

Explaining FOFC without the LCA

Hedde Zeijlstra

Georg-August-Universität Göttingen

hzeijls@uni-goettingen.de

I. Left-right asymmetries

- Where in the grammar are left-right distinctions determined?
- $[A [B C]] \leftrightarrow /A B C/$

I. Left-right asymmetries

- **In syntax:** Kayne (1994), Lexical Correspondence Axiom (LCA): All XPs are uniformly head-initial.
- **Postsyntactically/postgrammatically:** Ackema & Neeleman (2002), Abels & Neeleman (2012): XPs are either head-initial or head-final; rightward movement is substantially more constrained than leftward movement ('the ban on rightward movement').

I. Left-right asymmetries

- Discuss a well established, but not completely uncontroversial left-right constraint: the **Final-Over-Final-Constraint** (FOFC).
- Argue that FOFC as well as several presented counterexamples to it are better explained as a result of a ban on rightward movement than as a result of the LCA.
- Show how the result can extend to other known left-right asymmetries.

II. FOFC: generalization

- Biberauer et al. (2014): A head-final phrase GP cannot dominate a head-initial phrase HP, where G and H are heads in the same extended projection.

$[_{GP} G [_{HP} H XP]]$

$[_{GP} [_{HP} XP H] G]$

$[_{GP} G [_{HP} XP H]]$

* $[_{GP} [_{HP} H XP] G]$

II. FOFC: generalization

- Of all six possible orders of O, V and Aux, only V-O-Aux is universally ruled out (cf. Biberauer et al, Sheehan 2014):
 - a. **O-V-Aux** German and dialects of German, Dutch and its dialects, Afrikaans; Old English, Old Norse
 - b. **O-Aux-V** or so-called *verb-raising/VR* structures: Swiss German dialects, Dutch and its dialects, Afrikaans; Old English, Old Norse
 - c. **Aux-O-V** or so-called *verb-projection raising/VPR* structures which involves a head-initial TP and a head-final VP: Swiss German dialects, Dutch dialects, spoken Afrikaans; Middle Dutch, Old High German, Old English, Old Norse
 - d. **V-Aux-O**: required for CP-complements in German, Dutch, Afrikaans and their dialects; possible with PP-complements in Dutch and Afrikaans and, to a lesser extent, German; possible with DPs in Old English and Old Norse
 - e. **Aux-V-O**: English, Mainland Scandinavian, Icelandic; Old English
 - f. ***V-O-Aux**: unattested⁸ [summary based on BHR (2007: 97)]

II. FOFC: generalization

- In languages with both complementizers and polarity question particles, the hierarchical order is: CP>PolP. The word orders C-TP-Pol is pervasive, the order Pol-TP-C is virtually unattested:

Type	Position of Pol	Position of C	Number of Language: genera: families ¹⁰
A	Initial	Initial Only	72: 35: 13 (78) ¹¹
B	Final	Final Only	45: 33: 20 (46)
C	Final	Initial	74: 40: 16 (82)
D	Initial	Final	4: 3: 3 (4)

II. FOFC: generalization

Head-initial CP complements in OV languages must be extraposed:

- a. Hans sagt dass [er Marie gesehen hat]
- b. *Hans sagt dass [er [dass Marie krank ist] gesehen hat]
- c. Hans sagt dass [er gesehen hat [dass Marie krank ist]]

(Though this only follows from FOFC under specific assumptions regarding its restriction to extended projections.)

III. FOFC: explanation

- Explanation (Biberauer et al.):

Step I: the LCA:

- Head-Initial orders: can be base orders.
- Head-Final orders: must be derived orders.

III. FOFC: explanation

Step II: Movement is triggered:

- ,Movement is triggered by a general movement-triggering feature. We use ^ (caret) as a symbol for this feature'

$[_{HP} [H XP]]$

Head-Initial

$[_{HP} XP_i [H^{\wedge} \cancel{XP}_i]]$

Head-Final

III. FOFC: explanation

Step III:

- If a head X_i in the extended projection EP of a lexical head L, EP(L), has \wedge associated with its $[\pm V]$ -feature, then so does X_{i+1} , where X_{i+1} is c-selected by X_i in EP(L).

IV. FOFC: problems

- Biberauer et al.'s proposal has received a fair amount of criticism, both empirically and theoretically.

IV. FOFC: problems

- Various particles (tense, aspect, mood, negation) may appear in final order in VO languages:

IV. FOFC: problems

- Mandarin, Lagwan: Question particles (Biberauer et al 2014; Philip 2012; Erlewine 2015):

Hongjian xihuan zhe ben shu ma ?

Hongjian like this CL book Q

‘Does Hongjian like this book’

G-a mma ì gha da?

2SG-PERF leave her.ACC house Q

‘Did you leave it at home?’

IV. FOFC: problems

- Mumuye, Lao: Asp-Tense / modal particles
(Philip 2013; Biberauer in press)

Znaso de' baase' Ranti ni

Znaso PERF mimic Ranti IMMED.FUT

'Znaso is about to mimic Ranti.'

laaw vaw phaasaa laaw daj

3SG speak language Lao MOD

'S/he can speak Lao.'

IV. FOFC: problems

- Lagwan, Ma'di: Neg particles (Philip 2013)

Sa di-gir kasku diyasin sa
FUT 3FSG-go market tomorrow NEG
'She won't go to the market tomorrow.'

M-awı dotı ko
1SG-open door NEG.NONPST
'I won't open the door'

IV. FOFC: problems

- Possible solution 1: Particles are special.
- Q-markers can be conjunctions (cf. A-and-A questions) (cf. Biberauer et al. 2014).
- Questions and conjunctions are semantically distinct, suggesting that the account for Mandarin does not extend to other languages. Moreover, this does not extend to other particles.

IV. FOFC: problems

- Possible solution 2: Particles do not participate in the extended projection:
 - Neg-markers and other particles do not select
 - (Some) particles are a-categorial (Biberauer in press 2016)
 - But many particles are categorial or do select (AspP, TP, NegP with negative markers that have selectional tense or aspect requirements).

IV. FOFC: problems

- Possible solution 3: FOFC does not apply to extended projections, but to other domains:

- Complements of particles are ‘atomized’ (Sheehan 2014)
- FOFC applies to (language-specific) spell-out domains (complements of phase-heads, cf. Erlewine 2016, see also Richards 2016).
- But FOFC-violating particles are not restricted to the C- and v-edge elements. Many particles appear in between.

IV. FOFC: problems

Apart from these empirical problems, the LCA-based analysis also suffers from theoretical problems (cf. Sheehan 2014):

Most of these problems are not specific to FOFC but may be more generally problematic for the LCA.

IV. FOFC: problems

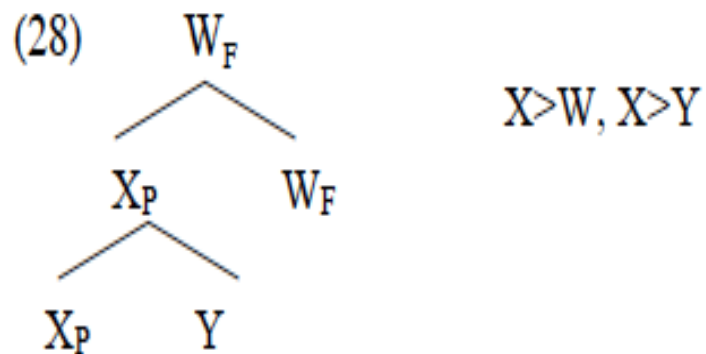
- If in HF structures the complement must move to the specifier, under Kaye's theory, there cannot be any extra specifier available. Now, certain categories must have specifiers, e.g. vP . If vP has a specifier, it must be HI, and so must every higher category (TP, CP). However, we know that HF TPs and CPs exist.
- Anti-locality: complement-to-specifier movement is generally ruled out (Abels 2003).
- HF structures involve more movement than HI structures; still HF structures are not anymore marked than HI structures.

IV. FOFC: problems

- Theoretically, the LCA-based account for FOFC faces various problems.
- Empirically, articles are pervasively FOFC-exempt and a FOFC-analysis should therefore predict the existence of such counter examples (pace Biberauer in press).

V. Alternative explanations

- Sheehan 2014: If a category A c-selects a category B, then A precedes/follows B at PF, but not the complement of B. Undetermined structures are subject to the LCA:



V. Alternative explanations

- W c-commands Y, so W should precede Y. But what do we get then?

X>W

X>Y

W>Y

= XWY !

- So, whenever you have a FOFC-violation, the structure gets spelled out as with the higher complement being split up. $[[V O] Aux]$ will be spelled out as V-Aux-O.

V. Alternative explanations

- However, it is not clear why the orders predicted Pol-C-TP and T-C-VP (predicted by Sheehan) never occur.
- A problem emerges for Sheehan when it comes to HI DPs in HF VP languages (like German).

... dass er [_{VP} [_{DP} eine Frau] gesehen] hat

How can the DP be to the left of V?

- Particles are left unexplained

V. Alternative explanations

- Hawkins (1994): Functional preferences for harmony; FOFC-obeying disharmony functionally preferred over FOFC-violating disharmony.
- But: disharmonic C-TP-Pol is widely preferred over its harmonic alternatives.

V. Alternative explanations

- Philip (2013): FOFC does not exist; whatever looks like FOFC is the result of a special requirement (known as the **Head Proximity filter**) that Cs (for being linkers) need to be close to V (recall that in OV languages CP complements extrapose):

[V[COV]]

[[OVC]V]

[V[CVO]]

V. Alternative explanations

- But even if this were correct, it would not explain other examples of FOFC, such as:

V, O, Aux orders

C, Pol, TP orders

- Her notion of linkers needs to be stretched beyond what is generally assumed to be linker-like: not every C counts a linker.

VI. Roadmap

- FOFC is to a large extent an adequate empirical observation.
- Particles seem to form a genuine class of counterexamples to FOFC.
- The explanation for FOFC in terms of the LCA faces several problems, mostly LCA-related.
- Alternative explanations for FOFC are also problematic.

VI. Roadmap

- Apply the other approach to left-right asymmetries ('the restriction on rightward movement') to FOFC.
- Show that FOFC is predicted by this approach as well, modulo particles.
- Show that this approach makes a number of additional predictions that are born out.
- Discuss remaining consequences.

VI. Roadmap

Ackema & Neeleman (2002), Abels & Neeleman (2012):

- Alternative to the LCA: heads be linearized before or after their complement (to be determined postsyntactically).
- Rightward movement is heavily constrained (and ruled out in most configurations where leftward movement is fine).

VII. Proposal

Applying this to FOFC: each base order should be grammatical, including the FOFC-violating order:

$[_{GP} G [_{HP} H XP]]$

$[_{GP} [_{HP} XP H] G]$

$[_{GP} G [_{HP} XP H]]$

$[_{GP} [_{HP} H XP] G]$

VII. Proposal

At the same time, G can only be a movement target for H iff G precedes H.

$[_{GP} G [_{HP} H XP]]$

Movement possible

$[_{GP} [_{HP} XP H] G]$

Movement impossible

$[_{GP} G [_{HP} XP H]]$

Movement possible

$[_{GP} [_{HP} H XP] G]$

Movement impossible

VII. Proposal

However, H-to-G movement is only needed if H is not in an adjacent position to G. If G, for instance hosts an affix that must attach to H (cf. Lasnik 1981, 1995, Baker 1988, Bobaljik 1995), it suffices that G and H are adjacent: in head-final configurations that is already the case.

Alternatively, it could be argued that rightward head movement is only allowed if it does not cross any dependents of the head (cf. Ackema & Neeleman 1992).

VII. Proposal

$[_{GP} G [_{HP} H XP]]$

Movement possible

$[_{GP} [_{HP} XP H] G]$

Movement impossible
but not required
(or possible)

$[_{GP} G [_{HP} XP H]]$

Movement possible

$[_{GP} [_{HP} H XP] G]$

Movement impossible
but required

VII. Proposal

- Biberauer et al. (2014): A head-final phrase GP cannot dominate a head-initial phrase HP, where G and H are heads in the same extended projection.
- So far: FOFC naturally follows for all those cases where G is a **movement target** for H.
- If N or any extended head of it is not a movement target for V, and vice versa, the restriction to extended projections follows too.

VII. Proposal

- When is G a movement target for H?
- If there is some instance in the grammar where H-to-G movement is required.
- For instance, in English C is a movement target for I, since in questions (and some other cases), I-to-C movement must take place, even though in other cases I-to-C movement does not have to take place.

VII. Proposal

- When is G not a movement target for H?
- If H **never** moves into G.
- That is, when all elements hosted in G, both zero elements (in which G might even be argued to be absent) or overtly realized elements, are morpho-phonologically independent.

VII. Proposal

- The prototypical cases of such overt morpho-phonologically independent elements in functional projections, almost by definition, are **particles**.
- Hence, the potential counterexamples presented to FOFC follow directly (see also Trinh 2012).

VIII. Application

- Mandarin: Q-particles (B. et al):
Hongjian xihuan zhe ben shu ma ?
Hongjian like this CL book Q
,Does Hongjian like this book‘
- Mumuye: Asp-Tense particles (Philip 2013)
Znaso de´ baase´ Ranti ni
Znaso PERF mimic Ranti IMMED.FUT
,Znaso is about to mimic Ranti.‘
- Ma´di: Neg particles (Philip 2013)
M-awı dotı ko
1SG-open door NEG.NONPST
,I won’t open the door‘

VIII. Application

- At the same time, other FOFC-obeying examples follow as well:
- Agreement morphology is generally hosted in a vP-external position. That means that in a language that has agreement morphology the highest verbal element (an auxiliary in case of more than one verbal element), must move into its surface position.
- Consequently: *[[VO] Aux]

VIII. Application

- However, this also predicts that in languages that do not exhibit verbal inflectional morphology V-O-Aux should be fine:
- Philip (2013): „It should be noted that for many of the VO languages exhibiting final uninflected tense or aspect particles, there is simply no verbal inflection in the language at all (Matthew Dryer, p.c.).“

VIII. Application

- In languages with both complementizers and polarity question heads the hierarchical order is: CP>PolP. The word orders C-TP-Pol is pervasive, the order Pol-TP-C is virtually unattested:
- While PolP is a functional projection that does not trigger movement, since projects a morpho-phonologically independent particle, CP is a functional projection that may still attract movement at large scale.

VIII. Application

- The only problem, then, may be CP-extrapolation: since C-to-V movement is excluded for a variety of reasons, verb-preceding CP complements should be possible:

$[_{VP} [_{CP} C [_{VP} OV]] V]$

VIII. Application

Unless of course such constructions are ruled out independently

- **Head-Proximate Filter:** The highest head in a complete extended projection must be contiguous with the lexical head of its superordinate extended projection.

(cf. Williams 1982, Rijkhoff 1984, 1986, 2002, Hawkins' 1990, 1994)

VIII. Application

Note that these orderings are also problematic for LCA-based explanations of FOFC.

Why couldn't both Vs (being lexical heads) have a caret, with C lacking it?

$[_{VP_2} V_2 \wedge [_{CP} C [_{VP_1} V_1 \wedge O]]]$ \leftrightarrow $/COV_1 V_2/$

IX. Conclusions

- FOFC is to a large extent an adequate empirical observation, but particles seem to form a genuine class of counterexamples to FOFC.
- The proposed explanation for FOFC in terms of the restriction on rightward movement, in contrast to its competing (LCA-based) accounts, explains FOFC including its counterexamples (see also Trinh 2012).
- The proposal makes some further predictions that might be able to account for other known left-right asymmetries in natural language.

IX. Conclusions

- So far, the alternative analysis can explain FOFC and at the same time explain why particles constitute a genuine class of counterexamples.
- Remainder of the talk: a glimpse of more general consequences of this approach.

X. Further prospects

- A notorious example of a left-right asymmetry concerns sentence-initial subjects/specifiers:

- **Order of subject, verb and object:**

SOV: 41,0%

SVO: 35,6%

VSO: 6,8%

VOS: 1,8%

OVS: 0,8%

OSV: 0.3%

Unclear: 13,7%

(Source: Dryer 2011)

X. Further prospects

- Assuming that OSV and VSO languages are derived languages there is a clear preference for preverbal subjects.
- However, if the subject position is a potential movement target, it follows that they will always be realized in the left position.

X. Further prospects

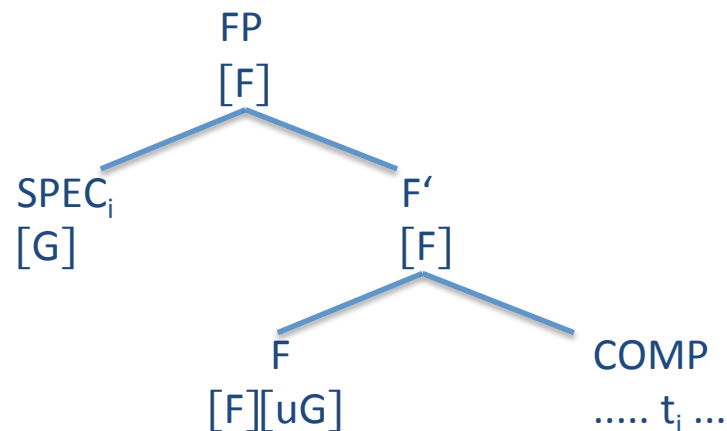
- One might even argue that being a specifier involves being triggered into a functional head (due to an Agree relation with F) by definition and that makes specifiers appear to the left of their head and complement.

X. Further prospects

- Hence, the ban on rightward movement may also account for the ‚left-ness‘ (or: strong leftward preference) of subjects and other specifiers.
- By contrast, adjuncts should be allowed to appear both in a leftward and rightward position (much in the same way like particles).

X. Further prospects

- Then, canonical Spec-Head-Comp structures are the result of movement, ...
- ... which is not a bad result, given that in the end Spec-Head-Comp structures are FOFC-violations ☺



Thank you!