On Deriving Locality Constraints on Movement in a Phase-Based Approach to Syntax

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Lecture 1

Background

1. Locality Constraints

1.1. General Remarks

(1) *Constraint types*:
   a. A local *derivational* constraint applies to syntactic (Merge or Move) operations.
   b. A local *representational* constraint ("filter") applies to an output representation.
   c. A *global* constraint applies to a whole derivation; it correlates non-adjacent steps in the derivation.
   d. A *translocal* constraint applies to sets of output representations; it picks out an optimal output representation among competing output representations.
   e. A *transderivational* constraint applies to sets of derivations; it picks out an optimal derivation among competing derivations.

(2) *Complexity of constraint types*:
   derivational constraints, representational constraints < global constraints < translocal constraints < transderivational constraints

Strategy:
If constraint C_1 and constraint C_2 can account for a given phenomenon in the same way and C_1 is less complex than C_2 then, other things being equal, choose C_1.

Note:
This strategy does not imply that transderivational, translocal, or global constraints should be abandoned.

A meta-constraint on constraints:
Constraints should be as general as possible.

1.2. The A-over-A Principle

(3) *A-over-A Principle* (Chomsky (1964)):
   In a structure ... [$_A$ ... [$_A$ ...] ...] ..., an operation can only affect the higher, more inclusive category A.

Note:
The A-over-A Principle is a local derivational constraint. To find out whether a given derivation respects it or not, each (Move) operation must be checked, by taking into account the phrase marker constructed so far.

(4) *A first consequence of the A-over-A Principle*:
   a. [$_{DP_1}$ My letter to [$_{DP_2}$ a friend in Italy]] got lost
   b. *[$_{DP_2}$ Who] did [$_{DP_1}$ my letter to t_2] get lost ?
   c. [$_{DP_1}$ Which letter to [$_{DP_2}$ a friend in Italy]] got lost?
   d. *John is the friend [$_{DP_2}$ who] C [$_{DP_1}$ my letter to t_2] got lost
   e. This is the letter [$_{DP_1}$ which] t_1 got lost

(5) *Another consequence of the A-over-A Principle*:
   a. John heard [$_{DP_1}$ a rumour that you had read [$_{DP_2}$ this book]]
   b. *[$_{DP_2}$ What] did John hear [$_{DP_1}$ a rumour that you had read t_2]] ?
   c. [$_{DP_1}$ Which rumour that you had read [$_{DP_2}$ this book]] did John hear ?
   d. *This is a book [$_{DP_2}$ which] John heard [$_{DP_1}$ a rumour that you had read t_2]
   e. This a rumour [$_{DP_1}$ which] John heard t_1

Note:
The A-over-A Principle can be reformulated as a representational constraint on outputs.

(6) *A-over-A Principle* (representational version):
   *... A_2 ... [$_{A_1}$ ... t_2 ...] ...] ...

Note:
Crucially, this formulation relies on the existence of traces, and this is in fact one of the two main reasons why one would want to postulate traces in the first place (the other main reason being that traces are relevant for semantic interpretation).

Motivating traces:
Traces are needed by representational constraints.

Problem:
The A-over-A Principle is too strong and too weak. The first problem is potentially severe; the second problem makes the A-over-A Principle look less plausible.

(7) *Well-formed DP-over-DP examples ruled out by the A-over-A Principle*:
   a. [$_{DP_2}$ Who would you approve of [$_{DP_1}$ my seeing t_2]] ?
   b. [$_{DP_2}$ Which author] did you read [$_{DP_1}$ a book about t_2] ?

(8) *Well-formed CP-over-CP examples ruled out by the A-over-A Principle*:
   a. John wouldn't say [$_{CP_1}$ that Mary thinks [$_{CP_2}$ that Bill is nice]]
   b. [$_{CP_2}$ That Bill is nice] John wouldn't say [$_{CP_1}$ that Mary thinks t_2]
   c. Fritz hat behauptet [$_{CP_1}$ Maria würde denken [$_{CP_2}$ dass er nett ist]]
      Fritz$_{nom}$ has claimed Maria$_{nom}$ would think that he nice is
   d. [$_{CP_2}$ Dass er nett ist] hat Fritz behauptet [$_{CP_1}$ würde Maria denken t_2]

(9) *Well-formed VP-over-VP (-over VP) examples ruled out by the A-over-A Principle*:

a. Fritz hat [$_{VP_1}$ [$_{VP_2}$ zu arbeiten] versucht]
Fritz$_{nom}$ has to work tried

b. [$_{VP_2}$ Zu arbeiten] hat Fritz [$_{VP_1}$ t_2 versucht]
to work has Fritz$_{nom}$ tried

c. [$_{VP_1}$ [$_{VP_2}$ Zu arbeiten] versucht] hat Fritz t_1
to work tried has Fritz$_{nom}$

d. Ich [$_{V_3}$ denke] nicht [$_{VP_0}$ t_3 [$_{CP}$ dass er [$_{VP_1}$ [$_{VP_2}$ zu arbeiten] versucht]
I think not that he to work tried
hat]]
has

e. ?[$_{VP_1}$ [$_{VP_2}$ Zu arbeiten] versucht] denke ich nicht [$_{VP_0}$ t_4 [$_{CP}$ dass er t_1
to work tried think I not that he
hat]]
has

f. ?[$_{VP_2}$ Zu arbeiten] denke ich nicht [$_{VP_0}$ t_4 [$_{CP}$ dass er [$_{VP_1}$ t_2 versucht]
to work think I now that he tried
hat]]
has

(10) *An ill-formed example not ruled out by the A-over-A Principle – AP movement from DP*:

a. You have [$_{DP_1}$ a [$_{AP_2}$ very intelligent] sister]
b. [$_{DP_1}$ [$_{AP_2}$ How intelligent] a t_2 sister] do you have ?
c. *[$_{AP_2}$ How intelligent] do you have [$_{DP}$ a t_2 sister] ?

(11) *Another ill-formed example not ruled out by the A-over-A Principle – DP movement from PP ('preposition stranding')*:

a. Sie spielt [$_{PP_1}$ mit [$_{DP_2}$ dem grünen Auto]]
she plays with the green car

b. [$_{PP_1}$ Mit [$_{DP_2}$ welchem Auto]] spielt sie t_1 ?
with which car plays she

c. *[$_{DP_2}$ Welchem Auto] spielt sie [$_{PP_1}$ mit t_2] ?
which car plays she with

d. [$_{PP_1}$ Mit [$_{DP_2}$ dem grünen Auto]] spielt sie t_1
with the green car plays she

e. *[$_{DP_2}$ Diesem Auto] spielt sie [$_{PP_1}$ mit t_2]
this car plays she with

Outlook: the future:
The A-over-A Principle is formulated in terms of categorial features. Assumption (see below): Certain designated features are responsible for triggering various movement operations ([•wh•] for *wh*-movement, [•top•] for topicalization, etc.). These features are not (necessarily) categorial. (Possible exception: [•D•], the EPP feature of T.) What would happen if the A-over-A Principle were revised as an F-over-F Principle?

(12) *F-over-F Principle*:
In a structure $\alpha_{[\bullet F \bullet]} \ldots [_{\beta_{[F]}} \ldots [_{\gamma_{[F]}} \ldots] \ldots] \ldots$, movement to [•F•] can only affect the category bearing the [$_{F]}$ feature that is closer to [•F•].

Note:
This is in fact (a subcase of) a constraint that is widely adopted in most recent versions of the minimalist program – the generalized Minimal Link Condition (see below).

Back to the sixties:
In reaction to Chomsky's A-over-A Principle, Ross (1967) developed a theory of *islands*, i.e., categories that are opaque for movement.

1.3. The Complex NP Constraint

(13) *Complex NP Constraint* (CNPC, Ross (1967)):
No element contained in a CP dominated by a DP may be moved out of that DP.

Note on terminology:
It was a standard assumption until the late eighties that NP dominates DP, not DP NP, as assumed here (and in most current work). Hence, the original Complex NP Constraint is a constraint on movement from NP, not from DP. The constraint is still known under its original name, which is therefore also adopted here, even though "Complex DP Constraint" might be more appropriate. The Complex NP Constraint accounts for some of the data that motivated the A-over-A Principle.

(14) *A consequence of the Complex NP Constraint, relative clauses*:

a. *[$_{DP_1}$ Which book] did John meet [$_{DP_2}$ a child [$_{CP}$ who read t_1]] ?
b. *[$_{DP_1}$ Who] does Mary know [$_{DP_2}$ a girl [$_{CP}$ who is jealous of t_1]] ?

(15) *A consequence of the Complex NP Constraint, argument clauses* (see (5-b)):

a. ??[$_{DP_1}$ Which book] did John hear [$_{DP_2}$ a rumour [$_{CP}$ that you had read t_1]] ?
b. *[$_{PP_1}$ How] did John hear [$_{DP_2}$ a rumour [$_{CP}$ that you had fixed the car t_1]] ?
c. ?*The hat [$_{DP_1}$ which] I believed [$_{DP_2}$ the claim [$_{CP}$ that Otto was wearing t_1]] is red

Note:
Movement from argument clauses (selected categories) in complex DPs typically yields much better results than movement from relative clauses (non-selected, modifier categories). However, this does not hold for movement of modifiers themselves, which is completely impossible throughout (see (15-a) vs. (15-b)).

(16) *Complex NP Constraint* (representational version):
*... α_1 ... [$_{DP}$ ... [$_{CP}$ ... t_1 ...]] ...

Problem:
The specific formulation of the CNPC predicts that extraction from CP to a position below DP should be fine, which it is not. This can be seen in constructions involving PP

movement to specifiers of DP in German (see Lindauer (1995) for extensive discussion – the construction typically requires certain intonation patterns, and it distribution is also restricted in a number of further ways); the illformedness of (17-d) is therefore a priori unexpected.

(17) *CNPC effects not covered by the CNPC in German*:

a. $[_{DP_2}\ [_{PP_1}$ Von Peter] $[_{D'}$ das Gerücht t_1]] habe ich t_2 gehört
by Peter the rumour have I heard

b. Fritz hat $[_{DP}$ das Gerücht $[_{CP}$ dass Maria $[_{PP_1}$ von Peter] ein Buch
Fritz has the rumour that Maria by Peter a book
gekriegt hat] gehört
given was heard

c. *$[_{PP_1}$ Von Peter] hat Fritz $[_{DP}$ das Gerücht $[_{CP}$ dass Maria t_1 ein Buch
by Peter has Fritz the rumour that Maria a book
gekriegt hat] gehört
given was heard

d. *Fritz hat $[_{DP}\ [_{PP_1}$ von Peter] $[_{D'}$ das Gerücht $[_{CP}$ dass Maria t_1 ein Buch
Fritz has by Peter the rumour that Maria a book
gekriegt hat]] gehört
given was heard

Generalization:
Extraction from CPs in DPs seems to be blocked in general, even if movement does not go beyond DP. (Note: Repercussions also for the *Subjacency Condition* (Chomsky (1977)), which I ignore throughout.)

1.4. The Sentential Subject Constraint

(18) *Sentential Subject Constraint* (Ross (1967)):
No element dominated by a CP may be moved out of that CP if that CP is a subject.

(19) *A consequence of the Sentential Subject Constraint*:

a. $[_{DP_1}$ Who] did the reporters expect $[_{CP}$ that the principal would fire t_1] ?
b. *$[_{DP_1}$ Who] was $[_{CP}$ that the principal would fire t_1] expected by the reporters ?
c. *$[_{DP_1}$ Who] did $[_{CP}$ that Mary was going out with t_1] bother you ?

(20) *Sentential Subject Constraint* (representational version):
*... α_1 ... $[_{CP}$ ... t_1 ...] ... if CP is a subject.

1.5. Subject Condition

Note:
The Sentential Subject Constraint can be generalized: DP subjects are also islands, even if they do not qualify as complex in the sense of the Complex NP Constraint.

(21) *Subject Condition* (Chomsky (1973), Huang (1982), Chomsky (1986), Freidin (1992)):
No element may be moved out of a subject.

(22) *Subject Condition* (see (4)):

a. *$[_{DP_2}$ Who(m)] has $[_{DP_1}$ a comment about t_2] annoyed you ?
b. *$[_{PP_3}$ About whom] has $[_{DP_1}$ a comment t_3] annoyed you ?

(23) *Subject Condition* (representational version):
*... α_1 ... $[_\beta$ ... t_1 ...] ... if β is a subject.

1.6. The Wh-Island Condition

(24) *Wh-Island Condition* (Chomsky (1973)):
Movement must not cross a CP with a *wh*-element in SpecC or C.

(25) *Wh-Island Condition* (representational version):
*... α_1 ... $[_{CP}$ β_2 ... t_1 ...] ..., where β is a *wh*-element in SpecC or C.

(26) *A consequence of the Wh-Island Condition*:

a. How$_1$ do you think $[_{CP}$ that Mary solved the problem t_1] ?
b. *How$_1$ do you wonder $[_{CP}$ whether Mary solved the problem t_1] ?
c. $[_{DP_1}$ Which book] do you think $[_{CP}$ that John read t_1] ?
d.?*$[_{DP_1}$ Which book] do you wonder $[_{CP}\ [_{PP_2}$ to whom] John gave t_1 t_2] ?

Note:
Wh-Island effects are typically not that strong if the *wh*-clause is an infinitive and the moved item is a complement DP.

(27) *Weak Wh-Island Condition effects*:
??$[_{DP_1}$ Which book] don't you know $[_{CP}$ whether to read t_1] ?

Note:
A similar effect arises with topicalization to SpecC. Accordingly, a *Topic Island Condition* has been suggested, and further generalization seems possible.

(28) *Topic Island effects*:

a. $[_{DP_1}$ This book] Mary thinks that Bill gave t_1 $[_{PP_2}$ to John]
b. *$[_{DP_1}$ This book] Mary thinks that $[_{PP_2}$ to John] Bill gave t_1 t_2
c.(?)$[_{DP_1}$ Wen] denkst du $[_{CP}$ dass Maria t_1 mag] ?
whom think you that Maria likes
d. *$[_{DP_1}$ Wen] denkst du $[_{CP}$ Maria$_2$ mag$_3$ t_2 t_1 t_3] ?
whom think you Maria likes

1.7. The Superiority Condition

(29) *Superiority Condition* (Chomsky (1973)):
In a structure $\alpha_{[\bullet F \bullet]}$... [... $\beta_{[F]}$ ... [... $\gamma_{[F]}$ ...] ...] ..., movement to [•F•] can only affect the category bearing the [F] feature that is closer to [•F•].

Note:
The only difference to the (revised) A-over-A Principle (i.e., the F-over-F Principle) is that β c-commands γ in the Superiority Condition, wheres β dominates γ in the F-over-F Principle.

(30) *Superiority Condition* (representational version):
*... $\gamma_{[F]}$... [... $\beta_{[F]}$ ... [... t_γ ...] ...] ... if the head of which γ is the specifier bears a [•F•] feature in the LA.

(31) *A consequence of the Superiority Condition*:
a. Who_1 t_1 saw what_2 ?
b. *What_2 did who_1 see t_2 ?
c. I wonder [$_{\text{CP}}$ who_1 t_1 bought what_2]
d. *I wonder [$_{\text{CP}}$ what_2 who_1 bought t_2]

Note:
The formulation of the Superiority Condition in (29) is of course not Chomsky's original one. The original definition is given in (32). The crucial thing to note is that (32) is also formulated in a very general way; and, in more current terminology, a rule "applies ambiguously to Z and Y" iff both Z and Y could satisfy the movement-inducing feature associated with the target head X. Therefore, (29) represents a faithful updating of (32).

(32) *Superiority Condition* (from Chomsky (1973, 246)):
No rule can involve X, Y in the structure
... X ... [$_\alpha$ ... Z ... -WYZ ...] ...
where the rule applies ambiguously to Z and Y and Z is superior to Y.

Note:
The Superiority Condition is essentially the *Minimal Link Condition* of Chomsky (1995, 2000, 2001, 2005a) (also see Fanselow (1991), Ferguson & Groat (1994))

1.8. The Clause Non-final Incomplete Constituent Constraint

(33) *Clause Non-final Incomplete Constituent Constraint* (Kuno (1973)):
It is not possible to move any element of a category α (α = DP or CP) in a clause non-final position out of α if what is left over in α constitutes an incomplete α.

(34) *Incompleteness*:
A DP/CP α is incomplete if an obligatory element is missing.
(An obligatory element may, as a first approximation, be an element that is obligatorily selected.)

Origin:
Kuno suggests the Clause Non-final Incomplete Constituent Constraint as a more general version of the Sentential Subject Constraint, which it is therefore supposed to replace.

(35) *A consequence of the Clause Non-final Incomplete Constituent Constraint, object DPs*:

a. [$_{\text{DP}_1}$ Which man] did you buy [$_{\text{DP}}$ a picture of t_1] ? (see (7-b))
b. [$_{\text{PP}_2}$ Of which man] did John give [$_{\text{DP}}$ a picture t_2] to Bill ?
c. ?*[$_{\text{DP}_1}$ Which man] did John give [$_{\text{DP}}$ a picture of t_1] to Bill ?

Note:
In (35-a), the DP is clause-final; in (35-b), the DP counts as complete (recall that arguments of N are optional). Only in (35-c) are both requirements violated: The DP from which movement takes place is in a non-final position, and if movement occurs, it counts as incomplete (*of* has an obligatory [•D•] feature).

(36) *A consequence of the Clause Non-final Incomplete Constituent Constraint, subject DPs*:
a. [$_{\text{DP}_1}$ Which cars] did the explosion damage [$_{\text{DP}}$ the hoods of t_1] ?
b. [$_{\text{PP}_2}$ Of which cars] were [$_{\text{DP}}$ the hoods t_2] damaged by the explosion ?
c. *[$_{\text{DP}_1}$ Which cars] were [$_{\text{DP}}$ the hoods of t_1] damaged by the explosion ?

Note:
(36-b) is expected to be ungrammatical under the Subject Condition. However, it has been suggested that these kinds of PPs may in fact be merged outside the subject DP (see Cinque (1990)), in which case the Subject Condition would be compatible with (36-b) (and the Clause Non-final Incomplete Constituent Constraint would be vacuously fulfilled here).

(37) *A consequence of the Clause Non-final Incomplete Constituent Constraint, CPs* (see (19)):
a. [$_{\text{DP}_1}$ Who] did the reporters expect [$_{\text{CP}}$ that the principal would fire t_1] ?
b. [$_{\text{DP}_1}$ Who] was it expected by the reporters [$_{\text{CP}}$ that the principal would fire t_1] ?
c. *[$_{\text{DP}_1}$ Who] was [$_{\text{CP}}$ that the principal would fire t_1] expected by the reporters ?

Note:
The Clause Non-final Incomplete Constituent Constraint can be reformulated as a representational constraint on outputs.

(38) *Clause Non-final Incomplete Constituent Constraint* (representational version):
*... α_1 ... [$_\beta$ ... t_1 ...] ... if (a)–(c) hold:
a. β = DP or CP.
b. β is in a clause non-final position.
c. β is incomplete.

(39) *An apparent problem*:
[$_{\text{DP}_1}$ Who] does John think [$_{\text{CP}_2}$ Mary has persuaded t_1 [$_{\text{CP}_3}$ that Bill is a spy]] ?

Note:
(39) does not violate the Clause Non-final Incomplete Constituent Constraint because the only CP from which movement takes place is CP_2; and CP_2 is incomplete after the

movement operation, but it is in a clause-final position.

(40) *A real problem?*
a. [$_{DP_1}$ Which man] did you buy [$_{DP}$ a picture of t_1] from Mary ?
b. [$_{DP_1}$ Which tree] did you see [$_{DP}$ the leaves of t_1] in the yard ?

Note:
Kuno assumes that (40-ab) are well-formed, and he takes this to follow from the Clause Non-final Incomplete Constituent Constraint. The idea is that what is problematic about the starred data is "the fact that the incomplete ... phrases are followed by nonoptional elements [...] In [(40-ab)], ... incomplete ... phrases appear either clause-finally or, if not, are followed only by optional elements in the sentences." But does this follow from the constraint?

1.9. The Post-Sentential Subject Extraction Constraint

(41) *Post-Sentential Subject Extraction Constraint* (Zaenen & Pinkham (1976)):
It is impossible to move a DP across a sentential subject.

Note:
Unlike the Clause Non-final Incomplete Constituent Constraint, this constraint is supposed to complement (rather than replace) the Sentential Subject Constraint.

(42) *A consequence for wh-movement*:
a. [$_{DP_1}$ Who] do you think [$_{CP_1}$ that [$_{DP_2}$ Bill's resignation] would surprise t_1] ?
b. *[$_{DP_1}$ Who] do you think [$_{CP_1}$ that [$_{CP_2}$ for Bill to resign] would surprise t_1] ?

(43) *A consequence for topicalization*:
a. [$_{DP_1}$ John] [$_{DP_2}$ Bill's resignation] would not surprise t_1
b. *[$_{DP_1}$ John] [$_{CP_2}$ for Bill to resign] would not surprise t_1

(44) *Post-Sentential Subject Extraction Constraint*(representational version):
*...α_1 ... [... β ... [... t_1 ...] ...] if β is a sentential subject.

A generalization?
(i) Sentential Subject Constraint:
All sentential subjects are islands.
(ii) Post-Sentential Subject Extraction Constraint:
The domain to the right of a sentential subject is an island.
→
(iii) Most general constraint:
All sentences with sentential subjects are islands.

Problem:
Sentential subjects themselves can be moved.

(45) *Movement of sentential subjects*:
That John would be late, Mary didn't think was very likely.

1.10. The Condition on Extraction Domain

Observation:
Items which do not enter the derivation via selectional Merge (modifiers, so-called *adjuncts*) are always islands. This can be formulated in a preliminary way as the Adjunct Condition:

(46) *Adjunct Condition*:
Movement must not take place from an XP that has been merged without a deletion of selectional features.

The Adjunct Condition straightforwardly excludes Complex NP Constraint constructions in which a relative clause is crossed by movement. Furthermore:

(47) *A consequence of the Adjunct Condition*:
a. [$_{DP_1}$ Who] did you get jealous [$_{CP}$ because I talked to t_1] ?
b. [$_{PP_1}$ To whom] did they leave [$_{CP}$ before speaking t_1] ?
c. [$_{DP_1}$ Who] did they leave [$_{CP}$ before speaking to t_1] ?

Observation:
The Subject Condition and the Adjunct Condition can be unified as the Condition on Extraction Domain (CED). The basic insight was arguably first formulated by Cattell (1976). The notion CED is due to Huang (1982).

(48) *Condition on Extraction Domain* (CED, Huang's original version):
A phrase A may be extracted out of a domain B only if B is properly governed.

Kayne (1984) employs a similar concept. Chomsky (1986) is the most comprehensive and careful study in this area; it centers around the notion of *barrier*. Cinque (1990) and Manzini (1992) have useful simplifications and modifications. The following definition freely draws on all the concepts developed in these approaches.

(49) *Condition on Extraction Domain* (CED):
a. Movement must not cross a barrier.
b. An XP is a barrier iff it is not a complement.

Note:
Conceptually, this is a step in the right direction because we move from an intrinsic definition to a contextual definition of locality domains: Whether some XP is a bounding node or not (in the sense of the Subjacency Condition) is simply listed; whether some XP is a barrier or not can be determined by looking at the syntactic context in which it occurs.

Consequence:
A barriers-based approach to locality in terms of the Condition on Extraction Domain can account for Subject Condition and Adjunct Condition effects. It also derives the

relative clause case of the Complex NP Constraint. If argument clauses selected by N are in fact not merged in complement position (as suggested by Stowell (1981), Kiss (1986), among others), Complex NP Constraint phenomena can be explained in toto. A further constraint that can (hopefully, see below) be dispensed with if the Condition on Extraction Domain is adopted is the Freezing Principle. The reason is that movement can never end in a complement position.

(50) *Freezing Principle* (based on Ross (1967), Wexler & Culicover (1980)):
Movement cannot take place from a moved XP.

Note:
Given that subject DPs are DPs that have been moved to SpecT, their opacity follows from both the Subject Condition and the Freezing Principle.

(51) *Consequences of the Freezing Principle*:
a. *Who$_1$ do you think [$_{CP}$ t$'_1$ that [$_{DP_2}$ pictures of t$_1$] were painted t$_2$] ?
b. *Who$_1$ do you think [$_{CP}$ t$'_1$ that [$_{DP_2}$ pictures of t$_1$] John would like t$_2$] ?
c. *Who$_1$ do you think [$_{CP}$ [$_{PP_2}$ to t$_1$] he will talk t$_2$] ?
d. *Who$_1$ don't you know [$_{CP}$ [$_{DP_2}$ which picture of t$_1$] Mary bought t$_2$] ?
e. *[$_{PP_1}$ Über Fritz]$_1$ glaube ich [$_{CP}$ [$_{DP_2}$ ein Buch t$_1$] hat Maria t$_2$
about Fritz believe I a book has Maria
geschrieben]
written

1.11. Relativized Minimality

(52) *Relativized Minimality* (original version, Rizzi (1990)):
a. (Certain) chain links require antecedent-government.
b. X antecedent-governs Y only if there is no Z such that (i) and (ii) hold.
(i) Z is a typical potential antecedent-governor for Y.
(ii) Z c-commands Y and does not c-command X.

(53) *Typical Potential Antecedent Governor*:
a. Z is a typical potential antecedent governor for Y, Y in an A-chain = Z is an A specifier c-commanding Y.
b. Z is a typical potential antecedent governor for Y, Y in an A′-chain = Z is an A′ specifier c-commanding Y.
c. Z is a typical potential antecedent governor for Y, Y in an X^0-chain = Z is a head c-commanding Y.

(54) *Relativized Minimality* (updated version, Rizzi (2001)):
a. Chain links require a Minimal Configuration (MC).
b. Y is in a Minimal Configuration (MC) with X iff there is no Z such that (i) and (ii) hold.
(i) Z is of the same structural type as X.
(ii) Z intervenes between X and Y.

(55) *Consequences of Relativized Minimality for A-movement*:
*John$_1$ seems that *it* is likely [$_{TP}$ t$_1$ to win]

(56) *Consequences of Relativized Minimality for A′-movement*:
a. *Combien$_1$ a-t-il *beaucoup* consulté [t$_1$ de livres] ?
how many did he a lot consult of books
b. *How$_1$ do you wonder [$_{CP}$ *who$_2$* could solve this problem t$_1$] ?

(57) *Consequences of Relativized Minimality for head movement*:
a. Could$_1$ they t$_1$ have left ?
b. *Have$_2$ they *could* t$_2$ left ?

Note:
Relativized Minimality thus derives effects of the *Head Movement Constraint* (Travis (1984)).

1.12. Conclusion

An important distinction:
From a more general point of view, we can distinguish between two types of (local derivational or local representational) locality constraints – rigid locality constraints and relativized locality constraints (island constraints all belong to the first group).

(58) *Two types of locality constraints*:
a. *Rigid Locality*:
(i) Complex NP Constraint
(ii) Sentential Subject Constraint
(iii) Subject Condition
(iv) Wh-Island Condition
(v) Clause Non-final Incomplete Constituent Constraint
(vi) Post-Sentential Subject Extraction Constraint
(vii) Adjunct Condition
(viii) Condition on Extraction Domain
b. *Relativized Locality*:
(i) A-over-A Principle
(ii) F-over-F Principle
(iii) Superiority Condition
(iv) Relativized Minimality

Generalization:
At first sight at least, it looks like both types of constraints are needed, but it is far from clear which phenomena should be accounted for by which constraint type.

1.13. State of the Art

(59) *General assumptions*:

a. Constraints are general.
This excludes construction-specific constraints like the *Complex NP Constraint*, the *Sentential Subject Constraint*, the *Subject Condition*, the *Wh-Island Condition*, the *Post-Sentential Subject Extraction Constraint*, and the *Adjunct Condition*.

b. Constraints are not complex.
This excludes global constraints (like the *Projection Principle* (Chomsky (1981)) and translocal constraints (like *Avoid Pronoun* (Chomsky (1981)). It also excludes and transderivational constraints like the *Fewest Steps Condition* (Chomsky (1991), Epstein (1992), Collins (1994), Kitahara (1997)), the *Shortest Paths Condition* (Chomsky (1993), Chomsky (1995), Collins (1994), Nakamura (1998)), and *Merge before Move* (Chomsky (2000, 2001)).

c. Constraints are compatible with the minimalist requirements in (60).

(60) *Minimalist requirements* (Chomsky (2005b)):

a. Constraints are of type (i) or (ii).
(i) principles of efficient computation (local economy constraints)
(ii) interface conditions (constraints imposed by phonological and semantic interfaces)

b. Constraints do not rely on concepts that lack independent motivation (like, e.g., L-marking, (proper) government, barrier, and so forth).

The situation now:
Currently, there are two local constraints that are widely adopted: the Condition on the Extraction Domain on the one hand, and the (Generalized) Minimal Link Condition (i.e., the combined F-over-F Principle/Superiority Condition) on the other. However, whereas the latter constraint may perhaps be viewed as a principle of efficient computation, the former cannot straightforwardly be construed in such a way. Therefore, attempts have bewen made to derive it in some way.

2. The Minimal Link Condition: State of the Art

The problem with most of the constraints discussed so far is the lack of generality; these constraints often look construction-specific. Should syntactic constraints be permitted to mention specific categorial features, or specific selectional features? Ideally, the answer is no. Still, some of the constraints are not subject to this critique. Most notably, this holds for the the A-over-A principle (in particular, its F-over-F version) and for the Superiority Condition (Minimal Link Condition). It therefore does not come as a surprise that the combination of these two conditions is widely considered valid nowadays. The combined constraint can be referred to as the *Generalized Minimal Link Condition*.

(61) *F-over-F Principle*:
In a structure $\alpha_{[\bullet F\bullet]} \dots [_{\beta_{[F]}} \dots [_{\gamma_{[F]}} \dots] \dots] \dots$, movement to $[\bullet F\bullet]$ can only affect the category bearing the $[_{F]}$ feature that is closer to $[\bullet F\bullet]$.

Empirical evidence for the F-over-F Principle:
This constraint blocks certain illicit instances of remnant movement in languages like German and Japanese (Takano (1994), Koizumi (1995), Kitahara (1997), Müller (1998)).

(62) a. $[_{\alpha}$ t_1 Zu lesen $]_3$ hat $[_{NP}$ das Buch $]_1$ keiner t_3 versucht
to read has the book no-one tried

b. $[_{\alpha}$ t_1 t_2 Zu reparieren $]_3$ hat der Frank dem Matthias$_1$ den Drucker$_2$ t_3
to fix has ART Frank ART Matthias$_{dat}$ the printer$_{acc}$
versprochen
promised

(63) a. *dass $[_{\alpha}$ t_1 zu lesen $]_3$ $[_{NP}$ das Buch $]_1$ keiner t_3 versucht hat
that to read the book$_{acc}$ no-one tried has

b. *dass der Frank $[_{\alpha}$ t_1 t_2 zu reparieren $]_3$ dem Matthias$_1$ den Drucker$_2$ t_3
that ART Frank to fix ART Matthias$_{dat}$ the printer$_{acc}$
versprochen hat
promised has

(64) a. $[_{CP}$ Mary-ga $[_{NP}$ sono hon-o $]_1$ yonda-to $]_2$ Bill-ga $[_{CP}$ John-ga t_2
Mary$_{nom}$ that book$_{acc}$ read-COMP Bill$_{nom}$ John$_{nom}$
itta-to] omotteiru (koto)
said-COMP think fact

b. *$[_{CP}$ Mary-ga t_1 yonda-to $]_2$ $[_{NP}$ sono hon-o $]_1$ John-ga t_2 itta (koto)
Mary$_{nom}$ read-COMP that book$_{acc}$ John$_{nom}$ said fact

(65) a. *$[_{NP}$ Which book about t_1 $]_2$ don't you know $[_{CP}$ who$_1$ to read t_2] ?
b. *$[_{NP}$ Which picture of t_1 $]_2$ do you wonder $[_{CP}$ who$_1$ she likes t_2] ?

In (63), (64), and (65), there is a stage of the derivation where a movement-inducing feature (like $[\bullet\Sigma\bullet]$ for scrambling, and $[\bullet wh\bullet]$ for *wh*-movement) on a target head could in principle attract either the more inclusive category or another category dominated by the latter (both bearing, by assumption, a matching feature $[\Sigma]$ or [wh]). The F-over-F Principle then demands movement of the higher category first, and subsequent will invariably be excluded by whatever derives the *c-command* constraint on movement (because it involves lowering), plus the CED.

(66) *Superiority Condition/Minimal Link Condition*:
In a structure $\alpha_{[\bullet F\bullet]} \dots [\dots \beta_{[F]} \dots [\dots \gamma_{[F]} \dots] \dots] \dots$, movement to $[\bullet F\bullet]$ can only affect the category bearing the [F] feature that is closer to $[\bullet F\bullet]$.

(67) *Generalized Minimal Link Condition* (Takano (1994), Kitahara (1997), Müller (1998), Fitzpatrick (2002), Rackowski & Richards (2005)):
In a structure $\alpha_{[\bullet F\bullet]} \dots [\dots \beta_{[F]} \dots \gamma_{[F]} \dots] \dots$, movement to $[\bullet F\bullet]$ can only affect

the category bearing the [F] feature that is closer to [•F•] (where β is closer to α than γ if β dominates or c-commands γ).

Note:
The constraints discussed here are all local (derivational or representational). Is it possible to reformulate constraints like, e.g, the F-over-F Principle and the Superiority Condition as, e.g., transderivational constraints? Indeed, there is a straightforward reformulation, even though it is not fully equivalent.

(68) *Shortest Paths Condition* (Chomsky (1993)):
Minimize the length of movement paths.
(Given the set of derivations RS that are based on the same LA, choose the derivation in RS in which movement paths have minimal length.)

(69) *Movment path* (informal):
A movement path is the set of nodes that are crossed by movement operation. A movement path α is shorter than a movement path β if α has fewer nodes than β.

However:
If transderivational constraints are to be dispensed with (if possible), (68) is not a viable alternative to (67).

3. The Condition on Extraction Domain: State of the Art

3.1. Problems with the CED

(70) *Condition on Extraction Domain* (CED):
a. Movement must not cross a barrier.
b. An XP is a barrier iff it is not a complement.

Properties of the CED:

- The CED is a general constraint.
- The CED is a local constraint.
- The CED does not seem to qualify as a principle of efficient computation.
- The CED does not seem to be an interface condition.
- The CED relies on concepts that lack independent motivation (barrier).

Consequence:
Attempts have been made to derive the CED (or CED effects) in a way that respects all meta-requirements for constraints.

Three kinds of analyses:

- CED effects are derived by invoking assumptions about elementary operations like Merge and Agree.
  → Sabel (2002), Rackowski & Richards (2005)

- CED effects are derived by invoking assumptions about cyclic spell-out.
  → Uriagereka (1999), Nunes & Uriagereka (2000), Nunes (2004)
- CED effects are derived as freezing effects.
  → Kitahara (1994), Takahashi (1994), Boeckx (2003), Rizzi (2006, 2007), Gallego & Uriagereka (2006), Stepanov (2007)

Observations:

1. The first kind of analysis relies on special assumptions that mimic assumptions in Chomsky's (1986a) theory of barriers.
2. The second kind of analysis is incompatible with the assumption that only the complement of a phase head is affected by spell-out (whereas the specifier domain and the head itself remain available for further operations on subsequent cycles).
3. The third kind of analysis is incompatible with the existence of CED effects where an XP is a barrier in its in situ position.

3.2. Elementary Operations

3.2.1. Merge in Sabel (2002)

In Sabel's (2002) approach, extraction from subjects and adjuncts is argued to be impossible because these items are not merged with a lexical head, and a required S-projection cannot be formed. Sabel starts out with (71), which is assumed to follow as theorem: "I will argue [...] that [(71)] is motivated by θ-theoretic considerations" (Sabel (2002, 292)).

(71) *Barrier*:
A category A may not be extracted from a subtree T_2 (X^{max}) of T_1 if T_2 was merged at some stage of the derivation with a complex category (i.e., with a non-head).

"I assume that transparency and barrierhood in the case of CED-islands is a consequence of θ- (or [...] 'selection'-) theory." (p. 295).

(72) *Assumptions about Merge*:
a. Head/complement Merge results in co-indexing; it establishes a selectional (superscript) index on a head and its complement (head/specifier Merge does not, and adjunction does not create co-indexing either).
b. Selectional indices are projected from a head to its XP.

(73) *Selection-Projection*:
X heads the smallest projection containing α_n. Then Y is an S-projection of X iff
a. Y is a projection of X, or
b. Y is a projection of Z, where Z bears the same index as X.

(74) *Uniform Domain* (UD):
Given a nontrivial chain CH = $<\alpha_i,...,\alpha_n>$ with n>1, there must be an X such that every α is included in an S(election)-projection of X.

Consequence:
(i) As soon as the path from a base position to a (final) landing site of movement includes a specifier or adjunct, propagation of the original selectional index stops.
(ii) If selectional index transmission stops, the S-projection ends, because of clause (b) of (73).
(iii) Therefore, in such a case, there cannot be some node X anymore such that every member of the movement chain is included in an S-projection of X. Members of the movement chain will invariably belong to the dominance domains of more than one S-projection.

Comments:
(i) Uniform Domain is a constraint that does not seem to qualify as either an economy constraint or an interface condition (perhaps the latter?).
(ii) The analysis is incompatible with the concept of a phase (Chomsky (2000, 2001, 2005a)) because checking whether UD is violated or not requires scanning the large portions of syntactic structure.
(iii) The analysis requires special concepts that do not seem to be needed otherwise (S-projection, selectional indices).
(iv) The crucial assumption is (72-a), which introduces a difference between head/complement and head/specifier (or head/adjunct) relations and thereby mimicks the concept of L-marking in Chomsky (1986a) (or clause (b) of (70)).

3.2.2. Agree in Rackowski & Richards (2005)

In contrast to Sabel (2002), Rackowski & Richards (2005) derive (a version of) the CED by invoking special assumptions about Agree.

(75) *Assumptions about movement*:
- a. A probe must Agree with the closest goal that can move.
- b. A goal α can move if it is a phase (CP, vP, DP).
- c. A goal α is the closest one to a probe if there is no distinct goal β such that for some X (X a head or a maximal projection – note that X′ categories must not count), X c-commands α but not β.
- d. Once a probe P is related by Agree with a goal G, P can ignore G for the rest of the derivation.
- e. v has a Case feature that is checked via Agree. It can also bear EPP-features that move active phrases to its edge.
- f. [+wh] C has a [+wh] feature that is checked via Agree (and sometimes Move).

(76) *Condition on Extraction Doman* (Rackowski & Richards's (2005) version):
Only those CPs and DPs that Agree with a phase head on independent grounds (e.g., direct objects and complement clauses) are transparent for *wh*-extraction.

(77) $[_{\rm CP}$ Who do you $[_{\rm vP}$ think $[_{\rm CP}$ that we should $[_{\rm vP}$ hire –]]]] ?

Remarks on (78):
(i) "We will sketch the derivation as though movement begins once the tree has been completed" (p. 283).
(ii) The 'Forget' operations in (78) are not in the original paper.

(78) *Extraction from object CP*:
- a. $[C_{[+wh]}$ [v [C [v *who*]]]]
- b. $[C_{[+wh]}$ [v [C [v_y who_y]]]] (Agree v-DP)
- c. $[C_{[+wh]}$ [v [C [who_y v_y ~~who_y~~]]]] (Move DP)
- d. $[C_{[+wh]}$ [v [C [*who* v ~~*who*~~]]]] (Forget Agree)
- e. $[C_{[+wh]}$ [v_z [C_z [*who* v ~~*who*~~]]]] (Agree matrix v-CP)
- f. $[C_{[+wh]}$ [v [C [*who* v ~~*who*~~]]]] (Forget Agree)
- g. $[C_{[+wh]}$ [v_x [C [who_x v ~~*who*~~]]]] (Agree matrix v-DP)
- h. $[C_{[+wh]}$ [who_x v_x [C [~~who_x~~ v ~~*who*~~]]]] (Move DP)
- i. $[C_{[+wh]}$ [*who* v [C [~~*who*~~ v ~~*who*~~]]]] (Forget Agree)
- j. Now Agree of matrix C is possible with matrix vP, or with *who* (by stipulation – see (75-c) –, v′ does not count, and vP thus does not intervene).
- k. $[C_{[+wh]w}$ [who_w v [C [~~*who*~~ v ~~*who*~~]]]] (Agree C-DP)
- l. [who_w $C_{[+wh]w}$ [~~who_w~~ v [C [~~*who*~~ v ~~*who*~~]]]] (Move DP)
- m. [*who* $C_{[+wh]}$ [~~*who*~~ v [C [~~*who*~~ v ~~*who*~~]]]] (Forget Agree)

Note:
(i) v must independently Agree with C (clauses, by assumption, need case).
(ii) The analysis predicts that there can be no intermediate traces in SpecC positions.

How CED effects are derived:
(i) Subjects, like adjuncts, never enter into an Agree relation with v (v cannot probe into its own specifier, given the c-command requirement on Agree).
(ii) If they do in some languages after all because Agree is possible under m-command (as assumed for Japanese), subjects become transparent.

An empirical problem:
The analysis does not permit successive-cyclic movement to take place via embedded SpecC positions. The counter-evidence from partial *wh*-movement in languages like German may be explained away by assuming an indirect dependency approach (Dayal (1994)). Such a way out is not available for the closely related *wh*-copy construction.

(79) *Partial wh-movement and copy movement in German*:
- a. Was meinst du $[_{\rm CP}$ wen_1 wir t_1 einladen sollen] ?
  what think you whom we invite should
- b. Wen_1 meinst du $[_{\rm CP}$ wen_1 wir t_1 einladen sollen] ?
  whom think you whom we invite should

Comments:
(i) The crucial assumption is that extraction from XP requires an Agree operation involving v and XP. Since v can Agree with (something in) its complement but not with its specifier or an adjunct, the latter two categories are derived as barriers.

(ii) Arguably, the "c-command by v" requirement mimicks the L-marking requirement of Chomsky (1986a). Plus, the restriction to v (vs. T, C) is also very similar to the restriction to lexical categories that is part of the definition of L-marking.
(iii) There is a curious asymmetry: For the purposes of minimality, the vP-v′ distinction must be ignored; for the purposes of deriving the CED, this distinction must be maintained.
(iv) Agree relations between C or T and (e.g.) CP would undermine the account of CED effects (this is why intermediate movement steps to SpecC cannot be permitted in this system); but they can only be excluded by additional stipulations.
(Suppose that C (or T) first carries out Agree with a subject (CP or DP), and then with an item in the left edge of the subject (CP or DP). Then, extraction from a subject would be possible after all.)
This restriction is all the more peculiar since T *does* regularly undergo Agree with subjects.

3.3. Spell-Out

3.3.1. Cyclic Spell-Out: Uriagereka (1999), Nunes & Uriagereka (2000), Nunes (2004)
Here, the attempt is made to derive (some version of) the CED, by invoking specific (though independently motivated) assumptions about cyclic spell-out. I focus on Uriagereka (1999).

Main goal:
The goal is to derive (a version of) the LCA from minimalist assumptions.

Claim:
This is possible if we assume cyclic (multiple) spell-out.

The original LCA:

(80) *Linear ordering* of terminal symbols (L):
  a. transitive: $\forall$x,y: <x,y> $\in$ L $\wedge$ <y,z> $\in$ L $\rightarrow$ <x,z> $\in$ L
  b. total: $\forall$x,y: <x,y> $\in$ L $\vee$ <y,x> $\in$ L
  c. antisymmetric: $\forall$x,y: $\neg$(<x,y> $\in$ L $\wedge$ <y,x> $\in$ L)

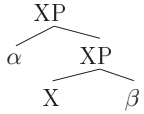
(81) a. D = dominance relation between non-terminal symbols
  b. d = dominance relation between non-terminal and terminal symbols
  c. d(X) = set of terminal symbols that are dominated by a non-terminal X (the 'image' of X under d)
  d. d<X,Y> (image of non-terminal <X,Y> under d) = {<a,b>}: a $\in$ d(X) $\wedge$ b $\in$ d(Y)
  e. Let S be a set of ordered pairs $<X_i,Y_i>$ (0<i<n). Then: d(S) = $\bigcup$ for all i (0<i<n) of d($<X_i,Y_i>$)

(82) a. A = {$<X_j,Y_j>$}, such that for each j: X_j c-commands Y_j asymmetrically
  b. T = set of terminal symbols of a phrase structure tree P

(83) *Linear Correspondence Axiom* (LCA; Kayne (1994)):
d(A) is a linear ordering of T.

(84) *Consequences*:
  a. A head precedes its complement (β).
  b. A specifier (α) must formally qualify as an adjunct. It is unique and precdes its head.

(85) *The shape of phrases under Kayne's LCA*:



Difference between Kayne (1994) and Chomsky (1995):

- Kayne's original LCA restricts possible phrase markers.
- Chomsky's version of the LCA restricts possible linearizations of a priori unordered phrase markers at PF

Deducing the Base Step of the LCA Assumption (Chomsky (1995)):
The LCA ensures linearization of a priori unordered phrase structures (in a bare phrase structure model).

(86) *A Chomskyan version of the LCA*:
  a. Base step: If α c-commands β, then α precedes β.
  b. Induction step: If γ precedes β and γ dominates α, then α precedes β.

Note:
(86-b) is essentially the Nontangling Condition (Partee et al. (1993, 437)):

(87) *Nontangling Condition*:
In any well-formed constituent structure tree, for any nodes x and y, if x precedes y, then all nodes dominated by x precede all nodes dominated by y.

(88) *Command Unit* (CU):
A command unit emerges in a derivation through the continuous application of Merge to the same object.

Note: Labels are underlined in (89) and (90).

(89) *Continuous application – command unit*:
  a. α + {$\underline{\beta}$ ... } $\rightarrow$ { $\underline{\alpha}$, { α, {$\underline{\beta}$ ... }}}
  b. γ + { $\underline{\alpha}$, { α, {$\underline{\beta}$ ... }}} $\rightarrow$ { $\underline{\alpha}$, { γ, { $\underline{\alpha}$, { α, {$\underline{\beta}$ ... }}}}

(90) *Discontinuous application – not a command unit*:
  a1. α + {$\underline{\beta}$ ... } $\rightarrow$ { $\underline{\alpha}$, { α, {$\underline{\beta}$ ... }}}
  a2. γ + {$\underline{\delta}$ ... } $\rightarrow$ { $\underline{\gamma}$, { γ, {$\underline{\delta}$ ... }}}

a. $\{ \underline{\alpha}, \{ \alpha, \{\underline{\beta} \ldots \}\}\} + \{ \underline{\gamma}, \{ \gamma, \{\underline{\delta} \ldots \}\}\} \rightarrow$
$\{ \underline{\alpha}, \{ \{ \underline{\gamma}, \{ \gamma, \{\underline{\delta} \ldots \}\}\}, \{ \underline{\alpha}, \{ \alpha, \{\underline{\beta} \ldots \}\}\} \}$

Question:
There are $n!$ ways to "lay the mobile on the ground" – why is the Spec–Head–Comp order chosen (assuming the validity of the LCA)?

(91) *Possible orders*

a. Comp Head Spec
b. Head Comp Spec
c. Spec Comp Head
d. Spec Head Comp
e. Comp Spec Head

(violates Nontangling)

f. Head Spec Comp

(violates Nontangling)

Assumption:
(i) There is an order of Merge operations (a "Merge-wave of terminals").
(ii) The most economical way to map phrase structure onto linear order is to "harmonize (in the same local direction) the various wave states, thus essentially mapping the merge order into the PF linear order in a homomorphic way." (But: This is "hand-waving until one establishes what such a Merge-wave is.")

Problem:
Why does the command relation collapse into precedence, and not the opposite ((91-d) vs. (91-a))?

Solution:
This is not a problem because we only need *an* optimal solution; there may not be *the* optimal solution.

Deducing the Induction Step of the LCA Goal: The goal now is to derive the Nontangling Condition.

Idea: Multiple spell-out.

Question:
Assuming that the induction step of the LCA in (86) does not hold, how does linearization work in derivations with more than one CU?

(92) Induction step: If γ precedes β and γ dominates α, then α precedes β.

Answer:
There are various steps of linearization, each of which involves only CUs.

Two implementations:

1. Conservative approach:
   A collapsed Merge structure is no longer phrasal after spell-out; it's more like a giant lexical compound, or a word.
2. Radical approach:
   A spelled-out CU does not merge with the rest of the structure; interphrasal association is accomplished in the performative components.

Note:
In the remainder of the paper, the analysis simultaneously proceeds in two different directions, Uriagereka systematically giving two competing accounts of the relevant observations. To simplify matters, I focus on the *conservative account* throughout.

(93) *How spell-out works*:

a. $\{ \alpha, \{ \text{L, K} \} \} \Rightarrow \{ \alpha, < \text{L, K} > \}$
b. $\{ \alpha, < \text{L, K} > \} = \{ \alpha, \{ \{L\}, \{\text{L,K} \}\}\}$
c. $\{ \alpha, \{ \{L\}, \{\text{L,K} \}\}\}$ is not a *syntactic object*.

(94) *Syntactic object* (Chomsky (1995)):

a. Base step: A word is a syntactic object.
b. Induction step: $\{ \alpha, \{ \text{L, K} \}\}$ is a syntactic object, for L and K syntactic objects and α a label.

"[(94-b)] is obtained through Merge and involves a labeling function that Chomsky argues is necessarily *projection*."

(95) Within a syntactic object, a label α is not a term.

(96) K is a term iff (a) or (b):

a. Base step: K is a phrase marker.
b. Induction step: K is a member of a member of a term.

Consequence:
{ L, K } in (93)-(c) is a term, but not a syntactic object. Therefore, it is not accessible to syntactic operations.

CED Effects

(97) *Condition on Extraction Domain*:

a. Movement must not cross a barrier.
b. An XP is a barrier iff it is not a complement.

(98) *CED Effects*:

a. Who_1 did you see $[_{\text{DP}}$ a critic of $\text{t}_1]$?
b. *Who_1 did $[_{\text{DP}}$ a critic of $\text{t}_1]$ see you ?

Analysis in terms of multiple spell-out:
"If a non-complement is spelled out independently from its head, any extraction from

a non-complement will involve material from something that is not even a syntactic object; thus, it should be as hard as extracting part of a compound."

Problem (?):
Why are sentences with left-branch extractions like (99) possible?

(99) Which professor$_1$ did you say [t$_1$ left] ?

Note:
A similar problem arises in Gazdar's (1981) analysis in terms of the *Generalized Left Branch Condition*.

(100) *Generalized Left Branch Condition* (Ross (1967), Gazdar (1981)):
The leftmost item of an XP cannot be moved out of that XP.

Solutions:
(i) Gazdar's solution (not Uriagereka's solution!): There is no subject trace present in these cases.
(ii) "The answer to this puzzle relates to the pending question of *wh*-feature accessibility in spelled-out phrases."

Side remark:
The analysis of CED effects in Nunes & Uriagereka (2000) is basically identical (but the analysis is extended to parasitic gaps and their ability to circumvent CED violations, by adopting a sideward movement approach).

3.3.2. Late Adjunct Insertion: Stepanov (2007)

Note:
Stepanov (2007) argues for a heterogeneous approach to CED effects that distinguishes between the Subject Condition and the Adjunct Condition. For the former, he adopts a version of the freezing approach (see below). For the latter, he suggests that *late insertion* of adjuncts provides the ultimate explanation: At the point where extraction takes place, the adjunct is not yet part of the structure. The effect is similar to the one occurring with subjects in Uriagereka's approach: XPs are islands because they are not present as syntactic objects at the relevant stage of the derivation where movement takes place – either not anymore (Uriagereka and Nunes), or not yet (Stepanov).

3.3.3. Conclusion

Comments:
Uriagereka & Nunes' analysis is fundamentally incompatible with the notion of a *phase* as the relevant domain for cyclic spell-out (Chomsky (2000, 2001, 2005a)). Uriagereka's spell-out domains are variable in size.
(i) They can be larger than the spell-out domain of a phase – in fact, extremely large (possibly, the whole sentence): As long as no complex specifier is merged (either no specifier, or specifiers consisting only of lexical items), a new spell-out domain will not be created.

(ii) They can be smaller than the spell-out domain of a phase: E.g., a complex specifier (belonging to any category) is always a spell-out domain.

3.4. Freezing

Refs.:
→ Kitahara (1994), Takahashi (1994), Boeckx (2003), Rizzi (2006), Stepanov (2007)

Note:
All these analyses presuppose that (relevant subcases of) CED effects can be traced back to freezing effects; i.e., an item becomes a barrier after movement has taken place. They differ in what is taken to be responsible for the occurrence of freezing.

3.4.1. Freezing and Head Movement: Kitahara (1994)

The first freezing approach to be discussed here is actually not typical: The freezing effect does not arise from movement of the XP from which extraction is to take place, but rather from movement of a head to the domain in which XP is located. (This is in fact a bit more in the spirit of the proposal of Wexler & Culicover (1980).)

Goal:
A minimalist *reformulation* of the CED that makes the following predictions:
(i) A complement is never a barrier.
(ii) An adjunct is always a barrier.
(iii) A specifier is a barrier only if its head has been the target of head movement.

(101) *Inner Minimal Domain Requirement* (IMDR):
Extraction out of a category K is possible only if for every X^0-chain H such that K $\in$ the minimal domain of H, K $\in$ the inner minimal domain of H.

(102) *Domain, minimal domain* (basically as in Chomsky (1993)):
For any X^0-chain CH $<\alpha_1,...,\alpha_n>$:
a. the domain of CH = the set of nodes (i.e., categories) contained in the least full-category maximal projection dominating α_1 that are distinct from and do not contain any α_i.
b. the minimal domain of CH = the smallest subset K of the domain of CH such that for any $\Gamma \in$ the domain of CH, some $\beta \in$ K reflexively dominates Γ.

(103) *Inner minimal domain*:
For any X^0-chain CH $<\alpha_1,...,\alpha_n>$:
the inner minimal domain of CH = the (maximal) subset S of the minimal domain of CH such that each member of S is dominated by every maximal projection dominating α_i.

(104) *Configurations*:
a. [$_{XP}$ [$_{XP}$ Spec [$_{X'}$ X Comp]]] Adj]
Adj barrier, Spec & Comp transparent

b. $[_{HP}$ Spec$_1$ $[_{H'}$ $[_{H}$ X_i $]$ $[_{XP}$ Spec$_2$ $[_{X'}$ t_i Comp $]]]]$
Spec$_1$ barrier, Spec$_2$ & Comp transparent

Note:
This is not per se incompatible with the view that head movement does in fact *remove* barriers (rather than create them). The evidence that head movement opens up barriers is originally only concerned with *complements* (see Baker (1988)); also see Bobaljik & Wurmbrand (2003), Gallego & Uriagereka (2006), and den Dikken (2007, 2008) for recent discussion, and below).

(105) *Empirical evidence: English vs. Icelandic subjects*:
a. *Who$_1$ do you think $[_{CP}$ that $[_{DP}$ pictures of t_1 $]$ are on sale $]$?
b. ?Hverjum$_1$ heldur þú $[_{CP}$ að $[_{DP}$ myndir af t_1 $]$ séu til sölu $]$?
who think you that pictures of are on sale

Account of (105):
(i) In both cases, the subject DP moves to SpecAgr/S, which dominates TP. (Note: this movement step, by itself, does not create a barrier, under Kitahara's assumptions. It is irrelevant for determining barrier status.)
(ii) In English, subject raising must *follow* T-to-Agr/S movement (for reasons having to do with case-checking).
(iii) In Icelandic, subject raising can *precede* T-to-Agr/S movement, and there is thus a legitimate order that respects the IMDR: (a) subject raising to SpecAgr/S; (b) extraction from subject; (c) T-to-Agr/S head movement that turns the subject into a barrier (but too late to block extraction) by removing it from the inner minimal domain of the T chain.

Comment:
Independently of various potential empirical problems, it can be noted that this analysis does not seem to meet minimalist requirements: The IMDR neither contributes to efficient compuation in an obvious sense, nor is it an interface requirement. In addition, it employs concepts that do not seem independently motivated (dominance vs. containment, minimal domain, inner minimal domain, etc.)

3.4.2. Freezing and Chain Uniformity: Takahashi (1994), Stepanov (2007)

Note:
The exposition here follows Takahashi (1994); Stepanov (2007) adopts a version of Takahashi's approach, but only for the Subject Condition part of the CED (as noted above, the Adjunct Condition part is treated differently).

(106) *Chain Uniformity*:
Chains must be uniform.

(107) *Uniformity Corollary on Adjunction* (UCA):
Adjunction to a part of a non-trivial chain or coordination is not allowed.

Assumptions:
Chain members are full *copies*. Therefore, after movement of some XP, no adjunction to either XP copy created by movement is permitted.

(108) *Shortest Move* (a transderivational constraint; see (68)):
Make the shortest move.

Assumption:
Every possible intermediate landing site (for a given movement type: A, A-bar, head) must be used in the course of movement, by adjunction to XP.

Observation:
Extraction from a subject that has undergone movement from Specv to SpecT will lead to a dilemma: It is impossible to satisfy both the UCA and Shortest Move simultaneously in this context. Either one of the two copies must be targetted by adjunction (as in (109-a)), or a non-local movement step must be carried out (skipping the DP adjunction site and moving to TP-Adj directly, as in (109-b)).

(109) *A dilemma for extraction from moved subjects, part 1: *UCA*:
*Who$_1$ has $[_{TP}$ $[_{DP_2}$ *who*$_1$ $[_{DP}$ a comment about who$_1$ $]]$ T $[_{vP}$ $[_{DP_2}$ a comment about who$_1$ $]$ $[_{v'}$ v-annoyed $[_{VP}$ t_V you $]]]]$?

(110) *A dilemma for extraction from moved subjects, part 2: *Shortest Move*:
*Who$_1$ has $[_{TP}$ *who*$_1$ $[_{DP_2}$ a comment about who$_1$ $]$ T $[_{vP}$ $[_{DP_2}$ a comment about who$_1$ $]$ $[_{v'}$ v-annoyed $[_{VP}$ t_V you $]]]]$?

Prediction:
CED effects with subjects only show up if the subject is moved from its base position. External arguments in situ (in Specv) and derived subjects (as in passive clauses) are transparent as long as they can stay in situ (which they can in various languages).

Towards deriving the Adjunct Condition part of the CED:
By assumption, clauses with adjuncts are coordination-like structures; hence, adjunction to adjuncts is blocked.
(This part of the analysis raises various questions, see Stepanov (2007).)

Comment:
(i) The Chain Uniformity requirement makes it necessary to scan large domains of syntactic structure; as it stands, it does not seem compatible with a phase-based approach, where the active part of the derivation is very small at any given stage.
(ii) The analysis crucially relies on the copy theory of movement.
(iii) The analysis involves a transderivational constraint (but see lecture 2 for an alternative that does not but produces essentially the same results.)

3.4.3. Φ-Completeness: Boeckx (2003)

Assumption (Boeckx (2003):
The Adjunct Condition and the Subject Condition are to be treated differently.

- Adjunct Condition: Φ-Inertness
  Probes cannot undergo Agree with anything inside an adjunct. Therefore, if Move involves Agree, the barrier status of adjuncts is predicted.
- Subject Condition: Freezing
  The approach is designed to be a minimal variation of Takahashi's approach that captures his basic insight that "the ban on extraction out of displaced constituents results from what one might call a 'chain conflict"'(Boeckx (2003, 104)).

Takahashi's combination of UCA and Shortest Move is replaced with the constraint in (111): a version of the *Freezing Principle* that I call *Constraint on Φ-complete Domains* (Boeckx does not give it a name). (Note: There is a potential tension here when we recall Rackowski & Richards's (2005) hypothesis that Agree relations create transparency. Still, there is a relevant difference with respect to the locus in which the Agree relation is morphologically realized.)

(111) *Constraint on Φ-complete Domains*:
Agree cannot penetrate a domain that is already Φ-complete.

Analysis:
(i) When an XP has undergone movement and reached its final landing site, it freezes – it is Φ-complete.
(ii) Movement out of XP requires an Agree relation into XP.
(iii) Therefore, moved (Φ-complete) XPs are barriers.

Note:
The approach is supposed to cover *all* kinds of freezing effects.

Comments:
(i) Given the Phase Impenetrability Condition (Chomsky (2000, 2001, 2005a), (111) is a second constraint that imposes a locality requirement on syntactic operations. Neither constraint is reducible to the other one (not all phases are Φ-complete, not all Φ-complete items are phases, and phases provide a domain that is accessible from outside, which (111) must not do), but many redundancies arise.
(ii) There are freezing effects with categories where it does not seem to make sense to attribute them the property is/is not Φ-complete; cf. the VP and PP examples in (112).
(iii) There is an interesting potential tension between Boeckx's (2003) approach on the one hand, and Rackowski & Richards's (2005) on the other: In the latter approach, Agree with XP makes XP transparent for extraction out of it, in the former, Agree with XP (producing Φ-completeness) renders XP opaque.

(112) a. Ich denke $[_{CP}\ [_{VP}$ das Buch gelesen $]_2$ hat keiner $t_2\ ]$
I think the book read has no-one
b. $[_{DP}$ Was $]_1$ denkst du $[_{CP}\ t'_1$ hat keiner $[_{VP}\ t_1$ gelesen $]_2\ ]$?
what think you has no-one read
c. *$[_{DP}$ Was $]_1$ denkst du $[_{CP}\ [_{VP}\ t_1$ gelesen $]_2$ hat keiner $t_2\ ]$?
what think you gelesen has no-one

(113) a. Who$_1$ do you think that he will talk $[_{PP_2}$ to $t_1\ ]$?
b. *Who$_1$ do you think that $[_{PP_2}$ to $t_1\ ]$ he will talk t_2 ?

3.4.4. Criterial Freezing: Rizzi (2006, 2007)

The approach developed in Rizzi (2006, 2007) and related work is not primarily concerned with CED effects, but it is based on a principle that is very similar to a number of freezing constraints that yield CED effects as a consequence.

(114) *Criterial Freezing*:
In a criterial configuration, the criterial goal is frozen in place.

However:
To account for the contrast between (115-a) and (115-b) in French, Rizzi (2007) actually assumes that the a criterially frozen subject is *not* a barrier. On his view, the construction is legitimate *because* the subject DP is endowed with "nominal and Φ-features", and these are maintained in the criterial subject position if only *combien* is extracted (in contrast to (115-a), where Criterial Freezing is violted). (The slight deviance of (115-b) is attributed to a Left Branch Condition violation.)

(115) a. *$[_{DP_2}$ Combien$_1$ de personnes $]$ veux-tu $[_{CP}$ que $[_{TP}\ t_2$ viennent á
how many of people do you want that come to
ton anniversaire $]]$?
your birthday
b. ?Combien$_1$ veux-tu $[_{CP}$ que $[_{TP}\ [_{DP_2}\ t_1$ de personnes $]$ viennent á
how many do you want that of people come to
ton anniversaire $]]$?
your birthday

3.4.5. Phase Sliding: Gallego & Uriagereka (2006)

The basic assumption here is that there is a specific freezing constraint; the constraint is similar to Boeckx's Constraint on Φ-complete Domains and Rizzi's Criterial Freezing; but it also incorporates Uriagereka's idea of 'flattening' complex (non-complement) constituents.

(116) *Edge Condition*:
Syntactic objects in phase edges become internally frozen.

Note:
(116) does not impose a ban on extraction from moved items per se; it only blocks extraction from items that have undergone movement to phase edges. (Of course, the two options may be identical, if all movement is movement to phase edge positions.)

The idea:
(116) is not radically different from what can be found in other approaches. Gallego & Uriagereka's (2006) main new contribution is that they assume that v-to-T movement may result in TP (rather than vP) becoming the relevant phase; i.e., movement of v carries the phase property along. This accounts for a curious asymmetry with extraction

from subjects in Spanish: Preverbal subjects are barriers, postverbal subjects are not.

(117) *Extraction from preverbal and postverbal subjects in Spanish*:

a. De qué conferenciantes$_1$ te parece que me van a impresionar
of what speakers to you seem-3.SG that to me go-3.SG to impress
[$_{DP}$ las propuestas t_1]
the proposals

b. *De qué conferenciantes$_1$ te parece que [$_{DP}$ las propuestas t_1]
of what speakers to you seem-3.SG that the proposals
me van a impresionar
to me go-3.SG to impress
'Which speakers does it seem to you that the proposals by will impress me?'

Observation:
Given that TP (not vP) is the phase in Spanish, the subject DP is in the edge domain of a phase in (117-b) but not in (117-a).

Comments:
(i) The proposal has a number of far-reaching empirical consequences (e.g., shouldn't we expect that postverbal subjects in verb-second clauses are always transparent for extraction?).
(ii) It is unclear whether the analysis is compatible with the idea that phases are first and foremost motivated by complexity considerations.
(iii) One might think at first sight that this approach predicts the *opposite* of Kitahara's (1994) approach discussed above: In one approach, head movement creates transparency of a specifier (Gallego & Uriagereka); in the other approach, head movement creates opacity of a specifier (Kitahara). However, this is not the case. In both approaches, head movement turns a specifier of the landing site into a barrier; and in both approaches, a specifier associated with the head in situ is predicted to be transparent for extraction.

3.4.6. Conclusion

Two problems with freezing analyses:
(i) All freezing analyses rely on additional constraints. It is far from clear whether these constraints can be taken to comply with basic minimalist tenets, as formulated above.
(ii) Freezing analyses have nothing to say about CED effects that arise in contexts where the barrier has not undergone movement. An example: Assuming that particles like *denn*, *wohl*, *ja* demarcate the vP edge in German, it seems clear that the subject DP (DP_3) is in situ in the German examples in (118). Nevertheless, a CED occurs with extraction out of the subject.

(118) *CED effects with subject DPs in situ in German*:

a. *Was$_1$ haben denn [$_{DP_3}$ t_1 für Bücher] [$_{DP_2}$ den Fritz] beeindruckt ?
what have PRT for books$_{nom}$ the Fritz$_{acc}$ impressed

b. *[$_{PP_1}$ Über wen] hat wohl [$_{DP_3}$ ein Buch t_1] [$_{DP_2}$ den Fritz]
about whom has PRT a book$_{nom}$ the Fritz$_{acc}$
beeindruckt ?
impressed

3.5. General Remarks

Conclusions so far (repeated in modified form from above):

1. Analyses that are centered around the working of elementary operations like Move or Agree rely on special assumptions that mimic assumptions in Chomsky's (1986a) theory of barriers.
2. Analyses that are based on specific concepts of cyclic spell-out are incompatible with the assumption that only the complement of a phase head is affected by spell-out (whereas the specifier domain and the head itself remain available for further operations on subsequent cycles), and with the notion of phase in general.
3. Analyses that rely on freezing are incompatible with the existence of CED effects where an XP is a barrier in its in situ position.
4. Furthermore, most of the approaches discussed so far make it necessary to stipulate separate constraints and/or concepts that are not independently motivated, and that may not always fall under either economy or interface constraints.

Finally:
All these analyses have nothing to say about *melting* effects, a class of data that I will discuss in detail in lecture 3. Here, it looks as though an XP may qualify as a barrier in one case and as transparent in another even though it has exactly the same structural relationship with the surrounding lexical items.

(119) *A melting effect with local scrambling in German*:

a. *Was$_1$ haben [$_{DP_3}$ t_1 für Bücher] [$_{DP_2}$ den Fritz] beeindruckt ?
what have for books$_{nom}$ the Fritz$_{acc}$ impressed

b. Was$_1$ haben [$_{DP_2}$ den Fritz] [$_{DP_3}$ t_1 für Bücher] t_2 beeindruckt ?
what have the Fritz$_{acc}$ for books$_{nom}$ impressed

(120) *A melting effect with local scrambling in Czech*:

a. *[$_{NP_1}$ Holka] neudeřila [$_{DP_3}$ žádná t_1] Petra$_2$
girl$_{nom}$ hit no$_{nom}$ Petr$_{acc}$
'No girl hit Petr.'

b. [$_{NP_1}$ Holka] neudeřila Petra$_2$ [$_{DP_3}$ žádná t_1] t_2
girl$_{nom}$ hit Petr$_{acc}$ no$_{nom}$
'No girl hit Petr.'

4. Goals

In the following lectures (2 & 3), I will argue that both MLC and CED effects follow from the *Phase Impenetrability Condition* (PIC), in interaction with independently motivated

assumptions about movement and structure-building in general. In lecture 4, I address the fate of the Head Movement Constraint; and I argue that it can be derived without invoking a separate constraint, too – it follows from the properties of a certain type of categorial probe features (*Münchhausen* features).

(121) *Claims*:

a. Edge features that trigger intermediate movement steps to phase edges can only be inserted when they have an "effect on outcome", in Chomsky's (2001) terms. A simple way of making precise what this means implies that MLC effects follow from the PIC.

b. Edge features that trigger intermediate movement steps to phase edges can only be inserted "after the phase is otherwise complete", in Chomsky's (2001) terms. There is good theory-internal evidence for replacing "after" with "before"; this move implies that CED effects follow from the PIC.

c. Head movement by adjunction is known to be a problematic concept (Strict Cycle Condition, c-command requirement for traces, etc.). If head movement must involve reprojection, these problems are solved. In addition, HMC effects follow without further ado.

Lecture 2

On Deriving MLC Effects from the PIC

1. Introduction

Claim:
There is something wrong with the (Generalized) Minimal Link Condition (MLC): A derivational approach to syntax should minimize search space, its representational residue (Brody (2001, 2002)). Constraints that minimize search space should therefore be strengthened (Chomsky; Chomsky's (2000; 2001) PIC); constraints that presuppose search space should be abandoned (MLC).

Empirical domain:
MLC effects (superiority and superiority-like effects in German and English) can be derived from a strengthened version of the PIC (Chomsky (2000, 2001)) that holds for *phrases* rather than *phases*.

2. Phase Impenetrability

2.1. The Standard Approach

Note:
In Chomsky's (2000; 2001) system, the SCC and the PIC impose strong restrictions on *active parts* of derivations. The SCC restricts possible positions for the probe, and the PIC restricts the probe's search space, i.e., possible positions for the goal.
(For more recent versions of the SCC, see Chomsky (1995, 2001), Collins (1997), Kitahara (1997), Bošković & Lasnik (1999), and Freidin (1999).)

(1) *Strict Cycle Condition* (SCC) (Chomsky (1973), Perlmutter & Soames (1979)):
Within the current XP α, a syntactic operation may not target a position that is included within another XP β that is dominated by α.

(2) *Phase Impenetrability Condition*$_1$ (PIC$_1$) (Chomsky (2000, 108; 2001, 13)):
The domain of a head X of a phase XP is not accessible to operations outside XP; only X and its edge are accessible to such operations.

This lecture is mainly based on Müller (2004a), with various subtle changes in the theory (e.g., concerning the Edge Feature Condition and the role of a constraint Phase Balance) carried out to enhance overall coherence.

(3) *Edge* (Chomsky (2001, 13)):
The edge of a head X is the residue outside of X′; it comprises specifiers of X (and adjuncts to XP).

(4) *Phase*:
The propositional categories CP and vP are phases; other XPs (except perhaps for DP) are not.

Consequence:
Suppose that ZP, XP, and UP are phases in (5). Then, in (5-a), operations can have a probe only in YP (SCC), and look for a goal only in YP or in the residue or head of XP (PIC$_1$). In the subsequent step (5-b), the probe must be in ZP, and the search space for a goal grows as indicated.

(5) *Search space under PIC*$_1$:

a. $\overbrace{[_{\text{YP}}\text{...Y}\ [_{\underline{\text{XP}}}\text{...}[_{\text{X}'}\text{X}}^{\text{PIC}_1}}^{\text{SCC}}\ [_{\text{WP}}\text{...W}\ [_{\underline{\text{UP}}}\text{...U...]]]]]$

b. $\overbrace{\underbrace{[_{\underline{\text{ZP}}}\text{...Z}\ [_{\text{YP}}\text{...Y}\ [_{\underline{\text{XP}}}\text{...}[_{\text{X}'}\text{X}}_{\text{PIC}_1}}^{\text{SCC}}\ [_{\text{WP}}\text{...W}\ [_{\underline{\text{UP}}}\text{...U...]]]]]$

Problem:
The PIC$_1$ does not allow an operation involving Y and an element of WP. Suppose that YP = TP, XP = vP, and WP = VP. The PIC$_1$ then precludes an operation involving T and DP in VP, which is arguably necessary for cases of long-distance agreement with nominative objects. Solution: The PIC$_1$ is weakened: A phase is evaluated with respect to the PIC$_2$ only at the next phase level.

(6) *Phase Impenetrability Condition*$_2$ (PIC$_2$) (Chomsky (2001, 14)):
The domain of a head X of a phase XP is not accessible to operations at ZP (the next phase); only X and its edge are accessible to such operations.

Consequence:
The search space is enlarged: Operations in YP can now look for a goal in YP, in XP, in WP, or in the residue or head of UP.

(7) *Search space under PIC*$_2$:

a. $\overbrace{[_{\text{YP}}\text{...Y}\ [_{\underline{\text{XP}}}\text{...}[_{\text{X}'}\text{X}\ [_{\text{WP}}\text{...W}\ [_{\underline{\text{UP}}}\text{...U}}^{\text{PIC}_2}}^{\text{SCC}}\ \text{...]]]]]$

b. $\overbrace{\underbrace{[_{\underline{\text{ZP}}}\text{...Z}\ [_{\text{YP}}\text{...Y}\ [_{\underline{\text{XP}}}\text{...}[_{\text{X}'}\text{X}}_{\text{PIC}_2}}^{\text{SCC}}\ [_{\text{WP}}\text{...W}\ [_{\underline{\text{UP}}}\text{...U...]]]]]$

Wh-movement:
Movement is an agreement relation that is accompanied by an EPP feature on the probe. Checking is deletion under matching. Both PIC_1 and PIC_2 require successive-cyclic *wh*-movement to proceed via Specv and SpecC. What triggers intermediate movement steps?

(8) *Edge Feature Condition* (EFC) (Chomsky (2000, 109), Chomsky (2001, 34), Chomsky (2005a, 14)):
The head X of phase XP may be assigned an edge feature after the phase XP is otherwise complete, but only if that has an effect on outcome.

(9) *Derivation of wh-questions*:
(I wonder) what John read
a. $[_{VP}$ read$_3$ what$_1$ $]$
b. $[_{vP}$ what$_1$ John$_2$ read$_3$ $[_{VP}$ t$_3$ t$_1$ $]]$ (EPP on v)
c. $[_{TP}$ John$_2$ T $[_{vP}$ what$_1$ t$_2$ read$_3$ $[_{VP}$ t$_3$ t$_1$ $]]]$ (EPP on T)
d. $[_{CP}$ what$_1$ C $[_{TP}$ John$_2$ T $[_{vP}$ t$'_1$ t$_2$ read $[_{VP}$ t$_3$ t$_1$ $]]]]$ ([wh], EPP on C)

(10) *Minimal Link Condition* (Chomsky (2000; 123; 2001, 27)):
If β and γ both match a probe α and β asymmetrically c-commands γ, a syntactic operation cannot involve α and γ.

Problem:
Subject raising to SpecT should be blocked by the MLC if object movement to Specv has occurred: *what*$_1$ is closer to T in (9-c) than t$_2$.

Solution:
Since an equidistance solution (Chomsky (1995)) is to be avoided, the MLC in its strict form must be fulfilled in (9) after all. Idea: After *wh*-movement, the subject DP is the closest goal for T. Execution of this idea seems to imply giving up the SCC (movement in TP would have to follow movement in CP). Chomsky's solution: The MLC is not evaluated at each step of the derivation; it is only evaluated at the phase level. In (9-d), no overt DP separates the subject trace and T, and the MLC is respected.

2.2. Conceptual Considerations

Background assumption:
An attractive feature of incremental derivational approaches to syntax is that complexity can be reduced, compared to representational approaches.
(i) Lack of look-ahead: At each step of the derivation, subsequent operations and their effects need not (and cannot) be considered.
(ii) Cyclicity: The SCC prohibits going back to earlier parts of the derivation.
(iii) Phase Impenetrability: The $PIC_{1,2}$ significantly reduces the search space. In effect, all syntactic material in the domain that the $PIC_{1,2}$ renders opaque can (and must) be forgotten for the remainder of the derivation ("spell-out").

Observation:
(i) PIC_1 and, in particular, PIC_2 could reduce search space even more radically.
(ii) MLC presupposes search space.

Three problems with $PIC_{1,2}$ and MLC:

(i) *Weak/Strong Representationality* (Brody (2001, 2002)):
A representational approach can be strictly non-derivational. However, a derivational theory must always be representational to some extent. It is *weakly representational* if "derivational stages are transparent (i.e., representations), in the sense that material already assembled can be accessed." It is *strongly representational* if it "is weakly representational and there are constraints on the representations." On this view, Chomsky's (2000; 2001) approach is strongly derivational (see phase evaluation of PIC_2 and MLC). Ideally, though, a strictly derivational theory should not even be weakly representational.

(ii) *PIC/MLC Redundancy*:
Chomsky (2001, 47, fn. 52) notes: "The effect on the MLC is limited under the PIC, which bars 'deep search' by the probe." The MLC can only become relevant in the relatively small portions of structure permitted by PIC_1 and PIC_2; it thus loses much of its original empirical coverage. In line with problem (i), this could be taken to suggest that strictly derivational approaches should dispense with the MLC in toto since this constraint presupposes an articulated representation (the search space for the probe). Arguably, in a derivational approach, minimality effects should not be covered by a constraint that accesses a significant amount of syntactic structure, i.e., a representation (MLC); rather, they should emerge as epiphenomena of constraints that reduce the search space (PIC).

(iii) *SCC/PIC$_{1,2}$ Asymmetry*:
The SCC and the $PIC_{1,2}$ have complementary tasks and look like two sides af the same coin. Therefore, it is possibly suspicious that the two constraints talk about domains of such a different size: From the point of view of symmetry, the local domain of the SCC should be the phase (not the phrase); or the local domain of the PIC should be the phrase (not the phase).

Goal:
A derivational approach that evades problems (i), (ii) and (iii) by having the following properties:
(i) The material that can be accessed at any given step of the derivation is a small bundle of categories that can hardly be called a representation anymore. Hence, the approach is not even weakly representational.
(ii) The MLC is dispensed with in favour of a strengthened version of the PIC.
(iii) The new version of the PIC has the same kind of local domain as the SCC: Phrases are phases.

3. Assumptions

3.1. All Syntactic Operations are Feature-Driven

Standard assumption:
Agree and internal Merge (i.e., Move) are feature-driven (but see Chomsky (2005a, 2007)).

Proposal:
External Merge is also feature-driven (Svenonius (1994), Stabler (1996, 1997, 1998), Collins (2003), Adger (2003), Lechner (2004), Kobele (2006), Heck & Müller (2006), Sternefeld (2006), Lahne (2006), Pesetsky & Torrego (2006)): It is triggered by subcategorization features.

(11) *Two types of features that drive operations* (Heck & Müller (2006); based on Adger (2003), Roberts & Roussou (2002), Sternefeld (2006)):
   a. Structure-building features (edge features, subcategorization features) trigger (external or internal) Merge: [•F•]
   b. Probe features trigger Agree: [∗F∗].

(12) *Last Resort* (LR):
   Every syntactic operation must discharge either [•F•] or [*F*].

Convention:
[•F•] or [*F*] must be eliminated by the respective operations they trigger.

Movement-inducing features are category-specific:

1. [•wh•] on C: *wh*-movement
2. [•top•] on C: topicalization
3. [•Σ•] on V or v: scrambling to Specv (Grewendorf & Sabel (1999), Sauerland (1999))
4. [•D•] on T: EPP movement to SpecT
5. [...]

3.2. All Phrases are Phases

Standard assumptions about phases:

- vP and CP are phases (Chomsky (2000, 2001, 2005a))
- DP may be a phase (Svenonius (2004), Heck & Zimmermann (2004), Matushansky (2005), Kramer (2007), Heck et al. (2007))
- TP may be a phase (possibly as a parametrized option: Richards (2004, 2007), Gallego & Uriagereka (2006), Gallego (2007)).

Conflicting assumptions about locality:

- All XPs are locality domains for movement (Koster (1978, 2000), van Riemsdijk (1978)).
- Successive-cyclic movement takes place via the edge domain of all intermediate XPs (Sportiche (1988, 1989), Takahashi (1994), Agbayani (1998), Chomsky (1995, 2005a,b), Bošković (2002), Boeckx (2003), Boeckx & Grohmann (2007)).
- Also compare Slash feature percolation in Gazdar (1981); Gazdar et al. (1985), and the related concepts of "gap phrase" and "operator feature percolation" in Koster (2000) and Neeleman & van de Koot (2007).

Proposal:

(13) *Phase*:
   All phrases are phases.

Observation:
Such an approach makes it necessary to reconsider a substantial part of the evidence that has been broght forward in support of a less general, category-selective concept of phases.

3.2.1. Cyclic Spell-Out Domains

First, phases have been correlated with cyclic spell-out domains. However:

- The correlation is not perfect in the first place (it is the complement domain of the phase head that is spelled out, rather than the phase as such – edge and head material must be available for operations on the next phase level).
- Domains for cyclic spell-out have also been argued to be potentially smaller than the classical phase (cf. Uriagereka (1999)), perhaps radically so (see Epstein & Seely (2002)).

3.2.2. Reflexes of Successive Cyclicity

Second, closer inspection of the literature on morphological and other reflexes of successive cyclicity reveals that that they are not always confined to the CP or vP domains (as is the case with, e.g., complementizer selection in Modern Irish discussed in McCloskey (1979, 2002), or possibly the instances of *wh*-agreement in Chamorro discussed in Chung (1994)).

- For instance, focus movement in Ewe looks like a clear counter-example because the morphological reflex shows up in the TP domain (rather than the vP or CP domain): Optionally, a different form of subject pronoun in SpecT can be chosen if movement to SpecC takes place (see Collins (1993, 1994)).
- Similarly, tonal downstep in Kikuyu is a reflex of successive-cyclic movement that does not exclusively identify CP or vP edges (see Clements et al. (1983)).

3.2.3. Reconstruction

Third, the assumption is compatible with evidence from reconstruction (Fox (2000), Nissenbaum (2000)).

3.2.4. Reflexivization

Fourth and finally, Abels' (2003) argument for designated intermediate landing sites (for "punctuated paths," in his terminology) can be shown to be inconclusive.

(14) *Pit-stop reflexives seem to distinguish between SpecC and SpecT*:
   a. Which pictures of himself$_1$ does Jane believe (that) John$_1$ thinks [$_{CP}$ □ (that) she likes t] ?
   b. *Which pictures of himself$_1$ did Mary$_2$ seem to John$_1$ [$_{TP}$ □ t$_2$ to like t] ?a

Two problems:

- When *which picture of himself* in (14-b) moves to SpecT (assuming that it does because every phrase is a phase), the intervening subject *Mary* is still present in the same domain, and it continues to be present when *John* is merged. Therefore, *Mary* will intervene, and block binding of the reflexive by *John* (as a closer potential antecedent) even if *which picture of himself* moves to SpecT, assuming that two specifiers of the same head are in the same minimal domain and may create intervention effects for each other.
- A second problem with Abels's (2003) argument for desginated phases: Boeckx (2008), Abels & Bentzen (2008): Sentences like (15) also lack the enrichment of binding options by movement to intermediate positions although the most deeply embedded clause is a CP, and movement to the □ position of this CP domain should suffice for creating the new binding option. Conclusion: An intervening experiencer blocks the enrichment of binding options, quite independently of the nature of the landing site involved.

(15) *Experiencers block enrichment of reflexivization options*:
*Which pictures of himself$_1$ did Mary$_2$ seem to Jane$_3$ [$_{TP}$ t$_2$ to have told John$_1$ [$_{CP}$ □ that she likes t]] ?

3.2.5. Conclusion

Consequence:
Wh-movement must proceed via every XP edge domain on its way to its ultimate target position (the C$_{[\bullet wh\bullet]}$ node that attracts it), given the PIC.

The SCC is as before, but PIC$_3$ now is restricted to phrases. This denies a special role of CP and vP for the purposes of movement theory, contra Chomsky (2000, 2001), Fox (2000), Nissenbaum (2000), Bruening (2001), Barbiers (2002), and others. (But it is of course compatible with the all the evidence suggesting that SpecC and Specv are used by successive-cyclic movement.)

(16) *Strict Cycle Condition* (SCC):
Within the current XP α, a syntactic operation may not target a position that is included within another XP β that is dominated by α.

(17) *Phrase Impenetrability Condition*$_3$ (PIC$_3$):
The domain of a head X of a phase (= **phrase**) XP is not accessible to operations outside XP; only X and its edge are accessible to such operations.

(18) *Search space under PIC*$_3$:
   a. $\overbrace{[_{\underline{YP}}\ldots Y\ [_{\underline{XP}}\ldots[_{X'}X}^{\text{SCC}}\ \underbrace{[_{\underline{WP}}\ldots W\ [_{\underline{UP}}\ldots U\ldots\ ]]]]}_{\text{PIC}_3}$
   b. $\overbrace{\underbrace{[_{\underline{ZP}}\ldots Z\ [_{\underline{YP}}\ldots Y}_{\text{PIC}_3}}^{\text{SCC}}\ [_{\underline{XP}}\ldots\ [_{X'}X\ \ [_{\underline{WP}}\ldots W\ [_{\underline{UP}}\ldots U\ldots\ ]]]]]$

3.3. The Edge Feature Condition

(19) *Edge Feature Condition* (EFC):
The head X of phase XP may be assigned an edge feature after the phase XP is otherwise complete, but only if that *has an effect on outcome*.

A question:
What does it mean to "have an effect on outcome"?

An answer:
Phase Balance: Heck & Müller (2000, 2003), Fischer (2004).
(Note: The following analysis differs from the ones given in Heck & Müller (2000) and Müller (2004a) in that instead of the constraint *Phase Balance*, there is just a concept *Balanced Phase* that is referred to by a revised EFC.)

(20) *Balanced Phase*:
A phase is balanced iff, for every feature [•F•] in the numeration, there is a distinct potentially available feature [F].

(21) *Potential availabiliy*:
A feature [F] is potentially available at the XP level if (i) or (ii) holds:
   a. [F] is on X or on an edge element of X.
   b. [F] is part of the workspace of the derivation.
   (The workspace of a derivation D comprises the numeration and material in trees that have been created earlier and have not yet been used in D.)

(22) *Edge Feature Condition* (EFC; revised):
The head X of phase XP may be assigned an edge feature after the phase XP is otherwise complete, but only if that *is the only way to produce a balanced phase*.

Note:
(i) In contrast to Müller (2004a), this system does not envisage minimal violations of *Last Resort* (if Phase Balance, as a constraint, triggers movement).
(ii) However, edge feature insertion must be able to minimally violate the *Inclusiveness Condition* (Chomsky (1995, 2000, 2001)). Thus, whereas the prohibition against non-feature driven movement is strict, the prohibition against feature insertion is not.

Consequence:

1. In the case of *wh*-movement, a *wh*-object must move to the edge domain of every intervening phase (= phrase), because of the PIC.
2. For these movement steps to be possible, edge features must be inserted on phase heads, because of Last Resort.
3. Edge feature insertion to a phase head is legitimate only if there is no other way to balance the phase, because of the Edge Feature Condition.
4. To find out, whether the phase would otherwise be balanced or not, a look into the numeration (and the workspace) is necessary – if it would not be balanced without *wh*-movement, an edge feature can be inserted which attracts the *wh*-phrase.
5. If the edge feature is not inserted, the PIC will block further movement of the *wh*-phrase on the next cycle, and the derivation eventually crashes because [•wh•] on C cannot be checked.
6. A *wh*-phrase therefore moves only if it is required by some (non-local) C head bearing [•wh•].
7. *Wh*-movement must proceed via every XP on its way to its ultimate target position (the $C_{[\bullet wh\bullet]}$ node that attracts it).

(23) *Derivation of wh-questions*:
(I wonder) what John read

a. $[_{VP}\ what_3\ read_3\ t_1\ ]$
→ workspace: $\{C_{[\bullet wh\bullet]}, John, T_{[\bullet D\bullet]}, v\}$

b. $[_{vP}\ what_1\ John_2\ v{+}read_3\ [_{VP}\ t'_1\ t_3\ \cancel{t_1\ ]}]$
→ workspace: $\{C_{[\bullet wh\bullet]}, T_{[\bullet D\bullet]}\}$

c. $[_{TP}\ what_1\ John_2\ T\ [_{vP}\ t''_1\ t_2\ v{+}read_3\ \cancel{[_{VP}\ t'_1\ t_3\ t_1\ ]]}]$
→ workspace: $\{C_{[\bullet wh\bullet]}\}$

d. $[_{CP}\ what_1\ C\ [_{TP}\ t'''_1\ John_2\ T\ \cancel{[_{vP}\ t''_1\ t_2\ v{+}read_3\ [_{VP}\ t'_1\ t_3\ t_1\ ]]]}]$
→ workspace: {–}

Note:
Material that is crossed out is not accessible anymore for further operations in the derivation.

4. Deriving the Minimal Link Condition

4.1. Superiority Effects in English

(24) *Subject and object*:
a. (I wonder) who_1 bought $what_2$
b. *(I wonder) $what_2$ who_1 bought t_2

(25) *Object and object*:
a. Who_1 did you persuade t_1 $[_{CP}$ to read $what_2\ ]$?
b. *$What_2$ did you persuade who_1 $[_{CP}$ to read $t_2\ ]$?

Analysis:
(i) Movement of DP_2 to SpecV (Specv, SpecT, ...) cannot be triggered by inherent movement-inducing features on lexical items ([•F•]): English does not have object shift or scrambling.
(ii) Movement of DP_2 to SpecV (Specv, SpecT, ...) cannot be triggered by the PIC, via the *Edge Feature Condition*: VP is balanced because there is another *wh*-phrase in the workspace, viz., DP_1; vP and TP in (24) are balanced because DP_1 occupies the respective specifiers (but given the PIC, at this point it would be too late for DP_2 anyway). In addition, if an edge feature has not been inserted on the first cycle, the derivation will eventually crash.

(26) *Derivation of (24)*:

a. $[_{VP}\ bought_3\ what_2\ ]$
→ workspace: $\{C_{[\bullet wh\bullet]}, who_1, T_{[\bullet D\bullet]}, v\}$

b. $[_{vP}\ who_1\ v{+}bought_3\ [_{VP}\ t_3\ \cancel{what_2\ ]}]$
→ workspace: $\{C_{[\bullet wh\bullet]}, T_{[\bullet D\bullet]},\}$

c. $[_{TP}\ who_1\ T\ [_{vP}\ t_1\ v{+}bought_3\ \cancel{[_{VP}\ t_3\ what_2\ ]]}]$
→ workspace: $\{C_{[\bullet wh\bullet]}\}$

d. $[_{CP}\ who_1\ C\ [_{TP}\ t''_1\ T\ \cancel{[_{vP}\ t_1\ v{+}bought_3\ [_{VP}\ t_3\ what_2\ ]]]}]$
→ workspace: {–}

Observation 1 (Chomsky (1973, 246), Fiengo (1980, 123)):
If there are two *wh*-objects in double object constructions with a prepositional object, either object can move; but preposition stranding becomes impossible.

(27) *Double object constructions with a prepositional object*:
a. $What_1$ did you give t_1 to $whom_2$?
b. To $whom_3$ did you give $what_1$ t_3 ?
c. *Who_2 did you give $what_1$ $[_{PP_3}$ to $t_2\ ]$?

Observation 2 (Barss & Lasnik (1986, 349)):
If there are two *wh*-objects in double object constructions with dative shift, only the shifted object can (marginally) move. (The marginality is due to a general weak ban on A-bar movement of dative-shifted objects in English and thus independent of superiority; see Stowell (1981, ch. 4) and Larson (1988), among others.)

(28) *Double object constructions with dative shift*:
a.(?)Who_2 did you give t_2 $what_1$?
b. *$What_1$ did you give who_2 t_1 ?

Assumption 1 (modification of Larson (1988)):
The direct (Theme) object is in a complement position of V throughout; the indirect (Goal) object is in SpecV if it has undergone dative shift, and in a right-peripheral V′ sister position if it is prepositional.

(29) *Base generation of double object constructions*:
a. $[_{VP}\ [_{V'}\ [_{V'}\ V\ DP_1\ ]\ [_{PP_3}\ P\ DP_2\ ]]]$

b. [$_{VP}$ DP_2 [$_{V'}$ V DP_1]]

Assumption 2:
Pied piping involves optional feature percolation, which can be viewed as actual displacement of a feature (this assumption is probably wrong, but it may suffice for present purposes; see Heck (2004, 2007)).

Analysis of (27):
(i) Suppose that [wh] percolation has taken place, and PP bears [wh]. The two objects are merged in VP-internal non-edge positions. To balance the VP phase, movement of one *wh*-phrase to SpecV must take place (one edge feature can be inserted, given the Edge Feature Condition). It does not matter which one, but whichever *wh*-phrase is moved first forces the other *wh*-phrase to stay in situ, to avoid an unforced violation of *Last Resort*. The *wh*-phrase in SpecV is then passed on through further cycles of the derivation, until CP is reached and [•wh•] on C is checked.
(ii) Suppose that [wh] percolation has not taken place. Then, PP cannot move. However, DP_2 in PP cannot move either: To leave PP, it must move to SpecP. This operation is not available because there is no [•F•] that might trigger it, and because the phase is independently balanced (with another *wh*-phrase in the workspace).

Analysis of (28):
In dative shift constructions, DP_2 is in SpecV for independent reasons (either because it is base-generated there, or because there is an [•F•] that triggers dative shift to that position). Hence, the phase is balanced from the start, and an edge feature cannot be inserted.

A prediction:
If two *wh*-phrases are further embedded in objects, preposition stranding is predicted to be blocked throughout. (Note: Examples like (30-d) are classified as ill formed by Jackendoff (1990, 433), and as well formed by Fiengo (1980, 124).)

(30) *Two embedded wh-phrases*:
a. *Who$_2$ did you give [$_{DP}$ pictures of t_2] [$_{PP}$ to whom$_1$] ?
b. *Who$_1$ did you give [$_{DP}$ pictures of whom$_2$] [$_{PP}$ to t_1] ?
c. *Who$_2$ did you talk [$_{PP}$ to t_2] [$_{PP}$ about whom$_1$] ?
d. *Who$_1$ did you talk [$_{PP}$ to whom$_2$] [$_{PP}$ about t_1] ?

(30-ac) (classified as acceptable by Jackendoff) should involve an additional violation of the *Clause Nonfinal Incomplete Constituent Constraint*; see Kuno (1973, 379), Lasnik & Saito (1992, 91), and lecture 1).

(31) *Movement from clause non-final constituents*:
a. Who$_2$ did you give [$_{DP}$ pictures of Mary] [$_{PP}$ to t_2] ?
b.?*Who$_1$ did you give [$_{DP}$ pictures of t_1] [$_{PP}$ to John] ?

4.2. Lack of Superiority Effects in German

Observation (Haider (1983, 1993, 2000b), Grewendorf (1988), Bayer (1990)):
German does not exhibit superiority effects with clause-mates.

(32) *Lack of superiority effects with clause-mates*:
a. (Ich weiß nicht) wer$_1$ C t_1 was$_2$ gesagt hat
I know not who$_{nom}$ what$_{acc}$ said has
b. (Ich weiß nicht) was$_2$ C wer$_1$ t_2 gesagt hat
I know not what$_{acc}$ who$_{nom}$ said has

Observation (Fanselow (1991), Kim & Sternefeld (1997)), Haider (2000b)):
German does not exhibit superiority effects with control infinitives.

(33) *Lack of superiority effects in control infinitives*:
a. (Ich weiß nicht) wen$_1$ er t_1 überzeugt hat [was$_2$ zu kaufen]
I know not whom$_{acc}$ he convinced has what$_{acc}$ to buy
b. (Ich weiß nicht) was$_2$ er wen$_1$ überzeugt hat [t_2 zu kaufen]
I know not what$_{acc}$ he whom$_{acc}$ convinced has to buy

Some previous accounts:
(i) Superiority results from a lack of government (ECP). All arguments are governed in German (Haider (1983, 1993)).
(ii) Superiority results from a lack of government (ECP). C in V/2 languages can govern the subject position (Noonan (1988)).
(iii) Superiority results from an IP barrier that restricts LF movement of the in-situ *wh*-phrase (ECP). This barrier does not exist in German (Müller (1995)).
(iv) Superiority violations are only apparent in German; D-linking is involved (Fanselow (1991), Wiltschko (1997), Grohmann (1998)).
(v) Superiority results from a feature-based version of relativized minimality: a *wh*-element in situ must not c-command the trace of a *wh*-element whose overt licensing features are non-distinct (Haider (2000b), based on Fanselow (1991)). German can avoid superiority effects because Case is a licensing feature and overt Case forms are often distinct; this is not the case in English.
(vi) Superiority results from the MLC. German has variable base generation of arguments (Kim & Sternefeld (1997)), based on (an earlier version of) Fanselow (2001)).
(vii) Superiority results from the MLC. The English C attracts all *wh*-phrases, but only the first one that is attracted by C is PF-realized (Pesetsky (2000)). German has a different C that requires only one *wh*-phrase in SpecC and attracts the *wh*-features of the others. If feature attraction precedes phrase attraction, superiority violations occur.
(viii) Superiority results from the MLC. German has scrambling, which may independently move a lower *wh*-phrase to a higher position, by *wh*-scrambling (Fanselow (1996), Grohmann (1997)).

Assumption:
The last approach is the correct one: A lower *wh*-phrase cannot move across a *wh*-phrase that is generated in a higher XP by *wh*-movement, given the Edge Feature Condition and the PIC; but it can do so by scrambling. Scrambling is triggered by $[\bullet\Sigma\bullet]$ on a probe, and $[\Sigma]$ on the scrambled item (Müller (1998), Sauerland (1999), Grewendorf & Sabel (1999)).

(34) *Derivation of (32-b)*:

a. $[_{VP}$ was$_{2,\Sigma}$ $[_{V'}$ t_2 gesagt $]]$
→ workspace: $\{C_{[\bullet wh\bullet]}$, wer$_1$, T, $[_v$ hat $]_{[\bullet\Sigma\bullet]}\}$

b. $[_{vP}$ was$_{2,\Sigma}$ wer$_1$ $[_{VP}$ t'_2 ~~$[_{V'}$ t_2~~ gesagt $]]$ $[_v$ hat $]]$
→ workspace: $\{C_{[\bullet wh\bullet]}$, T$\}$

c. $[_{TP}$ was$_{2,\Sigma}$ $[_{vP}$ t''_2 wer$_1$ ~~$[_{VP}$ t'_2 $[_{V'}$ t_2 gesagt $]]$~~ $[_v$ hat $]]$ T $]$
→ workspace: $\{C_{[\bullet wh\bullet]}\}$

d. $[_{CP}$ was$_{2,\Sigma}$ C $[_{TP}$ t'''_2 ~~$[_{vP}$ t''_2 wer$_1$ $[_{VP}$ t'_2 $[_{V'}$ t_2 gesagt $]]$ $[_v$ hat $]]$~~ T $]$
→ workspace: $\{-\}$

Note:
There are certain restrictions on *wh*-in situ in German that are not covered by the present approach; see Haider (2000b, 2004).

4.3. Superiority Effects with Long-Distance Movement in German

Observation (Frey (1993), Büring & Hartmann (1994), Fanselow (1996), Heck & Müller (2000)), Pesetsky (2000)):
German does exhibit superiority effects with long-distance movement.

(35) *Superiority effects with long-distance movement*:

a. Wer$_1$ hat t_1 geglaubt $[_{CP}$ dass der Fritz wen$_2$ mag $]$?
who$_{nom}$ has believed that the Fritz whom$_{acc}$ likes

b. *Wen$_2$ hat wer$_1$ geglaubt $[_{CP}$ dass der Fritz t_2 mag $]$?
whom$_{acc}$ has who$_{nom}$ believed that the Fritz likes

Analysis:
DP$_2$'s [wh] feature in (35) does not permit movement at all (edge feature insertion for it is blocked by the presence of DP$_1$ in the workspace). Scrambling cannot leave a finite CP in German (only v and V tolerate $[\Sigma]$ at its edge). Hence, a potential $[\Sigma]$ feature cannot trigger movement beyond vP.

4.4. Superiority Effects with Subject Raising in German

Assumption (Müller (2001)):
The EPP feature of T is optional in German (Diesing (1992)). There is one context where it is clear that subject raising to SpecT must have occurred: Unstressed pronouns must be at the *phonological edge* of vP. Only a subject DP can optionally precede these pronouns. In that case, the subject DP must have undergone movement to SpecT (also see Fanselow (2004)) .

(36) *Superiority effects with subject raising 1*:

a. Wem$_2$ hat $[_{vP}$ es t'_2 wer$_1$ t_2 gegeben $]$?
whom$_{dat}$ has it$_{acc}$ who$_{nom}$ given

b.?*Wem$_2$ hat wer$_1$ $[_{vP}$ es t'_2 t_1 t_2 gegeben $]$?
whom$_{dat}$ has who$_{nom}$ it$_{acc}$ given

(37) *Superiority effects with subject raising 2*:

a. Was$_2$ hat $[_{vP}$ ihm t'_2 wer$_1$ t_2 gegeben $]$?
what$_{acc}$ has him$_{dat}$ who$_{nom}$ given

b.?*Was$_2$ hat wer$_1$ $[_{vP}$ ihm t'_2 t_1 t_2 gegeben $]$?
what$_{acc}$ has who$_{nom}$ him$_{dat}$ given

Analysis:
If a subject DP$_{[wh]}$ and an object DP$_{[wh]}$ are both in Specv, and T has an optional EPP feature, TP is balanced by feature-driven subject raising, and movement of the object incurs a fatal Last Resort violation.

(38) *Examples with non-wh-subjects*:

a. Wem$_2$ hat t''_2 der Fritz$_1$ $[_{vP}$ es t'_2 t_1 t_2 gegeben $]$?
whom$_{dat}$ has the Fritz$_{nom}$ it$_{acc}$ given

b. Was$_2$ hat t''_2 der Fritz$_1$ $[_{vP}$ ihm t'_2 t_1 t_2 gegeben $]$?
what$_{acc}$ has the Fritz$_{nom}$ him$_{dat}$ given

(39) *Examples with non-pronouns*:

a. Wem$_2$ hat $[_{vP}$ wer$_1$ das Buch t'_2 t_1 t_2 gegeben $]$?
whom$_{dat}$ has who$_{nom}$ the book$_{acc}$ given

b. Was$_2$ hat $[_{vP}$ wer$_1$ dem Fritz t'_2 t_1 t_2 gegeben $]$?
what$_{acc}$ has who$_{nom}$ the Fritz$_{dat}$ given

4.5. Superiority Effects with Scrambling from Wh-XP in German

Observation (Fanselow (1996)):
A *wh*-phrase PP$_1$ can be scrambled from a *wh*-phrase DP$_2$. However, once it has done this, the MLC forces movement of PP$_1$ to SpecC – if DP$_2$ also undergoes scrambling so as to be in a position for *wh*-movement to SpecC, a violation of Unambiguous Domination (UD; Müller (1998)) occurs; according to UD, an α-trace must not be α-dominated.

(40) *Superiority effects with scrambling from wh-XP*:

a. (Ich weiß nicht) $[_{PP_1}$ über wen $]$ er $[_{DP_2}$ wieviele Bücher t_1 $]$ lesen
I know not about whom he how many books read
will
wants

b.?*(Ich weiß nicht) $[_{DP_2}$ wieviele Bücher t_1 $]$ er $[_{PP_1}$ über wen $]$ t_2 lesen
I know not how many books he about whom read
will
wants

c. (Ich weiß nicht) [$_{DP_2}$ wieviele Bücher t_1] er [$_{PP_1}$ über die Liebe] t_2
I know not how many books he about love
lesen will
read wants

Analysis:
Movement of PP_1 from DP_2 must take place while DP_2 is still in situ, a sister of V (otherwise, a CED effect would result); PP_1 is scrambled to SpecV (triggered by $[\bullet\Sigma\bullet]$, either on V directly, or indirectly, in accordance with the the Edge Feature Condition). In situ, DP_2 is not visible for further operations, because of the PIC_3. However, if DP_2 moves to SpecV (triggered by $[\bullet\Sigma\bullet]$ on V or v, and by $[\Sigma]$ on DP_2), UD is violated.

4.6. Superiority-Like Effects with Remnant Movement in German

Observation (Koizumi (1995), Takano (1994), Kitahara (1997), Müller (1998), Sauerland (1999)):
UD effects can be derived from the MLC: In a configuration ... [$_\beta$ ... γ ...], where β and γ both qualify as a goal for a β-external probe α, the MLC forces movement of the item that is closer to α: β.

(41) *Unambiguous Domination effects*:

a. *dass [$_{vP}$ [$_{VP_{2,[\Sigma]}}$ t_1 zu lesen] [$_{DP_{1,[\Sigma]}}$ das Buch] keiner t_2 versucht hat]
that to read the book$_{acc}$ no-one$_{nom}$ tried has

b. dass [$_{vP}$ [$_{VP_{2,[\Sigma]}}$ das Buch$_1$ zu lesen] keiner t_2 versucht hat]
that the book$_{acc}$ to read no-one$_{nom}$ tried has

Analysis:
The illformedness of (41-a) does not follow from the PIC_3. Suppose that there are two $[\bullet\Sigma\bullet]$ features, one for DP_1, one for VP_2. Then, there should be a well-formed derivation for (41-a), with DP_1 undergoing edge-feature driven movement to SpecV first, followed by regular feature-driven movement of DP_1 to Specv, and then of VP_2 to Specv – both movements are compatible with PIC_3. However, UD can be derived by a version of the A-over-A condition that I call "residual". (Also see lecture 3 for more on this phenomenon.)

(42) *Residual A-Over-A Condition* (RAOA):
If $[\bullet F\bullet]$ can be checked either with a head, or with an edge element, it must be checked with the head.

Note:
This forces VP_2 movement to apply first; subsequent DP_1 lowering then violates (at least) the Strict Cycle Condition.

5. Intervention Effects that do Not Follow From the (G)MLC

5.1. Long-Distance Intervention without C-Command in German

Observation (Heck & Müller (2000)):
Non-c-commanding *wh*-phrases in a matrix clause block long-distance *wh*-movement in German.

(43) *Long-distance wh-movement across a wh-item in an adjunct clause*:

a. Wen$_1$ hat Fritz [$_{CP}$ nachdem er was$_2$ gemacht hat] t_1 getroffen ?
whom has Fritz after he what done has met

b. *Wen$_1$ hat Fritz [$_{CP}$ nachdem er was$_2$ gemacht hat] gesagt [$_{CP}$ dass Maria
whom has Fritz after he what done has said that Maria
t_1 liebt] ?
loves

c. *Was$_2$ hat Fritz [$_{CP}$ nachdem er t_2 gemacht hat] gesagt [$_{CP}$ dass Maria
what has Fritz after he done has said that Maria
wen$_1$ liebt] ?
whom loves

(44) *Long-distance wh-movement across a wh-item in a relative clause*:

a. Wen$_1$ hat Fritz [$_{DP}$ einem Mann [$_{CP}$ der was$_2$ kennt]] t_1 vorgestellt ?
whom$_{acc}$ has Fritz a man$_{dat}$ that what knows introduced

b. *Wen$_1$ hat Fritz [$_{DP}$ einem Mann [$_{CP}$ der was$_2$ kennt]] gesagt [$_{CP}$ dass
whom$_{acc}$ has Fritz a man$_{dat}$ that what knows said that
er t_1 einladen soll] ?
he invite should

c. *Was$_2$ hat Fritz [$_{DP}$ einem Mann [$_{CP}$ der t_2 kennt]] gesagt [$_{CP}$ dass er
what$_{acc}$ has Fritz a man$_{dat}$ that knows said that he
wen$_1$ einladen soll] ?
whom$_{acc}$ invite should

(45) *Long-distance wh-movement across a wh-item in an DP*:

a. Wen$_1$ hat Fritz [$_{DP}$ einem Freund von wem$_2$] t_1 vorgestellt ?
whom$_{acc}$ has Fritz a friend$_{dat}$ of whom introduced

b.?*Wen$_1$ hat Fritz [$_{DP}$ einem Freund von wem$_2$] gesagt [$_{CP}$ dass Maria t_1
whom$_{acc}$ has Fritz a friend$_{dat}$ of whom said that Maria
liebt] ?
loves

c. *[$_{PP_2}$ Von wem] hat Fritz [$_{DP}$ einem Freund t_2] gesagt [$_{CP}$ dass Maria
of whom$_{acc}$ has Fritz a friend$_{dat}$ said that Maria
wen$_1$ liebt] ?
whom$_{acc}$ loves

Analysis:
The (a)-examples are well formed because DP_1 can always reach a phrase edge by

scrambling. The (b)-examples are ill formed because, given another *wh*-item in the workspace, an edge feature cannot be inserted, and Last Resort prohibits movement of DP_1 to the edge. Independent scrambling must stop in the embedded vP domain. (The (c)-examples are also ill formed because of the CED; see lecture 3).

(46) *Superiority-like effects with subject raising*:

a. ?Wem$_1$ hat [$_{DP}$ die Frau [$_{PP_2}$ mit welchem Mantel]] t$_1$ ein Buch
whom$_{dat}$ has the woman with which coat a book$_{acc}$
gegeben ?
given

b.?*Wem$_1$ hat [$_{DP}$ die Frau [$_{PP_2}$ mit welchem Mantel]] es t$_1$ gegeben ?
whom$_{dat}$ has the woman with which coat it$_{acc}$ given

c. *[$_{PP_2}$ Mit welchem Mantel] hat [$_{DP}$ die Frau t$_2$] es wem$_1$
with which coat has the woman it$_{acc}$ whom$_{dat}$
gegeben ?
given

5.2. Clause-Bound Intervention without C-Command in English

Prediction:
Since English does not have scrambling, we expect clause-bound intervention effects with non-commanding *wh*-phrases. At first sight, this seems to contradict the standard view that argument *wh*-in situ in English does not obey any island constraints (Chomsky (1981), Huang (1982, 1995), Lasnik & Saito (1992), Hornstein (1995)). However, most of the pertinent examples in the literature do not involve intervention without c-command. Where such intervention does occur, acceptability seems to be significantly reduced.

(47) *Wh-in situ in an object or adjunct does not block subject wh-movement*:

a. Who$_1$ t$_1$ saw [$_{DP}$ the man that bought what$_2$] ?
b. Who$_1$ t$_1$ likes [$_{DP}$ books that criticize who$_2$] ?
c. Who$_1$ t$_1$ bought [$_{DP}$ the books on which table$_2$] ?
d. Who$_1$ t$_1$ met [$_{DP}$ friends of whom$_2$] ?
e. I wonder who$_1$ t$_1$ heard [$_{DP}$ the claim that John had seen what$_2$]
f. I wonder who$_1$ t$_1$ heard [$_{DP}$ John's stories about what$_2$]
g. Who$_1$ t$_1$ left [$_{PP}$ despite which warning$_2$] ?

(48) *Wh-in situ in a subject does not block matrix subject wh-movement*:
Who$_1$ t$_1$ thinks that [$_{DP}$ pictures of who$_2$] are on sale ?

(49) *Wh-in situ in a subject may block object wh-movement*:

a.?*Who$_2$ did [$_{DP}$ the man that bought what$_1$] see t$_2$?
b.?*Who$_2$ did [$_{DP}$ books that criticize who$_1$] impress t$_2$?
c.?*What$_2$ did [$_{DP}$ the books on which table$_1$] cost t$_2$?
d.?*Who$_2$ did [$_{DP}$ friends of whom$_1$] meet t$_2$?
e. *Who$_2$ did [$_{DP}$ friends of whom$_1$] say that we should invite t$_2$?

Note:
The data in (49) were checked with various native speakers, who unanimously declared them to be ill formed, and who all found a sharp contrast in the minimal pairs that can be formed on the basis of (47) and (49). However, I am aware of one exception to the apparent general neglect of constructions like those in (49) in the literature: Such examples are discussed in Fiengo et al. (1988) and, following them, Fitzpatrick (2002), and judged grammatical. I have nothing to say here about the source of the diverging judgements, except for the observation that Fiengo et al. (1988) are primarily concerned with contrasting the construction in (49), with a *wh*-phrase embedded in a subject DP and an object *wh*-phrase ending up in front of it, with one in which the subject DP-internal *wh*-phrase undergoes movement (in violation of the CED) and the object *wh*-phrase stays in situ – and not with one in which a *wh*-phrase is embedded in an object DP and a subject *wh*-phrase undergoes movement. In other words: One might speculate that judgement differences arise in this domain because different kinds of minimal pairs are taken into account, and judgements are taken to be relative rather than absolute.

6. Further Refinements

6.1. Multiple C Domains and Intervention

(50) *A potential problem*:

a. [$_{DP}$ Die Frage [$_{CP_9}$ wer$_1$ C t$_1$ was$_2$ mitbringt]]] ist relevant für die
the question who what brings is relevant to the
Frage [$_{CP_7}$ wie$_3$ Fritz denkt [$_{CP_5}$ t$'_3$ dass die Party t$_3$ wird]
question how Fritz thinks that the party will be

b. [$_{CP_5}$ Wer$_1$ hat t$_1$ wen$_2$ gefragt [$_{CP_4}$ was$_3$ Fritz t$_3$ mag]] ?
who$_{nom}$ has whom$_{acc}$ asked what$_{acc}$ Fritz$_{nom}$ likes

c. [$_{CP_5}$ Who$_1$ t$_1$ asked whom$_2$ [$_{CP_4}$ what$_3$ C John likes t$_3$]] ?

Solution:
Wh-features are accompanied by scope indices on items in the numeration. Hence, [wh]$_i$ on a *wh*-phrase can never be potentially available for [•wh•]$_j$ on a C in the workspace, due to feature mismatch.

6.2. D-Linking

Problem:
Why does an intervening D-linked *wh*-phrase (Pesetsky (1987)) not induce a superiority violation in English?

(51) *D-linking effects*:

a. *I know [$_{DP_2}$ which books] who$_1$ read t$_2$
b. I know what$_2$ [$_{DP_1}$ which people] read t$_2$

Suggestion:
D-linked *wh*-phrases can optionally lack a (proper) [wh]-feature; if they lack this feature,

a balanced phase can only be reached by movement of the other *wh*-phrase.

7. Conclusion

Results:
(i) There are independent reasons for strengthening the standard PIC in a derivational grammar, with all phrases qualifying as phases (PIC_3).
(ii) It follows from this move that the PIC_3 accounts for typical MLC effects in English. The MLC can therefore be dispensed with (except perhaps for a residue, RAOA).
(iii) Given that German has scrambling of *wh*-phrases, superiority effects are predicted to be absent, except for those circumstances where scrambling is independently excluded.
(iv) Unlike the MLC, the system based on balanced phases and the PIC_3 predicts superiority-like intervention effects without c-command.

Outlook:
As it stands, the PIC_3 has important consequences for many other phenomena, especially if we pursue the strongest possible hypothesis in a derivational approach:

(52) *A strong hypothesis*:
Once rendered inaccessible by the PIC_3, syntactic structure does not become accessible again when the syntactic derivation terminates ("at LF"). Hence, there can be no constraints on representations ("bare output conditions").

- Hypothesis (52) implies that there is no reason left to assume the existence of traces (neither as t, nor as a copy), which presupposes a derivational approach to semantic interpretation (Sternefeld (1996), Adger & Svenonius (2003)).
- It also raises interesting problems for binding of anaphors (at least those cases that are not strictly local and can be covered by Reinhart & Reuland's (1993) reflexivity constraints) and pronouns, control, long-distance agreement, etc. It seems that apparent non-local relations must be accounted for by successive-cyclic local [F] feature movement from head to head (mediated by concepts like balanced phases or motivated by independent features; see Pesetsky (2000) on the viability of feature movement). [F] must encode the relevant properties of the in-situ element; e.g.: anaphor, PRO. For binding, this strategy would be a natural extension of proposals like Chomsky's (1986b) LF movement of anaphors, and a version of it is in fact pursued by Reuland (2001) in his account of A-chain condition effects, and by Fischer (2004) more generally.
- For (obligatory) control, the strategy would amount to a decomposition of Landau's (2000) Agree relation into small steps of feature movement (or, indeed, a version of Hornstein's (2001) A-movement approach).
- Finally, long-distance agreement may or may not suggest the same kind of analysis; there there is disagreement in the literature:

1. Long-distance agreement is real; but the operation (unlike other syntactic operations) may violate standard locality restrictions (Stjepanoivć & Takahashi (2001), Sells (2006), Bošković (2007)).
2. Long-distance agreement only affects two items if they are fairly local (phasemates) after all (Bhatt (2005), Boeckx (2004)).
3. Long-distance agreement involves movement into the higher local domain (phase) (Polinsky & Potsdam (2001), Polinsky (2003), Chandra (2005)).
4. Long-distance agreement involves cyclic Agree (Butt (1995), Chomsky (2001), Legate (2005)).

Lecture 3

On Deriving CED Effects from the PIC

1. Introduction

Question:
How can the effects of the Condition on Extraction Domain (CED; Huang (1982), Chomsky (1986a, 1995, 2005a), Cinque (1990), Manzini (1992)) be made to follow in the minimalist program?

(1) *Condition on Extraction Domain*:
   a. Movement must not cross a barrier.
   b. An XP is a barrier iff it is not a complement.

State of the art in minimalist syntax (recall lecture 1):

- CED effects are derived by invoking assumptions about elementary operations like Merge and Agree.
  → Sabel (2002), Rackowski & Richards (2005)
- CED effects are derived by invoking assumptions about cyclic spell-out.
  → Uriagereka (1999), Nunes & Uriagereka (2000), Nunes (2004)
- CED effects are derived as freezing effects.
  → Kitahara (1994), Takahashi (1994), Boeckx (2003), Rizzi (2006, 2007), Gallego & Uriagereka (2006), Stepanov (2007)

Conclusions (repeated from lecture 1):

1. Analyses that are centered around the working of elementary operations like Move or Agree rely on special assumptions that mimic assumptions in Chomsky's (1986a) theory of barriers.
2. Analyses that are based on specific concepts of cyclic spell-out are incompatible with the assumption that only the complement of a phase head is affected by spell-out (whereas the specifier domain and the head itself remain available for further operations on subsequent cycles), and with the notion of phase in general.
3. Analyses that rely on freezing are incompatible with the existence of CED effects where an XP is a barrier in its in situ position.
4. Furthermore, most of the approaches discussed so far make it necessary to stipulate separate constraints and/or concepts that are not independently motivated, and that may not always fall under either economy or interface constraints.
5. Finally, all these analyses have nothing to say about *melting* effects: Local scrambling in front of what would otherwise qualify as a last-merged specifier renders the specifier transparent for extraction. Thus, an XP may qualify as a barrier in one case and as transparent in another even though it has exactly the same structural relationship with the surrounding lexical items.

Background:
Chomsky (2000, 2001, 2005a): PIC forces successive-cyclic movement via phase edges; such movement is possible because edge features that drive it can be inserted.

(2) *Phase Impenetrability Condition* (PIC):
The domain of a head X of a phase XP is not accessible to operations outside XP; only X and its edge are accessible to such operations (where edge of X = specifier(s) of X).

(3) *Edge Feature Condition* (EFC; Chomsky (2000, 109), Chomsky (2001, 34), Chomsky (2005a, 14)):
The head X of phase XP may be assigned an edge feature after the phase XP is otherwise complete, but only if that has an effect on outcome.

Recall:
The most important assumption of lecture 2 was that to "have an effect on outcome" should be made precise as in (4) (= (22) of lecture 2).

(4) *Edge Feature Condition* (EFC; revised):
The head X of phase XP may be assigned an edge feature after the phase XP is otherwise complete, but only if that is the only way to produce a balanced phase.

Note:
In what follows, I will ignore the question of what exactly it means for edge feature insertion to "have an effect on outcome". The analysis to be developed here is compatible with various ways that this can be made sense of – but, of course, it is especially compatible with the specific definition in (4). However, since this issue is orthogonal to the main plot, in what follows I will tacitly presuppose that some additional requirement like "only if that is the only way to produce a balanced phase" is also part of the Edge Feature Condition; but I will focus on the other parts of the constraint. In particular, I want to make the following suggestion:

"What yields the subject-island effect, it appears, is search that goes too deeply into a phase already passed" (Chomsky (2005a, 19))
This lecture is based on a paper that is available from my website:
www.uni-leipzig.de/∼muellerg/mu217.pdf

Suggestion:
Replace *after* with *before* in (4) and see what happens.

2. Claim

Claim:
CED effects can be derived from the PIC if the following four assumptions are made:

1. All syntactic operations are driven by features of lexical items.
2. These features are ordered on lexical items.
3. All phrases are phases.
4. Edge features that trigger intermediate movement steps can be added only as long as the phase head is still active.

(5) *Condition on Extraction Domain* (new version; to be derived from the PIC):
   a. Movement must not cross a barrier.
   b. α is a barrier if the operation that has merged α in a phase Γ is the final operation in Γ.

3. Assumptions

3.1. All Syntactic Operations are Feature-Driven

I have justified this assumption in lecture 2. The main conclusions are the following.

(6) *Two types of features that drive operations*:
   a. Structure-building features (edge features, subcategorization features) trigger (external or internal) Merge: [•F•]
   b. Probe features trigger Agree: [∗F∗].

(7) *Last Resort* (LR):
Every syntactic operation must discharge either [•F•] or [*F*].

3.2. Features on Lexical Items are Ordered

Question:
How does linking (argument structure in the lexicon → argument realization in syntax) work?

(8) *Linking*:
   a. [$_{vP}$ John AGENT likes+v [$_{VP}$ V_t Mary THEME]]
   b. [$_{vP}$ Mary AGENT gave+v [$_{VP}$ a book THEME t_V to Bill GOAL]]

First strategy (Adger (2003)):
Syntactic positions (= argument realizations) are given fixed argument structure correlates.

(9) a. NP daughter of vP ⟶ AGENT
   b. NP daughter of VP ⟶ THEME
   c. PP daughter of V′ ⟶ GOAL

Consequence:
(10) is uninterpretable. But is that correct?

(10) *[$_{vP}$ Mary AGENT gave+v [$_{VP}$ to Bill ?? t_V a book ??]]

Second strategy (long tradition, based on categorial grammar; see, e.g., Lewis (1972), also Pollard & Sag (1994), Wunderlich (1997), Lechner (2004); adopted here):
(i) Θ-roles are ordered in lexical entries of predicates.
(ii) Θ-roles are mapped to a list of categorial subcategorization features (i.e., structure-building features: [•F•]) in reverse order.

(11) a. *Θ-roles*:
$\Theta_1 \gg \Theta_2 \gg \Theta_3$ (AGENT ≫ THEME ≫ GOAL)
   b. *Subcategorization features*:
$[\bullet P \bullet]_3 \succ [\bullet D \bullet]_2 \succ [\bullet D \bullet]_1$

(12) *Last Resort* (LR, revised):
   a. Every syntactic operation must discharge either [•F•] or [*F*].
   b. Only features on the top of a feature list are accessible.

Note:
(12-b) presupposes that a discharged feature is removed from the lexical item, and deleted. Issues related to morphological realization of case and agreement features may ultimately demand a slightly more complicated approach (according to which discharged features become inactive for further processes in the sense of (12-b) but remain accessible for morphological realization; see Adger (2003), Müller (2008) for discussion); but for present purposes we may keep to the simplest assumption.

More specific assumptions:

- Subcategorization features that do not go back to Θ-grids also enter argument lists.
- AGENT DPs are introduced by v: [•V•] ≻ [•D•]
- Transitive verbs thus take only one argument; ditransitive verbs subcategorize for two arguments.

Extension:
The same goes for probe features: They show up on a separate stack, and if there is more than one, they are ordered on a lexical head (the latter assumption will not be important in this lecture, though).

Conclusion:
There are two stacks of features on lexical items. Given Last Resort in (12), lexical heads look like *push-down automata* (last-in/first-out).

3.3. All Phrases are Phases

Again, I have justified this assumption in lecture 2. The assumption and its consequence:

(13) *Phase*:
All phrases are phases.

Consequence:
Wh-movement must proceed via every XP edge domain on its way to its ultimate target position (the $C_{[\bullet wh\bullet]}$ node that attracts it), given the PIC.

3.4. Edge feature insertion

Observation:
When a phase is complete, it has "exhaust[ed] the lexical subarray from which it is derived" (Chomsky (2000, 109)). Assuming that all operations are triggered by the phase head, this suggests that the phase head is inert once the phase is complete. Hence, the null hypothesis is that the phase is inaccessible for further internal modification at this point. From this perspective, subsequent edge feature insertion (as in (3), (4)) is a peculiar operation.

Proposal:
Replace *after* with *before* in (3): Edge features can only be inserted as long as the phase head is active.

(14) *Edge Feature Condition* (EFC, new version):
An edge feature [•X•] can be assigned to the head γ of a phase only if (a) and (b) hold:
   a. γ has not yet discharged all its structure-building or probe features.
   b. [•X•] ends up on top of γ's list of structure-building features.

In other words:
Assignment of an edge feature [•X•] to γ can take place only to the top of a (non-empty) feature list.

4. Deriving the Condition on Extraction Domain

4.1. Analysis: Merge

Deriving the CED:

1. If an edge feature [•X•] is to be inserted on a phase head γ, it must go to the top of γ's list of structure-building features. (EFC)
2. γ must contain at least one other feature at this point (otherwise it is inert). (EFC)
3. But then, [•X•] is discharged again immediately (last-in/first-out). (LR)
4. Thus, it is impossible to insert an edge feature for a category α that is merged in Γ as the last operation taking place in Γ. (EFC)

5. Therefore, a moved item in the edge domain of an α merged last in Γ is not accessible anymore outside Γ (assuming a non-recursive notion of edge). (PIC)
6. Consequently, extraction from α is predicted to be impossible. (PIC)
7. Given that (outer) specifiers are last-merged in their projections, they are thus barriers for movement. (CED derived)

(15) *Clause structure*:
(...) $[_{\text{CP}}\ \alpha_1$ C $[_{\text{TP}}\ \alpha_2$ T $[_{\text{vP}}\ \alpha_3$ V+v $[_{\text{VP}}\ \alpha_4\ [_{\text{V}'}\ t_V\ \beta\ ]]]]]$

(16) *Why specifiers in (15) are barriers*:
α_i is a specifier that is last-merged in its phase.
   a. Edge feature insertion follows specifier feature discharge:
   $\rightarrow$ γ: [•α•]
   $\rightarrow$ γ: Ø
   $\rightarrow$ γ: [•X•]
   $\rightsquigarrow$ violates (14-a)
   b. Edge feature insertion precedes specifier feature discharge, version 1:
   $\rightarrow$ γ: [•α•]
   $\rightarrow$ γ: [•α•] $\succ$ [•X•]
   $\rightarrow$ γ: [•X•]
   $\rightsquigarrow$ violates (14-b)
   c. Edge feature insertion precedes specifier feature discharge, version 2:
   $\rightarrow$ γ: [•α•]
   $\rightarrow$ γ: [•X•] $\succ$ [•α•]
   $\rightarrow$ γ: [•α•]
   $\rightsquigarrow$ does not help because of (12-b)

Conclusion:
Specifiers are barriers because of the PIC: There is no way to carry out an intermediate movement step from a last-merged specifier to the specifier of the minimal phase above it.

Side remark on notation:
α refers to a syntactic category (a phrase, possibly with rich internal structure); in contrast, [•α•] is a subcategorization feature selecting the category label of α. Thus, strictly speaking, "α" is ambiguous between a syntactic category and its label. This simplification is harmless.

(17) *Why complements in (15) do not have to be barriers*:
β, VP, vP, TP, CP (by assumption) are complements that are first-merged in their phases and have not yet discharged the final structure-building feature of the respective phase head's feature list.

a. Edge feature insertion follows complement feature discharge but precedes specifier feature discharge:

γ: [•β•] ≻ [•α•]
→ γ: [•α•]
→ γ: [•X•] ≻ [•α•] ⇝ violates nothing
→ γ: [•α•]
→ γ: Ø

b. Edge feature insertion precedes complement feature discharge, version 1:

γ: [•β•] ≻ [•α•]
→ γ: [•β•] ≻ [•X•] ≻ [•α•] ⇝ violates (14-b)
→ γ: [•X•] ≻ [•α•]

c. Edge feature insertion precedes complement feature discharge, version 2:

γ: [•β•] ≻ [•α•]
→ γ: [•X•] ≻ [•β•] ≻ [•α•] ⇝ does not help because of (12-b)
→ γ: [•β•] ≻ [•α•]

Conclusion:
Movement out of complements can respect the PIC: There is a stage in the derivation where the complement feature has already been discharged (so that subsequent edge feature insertion can attract an item within the complement), but the specifier feature has not yet been discharged.

Note:
Under this approach, intermediate movement steps to phase edges must take place *before* a (final) specifier is merged. (Also, this approach is incompatible with Anti-Locality requirements on movement; see Abels (2003), Grohmann (2003), among others.)

(18) **DP**$_2$ ... [$_{vP}$ DP$_1$ [$_{v'}$ $\underline{\mathbf{t}''_2}$ [$_{v'}$ V+v [$_{VP}$ DP$_3$ [$_{V'}$ $\underline{\mathbf{t}'_2}$ [$_{V'}$ t$_V$ $\mathbf{t}_2$]]]]]]

(19) *Sentential Subject Constraint effects*:
a. [$_{DP_1}$ Who] did the reporters expect [$_{CP}$ that the principal would fire t$_1$] ?
b. *[$_{DP_1}$ Who] was [$_{CP}$ that the principal would fire t$_1$] expected by the reporters ?
c. *[$_{DP_1}$ Who] did [$_{CP}$ that Mary was going out with t$_1$] bother you ?

(20) *Subject Condition effects*:
a. *[$_{DP_2}$ Who(m)] has [$_{DP_1}$ a comment about t$_2$] annoyed you ?
b. *[$_{PP_3}$ About whom] has [$_{DP_1}$ a comment t$_3$] annoyed you ?

Note:
Assuming that *adjuncts* are last-merged specifiers of special functional projections (Alexiadou (1997), Cinque (1999)), they are also correctly predicted to be barriers.

(21) *Adjunct Condition effects*:
a. *[$_{DP_1}$ Who] did you get jealous [$_{CP}$ because I talked to t$_1$] ?

b. *[$_{PP_1}$ To whom] did they leave [$_{CP}$ before speaking t$_1$] ?
c. *[$_{DP_1}$ Who] did they leave [$_{CP}$ before speaking to t$_1$] ?

Note:
Given that dative ('affected') GOAL arguments are merged last in VP, in SpecV (in contrast to other GOAL arguments that are realized by PPs), they are invariably barriers. This prediction seems correct for German (Müller (1995)).

(22) *Nominative and dative DPs as barriers in German*:
a. *[$_{PP_1}$ Über wen] hat [$_{DP}$ ein Buch t$_1$] den Fritz beeindruckt ?
about whom has a book$_{nom}$ the Fritz$_{acc}$ impressed
b. *[$_{PP_1}$ Über wen] hat der Verleger [$_{DP}$ einem Buch t$_1$] keine Chance gegeben ?
about whom has the publisher$_{nom}$ a book$_{dat}$ no chance$_{acc}$ given

Note:
It has sometimes been argued that certain kinds of subject DPs are transparent for extraction in German (Haider (1983, 1993), Diesing (1992)). As noted by Fanselow (2001, 422), many of the putative counter-examples in German involve passive or unaccusative constructions with the nominative DP in situ, in a complement position, as in (23).

(23) *Extraction from passive and unaccusative subjects in German*:
a. [$_{PP_1}$ Über wen] wurde [$_{DP}$ ein Buch t$_1$] gelesen ?
about whom was a book$_{nom}$ read
b. [$_{PP_1}$ Über wen] ist [$_{DP}$ ein Buch t$_1$] erschienen ?
about whom is a book$_{nom}$ appeared

A similar complication:
Differences in extractions from nominative DPs with individual-level and stage-level predicates (Diesing (1992)). Suggestion: To the extent that the effect is real, it can presumably be reinterpreted along the same lines (difference between VP-internal complements and specifiers of v).

(24) *Stage-level vs individual-level predicates*:
a. ??Was$_1$ sind [$_{DP}$ t$_1$ für Leguane] intelligent ?
what are for iguanas$_{nom}$ intelligent
b. Was$_1$ sind [$_{DP}$ t$_1$ für Leguane] verfügbar ?
what are for iguanas$_{nom}$ available

A third type of apparent counter-examples:
PPs headed by *von* ('of'): (25-a). For these, a non-movement analysis seems systematically available; see below. (Similar reasonings apply in the case of DP split constructions such as (25-b).)

(25) *Further exceptions*:

a. ?[$_{PP_1}$ Zu to/concerning diesem this Problem problem] haben have [$_{DP}$ einige several Briefe letters$_{nom}$ (t_1)] den the Sender station erreicht reached

b. [$_{NP}$ Briefe] letters$_{nom}$ haben have mich me [$_{DP}$ keine none$_{nom}$ (t_1)] erreicht reached

Observation:
The most convincing counter-examples to the generalization that subject DPs in Specv (or, optionally, SpecT) are barriers for extraction in German typically involve configurations where the subject DP is adjacent to V as a result of object scrambling. I take this phenomenon to be real: melting.

4.2. Analysis: Agree

Problems:
(i) So far, the prediction is that Theme (accusative) objects can avoid becoming a barrier in VP only if there is something else that is merged later. This prediction is not borne out; see (26-ab) (examples from German).
(ii) Movement out of Theme (accusative) objects is known to depend on a tight relation between V and N ("natural predicate"); see (26-bc) (Cattell (1976)). This fact is not accounted for either under present assumptions.

(26) *Accusative DPs as partly transparent local domains*:

a. [$_{PP_1}$ Worüber] about what hat has er he$_{nom}$ der Maria the Maria$_{dat}$ [$_{DP}$ ein a Buch book$_{acc}$ t_1] gegeben given ?

b. [$_{PP_1}$ Worüber] about what hat has der Fritz the Fritz$_{nom}$ [$_{DP}$ ein a Buch book$_{acc}$ t_1] gelesen read ?

c. *[$_{PP_1}$ Worüber] about what hat has der Fritz the Fritz$_{nom}$ [$_{DP}$ ein a Buch book$_{acc}$ t_1] geklaut stolen ?

Analysis in Müller (1995), Sauerland (1995), Davies & Dubinsky (2003), Schmellentin (2006); based on Baker (1988):

- Abstract incorporation of N into V must apply to remove barrier status from an NP. (Assumption: Head movement opens barriers, and abstract incorporation is head movement at LF.)
- Abstract incorporation can be viewed as co-indexing under minimality (see Head Movement Constraint) in syntax.
- V-N:*read-book* is a natural predicate resulting from abstract incorporation; V-N:*steal-book* is not (for most speakers).

A problem with the abstract incorporation analysis:
The analysis is incompatible with DP-over-NP structures (Abney (1987)): N cannot abstractly incorporate into V in the presence of an intervening D.

Reanalysis:

- Abstract incorporation is an instance of Agree: If V and N form a natural predicate, they share an abstract feature [∗f∗]/[f].
- Agree requires c-command, but is less local: An intervening D is unproblematic.

(27) *Abstract incorporation as [*f*]/[f] Agree*:

a. [$_{VP}$ $V_{[*f*]}$ [$_{DP}$ D [$_{NP}$ $N_{[f]}$ PP]]] *read book*

b. [$_{VP}$ V [$_{DP}$ D [$_{NP}$ N PP]]] *steal book*

Note:
This implies that either the PIC is relaxed for Agree, or that Agree can be successive-cyclic. Something to this effect is required independently, under many versions of the PIC (cf., e.g., agreement of T with nominative objects in Icelandic; and the analysis of long-distance agreement in general, as mentioned at the end of lecture 2).

Probe features and hierarchies:
• Probe features are on a separate stack of a phase head.

Observation:
Probe features on a phase head can never remove barrier status from a last-merged specifier:

1. A probe feature cannot carry out Agree with (some item in) its specifier (Chomsky (2001, 2005a)).

2. A probe feature cannot carry out Agree with (some item in) its complement after a specifier has been merged. (For instance, Agree(v,α in VP) (for accusative case assignment) must precede Merge(DP_{ext},v′).) This follows from a restrictive version of the *Strict Cycle Condition* (Chomsky (1973)).

(28) *Strict Cycle Condition* (SCC):
Within the current domain α, a syntactic operation may not exclusively apply to positions that are included within another domain β that is dominated by α.

Consequences:
(i) Last-merged specifiers continue to be barriers.
(ii) Non-last-merged specifiers and complements are not barriers.
(iii) Last-merged complements are not barriers if the phase head has an additional probe feature for Agree with/into the complement.

Note:
(ii) is confirmed by many cases (e.g., (29), from Koster (1987), Müller (1995)); but it may ultimately prove too liberal: For instance, certain accusative objects might be barriers despite the presence of a higher dative object. Possible solution: The two objects show up in two distinct verbal projections.

(29) a. Da_1 ist [$_{VP}$ er [$_{V'}$ [$_{PP}$ t_1 mit] [$_{V'}$ zum Doktor gegangen]]] v
there is he with to the doctor gone

b. *Da_1 hat [$_{vP}$ er [$_{v'}$ [$_{VP}$ [$_{PP}$ t_1 mit] [$_{V'}$ das Rennen beendet]] v]]
there has he with the race completed

(30) *Why last-merged complements do not have to be barriers*:
γ (e.g., V) is merged with α (e.g., DP) and has thereby discharged all its structure-building features.

a. Edge feature insertion follows complement feature discharge, no probe feature:

$\rightarrow$ $\boxed{\gamma\text{: } [\bullet\alpha\bullet]}$
$\rightarrow$ γ: Ø $\rightsquigarrow$ violates (14-a)
$\rightarrow$ $\boxed{\gamma\text{: } [\bullet X\bullet]}$

b. Edge feature insertion follows complement feature discharge, with probe feature:

$\boxed{\gamma\text{: } [\bullet\alpha\bullet]\ [*f*]}$
$\rightarrow$ $\boxed{\gamma\text{: } [*f*]}$ $\rightsquigarrow$ violates nothing
$\rightarrow$ $\boxed{\gamma\text{: } [\bullet X\bullet]\ [*f*]}$

Note:
(i) To avoid a SCC violation (as it would occur with specifiers), the probe feature must be discharged before the structure-building edge feature in (30-b) (this is unproblematic given that the two features are on different stacks).
(ii) V does not assign structural accusative case (v does); hence, it cannot be case assignment that provides the relevant Agree relation.
(iii) Additional assumptions are necessary to ensure the possibility of barrier status of lexically case-marked DPs (e.g., V assigns lexical case only after movement to v).

Clausal heads:
(i) A clausal head (Vs, v, T, ...) *status-governs* (Bech (1955/1957)) the head of its verbal complement.
(ii) This can be viewed as co-indexing of heads (abstract incorporation, hence Agree in the present approach); Sternefeld (1991), Müller (1995).
(iii) Consequently, clausal projections are not barriers, even if there is no specifier present (and the projection is thus last-merged).

(31) *Extraction from DP subjects of unaccusative verbs across specifier-less projections in German (Grewendorf (1989), Fanselow (2001)):*
Worüber$_2$ denkst du [$_{CP}$ t_2'''''' dass [$_{TP}$ t_2'''' [$_{vP}$ t_2'''' [$_{VP}$ t_2''' [$_{DP}$ t_2'' ein [$_{NP}$ t_2'
about what think you that a
Buch t_2]] t_V] erscheint-v] T]] ?
book appears

5. Freezing

Question:
Are moved items always barriers for extraction to a higher position (freezing)?
(See Ross (1967), Wexler & Culicover (1980), Browning (1991), Collins (1994), Takahashi (1994), Boeckx (2003), Rizzi (2006), and lecture 1.)

1. SpecC: Cinque (1990), Sternefeld (1991) vs. Chomsky (1986a), Lasnik & Saito (1992).

2. SpecT: Browning (1991), Collins (1994), Takahashi (1994), Chomsky (1995), Broekhuis (2005), Rezac (2004), Boeckx & Grohmann (2007) vs. Chomsky (2005a), Gallego & Uriagereka (2006).

(32) *Movement to SpecC in Spanish* (Chomsky (1986a)):
a. *Esta es la autora [$_{PP_1}$ de la que] [$_{DP_2}$ varias traducciones t_1] han
this is the author by whom various translations have
ganado premios internacionales
won awards international
b(*)[$_{PP_1}$ De que autora] no sabes [$_{CP}$ [$_{DP_2}$ que traducciones t_1] han
by what author not you know which translations have
ganado t_2 premios internacionales] ?
won awards international

(33) *Movement to SpecC in English* (Lasnik & Saito (1992)):
a.??(*)Who$_1$ do you wonder [$_{DP_2}$ which picture of t_1] Mary bought t_2 ?
b.??(*)Who$_1$ do you wonder [$_{DP_2}$ which picture of t_1] t_2 is on sale ?

(34) *Movement to SpecT in English* (Chomsky (2005a)):
a. *[$_{PP_1}$ Of which car] did [$_{DP_2}$ the driver t_1] [$_{vP}$ t_1 cause a scandal] ?
b.(*)[$_{PP_1}$ Of which car] is [$_{DP_2}$ the driver t_1] likely [$_{TP}$ t_2' to t_2 cause a scandal] ?

Observation:
If nothing else is said, the present system predicts that freezing effects can be avoided with complement movement (as in (33-a)): On the VP cycle, an edge feature can be inserted for both DP_1 and DP_2, and from that point on, the two items move hand in hand (but separately) to higher specifiers (see Heck (2004) for discussion).

Problem:
(i) There are many well-established freezing effects; see, e.g., (35), (36).
(ii) Putative exceptions tend to involve *of*-phrases, which are known to be independently available as optional arguments in many cases (e.g., this is the only possibility in (37), which would otherwise have to involve long-distance scrambling from a finite clause in German).

(35) *Freezing effects with VP topicaliztion in German* (Müller (1998)):

a. Ich denke [$_{CP}$ [$_{VP}$ das Buch gelesen]$_2$ hat keiner t_2]
I think the book read has no-one

b. [$_{DP}$ Was]$_1$ denkst du [$_{CP}$ t'_1 hat keiner [$_{VP}$ t_1 gelesen]$_2$] ?
what think you has no-one read

c. *[$_{DP}$ Was]$_1$ denkst du [$_{CP}$ [$_{VP}$ t_1 gelesen]$_2$ hat keiner t_2] ?
what think you gelesen has no-one

(36) *Freezing effects with PP topicalization in English* (Postal (1972)):

a. Who$_1$ do you think that he will talk [$_{PP_2}$ to t_1] ?

b. *Who$_1$ do you think that [$_{PP_2}$ to t_1] he will talk t_2 ?

(37) *Long-distance scrambling in German?*
dass ich [$_{PP_1}$ von Peter] glaube [$_{CP}$ dass [$_{DP_2}$ eine neue CD (t_1)] erschienen ist]
that I of Peter believe that a new CD appeared is

Conclusion:
The freezing generalizations in (38) holds.

(38) *Freezing Generalization*:
At S-structure, a trace t may not be included in a moved XP (i.e., an XP that binds a trace) if the antecedent of t c-commands XP.
(This permits remnant movement.)

(39) *Anti-freezing effects with VP topicalization in German – remnant movement*:

a. [$_{VP_2}$ t_1 Zu lesen] hat [$_{DP_1}$ es] keiner t_2 versucht
to read has it_{acc} no-one$_{nom}$ tried

b. [$_{VP_2}$ t_1 Gelesen] hat der Fritz [$_{DP_1}$ das Buch] nicht
read has the Fritz$_{nom}$ the book$_{acc}$ not

Assumptions about movement-inducing features:
(i) [•F•] features that trigger internal Merge are on the same stack as [•F•] features that trigger external Merge, but invariantly lower.
(ii) Movement-inducing features include [•wh•] (for *wh*-movement), [•top•] (for topicalization), [•Σ•] (for scrambling to Specv and SpecV; see lecture 2), [•D•] (for EPP-movement to SpecT).
(iii) Multiple edge feature insertion follows a feature hieararchy going back to Williams (1974).

Analysis:

1. In [$_{XP}$ [$_{ZP}$ WP [$_{W'}$ W ...]] [$_{X'}$ X ...]], WP is not part of the edge of X.
2. Hence, in (39), DP_1 and VP_2 both have to move to Specv, because of the PIC (or, in the case of (39-b), the requirement to discharge [•Σ•]).

3. If two items need to move, there is a fixed order of edge feature insertion operations (for structure-building features outside the current derivation). This order follows a feature hierarchy that mirrors the typical hierarchy in phrase structures: [•Σ•] ≫ [•D•] ≫ [•top•] ≫ [•wh•] (see Grewendorf (2003, 2004) and Abels (2006), building on Williams (1974, 2003), Sternefeld (1992) (the 'Williams cycle')).
4. In (39-ab), movement of DP_1 to Specv precedes movement of VP_2 to Specv. In (35-c), movement of VP_2 precedes movement of DP_1. See (40-a).
5. Suppose that (a minimal extension of) the Strict Cycle Condition blocks insertion of an edge feature for a lower category DP_1 after it has triggered the insertion of an edge feature for the higher, more inclusive category VP_2.

(40) *Cyclity restrictions on multiple edge feature assignment*:

a. Multiple assignment of categorially marked edge features [•F_i•], [•F_j•] to a single phase head respects the hierarchy [•F_i•] ≫ [•F_j•] (where [•F_j•] is intrinsically associated with a higher position in the clausal structure than [•F_i•]).

b. An edge feature cannot be assigned to a head γ for a category β if an edge feature has been assigned to γ for a category α, and α includes β.

(41) *A legitimate remnant movement derivation*:
[$_{X'}$ [$_{ZP_2}$ WP_1 [$_{Z'}$ ... Z]] X:[*f*]]

a. [$_{X'}$ [$_{ZP_2}$ WP_1 [$_{Z'}$ ... Z]] X:[*f*], [•F_i•]]
b. [$_{X'}$ [$_{ZP_2}$ WP_1 [$_{Z'}$ ... Z]] X: [•F_i•]]
c. [$_{X'}$ [$_{ZP_2}$ WP_1 [$_{Z'}$ ... Z]] X: [•F_j•] ≻ [•F_i•]]
d. [$_{X'}$ [$_{ZP_2}$ WP_1 [$_{Z'}$ ... Z]] [$_{X'}$ t_2 X: [•F_i•]]]
e. [$_{XP}$ WP_1 [$_{X'}$ [$_{ZP_2}$ t_1 [$_{Z'}$ ... Z]] [$_{X'}$ t_2 X]]]

(42) *An illegitimate freezing derivation*:
[$_{X'}$ [$_{ZP_2}$ WP_1 [$_{Z'}$ ... Z]] X:[*f*]]

a. [$_{X'}$ [$_{ZP_2}$ WP_1 [$_{Z'}$ ... Z]] X:[*f*], [•F_i•]]
b. [$_{X'}$ [$_{ZP_2}$ WP_1 [$_{Z'}$ ... Z]] X: [•F_i•]]
c. *[$_{X'}$ [$_{ZP_2}$ WP_1 [$_{Z'}$ ... Z]] X: [•F_j•] ≻ [•F_i•]]

Note:
For freezing effects where two identical structure-building features occur, a minimal extension of what has been assumed so far is required: There is an addition to (40-a) such that in cases of identical structure-building features, the higher, more inclusive category must be targetted first; insertion of an identical feature for a second category dominated by the first one is then always impossible, because of (40-b). (Recall the RAOA in lecture 2.)

(43) *Illicit remnant movement constructions in German* (Takano (1994), Grewendorf & Sabel (1994), Kitahara (1997), and Müller (1998)):

a. *dass [$_{VP_2}$ t_1 zu lesen] es_1 keiner t_2 versucht hat
that to read it no-one tried has

b. *dass [$_{VP_2}$ t_1 gelesen] der Fritz das Buch$_1$ nicht t_2 hat
that read the Fritz the book not has

Note:
In (43), VP_2 and DP_1 are moved because of the same structure-building feature (viz., [•Σ•]).

6. Melting

There is a suprising further effect that is predicted under present assumptions: A specifier α of Γ ceases to be an island when some β becomes an outer specifier of Γ by movement.

6.1. Melting effects with scrambling in German

(44) *Melting effects with was-für split; subjects*:
a. *Was$_1$ haben [$_{DP_3}$ t_1 für Bücher] [$_{DP_2}$ den Fritz] beeindruckt ?
what have for books$_{nom}$ the Fritz$_{acc}$ impressed
b. Was$_1$ haben [$_{DP_2}$ den Fritz] [$_{DP_3}$ t_1 für Bücher] t_2 beeindruckt ?
what have the Fritz$_{acc}$ for books$_{nom}$ impressed

Note:
There is no psych-verb issue here. As shown by Grewendorf (1989) on the basis of a number of tests, a psych verb like *beeindrucken* ('impress') takes a regular external argument in German; i.e., the nominative DP here is never VP-internal. (As a matter of fact, one of the ten or so tests employed in that work is based on extraction from DP, as in (44-a); see Grewendorf (1989, 182).) However, the pattern in (44) would be identical if *Bücher* ('books') were to be replaced with *Leute* ('people'), and *beeindruckt* ('impressed') with the agentive, non-psych verb *getroffen* ('met').

(45) *Melting effects with PP extraction from DP; subjects*:
a. *[$_{PP_1}$ Über wen] hat [$_{DP_3}$ ein Buch t_1] [$_{DP_2}$ den Fritz] beeindruckt ?
about whom has a book$_{nom}$ the Fritz$_{acc}$ impressed
b. [$_{PP_1}$ Über wen] hat [$_{DP_2}$ den Fritz] [$_{DP_3}$ ein Buch t_1] t_2 beeindruckt ?
about whom has the Fritz$_{acc}$ a book$_{nom}$ impressed

Analysis:
(i) Scrambling is triggered by a designated structure-building feature on v: [•Σ•]
(ii) If v still has a [•Σ•] feature left after discharge of [•D•] (= Merge of the external argument DP), an edge feature [•X•] can be inserted before the phase is complete.
(iii) Therefore, the phase head can now attract an item out of the external argument to its edge position.

(46) $\underline{PP_1}$ ... [$_{vP}$ DP_2 [$_{v'}$ $\underline{t''_1}$ [$_{v'}$ [$_{DP_3}$ $\underline{t'_1}$ ... $\underline{t_1}$] [$_{v'}$ [$_{VP}$ ... t_2 ...V] v]]]]

(47) *How the melting effect is derived*:

	γ: [•β•] ≻ [•α•] ≻ [•δ•]	
→	γ: [•α•] ≻ [•δ•]	
→	γ: [•δ•]	
→	γ: [•X•] ≻ [•δ•]	⇝ violates nothing
→	γ: [•δ•]	
→	γ: Ø	

Prediction:
The same effect arises in double object constructions; V adjacency as such is irrelevant.

(48) *Melting effects without V adjacency; subjects*:
a. *Was$_1$ haben [$_{DP_3}$ t_1 für Leute] [$_{DP_2}$ dem Fritz] [$_{DP_3}$ Bücher]
what have for people$_{acc}$ the Fritz$_{dat}$ books$_{acc}$
geschenkt ?
given
b. Was$_1$ haben [$_{DP_2}$ dem Fritz] [$_{DP_3}$ t_1 für Leute] t_2 [$_{DP_3}$ Bücher]
what have the Frith$_{dat}$ for people books
geschenkt ?
given

(49) *Melting effects with indirect objects*:
a. *Was$_1$ hat er [$_{DP_3}$ t_1 für Leuten] [$_{DP_2}$ den Fritz] vorgestellt ?
what has he$_{nom}$ for people$_{dat}$ the Fritz$_{acc}$ introduced
b. Was$_1$ hat er [$_{DP_2}$ den Fritz] [$_{DP_3}$ t_1 für Leuten] t_2 vorgestellt ?
what has he$_{nom}$ the Fritz$_{acc}$ for people$_{dat}$ introduced

6.2. Melting effects with scrambling in Czech

The same phenomenon shows up in Czech; it can be seen very clearly in DP split constructions (Fanselow & Lenertová (2007), Kučerová (2006)), but also with other instances of movement from DP. The analysis is essentially identical to that given for German (assuming that Czech scrambling of the type shown here targets Specv); the different position of the verb is irrelevant. (Data and judgements in this section are due to Petr Biskup and Denisa Lenertová; the judgements have informally been confirmed by Pavel Caha, Ivona Kučerová, and other Czech linguistis.)

(50) *Melting effects with DP split constructions 1*:
a. *Stará$_1$ neudeřila [$_{DP_3}$ žádná t_1] Petra$_2$
old$_{nom}$ hit no$_{nom}$ Petr$_{acc}$
'No old one hit Petr.'
b.(?)Stará$_1$ neudeřila Petra$_2$ [$_{DP_3}$ žádná t_1] t_2
old$_{nom}$ hit Petr$_{acc}$ no$_{nom}$
'No old one hit Petr.'

(51) *Melting effects with DP split constructions 2*:

a. *[$_{NP_1}$ Holka] neudeřila [$_{DP_3}$ žádná t_1] Petra$_2$
girl$_{nom}$ hit no$_{nom}$ Petr$_{acc}$
'No girl hit Petr.'

b. [$_{NP_1}$ Holka] neudeřila Petra$_2$ [$_{DP_3}$ žádná t_1] t_2
girl$_{nom}$ hit Petr$_{acc}$ no$_{nom}$
'No girl hit Petr.'

c. [$_{NP_1}$ Holku] neudeřil Petr$_2$ [$_{DP_3}$ žádnou t_1]
girl$_{acc}$ hit Petr$_{nom}$ no$_{acc}$
'Petr hit no girl.'

Note:
The issue of intervention and anti-intervention effects in DP split constructions in Czech (Kučerová (2006), based on Beck (1997), Pesetsky (2000)) is avoided here.

(52) *Melting effects with PP extraction from DP*:

a. *[$_{PP_1}$ O starých autech] oslovila [$_{DP_3}$ kniha t_1] Petra$_2$
about old cars fascinated book$_{nom}$ Petr$_{acc}$
'A book about old cars fascinated Petr.'

b.(?)[$_{PP_1}$ O starých autech] oslovila Petra$_2$ [$_{DP_3}$ kniha t_1] t_2
about old cars fascinated Petr$_{acc}$ book$_{nom}$
'A book about old cars fascinated Petr.'

c. [$_{PP_1}$ O starých autech] četl Petr$_2$ [$_{DP_3}$ knihu t_1]
about old cars read Petr$_{nom}$ book$_{acc}$
'Petr read a book about old cars.'

(53) *Melting effects with wh-movement from DP (in violation of the Left Branch Condition)*:

a. *Čí$_1$ udeřila [$_{DP_3}$ t_1 sestra] Petra$_2$ t_2 ?
whose hit sister$_{nom}$ Petr$_{acc}$
'Whose sister hit Petr?'

b.(*)Čí$_1$ udeřila Petra$_2$ [$_{DP_3}$ t_1 sestra] t_2 ?
whose hit Petr$_{acc}$ sister$_{nom}$
'Whose sister hit Petr?

c. Čí$_1$ udeřil Petr [$_{DP_3}$ t_1 sestru] ?
whose hit Petr$_{nom}$ sister$_{acc}$
'Whose sister did Petr hit?'

d. Čí$_1$ Petr udeřil [$_{DP_3}$ t_1 sestru] ?
whose Petr$_{nom}$ hit sister$_{acc}$
'Whose sister did Petr hit?'

Note:
The Czech examples differ from the German examples with respect to the position of the verb. In all the cases listed here (except for (53-d)), the verb precedes both subject and object. Since extraction from the subject is only possible when the object is scrambled, and as a result comes to separate the verb and the subject, the conclusion arrived at on the basis of data like (48-b) in German is reinforced: The melting effect (as it can be seen with subjects in German) cannot be reduced to an adjacency effect.

6.3. Further Issues

Observation:
The present approach differs from all the other theories of locality with a focus on CED effects discussed in lecture 1 in that it envisages the possibility that some XP α may or may not be a barrier in two syntactic contexts that do not differ with respect to the relation between α and the surrounding heads of the clausal projection.

Question:
Maybe DP_3 does in fact not occupy identical positions in the (a)-examples and in the (b)-examples of the last two subsections?

Answer:
It does.

(54) *Subject DPs do not participate in predicate fronting in German*:

a. *[$_{vP_2}$ [$_{DP_3}$ Ein Buch] t_1 beeindruckt] hat ihn$_1$ nicht t_2
a book$_{nom}$ impressed has him$_{acc}$ not

b. [$_{VP_2}$ [$_{DP_3}$ Ein Buch] gelesen] hat er$_1$ nicht t_2
a book$_{acc}$ read has he$_{nom}$ not

(55) *Subject DPs do not participate in long-distance predicate fronting after wh-object movement* (Fanselow (1987), Müller (1998)):

a. *[$_{vP_2}$ [$_{DP_3}$ Ein Buch t_1] t_4 beeindruckt] weiß ich nicht [$_{CP}$ [$_{PP_1}$ über
a book$_{nom}$ impressed know I now about
wen] ihn$_4$ t_2 hat]
whom him$_{acc}$ has

b. ??[$_{VP_2}$ [$_{DP_3}$ Ein Buch t_1] gelesen] weiß ich nicht [$_{CP}$ [$_{PP_1}$ über wen] er$_4$
a book read know I not about whom he
t_2 hat]
has

Conclusion:
Subject DPs in German (in constructions that are neither unaccusative nor passive) never show up VP-internally.

Alternative approach:
Subject DPs (labelled DP_3) in (44), (45), and (48) are in Specv in the well-formed cases, and in SpecT in the ill-formed cases; and the theory of locality is somehow sensitive to this difference. (See the freezing analyses discussed in lecture 1.)

Note:
Such an account does not seem viable either.

6.3.1. Conceptual Reasons

Whereas there is good evidence that the subject DP is within vP in examples like (44-b) (given that scrambling in German cannot target a domain beyond vP), there is no evidence whatsoever that the subject DP has undergone optional raising to SpecT in ungrammatical (non-melting) examples like (44-a); indeed, from a theory-internal point of view, it is hard to see what could force (string-vacuous) subject raising to SpecT in (cases like) (44-a) while (at least optionally) blocking it in (cases like) (44-b).

6.3.2. Subjects to the Right of a Particle

Webelhuth (1992), Diesing (1992), Haider (1993) and others have proposed that certain items (like the particles *ja*, *doch*, *denn*, *etwa*) demarcate (what is in current terminology) the vP edge. Suppose that this is the case (for base generation; see below). The addition of a particle preceding the subject DP does not improve extraction from the subject DP in the examples that do not involve local object scrambling; on the other hand, the melting examples stay well formed.

(56) *Extraction from subjects showing up to the right of a particle*:

a. *Was$_1$ haben denn [$_{DP_3}$ t$_1$ für Bücher] [$_{DP_2}$ den Fritz] beeindruckt ?
what have PRT for books$_{nom}$ the Fritz$_{acc}$ impressed

b. Was$_1$ haben denn [$_{DP_2}$ den Fritz] [$_{DP_3}$ t$_1$ für Bücher] t$_2$ beeindruckt ?
what have PRT the Fritz$_{acc}$ for books$_{nom}$ impressed

c. Was$_1$ haben [$_{DP_2}$ den Fritz] denn [$_{DP_3}$ t$_1$ für Bücher] t$_2$ beeindruckt ?
what have the Fritz$_{acc}$ PRT for books$_{nom}$ impressed

d. *[$_{PP_1}$ Über wen] hat wohl [$_{DP_3}$ ein Buch t$_1$] [$_{DP_2}$ den Fritz]
about whom has PRT a book$_{nom}$ the Fritz$_{acc}$
beeindruckt ?
impressed

e. [$_{PP_1}$ Über wen] hat wohl [$_{DP_2}$ den Fritz] [$_{DP_3}$ ein Buch t$_1$] t$_2$
about whom has PRT the Fritz$_{acc}$ a book$_{nom}$
beeindruckt ?
impressed

f. [$_{PP_1}$ Über wen] hat [$_{DP_2}$ den Fritz] wohl [$_{DP_3}$ ein Buch t$_1$] t$_2$
about whom has the Fritz$_{acc}$ PRT a book$_{nom}$
beeindruckt ?
impressed

Assumptions:
(i) Particles like *denn* and *wohl* do not enter the syntactic derivation via structure-building features.
(ii) Given that scrambling is confined to the vP/VP domain in German, the particles in question may demarcate the vP edge before movement, but do not have to show up at the left phonological border of vP after scrambling has applied.

6.3.3. Subjects to the Left of a Particle

Consider finally what happens when these kinds of particles are added in a position to the right of the subject DP.
(i) On the one hand, it does not come as a surprise that judgements for (57-ac) stay as they are for the corresponding examples in (56-ad) (the subject DP is an island to begin with, independently of a freezing effect, and there is no melting configuration because the object has not passed the subject).
(ii) On the other hand, an order with the particle following both the subject (from which extraction takes place) and the object also leads to ungrammaticality; see (57-bd). This follows as a freezing effect.

(57) *Freezing effects with subjects to the left of a particle*:

a. *Was$_1$ haben [$_{DP_3}$ t$_1$ für Bücher] denn t$_3$ [$_{DP_2}$ den Fritz] beeindruckt ?
what have for books$_{nom}$ PRT the Fritz$_{acc}$ impressed

b. *Was$_1$ haben [$_{DP_2}$ den Fritz] [$_{DP_3}$ t$_1$ für Bücher] denn t$_3$ t$_2$
what have the Fritz$_{acc}$ for books$_{nom}$ PRT
beeindruckt ?
impressed

c. *[$_{PP_1}$ Über wen] hat [$_{DP_3}$ ein Buch t$_1$] wohl t$_3$ [$_{DP_2}$ den Fritz]
about whom has a book$_{nom}$ PRT the Fritz$_{acc}$
beeindruckt ?
impressed

d. *[$_{PP_1}$ Über wen] hat [$_{DP_2}$ den Fritz] [$_{DP_3}$ ein Buch t$_1$] wohl t$_3$ t$_2$
about whom has the Fritz$_{acc}$ a book$_{nom}$ PRT
beeindruckt ?
impressed

(58) *A loophole? – Intermediate melting*

*Was$_1$ haben [$_{TP}$ [$_{DP_3}$ t$_1$ für Bücher] [$_{vP}$ [$_{DP_2}$ den Fritz] [$_{v'}$ t$'_1$ [$_{v'}$ t$_3$ [$_{v'}$ [$_{VP}$ t$_2$
what have for books$_{nom}$ the Fritz$_{acc}$
beeindruckt] v]]]] T] ?
impressed

Two possible solutions:

- (58) is a Duke-of-York derivation (Pullum (1979)): The order A∼B is first changed into the order B∼A, which is subsequently changed into an order A∼B again, with no interaction with other material (C) involved. Ross (1967), Haider (1993): Such cases of *globally string-vacuous optional movement* need to be blocked in any theory that envisages optional movement; otherwise sentences could have infinite numbers of legitimate derivations.
- Subjects are in fact not part of the edge domain of vP in their base position; only a derived specifier would count as part of the edge. Then, movement of the subject DP$_3$ in (58) would have to proceed via a further specifier of vP, and this would give rise to the dilemma for freezing derivations sketched in section 5 – both

the subject DP_3 and the *wh*-element to be extracted from it then need to move to an outer specifier of v, triggered by [•D•] in one case, and by [•wh•] in the other, with the edge feature for the more inclusive category inserted first (and, as a consequence, insertion for the dominated category not available anymore).

(59) *A possible argument for the second solution*:

*Was$_1$ haben [$_{DP_3}$ t_1 für Bücher] [$_{DP_2}$ den Fritz] denn t_3 t_2 beeindruckt ?
what have for books$_{nom}$ the Fritz$_{acc}$ PRT impressed

7. Outlook and Conclusion

7.1. Outlook

Observation:
It has sometimes been claimed, for certain movement types or certain languages, that subjects are not necessarily barriers for extraction.

- Haider (1983, 1993) on German
- Frantz (1980) on Blackfoot
- Bickel (2004) on Belhare
- Lasnik & Saito (1992), Takahashi (1994), Rackowski & Richards (2005) on Japanese (for null operator movement).
- Stepanov (2007) on Navajo, Turkish, Palaun, Hungarian, Russian

Assumption:
(i) Many of the putatitve counter-examples to the generalization that subjects in Specv are islands can be rejected by showing that they either involve VP-internal arguments or no extraction at all, or melting.
(ii) However, it may be that such a way out is not available for all constructions, and all languages where apparent exceptions from the CED have been observed.

What can be done?

- One can adopt a freezing approach: Specv is transparent, SpecT is a barrier.
  Problem: This is not compatible with the data given above.
- One can weaken the basic assumptions, and invoke parametrization.
  Example: Rackowski & Richards (2005, 585) assume that CED effects with subjects can be avoided if a language can a establish an Agree relation between v and a specifier.
  (Also cf. Gallego & Uriagereka (2006).)
  Problem: This violates the c-command requirement on Agree relations assumed in Chomsky (2001, 2005a) and much related work.
- One can pursue a *pseudo-melting* approach and look for a (possibly covert) item that is merged after an external argument DP (CP) in these cases.

7.1.1. Expletive Constructions in English

Observation (Moro (1997), Lasnik & Park (2003)):
The associate DP in English expletive constructions is not inherently a barrier; see (60-ab). (In contrast, DP is a barrier for extraction in locative inversion constructions, as in (60-c)).

(60) *English expletive constructions*:

a. Which wall$_1$ do you think there$_3$ was [$_{vP}$ t_3 [$_{v'}$ v [$_{DP_2}$ a picture of t_1]]] ?
b. Which candidate$_1$ were there$_3$ [$_{DP_2}$ posters of t_1] all over town ?
c. *Who$_1$ do you think [$_{PP_3}$ on this wall] hung [$_{DP_2}$ a picture of t_1] t_3 ?

Assumption (Williams (1994, 2006), Hazout (2004), Hartmann (2005)):
The expletive is a subject, and the DP its predicate, with both items merged in the same projection (vP).

Consequence:
DP_2 in (60-ab) is in fact not last-merged in its projection because *there* is merged later, in the same projection (subsequently, *there* undergoes raising to SpecT). Therefore, DP_2 does not have to be an island for extraction.

7.1.2. Subject Clauses in German

Another case that might shed some light on this issue is that of a German expletive pronoun *es* optionally accompanying a finite subject clause from which extraction has taken place. Fanselow & Mahajan (2000) claim that (61-a) (extraction in the presence of *es*) is just as good as (61-b) (extraction from a subject clause without *es* being present); interestingly, for some speakers, the presence of *es* actually *improves* the example. (That said, for what is perhaps the majority of speakers, both examples are equally ungrammatical, as one would expect under the approach developed above; also see Stechow (2000).)

(61) *Extraction from finite subject clauses with and without an expletive*:

a. #Wen$_1$ ärgert es dich [$_{CP}$ dass sie t_1 liebt] ?
whom$_{acc}$ annoys it you$_{acc}$ that she$_{nom}$ loves
b. #Wen$_1$ ärgert dich [$_{CP}$ dass sie t_1 liebt] ?
whom$_{acc}$ annoys you$_{acc}$ that she$_{nom}$ loves

Data judgements:
(i) Fanselow & Mahajan (2000): (61-ab) are both well formed.
(ii) Stechow (2000): (61-ab) are both ill formed.
(iii) Some speakers: The presence of *es improves* the example.

Assumptions needed to derive (iii) (pseudo-melting):
(i) The (phrase headed by the) expletive does not stand in a dominance relation with the subject clause (as in Ross (1967) and much later work).
(ii) The expletive is merged after the finite subject clause, but within the same

projection.

Consequence:
Some item in the left edge of the subject clause will be able to undergo edge-feature driven movement to an outer vP specifier (while the subject clause is still in situ), and a CED effect can be avoided.
(Speculation on (61-b) if it is accepted as grammatical: zero expletives.)

Possible extension to uncontroversial data:
(Zero or overt) expletives might exempt subject infinitives in German from barrier status.

(62) *Extraction from subject infinitives in German* (Haider (1983, 1993), Sternefeld (1985), Grewendorf (1989)):

a. Was_1 hat es sich nicht gehört $[_{\text{CP}}\ t'_1$ PRO t_1 zu beanstanden] ?
what_{acc} has it not been proper to object to

b. Was_1 hat $[_{\text{CP}}\ t'_1$ PRO t_1 zu beanstanden] sich nicht gehört ?
what_{acc} has to object to not been proper

c. Was_1 hat sich nicht gehört $[_{\text{CP}}\ t'_1$ PRO t_1 zu beanstanden] ?
what_{acc} has not been proper to object to

Caveat:
The main purpose of this subsection is not to justify actual analyses, but rather to show a direction in which one might profitably look upon encountering exceptions to the CED with external arguments in Specv that are transparent for extraction (or related configurations), in a given language: In those cases, it might well be that there is a (possibly non-overt) item that is merged later, in the same projection, which thereby permits the insertion of an edge feature for some item in the specifier of an otherwise opaque XP, thereby creating a pseudo-melting effect.

A similar reasoning:
Bittner & Hale's (1996) treatment of accusative case assignment in terms of abstract pseudo-coarguments

7.2. Conclusion

Question:
To what extent are the four main assumptions underlying the present analysis crucial?

(63) a. All syntactic operations are driven by features of lexical items.
b. These features are ordered on lexical items.
c. All phrases are phases.
d. Edge features that trigger intermediate movement steps can be added only as long as the phase head is still active.

Answer:
Assumption (63-d) is important; the remaining three assumptions can to some extent be

modified or replaced with alternative assumptions (with various empirical consequences – if, say, fewer XPs are phases – e.g., only vP and CP –, then only specifiers of these categories are predicted to be barriers.) But even (63-d) does not have to be assumed in the specific way it is adopted here.

(64) *The irreducible core of the present proposal*:
Operation ζ (however it is defined) is responsible for inducing movement to (intermediate) phase edges, and ζ can only apply at any given step of the derivation if the phase head providing the phase edge qualifies as still "active" (however this is defined).

Final remark:
Deriving CED effects from the PIC in the way laid out in this lecture is only possible in a derivational approach to syntax that recognizes *before* and *after* as basic theoretical concepts, and in which there is a total order of all operations in a derivation (and thus no room for operations applying simultaneously in a single phrase marker). Therefore, to the extent that the account can be characterized as successful, it provides an argument for a strictly derivational organization of grammar.

Lecture 4

On Deriving HMC Effects

1. Introduction

On the one hand:
Head movement as adjunction of one head to another creates several problems with respect to highly general (and independently motivated) constraints on movement, e.g., the Extension Condition (Strict Cycle Condition) (Chomsky, 1995), the (related) c-command requirement for traces (Brody (2001), Mahajan (2001), Müller (2004b), and Matushansky (2006)). It is also not clear why it cannot apply successive-cyclically.

On the other hand:
There is good evidence for head movement in nominal and verbal projections.

Proposal:
(i) Head movement can involve *reprojection*: A head H moves out of a phrase α and remerges with α, projecting its category label in the derived position.
Refs.: Pesetsky (1985), Stechow & Sternefeld (1988), Holmberg (1991), Ackema et al. (1993), Koeneman (2000), Haider (2000a), Hornstein & Uriagereka (2002), Fanselow (2003), Bury (2003), Bayer & Brandner (2007), Bhatt (2002), Donati (2005), Kayne (1994); and Surányi (2005).
(ii) Head movement cannot proceed by adjunction (or by substitution, for that matter: Roberts (1991, 2001)). All cases that cannot be accounted for by reprojection must be handled differently (e.g., by *remnant movement*, or by assuming *complex lexical items* (incorporation)).
(iii) The *Head Movement Constraint* (HMC) does not follow from either the MLC or the CED (nor does it follow under the assumption made in lectures 2 and 3). However, the HMC follows straighforwardly if head movement is reprojection.

This lecture is based on joint work with Doreen Georgi; see Georgi & Müller (2007). It is available from www.uni-leipzig.de/∼asw/lab/lab85/lab85_11_georgi.pdf (Linguistische Arbeits Berichte).

Empirical domain:
I will mainly be concerned with head movement in nominal projections.

Background:
Many of the arguments that were presented in favour of a functional category D that heads the nominal phrase (see in particular Abney (1987) and Szabolcsi (1994)) have lost their force under minimalist assumptions (Chomsky, 1995, 2001, 2005b).

(1) *Multiple specifiers undermine arguments for DP*:
a. [$_{NP}$ [the Emperor's] [$_{N'}$ [every] [$_{N}$ wish]]]
b. [$_{NP}$ [Peter] [$_{N'}$ [valamannyi] [$_{N}$ kalap-ja]]]
Peter's every hat-DEF

Hypothesis:
Nominal projections are NPs, not DPs.

However:
There is one type of argument in favor of the DP hypothesis that has so far resisted a straightforward minimalist elimination: There is strong evidence for movement of N, and if N moves, there must be a landing site (D) (cf. Alexiadou et al., 2007). The main claim of this lecture is that reprojection of N severely weakens this argument (and, therefore, the DP hypothesis) because no further functional head is needed as a target for movement.

2. Arguments for N Movement

2.1. N Movement in Italian

(2) *The argument for N movement with Italian proper names* (Longobardi (1994))
a. *[$_{DP}$ mio [$_{D'}$ il [$_{NP}$ [$_{N}$ Gianni]]]
my DEF Gianni
b. [$_{DP}$ il [$_{NP}$ [$_{AP}$ mio] [$_{N}$ Gianni]]]
DEF my Gianni
c. #[$_{DP}$ il [$_{NP}$ t_1 [$_{N}$ Gianni]] [$_{AP_1}$ mio]]
DEF Gianni my *(only contrastive reading)*
d. *[$_{DP}$ D [$_{NP}$ [$_{AP}$ mio] [$_{N}$ Gianni]]]
my Gianni
e. [$_{DP}$ [$_{D}$ [$_{N_1}$ Gianni] D] [$_{NP}$ [$_{AP}$ mio] t_1]]
Gianni my *(no contrastive reading)*

2.2. N Movement in Modern Hebrew

(3) *Construct state in Hebrew*:
a. beyt ha-mora
house DEF-teacher
'the house of the teacher'

b. ha-bayit
DEF-house
'the house' (*non-CS*)

c. harisat ha-oyev 'et ha-'ir
destruction DEF-enemy OM DEF-city
'the enemy's destruction of the city'

d. beyt ha-mora ha-yafe
house DEF-teacher DEF-pretty
'the pretty house of the teacher'

(4) *Ritter's (1988) structures*:

a. $[_{DP}$ N (ha-) XP_{gen} ...] (*CS*)

b. $[_{DP}$ (ha-)N ...] (*non-CS*)

Ritter's argument for N-to-D movement:

1. Construct state nominals and non-construct state nominals are to be derived from the same underlying structure.
2. SNO is the base order.
3. Therefore, in construct state nominals, N must move to the left; the only position that is available for such movement is D.

Note:
There are alternative analyses (e.g., Borer (1999), Shlonsky (2004)) where the evidence for N movement breaks down. For the sake of the argument, these will be ignored here.

2.3. N Movement and Constraints on Word Order in Nominal Projections

Cinque (2005) observes that out of the 24 possible orders of demonstrative (D), numeral (n = Num), adjective (A), and noun (N) given in (5), only the 14 orders in I are attested (as unmarked orders); the orders in II are not.

(5) *Possible and impossible orders in nominal projections*:

Ia				
	D	n	A	N
	D	n	N	A
	D	A	N	n
	D	N	A	n
	N	A	n	D
	A	N	n	D
	n	A	N	D
	n	N	A	D

Ib				
	D	N	n	A
	N	n	A	D
	N	D	n	A
	N	D	A	n
	N	A	D	n
	A	N	D	n

II					
	*	D	A	n	N
	*	A	D	n	N
	*	n	A	D	N
	*	A	n	D	N
	*	A	D	N	n
	*	n	D	A	N
	*	n	D	N	A
	*	A	n	N	D
	*	n	N	D	A
	*	N	n	D	A

(6) *An English example*:
these seven white mice
D n A N

2.3.1. Cinque's (2005) Analysis

Assumptions:

- Linear Correspondence Axiom (LCA) (Kayne (1994))
- Hierarchy of the elements in their base position: D $\succ$ n $\succ$ A $\succ$ N, where $\succ$ stands for c-command. As a consequence, only this order can be base-generated and the other 13 possibilities are derived by movement.
- Head movement is excluded; all movement is phrasal.
- Movement must always go to the left (because of the LCA). Thus, movement targets specifier positions of additional functional heads in the nominal projection.

More specific assumptions:
(i) Movement may apply totally to an XP that is the specifier of the highest functional category in the nominal projection, or it applies partially to a specifier of a functional category below the highest one.
(ii) Movement can only involve a subtree containing N.
(iii) Such a subtree may contain N and no other lexical item.
(iv) Alternatively, it may involve pied piping of further material by N.
(v) Such pied piping comes in two varieties: In one, N stays in its base position and the constituent immediately containing N and its sister is moved (the *whose picture* type); in the other, N first moves alone and pied pipes its sister node in a second movement step (the *picture of who* type).

(7) *Structure of nominal projections*:
$[_{Agr_wP}$ – $[_{Agr_{w'}}$ Agr_w $[_{WP}$ DP $[_{W'}$ $[_W$ $[_{Agr_xP}$ – $[_{Agr_{x'}}$ Agr_x $[_{XP}$ nP $[_{X'}$ X $[_{Agr_yP}$ – $[_{Agr_{y'}}$ Agr_y $[_{YP}$ AP $[_{Y'}$ NP]]]]]]]]]]]]

(8) *Examples*:

a. N–D–n–A: total movement of (a constituent containing) N alone successive-cyclically through each specifier.

b. D–A–N–n: partial movement of (a constituent containing) N and A (the *whose picture* type) to $SpecAgr_X$.

c. D–N–A–n: movement of (a constituent containing only) N to $SpecAgr_Y$ followed by movement of Agr_{YP} (*picture of who* type) to $SpecAgr_X$.

Conclusion:
This set of assumptions derives the orders that exist but not those that do not exist. All assumptions are important.

2.3.2. Abels & Neeleman's (2006) Reanalysis

Observation (Abels & Neeleman (2006)):
One can derive the patterns in (5) in a somewhat simpler way that shares some of Cinque's assumptions while abandoning others.
Assumptions:
(i) The underlying hierarchical order of elements is D $\succ$ n $\succ$ A $\succ$ N for external Merge.

(ii) The LCA does not hold: Complements and specifiers may be generated to the left or to the right of a head, regulated by language-specific parameterization.

Consequence:
(i) The orders in Ia in (5) can all be base-generated.
(ii) The orders in Ib in (5) are derived by movement.
(iii) The orders in II in (5) cannot be derived if the following constraints on movement are adopted.

(9) *Constraints on movement*:
- a. Movement must go to the left.
- b. Movement ends in a c-commanding position.
- c. Only those subtrees can undergo movement in nominal projections that contain N.

Note:
The system permits *derivational ambiguities*: Some possible movements do not lead to new orders. For example, D–N–A–n may be base-generated with A and n to the right of N, and D to its left, but it may also be the result of moving the subtree N out of the basic order D–A–N–n.

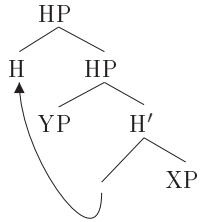
(10) *Derivational ambiguities*:
- a. [D [[N A] n]]
- b. [D [N [[A t_N] n]]]

3. Reprojection

3.1. Background

Head movement by reprojection:
A head is moved out of its projection and takes it as its own complement by merging with it, projecting anew in the derived position.

(11) *Reprojection*:



Properties of head movement as reprojection:
(i) The remerged head c-commands its base posititon.
(ii) The operation extends the tree generated so far and respects the Strict Cycle Condition.
(iii) The operation may be applied recursively, giving rise to successive-cyclic head movement.

3.2. Architecture of the System

3.3. All Syntactic Operations are Feature-Driven

I have justified this assumption in lecture 2 (and used it also in lecture 2). The main conclusions are repeated here.

(12) *Two types of features that drive operations*:
- a. Structure-building features (edge features, subcategorization features) trigger (external or internal) Merge: [•F•]
- b. Probe features trigger Agree: [∗F∗].

(13) *Last Resort* (LR):
Every syntactic operation must discharge either [•F•] or [*F*].

3.4. Features on Lexical Items are Ordered

I have justified this assumption in lecture 3.

(14) *Feature stacks*:
- a. Θ-*roles*:
  $\Theta_1 \gg \Theta_2 \gg \Theta_3$ (Agent ≫ Theme ≫ Goal)
- b. *Subcategorization features*:
  $[\bullet P\bullet]_3 \succ [\bullet D\bullet]_2 \succ [\bullet D\bullet]_1$

Consequence:
Multiple specifiers come into existence by successively discharging structure-building features of a lexical item.

(15) *Properties of probe features*:
- a. Probe features ([∗F∗]) must find a matching goal under Agree.
- b. The Agree operation in turn requires c-command.

Note:
Since such a c-command requirement does not hold for structure-building features (almost by definition, since they must be able to create specifiers), there is an interesting asymmetry between [•F•] checking and [∗F∗] checking; and it is this asymmetry that will be exploited below.

(16) *Strict Cycle Condition* (new version):
Only the head of the present root can have features that trigger operations ([•F•] or [∗F∗]).

(17) *Last Resort*:
- a. A syntactic operation must discharge (and delete) [•F•] or [∗F∗].
- b. Only [•F•] or [∗F∗] features that are on top of a feature stack are accessible.

Observation:
Given that there are two feature stacks, indeterminacies in rule application may arise.

They are resolved in a principled way by the constraint in (18) (which is modelled on Chomsky's (1995) Merge over Move, but which is not transderivational).

(18) *Agree over Merge*:
If both [•F•] and [∗F∗] can be discharged, [∗F∗] is given preference.

(19) *Derivation of an NP*:
a. N:{[•A•] ≻ [•n•] ≻ [•D•]} (initial features on N; lexicon)
b. N:{[•A•] ≻ [•D•]} (optional deletion; numeration)
c. Merge(N:{[•A•] ≻ [•D•]}, AP) ⇒ [$_{N'}$ AP N:{[•D•]}]
d. Merge([$_{N'}$ AP N:{[•D•]}], DP) ⇒ [$_{NP}$ DP [$_{N'}$ AP N:{–}]]
e. Merge(X:{[•N•] ≻ ... }, NP) ⇒ [$_{X'}$ X:{...} NP] etc.

Linearization:
(i) Merge operations are independent of linear order.
(ii) The linearization of complements and specifiers is regulated by language-specific (and also category-specific) linearitzation rules that affect the tree directly after each Merge operation.

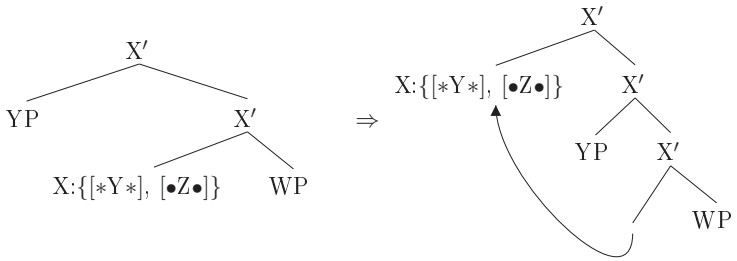
3.5. Münchhausen Features

A Münchhausen feature is nothing special: It is simply a probe feature with a category label as its content that accompanies a structure-building feature with the same category label; this way, it brings about a special identification of subcategorized items. Thus, if a feature [•F•] on a lexical item co-occurs with a corresponding feature [∗F∗], the latter is a Münchhausen feature.

(20) *Two scenarios*:
a. [•F•] is topmost on the initial stack, creationg a complement with label F. In this case, [∗F∗] can (and, given Agree over Merge: must) be discharged immediately afterwards, which creates no discernible effect.
b. [•F•] is not topmost on an initial stack on a lexical item; i.e., it generates a specifier. In that case, the probe feature [∗F∗] accompanying it has an interesting effect. Being a probe feature, it must be checked under c-command. However, a head does not c-command its specifier. Therefore, the Münchhausen feature cannot be checked with a specifier if the head stays in situ.

Way out:
The lexical item bearing the Münchhausen probe feature that cannot be discharged with the specifier moves out of its projection and remerges with it, projecting anew. After this movement step, Agree becomes possible because the probe feature on the moved head c-commands the specifier of the projection that it was originally the head of. Since the head bearing at least one operation-inducing feature (viz., the Münchhausen feature – possibly there are still others left on it) has been moved out of its projection, this projection qualifies as an XP in the sense of the Strict Cycle Condition (see (16)): As soon as the head moves out, there are no probe or structure-building features left in its original projection.

(21) *Reprojection movement triggered by Münchhausen features*:



Note:
Reprojection movement is not directly feature-driven and therefore violates Last Resort (see (17)); it is legitimated by feature checking of [∗Y∗], which becomes possible only *after* its application. Thus, we conclude that Last Resort must be minimally violable in favour of the Strict Cycle Condition in (16) (which implies that operation-inducing features must be discharged, among other things). In this respect, head movement behaves differently from phrasal movement as discussed in lectures 1–3.
(Then again, the violation of Last Resort really is minimal – if one wants to avoid it, it would suffice to replace "must discharge" by "must result in discharge in a subsequent (essentially: the next but one) movement step"; see Surányi (2005).)

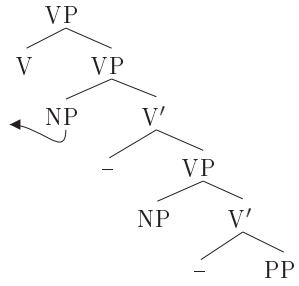
3.6. Reprojection within VP

Hypothesis:
Iterated V movement in SVO structures is follows from assuming that Münchhausen features accompany the subcategorization features.

(22) Mary gave it to John

(23) *An implementation of Haider's (2006) approach to SVO languages*
a. V's feature set:{[•P•] ≻ [•N•] ≻ [•N•], [∗P∗], [∗N∗], [∗N∗]} (*gave*)
b. Merge(V:{[•P•] ≻ [•N•] ≻ [•N•]}, PP) ⇒
[$_{V'}$ V:{[•N•] ≻ [•N•], [∗P∗], [∗N∗], [∗N∗]} PP] (*gave to John*)
c. Agree([∗P∗], PP) ⇒ [$_{V'}$ V:{[•N•] ≻ [•N•], [∗N∗], [∗N∗]} PP]
d. Merge([$_{V'}$ V:{[•N•] ≻ [•N•], [∗N∗], [∗N∗]} PP], NP$_2$) ⇒
[$_{V'}$ NP$_2$ [$_{V'}$ V:{[•N•], [∗N∗], [∗N∗]} PP]] (*it gave to John*)
e. Move(V:{[•N•], [∗N∗], [∗N∗]} [$_{VP}$ NP$_2$ [$_{V'}$ V PP]]) ⇒
[$_{V'}$ V:{[•N•], [∗N∗], [∗N∗]} [$_{VP}$ NP$_2$ [$_{V'}$ – PP]]
(*gave it to John*)
f. Agree([∗N∗], NP$_2$) ⇒ [$_{V'}$ V:{[•N•], [∗N∗]} [$_{VP}$ NP$_2$ [$_{V'}$ – PP]]
g. Merge([$_{V'}$ V:{[•N•], [∗N∗]} [$_{VP}$ NP$_2$ [$_{V'}$ – PP]]], NP$_1$) ⇒
[$_{V'}$ NP$_1$ [$_{V'}$ V [$_{VP}$ NP$_2$ [$_{V'}$ – PP]]]] (*Mary gave it to John*)
h. Move(V:{[∗N∗]}, [$_{VP}$ NP$_1$ [$_{V'}$ V [$_{VP}$ NP$_2$ [$_{V'}$ – PP]]]]) ⇒
[$_{V'}$ V:{[∗N∗]} [$_{VP}$ NP$_1$ [$_{V'}$ – [$_{VP}$ NP$_2$ [$_{V'}$ – PP]]]]
(*gave Mary it to John*)
i. Agree([∗N∗], NP$_1$) ⇒ [$_{VP}$ V:{} [$_{VP}$ NP$_1$ [$_{V'}$ – [$_{VP}$ NP$_2$ [$_{V'}$ – PP]]]]

(24) *Resulting VP structure*:



Note:
(i) This analysis is mainly for expository purposes.
(ii) If one wants to avoid the generation of VSO structures for SVO languages (demanding further subject raising), one could perhaps restrict Münchhausen feature insertion to all *except for the most deeply embedded subcategorization feature*.
(iii) As it stands, this analysis is not fully compatible with the account of CED effects in lecture 3: Due to the lack of a v/V distinction, subject DPs are correctly predicted to be barriers (given that they are not identified by a special Münchhausen feature), but dative DPs are not.
(iv) Nothing would block the assumption that reprojection movement of V in SVO languages just generates the classical VP, with v (and a subject DP) merged later – but it is clear that there can be no head movement of V beyond the VP (sister of v) in this case.
(v) What about V-to-T movement, or verb-second movement, or subject-aux inversion? → remnant movement, or reprojection movement of T (perhaps in *do*-support constructions).

4. Noun Phrase Structure by Reprojection

4.1. Reprojection of N in Italian

Assumptions:
(i) N obligatorily has a subcategorization feature [•D•] in Italian.
(ii) If N is a proper name, and the specific determiner that is selected is phonologically null, N must also be equipped with [∗D∗] in addition.

(25) a. N's feature set: {[•A•] ≻ [•D•], [∗D∗]}
b. Merge(N:{[•A•] ≻ [•D•], [∗D∗]}, AP) ⇒
$[_{N'}$ AP N:{ [•D•], [∗D∗]}] (*mio Gianni*)
c. Merge($[_{N'}$ AP N:{ [•D•], [∗D∗]}], DP) ⇒
$[_{N'}$ DP $[_{N'}$ AP N:{[∗D∗]}]] (*D mio Gianni*)
d. Move(N:{[∗D∗]}, $[_{NP}$ DP $[_{N'}$ AP N]]) ⇒
$[_{N'}$ N:{[∗D∗]} $[_{NP}$ DP $[_{N'}$ AP –]]] (*Gianni D mio*)

e. Agree([∗D∗],DP) ⇒ $[_{NP}$ N:{–} $[_{NP}$ DP $[_{N'}$ AP –]]]

4.2. Reprojection of N in Modern Hebrew

Assumption:
N has a categorial probe feature [∗D∗] in addition to its subcategorization feature [•D•] in the presence of a genitive possessor, i.e., in the context for construct state.

(26) Feature set of N in construct state contexts:
N:{[•N•] ≻ [•D•], [∗D∗]}

Analysis:
The probe feature [∗D∗] triggers movement of N in construct state environments because [∗D∗] cannot be checked in situ as N does not c-command its specifier DP. Therefore, reprojection movement of N is called for; and this produces the N-initial word order.

(27) $[_{NP}$ $[_{N_1}$ beyt] $[_{NP}$ $[_{DP}$ ha- $[_{N'}$ $[_{NP_2}$ mora] –]]]]
house DEF- teacher
'the house of the teacher'

Prediction:
D and the genitive possessor automatically form a constitutent.

4.3. Deriving the Constraints on Word Order Variation

(28) *Abels & Neeleman's (2006) assumptions*:
a. External Merge respects the hierarchical order D ≻ n ≻ A ≻ N.
b. Movement ends in a c-commanding position.
c. Movement is leftward.
d. Movement in the nominal projection must involve a subtree containing N.

Implementation:
(29) is a faithful adaptation of Abels & Neeleman's (28-a) to the present proposal, and (28-bc) can be adopted unchanged.

(29) The hierarchy [•A•] ≻ [•n•] ≻ [•D•] must be respected on N.

Note:
Of the four assumptions in (28), (29-d) is the most stipulative one:

- (28-bc) are very general constraints on movement (and (28-b) follows from the Strict Cycle Condition if Move is internal Merge).
- (28-a) (or (29)) is simply a fact about language that any theory must encode in some way.
- However, (28-d) is peculiar; it is the only conceptual blemish in Abels & Neeleman's (2006) reconstruction of Cinque's (2005) approach. To the extent that it is true, it should be derived from more basic assumptions.

Observation:
(28-d) follows as a theorem, in a way that is similar to the one that Abels (2003) gives

in his account of Anti-Locality effects. Here is why: If N is the head of the nominal projection, all movements within this projection are either triggered by structure-building (movement-type specific) edge features on N, or they are triggered by the need to get rid of probe features in the next but one step (reprojection movement). The latter option can only be relevant for the head N itself (given the Strict Cycle Condition, non-heads cannot have operation-inducing features). The former option does not help in the case of A, n, and D. Suppose for the sake of the argument that N bears some feature [•F•] in addition to its subcategorization features for (say) A, n, and D that could in principle trigger movement ([•F•] must then be embedded below subcategorization features in the stack of structure-building features); and that one of these categories (e.g., n) can actually provide a goal [F] for [•F•]. [•F•] could still not trigger movement of nP across DP to an outer specifier of N (thereby giving rise to an unattested order) because the resulting configuration is structurally identical to the pre-movement configuration: If nP can check N's [•F•] feature in a derived specifier position, it can just as well check the same feature in situ (roughly, [•F•] on X is interpreted as 'X wants to see F in its projection').

(30) *Possible and impossible orders in nominal projections*:

Ia				
D	n	A	N	
D	n	N	A	
D	A	N	n	
D	N	A	n	
N	A	n	D	
A	N	n	D	
n	A	N	D	
n	N	A	D	

Ib				
(i)	D	N	n	A
(ii)	N	n	A	D
(iii)	N	D	n	A
(iv)	N	D	A	n
(v)	N	A	D	n
(vi)	A	N	D	n

II				
*	D	A	n	N
*	A	D	n	N
*	n	A	D	N
*	A	n	D	N
*	A	D	N	n
*	n	D	A	N
*	n	D	N	A
*	A	n	N	D
*	n	N	D	A
*	N	n	D	A

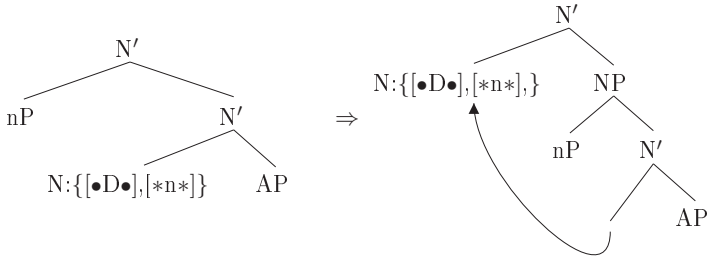
Generalization:
(i) The orders in Ia can be base-generated.
(ii) The orders in II cannot be generated.
(iii) The orders in Ib can be derived by (reprojection) movement.

(31) *Orders (i), (ii)*:

(i) D N n A → N moves in front of n
N:{[•A•] ≻ [•n•] ≻ [•D•], [∗n∗]} initial specification
[$_{NP}$ DP [$_{N'}$ N_1 [$_{NP}$ nP [$_{N'}$ – AP]]]] derivation

(ii) N n A D → N moves in front of n
N:{[•A•] ≻ [•n•] ≻ [•D•], [∗n∗]} initial specification
[$_{NP}$ [$_{N'}$ N_1 [$_{NP}$ nP [$_{N'}$ – AP]]] DP] derivation

(32) *Deriving order (i)*

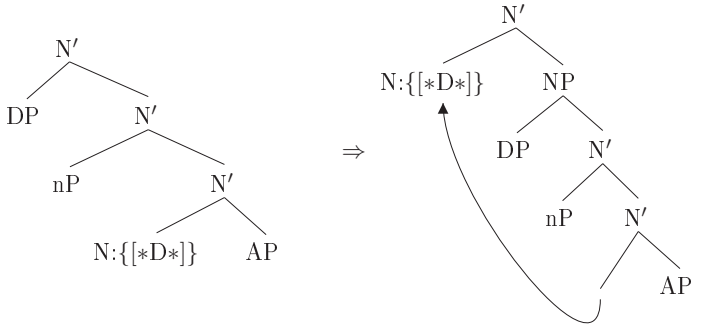


(33) *Orders (iii), (iv)*:

(iii) N D n A → N moves in front of D
N:{[•A•] ≻ [•n•] ≻ [•D•], [∗D∗]} initial specification
[$_{NP}$ N_1 [$_{NP}$ DP [$_{N'}$ nP [$_{N'}$ – AP]]]] derivation

(iv) N D A n → N moves in front of D
N:{[•A•] ≻ [•n•] ≻ [•D•], [∗D∗]} initial specification
[$_{NP}$ N_1 [$_{NP}$ DP [$_{N'}$ [$_{N'}$ – A] nP]]] derivation

(34) *Deriving order (iii)*



Note:
In order to derive the orders in (v) and (vi), pied piping is needed: N pied-pipes A when it moves by reprojection. Assumption: Pied piping involves feature percolation (but see Heck (2004, 2007)).

(35) *Orders (v), (vi)*:

(v) N A D n → N+A moves in front of D
N:{[•A•] ≻ [•n•] ≻ [•D•], [∗D∗]}
initial specification; [∗D∗] percolates
[$_{NP}$ [$_{N'}$ N AP] [$_{NP}$ DP [$_{N'}$ nP –]]] derivation

(vi) A N D n → A+N moves in front of D
N:{[•A•] ≻ [•n•] ≻ [•D•], [∗D∗]}
initial specification; [∗D∗] percolates
[$_{NP}$ [$_{N'}$ AP N] [$_{NP}$ DP [$_{N'}$ nP –]]] derivation

Remark:
Percolation does not give rise to unwanted orders – still, only items that contain N can undergo movement, so all the orders in II remain excluded.

An interesting difference to Abels & Neeleman's approach:
Derivational ambiguities can arise in their system, a given legitimate string involving D, n, A, and N can only have one possible source in the present framework: It is either derived by reprojection movement (Ib), or it is base-generated (Ia) – a derivation of the strings in (Ia) via movement turns out to be impossible under present assumptions (the relevant movements would all be too local).

5. Conclusion

Results:

- Given the availability of reprojection movement, one of the strongest arguments for DP-over-NP analyses of nominal projections disappears.
- The reprojection movement approach can further simplify Abels & Neeleman's analysis of possible word order in nominal projections (by deriving the ban on moving a category without N in it).
- Most importantly, from the perspective of this course, if all head movement is reprojection movement, the HMC is derived: Reprojection movement is triggered by probe features of the moved head, and the Strict Cycle Condition ensures that projections with heads that have undischarged probe or structure-building features cannot be merged with another lexical item.

References

Abels, Klaus (2003): Successive Cyclicity, Anti-Locality, and Adposition Stranding. PhD thesis, University of Connecticut, Storrs, Connecticut.

Abels, Klaus (2006): Towards a Restrictive Theory of (Remnant) Movement: Improper Movement, Remnant Movement, and a Linear Asymmetry. Ms., University of Tromsø.

Abels, Klaus & Ad Neeleman (2006): Universal 20 Without the LCA. Ms., University of Tromsø and University College London.

Abels, Klaus & Kristine Bentzen (2008): Is There Any Evidence for Punctuated Paths?. Ms., University College London and University of Tromsø.

Abney, Steven (1987): The English Noun Phrase in Its Sentential Aspect. PhD thesis, MIT, Cambridge, Mass.

Ackema, Peter, Ad Neeleman & Fred Weerman (1993): Deriving Functional Projections. In: *Proceedings of NELS*. Vol. 23, Amherst: GSLA, pp. 17–31.

Adger, David (2003): *Core Syntax*. Oxford University Press, Oxford, New York.

Adger, David & Peter Svenonius (2003): Beyond the Interface, *GLOW Newsletter* 50, Spring 2003.

Agbayani, Brian (1998): Feature Attraction and Category Movement. PhD thesis, UC Irvine.

Alexiadou, Artemis (1997): *Adverb Placement*. Benjamins, Amsterdam.

Alexiadou, Artemis, Liliane Haegeman & Melita Stavrou (2007): *Noun Phrase in the Generative Perspective*. De Gruyter, Berlin, New York.

Baker, Mark (1988): *Incorporation. A Theory of Grammatical Function Changing*. University of Chicago Press, Chicago.

Barbiers, Sjef (2002): Remnant Stranding and the Theory of Movement. In: *Dimensions of Movement*. Benjamins, Amsterdam, pp. 47–67.

Barss, Andrew & Howard Lasnik (1986): A Note on Anaphora and Double Objects, *Linguistic Inquiry* 17, 347–354.

Bayer, Josef (1990): Notes on the ECP in English and German, *Groninger Arbeiten zur Germanistischen Linguistik* 30, 1–51.

Bayer, Josef & Ellen Brandner (2007): On Wh-Head-Movement and the Doubly-Filled-Comp Filter. Ms., Universität Konstanz. (Paper presented at West Coast Conference on Formal Linguistics 26, Berkeley).

Bech, Gunnar (1955/1957): *Studien über das deutsche Verbum Infinitum*. Niemeyer, Tübingen. Reprint 1983.

Beck, Sigrid (1997): Wh-Constructions and Transparent Logical Form. PhD thesis, Universitä Tübingen.

Bhatt, Rajesh (2002): The Raising Analysis of Relative Clauses, *Natural Language Semantics* 10, 43–90.

Bhatt, Rajesh (2005): Long Distance Agreement in Hindi-Urdu, *Natural Language and Linguistic Theory* 23, 757–807.

Bickel, Balthasar (2004): Constraining Focus and Extraction Domains. Ms., Universität Leipzig. (Talk presented at *Syntax of the World's Languages 1*).

Bittner, Maria & Ken Hale (1996): The Structural Determination of Case and Agree-

ment, *Linguistic Inquiry* pp. 1–68.
Bobaljik, Jonathan & Susi Wurmbrand (2003): Relativized Phases. Ms., University of Connecticut, Storrs.
Boeckx, Cedric (2003): *Islands and Chains. Resumption as Stranding*. Benjamins, Amsterdam.
Boeckx, Cedric (2004): Long-distance Agreement in Hindi: Some Theoretical Implications, *Studia Linguistica* 58, 23–36.
Boeckx, Cedric (2008): *Understanding Minimalist Syntax*. Blackwell, Oxford.
Boeckx, Cedric & Kleanthes Grohmann (2007): Putting Phases in Perspective, *Syntax* pp. 204–222.
Borer, Hagit (1999): Deconstructing the Construct. In: K. Johnson & I. Roberts, eds., *Beyond Principles and Parameters*. Kluwer, Dordrecht, pp. 43–90.
Bošković, Željko (2002): A-Movement and the EPP, *Syntax* 5, 167–218.
Bošković, Željko (2007): Agree, Phases, and Intervention Effects, *Linguistic Analysis* 33, 54–96.
Bošković, Željko & Howard Lasnik (1999): How Strict is the Cycle?, *Linguistic Inquiry* 20, 691–703.
Brody, Michael (2001): Some Aspects of Elegant Syntax. Ms., University College London.
Brody, Michael (2002): On the Status of Representations and Derivations. In: S. D. Epstein & T. D. Seely, eds., *Derivation and Explanation in the Minimalist Program*. Blackwell, Oxford, pp. 19–41.
Broekhuis, Hans (2005): Extraction from Subjects: Some Remarks on Chomsky's 'On Phases'. In: H. Broekhuis, N. Corver, R. Huybregts, U. Kleinherz & J. Koster, eds., *Organizing Grammar. Studies in Honor of Henk van Riemsdijk*. Mouton de Gruyter.
Browning, Maragaret (1991): Bounding Conditions on Representations, *Linguistic Inquiry* 22, 541–562.
Bruening, Benjamin (2001): Syntax at the Edge: Cross-Clausal Phenomena and the Syntax of Passamaquoddy. PhD thesis, MIT, Cambridge, Mass.
Büring, Daniel & Katharina Hartmann (1994): The Dark Side of Wh-Movement, *Linguistische Berichte* 149, 56–74.
Bury, Dirk (2003): Phrase Structure and Derived Heads. PhD thesis, University College London.
Butt, Miriam (1995): *The Structure of Complex Predicates in Urdu*. CSLI Publications, Standford, California.
Cattell, Ray (1976): Constraints on Movement Rules, *Language* 52, 18–50.
Chandra, P. (2005): Hindi-Urdu Long Distance Agreement: Agree, AGREE or Spec-Head?. Ms, University of Maryland, College Park.
Chomsky, Noam (1964): *Current Issues in Linguistic Theory*. Mouton, The Hague.
Chomsky, Noam (1973): Conditions on Transformations. In: S. Anderson & P. Kiparsky, eds., *A Festschrift for Morris Halle*. Academic Press, New York, pp. 232–286.
Chomsky, Noam (1977): On Wh-Movement. In: P. Culicover, T. Wasow & A. Akmajian, eds., *Formal Syntax*. Academic Press, New York, pp. 71–132.
Chomsky, Noam (1981): *Lectures on Government and Binding*. Foris, Dordrecht.

Chomsky, Noam (1986a): *Barriers*. MIT Press, Cambridge, Mass.
Chomsky, Noam (1986b): *Knowledge of Language*. Praeger, New York.
Chomsky, Noam (1991): Some Notes on Economy of Derivation and Representation. In: R. Freidin, ed., *Principles and Parameters in Comparative Grammar*. MIT Press, Cambridge, Mass., pp. 417–454.
Chomsky, Noam (1993): A Minimalist Program for Syntactic Theory. In: K. Hale & S. J. Keyser, eds., *The View from Building 20*. MIT Press, Cambridge, Mass., pp. 1–52.
Chomsky, Noam (1995): *The Minimalist Program*. MIT Press, Cambridge, Mass.
Chomsky, Noam (2000): Minimalist Inquiries: The Framework. In: R. Martin, D. Michaels & J. Uriagereka, eds., *Step by Step*. MIT Press, Cambridge, Mass., pp. 89–155.
Chomsky, Noam (2001): Derivation by Phase. In: M. Kenstowicz, ed., *Ken Hale. A Life in Language*. MIT Press, Cambridge, Mass., pp. 1–52.
Chomsky, Noam (2005a): On Phases. Ms., MIT, Cambridge, Mass.
Chomsky, Noam (2005b): Three Factors in Language Design, *Linguistic Inquiry* 36, 1–22.
Chomsky, Noam (2007): Approaching UG from Below. In: U. Sauerland & H.-M. Gärtner, eds., *Interfaces + Recursion = Language?*. Mouton de Gruyter, Berlin, pp. 1–31.
Chung, Sandra (1994): Wh-Agreement and 'Referentiality' in Chamorro, *Linguistic Inquiry* 25, 1–44.
Cinque, Guglielmo (1990): *Types of A-bar Dependencies*. MIT Press, Cambridge, Mass.
Cinque, Guglielmo (1999): *Adverbs and Functional Heads*. Oxford University Press, Oxford.
Cinque, Guglielmo (2005): Deriving Greenberg's Universal 20 and Its Exceptions, *Linguistic Inquiry* 36, 315–323.
Clements, George, James McCloskey, Joan Maling & Annie Zaenen (1983): String-Vacuous Rule Application, *Linguistic Inquiry* 14, 1–17.
Collins, Chris (1993): Topics in Ewe Syntax. PhD thesis, MIT, Cambridge, Mass.
Collins, Chris (1994): Economy of Derivation and the Generalized Proper Binding Condition, *Linguistic Inquiry* 25, 45–61.
Collins, Chris (1997): *Local Economy*. MIT Press, Cambridge, Mass.
Collins, Chris (2003): Eliminating Labels. In: S. D. Epstein & T. D. Seely, eds., *Derivation and Explanation in the Minimalist Program*. Blackwell, Oxford, pp. 42–64.
Davies, William & Stanley Dubinsky (2003): On Extraction from NPs, *Natural Language and Linguistic Theory* 21, 1–37.
Dayal, Veneeta (1994): Scope Marking as Indirect Wh-Dependency, *Natural Language Semantics* 2, 137–170.
den Dikken, Marcel (2007): Phase Extension: Contours of a Theory of the Role of Head Movement in Phrasal Extraction, *Theoretical Linguistics* 33, 1–41.
den Dikken, Marcel (2008): Small Clauses, Phases, and Phase Extension – The Case of Scope and Object Shift. Ms.,CUNY Graduate Center. (Talk at Glow 2008, Newcastle).
Diesing, Molly (1992): *Indefinites*. MIT Press, Cambridge, Mass.
Epstein, Samuel David (1992): Derivational Constraints on $\overline{\text{A}}$-Chain Formation, *Linguistic Inquiry* 23, 235–259.

Epstein, Samuel David & T. Daniel Seely (2002): Rule Applications as Cycles in a Level-Free Syntax. In: S. D. Epstein & T. D. Seely, eds., *Derivation and Explanation in the Minimalist Program*. Blackwell, Oxford, pp. 65–89.

Fanselow, Gisbert (1987): *Konfigurationalität*. Narr, Tübingen.

Fanselow, Gisbert (1991): Minimale Syntax. Habilitation thesis, Universität Passau.

Fanselow, Gisbert (1996): The Proper Interpretation of the Minimal Link Condition. Ms. Universität Potsdam.

Fanselow, Gisbert (2001): Features, Theta-Roles, and Free Constituent Order, *Linguistic Inquiry* 32, 405–436.

Fanselow, Gisbert (2003): Münchhausen-Style Head Movement and the Analysis of Verb-Second. In: A. Mahajan, ed., *Head Movement and Syntactic Theory*. Vol. 3 of *Syntax at Sunset*, UCLA & Universität Potsdam Working Papers in Linguistics, Los Angeles & Potsdam, pp. 40–76.

Fanselow, Gisbert (2004): The MLC and Derivational Economy. In: A. Stepanov, G. Fanselow & R. Vogel, eds., *Minimality Effects in Syntax*. Mouton de Gruyter, Berlin, pp. 73–123.

Fanselow, Gisbert & Anoop Mahajan (2000): Towards a Minimalist Theory of Wh-Expletives, Wh-Copying, and Successive Cyclicity. In: U. Lutz, G. Müller & A. von Stechow, eds., *Wh-Scope Marking*. Benjamins, Amsterdam, pp. 195–230.

Fanselow, Gisbert & Denisa Lenertová (2007): Movement to Spec,CP and Linearization. Ms., Universität Potsdam & Universität Leipzig.

Ferguson, Scott & Erich Groat (1994): Defining 'Shortest Move'. Ms., Harvard University.

Fiengo, Robert (1980): *Surface Structure*. Harvard University Press, Cambridge, Mass.

Fiengo, Robert, Cheng-Teh James Huang, Howard Lasnik & Tanya Reinhart (1988): The Syntax of Wh-in-situ. In: H. Borer, ed., *Proceedings of WCCFL 7*. CSLI Publications, Stanford, pp. 81–98.

Fischer, Silke (2004): Towards an Optimal Theory of Reflexivization. PhD thesis, Universität Tübingen.

Fitzpatrick, Justin (2002): On Minimalist Approaches to the Locality of Movement, *Linguistic Inquiry* 33, 443–463.

Fox, Danny (2000): *Economy and Semantic Interpretation*. MIT Press, Cambridge, Mass.

Frantz, Donald (1980): Ascensions to Subject in Blackfoot. In: *Proceedings of the 6th Annual Meeting of the Berkeley Linguistics Society*. BLS, Berkeley, University of California, pp. 293–299.

Freidin, Robert (1992): *Foundations of Generative Syntax*. MIT Press, Cambridge, Mass.

Freidin, Robert (1999): Cyclicity and Minimalism. In: S. D. Epstein & N. Hornstein, eds., *Working Minimalism*. MIT Press, Cambridge, Mass, pp. 95–126.

Frey, Werner (1993): *Syntaktische Bedingungen für die Interpretation*. Akademieverlag, Berlin.

Gallego, Ángel (2007): Phase Theory and Parametric Variation. PhD thesis, Universitat Autónoma de Barcelona, Barcelona.

Gallego, Ángel & Juan Uriagereka (2006): Sub-Extraction from Subjects. Ms., Universitat Autónoma de Barcelona.

Gazdar, Gerald (1981): Unbounded Dependencies and Coordinate Structure, *Linguistic Inquiry* 12, 155–184.

Gazdar, Gerald, Ewan Klein, Geoffrey Pullum & Ivan Sag (1985): *Generalized Phrase Structure Grammar*. Blackwell, Oxford.

Georgi, Doreen & Gereon Müller (2007): Noun Phrase Structure by Reprojection. In: J. Trommer & A. Opitz, eds., *1 2 Many*. Vol. 85 of *Linguistische Arbeitsberichte*, Universität Leipzig, pp. 263–301.

Grewendorf, Günther (1988): *Aspekte der deutschen Syntax*. Narr.

Grewendorf, Günther (1989): *Ergativity in German*. Foris, Dordrecht.

Grewendorf, Günther (2003): Improper Remnant Movement, *Gengo Kenkyo: The Journal of the Linguistic Society of Japan* 123, 47–94.

Grewendorf, Günther (2004): Die linke Bewegung von Restkategorien. Ms., Universität Frankfurt/Main.

Grewendorf, Günther & Joachim Sabel (1994): Long Scrambling and Incorporation, *Linguistic Inquiry* 25, 263–308.

Grewendorf, Günther & Joachim Sabel (1999): Scrambling in German and Japanese, *Natural Language and Linguistic Theory* 17, 1–65.

Grohmann, Kleanthes (1997): German Superiority, *Groninger Arbeiten zur Germanistischen Linguistik* 40, 97–107.

Grohmann, Kleanthes (1998): Syntactic Inquiries into Discourse Restrictions on Multiple Interrogatives, *Groninger Arbeiten zur Germanistischen Linguistik* 42, 1–60.

Grohmann, Kleanthes (2003): Successive Cyclicity under (Anti-)Local Considerations, *Syntax* 6, 260–312.

Haider, Hubert (1983): Connectedness Effects in German, *Groninger Arbeiten zur Germanistischen Linguistik* 23, 82–119.

Haider, Hubert (1993): *Deutsche Syntax – generativ*. Narr, Tübingen.

Haider, Hubert (2000a): Branching and Discharge. In: P. Coopmans, M. Everaert & J. Grimshaw, eds., *Lexical Specification and Insertion*. Benjamins, Amsterdam, pp. 135–164.

Haider, Hubert (2000b): Towards a Superior Account of Superiority. In: U. Lutz, G. Müller & A. von Stechow, eds., *Wh-Scope Marking*. Benjamins, Amsterdam, pp. 231–248.

Haider, Hubert (2004): The Superiority Conspiracy: Four Constraints and a Processing Effect. In: A. Stepanov, G. Fanselow & R. Vogel, eds., *Minimality Effects in Syntax*. Mouton de Gruyter, Berlin, pp. 147–175.

Haider, Hubert (2006): Zufall und Notwendigkeit bei der germanischen VO/OV-Spaltung. Ms., Universität Salzburg.

Hartmann, Jutta (2005): Wh-Movement and the Small Clause Analyses of the English 'There'-Construction, *Leiden Papers in Linguistics* 2.3, 93–106.

Hazout, Ilan (2004): The Syntax of Existential Constructions, *Linguistic Inquiry* 35, 393–430.

Heck, Fabian (2004): A Theory of Pied Piping. PhD thesis, Universität Tübingen.

Heck, Fabian (2007): On Certain Properties of Pied Piping. Ms., Universität Leipzig. To appear in *Linguistic Inquiry*.
Heck, Fabian & Gereon Müller (2000): Successive Cyclicity, Long-Distance Superiority, and Local Optimization. In: R. Billerey & B. D. Lillehaugen, eds., *Proceedings of WCCFL*. Vol. 19, Cascadilla Press, Somerville, MA, pp. 218–231.
Heck, Fabian & Gereon Müller (2003): Derivational Optimization of Wh-Movement, *Linguistic Analysis* 33, 97–148.
Heck, Fabian & Gereon Müller (2006): Extremely Local Optimization. Ms., Universität Leipzig.
Heck, Fabian & Malte Zimmermann (2004): DPs as Phases. Ms., Universität Leipzig and HU Berlin.
Heck, Fabian, Gereon Müller & Jochen Trommer (2007): A Phase-Based Approach to Scandinavian Definiteness Marking. Ms., Universität Leipzig. To appear in *Proceedings of WCCFL 2007*, Berkeley.
Holmberg, Anders (1991): Head Scrambling. Handout of talk; GLOW 1991 (Leiden).
Hornstein, Norbert (1995): *Logical Form*. Blackwell, Oxford.
Hornstein, Norbert (2001): *Move. A Minimalist Theory of Construal*. Blackwell, Oxford.
Hornstein, Norbert & Juan Uriagereka (2002): Reprojections. In: S. D. Epstein & D. Seely, eds., *Derivation and Explanation in the Minimalist Program*. Blackwell, London, pp. 106–132.
Huang, Cheng-Teh James (1982): Logical Relations in Chinese and the Theory of Grammar. PhD thesis, MIT, Cambridge, Mass.
Huang, Cheng-Teh James (1995): Logical Form. In: G. Webelhuth, ed., *Government and Binding Theory and the Minimalist Program*. Blackwell, Oxford, pp. 125–175.
Jackendoff, Ray (1990): On Larson's Account of the Double Object Construction, *Linguistic Inquiry* 21, 427–454.
Kayne, Richard (1984): *Connectedness and Unambiguous Paths*. Foris, Dordrecht.
Kayne, Richard (1994): *The Antisymmetry of Syntax*. MIT Press, Cambridge, Mass.
Kim, Shin-Sook & Wolfgang Sternefeld (1997): Superiority vs. Crossover. Ms., Universität Tübingen.
Kiss, Katalin (1986): Why Noun Complement Clauses are Barriers. In: J. Mascaró & M. Nespor, eds., *Grammar in Progress*. Foris, Dordrecht, pp. 265–277.
Kitahara, Hisatsugu (1994): A Minimalist Analysis of Cross-Linguistically Variant CED Phenomena. In: *Proceedings of NELS*. Vol. 24, Amherst: GSLA, pp. 241–253.
Kitahara, Hisatsugu (1997): *Elementary Operations and Optimal Derivations*. MIT Press, Cambridge, Mass.
Kobele, Greg (2006): Generating Copies. PhD thesis, UCLA, Los Angeles.
Koeneman, Olaf (2000): The Flexible Nature of Verb Movement. PhD thesis, Utrecht University.
Koizumi, Masatoshi (1995): Phrase Structure in Minimalist Syntax. PhD thesis, MIT, Cambridge, Mass.
Koster, Jan (1978): *Locality Principles in Syntax*. Foris, Dordrecht.
Koster, Jan (1987): *Domains and Dynasties*. Foris, Dordrecht.
Koster, Jan (2000): Variable-Free Grammar. Ms., University of Groningen.

Kramer, Ruth (2007): The Amharic Definite Marker and the Syntax/PF Interface. Ms., University of California at Santa Cruz.
Kuno, Susumo (1973): Constraints on Internal Clauses and Sentential Subjects, *Linguistic Inquiry* 4, 363–385.
Kučerová, Ivona (2006): An Anti-Intervention Effect in Czech Splits: An Argument for Late Merge. In: R. Compton, M. Goledzinowska & U. Savchenko, eds., *Proceedings of FASL 15*. Michigan Slavic Publications, Ann Arbor, pp. 161–179.
Lahne, Antje (2006): A CP Approach to Left Peripheral Architecture. Ms., Universität Leipzig.
Landau, Idan (2000): *Elements of Control*. Kluwer, Dordrecht.
Larson, Richard (1988): On the Double Object Construction, *Linguistic Inquiry* 19, 335–391.
Lasnik, Howard & Mamoru Saito (1992): *Move α*. MIT Press, Cambridge, Mass.
Lasnik, Howard & Myung-Kwan Park (2003): The EPP and the Subject Condition Under Sluicing, *Linguistic Inquiry* 34, 649–660.
Lechner, Winfried (2004): Extending and Reducing the MLC. In: A. Stepanov, G. Fanselow & R. Vogel, eds., *Minimality Effects in Syntax*. Mouton de Gruyter, Berlin, pp. 205–240.
Legate, Julie Anne (2005): Phases and Cyclic Agreement, *MITWPL* 49, 147–156. Perspectives on Phases.
Lewis, David (1972): General Semantics. In: D. Davidson & G. Harman, eds., *Semantics of Natural Language*. Reidel, Dordrecht, pp. 169–218.
Lindauer, Thomas (1995): *Genitivattribute: Eine morphosyntaktische Untersuchung zum deutschen DP/NP-System*. Niemeyer, Tübingen.
Longobardi, Giuseppe (1994): Reference and Proper Names: A Theory of N-Movement in Syntax and Logical Form, *Linguistic Inquiry* 25, 609–665.
Mahajan, Anoop (2001): Word Order and Remnant VP Movement. UCLAO, Ms.
Manzini, Rita (1992): *Locality. A Theory and Some of Its Empirical Consequences*. MIT Press, Cambridge, Mass.
Matushansky, Ora (2005): Going Through a Phase, *MITWPL* 49, 157–181. Perspectives on Phases.
Matushansky, Ora (2006): Head-Movement in Linguistic Theory, *Linguistic Inquiry* 37.1(69-109).
McCloskey, James (1979): *Transformational Syntax and Model Theoretic Semantics. A Case Study in Modern Irish*. Reidel, Dordrecht.
McCloskey, James (2002): Resumptives, Successive Cyclicity, and the Locality of Operations. In: S. D. Epstein & T. D. Seely, eds., *Derivation and Explanation in the Minimalist Program*. Blackwell, Oxford, pp. 184–226.
Moro, Andrea (1997): *The Raising of Predicates: Predicative Noun Phrases and the Theory of Clause Structure*. Cambridge University Press, Cambridge.
Müller, Gereon (1995): *A-bar Syntax*. Mouton/de Gruyter, Berlin.
Müller, Gereon (1998): *Incomplete Category Fronting*. Kluwer, Dordrecht.
Müller, Gereon (2001): Order Preservation, Parallel Movement, and the Emergence of the Unmarked. In: G. Legendre, J. Grimshaw & S. Vikner, eds., *Optimality-Theoretic*

Syntax. MIT Press, Cambridge, Mass., pp. 279–313.
Müller, Gereon (2004a): Phrase Impenetrability and Wh-Intervention. In: A. Stepanov, G. Fanselow & R. Vogel, eds., *Minimality Effects in Syntax*. Mouton de Gruyter, Berlin, pp. 289–325.
Müller, Gereon (2004b): Verb-Second as vP-First, *Journal of Comparative Germanic Linguistics* 7, 179–234.
Müller, Gereon (2008): Ergativity, Accusativity, and the Order of Merge and Agree. Universität Leipzig. To appear in *Explorations of Phase Theory. Features, Arguments, and Interpretation at the Interfaces*, ed. Kleanthes Grohmann. Berlin: Mouton de Gruyter.
Nakamura, Masanori (1998): Reference Set, Minimal Link Condition, and Parametrization. In: P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis & D. Pesetsky, eds., *Is the Best Good Enough?*. MIT Press and MITWPL, Cambridge, Mass., pp. 291–313.
Neeleman, Ad & Hans van de Koot (2007): A Local Encoding of Syntactic Dependencies and its Consequences for the Theory of Movement. Ms., University College London.
Nissenbaum, Jon (2000): Covert Movement and Parasitic Gaps. In: M. Hirotani, A. Coetzee, N. Hall & J.-Y. Kim, eds., *Proceedings of NELS 30*. GLSA, Amherst, Mass, pp. 542–555.
Noonan, Máire (1988): Superiority Effects: How do Antecedent Government, Lexical Government and V/2 Interact?, *McGill Working Papers in Linguistics* pp. 192–214.
Nunes, Jairo (2004): *Linearization of Chains and Sideward Movement*. MIT Press, Cambridge, Mass.
Nunes, Jairo & Juan Uriagereka (2000): Cyclicity and Extraction Domains, *Syntax* 3, 20–43.
Partee, Barbara, Alice ter Meulen & Robert Wall (1993): *Mathematical Methods in Linguistics*. Kluwer, Dordrecht.
Perlmutter, David & Scott Soames (1979): *Syntactic Argumentation and the Structure of English*. The University of California Press, Berkeley.
Pesetsky, David (1985): Morphology and Logical Form, *Linguistic Inquiry* 16, 193–246.
Pesetsky, David (1987): Wh-in-Situ: Movement and Unselective Binding. In: E. Reuland & A. ter Meulen, eds., *The Representation of (In)Definiteness*. MIT Press, Cambridge, Mass, pp. 98–129.
Pesetsky, David (2000): *Phrasal Movement and Its Kin*. MIT Press, Cambridge, Mass.
Pesetsky, David & Esther Torrego (2006): Probes, Goals and Syntactic Categories. Ms., MIT. Lingbuzz/000321.
Polinsky, Maria (2003): Non-Canonical Agreement is Canonical, *Transactions of the Philological Society* 101.
Polinsky, Maria & Eric Potsdam (2001): Long-Distance Agreement and Topic in Tsez, *Natural Language and Linguistic Theory* 19, 583–646.
Pollard, Carl J. & Ivan A. Sag (1994): *Head-Driven Phrase Structure Grammar*. University of Chicago Press, Chicago.
Postal, Paul (1972): Some Rules That Are Not Successive Cyclic, *Linguistic Inquiry* pp. 211–222.
Pullum, Geoffrey (1979): *Rule Interaction and the Organization of a Grammar*. Garland, New York.

Rackowski, Andrea & Norvin Richards (2005): Phase Edge and Extraction, *Linguistic Inquiry* 36, 565–599.
Reinhart, Tanya & Eric Reuland (1993): Reflexivity, *Linguistic Inquiry* 24, 657–720.
Reuland, Eric (2001): Primitives of Binding, *Linguistic Inquiry* 32, 439–492.
Rezac, Milan (2004): Elements of Cyclic Syntax: Agree and Merge. PhD thesis, University of Toronto.
Richards, Marc (2004): Object Shift and Scrambling in North and West Germanic: A Case Study in Symmetrical Syntax. PhD thesis, University of Cambridge, Cambridge, UK.
Richards, Marc (2007): Deriving the Edge: What's in a Phase?. Ms., Universität Leipzig.
Ritter, Elizabeth (1988): A Head Movement Approach to Construct State Noun Phrases, *Linguistics* 26, 909–929.
Rizzi, Luigi (1990): *Relativized Minimality*. MIT Press, Cambridge, Mass.
Rizzi, Luigi (2001): Relativized Minimality Effects. In: M. Baltin & C. Collins, eds., *The Handbook of Contemporary Syntactic Theory*. Blackwell, Oxford, pp. 89–110.
Rizzi, Luigi (2006): Criterial Freezing, EPP, and Asymmetries. Ms., Siena University.
Rizzi, Luigi (2007): On Some Properties of Criterial Freezing, *CISCL Working Papers on Language and Cognition* 1, 145–158.
Roberts, Ian (1991): Excorporation and Minimality, *Linguistic Inquiry* 22, 209–218.
Roberts, Ian (2001): Head Movement. In: M. Baltin & C. Collins, eds., *The Handbook of Contemporary Syntactic Theory*. Blackwell, Oxford, pp. 113–147.
Roberts, Ian & Anna Roussou (2002): The Extended Projection Principle as a Condition for the Tense-Dependency. In: P. Svenonius, ed., *Subjects, Expletives, and the EPP*. Benjamins, Amsterdam.
Ross, John (1967): Constraints on Variables in Syntax. PhD thesis, MIT, Cambridge, Mass.
Sabel, Joachim (2002): A Minimalist Analysis of Syntactic Islands, *The Linguistic Review* 19, 271–308.
Sauerland, Uli (1995): Review of 'A-bar Syntax' by Gereon Müller, *Glot International* 1(8).
Sauerland, Uli (1999): Erasability and Interpretation, *Syntax* 3, 161–188.
Schmellentin, Claudia (2006): *PP-Extraktionen. Eine Untersuchung zum Verhältnis von Grammatik und Pragmatik*. Niemeyer, Tübingen.
Sells, Peter (2006): Using Subsumption Rather than Equality in Functional Control. In: M. Butt & T. King, eds., *Proceedings of LFG-06*. CSLI Publications, Universität Konstanz.
Sportiche, Dominique (1988): A Theory of Floating Quantifiers and Its Corollaries for Constituent Structure, *Linguistic Inquiry* 19, 425–450.
Sportiche, Dominique (1989): Le Mouvement Syntaxique: Contraintes et Paramètres, *Langages* pp. 35–80.
Stabler, Edward (1996): Acquiring and Parsing Languages with Movement. Book ms., UCLA.

Stabler, Edward (1997): Derivational Minimalism. In: C. Retoré, ed., *Logical Aspects of Computational Linguistics*. Springer, Heidelberg, pp. 68–95.
Stabler, Edward (1998): Acquiring Languages with Movement, *Syntax* 1, 72–97.
Stechow, Arnim von (2000): Partial Wh-Movement, Scope Marking, and Transparent Logical Form. In: U. Lutz, G. Müller & A. von Stechow, eds., *Wh-Scope Marking*. Benjamins, Amsterdam, pp. 447–478.
Stechow, Arnim von & Wolfgang Sternefeld (1988): *Bausteine syntaktischen Wissens*. Westdeutscher Verlag, Opladen.
Stepanov, Artur (2007): The End of CED? Minimalism and Extraction Domains, *Syntax* 10, 80–126.
Sternefeld, Wolfgang (1985): Deutsch ohne grammatische Funktionen: Ein Beitrag zur Rektions- und Bindungstheorie, *Linguistische Berichte* 99, 394–439.
Sternefeld, Wolfgang (1991): *Syntaktische Grenzen. Chomskys Barrierentheorie und ihre Weiterentwicklungen*. Westdeutscher Verlag, Opladen.
Sternefeld, Wolfgang (1992): Transformationstypologie und strukturelle Hierarchie. Ms., Universität Tübingen.
Sternefeld, Wolfgang (1996): A Minimalist Semantics for Questions. Ms., Universität Tübingen.
Sternefeld, Wolfgang (2006): *Syntax*. Stauffenburg, Tübingen. Two volumes.
Stjepanoivć, Sandra & Shoichi Takahashi (2001): Eliminating the Phase Impenetrability Condition. Ms., Kanda University of International Studies.
Stowell, Tim (1981): Origins of Phrase Structure. PhD thesis, MIT, Cambridge, Mass.
Surányi, Balázs (2005): Head Movement and Reprojection, *Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös Nominatae. Sectio Linguistica. ELTE* Tomus XXVI, 313–342.
Svenonius, Peter (1994): C-Selection as Feature-Checking, *Studia Linguistica* 48, 133–155.
Svenonius, Peter (2004): On the Edge. In: D. Adger, C. de Cat & G. Tsoulas, eds., *Peripheries. Syntactic Edges and their Effects*. Kluwer, Dordrecht, pp. 261–287.
Szabolcsi, Anna (1994): The Noun Phrase. In: F. Kiefer, ed., *Syntax and Semantics, vol 27: The Structure of Hungarian*. Academic Press, San Diego, pp. 179–274.
Takahashi, Daiko (1994): Minimality of Movement. PhD thesis, University of Connecticut.
Takano, Yuji (1994): Unbound Traces and Indeterminacy of Derivation. In: M. Nakamura, ed., *Current Topics in English and Japanese*. Hituzi Syobo, Tokyo, pp. 229–253.
Travis, Lisa (1984): Parameters and Effects of Word Order Variation. PhD thesis, MIT, Cambridge, Mass.
Uriagereka, Juan (1999): Multiple Spell-Out. In: S. Epstein & N. Hornstein, eds., *Working Minimalism*. MIT Press, Cambridge, Mass., pp. 251–282.
van Riemsdijk, Henk (1978): *A Case Study in Syntactic Markedness: The Binding Nature of Prepositional Phrases*. Foris, Dordrecht.
Webelhuth, Gert (1992): *Principles and Parameters of Syntactic Saturation*. Oxford University Press, Oxford.
Wexler, Ken & Peter Culicover (1980): *Formal Principles of Language Acquisition*. MIT Press, Cambridge, Mass.

Williams, Edwin (1974): Rule Ordering in Syntax. PhD thesis, MIT, Cambridge, Mass.
Williams, Edwin (1994): Remarks on Lexical Knowledge, *Lingua* 92, 7–34.
Williams, Edwin (2003): *Representation Theory*. MIT Press, Cambridge, Mass.
Williams, Edwin (2006): The Subject-Predicate Theory of 'There', *Linguistic Inquiry* 37, 648–651.
Wiltschko, Martina (1997): Scrambling, D-linking and Superiority in German, *Groninger Arbeiten zur Germanistischen Linguistik* 41, 107–142.
Wunderlich, Dieter (1997): Cause and the Structure of Verbs, *Linguistic Inquiry* 27, 27–68.
Zaenen, Annie & Jessie Pinkham (1976): The Discovery of Another Island, *Linguistic Inquiry* 7, 652–664.