FOFC and what left-right asymmetries may tell us about syntactic structure building[1]

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In this paper, I demonstrate that a well-known left-right asymmetry, Biberauer, Holmberg and Roberts's (2014) Final-over-Final Condition (FOFC), which these authors claim follows from Kayne's Linear Correspondence Axiom (LCA), is actually better explained under a symmetric approach to syntactic structure building in tandem with the mechanism that underlies the constraints on rightward movement. Apart from circumventing the theoretical and empirical problems that this LCA-based analysis faces, the fact that particles form a natural class of counterexamples to FOFC naturally follows under such a symmetric approach. The final part of this paper shows that this explanation to FOFC also straightforwardly applies to the semi-universal leftwardness of (subject) specifiers in both head-final and head-initial languages.

KEYWORDS: (a)symmetry, FOFC, (head) movement, LCA, particles, word order

1. SYMMETRY AND ASYMMETRY IN STRUCTURE BUILDING

One of the central questions in linguistic theory concerns the way in which syntactic structures are linearized. In short, this amounts to wondering where it is determined that two terminal nodes should be linearized in a particular order. Over the last several decades, the inquiry into the nature of how to linearize syntactic structures has yielded (at least) two opposing views. One view, defended among others in Chomsky (1986), Fukui & Takano (1998), Ackema & Neeleman (2002), Citko (2011), and Abels & Neeleman (2012), argues that syntax does not have access to notions like leftward or rightward. Syntactic structures are purely hierarchical in nature. Under this view the underlying structures of the two sentences in (1) are identical. It is only at the Phonological Form (PF) where it is determined whether the

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head of the verb phrase (VP) is spelled out to the left of its complement (as in English) or to its right (as in Kannada).

(1) (a) I read the book
     (b) Naanu   pustaka   oodtiini   Kannada
          I   book   read
          'I read the book.'   (Schiffman 1983: 96)

The alternative view, originally proposed as Kayne's Linear Correspondence Axiom (LCA) (Kayne 1994), and followed on by Alexiadou (1997), Moro (2000), and Di Sciullo (2002, 2005) among others, states that left-right orderings are determined within the syntactic structure: left-right orderings reflect asymmetric c-command. Under this view, the syntactic structure of the Kannada example in (1b) must be different from the syntactic structure of the English example in (1a) and at least involve movement of the object (or a phrase containing the object) to a position from where it c-commands the verb. Only then can the object be linearized to its left.

Initial evidence for this second approach comes from various existing left-right asymmetries with respect to structure building. One well-known example concerns syntactic movement, which generally is leftward (i.e. the target position of movement is to a position to the left of the base position). Under a symmetric view, the target position could just as easily be linearized to the left as to the right of its sister, so the abundant presence of leftward movement remains unaccounted for. Kayne's asymmetric view, however, derives the leftness of movement immediately and bans rightward movement altogether: since the target position of movement should c-command the base position, the moved element is always linearized into a position to the left of its base position.[2]

However, it is unclear whether the leftness of movement constitutes a strong argument in favour of Kayne's asymmetric linearization algorithm. Ackema & Neeleman (2002) and, more recently, Abels & Neeleman (2012) have argued that the fact that movement generally, though not always, applies in a leftward fashion is the result of extra-grammatical properties and has nothing to do with syntax proper. These scholars argue that the scarcity of rightward movement arises not because of grammar-internal principles but rather because of the widely adopted idea that, as sentence processing proceeds, the parser cannot alter the structures that it has already built (see Berwick & Weinberg 1985; Weinberg 1988; Gibson 1991; Frazier & Clifton 1996); it can only modify the structure that is yet to be built based on the information that it has at any given point. In general, this means that a structure with an element that moves to the left can be straightforwardly constructed because the parser, proceeding from left-to-right, first encounters the

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[2] Note that Kayne's theory can still generate structures that give rise to a rightward movement illusion, for example, when one element moves leftward/upward, followed up by movement of its remnant across it. This means that any implementation of the Kaynean theory requires further constraints to be satisfied (for example, concerning constraints on possible landing sites for movement), as otherwise every possible linear order could be generated.

phonologically visible antecedent, which allows it to build a structure that includes a position from which the moved element originates (i.e. the trace/copy). By contrast, if the parser encounters a rightward-moving element, in most cases it cannot alter the already built structure in order to properly analyse the trace position. Only in particular cases does this parsing-based approach to the directionality of movement also allow rightward movement; extended projections (DPs and CPs), for instance, can undergo rightward movement as in cases of extra-position (see also Overfelt 2015 for more cases of rightward movement).[3] Under this approach, the scarcity or absence of rightward movement is not directly the result of a grammar-internal principle. Either unparsable sentences, i.e. sentences that would force the parser to alter the structures that it has already been built, are judged equally bad by speakers as ungrammatical sentences, or the unparsability of such instances of rightward movement motivates grammar to require that a moved constituent must be linearized at PF as preceding its sister (see Abels & Neeleman 2012).[4]

Since the asymmetry behind movement might not be the direct result of syntax, but rather of extra-grammatical parsing constraints, the question arises whether other left-right asymmetries can be accounted for in such terms as well (i.e. as the result of the leftness of movement), or whether these reflect true syntactic left-right asymmetries.

For certain left-right asymmetries it is indeed the case that they follow from restrictions on movement. A very good example concerns Greenberg's Universal 20 (concerning the relative orders of determiners, adjectives, and noun). As shown by Cinque (2005, 2009) and Abels & Neeleman (2012) all orders can be realized both by symmetric and by Kaynean asymmetric structure-building mechanisms that take movement to be leftward, and do not provide empirical evidence for either of the two. That also applies to those left-right asymmetries that show the same footprint (see Cinque 2009; Abels 2016; among others).

For other left-right asymmetries, the picture is less clear. For instance, the surface orders of verbs and arguments in many languages provide apparent conflicting evidence for both theories. The dominant order of subjects and verbs is SV, as exhibited by 76.9% of hitherto documented world languages, whereas only 9.4% exhibit VS orders (see Dryer 2013). And for the large majority thereof, the evidence is fairly clear that VS orders are underlyingly SV. This imbalance favours the idea that syntax is asymmetric, as the subject, which always c-commands the verb and its

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[3] See Ackema & Neeleman (2002) and Abels & Neeleman (2012) for a discussion of why complete extended projections can undergo non-string-adjacent rightward movement but parts of it cannot. In short, the reason is that the lower copy of such a moved constituent would indicate that its right-sister is dominated by an element that is part of the extended projection of the moved element, but the higher copy would indicate that this sister is dominated by a member of the extended projection of the moved element on its right. This way, an earlier analysis of the parser would be contradicted by a later one. Since, the human parser must be committed to earlier analyses, this will yield a crash.

[4] Note that Kayne (2019) currently aims at deriving the version of anti-symmetric syntax in Kayne (1994) partially in terms of parsing/processing as he takes probe-goal searches to share the directionality of parsing and of production (i.e. to apply in a left-to-right fashion).

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objects (in base position), generally precedes the verb. Under a symmetric perspective, one would expect an even balance between SV and VS languages. By contrast, the order of verbs and objects are roughly equally split, with VO order occurring in 44.2% of world's languages and OV in 41.2%. This is directly predicted by the symmetric theory, which requires no movement operations of either verb or objects and thus straightforwardly predicts the VO–OV balance. The asymmetric theory, by contrast, must derive OV orders in roughly half of the world's languages by moving the rightward complement of the verb to a higher position.

Hence, in order to evaluate whether syntactic structure building is symmetric or not, it is important to see to what extent other existing left-right asymmetries can be taken to form evidence in favour of an asymmetric view to syntax. We already saw that the general leftness of movement does not provide such an instance of evidence, as this leftness could equally well be explained in extra-grammatical terms. Whether that is the case for other left-right symmetries, such as the alleged universal leftness of subjects, is still an open question (though see Section 7).

In this paper, I will discuss another well-known left-right asymmetry that has been discussed quite intensively in the literature, the so-called Final-Over-Final-Condition (FOFC; see Biberauer, Holmberg & Roberts 2014). In its essence, FOFC states that, within the same extended projection, a head-final phrase may not dominate a head-initial phrase, but that the reverse is possible; head-initial phrases may dominate head-final phrases that are part of the same extended projection. According to Biberauer et al. (2014), FOFC is another left-right asymmetry that should be accounted for in terms of the LCA and thus yield support in favour of an asymmetric perspective on grammatical structure building. In this paper, I will evaluate this assessment and conclude, rather to the contrary, that all patterns predicted by FOFC, plus a natural class of counterexamples to it, directly follow from the general leftwardness of movement. Since such constraints can be accounted for without alluding to the LCA, I argue that, consequently, FOFC does not form an argument in favour of asymmetric approaches to structure building. In fact, since the well-observed existence of various clause-final particles in VO languages is straightforwardly predicted by the symmetric perspective and would require various additional non-trivial and independently ill-motivated assumptions under the asymmetric perspective, I conclude that FOFC, despite appearance, forms further evidence for such a symmetric view.

2. FOFC: The pattern

The Final-Over-Final-Condition (FOFC) states that a head-final phrase αP cannot dominate a head-initial phrase βP, where α and β are heads in the same extended projection (see Biberauer Holmberg & Roberts 2007, 2008, 2014; Sheehan 2013). In other words, phrases that contain a leftward head may not be the complement of a rightward head within the same clausal or the nominal spine. Of the following four

configurations in (2) (that are part of the same extended projection), (2d) is universally ruled out.

(2) (a)

αP
α   βP
β   XP

Head-initial over head-initial

(b)

αP
α   βP
XP   β
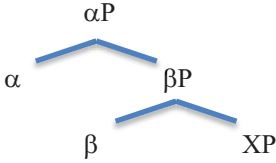
Head-initial over head-final

(c)

αP
βP   α
XP   β
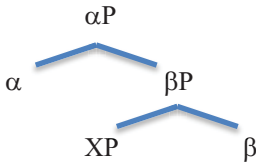
Head-final over head-final

(d) *

αP
βP   α
β   XP
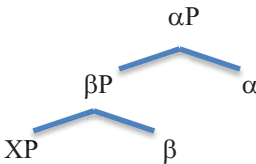
Head-final over head-initial
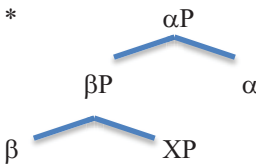
Below, I present three pieces of evidence taken from Biberauer et al. (2014) in favour of FOFC – (i) the orders of verbs, auxiliaries and objects in Germanic languages; (ii) the distribution of complementizers and polar particles; and (iii) the behaviour of clausal complements in OV-languages – although Biberauer et al. (2014) present many more.

It has been observed that of the six logical configurations between V, O and Aux, only five are attested. The order V-O-Aux is unattested (see Travis 1984; Den Besten 1986; Pintzuk 1991, 1999; Kiparsky 1996; Hroarsdottir 1999, 2000; Fuss & Trips 2002). Whereas the orders V-Aux-O and O-Aux-V must be derived by movement (as otherwise V and O should have remained adjacent to each other), the other four logical possibilities, Aux-V-O (2a), Aux-O-V, (2b), O-V-Aux

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(2c) and V-O-Aux (2d) can in principle be base structures. However, whereas the first three are easily found (e.g. in English (3a), West Flemish (3b), German (3c), the fourth one has not been attested. That follows directly from FOFC.

(3) (a) John   has read   the book   English
    (b) … da Jan wilt   een huis   kopen   West Flemish
        … that Jan wants a   house buy
        '… that John wants to buy a house'
                                 (Haegeman & Van Riemsdijk 1986: 419)
    (c) … dass Johann das Buch gelesen hat   German
        … that Johann the book read   has
        '… that Johann has read the book'

A second piece of evidence in favour of FOFC that Biberauer et al. (2014) provide comes from work on Indo-Aryan languages (following Biberauer, Newton & Sheehan 2009 and Biberauer, Sheehan & Newton 2010). Many Indo-Aryan languages that exhibit a polar particle, have also developed a final complementizer over time, but only did so if this polar particle was not head-initial. Sheehan (2017) shows that this observation can even be generalized. Basing herself on the *World Atlas of Language Structures* (*WALS*), she shows that there have been 72 languages identified with both head-initial CPs and head-initial PolPs, 45 languages with both head-final CPs and head-final PolPs, 74 languages with head-initial CPs and head-final PolPs, and only 4 languages head-final CPs and head-initial PolPs. Under the assumption that CP dominates PolP, this pattern follows as well from the FOFC scheme.

Note that these two case studies also show that FOFC does not result from a general preference for harmony, as the disharmonic head-initial-over-head-final orders can be easily attested. In fact, in the CP > PolP case, the disharmonic order occurs even more often than the harmonic head-final order (contra Hawkins 2013 who takes FOFC to be just about harmony preferences).

A third piece of evidence concerns differences in behaviour between nominal and complement clauses in certain OV languages. German is an OV language, which means that nominal complements appear to the left of the verb, as shown in (3c). However, complement clauses in OV languages must systematically be extraposed. Example (4a) is fine, whereas (4b) is ruled out.

(4) (a) Hans hat gesehen, dass Marie zu Hause ist
        Hans has seen   that Marie at home is
        'Hans has seen that Mary is at home.'
    (b) *Hans hat dass Marie zu Hause ist gesehen
        Hans   has that Marie at home is seen
        'Hans has seen that Mary is at home.'

For Biberauer et al. (2014), the reason is that in (4b), a head-initial CP would be dominated by a head-final VP, even though both are part of the verbal extended projection. However, it should be noted here that these are not part of the same

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verbal extended projections . One is is the embedded verbal extended projection, the other belongs to the matrix verbal extended projection.

The examples above, and I could have chosen many others as well, show that there is clearly such a thing as a FOFC pattern, a restriction on domination of head-final projections by head-final ones, even if it turns out that there are exceptions to the described pattern. That also means that the phenomenon is in need of explanation: why is it that natural language rules out linearizations that violate FOFC?

3. BIBERAUER, HOLMBERG & ROBERTS (2014): FOFC AND THE LCA

3.1 *Proposal*

For Biberauer et al. (2014), FOFC is part of a bigger scheme of left-right asymmetries that all fall under Kayne's (1994) LCA. Under the LCA, linearization reflects asymmetric c-command relations. What is spelled out on the left occupies a higher structural position than what is spelled out on the right. As is well known, this has severe consequences for the analysis of head-final projections in comparison to head-initial projections. A structure like (5) with a verb taking a DP complement, can only be realized as V-D-N.

(5)
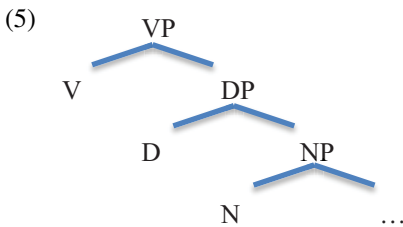
Consequently, such a structure can never be realized with the head spelled out in a final position. The only way to yield surface head-final constructions is by raising the complement to a position from where it asymmetrically c-commands the head, for instance, as in (6).

(6)
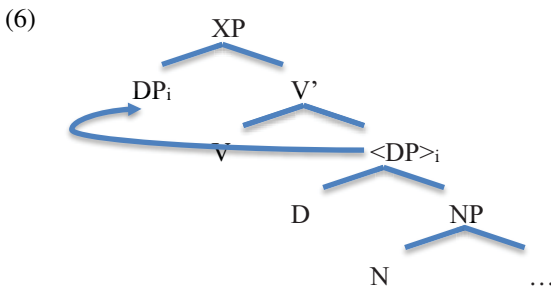
In order to trigger this kind of movement, the verbal head V must have some property that triggers its complement to raise into its specifier position (or any higher position).

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The question that arises is of course why movement to the specifier must take place. For Biberauer et al. (2014) this must be the result of some formal property encoded in the relevant head. For them, a probing feature can have a formal diacritic, dubbed the CARET (^), that ensures that the specifier is filled. A probing feature on T that carries ^ triggers movement of its goal into the specifier, ^ on a lexical head triggers movement of its complement into the specifier, and ^ on a phase-head triggers A-Bar movement into the phase edge. In order to derive the FOFC effects, Biberauer et al. (2014) postulate the following condition on heads that carry such a ^:

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

What (7) amounts to is that for every functional head in the extended projection that carries ^, its immediately lower head in the same projection must have ^ as well. The ^ cannot emerge in the extended projection. Lexical heads, such as V and N, may or may not carry ^, a language-specific property (in OV languages, V carries it; in VO languages, it doesn't). Only, if the lexical head has ^ is it possible for the next head up (in the extended projection) to carry ^ as well; it does not have to, though. However, if it does not, it is impossible for any higher head (in the extended projection) to carry one again.

For Biberauer et al. (2014), any head carrying ^ triggers movement of its complement into its specifier. Since head-final projections require ^ to be present on their heads, just as head-initial projections require ^ to be absent, it is possible for a head-final projection to be dominated by a head-initial projection (as it is possible that the higher head has not inherited ^ from the lower one), but it is impossible for a head-initial projection to be dominated by a head-final one (as there is no way in which the higher head could have inherited ^). This, then, derives the FOFC pattern.

3.2 *Problems for asymmetric approaches to FOFC*

Even though Biberauer et al.'s (2014) proposal derives the FOFC pattern with making one assumption on top of Kayne's anti-symmetry framework, it also faces a number of problems, both on the theoretical and on the empirical side. Some of these problems are simply 'inherited' from the Kaynean framework, some problems are due to the adoption of (7).

One theoretical problem that emerges due to the specific embedding in Kayne's theoretical framework, concerns the fact that every head can only have a unique specifier. As pointed out by Sheehan (2017), that entails that every head that requires its specifier position to be filled by something else than its complement must be head-initial. Since, external arguments are base-generated by *v*, every higher head in the extended projection should be head-initial as well, but it is a

well-known fact that many languages are rigidly head-final, also when the subject is an external argument, and have head-final T and C heads (e.g. Turkish and Korean).

Another theoretical problem concerns movement from complement to specifier positions. As shown by Abels (2003) and Grohmann (2003), it is generally forbidden for a complement to raise into the specifier position of its sister head (see also Richards 2010; Abels & Neeleman 2012). One of the reasons for this is that whatever the property on the head is that requires the presence of such a constituent in the specifier position is already satisfied by the complement in the sister position.

Finally, it is far from clear why movement diacritics can only start out on lexical heads and be percolated up (though see Richards 2016 for an attempt to principally derive such restrictions). There is nothing that inherently forbids a functional head to be equipped with a movement triggering diacritic.

These criticisms above are not specifically addressed to Biberauer et al. (2014), but apply more generally to asymmetric approaches to grammatical structures. That by itself may already call for an alternative to FOFC that is not formulated in terms of grammatical asymmetries.[5] However, before spelling out such an alternative approach, first another, empirical, problem for Biberauer et al.'s approach needs to be discussed, namely the existence of clause-final particles in VO languages, which, at least prima facie, appear to form counterexamples to the FOFC generalization.

4. APPARENT FOFC-VIOLATING PARTICLE CONFIGURATIONS

Apart from the mostly theoretical problems outlined above, Biberauer et al. (2014) also face several empirical challenges. At least prima facie, there appears to be a class of counterexamples involving clause-final particles in VO languages. Naturally, it ought to be investigated whether every such particle indeed violates FOFC. As FOFC concerns head-directionality with respect to complements, FOFC has nothing to say about particles that, for instance, occupy a specifier or adjunct position. Closer inspection should therefore reveal whether such clause-final particles are indeed counterexamples to FOFC.

I will provide below a brief overview of the kind of particles that can be attested in apparent FOFC-violating configurations, focusing on tense, aspect, or modality (TAM) particles (Section 4.1), negative particles (Section 4.2), and interrogative particles (Section 4.3). I will conclude, basing myself mostly on data presented in Biberauer (2017) that there are indeed particles occupying a head position in the

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[5] A reviewer suggests that such an alternative could amount to the head-complement order being the default linearization and complement-head linearization to be triggered only if the head carries ^. Then, if ^ can only be introduced by lexical heads and may or may not be inherited by the next head up, FOFC would be derived as well. It should be mentioned that even though such an account does not suffer from the problems specific to the LCA, it is still an open question why head-complement linearization should be the default and why ^ can only be introduced by lexical heads. Moreover, it also suffers from the empirical problems discussed in the next section.

clausal spine of VO languages (Section 4.4). This, I will argue, forms an empirical motivation to pursue an alternative explanation to FOFC in grammatically symmetric terms.

4.1 *Clause-final TAM particles*

Various East Asian and Central African languages exhibit sentence-final particles expressing tense, aspect, or modality (TAM), both in VO and OV languages. Examples of such apparent FOFC-violating clause-final TAM particles in VO languages can be found in (8) and (9):

(8) (a) Teko   w-apy   ko   kwez kury.   Tenetehára
          people 3SG-burn farm   IPAST now
          'The people have burned the field.   (Bonfim Duarte 2012: 360)[6]
     (b) Awa   w- ekar   tapi'ir   iko.
          man   3SG-look.for tapir   be
          'The man is looking for tapir.   (Bonfim Duarte 2012: 374)
     (c) Ma'e pe Zuze w-enu   tazahu   ra'e.
          what at John 3SG-hear   big.pig   IPAST
          'Where did John just hear the big pig?'   (Bonfim Duarte 2012: 374)
     (d) A'e ae   u-mu-me'u-putar wa-n-   emiapo-kwer   nehe.
          he   EMP 3SG-CAUS-speak-want   3PL-ABS-make- PAST FUT
          'He will tell what they have made.'   (Bonfim Duarte 2012: 374)

(9) (a) Znàsọ baasé ranti yé.   Mumuye
          Znaso mimic Ranti PERF
          'Znaso has mimicked Ranti.'   (Shimizu 1983: 107)

     (b) znàsọ dé   baasé   ranti   ni.
          Znaso PERF   mimic   Ranti   IMMED.FUT
          'Znaso is about to mimic Ranti.'   (Shimizu 1983: 112)

A striking fact about those particles is that they do not exhibit any inflectional morphology (i.e. the do exhibit any kind of φ-agreement). Following Dryer (2007), sentence-final particles are indeed notoriously uninflected. This can be witnessed, for instance, in the following example from Ngambay, which exhibits both inflectional and non-inflected TAM markers. Crucially, all inflectional TAM markers appear in preverbal position.

(10) m-ā   k-ào   àl   ngà.   Ngambay
      1SG-FUT NOM-go NEG   REPEATED
      'I will not go again.'   (Vandame 1963: 118, cited in Dryer 2009b: 344)

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[6] Unless indicated otherwise, all examples in Sections 4.1–4.3 have been reported in Biberauer (2017). In the text, I refer to the original sources.

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The evidence that TAM particles that appear to violate FOFC is strong and striking and, as we will see in the next subsection, not restricted to TAM morphology. This means that any theory concerning FOFC should account for (i) the fact that inflectional particles are always FOFC-compliant, but also for the fact that (ii) non-inflected particles are not. Naturally, for theories like Biberauer et al. (2014) (i) follows trivially, so the question is how to account for (ii). Note that theories that allow particles to be FOFC-exempt (including my proposal in Section 5), should also still explain why such particles cannot be inflectional.

Biberauer (2017) argues that there is another crucial distinction between uninflected sentence-final particles and inflectional TAM morphology. Sentence-final particles may impose lexical restrictions that inflected TAM particles do not appear to exhibit. For instance, Ma'di exhibits various particles conveying completion, which stand in (lexically driven) competition, as shown in (11).

(11) (a) dʒì   mī l!/ *gbírí   Ma'di
           close eye completely/completely
           'shut eye completely/tightly'
      (b) dʒì   tī   gbírí/*l!
           close mouth   completely/completely
           'close mouth completely'   (Blackings & Fabb 2003: 504)

These examples for her show that uninflected particles might not be as much grammaticalized in comparison to their inflected counterparts. As it is a well-known fact that processes of grammaticalization may involve changes from lexical phrases into functional heads, this may be an indication that such particles do not occupy a head position in the clausal spine, but are rather adjoined to other phrases.

However, the fact that certain particles are less grammaticalized than others does not entail that these cannot violate FOFC. As grammaticalization pathways go from full content words via particles and clitics to affixes (see Hopper & Traugott 1993; Roberts & Roussou 2003), the fact that different particles reflect different stages of grammaticalization does not mean they cannot not be functional heads in the clausal (or nominal) spine. In fact, particles occupying head positions of their own often reflect intermediate stages of grammaticalization processes. Their morpho-phonological strength enables them to host a head position of their own without any additional morpho-phonological support and, being functional heads, they are also allowed to impose selectional restrictions of this kind (see Borer 1984).

Only those particles that are fully ungrammaticalized can be taken to be a full phrasal expression that adjoins to other FPs and thus as non-FOFC-violating. However, the fact that most of the other discussed particles have a fixed position in the clause actually suggests that they host head positions in the clausal spine. Hence, most uninflected clause-final TAM particles, like the ones discussed above, violate FOFC.

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4.2 *Clause-final negative particles*

Dryer (2009b) reports the existence of final negative particles in a variety of both OV and VO languages, most notably among Central African and Austronesian language families. Some examples of such particles in VO languages, again all discussed in Biberauer (2017), are below.

(12) (a) Deb-ge   tol   kobio li.   Bagirmi
       person-PL kill lion   NEG
       'The people didn't kill the lion.'   (Dryer 2009b: 317)

     (b) Ma (nja) ami   a'ji   wa.   Bongo
       1SG NEG   make thing NEG
       'I am not doing anything.'   (Dryer 2009b: 316)

     (c) Sira   hapu lafa-t   la   yako   langina moo.   Buru
       3PL.ACT tie   food-NOM for 1SG.BEN earlier NEG
       'They didn't tie up trailfood for me earlier.'   (Reesink 2002: 245)

     (d) Ona (kama) hoda mansia tobo   ua.   Tidore
       3PL NEG   see   people bathe.in.sea NEG
       'They did not see the people bathe in the sea.'   (Reesink 2002: 254)

Several of these negative markers may take different forms regarding the aspect, tense, or mood of the sentence. This is, for instance, the case in Ma'di where the negative marker in a non-past tense clause is different from the one used in past tense clauses. Biberauer (2017) argues that this does not mean that these negative markers are inflected in the canonical sense (rendering them auxiliaries). At the same time, such negative markers are still sentence-final particles that, therefore, appear to violate FOFC.

(13) (a) má   èɓī   ɲ ā   rá.   Ma'di
       1SG fish N.eat AFF
       'I will (certainly) eat fish.'   (Blackings & Fabb 2003: 157)

     (b) ḿ- āwí   dʒótī kɹ̄ rʊ.
       1SG-open door NEG.PAST
       'I did not open the door.'   (Blackings & Fabb 2003: 469)

     (c) ǃdrɛ́ ɔ̄-ɲā ǃ zá   kɹ̄.
       rat   3-eat meat NEG.N
       'Rats don't eat meat.'   (Blackings & Fabb 2003: 470)

One potential way of analysing such particles is by assuming that these clause-final negative particles are actually phrasal and adjoin to phrases or may be (rightward) specifiers of NegPs rather than being the heads thereof. The fact the negative markers in the examples stand in a particular selectional relation to a T, Asp, or M head, makes it very likely that they are heads themselves, though, as phrasal negative markers do not exhibit such restrictions. Phrasal negative markers are strongly syntactically flexible as they do not syntactically select their sisters and can

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therefore, as long as the semantics permits it, adjoin to other phrases too. This way they can yield both constituent and sentential negation.[7] To take an example close from home: phrasal *not* in English can adjoin quite freely; the head of the NegP, *n't*, can only attach to finite auxiliaries. Hence, even though not every final negative particle is the realization of the head of a NegP, a substantial subset thereof must be. When such particles appear in OV languages, as they do in the examples, they form a true set of counterexamples to FOFC.

4.3 *Clause-final interrogative particles*

A common pattern involving clause-final particles is constituted by interrogative particles. Based on work by Dryer (2009a,b), Biberauer (2017) reports at least 154 languages that exhibit a V-O-Q particle. Some examples from Lagwan, Mupun, and Yixing Chinese are below.

(14) (a) G- a   mma ì   gha   ɗà?   Lagwan
         2SG-PERF leave her.ACC house Q
         'Did you leave it at home?'   (Philip 2012: 92)
    (b) Mɨ   ghɨn   ɗɨkimi   (ɗà)?
         1PL   do   how   Q
         'What do we do?'   (Philip 2012: 117)

(15) A   man   nalep-e ?   Mupun
     2SG know   Nalep-Q
     'Do you know Nalep?'   (Frajzyngier 1993: 360)

(16) (a) Ní   huāxi yīngguo   fè?   Yixing Chinese
         2SG   like   Britain   Q
         'Do you like Britain?'
    (b) Ní   zuòniē   xièhào   me?
         2SG   homework   finish   Q
         'Have you finished your homework?'
    (c) Ní   huāxi yīngguo   à?
         2SG   like   Britain   Q
         'Do you really like Britain? (I'm so surprised!)'
                     (Biberauer & Hu 2014: 11–12)

Again, all these examples appear to violate FOFC.

   Biberauer (2017) points out that in many languages these particles are truly interrogative particles and not subordinating elements. For instance, in Lagwan and Mupun embedded interrogative clauses, a clause-final interrogative Q-particle co-occurs with a head-initial subordinating element.

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[7] Strictly speaking, the distinction between sentential and constituent negation is a false dichotomy. Sentential negation is an instance of constituent negation that applies to at least the vP/VP (Acquaviva 1997; Penka 2011; Zeijlstra 2004, forthcoming).

(17) Ndalu   ngwa   fine,   ki   bɨle=a   shi   a
      1SG.PROG look.at outside LINK man=LINK.M some   3SG.M.PERF
      s- o   gha   ɗa   Lagwan
      enter-VENT house Q
      'I'm looking outside, (to see) whether someone has entered the house.'
      (Philip 2012: 93)

(18) N-tal   pəə   wur a   nəə ket gwar kat   kəə nalep-e. Mupun
      1SG-ask PREP   him COP that if   he   meet PREP Nalep-Q
      'I asked him whether he met Nalep.'   (Frajzyngier 1993: 364)

(18) N-tal   pəə   wur a   nəə ket gwar kat   kəə nalep-e. Mupun
      1SG-ask PREP   him COP that if   he   meet PREP Nalep-Q
      'I asked him whether he met Nalep.'   (Frajzyngier 1993: 364)

For these languages the underlying structure must be along the lines in (19), where a head-initial subordinator or linker occupies a higher structural position than a head-final interrogative particle.

(19) [SubP/CP Sub-/C-particle … [IntP … [VP V O] Q-Particle]]

It should be noted, though, that not every language where the complementizers are split, the final one must be an interrogative particle. The data from Shupamem in (20) show that complementizing particles may also appear in clause-final positions. Shupamem *nəə́* is a clause-final particle (that has developed out of a demonstrative) that must be present in every indicative embedded clause, even though a second head-initial complementizer is present as well.

(20) (a) ŋvɯɣə́ŋ   ná   n- ʒú   pàyú júó   púɣɛ
           2³³.chimpanzees IRR PTCP-eat 3.food that 2.humans
           n- ʒú   nə́.   Shupamem
           PTCP-eat COMP
           'Chimpanzees eat food that humans eat.'   (Nchare 2012: 333)
      (b) mɔ́n   x-wó   í   ʃéʃé   nə́   pàː rànì.
           1.child 1-REL 3SG commission   COMP be   smart
           'The child that he commissioned is smart.'   (Nchare 2012: 188)

Hence, when it comes to FOFC, whenever the two can be distinguished, it appears to be the case that interrogative particles rather than subordinating particles are more prone to appear in head-final position, even though clause-final complementizers can indeed be attested. It thus looks like it is subordinating particles that have a special status. The question as to why truly subordinating particles in such languages are head-initial may then not be a result of FOFC, but should receive an independent explanation. This could, for instance, be cast in terms of the HEAD-FINAL FILTER (Williams 1982), which, among others, requires head-initial CPs to appear to the right of the verbs that select them, or Philip's (2012) HEAD-PROXIMITY FILTER,

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which requires complementizers (and other linkers) to be as close as possible to the selecting verb (so that if CP follows the selecting verb, the complementizer must be CP-initial and when the CP precedes the selecting verb, the complementizer must be CP-final).

Evidence for this also comes from languages where different interrogative particles can be distinguished, each particle making a slightly different meaning contribution. For instance, Yixing Chinese, as already shown in (16), has plain final interrogative particles that just denote interrogativity, as well as interrogative particles that convey surprise. Such particles may also be combined (in fixed orders), as shown for Bwe-Karen in (21), suggesting that different interrogative particles indeed realize different head positions in the clausal periphery. Such patterns are not uncommon. For instance, in Thai as many as 25 such clause-final interrogative particles can be attested, all appearing on the right.

(21) (a) nəə=phú   ɔ   dɔ́ hi   a?   Bwe-Karen
          2SG=grandfather exist LOC home Q
          'Is your grandfather at home?'   (Swanson 2011: 53)
      (b) dɛ   ladùlaʃá mi   nu   mɪ   má   nɔ?
          thing   strange   CL   NU   is   what Q
          'What is this strange thing?'   (Swanson 2011: 54)
      (c) ɔ   nu   mɪ   dǎkú   təə   ɓe,   nɔ   a?
          exist   NU   is   winnowing.tray   one   flat Q   Q
          'That is a "daku," isn't it?'   (Swanson 2011: 56)
      (d) nəə= le   bɔ   dɔ́   chíbúchígì   lɛ́   nəə= pʋa   bɔ
          2SG=go   just LOC stream   and   2SG=catch.food just
          dɪphodà   pho   təə ɓɔ́ ɓɔ́   nɔ   nɔ   nɔ?
          fish   small one long long Q   Q   Q
          'WHY don't you go to the river and catch some fish?'

The above shows that despite the fact that subordinating particles may not be of too much ease in clause-final position (in VO languages), this clearly does not hold for interrogative particles in general. Hence, interrogative clause-final particles do not adhere to the FOFC pattern.

4.4 *Summing up*

The discussion above shows that various languages indeed exhibit (uninflected) sentence-final particles, (at least) in the domains of TAM particles, negative particles, and interrogative particles. Such particles may vary with respect to their syntactic integration; some are always obligatory, others are not, some appear to be fully grammaticalized, others only reveal a particular degree of grammaticalization, and, again, some make a very clear semantic contribution whereas others are much more bleached. Nonetheless, there is a large class of elements that occupies head

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positions of different types in clauses that are head-initial from the bottom-up. Clause-final particles are widely attested both in VO (as well as in OV) languages, thus violating FOFC.

At the same time, it should be noted that none of the discussed particles that are inflected form FOFC-exceptions. Also, when a language differentiates between particles with an interrogative and a subordinating function it is the latter rather than the former that does not seem to appease FOFC. Needless to say, any theory of FOFC should be able to account for these differences.

In the light of the previously mentioned problems concerning the asymmetric approach to FOFC, and given the abundant appearance of clause-final particles in VO languages, alternative explanations to FOFC are called for. Below I formulate an explanation to FOFC within a symmetric approach to syntactic structure building. Such an approach turns out to have a very natural way of explaining the deviant FOFC-related behaviour of such particles.

Naturally, the existence of such a symmetric alternative does not mean that the asymmetric approach to FOFC must be on the wrong track. It can in principle very well be the case that amended versions of the asymmetric approach will also be able to handle such particles. At least two proposals along these lines have been formulated: Biberauer (2017) and Erlewine (2017). After having proposed a symmetric alternative for FOFC, this alternative should be compared with Biberauer's and Erlewine's proposals for a proper assessment.

5. A SYMMETRIC ALTERNATIVE TO FOFC

At first sight, asymmetric approaches to grammatical structure building seem to have a major advantage over symmetric ones when it comes to accounting for left-right asymmetries. As FOFC involves a very clear left-right asymmetry, it makes sense to try to deduce it from existing left-right asymmetries in syntax, such as the ones generated by the LCA. By contrast, a purely symmetric approach to grammatical structure building does not seem apt to account for FOFC, as the four types of relevant configurations can be straightforwardly derived, including the FOFC-violating one, as shown in (22), repeated from (2). Given the fact that head-directionality can be encoded on every relevant head in the tree, every head can in principle have its complement linearized to either its left or its right.

(22) (a) αP Head-initial over head-initial

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(b)   αP   Head-initial over head-final

α   βP

XP   β

(c)   αP   Head-final over head-final

βP   α

XP   β

(d)   αP   Head-final over head-initial

βP   α

β   XP
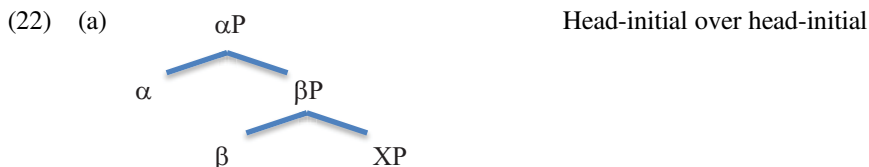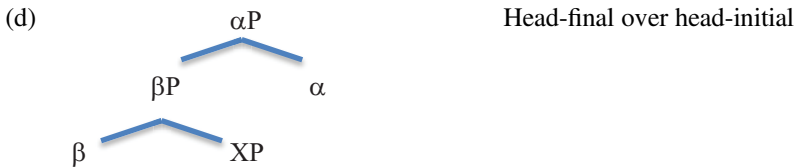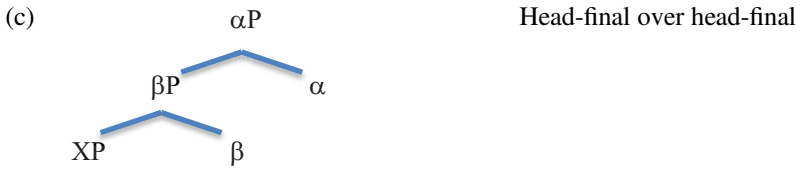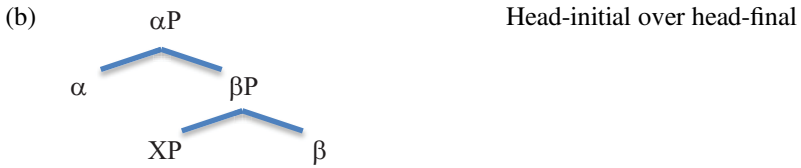
Nevertheless, it is not the case that such symmetric approaches can derive any possible configuration. Symmetric approaches to grammatical structure building are still subject to the general ban on rightward movement (i.e. the fact that rightward movement is distributionally much more restricted than leftward movement). The crucial difference, however, is that, unlike the LCA, the ban on rightward movement is not something that must follow directly from the structure building mechanism itself, but may rather be imposed on it by extra-grammatical constraints.

Irrespective of the exact mechanism underlying the ban on right movement, this means that the four configurations in (22) can only be derived if no illicit movement from β to α is involved. If, by contrast, head movement were suddenly to take place from β to α, depending on particular theoretical considerations, only two or three of these configurations can be derived.

(23)   (a)   αP   Head-initial over head-initial
                             Head movement possible

α   βP

β   XP

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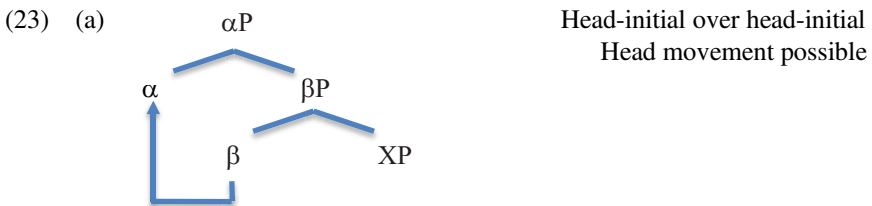
(b)   αP   Head-initial over head-final
              Head movement possible

α   βP

       XP   β
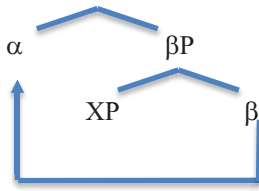
(c)   αP   Head-final over head-final
               Unclear whether head movement is
      βP   α possible

   XP   β
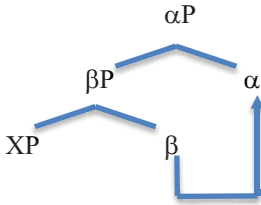
(d)   αP   Head-final over head-initial
               Head movement impossible

     βP   α

  β   XP
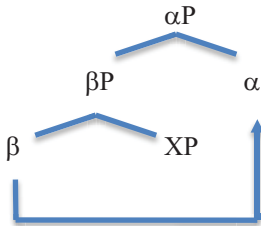
Example (23a–b) can straightforwardly be derived, given that the ban on right-ward movement is not violated; head movement here is simply to the left.

Example (23c) involves an instance of string-adjacent rightward head movement. Whereas rightward head movement across other constituents is systematically ruled out (see Ackema & Neeleman 2002; Abels & Neeleman 2012). This is less clear for string-adjacent rightward head movement, given that upon parsing previously established structural relations need not be altered. Theories actually differ with respect to whether such movement indeed exists, a debate that especially concerns rigidly head-final East Asian languages like Korean or Japanese. Various scholars have provided arguments in favour of such instances of rightward string-adjacent head movement. Otani & Whitman (1991), for instance, have argued that, in Japanese, the verb must raise to account for various ellipsis effects. The same holds for Koizumi (1995, 2000), who has primarily discussed scrambling and coordin-ation. Also, Yoon (1994) makes an argument in favour of string-adjacent head movement based on coordination of tensed and untensed conjuncts. Choi (1999),

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finally, formulates an account in terms of NPI licensing that calls for string-adjacent head movement.

But as Han, Lidz & Musolino (2007) and Han, Musolino & Lidz (2016) have shown, basing themselves on arguments by J. Kim (1995), Chung & Park (1997), Hoji (1998), S. Kim (1999), and Fukui & Sakai (2003), all these facts can also be accounted for by approaches that do not allude to rightward head movement. In turn, Han et al. (2007, 2016) argue that head-final languages (Korean is their example) may actually vary language-internally with respect to whether heads undergo raising or not (though see Zeijlstra 2017 for an argument against their claim that some varieties of Korean provide evidence for string-adjacent head movement).

However, irrespective of whether this type of head movement is grammatically possible, one may wonder whether it is necessary in the first place. Going back to Lasnik (1981, 1995) and Baker (2008a), head movement is required to satisfy the Stray-Affix Filter. If an agreement marker is realized on one head position and its host on another one, at PF these heads need to be string-adjacent in order to allow them to form a single morpho-syntactic unit (see Bobaljik 1995). However, since any string-adjacency requirement between a higher and a lower head is trivially satisfied in head-final configurations, head movement is not needed to establish this. Hence, whether structures like (22c)/(23c) allow β-to-α movement or not, is ultimately not important, given that α and β are string-adjacent in the first place.

This leaves us with (23d) which differs from the other three configurations in that neither α and β are string-adjacent at base structure, nor can they become string-adjacent by head movement. That is, if at some level α and β need to form a unit at PF, this configuration is doomed. Strikingly, (23d) is a FOFC-violating configuration.

The symmetric approach to syntactic structure building makes two different types of predictions. The first prediction is that the FOFC-violating configuration is banned as long as the higher head is a movement target for a lower head. The second prediction is that this configuration is fine as long as there is never a requirement for β to end up in α. Let us discuss these predictions in more detail.

The first prediction is that only three out of four possible configurations in (22) are licit if α is a movement target for β. Let us see what is meant exactly by the notion of a movement target. Y is a movement target if and only if in the grammar AT LEAST ONE INSTANCE of movement into Y can be attested. Since head positions are only landing sites for other heads (modulo clitic movement), this means that any instance of head movement into Y makes Y a movement target. Since such movement targets must be spelled out to the left of the moved element (or string-adjacent to it), whenever some functional head is a movement target, the FOFC pattern in such cases trivially follows.

This means that in a language that exhibits instances of X-to-Y movement, Y must always be realized to the left of X, irrespective of whether X actually moves into it in an actual sentence or not. The reason for this is that if linearization is determined at PF, PF simply exploits spell-out rules that determine per head

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whether it is head-final or head-initial. In German, V is head-final and C is head-initial, in Japanese, both are head-final, and in English, both are head-initial. It would be impossible for a language to realize, say, C to the right of the verb if the verb stays in situ, but to the left of it when V-to-C movement applies. Consequently, if the landing side of some verb differs from the surface position of a complementizer, these cannot be said to be the same C head positions, as the features per head determine its distribution: if two heads have a different distribution they differ in their featural makeup and thus are different heads.[8]

This means that the only configuration in which the FOFC-violating pattern may emerge is a configuration in which there is no movement of the lower head into the higher head whatsoever. That is, to the extent that functional heads need to be morphologically realized, the realization of such a higher, final head may never trigger any movement in it. Consequently, when immediately dominating a lower head-initial phrase, it must be morpho-phonologically independent (i.e. it may not be affixal but must be able to stand on their own). As discussed at length in the previous section, this prediction is naturally borne out: those are exactly the kind of configurations where these higher heads are realized by particles. Hence, whereas the asymmetric approach to FOFC is challenged by a natural class of counterexamples, this class of apparent FOFC-violating configuration is directly ruled in under the symmetric approach to FOFC.

Before continuing, and discussing potential ways to account for these observed patterns in asymmetric terms, there are four further predictions or provisos that the presented analysis makes. The first concerns so-called inflectional particles/auxiliaries; the second, the difference between clause-type and interrogative particles; the third, the behaviour of intermediate landing sites for (head) movement; and fourth, the restriction of FOFC to extended projections. I discuss each in turn.

First, as observed by Dryer (2007), sentence-final particles are notoriously uninflected. In his own words, '[i]t 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' (M. Dryer, pers. comm., quoted in Philip 2013). This follows straightforwardly from the proposal in order for such particles to become inflected, either the particle itself should be raised into a higher functional projection, or an agreement marker that originates below the particle should be raised into the position of the particle. In this sense, this paper builds on the idea that both inflected particles and auxiliaries (to the extent that these are different types of elements) are actual (verbal) categorial elements selected by a higher functional head (see Ross 1967; Pollock 1989; Pietraszko, published online 17 February 2022; among others). The presence of an agreement marker requires string-adjacency to

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[8] Note that it is not impossible for a particular head to appear sometimes to the left, or sometimes to the right of some XP (e.g. in cases of PPs that may appear to the left of a verb). However, this cannot be due to this head being flexible with respect to being head-initial/head-final. Either a head-final head in some but not all cases is triggered to be raised across XP, or the XP itself can be raised across a head. The only thing ruled out is the same head sometimes being head-initial and sometimes head-final.

another head. As both cases involve head movement, they should again adhere strictly to the FOFC scheme, as the only possible configurations violating it are the ones that do not involve head movement. Consequently, inflected sentence-final particles in VO languages are correctly ruled out.

Second, as Biberauer (2017) has observed, interrogative particles rather than subordinating particles are more prone to appear in head-final position, although both clause-final interrogative and subordinating particles have been attested. This might suggest that there should be a tendency in languages for subordinating heads to be movement targets but not for interrogative heads. But it is unclear whether or why this should be the case. For one, there is no clear empirical evidence that subordinate heads trigger more head movement than interrogative heads. More-over, in the current proposal, there is nothing intrinsic that treats subordinating particles differently from interrogative ones. Hence, something else should be at hand.

In this respect, note that subordinating participles are also subject to another tendency, namely to be as close to the embedding verbs as possible. To see this, take again the German extra-position examples from (4), repeated below:

(24) (a) Hans hat gesehen, dass Marie zu Hause ist
          Hans has seen   that Marie at home   is
          'Hans has seen that Mary is at home.'
      (b) *Hans hat dass Marie zu Hause ist gesehen
          Hans has that Marie at home   is seen
          'Hans has seen that Mary is at home.'

Unlike DP/PP objects (which have to appear to the left of the verb), CP objects are extraposed to the right. Biberauer et al. (2014) explain these German facts in terms of FOFC: (24b) is out as it involves a head-initial C embedded by head-final V. Closer inspection reveals, however, that FOFC cannot be taken to underlie these effects. Since V is always the root of an extended projection and CP the highest element, the examples in (24) involve two independent extended projections and FOFC cannot rule out (24b). Under Biberauer et al.'s (2014) analysis, there is nothing that would forbid V (in both clauses) to carry a caret ^, but not C. In fact, if it is a lexical property of V that it carries ^, all verbs in (24) should carry it. Example (24b) is thus fully FOFC-compatible, arguably even more so than (24a).

Hence, the tendency for subordinating particles to appear string-adjacent to the embedding verb must be independent from FOFC, irrespective whether it is approached from a symmetric or an asymmetric perspective. Naturally, FOFC is not the only constraint on potential word orders. Another constraint, not universal but known to hold for German, is Williams's (1982) Head-Final Filter, recently reformulated as Philip's (2013) Head Proximity Filter, which among others takes complementizers to be adjacent to their selecting verbs. Since this adjacency requirement is not met in the canonical object position in OV languages, extra-position of the CP must take place. Now, it follows straightforwardly that

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in head-initial languages which adhere to the Head-Final Filter or the Head Proximity Filter, subordinating particles are head-initial, while other particles can still be head-final: they occupy two different head positions in the clausal spine, one head-initial, one head-final. Hence, the asymmetry between subordinating and interrogative particles follows from an independently motivated constraint on word order that cannot be reduced to FOFC.

The third issue to be discussed concerns cases like German in (25):

(25) (a) Marie hat Hans gesehen
          Mary has Hans seen
          'Mary has seen Hans.'
     (b) [$_{CP}$ Hans hat$_i$ [$_{TP}$ Marie [$_{VP}$ gesehen t$_i$] t$_i$]]

Under the standard assumption that German VP and TP are head-final, but CP is head-initial, V first has to head-adjoin into T, before T-V can raise into C. This would involve an instance of string-adjacent V-to-T movement. If string-adjacent head movement is allowed, such cases are not problematic, but these might form a problem for analyses that also rule out string-adjacent rightward movement.

At the same time, it should be noted that what underlies the ban on rightward movement in symmetric approaches to grammar is that it in most cases, and crucially in every case of non-string-adjacent head movement, a moved element must linearly precede its traces/copies because of parsing considerations. However, this actually predicts that intermediate landing sites of head movement may be rightward as long as the head ultimately ends up at a position to the left of its traces, as is the case for German where finite verbs in the matrix clause end up in C. Instances of rightward movement like German V-to-T-to-C movement will never create configurations where traces/copies of head movement precede its final landing site and should therefore be allowed by the parser/grammar. Hence, examples like (25) do not form a problem for the proposed analysis, irrespective of one's take on the possibility of string-adjacent rightward head movement (see also Tring 2011, who aims at reducing FOFC to head movement as well, but finds the above-mentioned facts problematic for an approach like the one proposed in this article).

The fourth and final issue to be discussed here, is FOFC's restriction to extended projections. Across extended projections FOFC does not apply. Under Biberauer et al.'s (2014) analysis, this follows straightforwardly, as V and N are the only (root) elements that can have a caret without inheriting one ^. Under the proposed analysis here, there is no direct principled way of restricting FOFC to extended projections. At the same time, as FOFC is parasitic on head movement, it can only apply to domains in which head movement can apply as well. That means that for FOFC to apply outside extended projections, the roots of these extended projections should be head movement targets as well. This means that, then, C-to-N movement or D-to-V movement should take place. However, cases of C-to-N movement or D-to-V are independently ruled out as they violate the Proper Head Movement Generalization

(Li 1990; Baker 2008b): a functional head A cannot move to a lexical head B. This way, the proposal here predicts FOFC not to apply outside extended projections either.

To conclude, I have shown that a proposal in symmetric grammatical terms, where FOFC is an epiphenomenon of the ban on (non-string-adjacent) rightward (head) movement, captures all known restrictions to FOFC, as well as its attested counterexamples. Under the presented asymmetric approaches this is not the case, given that particles are straightforwardly FOFC-exempt. Naturally, that does not entail that such approaches must be wrong. It is still possible that after particular modifications the same results can be obtained. At least two such proposals have been presented in the literature. I discuss these in the next section.

6. ASYMMETRIC ALTERNATIVE ACCOUNTS TO CLAUSE-FINAL PARTICLES

In this section, I assess to what extent revised versions of existing, asymmetric approaches to FOFC are able to account for the distribution of such particles. First, I discuss Biberauer's (2017) approach, who argues that a large variety of apparent FOFC-violating particles are not part of the extended projection and, therefore, FOFC-exempt. Then, I focus on Erlewine's (2017) claim that apparent FOFC-violating particles may appear in the phase edge only. My conclusion will be that even though the behaviour of some particles can be accounted for in either of these ways, this does not hold for all of them. This, I argue, favours the symmetric explanation of FOFC presented in the previous section.

6.1 *Biberauer (2017)*

Biberauer (2017) argues that all attested FOFC-violating particles have particular properties that make them FOFC-exempt under Biberauer et al.'s account. She presents, inter alia, the following two criteria under which clause-final particles may appear above head-initial XPs, listed in (26):

(26) (a) The particle is categorially distinct from the head-initial structure in lacking a categorial specification. Here there are two possibilities:
    (i) It does bear one or more other formal features ([F]s), alongside semantic ([S])-features (Chomsky 1995)
    (ii) It lacks [F]s altogether and is syntactically inert; it may or may not bear [S]-features
(b) The particle is an agreement-realizing element not present in the Numeration as an element bearing an independent headedness specification, i.e. it is the PF-reflex of a Narrow-Syntax-internal Agree relation.

Criterion (26a) applies to particles that either carry formal features that are not part of either the nominal or verbal extended projection, or do not carry any formal

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features at all. Criterion (26b) concerns particles that do not occupy a head position in the syntax but purely reflect existing Agree relations at PF. Let's discuss each case in turn.

The first type of counterexamples concerns particles that are not specified with respect to a categorial feature of its complement. An example is formed by the Bulgarian and Macedonian Q(uestion)-particle *-li*. This *-li* may attach not to (finite) verb phrases, as in most other Slavic languages, but to any XP (as shown below for Bulgarian) and therefore cannot be said to be specified for either being nominal or verbal.

(27) (a) Ne   izprati   li Ivan pismoto?   Bulgarian
         NEG   sent.3SG   Q   Ivan letter.DEF
         'Hasn't Ivan sent the letter?'

     (b) Ivan   na   Maria li   dade   knigata?
         Ivan   to   Maria Q   gave   book.DEF
         'Was it Maria that Ivan gave the book to?'   (Schwabe 2004)

Since FOFC only applies to elements that belong to the same extended projection, such particles should be FOFC-exempt. The question, then, arises, what features *-li* consists of. Since *-li* has both focus and polar effects, Biberauer (2017) argues it carries both [polarity] and [focus] features.

That *-li* may not be part of the extended projection appears correct. What is less clear, however, is why it is nevertheless allowed to violate FOFC. Given Biberauer et al. (2014), head-finality results from a movement diacritic (^) that can only be inherited from elements that have categorial features ([N]/[V] or [±V]). The question, thus arises, how particles like *-li* obtain this ^. The ^ cannot have been inherited from any lower head in its extended projection, since it lacks any. Hence, it must be lexically encoded for having a movement diacritic. But this substantially weakens the claim that head-finality results from properties of lexical categories. If particles may carry ^ as well, then why should other elements not be allowed to carry it? In fact, if the features of *-li* are [focus] and [polarity], one should expect elements that are part of an extended projection and carry focus or polarity features to be allowed to be head-final as well, which would constitute another type of FOFC-violation.

Q-particles like *-li* are not the only particles that appear to be FOFC-exempt and syntactically more flexible. Another example is the particle *được* in Vietnamese. This particle is based on a verb meaning 'get', but may receive a variety of modal or aspectual (accomplishment) readings, and the exact interpretation depends on the structural position that it appears in, as the following examples from Duffield (2015, cited in Biberauer 2017), below show.

(28) (a) Ông   Quang mua   được cái nhà.   Vietnamese
         PRN   Quang buy   GET CL   house
         'Quang was able to buy a house.'   Aspectual

(b) Ông Quang được mua cái nhà.
    PRN Quang GET buy CL house
    'Quang was allowed to buy a house.'   Deontic
(c) Ông Quang mua cái nhà được.
    PRN Quang buy CL house GET
    (i) 'Quang may possibly buy a house'   Epistemic
    (ii) 'Quang is able to buy a house.'   Abilitative

Biberauer (2017) assumes that such particles are acategorial as they are selectively 'promiscuous'. Such acategorial particles, like roots, enter the derivation without any featural specification and merge with either a word (or, to be more precise, the morphosyntactic structure underlying it) or with a phrase. The first case, gives us cases like (28a–b). In (28a) *được* will merge with the verb, itself the result of merger of a categorizer *v* and a root. Given the original meaning of *được*, an accomplishment reading is yielded. Since the head (*v*) is marked for being verbal, and Vietnamese is strictly head-initial, the particle should be linearized to its right, yielding the linear order *mua được*:

(29) .

$$\begin{array}{c}\text{V[+V]}\end{array}$$

PRT[-]   V[+V]

được

        v[+V]   √R[-]

                    mua
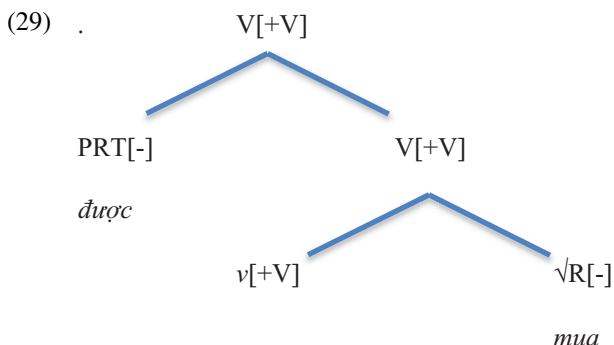
However, the particle can also be adjoined to a higher functional head. This is the case, for instance, in (28a), where *được* adjoins to a covert modal head Mod$_{\text{Deon}}$. Again, given that the head projects and is head-initial, *được* should appear to its immediate right.

Biberauer (2017) argues that acategorial particles like *được* may also adjoin to full phrases. This underlies the ambiguity of (28c). When an acategorial particle is part of a lexical array that constitutes a full phase (instead of one that constitutes a head), Biberauer argues that such a particle can only be merged once all further specified elements of the array are already part of the derivation; otherwise, the lexical array could not constitute an extended projection. Similarly, as in the cases of (28a–b), the particle must now be the rightmost element, but now of the entire phrase. This is what happens in (28c). Here, *được* either merges with *v*P, or with left-peripheral EpistP, which she takes both to be phasal and the highest heads that are part of the lexical array. When merged with the lower phase *v*P, the abilative

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reading emerges, when merged with the higher phase (EpistP), the epistemic reading emerges. The apparent FOFC-violating configurations are then the result of acategorial particles merging with a full phase. Given that these entire phases are also head-initial, they should appear to *được*'s left, and *được* ends up in clause-final projection. This means that, for Biberauer, clause-final acategorial particles may only appear in the phase edges.

However, even though *được* is clearly promiscuous in terms of its selectional properties, it only modifies elements that are part of the verbal extended projection; it is not an element that modifies both verbal and nominal phrases. Consequently, it should be specified for a verbal feature as well. This does not only hold for *được*, but also for all interrogative clause-final particles that Biberauer's (2017) analyses as acategorial particles in the phase edge as well, a point strongly reiterated in Erlewine (2017).[9] And it holds for the clause-final (uninflected) TAM particles that she discussed; if such particles would not be part of the verbal extended projection, they would not be restricted to selecting elements belonging to the verbal extended projection.

This leaves us with criterion (ii) in (26a). Biberauer (2017) argues that not only acategorial particles can be linearized to the right of their complements (again, only at the phase edge), but also acategorial heads that are valued under Agree. An example, for her, are polarity particles such as Afrikaans sentence-final *nie*, that appears at the end of every clause that already contains some negative material.[10]

(30) (a) Hy is *nie*   moeg *nie*   Afrikaans
          he is NEG   tired NEG
          'He is not tired.'
      (b) Hy is *nooit* moeg *nie*
          he is never tired NEG
          'He is never tired.'   (Biberauer 2017)

Since Afrikaans negative markers may attach to every XP, Biberauer argues that Pol is an acategorial head that takes the CP as its complement and is valued for negation by any (local) element in this CP that contains a negative feature. Given that she takes Pol itself to be acategorial, they must be linearized in clause-final position (just like Vietnamese *được*).

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[9] Note that one cannot circumvent this problem by arguing that *được*'s restriction to phrases that are part of the verbal extended projection is a purely semantic restriction, which for that reason, then, does not apply in syntax proper. Given that semantically nominal elements can mark modality and aspectuality as well – modal indefinites have epistemic readings (see Alonso-Ovalle & Menéndez-Benito 2010); aspectuality is not only expressed on verbs but also on nouns (Verkuyl 1993) – *được* would then be able to modify nominal elements as well, contrary to fact. So, it must be specified for [(+)V], which, given that this is a lexical feature, renders it part of the verbal extended projection. Consequently, it is predicted not to be FOFC-exempt. Only true acategorial particles could be taken to work along these lines, but most of the examples provided in Section 4 are not.
[10] Unless the negative marker *nie* immediately precedes sentence-final *nie*; then sentence-final *nie* remains unpronounced, arguably a haplology effect (see Biberauer 2008a).

It is a little hard to see, though, why Pol itself should be acategorial, given that it only selects CPs and no other (phasal) XPs. Polarity concerns truth-conditional reversal and therefore is a property of propositions; consequently, it belongs to the clausal domain and not to the nominal domain. Hence, Pol should be part of the verbal extended projection, but given the asymmetric FOFC-analysis cannot be linearized head-finally, since (lower) CPs in Afrikaans are head-initial.[11]

Naturally, one could argue that sentence-final negative particles are not the spell-out of some high head, but rather of a very low head, as has been argued by Zeijlstra (2022). Unlike the other clause-final negative particles in Section 4.2, sentence-final *nie* is never the overt realization of a semantic negation, as it only reflects the presence of another negation in the middle field. This would circumvent all the addressed problems mentioned above. And, since criterion (ii) in (26a) has primarily been introduced to account for negative clause-final, FOFC-violating particles, this would then undo the overall necessity for this criterion. That in itself appears to be a theoretical advantage, as this criterion is very sensitive to overgeneration.

To see this, take a high acategorial head that can be valued for φ-morphology. If such heads can be valued for a feature [Pol], nothing should forbid such heads to be able to be valued for φ-features as well; in fact, valuation has been motivated to account for φ-agreement (see Chomsky 2001). Since φ-features may appear on both verbal and nominal elements, nothing would then forbid such a head to reflect the φ-features of the subject and the verb. But note that it would render (inflected) V-O-Aux configurations (where Aux would be the realization of such φ-features) possible, whereas the ban on V-O-Aux is one of the empirical cornerstones of FOFC.

To conclude, the account by Biberauer et al. (2014) cannot account for the FOFC-exemptness of all the counterexamples presented in Section 4.

6.2 Erlewine (2017)

Erlewine (2017) shows that clause-final particles in Mandarin Chinese, a strictly head-initial language, violate FOFC, as is shown in his examples in (31)–(32). *Le* is a perfective marker, *ma* and *ba* are interrogative and imperative markers, respectively, and *ou* is a 'gentle warning' marker.

(31) (a) Tā   bù   chōuyān le   ma?   Mandarin Chinese
         she/he NEG   smoke   PERF Q
         'Does she/he no longer smoke?'
     (b) *Tā   bù   chōuyān ma   le?
         she/he NEG   smoke   Q   PERF   (Erlewine 2017)

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[11] It must be noted, though, that in certain varieties of Afrikaans, *nie* can appear at the end of every phrase containing a negation. This does not only hold for DPs (*niemand nie* 'nobody not'), but also PPs (*vir niemand nie* 'for nobody not') and AdvP (*nooit nie* 'never not'). Naturally, here one could argue that the relevant head is indeed acategorial (and should not be named Pol for that matter), but given the logic outlined above, every phrase in Afrikaans should then be phasal, contrary to fact (see Biberauer & Zeijlstra 2012).

(32) (a) Jin   lái   ba   ou!   Mandarin Chinese
            enter come   IMP   gentle warning
            'Hurry, come in!'
      (b) *Jin   lái   ou   ba!
            enter come   gentle warning IMP   (Erlewine 2017)

As the examples show, these particles are subject to strict ordering relations (see, for instance, (31), originally from Paul 2015). For Erlewine (2017), each of these particles modify one type of phase. Erlewine takes *le* to modify the *v*P, *ma/ba* the CP and *ou* AttitudeP, which he takes to be a phase above CP. That these particles appear at the phase edges (if, indeed, *v*P, CP and AttitudeP are phasal in nature) is in line with Biberauer's position that acategorial particles may only appear in phase edges. However, Erlewine strongly argues that these particles should not be taken to be acategorial as their selective properties cannot be reconciled with that position: particles that only select particular phrases as their complement cannot be acategorial.[12]

Erlewine (2017) argues that, for this reason, clause-final particles in Chinese should not be FOFC-exempt because of acategoriality, but rather because FOFC should apply to spell-out domains instead of extended projections. Since phase heads are crucially the lowest heads in their spell-out domains (as complements of phase heads are being shifted to the interfaces where linearization takes place), they can be head-final or head-initial without violating FOFC in any way.

Erlewine's approach naturally reduces FOFC's domain of application to an independently established locality constraint. At the same time, the approach also faces certain challenges, especially outside Mandarin Chinese.

For one, the approach is crucially dependent on three types of phase heads, *v*, C and Att. However, the phasality of *v* is controversial (see Abels 2012; Citko 2014; Georgi 2014; Van Urk 2020a,b for arguments in favour of *v*'s phase status; and Keine 2020a, b; Grano & Lasnik 2018; Keine & Zeijlstra 2021 for arguments that *v* is not phasal). Second, C's phasality, which is uncontroversial strongly relies on C being the outermost clausal heads, which is at odds with a higher Att-head, being phasal on top.

Second, many of the FOFC-supporting examples, such as *V-O-Aux, are configurations that involve different phasal spell-out domains. If FOFC is restricted to spell-out domains, these FOFC patterns would remain unexplained. Erlewine (2017) argues that such cases could in principle be captured by means of phase extension via head movement (i.e. if *v* itself raises into a higher head position, this extends the phase and thus also the spell-out domain). This way,

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[12] Note, that such restrictions cannot be purely semantic in nature either. For instance, Mandarin Chinese *éryǐ* ('only') in (i) is semantically flexible, but nevertheless syntactically restricted to a lower clausal position, identified as *v*P.

(i)   Tā kàn diànshì éryǐ
      He watch TV only
      'He only watches TV.'

similar to the proposal in Section 5, head movement acts as a restriction on FOFC. But when verb movement is not at stake, Erlewine predicts that only particles in *v*, C and Att can violate FOFC. However, as shown in Section 4, many FOFC-violating particles appear in positions in between *v* and C, and crucially do not involve head movement. Consequently, Erlewine's proposal may thus account for some FOFC-violating particles (dependent on what counts as a phase and whether phase extension can indeed be empirically motivated), but not for all of them; in any case not for the attested TAM and negative particles discussed in Sections 4.1–4.2.

6.3 *Comparison*

So far, we have seen two proposals that aim at accounting for the FOFC-violating behaviour of clause-final particles under asymmetric approaches to structure building, by arguing that such particles are not specified for [V] or [N], are even acategorial, or occupy phase heads. However, it is not clear that all attested particles adhere to these criteria. As shown in Section 4, large numbers of particles are specified for [V] or [N], are categorial and occupy non-phase heads, favouring the symmetric proposal in Section 5 over existing approaches in terms of asymmetric syntactic structure building.

Note that does not mean that asymmetric, LCA-based approaches to FOFC cannot hold a priori. The discussion above only shows that for such approaches to apply correctly, more independent motivation is needed to account for the fact that particles form a natural class of counterexamples to FOFC. However, given the current lack of such independent motivation, the symmetric approach to FOFC, which naturally rules in the observed behaviour of clause-final particles, is empirically and theoretically stronger.

7. EXTENSIONS BEYOND FOFC

So far, the symmetric approach to syntactic structure building at closer inspection fares better when it comes to explaining the left-right asymmetry known as FOFC. But FOFC is not the only left-right asymmetry attested in language. For instance, specifiers in many languages uniformly precede their heads' complements, irrespective of whether the language is head-final or head-initial.

As outlined in Section 1, it is a surprisingly strong fact that most of the world's languages are subject-initial. In the context of the position of subjects, 76.6% of the world's documented languages are either languages with subject-verb-object (SVO) or with subject-object-verb (SOV) orders, as shown for English and Japanese below (see Dryer 2013). By contrast, only 2.6% of the world's languages are either VOS (such as Nias) or OVS (like Hixkaranya) (examples taken from Dryer 2013):

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(33) (a) John read the book   English
       (b) John-ga tegami-o yon-da.   Japanese
             John   book   read
             'John read the book.'

(34) (a) I-rino   vakhe ina-gu.
             3.SG-cook   rice   mother-my
             'My mother cooked rice.'   (Brown 2001: 538)
       (b) Toto   y-ahosɨ-ye   kamara.   Hixkaranya
             Man   grab   jaguar
             'The jaguar grabbed the man.'   (Derbyshire 1979: 87)

Since subjects generally appear in specifier position, it firmly supports the generalization that specifiers generally precede their heads. That this generalization is about specifiers and not about subjects as such, comes from subjects of unaccusative verbs, which start out in the complement position of the verb and even in languages like English (in expletive constructions) may appear postverbally, as in (35).

(35)   There has arrive some student

These facts so far suggest that with respect to the linearization of specifiers, syntax is asymmetric: Under a symmetric perspective, one would expect an even balance between SV and VS languages.

   However, it is not the case that subjects or specifiers in general always precede their heads. In other, rarer types of languages, however, such as the Chapacuran language Wari', subjects in Wari' are always clause-final:

(36)   Jami   non   pije' narima'   Wari'
         turn.over 3.SG.RP/P.3SGM child woman
         'The woman turned over the child.'   (Everett & Kern 1997: 307)

Examples like (36) thus show that specifier-final orders are possible. Under an asymmetric approach, such orders should be derived orders. Under a symmetric approach, such orders can be generated right away.

   However, either way the question arises why such reverse orders are so rare. Under an asymmetric approach one could argue that the required additional movement steps are costly. Without such additional movement steps, specifiers just appear to the left of their heads. However, such an assumption is problematic given that that when accounting for the VO–OV balance, movement operations of the kind should not be costly at all.

   Under a symmetric approach, all other things being equal, the expectation may arise that the SV orders should be roughly equally as frequent as VS orders. This is clearly not the case and thus in need of an explanation. However, in the light of the proposal in Section 5, an explanation for the uneven distribution between the SV and the VS orders on the one hand, and the even distribution between VO and the OV orders on the other, suggests itself. As is well known, subjects generally move

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to the specifier of a higher phrase above the VP (see Chomsky 1982; Alexiadou & Anagnostopoulou 1998; Hasegawa 2005). This renders the specifier of this phrase, nowadays taken to be TP, a movement target. Since movement into a specifier of some particular head can only take place if the base position of the moved element lies inside the head's complement, movement targets should always precede their complements. Just as is the case for the other movement targets, if Spec,TP is a movement target, it will always appear to the left of T, even when the material inside it is base-generated.

Also, note that if in a language external arguments do not raise into some higher position but stay in situ instead, this base position can still be a movement target, as long as sometimes there is movement into it. For instance, if in such a language unaccusativity or passivization involves movement from the logical object position into the grammatical subject position, the subject's surface position is already a movement target. Only if there is no movement whatsoever in a particular specifier position, is this position not a movement target.

8. CONCLUSIONS

In this paper, I have demonstrated that a well-known left-right asymmetry, Biberauer, Holmberg & Roberts' (2014) Final-over-Final Condition (FOFC), which, they claim, follows from the LCA and thus provides evidence for it, is actually better explained under a symmetric perspective on syntactic structure building in tandem with an extra-grammatical principle that underlies the general ban on rightward movement. Apart from the theoretical and empirical problems the LCA in this respect faces, the fact that particles form a natural class of counterexamples to FOFC follows directly under such a symmetric approach. Moreover, as I show in the final part of this paper, this explanation also applies straightforwardly to the semi-universal leftwardness of (subject) specifiers in both head-final and head-initial languages.

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