The Asymmetry and Antisymmetry of Syntax

A Relational Approach to Displacement

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Abstract

Restrictions on displacement in syntax and phonology lead to sequences of contiguous elements:

- Feature Geometry-based Relativised Minimality (Starke 2001)
- Contiguous Agree (Nevins 2007)
- Line-Crossing Prohibition (Goldsmith 1976)

I argue that:

- Asymmetric relations are the basis of phrase structure
- Contiguity Effects follow from use of weak orders
- The existence of displacement and locality follows from use of Order Theory
1 Evidence for asymmetry in syntax
   ① The status of c-command
   ② Phrase markers as strict orders

2 The role of antisymmetry
   ① Properties of displacement
   ② Properties of weak orders

3 Schematic derivations

4 Antisymmetry and Contiguity Effects
   ① Relativised Minimality
   ② Contiguous Agree
   ③ Line-crossing Prohibition

5 Conclusion
What's (Kaynian) antisymmetry?

**LCA**

A → B ≺ D ≺ F

- Hierarchical structure needs to be linearised for phonology
- Kayne’s proposal for this: L(inear) C(orrespondence) A(xiom)
- Asymmetric c-command between terminals maps to linear precedence, yielding a strict total order
• Extensive empirical evidence for ‘antisymmetry’ in syntax (Kayne 1994 et seq.)
• If correct, then asymmetric c-command and strict orders are significant for system
• Why is the only part of Order Theory relevant to syntax **strict** orders?
Kinds of relation

- ‘Antisymmetry’ referred to more commonly outside of linguistics as ‘asymmetry’, as based on asymmetric relations
- Symmetry holds when existence of a relation from $a$ to $b$ implies its inverse
- Asymmetry is the opposite
- Antisymmetry holds if a symmetric relation implies equality

<table>
<thead>
<tr>
<th>Symmetry</th>
<th>$aRb \iff bRa$.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymmetry</td>
<td>$aRb \Rightarrow \neg bRa$.</td>
</tr>
<tr>
<td>Antisymmetry</td>
<td>$aRb \land bRa \Rightarrow a = b$.</td>
</tr>
</tbody>
</table>
Kinds of order

- Two of these relations have a corresponding order
  - Asymmetric relations form strict orders
  - Antisymmetric relations form weak orders
- Symmetric relations cannot be used for ordering

**Strict order**
\[ \beta \rightarrow \alpha \]

**Weak order**
\[ \delta \rightarrow \gamma \]

**No order**
\[ \zeta \leftrightarrow \epsilon \]
\[ \delta \leftrightarrow \gamma \]
\[ \theta \leftrightarrow \eta \]
• Symmetric and asymmetric relations have been investigated
  • Asymmetric c-command due to Linear Correspondence Axiom (Kayne 1994)
  • Symmetric c-command due to Dynamic Antisymmetry (Moro 1997)
  • What about *antisymmetric* relations?

• Meanwhile...
  • Merge and BPS do not predict existence of chains
  • Antisymmetry \((aRb \land bRa \Rightarrow a = b)\) may be basis for chains
  • If so there ought to be resulting idiosyncrasies
Evidence for asymmetry in syntax

1. The status of c-command
2. Phrase markers as strict orders

The role of antisymmetry

1. Properties of displacement
2. Properties of weak orders

Schematic derivations

Antisymmetry and Contiguity Effects

1. Relativised Minimality
2. Contiguous Agree
3. Line-crossing Prohibition

Conclusion
Section 1  Evidence for asymmetry in syntax
Subsection ① The status of c-command
• C-command relevant to disparate syntactic phenomena (binding, agreement, movement, etc.) suggesting fundamental place in system
• Use of c-command as a primitive in phrase structure restricts possible structures to a subset of LCA-compatible structures (Frank and Vijay-Shanker 2001)
Asymmetry

Antisymmetry

Schematic derivations

Contiguity Effects

Conclusion

The status of c-command

Indistinguishable trees

\[ \varepsilon \]
\[ \delta \]
\[ \gamma \]
\[ \beta \]
\[ \alpha \]

\[ \varepsilon \]
\[ \delta \]
\[ \gamma \]
\[ \alpha \]
\[ \beta \]
• Why would c-command be basis of phrase structure?
  • C-command combines a symmetric relation, sisterhood, with an asymmetric relation, dominance (assuming proper dominance)
  • C-command proposed very early, and has outlasted many other proposed relations, so seems to be essentially correct (Epstein 1999)

• Other possibility would be to try to reduce c-command to only precedence or dominance
• Asymmetric c-command already coincides with both precedence and dominance to a large extent (under Kaynian assumptions)
The status of c-command

- (Subparts of) structures able to be defined in terms of c-command can be modelled with Regular Grammars
- Regular Grammars are most restricted grammar on Chomsky Hierarchy

FSA-equivalent structure

```
γP
  γP
  βP
  β
  αP
  α
```

FSA rules

\{γP → γ βP, βP → β αP, αP → α\}
The status of c-command

- Regular Grammars on their own cannot accommodate specifiers
- Specifiers a challenge because they need to appear to the system to be simplex nodes
- Multiple Spell-out: specifiers linearised in multiple cycles (Uriagereka 2011)
- After each cycle specifier becomes opaque and inserted into larger structure
The status of c-command

Multiple Spell-out

\[
\gamma P + \epsilon P \rightarrow \epsilon P
\]

\[
\begin{array}{cccccc}
\gamma & \beta P & \gamma P & \bar{\epsilon} & \gamma P & \bar{\epsilon} \\
\beta & aP & \epsilon & \delta P & \gamma \beta \alpha & \epsilon & \delta P \\
\alpha & \delta & \ldots & & \delta & \ldots \\
\end{array}
\]
The status of c-command

- Hypothesis that system works with Regular Grammars can be maintained if recursive embedding possible
- If system always manipulates these structures, for terminals hierarchy and order will always coincide with asymmetric c-command
- If phrase structure based on a single asymmetric relation, then phrase marker can be conceived as a single strict order of terminals
<table>
<thead>
<tr>
<th>Asymmetry</th>
<th>Antisymmetry</th>
<th>Schematic derivations</th>
<th>Contiguity Effects</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambridge</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subsection ② Phrase markers as strict orders**
Asymmetry and Antisymmetry

- Labelling (of non-terminals) appears to be theory-internal (Chomsky 2013)
- Labelling determined by Labelling Algorithm (Chomsky 2013; 2015)

**Labelled and unlabelled structures**
Phrase markers as strict orders

- Phrase comprising head and phrase \{H,XP\} \rightarrow labeled by head H
- Phrase with two heads: root-categoriser distinction leads only categorisers to contribute labels
- Assume that specifiers never contribute label to phrase containing them because opaque to Labelling Algorithm due to embedding (cf. root-categoriser distinction)
- Specifiers would then be labelled by following node (unless also a specifier)
- If labelling predictable, and phrase markers have no labels, then possible to derive phrasal nodes from strict orders using Labelling Algorithm.
- Abstract asymmetric ordering relation axiomatic, hence no need to define c-command in terms of Graph Theory.
- Abstract ordering relation would map to order and hierarchy in externalisation.

**FSA-equivalent orders**

\[ \delta \rightarrow ? \rightarrow \gamma \rightarrow \beta \rightarrow \alpha \]

**Labelled specifier**

\[ (\delta \prec \gamma) \rightarrow \beta \rightarrow \alpha \]
Asymmetry
Antisymmetry
Schematic derivations
Contiguity Effects
Conclusion

Phrase markers as strict orders

Strict order and equivalent tree

\[ \zeta \rightarrow \varepsilon \rightarrow (\delta \prec \gamma) \rightarrow \beta \rightarrow \alpha \]

\[ \zeta \rightarrow \varepsilon \rightarrow \beta \rightarrow \delta \rightarrow \gamma \rightarrow \beta \rightarrow \alpha \]

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• Linearisation is doing much less than normally assumed—flattening recursively embedded specifiers into single total order
• Enforces ‘antisymmetry’ throughout derivation without claiming linearisation necessary for LF
• Far simpler relation than c-command (arguably simplest possible relation), and evidenced by both interfaces
• Biolinguistically plausible due to frequency of sequencing operations in natural world
• Strict order manipulation tested experimentally for primates (Samuels et al. 2017)
Given use of strict orders, why not weak order if orders are either strict or weak?
Evidence for asymmetry in syntax
  ① The status of c-command
  ② Phrase markers as strict orders

The role of antisymmetry
  ① Properties of displacement
  ② Properties of weak orders

Schematic derivations

Antisymmetry and Contiguity Effects
  ① Relativised Minimality
  ② Contiguous Agree
  ③ Line-crossing Prohibition

Conclusion
Section ❷ The role of antisymmetry
What's displacement?

- Displacement: extension or modification of existing structure using a subpart of this structure
- Formalisms modelling phenomenon substantially different (e.g. Internal Merge, Agree, and Autosegmental spreading)
- Similar condition has emerged in all
- Sequences of elements created must be contiguous in some sense (Starke 2001; Nevins 2007; Goldsmith 1976)
• Repetition of structure leads to tension between identity and distinctness
• Identical due to copying
• Distinct due to individuability
• Claim: tension results from conflicting ordering information
• Syntactic Objects may be in both strict and weak orders at the same time
• Possible resulting conflicting ordering information captures nature of displacement
Subsection ① Properties of displacement
Similar condition on displacement in three formalisms:

- Feature Geometry-based Relativised Minimality (Starke 2001): movement blocked when chain of copies sharing particular feature interrupted by intervening element with shared feature
- Contiguous Agree (Nevins 2007): multiple Agree searching from higher probe for goal with marked or contrastive feature value cannot skip intervening unmarked or non-contrastive goals
- Line-crossing Prohibition (Goldsmith 1976): spreading cannot take place across intervening element already linked to tier for which spreading is taking place
**[Quant₁][Quant₂][Quant₁]**

How much fun is she not having <how much fun>?

[Quant] [Quant] [Quant]

*<2,1> with probe search relativisation for marked [Auth]*

([+ Auth] is marked)

υ Maria tie- m- a prezentat
Maria 2-dat 1-acc has introduced

[uAuth] [− Auth] [+ Auth]

‘Maria has introduced me to you.’
(Romanian; adapted from Nevins 2007)
• Displacement must form contiguous chain with source element
• Conditions can be accounted for separately, yet are suspiciously similar
• Same element in multiple distinct positions
• Seems to be contradictory; most accounts imply it to be illusion
• Two basic options: copying or referencing
• Problems identical: identity and distinctness contradictory, but both necessary
• Copying approach leads to indices or variable interpretation
• Referencing approach often involves distinction between true element and references, or treating all occurrences as references
• Not possible to use indices or referencing to capture identity aspect of displacement as these added later (violating Inclusiveness (Chomsky 2014/1995))
• Variable interpretation more feasible, but on what basis?
• What about Order Theory?
Subsection ② Properties of weak orders
Properties of weak orders

- Claim: same nodes exist in both strict and weak orders
- Whether a node judged identical depends on order considered
- Nodes always distinct in strict order
- Nodes may be distinct in weak orders
Properties of weak orders

Ordering possibilities and identity and distinctness

<table>
<thead>
<tr>
<th>Operation</th>
<th>Strict order</th>
<th>Weak order</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Merge</td>
<td>Distinct</td>
<td>Distinct</td>
</tr>
<tr>
<td>Internal Merge</td>
<td>Distinct</td>
<td>Identical</td>
</tr>
</tbody>
</table>

- Two-way distinction yields two possibilities corresponding to External and Internal Merge
- Internal Merge effectively establishes extra antisymmetric relation

External Merge

```
β → β
α ← α
```

Internal Merge

```
γ ← γ
γ ← γ
```

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Asymmetry and Antisymmetry
• Abstract asymmetric ordering relation corresponding to asymmetric c-command can be represented with precedence relation \( \prec \)

• \( \preceq \): equivalent antisymmetric relation (precedes or equal to)

• \( = \): equality

• Difference between \( \prec \) and \( \preceq \) relations parallel to that between \( < \) and \( \leq \) relations (asymmetric versus antisymmetric)
• Symmetric antisymmetric relations yield equality
• Existence of such relations between two or more nodes corresponds to traditional chain
• Unlike indices, weak orders impose limits on possible chains

1 ≤ 2 ≤ 3

3 ≥ 2 ≥ 1

1 = 1 = 1
Properties of weak orders

- By transitivity, $1 \leq 2 \leq 1$ gives $1 = 2 = 1$, which is false
- Monotonicity rules out existence of interveners
### Order inventory

<table>
<thead>
<tr>
<th>Order</th>
<th>Membership criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strict</td>
<td>None (all nodes)</td>
</tr>
<tr>
<td>Weak</td>
<td>Head positions</td>
</tr>
<tr>
<td>Weak</td>
<td>Argumental features: Person, Number, Gender, Case,...</td>
</tr>
<tr>
<td>Weak</td>
<td>Quantificational features: <em>wh</em>, Foc, Neg, Measure, Frequency</td>
</tr>
<tr>
<td>Weak</td>
<td>Modifier features: Evaluative, Evidential, Manner, Measure, Frequency, Neg,...</td>
</tr>
<tr>
<td>Weak</td>
<td>Topic</td>
</tr>
</tbody>
</table>

(adapted from Rizzi 2011)
- Relativised Minimality, Contiguous Agree, and the Line-crossing Prohibition all result from weak ordering effect
- Conflicting requirements of identity and distinctness in displacement due to the possibility for elements to be in two potentially contradictory orders
- Strict orders
  - Used to extend phrase marker
  - May be recursively embedded (at least in syntax)
  - Contain information used for linearisation at PF as well as information about e.g. scope and other LF concerns
- Weak orders
  - Allow displacement to occur by formation of equality relations between nodes
  - Only contain subset of the nodes in strict order
1. Evidence for asymmetry in syntax
   ① The status of c-command
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2. The role of antisymmetry
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   ② Properties of weak orders

3. Schematic derivations

4. Antisymmetry and Contiguity Effects
   ① Relativised Minimality
   ② Contiguous Agree
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5. Conclusion
Section 3  Schematic derivations
Before External Merge of $\varepsilon$

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: $[F_1]$</th>
<th>Weak order: $[F_2]$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\delta$</td>
<td>$\gamma$</td>
<td>$\delta$</td>
</tr>
<tr>
<td>$\gamma$</td>
<td>$\beta$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>$\beta$</td>
<td>$\alpha$</td>
<td>$\alpha$</td>
</tr>
<tr>
<td>$\alpha$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• A new item ε is merged with the existing structure
• ε has [F₁]

After External Merge of ε

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: [F₁]</th>
<th>Weak order: [F₂]</th>
</tr>
</thead>
<tbody>
<tr>
<td>ε → δ → γ → β → α</td>
<td>ε → γ → β → α</td>
<td>δ → β → α</td>
</tr>
</tbody>
</table>
Before Internal Merge of $\gamma$

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: $[F_1]$</th>
<th>Weak order: $[F_2]$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\delta$</td>
<td>$\gamma$</td>
<td>$\delta$</td>
</tr>
<tr>
<td>$\gamma$</td>
<td>$\beta$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>$\beta$</td>
<td>$\alpha$</td>
<td>$\alpha$</td>
</tr>
<tr>
<td>$\alpha$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• $\gamma$, part of the existing structure, is merged with the overall structure
• $\gamma$ again has $[F_1]$

**After Internal Merge of $\gamma$**

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: $[F_1]$</th>
<th>Weak order: $[F_2]$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma$</td>
<td>$\delta$</td>
<td>$\gamma$</td>
</tr>
<tr>
<td>$\delta$</td>
<td>$\gamma$</td>
<td>$\gamma$</td>
</tr>
<tr>
<td>$\gamma$</td>
<td>$\beta$</td>
<td>$\gamma$</td>
</tr>
<tr>
<td>$\beta$</td>
<td>$\alpha$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>$\alpha$</td>
<td></td>
<td>$\alpha$</td>
</tr>
</tbody>
</table>
Collapsing of copies of $\gamma$

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: [$F_1$]</th>
<th>Weak order: [$F_2$]</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\gamma$</td>
<td>$\gamma$</td>
<td>$\delta$</td>
</tr>
<tr>
<td>$\delta$</td>
<td>$\beta$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>$\gamma$</td>
<td>$\alpha$</td>
<td></td>
</tr>
<tr>
<td>$\beta$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\alpha$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Asymmetry and Antisymmetry
### Before valuation of $\delta$’s $[F_1]$

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: $[F_1]$</th>
<th>Weak order: $[F_2]$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\delta$</td>
<td>$\gamma$: $[-F_1]$</td>
<td>$\delta$: $[+F_2]$</td>
</tr>
<tr>
<td>$\gamma$</td>
<td>$\beta$: $[-F_1]$</td>
<td>$\beta$: $[-F_2]$</td>
</tr>
<tr>
<td>$\beta$</td>
<td>$\alpha$: $[-F_1]$</td>
<td></td>
</tr>
<tr>
<td>$\alpha$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• Agree is similar but with feature values
• \( \delta \) has an unvalued \([F_1]\) feature
• Value from \( \gamma \) is copied

**After valuation of \( \delta \)'s \([F_1]\)**

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: ([F_1])</th>
<th>Weak order: ([F_2])</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \delta )</td>
<td>( \delta: [+F_1] )</td>
<td>( \delta: [+F_2] )</td>
</tr>
<tr>
<td>( \gamma )</td>
<td>( \gamma: [+F_1] )</td>
<td>( \beta: [-F_2] )</td>
</tr>
<tr>
<td>( \beta )</td>
<td>( \alpha: [-F_1] )</td>
<td></td>
</tr>
<tr>
<td>( \alpha )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Collapsing of values for \([F_1]\)

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: ([F_1])</th>
<th>Weak order: ([F_2])</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\delta)</td>
<td>(\delta/\gamma: [+F_1])</td>
<td>(\delta: [+F_2])</td>
</tr>
<tr>
<td>(\gamma)</td>
<td>(\alpha: [-F_1])</td>
<td>(\beta: [-F_2])</td>
</tr>
<tr>
<td>(\beta)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• Problem: apparently identical elements in strict orders resulting from Internal Merge
• If phrasal and head movement both create specifiers (Matushansky 2006), then what is moved becomes embedded and distinct from original element
• Occurs recursively (if more movement)
Evidence for asymmetry in syntax
- The status of c-command
- Phrase markers as strict orders

The role of antisymmetry
- Properies of displacement
- Properties of weak orders

Schematic derivations

Antisymmetry and Contiguity Effects
- Relativised Minimality
- Contiguous Agree
- Line-crossing Prohibition

Conclusion
Section 4  Antisymmetry and Contiguity Effects
Subsection ① Relativised Minimality
Before head movement

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: ([F_i])</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\delta)</td>
<td>(\gamma)</td>
</tr>
<tr>
<td>(\gamma)</td>
<td>(\beta)</td>
</tr>
<tr>
<td>(\beta)</td>
<td>(\alpha)</td>
</tr>
<tr>
<td>(\alpha)</td>
<td></td>
</tr>
</tbody>
</table>

\(\delta\) \rightarrow \gamma \rightarrow \beta \rightarrow \alpha \rightarrow \gamma \rightarrow \alpha \rightarrow \delta\)
Relativised Minimality violation

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: [F₁]</th>
</tr>
</thead>
<tbody>
<tr>
<td>(α)</td>
<td>α</td>
</tr>
<tr>
<td>δ</td>
<td>γ</td>
</tr>
<tr>
<td>γ</td>
<td>β</td>
</tr>
<tr>
<td>β</td>
<td>α</td>
</tr>
</tbody>
</table>

Relativised Minimality violation

Asymmetry and Antisymmetry
No Relativised Minimality violation

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: [F₁]</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>α ← γ ← β ← α</td>
</tr>
<tr>
<td>δ</td>
<td>α ← α</td>
</tr>
<tr>
<td>α</td>
<td>α ← α</td>
</tr>
<tr>
<td>β</td>
<td>α ← α</td>
</tr>
<tr>
<td>γ</td>
<td>α ← α</td>
</tr>
</tbody>
</table>

No Relativised Minimality violation
Before phrasal movement

Strict order | Weak order: [F₁]

ζ
(ε ≺ δ)
γ
β
α

ζ
(ε ≺ δ)
(β ≺ α)
Relativised Minimality violation

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: ([F_i])</th>
</tr>
</thead>
</table>

\[(\beta \prec \alpha)\]

\[(\varepsilon \prec \delta)\]

\[(\gamma \prec \beta)\]

\[(\alpha)\]
No Relativised Minimality violation

Strict order

Weak order: \([F_i]\)

\(\beta \prec \alpha\)

\(\zeta\)

\(\varepsilon \prec \delta\)

\(\gamma\)

\(\beta\)

\(\alpha\)
Subsection ② Contiguous Agree
• Agreement may involve only marked or contrastive values of features (Nevins 2007)
• Values being agreed with must be contiguous with element needing to agree (Nevins 2007)
Asymmetry and Antisymmetry
<table>
<thead>
<tr>
<th>Asymmetry</th>
<th>Antisymmetry</th>
<th>Schematic derivations</th>
<th>Contiguity Effects</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line-crossing Prohibition</td>
<td>Subsection ➂</td>
<td>Line-crossing Prohibition</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Asymmetry and Antisymmetry

Line-crossing Prohibition

**Spreading**

\[ k \quad t \quad b \]

\[ C \quad V \quad C \quad V \quad C \]

\[ a \]

**Line-crossing Prohibition violation**

\[ k \quad t \]

\[ C \quad V \quad C \quad V \quad C \]

\[ a \]
Line-crossing Prohibition violation

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: ([F_i])</th>
</tr>
</thead>
<tbody>
<tr>
<td>C \rightarrow V \rightarrow C \rightarrow V \rightarrow C</td>
<td>C: k \rightarrow C: t \rightarrow C: k</td>
</tr>
</tbody>
</table>

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Asymmetry and Antisymmetry
Before spreading

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<tr>
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<tbody>
<tr>
<td>(\delta)</td>
<td>(\delta: [-F_1])</td>
</tr>
<tr>
<td>(\gamma)</td>
<td>(\gamma: [+F_1])</td>
</tr>
<tr>
<td>(\beta)</td>
<td>(\alpha: [-F_1])</td>
</tr>
<tr>
<td>(\alpha)</td>
<td></td>
</tr>
</tbody>
</table>
Line-crossing Prohibition violation

<table>
<thead>
<tr>
<th>Strict order</th>
<th>Weak order: [F₁]</th>
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</thead>
<tbody>
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<td>The status of c-command</td>
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<td>Phrase markers as strict orders</td>
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<td>②</td>
<td>Contiguous Agree</td>
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<td>③</td>
<td>Line-crossing Prohibition</td>
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<tr>
<td>⑤</td>
<td>Conclusion</td>
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Section 5 Conclusion
• Strict orders may be more fundamental to syntax than usually assumed
• Contiguity effects in syntax and phonology seem to be a weak ordering effect
• Displacement and locality is expected in these systems because they make use of order theory, and weak orders allow displacement but impose severe restrictions on its use


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