



# Classic Constraints

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# Introduction

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In addition to the lexicon and structure-building operations, a derivational approach to syntax along the lines sketched in [1] crucially relies on constraints. There are various constraint types. Most importantly, constraints can be **local** or **non-local**.

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- d. A **translocal** constraint ( $\text{Con}^{tl}$ ) applies to sets of output representations; it picks out an optimal output representation among competing output representations.
- e. A **transderivational** constraint ( $\text{Con}^{td}$ ) 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.**

**Observation:**

Most of the constraints used so far are derivational constraints (see, e.g., the **Economy Constraint on Merge**, or the **Linearization Constraint on Merge**).

- (3) **Economy Constraint on Merge<sup>d</sup>:**  
Merge can only apply if it deletes the highest-ranked selectional feature of a LI.
- (4) **Linearization Constraint on Merge<sup>d</sup>:**  
The output of Merge in language  $L_i$  must conform to the linear precedence statements of  $L_i$ .



### Question:

What kind of constraint is the Inclusiveness Condition?

(5) **Inclusiveness Condition:**

Material that is not part of the lexical array (other LIs, additional features) is inaccessible throughout a derivation.

### Answer:

The Inclusiveness Condition should best be viewed not as a syntactic constraint at all; rather, it is a meta-constraint grammars, i.e., a hypothesis about the nature of syntactic operations. (That said, the Inclusiveness Condition **could** in principle be viewed as a local derivational constraint that restricts every Merge or Move operation.)

# Movement to SpecC: Wh-Movement

## Embedded Clauses

### Problem:

So far, a sentence like (6) cannot be generated:

- (6) **Embedded wh-questions in English:**  
I wonder what she read

### Solution:

A [+wh] C item in English requires movement of a **wh**-phrase in **wh**-questions. It has a structure-building feature [**•wh•**] that must be deleted under identity with a **wh**-phrase bearing a [wh]-feature in SpecC.

- (7) More complex *wh*-phrases:  
Which book will she buy ?
- (8) Partial LA of (7):
- a. which: { [D], [wh], [●N●] }
  - b. book: { [N] }

# Root Clauses

## Problem:

Root clauses pose an additional problem. There are two movement (i.e., internal Merge) operations to the C domain: The **wh**-phrase moves as before; in addition, a finite auxiliary or modal verb is fronted. (Movement of a finite main verb is impossible in this context; cf. **\*What said she?**. In this case, a dummy auxiliary **do** must be inserted: **What did she say?**; this is called “do-support”.)

(9) What has she said ?

## Assumption:

There are two types of movement:

- (i) XP movement = movement of a maximal projection to a specifier position.
- (ii) X (head) movement = movement of a minimal projection (= a LI) to a LI position, via **adjunction** to the LI.



### Assumption:

A root C bearing [ $\bullet$ wh $\bullet$ ] has a [ $\bullet$ T $_0$  $\bullet$ ] feature that also triggers movement of the auxiliary.

### (13) Partial LA of (9):

- a. has: { [T], [ $\bullet$ v $\bullet$ ] }
- b. what: { [D], [wh] }
- c.  $\emptyset$ : { [C], [root], [ $\bullet$ T $\bullet$ ] > [ $\bullet$ T $_0$  $\bullet$ ] > [ $\bullet$ wh $\bullet$ ].

### Note:

So far, it is only predicted that an empty [+wh] C element requires movement of a bare T. It does not yet follow that T is phonologically empty when a local wh-subject is moved, and is realized by an appropriate form of **do** otherwise. (And an attempt to account for this will not be made here.)

### Question:

Can it be ensured that C in (13) never triggers two Merge operations with separate T LIs, rather than Merge with TP and Move of T?

### Answer:

This follows from the assumption that there cannot be more than one T element per clause. Incidentally, similar questions arise with movement to SpecT and SpecC.

# Topicalization

## Observation:

Topicalization is similar to *wh*-movement, but it is movement to a [-*wh*] SpecC position. It is not accompanied by head movement in English.

## (14) Topicalization in English:

- a. [CP John<sub>1</sub> C [TP she does not really like t<sub>1</sub> ]]
- b. I think that [CP John<sub>1</sub> C [TP she does not really like t<sub>1</sub> ]]

## Note:

Topicalization systematically goes hand in hand with movement of the finite verb to C in German, Dutch, and the Scandinavian languages:



(15) **Topicalization in German:**

- a. [CP Den Fritz<sub>1</sub> mag<sub>2</sub> [TP sie sehr t<sub>1</sub> t<sub>2</sub> ]]  
ART Fritz<sub>acc</sub> likes she<sub>nom</sub> much
- b. Ich glaube [CP den Fritz<sub>1</sub> mag<sub>2</sub> [TP sie sehr t<sub>1</sub> t<sub>2</sub> ]]  
I think ART Fritz<sub>acc</sub> likes she<sub>nom</sub> much

**Note:**

German has linear precedence statements that are different from those of English. In particular, V (and perhaps T) heads follow their specifiers **and** their complements.

(16) **Verb-final VPs in German:**

- a. ... dass Fritz Maria mag  
that Fritz<sub>nom</sub> Maria<sub>acc</sub> likes
- b. Den Fritz<sub>1</sub> hat<sub>2</sub> sie sehr t<sub>1</sub> gemocht t<sub>2</sub>  
ART Fritz<sub>acc</sub> has she<sub>nom</sub> much liked

### Analysis:

Topicalization is triggered by a [ $\bullet$ top $\bullet$ ] feature on C and a corresponding [top] feature on some other XP. C is always marked [ $\bullet$ V<sub>0</sub> $\bullet$ ] in German if it bears the feature [root] (the **verb-second** effect). (Assumption: Auxiliaries and modals are also [V] in German.)

# Relativization

## Observation:

Relativization is similar to **wh**-movement and topicalization; it moves a relative pronoun (or relative phrase) to SpecC. The relative clause itself is a modifier of an N; it follows N.

## (17) Relativization:

- a. I know [<sub>DP</sub> a man [<sub>CP</sub> *who*<sub>1</sub> C [<sub>TP</sub> *t*'<sub>1</sub> T [<sub>VP</sub> *t*<sub>1</sub> likes cars ]]]]
- b. She likes [<sub>DP</sub> the book [<sub>CP</sub> *which*<sub>2</sub> John gave her *t*<sub>2</sub> ]]

## Analysis:

- (i) A relative pronoun (D) has the feature [rel].
- (ii) The head of a relative clause (C) has the feature [•rel•].

# The A-over-A Principle

(18) **A-over-A Principle<sup>d</sup>** (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.

(19) A first consequence of the A-over-A Principle:

- a. [DP<sub>1</sub> My letter to [DP<sub>2</sub> a friend in Italy ]] got lost
- b. \*[DP<sub>2</sub> Who ] did [DP<sub>1</sub> my letter to t<sub>2</sub> ] get lost ?
- c. [DP<sub>1</sub> Which letter to [DP<sub>2</sub> a friend in Italy ]] got lost?
- d. \*John is the friend [DP<sub>2</sub> who ] C [DP<sub>1</sub> my letter to t<sub>2</sub> ] got lost
- e. This is the letter [DP<sub>1</sub> which ] t<sub>1</sub> got lost

(20) Another consequence of the A-over-A Principle:

- a. John heard [DP<sub>1</sub> a rumour that you had read [DP<sub>2</sub> this book ]]
- b. \*[DP<sub>2</sub> What ] did John hear [DP<sub>1</sub> a rumour that you had read t<sub>2</sub> ] ?
- c. [DP<sub>1</sub> Which rumour that you had read [DP<sub>2</sub> this book ]] did John hear ?
- d. \*This is a book [DP<sub>2</sub> which ] John heard [DP<sub>1</sub> a rumour that you had read t<sub>2</sub> ]
- e. This a rumour [DP<sub>1</sub> which ] John heard t<sub>1</sub>

### Note:

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

(21) **A-over-A Principle<sup>r</sup>** (representational version):

\*... A<sub>2</sub> ... [A<sub>1</sub> ... t<sub>2</sub> ... ] ... ] ...

### 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.

(22) Well-formed DP-over-DP examples ruled out by the A-over-A Principle:

- a. [<sub>DP<sub>2</sub></sub> Who would you approve of [<sub>DP<sub>1</sub></sub> my seeing t<sub>2</sub> ] ] ?
- b. [<sub>DP<sub>2</sub></sub> Which author ] did you read [<sub>DP<sub>1</sub></sub> a book about t<sub>2</sub> ] ?

- (23) Well-formed CP-over-CP examples ruled out by the A-over-A Principle:
- a. John wouldn't say [<sub>CP<sub>1</sub></sub> that Mary thinks [<sub>CP<sub>2</sub></sub> that Bill is nice ]]
  - b. [<sub>CP<sub>2</sub></sub> That Bill is nice ] John wouldn't say [<sub>CP<sub>1</sub></sub> that Mary thinks t<sub>2</sub> ]
  - c. Fritz hat behauptet [<sub>CP<sub>1</sub></sub> Maria würde denken [<sub>CP<sub>2</sub></sub> dass er Fritz<sub>nom</sub> has claimed Maria<sub>nom</sub> would think that he nett ist ]]  
nice is
  - d. [<sub>CP<sub>2</sub></sub> Dass er nett ist ] hat Fritz behauptet [<sub>CP<sub>1</sub></sub> würde Maria denken t<sub>2</sub> ]



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

- a. Fritz hat [VP<sub>1</sub> [VP<sub>2</sub> zu arbeiten ] versucht ]  
 Fritz<sub>nom</sub> has to work tried
- b. [VP<sub>2</sub> Zu arbeiten ] hat Fritz [VP<sub>1</sub> t<sub>2</sub> versucht ]  
 to work has Fritz<sub>nom</sub> tried
- c. [VP<sub>1</sub> [VP<sub>2</sub> Zu arbeiten ] versucht ] hat Fritz t<sub>1</sub>  
 to work tried has Fritz<sub>nom</sub>
- d. Ich [V<sub>3</sub> denke ] nicht [VP<sub>0</sub> t<sub>3</sub> [CP dass er [VP<sub>1</sub> [VP<sub>2</sub> zu arbeiten ] versucht ]  
 I think not that he to work tried  
 hat ]]  
 has
- e. ?[VP<sub>1</sub> [VP<sub>2</sub> Zu arbeiten ] versucht ] denke ich nicht [VP<sub>0</sub> t<sub>4</sub> [CP dass er t<sub>1</sub> hat ]]  
 to work tried think I not that he has
- f. ?[VP<sub>2</sub> Zu arbeiten ] denke ich nicht [VP<sub>0</sub> t<sub>4</sub> [CP dass er [VP<sub>1</sub> t<sub>2</sub> versucht ] hat ]]  
 to work think I now that he tried has

- (25) An ill-formed example not ruled out by the A-over-A Principle – AP movement from DP:
- You have [DP<sub>1</sub> a [AP<sub>2</sub> very intelligent ] sister ]
  - [DP<sub>1</sub> [AP<sub>2</sub> How intelligent ] a t<sub>2</sub> sister ] do you have ?
  - \*[AP<sub>2</sub> How intelligent ] do you have [DP a t<sub>2</sub> sister ] ?
- (26) Another ill-formed example not ruled out by the A-over-A Principle – DP movement from PP ('preposition stranding'):
- Sie spielt [PP<sub>1</sub> mit [DP<sub>2</sub> dem grünen Auto ]]  
she plays with the green car
  - [PP<sub>1</sub> Mit [DP<sub>2</sub> welchem Auto ]] spielt sie t<sub>1</sub> ?  
with which car plays she
  - \*[DP<sub>2</sub> Welchem Auto ] spielt sie [PP<sub>1</sub> mit t<sub>2</sub> ] ?  
which car plays she with
  - [PP<sub>1</sub> Mit [DP<sub>2</sub> dem grünen Auto ]] spielt sie t<sub>1</sub>  
with the green car plays she
  - \*[DP<sub>2</sub> Diesem Auto ] spielt sie [PP<sub>1</sub> mit t<sub>2</sub> ]  
this car plays she with

## Outlook: the future:

The A-over-A Principle is formulated in terms of categorial features. The selectional features triggering movement that have been adopted so far ( $[\bullet D \bullet]$ ,  $[\bullet wh \bullet]$ ,  $[\bullet top \bullet]$ ,  $[\bullet rel \bullet]$ ) are not (necessarily) categorial, though. What would happen if the A-over-A Principle were revised as an F-over-F Principle?

### (27) F-over-F Principle<sup>d</sup>:

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  $[\bullet F \bullet]$ .

### Note:

This is in fact (a subcase of) a constraint that is widely adopted in most recent versions of the minimalist program (see below). And this version has in fact been proposed by Bresnan (1976), based on work by Chomsky in the early 70s.

### Excursus: Bresnan (1976)

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.

# The Complex NP Constraint

(28) **Complex NP Constraint**<sup>d</sup> (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.

(29) 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  $t_1$  ] ] ?

(30) A consequence of the Complex NP Constraint, argument clauses (see (20-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 (30-a) vs. (30-b)).

(31) **Complex NP Constraint'** (representational version):

\*...  $\alpha_1$  ... [DP ... [CP ...  $t_1$  ... ]] ...

# The Sentential Subject Constraint

- (32) **Sentential Subject Constraint<sup>d</sup>** (Ross (1967)):  
No element dominated by a CP may be moved out of that CP if that CP is a subject.
- (33) **A consequence of the Sentential Subject Constraint:**
- $[\text{DP}_1 \text{ Who}]$  did the reporters expect  $[\text{CP} \text{ that the principal would fire } t_1]$  ?
  - \* $[\text{DP}_1 \text{ Who}]$  was  $[\text{CP} \text{ that the principal would fire } t_1]$  expected by the reporters ?
  - \* $[\text{DP}_1 \text{ Who}]$  did  $[\text{CP} \text{ that Mary was going out with } t_1]$  bother you ?
- (34) **Sentential Subject Constraint<sup>r</sup>** (representational version):  
\*...  $\alpha_1$  ...  $[\text{CP} \dots t_1 \dots]$  ... if CP is a subject.



### Note:

Given the terminology adopted so far, “subject” means “element in SpecT”. However, movement to SpecT is triggered by [ $\bullet$ D $\bullet$ ]. Does that mean that CPs are actually DPs, so that they can move to SpecT if they are external arguments?

The following options are available:

- (i) The notion of subject is replaced by the notion of external argument in the formulation of the Sentential Subject Constraint; CPs are never in SpecT (they may be in VP or undergo topicalization).
- (ii) CPs are in fact embedded by empty DPs (and have abstract Case) (compare Kiparsky & Kiparsky (1970)).

# 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.

(35) **Subject Condition**<sup>d</sup> (Chomsky (1973), Huang (1982), Chomsky (1986), Freidin (1992)):

No element may be moved out of a subject.

(36) **Subject Condition** (see (19)):

a. \*<sub>[DP<sub>2</sub> Who(m)]</sub> has <sub>[DP<sub>1</sub> a comment about t<sub>2</sub>]</sub> annoyed you ?

b. \*<sub>[PP<sub>3</sub> About whom]</sub> has <sub>[DP<sub>1</sub> a comment t<sub>3</sub>]</sub> annoyed you ?

(37) **Subject Condition**<sup>r</sup> (representational version):

\*...  $\alpha_1$  ... [ $\beta$  ... t<sub>1</sub> ... ] ... if  $\beta$  is a subject.

# The Coordinate Structure Constraint

(38) **Coordinate Structure Constraint<sup>d</sup>** (Ross (1967)):

In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.

(39) **A consequence of the Coordinate Structure Constraint – movement from a conjunct:**

- a. John is [<sub>AP</sub> proud of [<sub>DP<sub>1</sub></sub> his father ]] and [<sub>AP</sub> tired of [<sub>DP<sub>2</sub></sub> his mother ]]
- b. \* [<sub>DP<sub>1</sub></sub> Who ] is John [<sub>AP</sub> proud of t<sub>1</sub> ] and [<sub>AP</sub> tired of [<sub>DP<sub>2</sub></sub> his mother ]] ?
- c. \* [<sub>DP<sub>2</sub></sub> Who ] is John [<sub>AP</sub> proud of [<sub>DP<sub>1</sub></sub> his father ]]

## Note:

It is not quite clear what the phrase structure of coordination looks like. An assumption that is sometimes made is that **and** is the head of a “coordination phrase”, and this would get the word order facts right; but it also raises several problems. E.g.: What about coordinations with three conjuncts:  $\alpha$ ,  $\beta$ , and  $\gamma$ ? If **and** is the head, how can the categorial features (like [A] in (39)) be visible for the selecting head (**is** bearing [\*A\*] in (39)?)

(40) A second consequence of the Coordinate Structure Constraint – movement of a conjunct:

- a. John likes [DP<sub>1</sub> Mary ] and [DP<sub>2</sub> Bill ]
- b. \*[DP<sub>1</sub> Who ] does John like t<sub>1</sub> and [DP<sub>2</sub> Bill ] ?
- c. \*[DP<sub>2</sub> Who ] does John like [DP<sub>1</sub> Mary ] and t<sub>2</sub> ?

(41) Coordinate Structure Constraint<sup>r</sup> (representational version):

\*...  $\alpha_1$  ... [  $\beta$  ... t<sub>1</sub> ... ] ..., where  $\beta$  is a coordinate structure.

Note:

This presupposes that a coordinate structure is a constituent. Indeed, it can be moved:

(42) Coordinate structures are constituents:

- a. [DP<sub>1</sub> Mary ] and [DP<sub>2</sub> Bill ] are t in the garden
- b. [DP<sub>1</sub> Mary ] and [DP<sub>2</sub> Bill ], John does not really like t

### Note:

There is an interesting exception to the Coordinate Structure Constraint: If movement simultaneously affects both conjuncts, the Coordinate Structure Constraint does not hold. This is known as *Across-the-board rule application*. (See Ross (1967), Williams (1978), Gazdar (1981)).

(43) **Across-the-Board rule application:**

- a. I wonder [<sub>CP</sub> [<sub>DP<sub>1</sub></sub> which books ] John hates t<sub>1</sub> and Mary likes t<sub>1</sub>
- b. I know a man [<sub>CP</sub> [<sub>DP<sub>1</sub></sub> who ] John [<sub>VP</sub> saw t<sub>1</sub> ] and [<sub>VP</sub> liked t<sub>1</sub> ]]
- c. The doctor [<sub>CP</sub> [<sub>DP<sub>3</sub></sub> who ] [<sub>TP<sub>1</sub></sub> John worked for t<sub>3</sub> ] and [<sub>TP<sub>2</sub></sub> Mary relied on t<sub>3</sub> ]] died

**Problem:**

It remains unclear how Across-the-board movement (two sources, one moved item) can be accounted for in the incremental approach adopted here.

# The Upward Boundedness Constraint

## Assumption:

Rightward movement (**extraposition**, **heavy NP (DP) shift**) exists. It is typically optional. (Some – optional – [**•F•**] features can only be deleted by movement to a right-peripheral specifier.)

## (44) Rightward movement:

- a. [<sub>DP</sub> The claim  $t_1$  ] was refuted [<sub>CP<sub>1</sub></sub> that all languages are context-free ]
- b. John [<sub>VP</sub> returned  $t_1$  [<sub>PP</sub> to the library ] ] [<sub>DP<sub>1</sub></sub> all the books [<sub>CP</sub> which he had borrowed ] ]
- c. [<sub>DP</sub> A review  $t_1$  ] came out yesterday [<sub>PP<sub>1</sub></sub> of this article ] ]



- (45) **Upward Boundedness Constraint<sup>d</sup>** (Ross (1967)):  
No element that is moved rightward may be moved out of the next higher CP.
- (46) **Upward Boundedness Constraint<sup>r</sup>** (representational version):  
\* ... [CP ... t<sub>1</sub> ... ] ... α<sub>1</sub> ...

**Note:**

This constraint is also known as the **Right Roof Constraint** (see, e.g., Perlmutter & Soames (1979)).

(47) A consequence of the Upward Boundedness Constraint:

- a.  $[CP_0$  It is catastrophic  $[CP_1$  that  $[DP_2$  a review  $[PP_3$  of this article ] ] came out yesterday ]]
- b.  $[CP_0$   $[CP_1$  That  $[DP_2$  a review  $[PP_3$  of this article ] ] came out yesterday ] is catastrophic ]
- c.  $[CP_0$   $[CP_1$  That  $[DP_2$  a review  $t_3$  ] came out yesterday  $[PP_3$  of this article ] ] is catastrophic ]
- d. \* $[CP_0$   $[CP_1$  That  $[DP_2$  a review  $t_3$  ] came out yesterday ] is catastrophic ]  $[PP_3$  of this article ]

(48) Another consequence of the Upward Boundedness Constraint:

- a. [CP<sub>0</sub> Fritz denkt [CP<sub>1</sub> dass Antje [DP<sub>2</sub> den Versuch [CP<sub>3</sub> mit fünf Bällen zu jonglieren ]] aufgegeben hat ] [CP<sub>4</sub> weil er sie nicht mehr sieht ]  
Fritz thinks that Antje the attempt with five balls to  
juggle given up has because he her not anymore sees
- b. [CP<sub>0</sub> Fritz denkt [CP<sub>1</sub> dass Antje [DP<sub>2</sub> den Versuch t<sub>3</sub> ] aufgegeben hat ] [CP<sub>3</sub>  
Fritz thinks that Antje the attempt given up has  
mit fünf Bällen zu jonglieren ] [CP<sub>4</sub> weil er sie nicht mehr sieht ]  
with five balls to juggle because he her not anymore sees
- c. \*[CP<sub>0</sub> Fritz denkt [CP<sub>1</sub> dass Antje [DP<sub>2</sub> den Versuch t<sub>3</sub> ] aufgegeben hat ] [CP<sub>4</sub>  
Fritz thinks that Antje the attempt given up has  
weil er sie nicht mehr sieht ] [CP<sub>3</sub> mit fünf Bällen zu jonglieren ]]  
because he her not anymore sees with five balls to juggle

# The Left Branch Condition

- (49) **Left Branch Condition<sup>d</sup>** (Ross (1967)):  
The leftmost item of an NP cannot be moved out of that NP.
- (50) **Left Branch Condition<sup>r</sup>** (representational version):  
\*...  $\alpha_1$  ... [NP t<sub>1</sub> ... N ... ] ...

## Note:

Like the Complex NP Constraint, the original Left Branch Condition presupposes a structure of nominal XPs that differs from the one adopted here, viz., (51-b) (where NP dominates DP) rather than (51-a) (where DP dominates NP), as assumed here and in most current literature.

(51) DP vs. NP:

- a. [DP D [NP ... N ... ] ... ]
- b. [NP [DP D ] ... N ... ]

(52) A consequence of the Left Branch Condition under (51-b):

- a. \*[<sub>DP<sub>1</sub></sub> Which ] did you buy [<sub>NP</sub> t<sub>1</sub> books ]?
- b. \*[<sub>DP<sub>1</sub></sub> Whose ] did you meet [<sub>NP</sub> t<sub>1</sub> sister ]?

Note:

It seems that the Left Branch Condition is needed to rule out (52-a) only if structure (51-b) is adopted. If we assume structure (51-a), the prohibition against movement of **which** will not be needed because (a) the [**wh**•] feature that triggers **wh**-movement does not permit head (LI) movement of D, and (b) if the whole DP moves, it has to carry the NP along. (Similar conclusions apply in the case of (52-b) if **whose** does not (fully) occupy SpecD – e.g., if **whose** is analyzed as **who** in SpecD plus 's in D.)

However:

The Left Branch Condition rules out sentences like (53-b) under either (51-b) or (51-a) if we understand “leftmost item” as “leftmost phonologically visible item”.

(53) A further consequence of the Left Branch Condition:

- a. Hans hat [DP D [NP [AP<sub>1</sub> neue ] Bücher ] ] gekauft  
Hans has new books bought
- b. \*[AP<sub>1</sub> Neue ] hat Hans [DP D [NP t<sub>1</sub> Bücher ] ] gekauft  
new has Hans books bought

## Note:

Ross noted that there are Left Branch Condition violations in a number of languages; see, e.g., (54). Given (51-b), one can then simply assume that the Left Branch Condition does not hold in these languages; but it is a priori unclear how to reconcile the very existence of data such as those in (54) with the structure in (51-a).

### (54) Left Branch Condition violations in Russian:

- a.  $[_{NP_1} [_{DP_2} \check{C}ju] [_{N} knigu]]$  ty čitaeš'  $t_1$  ?  
whose book you read
- b.  $[_{DP_2} \check{C}ju]$  ty čitaeš'  $[_{NP_1} t_2 [_{N} knigu]]$  ?  
whose you read book

## Note:

The Left Branch Condition can be generalized. This accounts for more data, but it also raises more problems.

(55) **Generalized Left Branch Condition<sup>d</sup>** (Ross (1967), Gazdar (1981)):  
The leftmost item of an XP cannot be moved out of that XP.

(56) **Generalized Left Branch Condition effects, APs:**

- a. [AP<sub>1</sub> [XP<sub>2</sub> How ] sane ] is John t<sub>1</sub> ?
- b. \*[XP<sub>2</sub> How ] is John [AP<sub>1</sub> t<sub>2</sub> sane ] ?
- c. [AP<sub>1</sub> [XP<sub>2</sub> Ganz schön ] neugierig ] ist Maria t<sub>1</sub>
- d. \*[XP<sub>2</sub> Ganz schön ] ist Maria [AP<sub>1</sub> t<sub>2</sub> neugierig ]

(57) **Generalized Left Branch Condition effects, TP ('that-trace effect'):**

- a. [DP<sub>1</sub> What ] do you think [CP that John bought t<sub>1</sub> ] ?
- b. [DP<sub>1</sub> What ] do you think [CP Ø John bought t<sub>1</sub> ] ?
- c. \*[DP<sub>1</sub> Who ] do you think [CP that [TP t<sub>1</sub> arrived ] ] ?
- d. [DP<sub>1</sub> Who ] do you think [CP Ø [TP t<sub>1</sub> arrived ] ] ?



### Note:

The **that**-trace configuration in (57-c) can be excluded; but unfortunately, the Generalized Left Branch Condition also excludes (57-d), which is well formed. Gazdar's solution: Movement from an embedded CP is only apparent here; the external argument **who** of **arrived** is in fact merged in the matrix VP domain. Furthermore, the analysis is incompatible with the idea that external arguments are merged in SpecV and move to SpecT.

### (58) Generalized Left Branch Condition effects, VP (problem):

- a.  $[CP [C \emptyset] [TP [DP_1 \text{John}] [T \emptyset] [VP t_1 \text{likes Mary} ]]]$
- b.  $[CP [DP_1 \text{Who}] [C \emptyset] [TP t'_1 [T \emptyset] [VP t_1 \text{likes Mary} ]]] ?$

# The Wh-Island Condition

- (59) **Wh-Island Condition<sup>d</sup>** (Chomsky (1973)):  
Movement must not cross a CP with a **wh**-element in SpecC or C.
- (60) **Wh-Island Condition<sup>r</sup>** (representational version):  
\*...  $\alpha_1$  ... [CP  $\beta_2$  ...  $t_1$  ... ] ..., where  $\beta$  is a **wh**-element in SpecC or C.
- (61) **A consequence of the Wh-Island Condition:**
- How<sub>1</sub> do you think [CP that Mary solved the problem  $t_1$  ] ?
  - \*How<sub>1</sub> do you wonder [CP whether Mary solved the problem  $t_1$  ] ?
  - [DP<sub>1</sub> Which book ] do you think [CP that John read  $t_1$  ] ?
  - ?\*[DP<sub>1</sub> Which book ] do you wonder [CP [PP<sub>2</sub> 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.

(62) **Weak Wh-Island Condition effects:**

?<sub>[DP<sub>1</sub> Which book ]</sub> don't you know [<sub>CP whether to read t<sub>1</sub> ] ?</sub>

## Note:

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

### (63) 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

# The Superiority Condition

(64) **Superiority Condition**<sup>d</sup> (Chomsky (1973)):

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  $[\bullet wh \bullet]$ .

**Note:**

The only difference to the (revised) A-over-A Principle (i.e., the F-over-F Principle) is that  $\beta$  c-commands  $\gamma$  in the Superiority Condition, whereas  $\beta$  dominates  $\gamma$  in the F-over-F Principle.

(65) **Superiority Condition**<sup>r</sup> (representational version):

\*  $\dots \gamma_{[F]} \dots [ \dots \beta_{[F]} \dots [ \dots t_\gamma \dots ] \dots ] \dots$  if the head of which  $\gamma$  is the specifier bears a  $[\bullet F \bullet]$  feature in the LA.

(66) A consequence of the Superiority Condition:

- a. Who<sub>1</sub> t<sub>1</sub> saw what<sub>2</sub> ?
- b. \*What<sub>2</sub> did who<sub>1</sub> see t<sub>2</sub> ?
- c. I wonder [CP who<sub>1</sub> t<sub>1</sub> bought what<sub>2</sub> ]
- d. \*I wonder [CP what<sub>2</sub> who<sub>1</sub> bought t<sub>2</sub> ]

# The Clause Non-final Incomplete Constituent Constraint

- (67) **Clause Non-final Incomplete Constituent Constraint<sup>d</sup>** (Kuno (1973)):  
It is not possible to move any element of a category  $\alpha$  ( $\alpha = \text{DP}$  or  $\text{CP}$ ) in a clause non-final position out of  $\alpha$  if what is left over in  $\alpha$  constitutes an incomplete  $\alpha$ .
- (68) **Incompleteness:**  
A DP/CP  $\alpha$  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.

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

- a. [DP<sub>1</sub> Which man ] did you buy [DP a picture of t<sub>1</sub> ] ? (see (22-b))
- b. [PP<sub>2</sub> Of which man ] did John give [DP a picture t<sub>2</sub> ] to Bill ?
- c. ?\*[DP<sub>1</sub> Which man ] did John give [DP a picture of t<sub>1</sub> ] to Bill ?

Note:

In (69-a), the DP is clause-final; in (69-b), the DP counts as complete (recall that arguments of N are optional). Only in (69-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).



(70) A consequence of the Clause Non-final Incomplete Constituent Constraint, subject DPs:

- a.  $[_{DP_1}$  Which cars ] did the explosion damage  $[_{DP}$  the hoods of  $t_1$  ] ?
- b.  $[_{PP_2}$  Of which cars ] were  $[_{DP}$  the hoods  $t_2$  ] damaged by the explosion ?
- c.  $*[_{DP_1}$  Which cars ] were  $[_{DP}$  the hoods of  $t_1$  ] damaged by the explosion ?

Note:

(70-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 (70-b) (and the Clause Non-final Incomplete Constituent Constraint would be vacuously fulfilled here).

(71) A consequence of the Clause Non-final Incomplete Constituent Constraint, CPs (see (33)):

- a.  $[_{DP_1}$  Who ] did the reporters expect  $[_{CP}$  that the principal would fire  $t_1$  ] ?
- b.  $[_{DP_1}$  Who ] was it expected by the reporters  $[_{CP}$  that the principal would fire  $t_1$  ] ?
- c.  $*[_{DP_1}$  Who ] was  $[_{CP}$  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.

(72) **Clause Non-final Incomplete Constituent Constraint<sup>r</sup>** (representational version):

\*...  $\alpha_1$  ... [ $\beta$  ...  $t_1$  ... ] ... if (a)–(c) hold:

- a.  $\beta$  = DP or CP.
- b.  $\beta$  is in a clause non-final position.
- c.  $\beta$  is incomplete.

(73) **An apparent problem:**

[<sub>DP<sub>1</sub></sub> Who ] does John think [<sub>CP<sub>2</sub></sub> Mary has persuaded t<sub>1</sub> [<sub>CP<sub>3</sub></sub> that Bill is a spy ]] ?

(73) **An apparent problem:**

[<sub>DP<sub>1</sub></sub> Who ] does John think [<sub>CP<sub>2</sub></sub> Mary has persuaded t<sub>1</sub> [<sub>CP<sub>3</sub></sub> that Bill is a spy ]] ?

**Note:**

(73) does not violate the Clause Non-final Incomplete Constituent Constraint because the only CP from which movement takes place is CP<sub>2</sub>; and CP<sub>2</sub> is incomplete after the movement operation, but it is in a clause-final position.

(74) A real problem?

- a. [DP<sub>1</sub> Which man ] did you buy [DP a picture of t<sub>1</sub> ] from Mary ?
- b. [DP<sub>1</sub> Which tree ] did you see [DP the leaves of t<sub>1</sub> ] in the yard ?

Note:

Kuno assumes that (74-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 [(74-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?

# The Post-Sentential Subject Extraction Constraint

(75) **Post-Sentential Subject Extraction Constraint<sup>d</sup>** (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.

(76) **A consequence for wh-movement:**

- a. [DP<sub>1</sub> Who ] do you think [CP<sub>1</sub> that [DP<sub>2</sub> Bill's resignation ] would surprise t<sub>1</sub> ] ?
- b. \*[DP<sub>1</sub> Who ] do you think [CP<sub>1</sub> that [CP<sub>2</sub> for Bill to resign ] would surprise t<sub>1</sub> ] ?

(77) A consequence for topicalization:

- a. [DP<sub>1</sub> John ] [DP<sub>2</sub> Bill's resignation ] would not surprise t<sub>1</sub>
- b. \*[DP<sub>1</sub> John ] [CP<sub>2</sub> for Bill to resign ] would not surprise t<sub>1</sub>

(78) Post-Sentential Subject Extraction Constraint<sup>r</sup> (representational version):

\*...α<sub>1</sub> ... [ ... β ... [ ... t<sub>1</sub> ... ] ... ] 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.

(79) Movement of sentential subjects:

That John would be late, Mary didn't think was very likely.



# Conclusion

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 revision) and for the Superiority Condition. It therefore does not come as a surprise that the combination of these two conditions is widely considered valid nowadays. (The combined constraint is known as the **Minimal Link Condition**; more on this constraint is to come later.)

# F-over-F Principle and Superiority Condition

(80) **F-over-F Principle<sup>d</sup>**:

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  $[\bullet F \bullet]$ .

(81) **Superiority Condition<sup>d</sup>** (Chomsky (1973)):

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  $[\bullet F \bullet]$ .

## Note:

The constraints discussed here are all local (derivational or representational); see (1), (2). 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.

(82) **Shortest Paths Condition**<sup>td</sup> (Chomsky (1993)):

Minimize the length of movement paths.

(Given the set of derivations that are based on the same LA, choose the derivation in which movement paths have minimal length.)

(83) **Movement path** (informal):

A movement path is the set of nodes that are crossed by movement operation. A movement path  $\alpha$  is shorter than a movement path  $\beta$  if  $\alpha$  has fewer nodes than  $\beta$ .