Introduction to Principles–and–Parameters Theory

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The theory of Generative Grammar, whose most recent incarnation is called the Principles–and–Parameters framework, owes its existence to Noam Chomsky (b. 1928). Some key quotes from his most recent book, The Minimalist Program, serve well to outline the basic premises of the theory.

• Generative Grammar

‘Early generative grammar faced two immediate problems: to find a way to account for the phenomena of particular languages (‘‘descriptive adequacy’’), and to explain how knowledge of these facts arises in the mind of the speaker-hearer (‘‘explanatory adequacy’’).’

→ levels of adequacy
→ knowledge of language, mentalism (‘‘the mind of the speaker-hearer’’)

‘Though it was scarcely recognized at the time, this research program revived the concerns of a rich tradition, of which perhaps the last major representative was Otto Jespersen. Jespersen recognized that the structures of language ‘‘come into existence in the mind of a speaker’’ by abstraction from experience with utterances, yielding a ‘‘notion of their structure’’ that is ‘‘definite enough to guide him in framing sentences of his own,’’ crucially ‘‘free expressions’’ that are typically new to speaker and hearer.

‘We can take these properties of language to set the primary goals of linguistic theory: to spell out clearly this ‘‘notion of structure’’ and the procedure by which it yields ‘‘free expressions,’’ and to explain how it arises in the mind of the speaker — the problems of descriptive and explanatory adequacy, respectively. To attain descriptive adequacy for a particular language L, the theory of L (its grammar) must characterize the state attained by the language faculty, or at least some of its aspects. To attain explanatory adequacy, a theory of language must characterize the initial state of the language faculty and show how it maps experience to the state attained.’

→ a theory of the initial state; the emphasis on language acquisition

‘Generative grammar can be regarded as a kind of confluence of long-forgotten concerns [due to the intervention of behaviorism and structuralism; MD] of the study of language and mind, and new understanding provided by the formal sciences.’

• The Principles–and–Parameters (P&P) model of generative grammar

‘These efforts culminated in the P&P model (...). This constituted a radical break from the rich tradition of thousands of years of linguistic inquiry, far more so than early generative grammar, which could be seen as a revival of traditional concerns and approaches to them (...). [T]he P&P approach maintains that the basic ideas of the tradition, incorporated without great change in early generative grammar, are misguided in principle — in particular, the idea that a language consists of rules for forming grammatical constructions (...). The P&P approach held that languages have no rules in anything like the familiar sense, and no theoretically significant grammatical constructions except as taxonomic artifacts. There are universal principles and a finite array of options as to how they apply (parameters), but no language-particular rules and no grammatical constructions of the traditional sort within or across languages.’

→ departure from traditional, rule-based systems; principles & parameters instead of filters & rules
Universal Grammar — a system of PRINCIPLES and PARAMETERS

- a theory about the language user’s universal, innate language faculty (UG), aimed at explaining what is sometimes called ‘Plato’s Problem’ — how can children learning language pick up so much in so little time (roughly, six years), from so little actual input?

- UG should be simple; it should generalise

(1) a. what did you eat?
b. where did you eat?
c. when did you eat?
d. why did you eat?
e. how did you eat?

(2) Rule 1 ‘what should be placed in initial position’
Rule 2 ‘where should be placed in initial position’
Rule 3 ‘when should be placed in initial position’
Rule 4 ‘why should be placed in initial position’
Rule 5 ‘how should be placed in initial position’

(3) Rule R ‘a question word should be placed in initial position’

(4) Principle P ‘features should be checked’
([+WH] is a feature borne by question words; to be checked in the initial position of the clause (to be made precise))

- language variation

(6) a. who has he seen? *he has seen who? (except as ‘echo-question’) [English]
b. who has he seen? he has seen who? [French]
c. *who has he seen? [Chinese]

(7) a. who has he seen where? *who where has he seen? [English]
b. *who has he seen where? who where has he seen? [Balkans]
c. *who has he seen where? he has seen who where? [Chinese]

- ‘Principle P’ is a universal principle
- languages differ with respect to the point in the derivation at which the demands of ‘Principle P’ are satisfied [notion of derivation to be addressed later]
- language variation is codified in terms of PARAMETERS

- two further examples of a parameter

(8) the null-subject parameter
a. *(I) fixed the car [English]
b. (io) ho riparato la macchina [Italian]
- empty subjects of finite sentences are allowed: {yes/no}

(9) correlations — (i) sentence-final subjects; (ii) that-trace effects
the word-order parameter

a. John hit Mary \( S-V-O \) [English]
b. John-ga Mary-o but-ta \( S-O-V \) [Japanese]

- the verb (V) {precedes/follows} its object (O)

* a case study: Dutch word order

(11) a. Jan sloeg Marie [Dutch]
    Jan hit Marie
b. (Piet zei dat) Jan Marie sloeg
    Piet said that Jan Marie hit

(12) a. Jan heeft Marie geslagen
    Jan has Marie hit
b. (Piet zei dat) Jan Marie heeft geslagen
    Piet said that Jan Marie has hit

The T–Model: D–structure → S–structure → LF/PF

(13) LEXICON  (Chomsky & Lasnik 1977)

D–structure

S–structure

PF  LF

- D–structure is the pure structural representation of information listed in the lexicon
- S–structure is transformationally derived from D–structure
- S–structure is interpreted in two ways: phonologically (PF, for Phonological Form) and semantically (LF, for Logical Form)

- when building a syntactic structure, you take a set of basic building blocks from the lexicon and put them together in a tree in accordance with the principles of the grammar, moving elements from their original position to their final resting place in the course of the derivation as needed
- so we always start out from the LEXICON

The Lexicon

- (syntactically relevant) lexical information
  - CATEGORY
  - SELECTIONAL RESTRICTIONS (subcategorisation)
  - THEMATIC ROLES
the four lexical categories

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<tr>
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<th>(+N)</th>
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<td>A</td>
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<td>V</td>
<td>(<code>Verb</code>)</td>
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- [+V] = purely predicative categories (A, V)
- [-N] = potential Case-assigners (P, V)

(15) a. the enemy destroyed the city destroyed = V
b. *the enemy destruction the city destruction = N

lexical specifications as determinants of syntactic distribution

(16) subcategorisation
a. John will sleep
b. John will sleep in the garden
c. *John will sleep the cat
d. *John will sleep the cat in the garden
e. *John will stroke
f. *John will stroke in the garden
g. John will stroke the cat
h. John will stroke the cat in the garden
i. *John will put
j. *John will put in the garden
k. *John will put the cat
l. John will put the cat in the garden

(17) subcategorisation frames
a. sleep: V, [__]
b. stroke: V, [__ NP ]
c. put: V, [__ NP PP ]

- non-subcategorised constituents (so-called adjuncts or adverbial phrases — temporal adverbials, adverbials of manner, place etc.) can be left out without affecting grammaticality; they are not included in subcategorisation frames (cf. in the garden in (16b,h))
- subcategorised constituents (so-called complements or internal arguments) cannot be left out without affecting grammaticality
- ‘implicit arguments’ (cf. (18)) are included in subcategorisation frames, in parentheses

(18) John was eating (an apple) eat: V, [__(NP) ]

- all representatives of all lexical categories have subcategorisation frames

(19) a. John’s mad (about/at the cat) mad: A, [__(PP) ]
b. John’s talk (about syntax) talk: N, [__(PP) ]
c. John’s at *(the office) at: P, [__ NP ]
• *thematic roles (or \( \theta \)-roles)*
  
  - the roles of the participants of an event denoted by the head of the predicate
  
  [an event can be thought of as a stage play; the \( \theta \)-roles are the stage roles, and the arguments bearing the \( \theta \)-roles are the actors on stage]

  - \( \theta \)-roles are listed in the lexicon, for each predicative head, in the \( \theta \)-grid of the head

(20) *some \( \theta \)-roles and their contents*

a. AGENT: John stroked the cat
b. PATIENT: John stroked the cat
c. THEME: John is in the garden
d. EXPERIENCER: John feels cold; John likes the cat; the cat pleases John
e. GOAL: John gave the fish to the cat
f. SOURCE: the cat received the fish from John
g. LOCATION: John is in the garden

(21) \( \theta \)-grid of a verb like *stroke*: \(<\theta_1, \theta_2>\)

- \( \theta \)-role labels are irrelevant in syntax after D–structure
- \( \theta_1 \), generally called the ‘external \( \theta \)-role’ (see below), is sometimes underscored in \( \theta \)-grids

• the roles listed in a \( \theta \)-grid are assigned to arguments in a syntactic structure:

(22) John stroked\(_{\theta_1} \theta_2\) the cat

• important difference between subcategorisation frames and \( \theta \)-grids: subcategorisation frames are concerned only with the selection of complements; ‘external arguments’ (such as John in (22)) are not represented in subcategorisation frames, but are listed in \( \theta \)-grids

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### The Thematic Criterion — The (Extended) Projection Principle

• two important constraints on the syntactic representation of lexical information

(23) *Thematic Criterion (\( \theta \)-Criterion)*

a. each argument must be assigned exactly one \( \theta \)-role
b. each \( \theta \)-role must be assigned to exactly one argument

(24) *Projection Principle* (initial formulation)

all lexical information must be syntactically represented

\( \theta \)-Criterion is narrower in the sense that it refers to thematic information (\( \theta \)-grids) only; Projection Principle applies to all lexical information (including subcategorisation frames)

(25) a. *John will stroke*
b. *John will put in the garden*
c. *John will put the cat*
d. *John will stroke the cat his girlfriend*
e. *John will sleep Mary*
not all syntactic positions are filled by material listed in the lexical specifications of heads
  – adjuncts (cf. *in the garden* in (16b,h))
  – expletives (cf. (26), (27))

→ important difference between adjuncts and expletives: the former are typically optional, the latter obligatory

(26) a. [that expletives are obligatory] puzzled John
    b. *it puzzled John [that expletives are obligatory]
    c. *puzzled John [that expletives are obligatory]

(27) a. [a cat] has been in the garden
    b. *there has been [a cat] in the garden
    c. *has been [a cat] in the garden

→ *it* in (26b) (which cannot be replaced with e.g. demonstrative *that*, *this* or the *wh*-pronoun *what*; cf. (29c), below) and *there* in (27b) are pleonastic/expletive/dummy elements — contentless ‘placeholders’ which make no contribution to the meaning of the sentence, but which are nonetheless obligatorily present

→ to accommodate obligatory expletives, the Projection Principle is extended with an extra clause:

(28) Extended Projection Principle
    a. all lexical information must be syntactically represented
    b. every clause has a subject

→ the combined effect of the θ–Criterion and the (Extended) Projection Principle revisited:

(29) a. *that/this puzzled John [that expletives are obligatory]
    b. *puzzled John [that expletives are obligatory]
    c. *that/this puzzled John [that expletives are obligatory]
    d. *there stroked the cat

→ violation of EPP (b)

→ violation of θ–Criterion (a)

→ violation of θ–Criterion (b)

→ ancillary assumptions concerning the locality and structural configuration of θ-role assignment:

(30) all θ-roles of a head are assigned within the maximal projection of that head

(31) a. internal θ-role is assigned internal to the first syntactic projection of the head (complement)
    b. external θ-role is assigned external to the first syntactic projection of the head (specifier)

→ motivation for a hierarchical distinction between internal and external θ-roles: idioms and the compositionality of external θ-role assignment

(32) a. John threw the ball
    b. John threw a party

(33) a. John kicked the cat
    b. John kicked the bucket

→ the nature of the external θ-role assigned to *John* is determined by V and its complement together

→ this distinction between internal and external argument is coded in syntactic hierarchical structure
the structure in (34) is the core of the structure of a sentence like *John stroked the cat*

### Projection — X–bar Theory

- **(34)** is a *projection* of the verbal head $V$, built in conformity with *X–bar Theory*
  - $V$ combines with its internal argument (if any); a $V'$ projection results
  - $V'$ combines with the external argument; a $VP$ ($P$ = Phrase; also called $V^\prime\prime$ or $V_{\text{max}}$) results
- projections of the type in (34) are not specific to the category $V$:
  1. ik vind $[VP$ hen $[V, zeuren om niets]]$ [Dutch] cf. he left her crying
     - I find them nag about nothing
  2. ik vind $[NP$ hen $[N, remedies tegen de liefde]]$ he left her a widow
     - I find them remedies against (the) love
  3. ik vind $[AP$ hen $[A, goed in taalkunde]]$ he left her speechless
     - I find them good in (i.e. ‘at’ ) linguistics
  4. ik vind $[PP$ hen $[P, in orde]]$ he left her in misery
     - I find them in order
- *category* of a projection determined by the head; head’s features *percolate* up the projection line

### (36) $X$–bar Theory — the wellformedness condition on projections

- $X^n$ $-$ $X^{n-1}$ $-$ $...$ 
- [where ‘$X$’ = any lexical category]
  1. $XP$ $-$ (Spec) $X$ (Spec)
  2. $X$ $-$ (Compl) $X$ (Compl)
- the X–bar Principle (36) is a *principle of UG* $-$ important improvement over earlier ‘PS–rules’!
- to the $X'$ and $XP$ levels, *adjuncts* can be *adjoined* — the $X'$ and $XP$ levels are *recursive*  
  [the question of whether adjunction should be restricted to either $X'$ or $XP$ will be skirted here]

### (37) $X$–bar Theory — the wellformedness condition on projections

- $X^n$ $-$ $X^{n-1}$ $-$ $...$ 
- [where ‘$X$’ = any lexical category]
  1. ik vind $[VP$ hen $[V, ontzetten [V, zeuren om niets]]]$ [Dutch] 
     - I find them enormously nag about nothing
  2. ik vind $[NP$ hen $[N, gigantische [N, remedies tegen de liefde]]]$ 
     - I find them gigantic remedies against (the) love
  3. ik vind $[AP$ hen $[A, ontzetten [A, goed in taalkunde]]]$ 
     - I find them enormously good in (i.e. ‘at’ ) linguistics
  4. ik vind $[PP$ hen $[P, volkomen [P, in orde]]]$ 
     - I find them completely in order

**NOTE** degree modifiers like *very* in *very proud* will be treated as *adjuncts*, *NOT* as specifiers (*contra* Haegeman); specifier positions of lexical projections will be reserved for 0-role bearers
The Basic Structural Relations in the Tree

- **tree** = a graph/set of **nodes** connected by **branches** [translatable into labelled bracketing; (34)]
  - all nodes in the set are linked with all others
  - branches represent **inclusion/containment** relations

- **dominance** and **linear precedence**

(38) \[ K \]

\[ \begin{array}{c}
L \\
\downarrow \\
N \\
\downarrow \\
O \\
\downarrow \\
P \\
\downarrow \\
Q
\end{array} \]

\[ K = \text{root node} \text{ (dominates all other nodes)} \]

\[ l, n, p, q = \text{terminal nodes} \text{ (dominate no other node)} \]

(39) **dominance**

if \( Y \) is a constituent of \( X \), then node \( Y \) is dominated by node \( X \)

(40) **immediate dominance**

\( X \) immediately dominates \( Y \) iff

(i) \( X \) dominates \( Y \)

(ii) there is no \( Z \) such that \( Z \) is dominated by \( X \) and \( Z \) dominates \( Y \)

(41) **mother/daughter**

where \( X \) immediately dominates \( Y \), \( X \) is the **mother** of \( Y \), \( Y \) is the **daughter** of \( X \)

(42) **sisterhood**

where \( X \) and \( Y \) are immediately dominated by identical \( Z \), \( X \) and \( Y \) are **sisters**

- **restrictions** on tree geometry

(43) a. **single motherhood** (every daughter has one and only one mother); cf. (44a)

b. **no crossing branches**; cf. (44b)

  if \( X \) dominates \( x \), \( Y \) dominates \( y \), and \( X \) precedes \( Y \), then \( x \) precedes \( y \)

c. **binarity** (Kayne 1984, 1994); cf. (44c)

  a mother node \( X \) has at most two daughter nodes (but **less than** two daughters is allowed!)

d. **single head**

  every phrase has exactly one head

(44) a. \( * \)

\[ \begin{array}{c}
Y \\
y
\end{array} \]

\[ \begin{array}{c}
Z \\
z
\end{array} \]

\[ \begin{array}{c}
W \\
w
\end{array} \]

b. \( * \)

\[ \begin{array}{c}
Y \\
y
\end{array} \]

\[ \begin{array}{c}
Z \\
z
\end{array} \]

\[ \begin{array}{c}
W \\
w
\end{array} \]

c. \( * \)

\[ \begin{array}{c}
Y \\
y
\end{array} \]

\[ \begin{array}{c}
Z \\
z
\end{array} \]

\[ \begin{array}{c}
W \\
w
\end{array} \]
• *illustration* of the hierarchical organisation of a sentence

(45) the private detectives will all carefully read the letters
a. ... and the policemen will do so, too
b. ... and the policemen will both do so, too
c. ... and the policemen will both sloppily do so, too
d. *... and the policemen will both sloppily do the diaries*

→ *do so* ‘stands for’ a *projection* of V, never for V₀ alone (cf. (45d))
→ manner adverbs like *carefully, sloppily* are outside the minimal V
→ quantifiers associated to the subject (*all, both*) are hierarchically higher than manner adverbs

• *adjunction* revisited — two loci of adjunction

(46)
a. a (very) black board
\[ [\text{NP} a [\text{N} [\text{AP} black] [\text{N} board]]] \rightarrow \text{adjunction of a phrase (AP) to a phrase (N')} \]
b. a (*very) blackboard
\[ [\text{NP} a [\text{N} [\text{A} black] [\text{N} board]]] \rightarrow \text{adjunction of a head (A₀) to a head (N₀)} \]

→ general *restriction on adjunction* — ‘like attracts like’ (*head-to-phrase, *phrase-to-head*)

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**The Structure of the Clause — Infl & IP**

(47) a. John stroked the cat
   b. \[ [\text{VP} [\text{NP} John] [\text{V} stroked [\text{NP} the cat]]] \]

• there is reason to believe that the structure of the clause *John stroked the cat* is larger than VP:

(48) a. John said that he would stroke the cat, and stroke the cat, he did (VP±topicalisation)
   b. what John did was stroke the cat (pseudo-cleft)
   c. John stroked the cat, didn’t he? (tag question)

→ tense affix is *syntactically independent* of the verbal base

• tense morpheme syntactically represented as a *separate head*, named I(nfl), short for ‘inflection’
• the clause as a *projection of Infl – IP* (built in accordance with general X–bar Theory)

(49) \[ [\text{IP} \text{Spec [I [I -ed] [VP [NP John] [V. stroke [NP the cat]]]]}] \]

Q1 how does -ed come to end up on the verb stem?
→ via ‘Affix Hopping’ (‘Rule R’); or via some operation in the postsyntactic PF component

Q2 what happens to the apparently unfilled SpecIP position?
→ it gets filled by the subject, *John*, at S–structure!

(50) a. John *will* stroke the cat
   b. \[ [\text{IP} [\text{NP John} [I [I will] [VP [NP ec] [V. stroke [NP the cat]]]]]] \]
Movement and Trace Theory

- at D-structure, John in (50a) is base-generated in SpecVP; there it receives its 0-role
- at S-structure (cf. (50b)), John is in SpecIP; it gets there via syntactic movement
- in the S-structure representation in (50b), the SpecVP position is occupied by an empty category (ec) after movement of John to SpecIP
- this ec is a ‘placeholder’ for John in its original position; it is an inaudible ‘copy’ of the moved constituent
- such ecs are referred to as TRACES, abbreviated as t
- to indicate that the trace is a trace of John (its antecedent), we use coindexation
- a trace and its antecedent constitute a chain — here, the chain (John, t)

(50b”) [IP [NP John] [I will] [VP [NP t] [V stroke [NP the cat]]]]

Q WHY DO WE NEED TRACES?

- the Projection Principle demands that all lexical information be syntactically represented — not just at D-Structure, but at ALL levels of syntactic representation
- so at S-structure, too, there must be a recipient of the verb’s external 0-role in SpecVP (the position to which external 0-roles are assigned)
- since the audible bearer of the external 0-role (John) is no longer in SpecVP at S-structure, and since there is nothing audible in SpecVP that could meet the demands of the Projection Principle, an empty category (trace) linked to John is postulated in SpecVP to bring movement in conformity with the principles of the theory

Q IS MOVEMENT FROM SPECVP TO SPECIP LICIT?

- 0-Criterion (clause a) demands that an argument be assigned exactly one 0-role; this requirement pertains to argument chains as well
- John receives an external 0-role in its base position, SpecVP
- to satisfy the 0-Criterion, John must not pick up a second 0-role in SpecIP
- SpecIP must be a so-called ‘0’-position’ (i.e., a non-thematic position; the bar denotes negation)

NOTES

- the distribution of traces is subject to severe restrictions, which will be discussed in detail below
- movement must always have a motive, usually called a TRIGGER

Q WHAT IS THE TRIGGER FOR MOVEMENT FROM SPECVP TO SPECIP?

- checking of Agreement features in Infl (‘concord’)
(51) John {is/*am*/are} stroking the cat
- assignment of Nominative Case by Infl
(52) {he/*him} is stroking the cat
Case Theory

(53) **Case Filter**
every overt NP must be assigned (abstract) Case
\[ *\text{NP}_{\text{overt}} \text{ if } [-\text{Case}] \]

- abstract or structural Case (spelled with a capital C) as distinct from morphological case

(54) **the German morphological case system**

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<tr>
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<th>Masculine Singular</th>
<th>Neuter Singular</th>
<th>Feminine Singular</th>
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<td><em>dem Mann</em></td>
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<td><em>der Frau</em></td>
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(55) **the English prononominal system**

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- abstract/structural Case distinguished even where there are no morphological distinctions
- abstract/structural Case is assigned in specific structural configurations

Q WHAT ARE THE STRUCTURAL CONFIGURATIONS IN WHICH CASE IS ASSIGNED?

**C–Command — Government — Spec–Head Agreement**

- Chomsky (1981) — Case is assigned under GOVERNMENT

(56) **government**
\( \alpha \text{ governs } \beta \text{ iff } \)
(i) \( \alpha \text{ is a governor; and } \)
(ii) \( \alpha \text{ c-commands } \beta \text{; and } \)
(iii) \( \text{there is no barrier between } \alpha \text{ and } \beta \)

(57) **c-command**
\( \alpha \text{ c-commands } \beta \text{ iff } \)
(i) \( \alpha \text{ does not dominate } \beta \text{ and } \beta \text{ does not dominate } \alpha; \alpha \neq \beta \)
(ii) \( \text{the first } X \text{ that dominates } \alpha \text{ dominates } \beta \)
\[ X \in \{ \text{first node, first branching node, first maximal projection} \} \]
barrier (informal)

α is a barrier for a relationship of government between G and û iff

(i) α is a non-selected maximal projection dominating û
(ii) α is the projection of a closer governor of û (Minimality)

(59)

\[ \begin{array}{c}
\text{XP} \\
\text{YP} \\
\text{X'} \\
\text{Y} \\
\text{X} \\
\text{ZP} \\
\text{WP} \\
\text{Z'} \\
\text{W} \\
\text{Z} \\
\text{(UP)}
\end{array} \]

→ given Minimality (58ii), X cannot govern UP even though X does c-command UP

(60) a. Jan at het
Jan ate it
→ V governs het
[Dutch]
b. Jan at ervan
Jan ate there-of (i.e. ‘Jan ate of it’)
→ P governs er
c. *Jan at van het
Jan ate of it
→ V does not govern het across P

important variable: precise definition of command — {first node, first branching node, first XP} ['first XP' definition of command usually referred to as m-command; Chomsky (1986)]

→ given (strict) c-command in (56/57ii), X does not c-command YP, hence cannot govern YP
→ given m-command in (56/57ii), X m-commands YP, hence governs YP

→ given (strict) c-command in (56/57ii), Z does not c-command WP, hence cannot govern WP; X can govern WP (if ZP ≠ barrier via (58i))
→ given m-command in (56/57ii), Z m-commands WP, hence governs WP; X cannot govern WP

(61) Exceptional Case-Marking (ECM)

a. I consider [Ap him foolish]
b. I saw [vp him walk in the garden]

→ ECM is regular Case-assignment under government on a (strict) c-command definition of govt
→ ECM cannot be regular Case-assignment under government on an m-command definition of govt

(62) Nominative Case-assignment to the subject in SpecIP

he stroked the cat

→ cannot be Case-assignment under government on a (strict) c-command definition of government
→ can be regular Case-assignment under government on an m-command definition of government

• alternative approach to Nominative Case-assignment to SpecIP — Spec–Head Agreement
(51) John \{is/\textit{am}/\textit{are}\} stroking the cat

- the phi-features of the finite verb (represented in Infl) agree with those of the subject (in SpecIP)

- the link between Infl and SpecIP (Spec–Head Agreement) can be exploited to the full by having Nominative Case assigned by Infl to SpecIP in the structural configuration of Spec–Head Agreement

Q Infl harbours two sets of features, Tense and Agreement features; which is the assigner of NOM?

(63) a. that he didn’t see her (was a pity)
b. *he not to have seen her (was a pity)

(64) \textit{Portuguese inflected infinitives}

a. será difícil [eles aprovar a proposta] (it) will-be difficult they to-approve-AGR the proposal
b. *será difícil [eles aprovar a proposta] (it) will-be difficult they to-approve the proposal
c. será difícil [aprovar a proposta] (it) will-be difficult to-approve the proposal

→ Nominative Case is assigned by [+AGR] in Infl

CONCLUSION

- \textit{structural Nominative Case is assigned by [+AGR] in Infl, under Spec–Head Agreement}

- \textit{structural Accusative Case is assigned by a [-N] lexical head, under government}

(65) a. I saw \underline{him} [-N,+V]
b. I looked \textit{at} \underline{him} [-N,−V]
c. I am \textit{fond} *(of) \underline{him} [+N,+V]
d. I am the eldest \textit{brother} *(of) \underline{him} [+N,−V]

- \textit{further issues in Case Theory}

(66) a. John speaks English fluently c. John will probably stroke the cat
b. *John speaks fluently English d. John probably will stroke the cat

→ \textit{adjacency condition} on Accusative Case-assignment

→ follows from (a) government approach to Accusative Case-assignment, plus (b) binary branching

(67) a. I prefer for \underline{him} to be honest
b. *for \underline{him}, I prefer to be honest
c. I prefer (sincerely) for (*sincerely) \underline{him} (*sincerely) to be honest

→ \textit{for} assigns Case to \underline{him} but does not form a constituent with \underline{him}

→ \textit{for} is an ‘infinitival complementiser’, assigning Accusative Case to \underline{him} under ECM

(68) I prefer \textit{[cp for [ip him to be honest]]}

[the structure of CP, the ‘Complementiser Phrase’, will be addressed more fully later in the course]
Referential Dependencies — The Binding Theory

- interim summary — components/modules of the grammar discovered so far
  - X–bar Theory (the X'–Principle)
  - Theta Theory (the θ–Criterion)
  - Trace Theory (the ECP — to be discussed later)
  - Case Theory (the Case Filter)
  - Government Theory (definition (56))

- modules still to be covered
  - Binding Theory [this class]
  - Control Theory
  - Bounding Theory

**BINDING THEORY**
- regulates referential dependencies between NPs within (complex) sentences
  - some NPs refer directly (deictically) to an entity in the extra-linguistic world
  - other NPs do not refer themselves; they refer to a referent denoted by some other NP in the sentence in which they occur — such NPs are referentially dependent on another NP (to be called their antecedent)

<table>
<thead>
<tr>
<th>i (John)</th>
<th>j (Mary)</th>
<th>k (X)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>a. John, hit himself</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>b. *John, hit herself</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>c. *John, said that Mary, hit himself</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>d. John, said that Mary, hit herself</td>
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(69)

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<td>✓</td>
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<tr>
<td>a. John, hit him</td>
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<tr>
<td>b. John, hit her</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>c. John, said that Mary, hit him</td>
<td>✓</td>
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<td>d. John, said that Mary, hit her</td>
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(70)

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</tr>
<tr>
<td>a. John, hit John</td>
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<tr>
<td>b. John, hit Mary</td>
<td>✓</td>
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<td>c. John, said that Mary, hit John</td>
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(71)

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<th>k (X)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>a. I saw John, hit himself</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>b. I saw [John,’s father], hit himself</td>
<td>✓</td>
<td>✓</td>
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(72)

<table>
<thead>
<tr>
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<th>j (Mary)</th>
<th>k (X)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>a. before he leaves John wants to take a nap</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>b. before John leaves he wants to take a nap</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>c. John wants to take a nap before he leaves</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>d. he wants to take a nap before John leaves</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

(73)

- (73d) is ungrammatical on coreferential reading of he and John
• binding is constrained by two factors:
  – C–COMMAND (cf. (72)–(73))
  – LOCALITY (cf. (69)–(71))

(74) binding = coindexation with a c-commanding antecedent

(75) binding principles
  a. Principle A an anaphor must be bound in its local domain
  b. Principle B a pronoun must be free in its local domain
  c. Principle C an R–expression (referential expression) must be free

– anaphors: {reflexives, reciprocals}
– pronouns: {personal pronouns}
– R–expressions: {names, (determiner+)common nouns}

(76) local domain — first attempt: the clause
the minimal clause (IP) containing the bindee

→ problem: anaphors and pronouns as subjects of ECM–infinitivals

(77) John, considers [IP {himself/*him,} (to be) intelligent]

(78) local domain — second attempt: the clause + the governor
the minimal clause (IP) containing (i) the bindee and (ii) the governor of the bindee

→ problem: anaphors and pronouns inside NPs

(79) a. [IP John, read [NP a description of {himself/*him,}]]
   b. [IP John, read [NP Bill,’s description of {himself/*him,}]]
   c. [IP John, read [NP Bill,’s description of {himself/*him,}]]

→ solution:
  – prenominal genitive as ‘subject’ in NP
  – reference to ‘clause’ replaced with reference to ‘subject’

(80) local domain — third attempt: the ‘governing category’ or ‘Complete Functional Complex’
the minimal maximal projection containing (i) the bindee, (ii) the governor of the bindee, and (iii) a subject

→ problem: contrast between anaphors as subjects of finite sentences and anaphors contained in subjects of finite sentences; and the lack of anaphor/pronoun complementarity in the latter case

(81) a. *John, thinks that himself is intelligent
   b. John, thinks that he, is intelligent
(82) a. John, thinks that [pictures of himself] are on sale in Olomouc
   b. John, thinks that [pictures of him,] are on sale in Olomouc

→ two approaches — ‘accessible SUBJECTS’ (83) or ‘BT–compatibility’ (85)

(83) local domain — fourth attempt: the revised ‘governing category’ (Chomsky 1981)
the minimal maximal projection containing (i) the bindee, (ii) the governor of the bindee, and (iii) a SUBJECT accessible to the bindee (‘accessible SUBJECT’ = {subject, [+AGR]})
the notion of `accessibility': α is an accessible SUBJECT for β if coindexing α and β does not violate any grammatical principles
- the grammatical principle in (84) is violated under coindexation of himself and AGR in Infl in (82a) (cf. *she, is [her, cook], and *the pictures of [the president], is, on sale)

(84) \(i\)-within-\(i\) filter
\(*[α \ldots β \ldots]_i\)

(85) local domain — fifth attempt: CFC + BT compatibility (Chomsky 1986 — KoL)
the minimal CFC containing (i) the bindee and (ii) a governor of the bindee in which the bindee's Binding Principle could in principle be satisfied

<table>
<thead>
<tr>
<th>[+pronominal]</th>
<th>[+anaphoric]</th>
<th>[-anaphoric]</th>
</tr>
</thead>
<tbody>
<tr>
<td>[-pronominal]</td>
<td>anaphors</td>
<td>R→expressions</td>
</tr>
</tbody>
</table>

CLASSIFICATION OF NPS IN TERMS OF BINDING FEATURES

NP–Movement Revisited — The Passive — Unaccusativity

(50b‘) \([IP [NP \text{John}, [t ]_i \text{will} [VP [NP \text{the cat}]]]]\)

(86) the cat will be stroked (by John)

→ the cat appears in subject position; but it is still the Patient of stroke

→ the cat is projected onto the complement position of stroke, and moved to subject position, forming the chain (the cat, ti)

Q how is this chain compatible with the 0–Criterion and the Case Filter (as defined on chains)? [chain should have exactly one 0-role and exactly one Case]

• PASSIVE — (i) ‘absorption’ of the external 0-role
  (ii) ‘absorption’ of structural Accusative Case

(87) \([IP [NP \text{the cat}, [t ]_i \text{will} [VP \text{be stroked } ti]]]\) (details to be addressed in next section)

• other cases of NP–movement

(88) ECM–passive
  a. John, is believed \([IP \text{t } \text{to have stroked the cat}]\)
  b. *it is believed \([IP \text{John to have stroked the cat}]\)
  c. it is believed \([CP \text{that John stroked the cat}]\)

(89) raising
  a. John, seems \([IP \text{t } \text{to have stroked the cat}]\)
  b. *it seems \([IP \text{John to have stroked the cat}]\)
  c. it seems \([CP \text{that John stroked the cat}]\)
Burzio’s Generalisation (Burzio 1981, 1986)

A verb that does not assign an external θ-role to its subject cannot assign structural Accusative Case, and vice versa

seem: <θ_m>, [ __ IP/CP ]

- there are also verbs that are like seem in assigning only an internal θ-role but that differ from seem in being subcategorised for NP (rather than a clause)

unaccusative/ergative verbs — <θ_m>, [ __ NP ]

a. John has arrived
b. Jan is gearriveerd
c. Gianni è arrivato

- diagnostics for unaccusativity
  - auxiliary selection (in aux-selection languages, a verb selecting ‘be’ in perfect is unaccusative)
  - pronominal attributive use of past participle

a. de man is/*heeft zojuist gearriveerd
   the man is/has just arrived
b. de man heeft/*is hard gelachen
   the man has/is loudly laughed

Locality of Movement (I) — NP–Movement and the Binding Theory

(94) a. the cat seems to have been stroked t
   b. *the cat seems that it/there has been stroked t

(94b) to be ruled out by locality condition on the distance between NP–trace and its antecedent

(95) [[ip [np the cat], [i₁ -s [vp seem [ip to have been stroked t₁]]]]

- the representation in (95) is overly simplistic; NP–movement does not take place in one fell swoop, but proceeds successively cyclically, via a succession of local steps

(96) [[ip [np the cat], [i₁ -s [vp t, seem [ip t, to [vp t, have [vp t, been [vp t, stroked t₁]]]]]]]

- chain (the cat t₁, t₂, t₃, t₄, t₅, t₆)
  - well-formed in the light of the θ–Criterion (all landing-sites are θ′ positions)
  - well-formed in the light of the Case Filter (only the final landing-site is assigned structural Case)

NP–MOVEMENT — SUMMARY

- moved element = NP
- movement is obligatory
- movement stretch is constrained by Principle A of the Binding Theory; NP–trace = anaphor
- landing-site = NP–position lacking a θ-role
- landing-site * necessarily a Case position; but final landing-site must be a Case position
PRO and Control Theory

(97) [to stroke the cat at midnight] is not a good idea

- subject of matrix clause = [to stroke the cat at midnight]
- subject of infinitival clause = ??

Q does the infinitival clause have a syntactically represented subject?
[clearly, there is an understood subject; but the question is whether it is represented in syntax]

• (Extended) Projection Principle
  – all lexical information must be represented in the syntactic structure
  – all clauses have a subject
• θ–Criterion
• Binding Theory

(98) a. [for John to kill {himself*oneself*yourself}] would be a shame
b. [to kill {*himself*oneself*yourself}] would be a shame

- one/yourself in (98b) must be bound in accordance with Principle A of the Binding Theory
- there must be a local antecedent
- the local antecedent is an empty category

(98b’) [ec to kill {*himself*oneself*yourself}] would be a shame

- ec cannot be NP–trace — ec ≠ bound in its local domain (it does not have a local domain)

- NEW TYPE OF EMPTY CATEGORY — PRO

(98b’) [PRO to kill {*himself*oneself*yourself}] would be a shame (final representation)

- PRO in (98b’) behaves as if it were a pronoun
- PRO in (99) behaves as if it were an anaphor

(99) John tried [PRO to kill {himself*oneself*yourself}]

[NOTE that we cannot analyse the empty subject of the infinitival clause in (99) as an NP–trace — its antecedent has its own θ-role; including the matrix and embedded subjects in a single chain would violate the θ–Criterion]

- so PRO seems to have a schizophrenic character

(100) PRO is a pronominal anaphor — [+anaphoric, +pronominal]

- from (100) it follows that PRO must not have a governing category (or else BT would be violated)

(101) PRO Theorem
PRO is not governed

- PRO Theorem holds at S–structure; Binding Theory holds at S–structure — cf. (102)
(102) \[\text{[PRO, to be killed \(t_i\) by a sniper] is not nice}\]

- since PRO must not be governed, the structure of (99) must be more complex — it must contain a projection of Comp to shield PRO off from government by \(\text{try}\)

(99') John tried \([_{CP} \text{Comp} \,[_{IP} \text{PRO to kill \{himself\}*\{oneself\}*\{yourself\}]}]]\]

- since PRO is not governed, it cannot receive structural Accusative Case
- PRO is not necessarily Caseless — it may receive a structural Case assigned under Spec–Head Agreement (cf. PRO and Case-agreement with nominative-marked secondary predicates in Icelandic, Sigurðsson; cf. PRO and ‘null Case’, Chomsky & Lasnik 1993)

(103)a. Gianni ha parlato
   Gianni has talked
b. \(\text{ec}\) ha parlato

Q: what is the nature of \(\text{ec}\) in (103b)?
   could it be PRO?
- if the subject position of a finite clause is ungoverned, there is nothing particularly wrong with the idea that \(\text{ec}\) in (103b) = PRO
- but since in Chomsky (1982, 1986) the subject position of a finite clause is governed (by Infl), it is commonly assumed that \(\text{ec}\) in (103b) \(\neq\) PRO
- instead, it is commonly assumed that \(\text{ec} = \text{pro}\), empty pronominal — \([-\text{anaphoric}, +\text{pronominal}]\)
- with \(\text{pro}\) in place, the typology of empty categories is almost complete; the double-minus box in the table below (filled with the so-called ‘variable’) is the topic of the remainder of the course

<table>
<thead>
<tr>
<th>NP–type</th>
<th>Overt</th>
<th>Covert</th>
</tr>
</thead>
<tbody>
<tr>
<td>[+anaphoric, -pronominal]</td>
<td>anaphor</td>
<td>NP–trace</td>
</tr>
<tr>
<td>[-anaphoric, +pronominal]</td>
<td>pronominal</td>
<td>(\text{pro})</td>
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<tr>
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<td>R–expression</td>
<td>variable</td>
</tr>
<tr>
<td>[+anaphoric, +pronominal]</td>
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<td>PRO</td>
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**TYPOLOGY OF NP–TYPES**

**Locality of Movement (II) — A’–Movement, Variables and Subjacency**

- *the A/A’ distinction*

(104) an A–position (A=Argument) is any member of a (singleton) NP–chain
   an A’–position (non-A) is any other XP position
   \(\rightarrow\) NP–movement = A–movement
20

(105)a. I would prefer \[CP\] for John to be honest
   b. I think \[CP\] that John should be honest

→ *for and that are COMPLEMENTISERS
→ complementisers head their own syntactic projections, labelled CP (Complementiser Phrase), on top of IP

Q if C is a head, the general X–bar schema guarantees (besides an (IP) complement) a specifier position — what is the function of this specifier position?

(106)a. ik vraag me af \[wie dat Jan gezien heeft\] [colloquial Dutch]
   I wonder who that Jan seen has
   b. I wonder who John has seen

→ the question word *wie ‘who’* in colloquial Dutch (106a) shows up in a position to the immediate left of the complementiser *dat* — the SpecCP position
→ in standard Dutch, C in (106a) is unrealised, just as in English (106b); but the position of the question word will be the same

(107)a. John stroked a cat
   b. which cat did John stroke?

→ extension to root questions — in (107b), *which cat* sits in SpecCP as well
→ with the subject *John* in SpecIP (as usual), word order shows that *did* sits in Comp
→ another case of simultaneous filling of C and SpecCP
   [discussion of doubly-filled Comp filter]

• *generalisation* — SpecCP = position of question words (referred to as *wh*-phrases)

• *wh*-phrases do not originate in SpecCP — cf. (107): just like a *cat* in (107a), *which cat* in (107b) is the internal argument of *stroke*, hence should be base-generated in V’s complement

→ S–structure MOVEMENT of *wh*-phrases to SpecCP
→ SpecCP = A–position; movement to SpecCP = A \*movement
→ *wh*-movement, like NP–movement, leaves a trace

• *locality restrictions* on the distance between a trace and its antecedent

(94) a. the cat seems to have been stroked
   b. *the cat seems that it/there has been stroked

→ the ban on ‘superraising’ was reduced to a BT–A effect (cf. p. 17)

(108)a. who did he know that he had seen?
   b. *who did he know when he had seen?

→ *wh*-phrase cannot move out of a *wh*–CP (‘*wh*-island constraint’)

(109)a. who did he claim that he had seen?
   b. *who did he make the claim that he had seen?

→ *wh*-phrase cannot move out of a complex NP (‘Complex NP Constraint’)

*Syntax I* • *Introduction to Principles–and–Parameters Theory* • *Linguistics Program* • *CUNY* • *Marcel den Dikken* • *Hand-out*
(110) **Subjacency Condition**  
move not cross more than one *bounding node* at a time  
[bounding nodes (English): {IP, NP}]  

- *back to (108) — ungrammaticality of (108b) now straightforward; but what about (108a)?*  
  - *successive-cyclic movement*, via the embedded SpecCP position  

(111)  
\[
[\text{CP} \, \text{who}, \text{did} \, [\text{IP} \, \text{he know} \, [\text{CP} \, t', \text{that} \, [\text{IP} \, \text{he had seen} \, t]]]]
\]
  
- each movement step crosses precisely one bounding node (IP) at a time → Subjacency respected  

- recall the successive cyclicity of NP–movement  

(96)  
\[
[\text{IP} \, \text{the cat}, \text{I, -s} \, [\text{VP} \, \text{t, seem} \, [\text{VP} \, \text{t, have} \, [\text{VP} \, \text{t, stroked} \, t]]]]
\]
  
- both A–movement and A’–movement proceed via a succession of *maximally small steps*  

(112)a. John, said he, saw Bill  
  b. *who, did John, say t, saw Bill?*  

(113)a. he, said Bill saw him  
  b. *who, did he, say Bill saw t?*  
  c. who, t, said Bill saw him?  

• *trace of A’–movement ≠ anaphor — not locally A–bound*  
  - anaphors must be locally bound (BT–A)  
  - though the *wh*-trace $t_i$ in (111) is indeed bound by the closest available binder $t_i'$, this does not qualify as binding in the sense of the Binding Theory  
  - *Binding Theory is concerned with A–binding only; it regulates dependencies among NPs in A–positions*  
  - the traces in (111) are A’–bound, hence do not qualify as anaphors in the sense of BT  

• *trace of A’–movement ≠ pronominal — Strong Crossover (SCO)*  

(114)a. *who, did he, say Bill saw t?*  
  b. *he, said Bill saw John*  
  (= (113b))  

- trace of A’–movement **MUST NOT** be A–bound  
- trace of A’–movement **MUST** be A’–bound  

(115)a. which cat, did John stroke $t_i$?  
  b. *did John stroke $t_i$?*  

**CONCLUSION**  
A’–bound trace fits in the [-anaphoric, -pronominal] box of the typology of NPs
Traces and Licensing — The Empty Category Principle

- traces are not legitimate in just any position — their distribution is curbed by licensing constraints

(116)a. who, do you think (that) John kissed t_i?  
   b. who, do you think (*that) t_i kissed Mary?  
- the ‘that-trace effect’ on long subject extraction

(117)a. who, would you prefer (for) John to kiss t_i?  
   b. who, would you prefer (*for) t_i to kiss Mary?  
- more general effect — the ‘Comp-trace effect’ on subject extraction

- SUBJECT–OBJECT ASYMMETRY (cf. a– vs b–examples)

(118) Empty Category Principle (ECP)  
   a trace must be PROPERLY GOVERNED

(119) a properly governs b iff (i) or (ii)  
   (i) a θ-governs b  
   (ii) a antecedent-governs b

(120)a. a θ-governs b iff a governs b and a θ-marks b  
   b. a antecedent-governs b iff a governs b and a is coindexed with b

[note that antecedent-government involves a type of government different from the cases of head-government encountered up to this point]

- back to (116)

(116a’) [CP who, do [IP you think [CP t_i’ (that) [IP John kissed t_i]]]]  
- t_i properly governed via the ‘θ-government’ clause of the ECP  
- presence/absence of that has no influence on the licensing of t_i  
- question of licensing of t_i’ to be ignored for the time being

(116b’) *[CP who, do [IP you think [CP t_i’ that [IP t_i kissed Mary]]]]  
- t_i is NOT θ-governed (subjects never are)  
- so t_i could only be licensed via the ‘antecedent-government’ clause of the ECP  
- t_i’ is the local antecedent of t_i  
- but in (116b’), t_i’ cannot antecedent-govern t_i — MINIMALITY: that = closer governor!

(116b’’) [CP who, do [IP you think [CP t_i’ ⊕ [IP t_i kissed Mary]]]]  
- here, t_i’ CAN antecedent-govern t_i — ⊕ Comp * governor — no Minimality effect arises
Subjacency & ECP — Overview of Constraints on Movement

(121)a. *who do you think that kissed Mary?
   b. ?who do you wonder when John kissed?

→ Subjacency effects typically give rise to ‘weaker’ deviance than ECP effects

(122)a. ?who do you wonder when John kissed?
   b. *who do you wonder when kissed Mary?
   c. *when do you wonder who John kissed?

→ adjunct traces must be antecedent-governed; antecedent-government fails in (122c) → *ECP

(123)a. ?who did you make the claim that John kissed?
   b. *who did you make the claim (that) kissed Mary?
   c. *when did you make the claim (that) John kissed Mary?

→ (123c) ungrammatical on ‘downstairs reading’ of when; not on ‘upstairs reading’ of when

• Subjacency and ECP as DIAGNOSTICS FOR MOVEMENT

(124)a. ?John, I wonder why Mary likes ec
   b. John, I wonder why Mary likes him

→ the Subjacency effect observed in (124a) indicates that ec = trace, not null pronoun (pro)

(125)a. *John, I think that ec likes Mary
   b. John, I think that he likes Mary

→ the ECP effect observed in (125a) confirms the conclusion drawn on the basis of (124)

(126)a. ?I am looking for those documents which I can never remember where I put ec
   b. I am looking for those documents which I can never remember where I put them

→ wh-relatives involve movement (not surprisingly)
→ Subjacency effect can be remedied with the aid of a resumptive pronoun (them in (126b))

(127)a. ?I am looking for those documents that I can never remember where I put ec
   b. I am looking for those documents that I can never remember where I put them

→ that-relatives also involve movement!
→ it cannot be that that is moving — that is a complementiser
→ movement to SpecCP of an EMPTY OPERATOR

(127a’) ?[CP Op, that [IP I can never remember [CP where [IP I put ti]]]]

• other empty operator movement constructions
  – infinitival relatives (a man to love, a man to fix the sink)
  – infinitival adjuncts (he is too stubborn to invite)
  – tough-movement/easy-to-please’ constructions (John is tough/easy to please)
  – ‘parasitic gap’ constructions (which book did you file without reading?)
A–movement and A’–movement compared — the nature of the extraction and final landing sites

<table>
<thead>
<tr>
<th></th>
<th>A–movement</th>
<th>A’–movt of argument</th>
<th>A’–movt of adjunct</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOOT OF THE CHAIN</td>
<td>+0, –Case</td>
<td>+0, +Case</td>
<td>−0, –Case</td>
</tr>
<tr>
<td>HEAD OF THE CHAIN</td>
<td>−0, +Case</td>
<td>−0, −Case</td>
<td>−0, −Case</td>
</tr>
</tbody>
</table>

INTERMEDIATE POSITIONS OF THE CHAIN are always −0, −Case

→ the differences between A–movement and A’–movement all follow from independent principles of the theory
→ A–movement is motivated/triggered by the search for Case; its extraction site must be Caseless, or else no A–movement will take place
→ A’–movement targets an A’–position; A’–positions are positions to which, by their very nature, no θ-roles can be assigned; hence the moved constituent must receive its θ-role (if any) in its extraction position
→ A’–movement targets an A’–position; A’–positions are positions to which, by their very nature, no Case can be assigned; hence the moved constituent must receive its Case (if any) in its extraction position
→ no landing-site can ever be a θ-position: (i) movement of an argument to a θ-position would violate the θ–Criterion (one-and-only-one θ-role); (ii) movement of a non-argument to a θ-position would violate the general requirement that only arguments can be assigned θ-roles
→ consequently, no different movement rules have to be formulated
→ there are NO MOVEMENT RULES — only Move a: ‘move anything anywhere’

NOTE

we have considered only movement of maximal projections in the discussion so far; heads can also undergo movement — HEAD MOVEMENT (another instance of Move a)

(128)a. who will John kiss?
   b. [CP who, [Cl will, [IP John, t_j [VP t_k [V kiss t_i]]]]]
→ will, base-generated in Infl, raises to Comp, inverting with its subject

→ head movement and the analysis of word order in the West-Germanic ‘Verb Second’ and ‘Verb Raising’ languages (Dutch, German)

(129)a. (ik denk dat) Jan Marie kussen zal
   I think that Jan Marie kiss will
   [Dutch]
   b. (ik denk dat) Jan Marie zal kussen
   I think that Jan Marie will kiss
   c. Jan zal Marie kussen
   Jan will Marie kiss
→ ‘Verb Raising’ (129a,b) — adjunction of lower verb to higher verb
→ ‘Verb Second’ (129c) — substitution of finite verb for Comp
• general restriction on head movement — heads may move to other head positions only
  -- cf. the ‘like attracts like’ condition on adjunction noted earlier:

(46) a. a (very) black board
    \[ [\text{NP} a [\text{N} [\text{AP} \text{black}] \text{N. board}]] ] \rightarrow \text{adjunction of a phrase (AP) to a phrase (N')} 

b. a (*very) blackboard
    \[ [\text{NP} a [\text{N} [\text{A} \text{black}] \text{N. board}]] ] \rightarrow \text{adjunction of a head (A) to a head (N)}

---

**Logical Form — Movement at LF**

• the T–model revisited — levels of representation and the domain of Move $\alpha$

(13) \[
\begin{align*}
\text{LEXICON} & \quad \text{(Chomsky & Lasnik 1977)} \\
\text{D–structure} \\
\text{S–structure} \\
\text{PF} & \quad \text{LF}
\end{align*}
\]

• Move $\alpha$ between D–structure and S–structure = OVERT MOVEMENT

• Move $\alpha$ between S–structure and LF = COVERT MOVEMENT
  -- Quantifier Raising
  -- LF–movement of wh-phrases in-situ

(130)a. John loves spinach

b. everybody loves spinach

c. nobody loves spinach

d. many/few people love spinach

→ John is a directly referring NP
→ everybody, nobody, many/few N — no deictic reference to a specific individual or group of individuals in the extra-linguistic world

• the reference of Quantifier Phrases (QP) is variable

• the semantics of QPs is represented at LF in terms of an OPERATOR–VARIABLE RELATIONSHIP, where Q = operator and $t$ = variable

• quantifiers assign scope at LF; scope is assigned via LF–movement to position reflecting scope

→ SCOPE AMBIGUITIES

(131)a. everybody loves somebody

b. ‘for everybody it is the case that he loves somebody’ \rightarrow wide scope for everybody

c. ‘there is somebody such that everybody loves him’ \rightarrow wide scope for somebody
(132)a. \[ \text{IP}\text{ every\textunderscore body}_{i} \text{IP}\text{ somebody}_{j} \text{IP} t_{i} \text{ loves } t_{j} \]\n\[ \text{IP}\text{ somebody}_{i} \text{IP}\text{ every\textunderscore body}_{j} \text{IP} t_{i} \text{ loves } t_{j} \]\n\[ \rightarrow \text{two LF representations derived via QUANTIFIER RAISING (QR) } = \text{QP}\text{-adjunction to local IP} \]

(133)a. someone thinks that everyone loves him \[ *\text{every } > \text{some} \]
b. \[ \text{IP}\text{ somebody}_{i} \text{IP} t_{i} \text{ thinks } \text{IP}\text{ that } \text{IP}\text{ everybody}_{j} \text{IP} t_{j} \text{ loves him} \]\]
\[ \rightarrow \text{evidence for QR as a movement operation: Antecedent\text{-}contained Deletion (ACD)} \]

(134)a. \[ \text{IP}\text{ John } \text{VP}\text{ suspected } \text{IP}\text{ everyone that Bill did } \text{VP}\text{ ec} \] \[ \rightarrow \text{ambiguous: } 2 > 4 \ 4 > 2 \]
b. \[ \text{IP}\text{ [everyone that Bill did } \text{VP}\text{ ec} ] , \text{IP}\text{ John } \text{VP}\text{ suspected } t_{i} \] \[ \rightarrow \text{unambiguous: } 2 > 4 \ *4 > 2 \]
\[ \rightarrow \text{quantifier scope ambiguity and wh\text{-}movement} \]

(135)a. four boys love two girls \[ \rightarrow \text{ambiguous: } 2 > 4 \ 4 > 2 \]
b. which two girls do four boys love? \[ \rightarrow \text{unambiguous: } 2 > 4 \ *4 > 2 \]
\[ \rightarrow \text{ambiguity of (135a) and non\text{-}ambiguity of (135b) observed also in a language like Chinese, which lacks overt wh\text{-}movement} \]

(136) multiple wh\text{-}questions
a. who loves whom?
  why does she love whom?
\[ \rightarrow \text{wh\text{-}in\text{-}situ moves covertly to the wh\text{-}phrase that sits overtly in SpecCP, via \textit{adjunction} to SpecCP} \]

(137) \[ \text{CP}\text{ Spec whom}_{j} \text{Spec whom}_{i} \text{C}\text{... } t_{i} \text{ loves } t_{j} \] \[ \text{(LF}\text{-}moved wh\text{-}phrase in italics) \]
\[ \rightarrow \text{evidence for wh\text{-}movement at LF in multiple wh\text{-}questions} \]

(138) Weak Crossover
a. *who does his, mother love? \[ *\text{his, mother loves everyone,} \]
b. *why does his, mother love who? \[ \text{his, mother loves John,} \]

(139) Superiority effects
a. *whom does who love? \[ \text{(cf. (136a))} \]
b. *whom does she love why? \[ \text{(cf. (136b))} \]
\[ \rightarrow \text{superiority } = \text{ECP violation at LF} \]

(140) \[ *\text{CP Spec whom}_{i} \text{Spec whom}_{j} \text{C}\text{... } t_{i} \text{ loves } t_{j} \] \[ \text{(LF}\text{-}moved wh\text{-}phrase in italics) \]
\[ \rightarrow \text{t}_{i} \text{ (in SpecIP) can be licensed via antecedent\text{-}government only} \]
\[ \rightarrow \text{SpecCP bears the index of the phrase substituted for SpecCP (i.e., the overtly moved wh\text{-}phrase)} \]
\[ \rightarrow \text{in (137), SpecCP bears index } i ; t_{i} \text{ is properly governed} \]
\[ \rightarrow \text{in (140), SpecCP bears index } j ; t_{j} \text{ cannot be properly governed} \]

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