*Final-over-Final – *Initial-over-Final
The universal asymmetry of functional projections

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ABSTRACT

More than half of the theoretically admissible clause structures do not exist. The cross-linguistically confirmed range of syntactic structures covers only a subset of the range of structural configurations admitted by present day theories of phrase structuring. One of the widely attested clausal structures consists of a verb phrase as the complement of a preceding functional head, whose projection may figure again as complement of another, preceding functional head.

What is inexistent is the partial mirror-image organization of the functional extension of phrases although its existence is stipulated and assumed in the theoretical literature, in the absence of any reliable or compelling empirical evidence: Functional projections with a phrase-final, separate functional head do not exist. This fact follows from a general constraint. This universal condition on structuring implicates the shell-structure of complex head-initial projections, the Spec-F-complement order of functional projections, and, eventually, it entails the recently propagated "FoF"-constraint.

1. Introduction

Languages with the base order V-Obj-Aux, that is, a head-*initial* VP followed by the position of the finite auxiliary verb, are not attested[1] cross-linguistically. This has been observed first by Steele (1975) and re-confirmed by Dryer (1992). From a theoretical point of view, such a pattern is an instance of a more general configuration, namely the structure in (1). A functionally extended projection of a phrase (with a phrase-initial lexical head) cannot be the complement of a head-final functional head. This is part of what has been derived first in Haider (1992, sect. 5.2).

(1) *[[head$_{L°}$ complement]$_{LP}$ head$_{F°}$]$_{FP}$

Non-attested instances of head-final functional projections are not only VPs as complements of phrase-final functional heads (2a), but also NPs with a complement followed by a separated article (2b), or [S[VO]]-clauses with a separated clause-*final* complementizer (2c).

(2) a. *[[V° complement] T°/I°]
    b. *[[N° complement] D°]
    c. *[[Subj. [T° [V° complement]]] C°]

What is a descriptively adequate generalization that captures (1), with its instances in (2)? The first step is the correct description, followed by its theoretical modelling. These steps have been accomplished already in the 90ies.[2] This notwithstanding, Biberauer et. als (2014) and Sheehan et als. (2017) present a "Finite-over-Finite"-constraint (FoFC) as an *original*[3] research result. It

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[1] The very surface order is – of course – possible in derived constructions, for instance with a fronted VP in V2-languages, as in Swedish: [[Läser boken]$_{VP}$ [gör [han nu]]].
                              [read book$_{+DEF}$]   does he now ('Reading the book he is now.')

[2] The respective research publications are easily accessible since the nineties: Haider (1992, 1993, 1995, 1997, 2000: 47-48) and later (2005, 2010, 2013).

[3] It is remarkable that the bibliography lists a paper (for other reasons) that formulates *verbatim* what the authors claim to be their *own* idea: "*If a functional projection is a functional extension of the projection of a lexical category, the BC rules out functional heads to the right in general.*" (Haider 2000: 48).

is to rule out head-initial phrases as the complement of a functional head in an extended projection. It is, as acknowledged by the authors, a descriptive generalization of a filter condition for sieving out the structures in (2). The grammatical reason for the ungrammaticality of (2) is left unaccounted. It surely is a challenge for grammar theory, but the challenge has been taken up and answered roughly thirty years ago (see below).

A more theory-oriented, easy-to-grasp but equally misleading hypothesis for the ungrammaticality of (1) might focus on the *mismatch* of the licensing directionality of lexical and functional heads of the extended projections in (2). A head-*initial* lexical phrase is the complement of a head-*final* functional extension. However, if a directionality mismatch were the source of the deviance of (1), the converse of (1), viz. (3a), ought to be ruled out as well, because of the very same directionality mismatch.[4] Is this empirically correct? No! Why not? Because Germanic V2 languages contain head-initial functional heads, as illustrated in (3b,c) with head-final verbal or functional complements.

(3) a.* $[C° [........ V°/I°]]$

    b. dass$_{C°}$ [jeder das sofort *erkennt*]
        that everyone this immediately realizes

    c. [Jeder [erkennt$_{Fin}$ [das sofort ---$_{Fin}$]]]

If the directionality mismatch is not the grammatically causal factor, what else? In general, a correct analysis is difficult to achieve when the respective set of data is not representative of the whole of the circumstances. In fact, staring at the mismatch is staring at a distracting property since (1) depicts only half of the relevant facts. The other half of the ungrammatical 'universe' is structured as in (4), contrary to widely accepted but empirically wrong perceptions.

(4) *[[complement head$_{L°}$]$_{LP}$ head$_{F°}$]$_{FP}$

The reverse side of the ungrammatical medal (1) is (4), and in particular the variants (5). It is equally true that the pattern (4) is not attested, but this is constantly overlooked or steadfastly denied. Relevant data are misanalysed in the interest of a favorited theory, even by adducing ad-hoc auxiliary assumptions on adjacency properties without any independent foundation. As scientists we are aware that theories are often extremely short-lived. Facts however remain facts, without any date of expiration. (5) describes a fact, and it is the crucial instance for identifying the configuration (4) because of the evidentiary value of the intervening phrase. Only in (5) is it unmistakeably clear that the lexical head has changed its place. Lexical verbs followed by a finite auxiliary can easily be mistaken and misanalysed as tokens of (4) since the alleged head-movement would be string vacuous. This disregards the cross-linguistically attested alternative, namely lowering of functional features, like in English declaratives with finite main verbs or in continental Scandinavian embedded clauses. A clause final finite verb is no immediate evidence for a clause final functional head position. The feature source could be just as well in a *preceding*, c-commanding position.

In section 3, it will be shown that there are sound empirical facts for identifying (5) as ungrammatical. No extended head-final phrases exist in which a lexicalized and phrase-final functional

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[4] Note that directionality mismatches are familiar from lexical phrases. Head-initial NPs and DPs, for instance, are immediate constituents of head-final VPs in languages with differentiated directionality, such as Germanic OV languages or Persian.

head-position is separated from the head-position of its complement by an intervening phrase, viz. YP in (5). This is neither an accident nor an exception. It is the direct consequence of the exclusion of such functional head positions, that is, head-final functional projections. If such positions existed, a verb, for instance, would be predicted to cross an intervening phrase when it targets the finiteness position. It does not cross it as indicated in (5b) because the alleged functional target position does not exist.

(5) a. *[[complement head$_{\mathbf{L}\circ}$ YP]$_{LP}$ **F°**]$_{FP}$
    b. *[[complement e$_{i\text{-}\mathbf{L}\circ}$ YP]$_{LP}$ head$_{i\text{-}\mathbf{F}\circ}$]$_{FP}$

The analysis of the position of the clause-final finite verb in an SOV clause structure as a case of the structure (4) is a classic example of biased misanalysis. Contrary to handbook wisdom, the finite verb in a verb-final clause does not raise to a clause-final functional head position which would make this an instance of (4). Any unquestionable instance of such a structure, that is, any unequivocal instances of (5b), are ungrammatical and robustly unacceptable, as will be shown in section 2. The relevant data have been accessible in the literature for quite some time but they are customarily 'explained away' by generously introducing unsubstantiated auxiliary hypotheses on adjacency, or, more often than not, they are simply ignored.

After this brief overture, we have reached the point to ask the crucial question in a grammatically well-posed way, namely the following. What is the grammatical causality that rules out both structures, namely (1) and (4)? Evidently, a directionality mismatch cannot be the thing that matters. What these two structures share is nevertheless obvious. The ungrammatical structure is a phrase that is functionally extended by a functional head *following* the phrase. As a consequence, the portion that is functionally extended is a *left* branch and *this* is the decisive grammatical defect. Phrasal left branches cannot be nodes of an extended projection. Starting with the first formulation in Haider (1992), this insight has been worked out and empirically undergirded in several publications (1993, 1995, 1997, 2000, 2010, 2013) over the past decades,

The well-formed structure (6a) and the ill-formed (6b) illustrate the crucial contrast with VPs as complements of a functional head position. In (6a), the whole extended projection line from V° to FP consists only of *phrasal* nodes on the *right*-hand side. In (6b), viz. the ungrammatical projection, one of the phrasal nodes of the extended projection, namely the VP is a *left*-hand node. Note that this defect is independent of the head-position of the lexical head of the VP. The essential structural property is that *any branching node* of an (extended) projection is a node on the *right* hand side (Haider 2000:47-48).
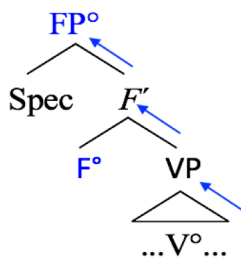
(6) a.   b.
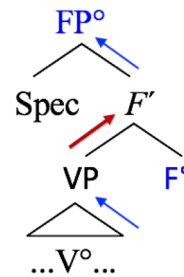
In (6b), the VP is a *left* branch of an extended projection. Left-branching extended projections are ruled out by a universal constraint on phrase structuring. Section 3 is a reminder of this

principle, which will be illustrated and explained in due detail. For the time being it is sufficient to realize that the ban on projecting nodes on the left-hand side of a (functional) projection covers both, (1) and (4).

In the following section, clear-cut evidence for the empirical justification of the exclusion of the structure (4) will be presented. Section 3 presents the principle behind the exclusion of left-branches. Section 4, eventually, compares the coverage of this principle with the FoF-constraint and re-emphasized that an FoFC is dispensable since it covers only half of the facts and it re-phrases what has been found out and published before.

2. Evidence for the absence of functional projections with a final head position

First, there has never been presented any compelling evidence for clause-final functional heads targeted by head-movement. Such assumptions are mere extrapolations from the head-initial clause structure of languages such as English, Romance or Scandinavian. Second, if a clause-final, that is, phrase-final functional head is a lexical item (e.g. a lexical complementizer) it never appears as a separate item in a functional-head *position*. What is common for head-*initial* complementizers or articles that precede an NP which in turn is preceded by attributes is totally absent for alleged clause-*final* functional heads. Clause final markers are cliticized to a lexical head. Nevertheless, properties of the clause structure of a head-initial language such as English (7a) have been extrapolated – in the absence of *indisputable* confirming evidence – into a head-final setting, simply by switching the position of (functional) heads (7b):

(7) a. [XP [T° [V° Obj]]]
     b. [XP [[Obj V°] T°]]

One might expect this analysis to have been accompanied by careful syntactic checks and tests of the kind that had been worked out for the English Infl-position since the late 50ies. They have not been carried out, and if they had, it would have been clear that they would prove negative. One simple and compelling piece of evidence for the English pre-VP functional head position, that dates back to "Syntactic Structures", is the evidence from interveners such as adverbials or the negation particle:

(8) a. They should not/simply *have* looked into the details.
     b. They *have* not/simply looked into the details.

I won't repeat the arguments here for the assumption that in (8b), *'have'* is not in the same position as in (8a). But let me emphasize that this kind of argumentation is entirely missing for the claim that a finite verb is raised to a clause-*final* head-position in OV languages. The counterevidence for this assumption is robust and diverse, but has been neglected or downplayed. Let's briefly review three grammatical areas of evidence, namely extraposition and particle stranding, as typical contexts for the kind of interveners that need to be presented, and IPP. These data clearly distinguish between the base position of a verb and a derived position. Details are discussed and summarized in Haider (2010, ch. 2.2).

Let us start with extraposition. Any lexical phrase, and therefore a VP, too, is an extraposition site, as the topicalized VP in (9a) exemplifies. Extraposed items are the kind of interveners that would clearly show whether the finite verb has moved to a clause final functional head position,

since it would have to cross these interveners. Any such variant (9b,c) is unacceptable. Anything that intervenes between the verbs in the clause final position in a simple clause makes it unacceptable. But (3a) predicts that interveners are expected, that they are grammatical, and that they should be fully acceptable, just like interveners in English pre-VP positions preceded by the functional head that is targeted by finite auxiliaries.[5]

(9)　　a. [Gesagt/Mitgeteilt [wer er ist]]$_{VP}$ hat er auch nicht.　　　　　　　German
　　　　　[told/communicated [who he is]]　has he also not

> https://www.fanfiktion.de › All-we-know ▾
> All we know :: Kapiteel 5 :: von Lilly-Lu-Dragneel :: Fairy Tail ...
> 11.07.2017 — „Wir haben sein Gesicht nicht gesehen und **gesagt wer er ist hat er** auch nicht,

　　　b.*dass er nicht [gesagt e_i [wer er ist]]$_{VP}$ hat$_i$
　　　c.*dass er nicht [mit-e_i [wer er ist]]$_{VP}$ teilte$_i$
　　　d. Er teilte$_i$ nicht [mit-e_i [wer er ist]]$_{VP}$

The *second* piece of evidence comes from particle stranding. When a German finite verb moves to a functional position, a separable particle is left in the base position of the verb. If, for instance, *'teilte'* is fronted to the clause-initial functional head position, the particle is stranded and the clause will be a grammatical and acceptable V1-clause, or the spec position is filled, which yields a declarative V2 clause (9d). (9c), however, is robustly unacceptable.[6]

An intriguing rule conflict for particle stranding arises when a verb with a separable particle is combined with a second, separable particle (or prefixed with an inseparable morpheme). In this case, there is no grammatical solution[7] if the verb has to leave its base-position (Haider 1993, 2010). Hence, fronting is avoided, but these verbs may nevertheless occur as *finite* forms in clause final positions.[8] This shows that a finite verb in the clause final position remains in its base position. If it had to raise to a clause final functional head position, the rule conflict for stranding would become effective in this position too, but it does not.[9]

In (10a), the double-particle verb *'vor-ein-stellen'* is finite and clause-final. (10b,c) show that any attempt to front the verb and strand a particle (10b) or both (10c) is ungrammatical.

(10) a. wie ihr die Standardansicht *voreinstellt*
　　　　how you the standard-screen pre-ad-just

> 🅽 netzwelt.de
> Google Maps: So startet ihr den Routenplaner in der ...
> Wie ihr unter Android die Satellitenansicht nutzt und als Standardansicht
> voreinstellt, zeigen die folgenden zwei Abschnitte. Google Maps-App: ...

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[5] Note that these data also rule out a copy&paste analysis of movement. The silent copy of the phrase in the spec-position would be ungrammatical in the base position. A trace in this position is grammatical, however.

[6] PPs extraposed in the VP are ungrammatical in this configuration, as expected:

　i. [Aufgehört [mit dem Rauchen]$_{PP}$]$_{VP}$ hat er sofort – ii. *dass er sofort auf-e_i [mit dem Rauchen]$_{PP}$ hörte$_i$
　　up-broken [with the smoking] has he instantly　　　that he instantly up- [with the smoking] broke

[7] If the first particle is stranded, the second one remains attached. If both particles are stranded, the first one remains attached (to the second one). Hence there is no way of satisfying the grammatical needs of each particle simultaneously. As a consequence, stranding contexts are consistently avoided because of the irresolvable rule conflict.

[8] This has been originally observed by T. Höhle (1991).

[9] This argument has been presented first in Haider (1992) and it figured prominently in a paper entitled *The Basic branching conjecture,* submitted to LI in 1993. The paper was rejected, but cited afterwards by exactly two persons before it appeared in a working paper collection (1995), namely by D. Pesetsky (1995) and by H. Koopman (1995). The argument expounded in the rejected paper happens to be the core of her 1995-LI paper. The rejected paper had not been distributed to anyone before fall 1995, when it appeared in the collection.

    c.*Ihr *einstellt*$_i$ die Standardansicht vor-e$_i$.

    b.*Ihr *stellt*$_i$ die Standardansicht *vorein-e*$_i$.

Dutch provides another facet, with the inseparable prefix '*her*-' ('re-'), prefixed to a verb with a separable prefix [see Haider (1992), (1993:77), Koopman (1995)], as in (11). The rule conflict in (11d), in contrast with (11c), is the same as in German. Hence, the finite form is well-formed only in the clause-*final* position. This is the base-position. Movement to any functional position would entail particle stranding, with the described rule conflict. In other words, whatever finite verb form occurs in the highest functional head position of the clause would be grammatical also in the functional head position immediately below (or lower), and vice versa.

(11)   a. omdat ik het niet *her*gebruikte

        because I it not *re*-used

    b. Ik *her*gebruikte het niet.

      I re-used it not

    c. toen Paus Pius het oude patriarchaat *her*oprichtte.

      when Pope Pius the old patriarchate re-established (lit.: *re-up*-put)

    d. Paus Pius *richtte*$_i$ het oude patriarchaat (*her-)op-e$_i$.

      Pope Paul put the old patriachate (re-)up.

The *third* area of evidence is the IPP-construction. In German (and in Dutch as well), the past participle of modals and other quasi-auxiliaries is strictly avoided[10] in verbal clusters (12a) and replaced by the infinitival form, but the auxiliary that would select the participle has to change its place (12b). From this position, it may be moved to a functional head position, as in the V2-clause in (12c). If the clause final position of a finite verb is a functional head position, (12d) is predicted to be as well-formed as (12c), but this serialization is unacceptable in standard German. This confirms that '*hätte'* in (12a) is in its base position and that (12d) is an inadequate structure assignment.

(12)   a.*dass ihr das wissen *gemusst* hättet

        that you$_{Pl}$ this know must$_{Past-Part.}$ had$_{Subj.}$ ('that you would have had to know this')

    b. dass ihr das *hättet* wissen müssen

      that you$_{Pl}$ this had$_{Subj.}$ know must$_{Inf.}$

    c. Ihr *hättet*$_i$ [das **e**$_i$ wissen müssen]

    d.*dass ihr [das **e**$_i$ wissen müssen] *hättet*$_i$

It is remarkable that this instructive piece of evidence has been completely overlooked. On the other hand, the past two decades have rarely seen serious efforts of thoroughly counterchecking the validity of VO-b(i)ased extrapolations for OV languages. The confirmation bias[11] has proven stronger, and misleading. It is not enough to demonstrate that a favoured structural ana-

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[10] A Google-books search (Nov. 29, 2020) produced the following results:

i.	*wissen *gemusst* hätte: 0	ii. *wissen müssen hätte: 0	(with all three verbs in a single clause)
	know$_{Inf}$ must$_{PII}$ had$_{subj}$	know$_{Inf}$ must$_{Inf}$ had$_{subj}$	
iii.	hätte wissen müssen: 8200	iv. wissen hätte müssen: 116	
	had$_{subj}$ know$_{Inf}$ must$_{Inf.}$	know$_{Inf}$ had$_{subj}$ must$_{Inf.}$	

[11] "*People sometimes see in data the patterns for which they are looking, regardless of whether the patterns are really there."* (Nickerson 1998:181).

lysis is by and large compatible with a set of data. It is more important that it has been systematically challenged and that it has satisfactorily passed the checks for its potentially weak points. If it does not pass the checks, it is wrong. And it does not pass these tests.

The empirical evidence discussed above is evidence from OV languages with V-movement. The majority of SOV languages worldwide does not displace the finite verb and does not extrapose phrases. Therefore, it is easy to stipulate string vacuous movements of the finite verb to an immediately adjacent, clause-final functional head position for these languages. However, in the absence of any positive *empirical* evidence for movement, the null hypothesis must be that the verb remains in its base position in these languages. The onus of the proof for head-movement to the right is on the side of those who postulate it, but they have not delivered.

Finally, for those who argue for lowering accounts, it should be obvious that they have *no positive evidence at all* for the claim that the alleged source of the lowered features, viz. the functional head, is in a final position.

3. Lexical projections and their functional extensions are universally right-branching

The section heading is a reminder of a universal constraint on phrase structuring. This constraint guarantees that he projecting node is the node on right-hand side in a binary projection. Any merged argument phrase or any functional head in an extended projection *precedes* the projecting node. This hypothesis of a universal asymmetry of projections has been presented first in Haider (1992) and (1993: 28, 57), and named Bʙᴄ. (="basic branching conjecture"). The relevant typological implications have been pointed out explicitly in Haider (1997: 22) and (2000: 48).

(13) *Basic branching constraint* (Bʙᴄ): (Extended) projections are endocentric and right-branching, that is, the phrasal nodes on the projection line are always on the right-hand side of the projection (i.e. following a sister node)

The following excerpts are to document that the exclusion of head-final *functional* extensions of phrases – lexical or functional – has been seen as an direct outcome of the constraint from the very first published versions onwards:[12]

- ▪ "*The BBC "forbid[s] the stacking of extended, head-final projections, since these result in left-branching structures insofar as these stacked projections form an extended projection in the sense of Grimshaw (1991)."Its effects are not limited to projections of lexical heads. The constraints exerted by the BC will apply to functional projections such as C and I as well.*" (Haider 1992, sect. 5.2)

- ▪ "*The BC does not allow functional heads that follow their complements in extended projections.*" "*The Spec-head-complement order of functional projections is derived from the BC. The BC eliminates three of the four structural possibilities for projections consisting of a functional had, its complement and a spec-position.*" (Haider 1997: 24, 27).

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[12] The first oral presentation was delivered 1991, at the conference on *"Lexical Specification and Lexical Insertion*", Utrecht Dec. 9-11, entitled "*On the structure of argument structure, - and its projection*". The working paper publication is Haider (1992). The conference proceedings appeared in 2000 [sic!] as Coopmans, P. et als. (eds.), *Lexical specification and insertion*. Amsterdam, Benjamins.
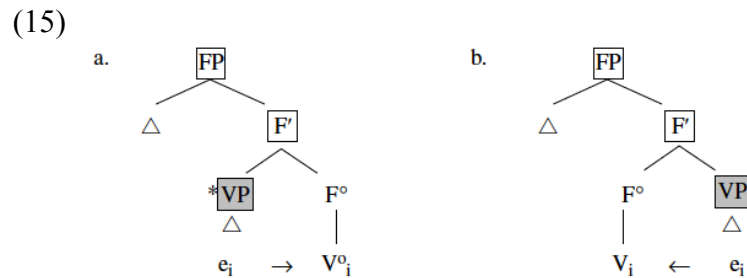
> ▪ "*If a functional projection is a functional extension of the projection of a lexical category, the BC rules out functional heads to the right in general.*" (Haider 2000: 48).

For subsequent work see the bibliography in Haider (2013: ix-x; 3f.). It guides to and characterizes the wide range of syntactic evidence that provides solid empirical justification for the justified re-construing of *"conjecture"* as "*constraint*", for the "C" in BBC (Haider 2000: 47).

The BBC first of all rules out lexical phrases with arguments merged to the right (14a), and second, it rules out extended projections with functional heads on the right hand side (14b). In each case, at least one node of the projection line is a left branch. (14a) is a left-branching lexical projection, with X' as an offending left node. (14b) is a functional projection in which the lexical phrase XP is the illicit, left node on the projection line of a functionally extended projection XP.

(14) a.   XP

        *X'   △

     .... X° ....

   b.   FP$_{XP}$

        *XP   F°

     .... X° ....

(15a) illustrates a frequently posited instance of (14b), namely the functional extension of a VP. The well-formed structure (15b) is right-branching. The position of the functional head in (15a) is ungrammatical. It is neither a target of movement nor a source of lowering.

(15)

a.   FP
      △   F'
          *VP   F°
           △ |
          e$_i$ →   V°$_i$

b.   FP
      △   F'
          F°   VP
           | △
          V$_i$ ← e$_i$

The first consequence of the BBC is the so-called *shell*-structure (16a) of complex head-*initial* lexical phrases. The second consequence is the exclusion of *functionally* extended phrases with the functional head on the right-hand side (16b), with the consequence for head-movement illustrated in (15a). There is no rightward verb-movement because there is no functional head on the right-hand side of an extended projection that an x° head could target (16c). The third consequence is the universal Spec-head-complement structure of functional projections. Any other order[13] would violate the BBC.

(16) a.   ... [x°$_i$ [YP [e$_i$ ...]]]   (see V- or N-shells in complex VPs and NPs, respectively)
      b.* [$_{F'}$ [$_{XP}$ ... e$_i$ ...] x°$_i$]
      c.* [$_{F'}$ [$_{XP}$ ...] F°]

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[13] i.   *[[Complement-F°]Spec]:   left-branching F' (i.e. extended projection on a left branch)
      ii. *[Spec [complement F°]]:   left-branching F' (i.e. extended projection on a left branch)
      iii. *[[F° complement]Spec]:   left-branching FP (i.e. F' on a left branch)

As for the shell-structure of a complex head-initial phrase, its very existence is a necessary and deducible consequence of three basic conditions, namely endocentricity, binary branching, and the BBC. After merging the first complement with a head, such as a verb (17a), BBC rules out subsequent merger to the right, as in (17b). Any further merger is to the left, as in (17c). For complex projections, this requires a re-instantiation of the head, viz. the verb in a head-*initial* VP (17d). The result is a head-chain which is what has been perceived as a shell-structure. For the details of the grammatically causal interaction between V-re-instantiation and directional licensing, please consult Haider (2015).

(17) a. [V° XP]
    b*[[V° XP] YP]
    c. [YP [V° XP]]
    d. [V°$_i$ [YP [e$_i$ XP]]]

Note that there is no need for appealing to something like "*little v*". The notorious "little v" is nothing but the empty verb position of the re-instantiated lexical head in a complex, clause-*initial* projection (17d). Since this re-instantiation is a necessary consequence also for transitive verbs, there is neither need nor necessity of invoking an inherently specified "little v". It is the familiar category of an empty head position in a head-chain, as the A-chain equivalent of head-movement, in contrast to the A'-chain version of head-movement targeting functional positions. The former projects an argument structure while the latter does not.

As pointed out in the introductory section, the BBC rules out head-final functional projections in general, irrespective of the position of the *lexical* head in the phrase it heads. That this is empirically correct has been shown above with V-movement to a functional head. What about clause-final lexical complementizer morphemes in OV languages and so-called post-nominal articles of head-initial or head-final NPs?

In OV-languages, clause final complementizers are cliticized to the clause-final verb. Crucially, there is no room for intervening material between the head of the complement and the functional morpheme. The clause final complementizers, unlike clause-initial ones, do not behave like an independent lexical-functional head. Here is an example from Korean (18). "*Korean is a head-final agglutinative language, that is, complementizers are marked on the predicates at the right edge of the clause*." (Ceong 1989: 2)

(18) [na-eykey [[Lily-ka Jerry-lul manass-nya-**ko**] Anna-ka Joy-eykey   Ceong (1989: 134)
    [1$_{sg-DAT}$ [[Lily$_{-NOM}$ Jerry$_{-ACC}$ met$_{-INT-}$**COMP**] Anna$_{-NOM}$ $_{Joy-DAT}$
    mwuless-nya-**ko**] mwut-nun-kes-i-nya]
    asked$_{-INT-}$**COMP** ask$_{-PRES-COMP}$-be$_{-INT-DIRECT}$
    'Did you ask me *whether* Anna asked Joy *whether* Lily met Jerry?

Analogously, so-called head-final articles are *suffixal* (= agglutinative) definiteness markers of the head-noun. This can be observed in Scandinavian languages (19a) as well as in Romance, e.g. Romanian (19b), and in many other languages, too, e.g. in Albanian, Bulgarian, Macedonian; see Bošković (2018).

(19) a. tag-*et*   –   tag*et* af *det* gamle hus   Danish
    roof-DEF ('the roof')   roof-$_{Def}$ of the old house

b. soti-*a*   –   soți*a* politician-*ul*-ui   Romanian
wife- DEF ('the wife)   wife-DEF politician-DEF-GEN ('the wife of the politician)

In none of these languages, the postnominal definiteness marker or the clause-final marker of an embedded clause is a free morpheme, which would be the expected analogy to prenominal articles, or clause-initial complementizers, such as 'that', 'whether' or the complementizers of adverbial clauses, that can be separated from the head of the lexical phrase by an intervener. This is a strong indication that head-initial functional-heads are different from functionally corresponding morphemes that follow. The latter are suffixal. The contrast to head-initial functional lexemes is conspicuous. Obligatorily agglutinated head-initial functional heads are the exception; agglutinated final functional heads are the exceptionless rule. This indicates that morpho-syntax is operative in these case and does the syntactic job that can be done phrase-structure-wise, alternatively. Note that in (19b), the definiteness marker is more proximate to the noun than the case affix.

The BBC is a parser-friendly restriction on the search space of a left-corner top-down & bottom-up parser. It excludes projection nodes on left branches. Such projections would inevitably give rise to the nesting of centre-embedded structures, which is known to be a severe impediment for parsing because it overstrains the working memory. This is known since Yngve (1961). Grammars have developed in co-evolution with the cognitively available parsing capacities. Consequently, grammatical variants that are parser-friendly are positively selected in the course of the cognitive evolution of grammars in grammar change. The BBC describes the outcome of a constraint that has evolved in the cognitive evolution of grammar systems), with parsing as a selective environment in the cognitive evolution of grammars (Haider 2020).

4. "FoFC" – half of the truth, and a corollary of the BBC

In several publications, especially in Biberauer et als. (2014) and Sheehan et als. (2017), the following descriptive generalization is presented, discussed, and termed "FoFC", an uneuphonic acronym for "Final-over-final constraint":

The Final-over-Final Constraint (FOFC)
A head-final phrase αP cannot dominate a head-initial phrase βP, where α and β are heads in the same extended projection.

It is true that head-initial phrases do not occur as complements of head-final functional projections. In no language would the finite verb of a head-*initial* VP end up in a head-*final* functional head position, and in no language, a head-initial NP would appear as a complement of a head-final, separate article position. This is what the FoFC describes and it is just part of what the BBC explicitly states (see the excepts in sect. 3), in virtually the same words. Moreover, the BBC correctly describes that the ban against phrase-final functional heads is independent of the positioning of the head in the lexical phrase that functions as the complement of a functional head.

These results have been published well before the first FoFC-publications in Haider (1992, 1993, 1995, 1997, 2010). In Haider (1992), sect. 5.2 explicitly demonstrates how the BBC rules out head-final extended projections, that is, functional projections with a functional head that follows its lexical complement phrase. "*According to the BC, the recursive branch* [*viz. projecting node*] *of a projection is a right branch.*" The FoFC is a paraphrase of the last but one

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paragraph of Haider (2000:48).[14] Haider (2013: 132) recaps with special reference to the FoFC how it is covered by the BBC.

It is evident that the Basic Branching Constraint is the explanatorily stronger constraint. It provides first of all a structurally based theory for the observed facts, and it predicts that the ban against head-final functional head positions is independent of the head-position of the lexically headed complement. The FoFC describes merely half of the truth, and does not explain anything. It rules out the structures whose absence is easy to perceive, namely a head-*initial* complement of a head-*final* functional head. However, head-final complements of head-final functional heads are ungrammatical as well, but this cannot be simply read off from a given serialization. Data that are conflicting with the still maintained, but evidently wrong analysis have been generously overlooked in the extrapolation approach to OV languages in the past decades. The confirmation bias has prevailed over the standard scientific duties, namely the systematic elimination of plausible alternative accounts that happen to have not been 'implemented' in the course of the evolution of grammars.

Let me point out again that this state of affairs is due to a serious sloppiness of 'postmodern' grammar theory. Would the same methodological rigour that had guided the study of the structural syntax of auxiliaries in English in the past century have been applied to the study of alleged V°-to-I° movement in Afrikaans, Frisian, Dutch or German, it could not have escaped the researchers' attention that the crucial empirical check for V-movement fails, namely the check for interveners. This evidence leads directly to the conclusion that a clause final finite verb cannot have been displaced to the right. Here is – once more, and this time based on Dutch data – the simple, easy-to-test class of data from verbs with particle stranding, with items extraposed to VPs. Dutch is a well-studied but misanalysed OV-language when it comes to the alleged movement of a finite verb to an allegedly post-verbal functional head position. The theory-geared 'V-to-I'-hypothesis evidently over-generates. The outcomes it predicts as grammatical are uncontroversially ungrammatical.

(20) a. Hij *doet* aan de wedstrijd *mee*.   (particle verb: *mee-doen*)
        he *joins* on the competition *in*

    b. Hij *doet* niet *mee* [aan de wedstrijd].   (extraposed PP)
      he *joins* not *in* on the competition

    c. [Meedoen aan de wedstrijd]$_{VP}$ kan je op de website.   (VP with extraposed PP)
       in-join at the competition can you on the website

    d.*dat hij [[*mee*-e$_i$ aan de wedstrijd]$_{VP}$ *doet*$_i$].
       that he *in*- on the competition *joins*

    e. dat hij *meedoet* [aan de wedstrijd] – dat hij aan de wedstrijd *meedoet*   (extraposed PP)

    f. This has$_i$ [*very often* [e$_i$ led to disappointing outcomes]].   (intervening adverbial)

Here is the crucial argumentation once more. First, when the finite verb moves to a functional position, the particle is obligatorily stranded, as in (20a,b). Second, a VP is an extraposition site (20c). Thirdly and crucially, V-to-F° could not be blocked by PP-extraposition to this very VP.

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[14] It seems that I do have to blame myself for *anticipatory plagiarism*. Had I known that a Cantabrigian team would publish the very same ideas two decades later, I could have generously deferred publicising my findings. Apparently, some like my ideas more than my papers.

The result would be (20d). This is predicted to be a grammatical structure and acceptable order by those who erroneously believe in V-movement to a right-hand functional head position. (20d) is the counterpart of the English structure (20f), with an adverbial intervening between T° and the VP. However, (20d) is robustly unacceptable. The BBC-constrained grammars only admit (20e), with the finite verb in-situ.

The FoF-perspective leads astray in the search for the correct explanation. First, it rules out merely a fraction of the relevant structures. Second, it sticks to the context of discovery that goes back to Steele's (1975) observation. The context of justification (and explanation) is broader. The FoFC is just a by-product of a far-reaching and universal constraint on projection structures, namely the exclusion of projecting nodes on the left-hand side of a projection. The relevant facts have been identified already in the past century, and their explanation, too. The relevant constraint on phrase structuring has been characterized and named (viz. Bʙᴄ) first in 1992, and it is part of the subsequent research publications that have appeared in the years after.

5. Concluding remarks

Lexical as well a functional projections have a uniform structural architecture. The projecting nodes are right-branches. This excludes, on the one hand, the merger of arguments on the right-hand side and it entails a shell-structure for head-initial projections. On the other hand, it excludes functional heads that follow their complements. As a direct consequence, functional projections are universally constrained to [Spec-[head-complement]] configurations, in that order since spec-position cannot follow either. The exclusion of left-branching lexical projection is the grammatical causality of the shell-structure of complex head-initial projections. In particular, this is the reason for the empty V-position that has been misidentified as "little v", and the embarrassing absence of direct evidence for its existence in SOV languages.

The constraint enables a left-corner parser to effectively combine the bottom-up information with the top-down information supplied by the grammar at any position during the left-to-right parse. The constraint eliminates at least ¾ of the structure space admitted by currently entertained theories of phrase structure as combinations of head-initial and head-final functional or lexical projections. This is the grammatical raison d'être of the constraint (see Haider 2013, ch.1). A narrowly constrained phrasal architecture guarantees effective and efficient parsing. The constraint is the evolutionary outcome of the ongoing parser-grammar co-evolution (Haider 2020).

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