Explaining FOFC without the LCA

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I. In the past years, various left-right asymmetries with respect to linearization have been discussed in the literature. However, the nature of these left-right asymmetries has remained subject to intensive debate. Kayne's (1994) Linear Correspondence Axiom (LCA) has been an anchor for long, but has recently been criticized by Abels & Neeleman (2012), in their account of Greenberg's Universal 20. They claim that a linearization mechanism that does not allude to the LCA, but only states that movement must always be leftward (for extra-grammatical reasons) fares equally well, if not better than the LCA. In this paper, we demonstrate that another well-known left-right asymmetry, Biberauer, Holmberg & Roberts' (2014) Final-over-Final Constraint, which has originally been claimed to follow from the LCA (and thus provide evidence for it), is actually better accounted for in the framework developed by Abels & Neeleman (2012).

II. Biberauer et al. (2014) argue that whereas both head-initial and head-final harmonic structures ([[XP H] G] and [G [H XP]]) are widely attested, languages universally rule out disharmonic structures as in (1a) (where a head-final projection embeds a head-initial one), but allow structures in (1b) (where a head-initial projection embeds a head-final one), provided that H and G belong to the same extended projection. They refer to this ban as the Final-over-Final Constraint (FOFC).

(1)   a.   *[$_{GP}$ [H XP] G]   b.   [G [$_{HP}$ XP H]]

Evidence for FOFC comes, for instance, from the universal ban on inflected head-final auxiliaries in VO languages (which would yield the forbidden [[V O] Aux] pattern, an instance of (1a)), the absence of clause-final complementizers in VO languages ([[V O] C]) and from the absence of head-final complementizers in languages with a head-initial polarity particle (where for all examples the other three logically possible orders have been attested). Biberauer et al. account for this universal ban in terms of the LCA, which takes all non-derived orders to be head-initial. In short, they argue that the head every lexical projection (N or V) may, but does not have to have a diacritic ˆ that forces its complement to raise into its specifier position. Functional projections may (but, again, don't have to) inherit this diacritic, but can only do so if the head that they immediately select has diacritic too. The inheritance of ˆ thus applies in a bottom-up fashion only. Consequently, this diacritic may get lost in an extended projection, but never be introduced in any position higher than the lexical head (within the extended projection), and that derives FOFC.

III. Biberauer et al.'s proposal has received a fair amount of criticism, both empirically and theoretically. Empirically, the biggest problem seems to be that many languages allow all kinds of particles (negative particles, interrogative particles and TAM particles) to appear at the end of VO clauses (cf. Philip 2013, Biberauer et al 2014, Sheehan 2014). Such configurations are counterexamples to (1a). An example is given in (2) for Mandarin Chinese, which is a VO language with sentence final question particles (taken from Biberauer et al. 2014):

(2)   Hongjian xihuan zhe ben shu ma?
        Hongjian likes this CL book Q$_{PRT}$
        'Does Hongjian likes this book?'

Theoretically, as Sheehan (2014) points out, the explanation by Biberauer et al. in terms of the LCA is problematic, since it crucially relies on complement-to-spec movement, which is generally ruled out (cf. Abels 2003), and would even be more problematic if the specifier is already filled by something else (since the LCA doesn't allow multiple specifiers). Sheehan instead proposes an alternative version of the LCA, but this account still empirically yields the same kind of problems as Biberauer et al. face with respect to the counterexamples involving particles. Other accounts try to argue that FOFC-violating structures are not ungrammatical but rather create extra processing

problems (e.g. Sheehan's implementation of Hawkins 1994) or claim that FOFC is generally an inadequate generalisation (e.g. Philip 2013). However, these accounts cannot explain the various patterns that follow from FOFC (such as the universal ban on inflected head-final auxiliaries in VO languages).

IV. In this paper we argue that the existence of certain FOFC-patterns as well as their apparent counterexamples are actually predicted once Abels & Neeleman's account of linearization (partly based on Cinque 1996 and Ackema & Neeleman 2002) is generalized. Abels & Neeleman argue that complements can either be linearized before or after the head, but that movement outside a particular phrase must always be leftward. Concretely, we take this to imply that FOFC-violating word orders as in (1a) are grammatical, *unless G is a potential movement target*, which follows directly from the ban on rightward movement. Being a potential movement target means that G may contain material that is raised into this position, but it does not always have to. Only in languages where no material at all can move into G, is (1a) a possible linearization pattern. Under this explanation, the presented evidence in favour of FOFC (such as the ban on V-O-Aux$_{infl}$ and the absence of V-O-C orders) as well as its counterexamples (involving particles) and its restriction to extended projections, follow directly.

V. First, the ban on V-O-Aux$_{infl}$ follows straightforwardly from the standard assumption that inflectional elements are required to be adjacent to their host at PF (known as the *Stray-affix-filter*, cf. Lasnik 1981, 1995, Baker 1988). This means that in [Aux [V O]] and [Aux [O V]] orders the verb undergoes leftward movement into Aux°, where it adjoins to the inflectional affix (and if the inflectional affixes are prefixes, in [Aux [V O]] constructions, head movement might even be absent). In [[O V] Aux], constructions, the verb is already in the correct position, so no verb movement is required to make the derivation converge at PF. So, the three orders, [Aux [V O]], [Aux [O V]] and [[O-V] Aux] are all predicted to be possible orders. However, the order [[V O] Aux] cannot be derived. The reason is that in order to have the verb adjoined to the affix, the verb has to undergo rightward movement into Aux°, which is a forbidden operation. Hence our proposal correctly derives the absence of [[V O] Aux] orders.

Second, as for the ban on [[V O] C] orders, in languages with overt complementizers, the C-position is restricted to complementizers in subordinate clauses only. In main clauses it remains available as a target for verbal or other movement, e.g. in the formation of questions (or imperatives). Hence, if a VO-language had a clause-final C head, questions (or imperatives) would require rightward V-C movement, which would again be forbidden. Hence the absence of [[V O] C] orders is explained as well. Naturally, the other orders [C [V O]], [C [O V]], and [[O V] C] are possible; the first two might require leftward verbal movement, the third one no movement at all, since V and C already end up string-adjacent at PF. Naturally, one can argue that in languages where verbs remain in situ and don't undergo movement the explanation above does not hold. That is indeed the case, but observe that in languages where questions are not marked by verbal movement, separate questions particles appear in C in order to mark the sentence for being an interrogative. Hence, in such a language, [[VO] C] orders can only exist if C hosts a morpho-phonologically independent particle. But these constructions are indeed known counterexamples to FOFC, as the example in (2) from Mandarin shows: in languages where C is occupied by a *particle* and where verb movement is not triggered, FOFC is not valid, a problematic counterexample for previous FOFC-explanations, but a straightforward prediction by our proposal. The exception of particles to the FOFC generalization follows directly from this it.

Third, note that the restriction of FOFC to extended projections immediately follows as well. As functional or lexical heads never raise out of extended their projections, our explanation predicts that FOFC-effects may only occur within an extended projection.