

# Superiority vs. Cross Over

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## 1 Economy

- (1) a. Whom<sub>1</sub> did John persuade t<sub>1</sub> [to visit whom<sub>2</sub>]  
b. \*Whom<sub>2</sub> did John persuade whom<sub>1</sub> [to visit t<sub>2</sub>]
- (2) *The Superiority Condition:* (Chomsky (1973, p. 246))
  - a. No rule can involve X, Y in the structure  
...X...[...Z...WYV...].  
where the rule applies ambiguously to Z and Y, and Z is superior to Y.
  - b. The category A is ‘superior’ to the category B if every major category dominating A dominates B as well but not conversely.
- (3) Chomsky (1993, p. 14)

“Looking at these phenomena in terms of economy considerations, it is clear that in all the ‘bad’ cases, some element has failed to make ‘the shortest move.’ In [(1-b)] movement of *whom*<sub>2</sub> to [Spec, CP] is longer in a natural sense (definable in terms of *c*-command) than movement of *whom*<sub>1</sub> to this position ...”
- (4) *Shortest Paths Condition:*

Given two convergent derivations D<sub>1</sub> and D<sub>2</sub> with the same numeration, D<sub>1</sub> blocks D<sub>2</sub> if D<sub>1</sub>’s chains are shorter.
- (5) *A counterexample:* (Huang (1982, p. 576), Lasnik & Saito (1992, p. 120))
  - a. Who wonders what<sub>1</sub> who<sub>2</sub> bought t<sub>1</sub> (S-structure)
  - b. ([e] who wonders) [e] who<sub>2</sub> bought what<sub>1</sub> (D-structure)
  - c. Who wonders who<sub>2</sub> t<sub>2</sub> bought what<sub>1</sub>
- (6) *LF-Movement and Shortest Paths:* (Baker’s (1970) ambiguity)

who knows where we bought what

↑	↑ shortest “move”
longer, but also grammatical	
- (7) *Shortest Paths (2)* (cf. Kitahara (1993, p. 109)):

Given two convergent derivations D<sub>1</sub> and D<sub>2</sub> with the same LF, D<sub>1</sub> blocks D<sub>2</sub> if D<sub>1</sub>’s chains are shorter.

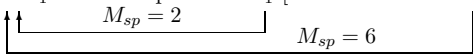
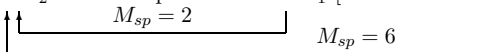
(8) *Reference Set:*

Two convergent derivations are in the same RS if and only if they have the same numeration and the same LF.

**Problems with LF-Movement**(9) *Structure of specifiers:*

- a. [CP [[whom<sub>1</sub>] whom<sub>2</sub>] ...]  
 b. [CP [[whom<sub>2</sub>] whom<sub>1</sub>] ...]

(10) *Shortest Paths Metrics (S-structure + LF):*

- a. Whom<sub>1</sub> did John persuade t<sub>1</sub> [ PRO to visit whom<sub>2</sub> ]  

- b. \*Whom<sub>2</sub> did John persuade whom<sub>1</sub> [ PRO to visit t<sub>2</sub> ]  


**Assumption: No LF-Movement for Wh-Phrases**(11) *Shortest Paths (3)* (cf. Kitahara (1993, p. 109)):

Given two convergent derivations D<sub>1</sub> and D<sub>2</sub> with the same LF output, D<sub>1</sub> blocks D<sub>2</sub> if D<sub>1</sub>'s chains are shorter.

(12) *Reference Set:*

Two convergent derivations are in the same RS if and only if they have the same numeration and the same semantic interpretation.

**Problems**

- (13) a. (11) is a look ahead device that probably has to look “too far;” it threatens to undermine the “Autonomy of Syntax.”  
 b. (11) cannot be reformulated in terms of Chomsky’s derivational reformulation of Superiority (Chomsky (1995, p. 296)):  
 “α can raise to target K only if there is no legitimate operation Move β targeting K, where β is closer to K.”

**A Solution**(14) *Scope Marking:* (von Stechow & Sternefeld (1988, p. 344ff))

- a. Was<sup>i</sup> glaubst du wer<sup>j</sup> wen<sup>k</sup> getroffen hat  
 What believe you who whom met has  
 ‘Who do you believe has met whom’  
 b. Was<sup>i</sup> glaubst du was<sup>i</sup> Fritz meint wer<sup>j</sup> gekommen ist  
 What believe you what Fritz thinks who come is  
 ‘Who do you believe Fritz thinks has come’

(15) *Superiority:* (Müller (1996))

A category α with a feature F can be moved to a position β only if there is no category γ with an unchecked feature of the same type as α that is closer to β. (where α and β are of different types if they have different scope indices).

As far as indexing is concerned, Superiority is reminiscent to a Cross-Over Condition:

(16) a. *Weak Cross Over Principle* (Chomsky (1976)):

A variable cannot be antecedent of a pronoun on its left.

- b. \*Who<sub>i</sub> does his<sub>i</sub> mother love t<sub>i</sub>

(17) *Generalized Cross Over:*

An operator cannot locally BIND something (a pronoun, *wh*-phrase, ...) which is to the left of the trace of that operator (where BINDING subsumes binding with referential and scope indices).

**2 Superiority and WCO****2.1 Wh/QP Interaction and WCO – Chierchia 1991/93**(18) a. Who<sub>i</sub> does everyone like t<sub>i</sub>

- b. Who<sub>i</sub> t<sub>i</sub> likes everyone

## (19) a. Mary

- b. His mother

- c. Bill likes Mary, Frank likes Susan, and John likes Julia.

WH/quantifier structures generate pair-list readings

- (i) when WHs have functinal interpretations in which there is an implicit pronoun bound to the quantifier, and

- (ii) the quantifier is of a type that can generate a domain (e.g., universal quantifier)

The binding of the implicit pronoun is subject to WCO restrictions and this induces the subject/object asymmetry in WH/quantifier interactions.

## (20) a. Who does everyone love t

- b. [CP who<sub>i</sub> [IP everyone<sub>j</sub> [IP t<sub>j</sub> loves [pro<sub>j</sub> t<sub>i</sub>]]]] (ok PL)

## (21) a. Who t loves everyone

- b. [CP who<sub>i</sub> [IP everyone<sub>j</sub> [IP [pro<sub>j</sub> t<sub>i</sub>] loves t<sub>j</sub>]]] (\*WCO ⇒ \*PL)

(22) a. \*His<sub>j</sub> mother loves everyone<sub>j</sub>.

- b. [IP everyone<sub>j</sub> [IP [his<sub>j</sub> mother] loves t<sub>j</sub>]]

(23) \*daß seine<sub>i</sub> Mutter jeden<sub>i</sub> liebt

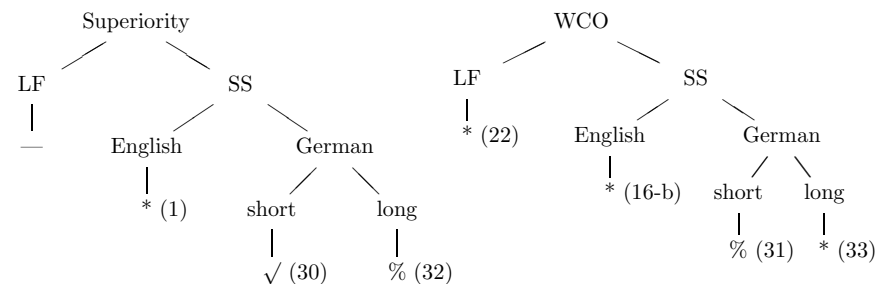
- that his mother everyone loves

## 2.2 Superiority and WCO – Hornstein 1995

- (24) Assumptions:
- The WH in SpecC functions like *everyone* in (20) (as a generator for the list) on the pair-list reading.
  - WHs-in-situ are interpreted functionally.
  - Only WH-elements such as *who*, *what*, etc. that range over individuals can act as a quantificational generator for a pair-list reading.
  - The requirement of exhaustiveness suffices to generate the pair-list reading.
- (25) a. Who<sub>i</sub> t<sub>i</sub> bought what  
 b. [CP who<sub>i</sub> [IP t<sub>i</sub> bought [pro<sub>i</sub> N ] ]]
- (26) a. \*What<sub>i</sub> did who buy t<sub>i</sub>  
 b. \*[CP what<sub>i</sub> [IP [pro<sub>i</sub> N] bought t<sub>i</sub> ]]
- (27) a. \*What<sub>i</sub> do you expect who to buy t<sub>i</sub>?  
 b. \*[CP what<sub>i</sub> [IP you expect [[pro<sub>i</sub> N] to buy t<sub>i</sub> ]]]
- (28) a. Which book<sub>i</sub> did you send t<sub>i</sub> to its<sub>i</sub> author?  
 b. \*Which author<sub>i</sub> did you send his<sub>i</sub> book to t<sub>i</sub>?
- (29) a. What<sub>i</sub> did you send t<sub>i</sub> to who?  
 a'. [CP what<sub>i</sub> [IP you send t<sub>i</sub> to [pro<sub>i</sub> N]]]  
 b. \*Who(m)<sub>i</sub> did you send what to t<sub>i</sub>?  
 b'. \*[CP who<sub>i</sub> [IP you send [pro<sub>i</sub> N] to t<sub>i</sub>]]

Conclusion: Superiority is WCO.

## 3 Superiority and WCO in German



- (30) a. Wer hat was gekauft?  
 who has what bought

- b. Was hat wer gekauft?  
 what has who bought
- (31) (?)Wen<sub>i</sub> liebt seine<sub>i</sub> Mutter t<sub>i</sub>?<sup>1</sup>  
 whom loves his mother  
 ‘Who<sub>i</sub> does his<sub>i</sub> mother love t<sub>i</sub>?’
- (32) a. ??Wen<sub>i</sub> glaubt wer, daß Hans t<sub>i</sub> gesehen hat?  
 whom believes who that Hans seen has  
 ‘Whom does who believe that Hans saw t?’  
 (Frey (1989), Buring & Hartmann (1993), Fanselow (1995, 21)<sup>2</sup>)  
 b. Ich weiß, was<sub>i</sub> er wem gestand [PRO t<sub>i</sub> gesehen zu haben]  
 I know what he to-whom confessed seen to have  
 (Fanselow (1991, 330))
- (33) \*Wen<sub>i</sub> glaubt seine<sub>i</sub> Mutter, daß jeder t<sub>i</sub> liebt?  
 whom believes his mother that everyone loves  
 ‘Who<sub>i</sub> does his<sub>i</sub> mother believe that everyone loves t<sub>i</sub>?’

Where the correlation breaks down (Haider (1996, 324))

- (34) a. \*Was<sub>i</sub> hast Du seinen<sub>i</sub> Besitzer überredet, [ PRO t<sub>i</sub> dir zu verkaufen]?  
 what has you its owner persuaded PRO you<sub>dat</sub> to sell  
 ‘what<sub>i</sub> did you persuade its<sub>i</sub> owner to sell t<sub>i</sub> to you?’  
 b. \*Jedes Bild<sub>i</sub> habe ich seinen<sub>i</sub> Besitzer überredet, [ PRO t<sub>i</sub> dir zu verkaufen].  
 sell  
 ‘every picture<sub>i</sub>, I persuaded its<sub>i</sub> owner to sell t<sub>i</sub> to you.’
- (35) Was<sub>i</sub> hast Du denn wen (jeweils) überredet, [PRO t<sub>i</sub> dir zu verkaufen]?  
 ‘what<sub>i</sub> did you persuade who [PRO to sell t<sub>i</sub> to you]?’  
 (Fanselow (1991, 330f))

(36)	short WCO	“long” Superiority
Dialect A	✓	*
Dialect B	*	*
Dialect C	✓	✓
Dialect D	*	✓

<sup>1</sup>Judgments vary considerably; cf. Grewendorf (1988), Haider (1988), Frey (1989), Webelhuth (1989), Höhle (1991), Fanselow (1991)

<sup>2</sup>In Fanselow & Mahajan (1996, 158), however, (32-a) is judged as grammatical.

## 4 Towards an Explanation

### 4.1 A Problem for Scrambling and Reconstruction

(37) Reconstruction for the purpose of binding by an object (Frank, Lee & Rambow (1992)):

- \*Ich glaube, daß der Jörg [ seinen<sub>i</sub> Vater ]<sub>j</sub> jedem<sub>i</sub> t<sub>j</sub> gezeigt hat  
I believe that ART Jörg his father to-everyone shown has
- \*Ich glaube, daß seinen<sub>i</sub> Vater jedem<sub>i</sub> der Jörg t<sub>i</sub> t t gezeigt hat
- \*Ich glaube, daß seinen<sub>i</sub> Vater jeder jedem<sub>i</sub> t t gezeigt hat
- \*Ich glaube, daß seinen<sub>i</sub> Vater jedem<sub>i</sub> jeder t t gezeigt hat

(38) Reconstruction for the purpose of binding with a subject:

- Ich glaube, daß seinen<sub>i</sub> Vater jedem der Jörg<sub>i</sub> t t gezeigt hat
- Ich glaube, daß seinen<sub>i</sub> Vater jeder<sub>i</sub> jedem t t gezeigt hat (compare (37-c))

How can this subject/object-asymmetry be explained?

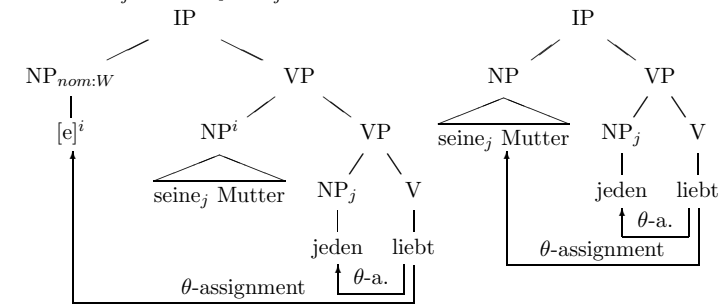
### 4.2 The “Return of the Base Generators” – Fanselow 1992

(39) Minimal assumptions (a *mélange* of Besten (1985), Hale (1983), Fanselow (1992)):

- All arguments can (or must?) be generated VP-internally (or are adjoined to VP?).
- All VP-internal argument positions are assigned an internal  $\theta$ -role; the VP-external (nominative) position is assigned the external  $\theta$ -role.
- German is like Italian (cf. Chomsky (1981)) in allowing
  - an expletive *pro* in the VP-external subject position (impersonal passives) and
  - a base generated coindexed VP-internal subject position adjoined to a projection of V.
- Movement of the subject into its  $\theta$ -position does not leave a trace (or: is not reconstructable).
- The nominative Case feature can be strong or weak.
- Direct and indirect objects are base generated and  $\theta$ -marked in either order.
- At LF, the subject can rest in situ in Dialect A; it must move to its  $\theta$ -position in Dialect B.

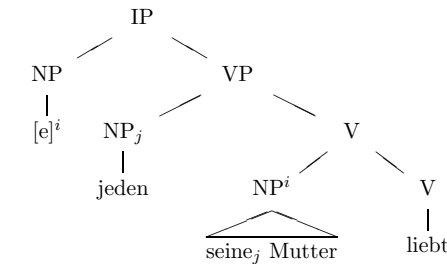
### 4.3 Sample Analyses

(40) \*weil seine<sub>j</sub> Mutter jeden<sub>j</sub> liebt:



Binding would require QR, which results in a WCO-configuration.

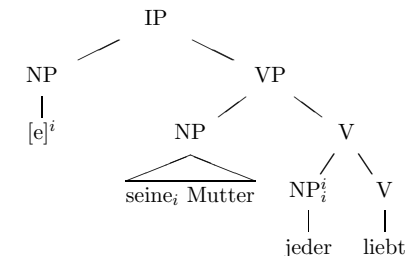
(41) weil jeden<sub>j</sub> seine<sub>j</sub> Mutter liebt:



No WCO in dialect A, because nothing can move; not interpretable in Dialect B because of movement of the subject at LF.

(42) weil jeder<sub>i</sub> seine<sub>i</sub> Mutter liebt: No problem.

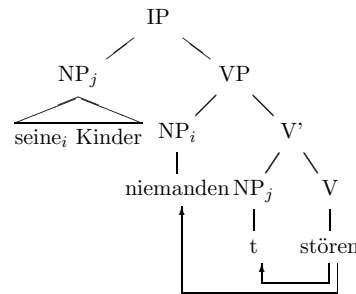
(43) weil seine<sub>i</sub> Mutter jeder<sub>i</sub> liebt:



LF-Movement into subject position, but: No trace (or: A-Movement), no WCO-configuration.

**Ergative verbs:**

- (44) weil seine
- <sub>i</sub>
- Kinder niemanden
- <sub>i</sub>
- stören:



Variable binding proceeds via reconstruction into the  $\theta$ -position of the subject

- (45) weil niemanden<sub>i</sub> seine<sub>i</sub> Kinder stören  
 (46) weil niemand<sub>i</sub> seine<sub>i</sub> Kinder stört  
 (47) weil seine<sub>i</sub> Kinder niemand<sub>i</sub> stört

All acceptable in all dialects: Movement into subject position can be reconstructed, because the trace is  $\theta$ -marked.

**5 Conclusion**

- The MLC can account for Superiority in Dialects A and B if scope indexing is taken into account.
- Equating Superiority with WCO cannot explain dialect B (ungrammaticality of WCO, but grammaticality of Sup.), C, and D.
- Moreover, the analysis of *wh*-phrases in terms of functional dependencies is semantically vacuous; semantics could work the same way without it.
- The MLC cannot explain the grammaticality of long Superiority in Dialects C and D.
- Finally, there seems to be no complete parallelism even in English; cf.

- (48) WCO violation, but functional answer ok.:  
 a. \*[His<sub>j</sub> defense]<sub>i</sub> worries t<sub>i</sub> everyone<sub>j</sub>  
 b. What worries everyone? (His defense) Chierchia (1993, 221)<sup>3</sup>

<sup>3</sup>But compare the grammaticality of the German examples with ergative verbs (44)-(48); cf. also

- (i) a. [Seine<sub>j</sub> Verteidigung]<sub>i</sub> bereitete jedem<sub>j</sub> t<sub>i</sub> Sorgen  
 b. weil seine<sub>j</sub> Verteidigung jedem<sub>j</sub> t<sub>i</sub> Sorgen bereitet

- c. ??I sent his book to every author Larson (1988, 338)<sup>4</sup>  
 d. Which paper did John return/send to every student (His phonology paper) Chierchia (1993, 216)

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- <sup>4</sup>An analogous example is judged grammatical in Chierchia (1993, 216):  
 (i) John returned his<sub>i</sub> paper to every student<sub>i</sub>

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