Probing the nature of the Final-over-Final Constraint: the perspective from adpositions [1]
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1.   Introduction

This paper considers the behaviour of adpositional structures in relation to the Final-over-Final Constraint (FOFC). FOFC's initial formulation, due to Anders Holmberg, is given in (1) (the significance of the *unrestricted* characterization will become clear below):

(1)   **The Final-over-Final Constraint (FOFC) – unrestricted version**
If a phrase α is head-initial, then the phrase β immediately dominating α is head-initial. If α is head-final, β can be head-final or head-initial. (Holmberg 2000:124)

Adposition-containing structures pose two distinct challenges to (1). Firstly, we observe that there are languages, notably including all members of the West Germanic family and also languages in what Stilo (2005) designates the Iranian "buffer zone" between Turkic and Semitic, that permit circumpositional structures in which a head-initial locative preposition appears to be dominated by a head-final directional postposition. Consider Afrikaans (2) in this connection:[2]

(2)   Hy loop **by** die deur **uit**.
         he walk by the door out
         'He walks out of the door.'

Secondly, as first noted by Sheehan (2008), we observe that OV-languages with initial PPs frequently seem to extrapose these PPs. (3) illustrates:

(3)   Ei   porritamiok a- pik [**gege-i   nat   nai**]. [Kairiru, Papua New Guinea]
         3SG axe   3SG-take from-3SG child that
         '(S)he took the axe from that child.'
                                    (Wivell 1981:151, via Hawkins 2008:170)

This pattern superficially resembles the head-initial CP-extraposition pattern (near-) universally observed in OV-languages (see Dryer 2009).[3] Consider (4) by way of illustration:

(4)   Chele-Ta   Sune-che   [**je**   or   baba aS   -be].   [Bengali]
         boy - CF   hear- PAST.3SG C   his   father come -FUT3SG
   'The boy heard that his father will come.'   (Bayer 2001:14)

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[2] Unless otherwise indicated, all Afrikaans examples were constructed by the author, a native-speaker. The data in question is entirely uncontroversial.
[3] Dryer (2009) highlights two exceptions to the extraposition pattern, Harar Oromo and Akkadian; see Biberauer (forthcoming) for discussion suggesting that even these do not constitute FOFC violations.

Significantly, CP-extraposition produces a FOFC-compliant structure in languages which otherwise have the ingredients to produce FOFC-violating structures: as schematised in (5), a head-final VP dominating a head-initial CP, as in (5a), would violate (1); extraposition of head-initial CP circumvents this, producing a FOFC-compliant structure (5b):[4]

(5)   a.   [$_{VP}$ [$_{CP}$ C TP] V]   - FOFC-violating structure

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                        VP
                    ／      ＼
                CP              V
            ／      ＼
        C              TP
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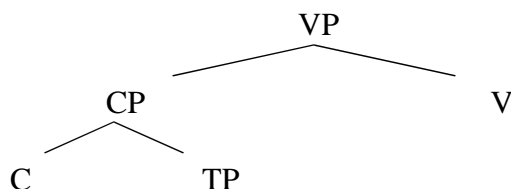
        b.   [$_{VP}$ V [$_{CP}$ C TP]]   - FOFC-compliant structure[5]

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                VP
            ／      ＼
        V              CP
                    ／      ＼
                C              TP
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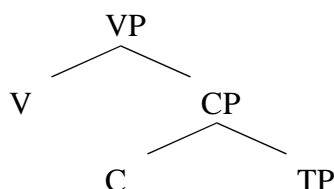
To the extent that OV-languages with head-initial PPs extrapose those PPs, they superficially appear to be employing another FOFC-compliance strategy (cf. Sheehan 2013). Importantly, however, the PP-extraposition pattern differs from the CP-extraposition one in not consistently being obligatory or, in some cases, even possible.

This paper's objective is to show how closer investigation of adpositional patterns like those in (3-4) reinforces the correctness of the view that FOFC is a narrower constraint than originally envisaged in Holmberg (2000). More specifically, I will show that the notion of 'Extended Projection' (Grimshaw 1990 *et seq.*) is central to its formulation in the manner stated in (6) (*pace* i.a. Sheehan 2013, Hawkins 2013, Etxepare & Haddican this volume):

(6)   **The Final-over-Final Constraint (FOFC) – restricted version**
A head-final phrase αP cannot dominate a head-initial phrase βP where α and β are heads in the same Extended Projection.
                                        (Biberauer, Holmberg & Roberts 2014:171)

Against this background, it emerges firstly, that the distribution of head-initial PPs in OV-languages does not constitute a challenge to the proposal that FOFC is a hierarchical universal in the sense of Whitman (2008), and, secondly, that attested

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[4] See Holmberg (2000:135) for discussion of another striking case in which languages with the potential to violate FOFC – in this case, by being VO-languages with a head-final WANT-element – do not in fact do so.

[5] (5b) is a simplified structure, which does not correspond to any of the extraposition structures that have been proposed in the literature; the intention is simply to show that a postverbal head-initial CP will not violate FOFC. The question of the right analysis for extraposed CPs is a very interesting one in relation to which numerous questions remain open (see Biberauer & Sheehan 2012 for some FOFC-oriented discussion and references; see also note 11).

circumpositional structures and, similarly, structures where head-final Ps dominate head-initial nominals also do not appear to instantiate FOFC-violating structures.

The paper is structured as follows: section 2 briefly introduces the on-going debate regarding the nature of FOFC, which, I argue, PPs give us important insight into; section 3 then considers the external distribution of head-initial PPs in OV-languages (these are expected to require obligatory extraposition on a (1)-type definition of FOFC, whereas a (6)-type definition does not rule out preverbal placement); section 4 focuses on the PP-internal distribution of head-final Ps in languages with head-initial nominals and/or head-initial Ps (both (1)- and (6)-type FOFC predict head-final and head-initial Ps not to be able to co-occur in circumpositional structures, except where the latter dominate the former, giving initial-over-final structures; and (1)- but not (6)-type FOFC predicts that the combination of head-initial nominals and head-final PPs should not be attested); section 5 concludes.

2. FOFC: what kind of constraint is it?

FOFC has been argued to hold over a wide range of domains, ruling out structures including the following (see Biberauer, Holmberg & Roberts 2014, Biberauer, Holmberg, Roberts & Sheehan to appear for overview discussion and references, also of cases that superficially appear to instantiate the structures below):

(7) a. $*[_{VP}VO]$ Aux
    b. $*[_{VP} VO]…$ C
    c. $*[_{PolP} Pol TP]$ C
    d. $*[_{Asp} Asp VP]$ T
    e. $*[_{D(em)P} [_{NumP} Num NP] D(em)]$

It has also been shown to regulate diachronic change, including that taking place in contact scenarios (see Biberauer, Newton & Sheehan 2009, Biberauer, Sheehan & Newton 2010). Word-order changes necessarily proceed along FOFC-compliant pathways of the kind schematized in (8) and not along FOFC-violating routes like those in (9) [FOFC-violation **bold underlined** in each case]:

(8) a. [[[O V] I] C] > [C [[O V] I]] > [C [I [OV]]] > [C [I [V O]]]
    b. [C [I [VO]]] > [C [I [O V]]] > [C [[OV] I]] > [[[O V] I] C]

(9) a. $*$[[[O V] I]C] > [[**I[O V]**]**C**] > [C[I [OV]]] > [C [I [V O]]]
    b. $*$[[[O V] I] C] > [[[**VO] I**]**C**] > [[**I [VO]**]**C**] > [C [I [V O]]]
    c. $*$[C [I [VO]]] > [C [[**VO]I**]] > [C[[OV] I]] > [[[O V] I] C]
    d. $*$[C [I [VO]]] > [[**I [VO]**]**C**] > [[[**VO] I**]**C**] > [[[O V] I] C]

Given evidence such as the above, the question that arises is what kind of constraint FOFC in fact **is**. Proposals to date include that it is a:

(10) a.   (tendential) processing/parsing effect (Cecchetto 2013, Hawkins 2013[6], Philip 2013, Mobbs 2015)

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[6] It is worth noting that Hawkins (2013) disputes the validity of FOFC as a distinct constraint on word-order variation, pointing out that it appears to be simultaneously too strong (in ruling out attested structures, including those that are the focus of this paper), and too weak (in failing to rule out

b. (tendential) product of diachronic forces (Whitman 2013)
c. superficial/"late" PF constraint (Sheehan 2013, Richards 2016, Etxepare & Haddican this volume)
d. deep syntactic constraint (Biberauer, Holmberg & Roberts 2009 *et seq.*, Cecchetto 2013)

With the exception of Cecchetto (2013), which we discuss under (10d) below, (10a,b)-type approaches allow for less commonly attested, but nevertheless genuine exceptions to (1)/(6):[7] FOFC on this view is a statistical universal, no different to the more robust cross-categorial word-order generalizations initially proposed by Greenberg (1963). Distinguishing between three sub-types of Greenbergian generalization – cross-categorial, hierarchical and derivational generalizations (Whitman 2008:234; see also section 5 below) – Whitman (*op. cit.*) argues that cross-categorial word-order generalizations are necessarily statistical, with Whitman (2013) specifically arguing that this is also the case for FOFC, interpreted as in (6). (10a,b), then, do not specifically rule out any of the structures we are concerned with in this paper, although processing and/or historical considerations may limit their attestation. They will be relevant to the present discussion in that we will consider the extent to which the types of external (processing and/or diachronic) forces proposed by the relevant authors correctly predict the (un)availability of the adpositional structures that are the main focus of this paper.

(10c) allows for syntax-internal final-over-initial structures, as long as these are not realized as such at PF, i.e. spellout considerations of different kinds preclude the realization of FOFC violations, with the result that apparent violations, such as those under discussion in this paper, must be shown to instantiate structures that do not pose the same spellout obstacle as unattested final-over-initial structures. For Sheehan (2013) and Etxepare & Haddican (this volume), who build on Sheehan's analysis, FOFC-effects arise as a result of a linearization difficulty that emerges in the presence of complex specifiers (cf. also Uriagereka 1999, who first observes that LCA-based linearization of such specifiers requires an "induction step" over and above the "basic" asymmetric c-command statement standardly associated with the LCA of Kayne (1994)).[8] As this difficulty arguably does not arise where a complex specifier

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unattested structures that don't meet the characterisation in (1) (see following note), but seem intuitively similar, e.g. extraposed head-final CPs of the kind we will discuss in section 3.2; see (i) below; and, if one adopts (6) – which Hawkins rejects – the absence of head-initial relative clauses in languages with head-final nominals; see (ii) below).

(i) * [$_{VP}$ V [$_{CP}$ TP C] – unattested (Hawkins 1990; though see section 3.2 and note 30)
(ii) *[$_{NP}$ [$_{CP}$ C TP] N] – unattested (Lehmann 1984)

His analysis therefore attempts to account for FOFC-type disharmony in processing-efficiency terms that also apply to initial-over-final (i.e. inverse-FOFC) disharmony.

[7] Cecchetto and Hawkins both assume unrestricted FOFC as in (1), while Whitman operates with restricted (6). The class of FOFC-violating structures that their approaches predict to be disfavoured, but nevertheless possible are therefore different, with the former authors interpreting a larger range of actually attested structures as being FOFC-violating – not only those in which a head-final XP dominates a head-initial one within its own Extended Projection, but also those in which this configuration involves a head-final XP dominating a head-initial one belonging to a **different** Extended Projection (e.g. a head-final VP dominating a head-initial PP, one of the cases of interest in this chapter).

[8] Worth noting here is that Sheehan and Etxepare & Haddican, like Biberauer, Holmberg & Roberts (2014), assume head-final orders to be derived via some kind of movement. In these terms, a head-initial XP located in a (derived) specifier position constitutes a potential FOFC-violation; whether it is

has already been spelled out, a situation which has been argued to produce islands (see Sheehan 2013 for discussion and references), such structures are expected to be permitted. In the FOFC domain, this produces the prediction that apparently FOFC-violating structures will involve a head-initial *island* dominated by a head-final structure, regardless of the categorial specifications of the initial and final phrases: as the linearization difficulty outlined above applies equally to all complex specifiers, regardless of whether they are categorially the same or different to the projection with which they are merging, Sheehan is necessarily committed to the unrestricted FOFC in (1).[9] Consider (11), which depicts the linearization options for complex specifiers in Sheehan's (2013) system; YP represents a complex specifier and Z the head whose specifier it has, in accordance with standard minimalist assumptions about how structure is generated, merged (11a) or moved (11b,c) to create:

(11)   a.   [$_{ZP}$ [$_{YP}$ Y XP] Z …]
          b.   [$_{ZP}$ [$_{YP}$ Y XP] Z … [~~$_{YP}$ Y XP~~]]
          c.   [$_{ZP}$ [$_{YP}$ Y ~~XP~~] Z … [$_{YP}$ ~~Y~~ XP]]

(11a) represents the case of a complex specifier spelled out in its first-merge position; the prediction is that these will necessarily be islands, with YP having been spelled out prior to merger with Z. (11b) involves a moved complex specifier, which has again been spelled out prior to movement, with the result that it can be spelled out in its derived position, again as an island. (11a)- and (11b)-type structures will be superficially FOFC-violating as Z will give the appearance of being final in relation to head-initial YP. (11c), on the other hand, involves a complex specifier which has *not* been spelled out prior to merger with Z; in Sheehan's system, head-initial YP cannot be spelled out in its derived position, requiring a "scattered deletion"-type operation which produces an extraposition structure, Y-Z-XP (see Sheehan 2013 for details). For this proposal, then, superficially FOFC-violating head-initial *island-containing* structures are predicted to be possible, and we also expect to see extraposition structures of a particular kind in contexts where a non-island apparently FOFC-violating structure might be expected. The examples in (12) illustrate − in simplified form − how this proposal would apply in the case of potentially FOFC-violating VOAux structures (a broadly Kaynean analysis is assumed, and ~~strikethrough~~ indicates lower copies):

(12)   a.   * … pæt [$_{TP}$ ænig mon [$_{VP}$ atellan [$_{DP}$ ealne pone demm]] mæge]
                  that   any man   relate   all   the   misery can
                                [pseudo-Old English, based on attested (12b)]

          b.   [$_{TP}$ pæt ænig mon [$_{VP}$ atellan ~~ealne pone demm~~] mæge [~~atellan~~ ealne
                that any   man   relate all   the   misery can   relate all

                pone demm]] > pæt ænig mon atellan mæge ealne pone demm
                the misery

‘ . . . that any man can relate all the misery . . . ’

[Old English, Pintzuk 2005:13 (coorosiu, Or_2:8.52.6.998), cited in Sheehan 2013:429]

Here the idea is that VP movement into the Aux-domain would result in the creation of a complex specifier containing the moved VO-VP. If VP were an island, it could be spelled out in the pre-auxiliary position, giving VOAux order of the kind illustrated in (12a). This is a scenario which potentially arises for VP-fronting structures in null-subject languages.[10] Since "regular" (i.e. non-focused or topicalised) VPs presumably do not constitute islands, however, (12a) is unattested, not only in Old English, but also more generally. What we do see, however, are structures like that illustrated in (12b), where V is spelled out in pre-Aux position with O following; this is Sheehan's "scattered deleted" structure (11c) above, i.e. [TP [VP V O̶] T [VP V̶ O]].[11]

Richards' PF-oriented proposals, in turn, rule out FOFC-violating structures occurring *within* the same phasal domain, or, more accurately, within the same spellout domain, with these latter corresponding to the domains defined by the original Phase

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[10] The Sardinian example below illustrates:

(i) CP [VP **Tunkatu su barkone**] C [TP asa-T]].   [Sardinian]
         shut   the window   have.2SG
         ‘It's shut the window you have!’   (Jones 1988:339)

Here we have surface VO-Aux, but the structure, crucially, involves A-bar movement. VP can therefore plausibly be viewed as an island, with the result that it does not violate FOFC on Sheehan's account. It likewise does not violate FOFC on the Extended Projection-oriented analysis advocated in BHR and also in this paper as FOFC only applies to structures in which the specifier is occupied by the categorially identical head-initial XP that constitutes the complement of its head, i.e. where the EP-sister of a head X has "rolled up" into its specifier (see Biberauer forthcoming for more detailed discussion).

The German examples in (ii) underline the striking difference between VO-Aux involving basic/neutral structures – which exhibit the ill-formedness expected in terms of FOFC (iib) – and VO-Aux structures involving non-neutral/A-bar movement-containing structures – which are well-formed (iia) (here, as elsewhere, we offer simplified structural representations):

(ii) a. [CP [VP **Gesprochen mit ihr**] hat-C [TP er t_that nicht mehr t_VP]]   [colloquial German]
              spoken   with her has   he   not   more
          ‘As for speaking with her, he no longer did that.’
      b. *…dass er nicht mehr gesprochen mit ihr hat.
              that he not   more spoken   with her has
      c. … dass er nicht mehr gesprochen hat mit ihr.
              that he no   more spoken   has with her
          ‘… that he didn't talk to her anymore.’   (Haider 2013:80)
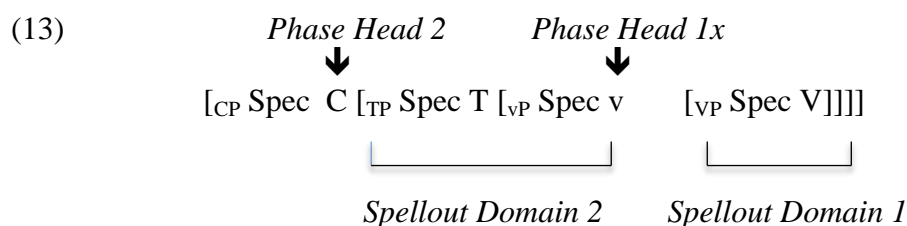
Exactly the same pattern emerges in Afrikaans, which permits PP-stranding much more readily than German.

[11] Assuming CP-complements to be embedded within a (non-island-inducing) and often not overtly realized nominal shell, as suggested for different reasons by i.a. by Kayne (2008), Arsenijevic (2009), Moulton (2009, 2013, 2015), Biberauer & Sheehan (2012), and Franco (2012), the CP-extraposition pattern that is typical of "non-rigid" OV-languages with head-initial CPs instantiates this "scattered deletion" pattern. This is schematized in (i), with (ii) providing an example from Afrikaans:

(i)   [VP [nP n C̶ T̶P̶] V [nP n̶ [CP C TP]]
(ii)   Hy het **dit** geweet [CP **dat** ons nie 'n kans   het nie]
           he has it known   that us not a chance have POL
           ‘He knew it that we didn't have a chance.’

Of course, if CPs are embedded within this type of nominal shell, preverbal head-initial CPs would not violate FOFC on (6)-type interpretations of this constraint, raising the question why they are nevertheless always extraposed, a matter I will not go into here. Also worth noting is the fact that the grammatical PP-extraposition structure in (iic) in the immediately preceding footnote instantiates a further case of the "scattered deletion" structure predicted by Sheehan's proposals.

Impenetrability Condition proposed in Chomsky (2000) and schematized for (a simplified version of) the clausal domain in (13) (see Richards 2016:chapter 5 for detailed discussion):

(13) *Phase Head 2*   *Phase Head 1x*
         ⬇   ⬇
    [$_{CP}$ Spec C [$_{TP}$ Spec T [$_{vP}$ Spec v   [$_{VP}$ Spec V]]]]
                        |_____| |_____|

                        Spellout Domain 2   *Spellout Domain 1*

For Richards, then, FOFC is an even more restricted constraint than (6), holding only *within*, but not *across* phasal domains, and thus also not across an entire Extended Projection. VO-Aux is therefore ruled out wherever the VO-containing VP and Aux are spelled out together upon completion of a phase. One circumstance where this applies would be where V raises to v and the auxiliary is merged within the T-domain, as the v- and T-space will always be spelled out together at the point where C is merged; another is where V remains in situ, but the auxiliary is merged within the first phase, below the phase head (rather clearly, the proposal would make incorrect predictions in the absence of suitably articulated phasal domains, i.e. clausal structure entailing more than the bare V-v-T-C structure typically cited in the minimalist literature; see Biberauer & Roberts 2015 for discussion of one route via which to "join up" bare minimalist and more articulated approaches to clause structure).[12] Where Aux is T, VO-Aux is, in principle at least, available, which looks to be correct if we consider the attestation of VO-T(ense) structures, featuring specifically Tense-marking auxiliaries: as already noted by Greenberg (1963), who consequently excluded non-inflecting auxiliaries from his V, O and Aux investigations, VO-T is attested in systems where T does not inflect (see also Dryer (1992) and Biberauer (forthcoming) for discussion, and see note 10 for another superficial VO-Aux structure that would be compatible with Richards' proposals). One complication here is the fact that there is no obvious explanation for why languages with **inflecting** T-auxiliaries do not permit VO-Aux structures, which seems to be the case (cf. Biberauer forthcoming for further discussion).

The same question arises in relation to C-elements in VO-C structures. For Richards, VO-C is predicted to be possible where C belongs to the same clause as V, e.g. where it is a matrix C-particle of the type found in Sinitic and many other languages (cf. Biberauer forthcoming for discussion); these particles are never spelled out at the same time as V, even if V undergoes raising into the higher phase. Structures of this

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[12] To the extent that they had not yet grammaticalised into T-elements, but instantiated spellouts of lower, non-phasal v-related heads, the Old and early Middle English auxiliaries would instantiate the types of auxiliary elements that Richards' proposals would predict to be incompatible with VO-Aux configurations, an accurate prediction (see Biberauer & Roberts 2010 for discussion of the plausibility of assuming non-T status for auxiliaries at the relevant stage). If, as is commonly assumed, the relevant pre-auxiliary constructions were biclausal, though, it is less clear that VO-Aux would be predicted to be ruled out. This looks like the incorrect prediction for earlier English, but it might fit with recent discoveries about the syntax of Latin, which permitted VO-Aux structures under certain clearly defined circumstances (cf. Danckaert to appear for discussion); these circumstances would, however, also be amenable to explanation on the basis of a (6)-type interpretation of FOFC. As the details remain to be worked out, we leave this matter aside here, noting only that Richards' proposals do entail different predictions for mono- and biclausal VO-Aux-containing structures.

type certainly exist, as predicted. More problematically, though, Richards' approach predicts that embedded clauses with VO-ordering should be compatible with final C-heads (e.g. complementisers). This is, however, strikingly at odds with typological findings about the distribution of **non-particle** subordinating complementisers (see again Dryer 2009, and also Biberauer forthcoming): VO-C of this type simply does not seem to occur (see Biberauer forthcoming for discussion of the two apparent counterexamples, neither of which ultimately constitute genuine VO-C structures). Precisely why there should be such a striking difference between (subordinating) complementiser elements of the kind that typologists have traditionally paid attention to and complementiser-particles is unclear on this approach.[13] More generally, the question for this approach, as should now be clear, is why the "inflecting" versus "non-inflecting" distinction should matter as it seems to: "inflecting" elements may not surface in FOFC-violating structures, regardless of how close or far a final inflecting element is from head-initial structure that is also part of its projection line (=Extended Projection), while "non-inflecting" elements may, again seemingly irrespective of the distance between them and the projecting initial element.

In the specific context of the structures we will be focusing our attention on here, Richards' approach does not rule out [VP [PP P DP] V]-type structures as PP defines its own spellout domain, meaning that PP and V could combine to produce structures of the type found in West Germanic and discussed further in section 3.1. To the extent that final Ps can be shown to be located in a higher phase than the head-initial XPs they dominate (see section 4 below), it also does not exclude [PP [PP P DP] P]- or [PP [DP D NP] P]-type structures. As we will see below, this approach is therefore as "strict" as the strictest version of (10d) when it comes to the adpositional structures that are the primary concern in this paper. These two approaches do, however, differ in respect of the predictions they make about the nature of the final elements dominating the head-initial XPs, a point we will return to in the following sections.

The final type of approach, (10d), outright bans the generation, at any stage of the syntactic derivation, of FOFC-violating structures; in other words, for these researchers, the ban on FOFC-violating structures is "deep", extending to the syntactic computation, which may not at any point produce final-over-initial structures.[14] These approaches also crucially understand FOFC as in (6), i.e. as a

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[13] By contrast, the (6)-type, Extended Projection-oriented interpretation of this constraint does allow us to understand why particle and inflecting instantiations of "the same" category do not distribute identically as far as FOFC is concerned. The key here is that particles can, on independent grounds, be shown not to be part of the Extended Projection of the verb, while the complementisers that have been the traditional focus of typological research – which typically encode multiple clause-related properties (subordination, force, finiteness, mood, etc.) – rather clearly are, at least on the assumption that Extended Projection-defining elements share features, with the result that they can Agree with one another (see Biberauer forthcoming for further discussion).

[14] Haider (2013) also explicitly states that FOFC-violating structures are ruled out by his Basic Branching Condition (BBC) as this Constraint requires functional heads always to be head-initial, regardless of the headedness of the lexical projection they dominate (cf. p.71 and section 5.2 for discussion). Crucially, however, this holds only of **derived** functional heads, i.e. those which are the target of head-movement or "feature attraction" (long-distance Agree, effectively). In his own words, "a functional projection is a *functional extension of a lexical projection* if and only if the lexical content for the *non-lexical functional head* position is derived. … Note that according to this definition, a projection of a *lexical* functional head (e.g. a lexical complementizer or a determiner) does not qualify as the *functional extension* of the complement of the functional head." (emphasis in the original; p.71). Final complementisers or question markers are thus equally ruled in, as his note 7

constraint which necessarily makes reference to Extended Projections. In terms of this type of approach, then, VO-Aux and VO-C are always ruled out where Aux and C can be shown to contribute to the Extended Projection of the verb, i.e. where they reflect or are sensitive to formally encoded[15] verb-related properties like finiteness, mood, agreement, etc. (see Biberauer forthcoming for detailed discussion). To the extent that elements that have been designated as 'particles' do not give evidence of a formal connection with the verb (see note 15), we expect them to be able to surface in apparently FOFC-violating structures, thus accounting for the structures mentioned above and also those more generally discussed in Biberauer (forthcoming).

Strikingly, Cecchetto (2013) proposes a parsing-motivated rationale as the basis for the "deep" ban on FOFC assumed in (10d)-type approaches. Building on Hawkins' Performance-Grammar Correspondence model – i.e. the idea that grammars conventionalize syntactic structures in proportion to their degree of preference in performance – and the dependency-parsing ideas originally proposed to account for the Right Roof Constraint (Fodor 1978, Rochemont 1992) and elaborated in Ackema & Neeleman (2002), Cecchetto argues that structures in which a selecting head follows and is not immediately adjacent to the head it selects will never become conventionalized in Hawkins's sense; as a result, structures of this type are ruled out for "deep" reasons. Importantly, his approach distinguishes between heads that select another head within a single Extended Projection (e.g. v and V or C and T) and heads which select elements outside of their Extended Projection (e.g. V and P).[16] The former are heads which select for the specific featural content of the selected head, and thus, by hypothesis, have to precede it to satisfy parsing requirements; the latter involve heads which arguably select for phrasal complements (PPs) rather than individual heads, with the result that head-head adjacency is not specifically required. In one of the cases of interest to us in this paper, for example, V selects for a PP, rather than the P-head of the PP; as the featural relationship is between V and a phrase, that phrase can precede its selector, with the location of the head of the phrase being immaterial.[17]

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directly states, leaving us with no account of the VO-C discrepancy that also poses a challenge for Richards' analysis (see main-text discussion), or, indeed, of any structures in which a "functional head is furnished with its own lexical content" (*ibid.*).

[15] The *formally encoded* qualification here is crucial: auxiliary and complementiser-elements which are sensitive to semantic properties that give no evidence of having been formally encoded via features that are visible Narrow Syntax-internally (cf. Chomsky 1995, Biberauer 2011 *et seq.*) in the relevant verbal system will, by hypothesis, not lead acquirers to postulate a formally instantiated connection between auxiliaries and complementisers; following on from Grimshaw's original definition of 'Extended Projection', we take the **formal** connection between verbs and higher verb-related elements like auxiliaries and complementisers to be crucial in establishing whether an element qualifies as part of an Extended Projection and, hence, whether it obeys (6)-type FOFC or not. Cf. also Wiltschko (2014 *et seq.*) on the difference between projecting versus modifying elements, which delivers the vital distinction in play here.

[16] CPs take on an interesting place in this context, clearly not being part of the same Extended Projection as the selecting V, but differing from nominal and adpositional selectees in sharing the [V]-related features associated with verbal Extended Projections. We leave this challenging case aside here, but see also note 11.

[17] Cf. also i.a. Baltin (1989), Payne (1993), Williams (2003), Sportiche (2005), Bruening (2009), Fowlie (2014), and Bruening, Dinh & Kim (2015) for argumentation focusing on completely different phenomena that also points to the fact that selection **across** Extended Projections is fundamentally different to selection within an Extended Projection. This is also necessarily the case in the context of theoretical approaches like Nanosyntax (cf. i.a. Starke 2009 and Pretorius in progress for discussion).

Insofar as the specific focus of this paper is concerned, then, head-initial PPs in OV languages are not predicted by (10d)-analyses to be problematic, and neither are postpositions dominating head-initial nominals that can be shown not to be part of the Extended Projection of the nominal; similarly, postpositions dominating prepositions in circumpositional structures will only be problematic if they are part of the same Extended Projection. The difference between (10c) and (10d) is thus that the former predicts FOFC to hold across a more limited domain within an Extended Projection, with the latter also highlighting the relevance of the formal make-up of elements within an Extended Projection – broadly speaking, the difference between Extended Projection-defining heads versus non-projecting/modifying elements.

Having introduced the nature of the debate surrounding the nature of FOFC, let us now consider the adpositional structures that are our principal focus in this paper.

3. The external distribution of head-initial PPs in OV-languages

This section will be concerned with the external distribution of head-initial PPs in OV-languages. If FOFC is unrestricted, as in (1), we would expect systems of this kind either to extrapose their head-initial PPs in the manner observed for head-initial CPs (cf. (4) above), or, if Sheehan (2013) is correct, for preverbally occurring head-initial PPs to be islands, with "scattered deletion" structures arising where this is not the case (cf. (11b) vs (11c) above). If FOFC is restricted as in (6) or as in Richards' (2016) proposal, head-initial PPs are not expected to show any special behaviour. If external considerations such as processing are a factor, we expect the relevant processing considerations to determine the nature of possible versus impossible structures. What we will see is that the distribution of head-initial PPs in OV languages does not exhibit the patterns (10a,b) would lead us to expect; both (10c) and (10d) are compatible with the observed data, however.

We start with a consideration of OV Germanic (section 3.1), before looking specifically at languages which, at first sight, appear to exhibit the obligatory PP extraposition pattern predicted by unrestricted ((1)-type) interpretations of FOFC, i.e. (10c)-type approaches (section 3.2).

3.1.   The distribution of head-initial PPs in OV West Germanic

In all OV West Germanic languages, it is unproblematic for head-initial PPs, like nominal complements, to surface preverbally. The illustrations in this section will mostly come from Afrikaans, the most extraposition-tolerating modern OV Germanic system. As (15) shows, mixed OV/VO Mòcheno[18], which extraposes even more readily than Afrikaans, also permits preverbal PP-placement (the labelled bracketing is simplified for expository convenience):

(14)   a.   Ek het   [VP [PP **in die bos**] **geloop**].   [Afrikaans]
                I   have   in the bush walked
                'I walked in the bush'

---

[18] Mòcheno, also known as Fersentalerisch, is an Upper German variety spoken in three villages in the Fersina valley in the Trentino province of northern Italy. Like neighbouring Cimbrian, it has been strongly influenced by contact with local varieties of Italian.

b.   Ek sal   [$_{VP}$ die presente [$_{PP}$ **vir/aan hulle**] **gee**]].
          I   shall   the presents   for to   them   give
          'I will give the presents to them.'

c.   Ek het   [$_{VP}$ [$_{PP}$ (**vir**) **haar gegroet**].
          I   have   for   her   greeted
          'I greeted her.'

(15)   Gester   hot der Mario **en de Maria** a puach gem.   [Mòcheno]
          yesterday has the Mario to the Mary a book   given
          'Yesterday Mario gave Mary a book.'   (Cognola 2012:46)

(14a,b) illustrate the preverbal placement of adjunct and argument PPs respectively, while (14c) instantiates an innovated structure in modern Afrikaans, a form of differential object-marking involving the preposition *vir*, which also serves, as (14b) shows, as one of the options for marking indirect objects. As the comparison between (16a) and (16b) shows, *vir* is optional where an object has undergone leftward scrambling, but obligatory where it is in its unscrambled position:

(16)   a.   Ek het **(vir) haar/Sarie** gister   gegroet.
          I   have for   her / Sarah   yesterday greeted
          'I greeted her/Sarah yesterday.'

      b.   Ek het   gister   *(**vir**) **haar/Sarie**   gegroet.
          I   have yesterday for   her   Sarah   greeted
          'I greeted her/Sarah yesterday.'

Assuming, in line with standard assumptions about West Germanic scrambling (cf. i.a. Richards 2004, Haider 2005, and Chocano 2007), that scrambled elements are located outside of VP, whereas their unscrambled counterparts are located VP-internally, the data in (16) mean that Afrikaans has innovated a context in which a head-initial PP is dominated by a head-final VP, namely (16b). This is *contra* what we might expect on the unrestricted interpretation of FOFC in (1), where it should never be possible for any head-initial XP to be dominated by a head-final XP.[19] Even more significantly in view of the (1)-induced expectation that OV-languages with initial PPs should permit these to be extraposed (cf. (3) above), it is completely impossible to extrapose a differentially object-marked nominal. As (17) shows, such objects are as unextraposable (17a) as their non-object-marked counterparts (17b) and nominal objects more generally (17c):

(17)   a.   *Ek het   gister   gegroet **vir haar/Sarie**.
            I   have yesterday greeted   for her   Sarah

---

[19] It is usually thought (*pace* Haider 2013 and this author's previous work) that the verbal functional structure immediately above VP is also head-final in West Germanic systems, meaning that scrambling of a head-initial PP will still result in a configuration where a head-final PP is dominated by a head-final verbal XP; the point here, though, is that *vir*-structures of the kind illustrated in (16b) represent a **novel** final-over-initial structure, i.e. an innovation of the kind that FOFC should rule out (see Biberauer, Sheehan & Newton 2009, Biberauer, Newton & Sheehan 2010).

b.   *Ek het gister   gegroet **daardie meisie**.
      I   have yesterday greeted that   girl

c.   *Ek het gister   gelees **daardie boek**.
      I   have yesterday read   that   book

Further, as (18) shows, it is (colloquially) possible to extrapose from a differentially object-marked object (18b):

(18)   a.   Ek het net gister   **vir Sarie wat by Sam-hulle bly** gegroet.
           I   have just yesterday for Sarah what by Sam-them stay greeted
           'I greeted Sarah who lives with Sam and them just yesterday.'

        b.   Ek het net gister   **vir Sarie** gegroet **wat by Sam-hulle bly**.
           I   have just yesterday for Sarah greated what by Sam-them stay

Strikingly, however, this extraposition does not resolve the superficial violation of (1) – [$_{VP}$ [$_{PP}$ P DP] V] – although it does decrease the number of elements that need to be parsed in order to identify the verb's PP-complement, which is in line with the Minimise Domains component of Hawkins' (1994 *et seq.*) processing proposals.[20] It also does not reflect the kind of extraposition pattern predicted by Sheehan's (2013) approach: a non-island PP-complement would, on this proposal, be expected to be linearized as in (19), which is, however, ungrammatical:

(19)   a.   … [$_{PP}$ vir ~~Sarie wat by Sam-hulle bly~~] gegroet [$_{PP}$ ~~vir~~ Sarie wat by
           Sam-hulle bly]
        b.   *Ek het net gister   **vir** gegroet **Sarie wat by Sam-hulle bly**.
           I   have just yesterday for greeted Sarah what by Sam-them stay

As already hinted at above, there are other kinds of head-initial PPs in Afrikaans – and also to a lesser extent in Dutch and to an even lesser extent in German – that can extrapose, particularly in the spoken language. Consider the following examples (the judgments below reflect those of the author and, additionally, 11 native-speakers, who were asked to consider the acceptability of these structures in their own spoken Afrikaans[21]):

(20)   a.   Ek het geloop **in die bos**.   (contrast (14a))
           I   have walked in the bush
           'I walked in the bush.'

---

[20] Minimize Domains (MiD): The human processor prefers to minimize the connected sequences of linguistic forms and their conventionally associated syntactic and semantic properties in which relations of combination and/or dependency are processed. (Hawkins 2004:32)
[21] My informants were all native-speakers of Afrikaans, who either live in South Africa or use the language daily. They ranged in age from 17 to 65, and none are speakers of a markedly regional variety.

b. Ek sal die present gee **vir/ aan** ??**hulle/iemand wat dit**
I shall the present give for to them someone what it
sal waardeer.
shall appreciate
'I will give the present to them/someone who will appreciate it.'

c. Ek het gereken **op hom**.
I have counted on him
'I counted on him.'

(21) a. … dat ek [$_{AP}$ [$_{PP}$ **met die antwoord**] tevrede] is.
that I with the answer satisfied am
'… that I am satisfied with the answer.'

b. … dat ek [$_{AP}$ tevrede [$_{PP}$ **met die antwoord**]] is.
that I satisfied with the answer am

c. … dat ek [$_{AP}$ tevrede] is [$_{PP}$ **met die antwoord**].
that I satisfied am with the answer

Here we see that adjunct PPs readily extrapose (20a), while argument PPs can be more resistant to extraposition, although weight considerations of the sort that one might expect to play a role in an approach like that of Hawkins (1994 *et seq.*) can ameliorate argument-extraposition to the point of full acceptability (20b). Since argument PPs do not constitute islands – cf. the stranding examples in (22c) and (23c) – the requirement that precisely these head-initial PPs must be placed before their selector and cannot be extraposed constitutes a challenge to Sheehan's proposed analysis, in terms of which, recall, superficially FOFC-violating structures like [$_{VP}$ [$_{PP}$ P DP] V]] and [$_{AP}$ [$_{PP}$ P DP] A]] are predicted to involve head-initial **islands**:

(22) a. Ek het [$_{VP}$ [$_{PP}$ **op hom**] gereken]. [Afrikaans]
I have on him counted
'I counted on him.'

b. **Op wie** het jy [$_{VP}$ [$_{PP}$ op wie] gereken]? [Standard Afrikaans]
on who have you counted
'On whom were you counting?' (piedpiping)

c. **Wie** het jy [$_{VP}$ [$_{PP}$ wie[22] **op** wie] gereken?] [Colloquial Afrikaans]
who have you on counted
'Who were you counting on?' (stranding)

(23) a. Ek is [$_{AP}$ [$_{PP}$ **met daardie student**] tevrede].
I am with that student satisfied
'I am satisfied with the answer.'

---

[22] There is strong evidence that *wh*-extraction in Afrikaans, as in other (West Germanic) languages, involves extraction via the PP-edge (cf. Abels 2003, 2012 for detailed discussion). As (23c) shows, a subset of Afrikaans Ps undergo form-change when wh- and other pronominal elements pass through their specifiers; in this case, *met* ('with') becomes *mee*.

b. **Met wie** is jy [AP [PP ~~met wie~~] tevrede]]? [Standard Afrikaans]
with who are you satisfied
'With whom are you satisfied?' (piedpiping)

c. **Wie** is jy [AP [PP ~~wie~~ **mee** ~~wie~~] tevrede]]? [Colloquial Afrikaans]
who are you with satisfied
'Who are you satisfied with?'

Importantly, PP-selecting verbs like *reken* in (20c) differ from ditransitives like *gee* in (20b) in that they do permit extraposition as an alternative to preverbal placement. Interestingly, the same is true for the PP-complements of adjectival predicates; thus (21c) is as readily accepted by the informants I consulted as (21a), while (21b) is more marked, but was nevertheless also accepted by all informants. Here, both Hawkins' and Sheehan's proposed analyses may facilitate insight into the observed extraposition patterns, though not into the optionality between (21a) and (21c); further, neither of these approaches would seem to have anything to say about the difference between (21b) and the corresponding verbal-complement pattern, VO-Aux, which is, of course, sharply ungrammatical – cf. (iib) in note 10, which is presented as (24a) here, with (24b) showing that the same pattern holds for Afrikaans:

(24) a. *…dass er nicht mehr [AuxP [VP gesprochen [PP mit ihr] hat]] [German]
that he not more spoken with her has

b. *… dat hy nie meer [AuxP [VP gepraat [PP met haar] het]] [Afrikaans]
that he not more spoken with her has

Importantly, PP-complements of copulas constitute an exception to the pattern that has emerged above: regardless of length, they cannot be fully extraposed (25b)[23]; where a complement-PP features independently extraposable material (e.g. the adjunct-PP in (25c)), extraposition of this latter material is, however, possible, something which fits with the more general pattern in Afrikaans:

(25) a. … dat ek **by die huis met die eindelose tuine** is.
that I by the house with the endless gardens am
'… that I am at house with the endless gardens.'

b. *… dat ek is **by die huis (met die eindelose tuine)**.
that I am by the house with the endless gardens

c. … dat ek **by die huis** is **met die eindelose tuine**.
that I by the house am with the endless gardens

As was the case for (18b) above, the extraposition pattern in (25c) does not ameliorate the (1)-type FOFC-violation, although it does conform to MiD (see note 20).

Taken together, then, what the OV West Germanic data considered here seem to show is that:

---

[23] This mirrors the more generally observed pattern in Dutch, which, as Broekhuis (2013:65) notes, consistently requires predicative complements to precede their selector, regardless of its nature.

(i) head-initial PPs are not banned from positions in which they superficially appear to violate (1), with some structures, like the copula-complements just considered (25), and the differentially marked objects discussed in (16-18), actually *requiring* superficially (1)-violating structures, and that

(ii) it does not appear to be the case that all of the apparently (1)-violating structures constitute islands (cf. the data in (22-23)).

Unexplained at this point, however, is why PP-extraposition should seem to be *necessary* in at least some OV-systems outside of West Germanic. This fact, first noted by Sheehan (2008), leaves open the possibility that West Germanic head-initial PPs may be crosslinguistically unusual and thus deserving of more detailed study in the FOFC context. The following section presents an empirical argument that this is not in fact the case, and that the conclusion reached here – namely that the external distribution of head-initial PPs in OV Germanic points to the inadequacy of (1)-type and also of at least some PF-oriented interpretations of FOFC – should stand.

3.2.   The distribution of head-initial PPs in OV systems more generally

As Sheehan (2008, 2013) notes, head-initial PPs in OV systems are less common than head-final PPs in VO systems, i.e. the distribution of disharmony predicted by FOFC. Consultation of the *World Atlas of Language Structures* (*WALS* 2013) reveals that the current survey features just 14 OV and preposition systems, as opposed to 41 VO-languages with postpositions. Worth noting here, though, is that the West Germanic languages, like others exhibiting both pre- and postpositions, are not included in this total.[24] Nevertheless, what Sheehan (2008) showed for the 10 OV-plus-preposition systems registered in *WALS* 2008[25] is that 5 of these (Persian, Neo-Aramaic, Iraqw, Päri and Tobelo) necessarily require PPs to be extraposed, while Mangarrayi does not obviously have Ps, and all the other systems, barring Sorbian, permit both pre- and postverbal placement of PPs.[26] (25), deriving from Sheehan (2013:435-436), illustrates structures from two of the obligatorily PP-postposing systems:

(26) a.   á- lw'ʌʌɾ' **kí   kwàc**   [Päri]
           1SG-fear   PREP   leopard
           'I am afraid of leopards.'   (Anderson 1988:303)

     b.   i-   na ta' <a'> ín   **ay dí-   r   konkomo**. [Iraqw]
           3SG- PAST run<HAB>3SGM   PREP place.F-CON cock
           'He ran to place where the cock was.'   (Mous 1993:100)

Evidently, then, there are languages that avoid (1)-violating PP-V structures via an extraposition pattern that superficially resembles the CP-extraposition pattern in (4);

---

furthermore, those that do not obligatorily do so all, with the exception of Afro-Asiatic Tigré (see below), belong to a single language family, Indo-European.

Closer consideration of the obligatory-extraposition systems – Persian, Neo-Aramaic, Iraqw, Päri and Tobelo – however highlights an important fact about the nature of the OV found in these systems: they are what Hawkins (2008) terms *OVX* systems, i.e. languages in which only nominal objects precede the verb, but elements of other kinds (e.g. PPs, CPs, etc.) follow it. For Hawkins, these languages are "basically VO" (see below and note 29 for further discussion)[27], a typological observation which is also readily understandable in (broadly Kaynian) generative terms. In these terms, these systems can be insightfully distinguished from more systematic (i.e. more consistently head-final) OV-languages in respect of the trigger underlying head-final orderings: in OVX languages, this is a specifically **nominal**-oriented trigger (e.g. a phi-probe on v); in more generally OV-systems, v (and, possibly, a contiguous subset of the verbal heads dominating it) will have a less specialized trigger – possibly a "blind" diacritic of the kind assumed in Biberauer, Holmberg & Roberts (2014) – resulting in more V-final patterns;[28] and in rigid OV-languages (e.g. Japanese and Malayalam), the "blind" diacritic is associated with all the heads making up the clausal spine, delivering consistently V-final structures. This gives the (simplified) OV-typology in (27) (cf. Biberauer & Sheehan 2013 for discussion and references):

(27) a. **rigid** OV: consistently V-final, e.g. Japanese, Malayalam, Sinhala, Korean, Kannada
      b. **intermediate OV**: DP/PP-V-CP/PP, e.g. West Germanic, Turkish, Hindi
      c. **OVX OV**: DP-V-X, e.g. Nupe, Mande (Niger-Congo), Päri, Iraqw, and Neo-Aramaic

Taking this into account, then, we can understand obligatory PP-extraposition as a reflex not of a FOFC-compliance strategy of the kind observed in the CP-domain (cf. again (4) above and also the discussion below), but, instead, of a particular type of OV-system.

That this seems to be the correct conclusion is strongly suggested by a very surprising and, to the best of our knowledge, to date unremarked-on fact about the nature of the PPs in OVX systems. As Hawkins (2008:183) shows in a table demonstrating the headedness of PP in OVX systems (see (28) below), 14/21 languages that he considers (i.e. 67%) are *postpositional*, and, of the remaining 7 languages, some are designated as having "no dominant order". (28) reproduces Hawkins' table, while (29) illustrates OVX systems which extrapose *post*positional PPs:

---

[27] Interestingly, Persian and Neo-Aramaic are known to have derived from initially VO-systems.
[28] As will be clear from the discussion in section 3.1, structures in which PPs and CPs "leak" past V are possible in these systems. On the view that head-final structures are always derived, data of this kind can be accounted for by appealing to devices like a "scattered-deletion" mechanism of the kind proposed by Sheehan (2013; see main text) or remnant fronting which strands the extraposed XP. What is crucial is that the explanation should allow us to understand the difference between extraposable and non-extraposable XPs, which is, as things stand, an unresolved matter.

(28)   **Table 1: Headedness of PP in different types of OV and VO languages**

Language type	Postpositions	Prepositions or No dominant order
XOV	97% (32)	3% (1)
OXV	94% (15)	6% (1)
OVX	**67% (14)**	**33% (7)**
VO	14% (22)	86% (134)

(25)   a.   U   sí   sìɲciiyí   cya **mìì á**   [Supyire]
            2SG FUT firewood.DEF seek 1SG POST
            'She will fetch firewood for me.'   (Carlson 1994:274)

       b.   Ay ga nooru wiri ay **baaba ga**   [Koyraboro Senni]
            1SG IMPF money seek 1SG father POST
            'I will seek money from my father.'   (Heath 1999:139)

The OVX PP-facts, then, constitute a striking exception to the more general head-initial orientation of OVX systems: where we might have expected the postverbal PPs in OVX systems to be head-initial, making these systems more VO-like in the usual generative sense (i.e. more consistently head-initial), what we in fact find is that these PPs are head-final, i.e. that there are at least two lexical heads in these systems that are head-final.[29] In the present context, the fact that the extraposed PPs are head-final is particularly significant as it suggests that PP-extraposition in OVX systems is not correlated with PP-headedness in the way that CP-extraposition is. To see this, consider Bayer's (2001) discussion of CP-placement possibilities in languages like Bengali which have both initial and final C-elements. These can be schematized as follow:

(30)   a. V [CP C [TP…]]   b. [CP [TP …T] C] V
         c. *[CP C[TP…]] V   **d. ?? V [CP [TP …T] C]**

---

[29] It is worth noting that Hawkins' characterization of OVX languages as "basically VO" is not undermined by the fact that these languages so frequently have head-final PPs. This becomes clear from the way he leads into the table representing the adpositional headedness facts ((28) in the main text):

> The OVX languages should be more head-initial and have head ordering correlations more like those of VO. … For correlations involving postpositions vs. prepositions within a PP as XP, there is a clear tendency in this direction: one third of OVX languages have either prepositions or no dominant order within PP and are transitional between the overwhelmingly postpositional XOV and OXV and the predominantly prepositional VO. (p.183)

In clausal placement terms, then, postverbal PPs fit the VO pattern, departing from the preverbal placement patterns – XOV and OXV – observed in OV languages. To the extent that OVX languages can be shown to have been "more OV" – i.e. more consistently head-final and thus less amenable to extraposition – at earlier points in their history, it may be that the 14 OV languages in Hawkins' sample afford insight into the way in which OV languages become more VO at the lowest levels of clausal structure: PP extraposition **precedes** a change in PP headedness. From a (1)-type FOFC perspective, this would be the expected sequence as VP dominates PP, and head-final to head-initial changes are expected to proceed top-down (cf. (8) above); on the (6)-type view being advocated here, the sequence of changes could as easily be the reverse, though, as V and P do not form part of the same extended projection line. As stable OV systems with head-initial PPs are clearly attested (see main text), there do not seem to be FOFC-based grounds for ruling out the reverse sequence of changes. Systems which have undergone these changes – like Persian and Neo-Aramaic (see note 27) – would nevertheless be interesting to investigate.

Here we see that head-initial CPs must be extraposed ((30a) vs (30c)) and that head-final CPs are perfect in preverbal position and only very marginally available (hence: ??) postverbally ((30b) vs (30d)).[30] Extraposition of head-final CPs, then, appears to be, at best, very marginal, whereas head-final PP-extraposition is *required* in two-thirds of OVX systems (cf. (28)).

OVX systems clearly merit much closer attention than has been the case to date – also because the obligatory extraposition of postpositional PPs would seem to entail a decrease in processing efficiency, a point that Hawkins (2008) does not address.[31] For our purposes, though, it seems that the following conclusions can be drawn about the FOFC-relevant insights afforded by the external distribution of PPs in OV-languages:

(i)   uncontroversial unrestricted (i.e. (1)-type) FOFC-violating preverbal prepositional PP structures can be found in West Germanic and elsewhere (Persian, Sorbian, etc);

(ii)   obligatory PP-extraposition in OV-languages is characteristic of OVX-type OV languages, which are "minimally OV", exhibiting many traits found in VO languages, i.e. there is an independent reason why we see PP-extraposition in the relevant languages, one which is not in force in more fundamentally OV languages; and

(iii)   because PP-extraposition affects postpositional PPs twice as frequently as prepositional PPs, PP-extraposition cannot be viewed as a FOFC-compliance strategy parallel to CP-extraposition; it appears to apply independently of the need to create FOFC-compliant structures.

Taken together, these facts suggest, firstly, that a more restricted (6)-type interpretation of FOFC is required, and also that the distribution of PPs in OV-languages cannot always be viewed as being straightforwardly dictated by processing considerations (see again note 31).

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[30] That head-final CP-extraposition is not crashingly bad in the way immediately preverbal placement of head-initial CPs is ((30d) vs (30c)) is worth noting in the context of one of Hawkins' (2013) objections to FOFC as a constraint that is too weak (see note 6). Hawkins' argument is that the two structures are equally bad, but this does not seem to be the case.

[31] That the postverbal placement of head-final PPs is not predicted to be optimal in processing efficiency terms is shown in the schematic representations in (i-ii) below:

(i) $[_{VP} [_{PP} NP \textbf{P}] \textbf{V}]]$
(ii) $[_{VP} \textbf{V} [_{PP} NP \textbf{P}]]$

As the structures show, immediately preverbal placement – XVO as in (i) – would be more efficient as selectee and selector are immediately adjacent in this case, in contrast to (ii), where the NP necessarily intervenes between V and the PP it selects (since PPs **always** extrapose in OVX languages, we can reason on the basis of selected – i.e. argument – PPs as these will necessarily be affected in the way described here; it is, of course, the case that PPs can also function as adjuncts). Interestingly, a preliminary investigation of the distribution of Hungarian PPs – which are most commonly postpositional – reveals that native-speakers are very happy to accept these in postverbal rather than the optimal preverbal position when the PPs in question are short (3 words, rather than 5 or 7 words; cf. Benson 2016 for discussion). Cursory investigation of some of the OVX languages listed on WALS suggests that length may more generally be a relevant consideration as the languages in question lack articles, and nominals appear to extrapose their complements, in the same way that Vs in these languages generally do. These patterns clearly deserve more detailed investigation.

In the following section, we will consider evidence from the internal make-up of PPs in languages featuring superficially (6)-type FOFC-violating structures in order to further support this conclusion.

## 4. The internal distribution of head-final Ps in languages with head-initial Ps (and nominals)

Our presentation in this section will again focus mostly on Afrikaans, a language that has been described as having all of the ingredients that are of principal interest to us here, namely prepositions, postpositions and circumpositions (and head-initial nominals).

### 4.1. A closer look at the Afrikaans adpositional system

(31) illustrates Afrikaans' head-initial nominals, prepositions, postpositions and circumpositions:

(31)   a.   die boek **oor**   Chomsky
            the book about Chomsky
            'the book about Chomsky'

       b.   Hulle loop die bos   **in**/ skool   **toe**.
            they walk the bush in   school to
            'They walk into the bush/to school.'

       c.   Hy loop **by** die huis   **uit**.
            he walk by the house out
   'He walks out of the house.'

If *in* and *toe* in (30b) combine with head-initial *die bos/skool* as part of the Extended Projection of N, as shown in (32), they will violate (6)-type FOFC (see i.a. Ledgeway 2012, and Sheehan & van der Wal 2015 for an argument in favour of the idea that Ps constitute part of the Extended Projection of fully extended nominals):

(32)
```
                    PP
              NP          P
          D       NP
```
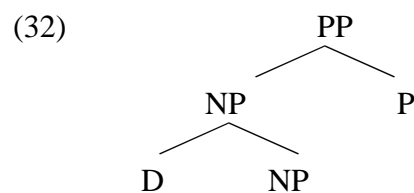
Similarly, *by die huis uit* in (31c) will violate (6)-type FOFC if it can be shown that *uit* dominates *by*, as diagrammed in (33):

(33)
```
                    PP
              PP          P
          P       NP
```
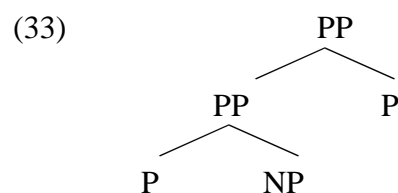
This does indeed seem to be the case as closer inspection of Afrikaans circumpositional structures reveals – and the same is true, more generally, for (non-English) West Germanic (cf. den Dikken 2010a and Koopman 2000, 2010 for two much-cited, comprehensive discussions of Dutch). More specifically, prepositions in these structures typically express location, while postpositions express direction,[32] and it is by now well established that P_{DIR} dominates P_{LOC} as shown in (34):[33]

(34)

$$P_{DIR}P$$

$$P_{LOC}P \qquad P_{DIR}$$

$$P_{LOC} \qquad NP$$
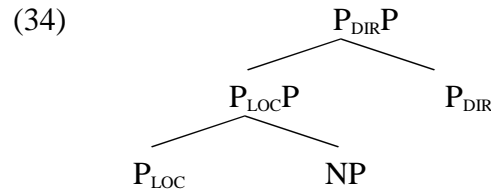
Various considerations, however, point to the need for care when it comes to simply assuming that Afrikaans' pre- and postpositions are equivalent types of element which can therefore be equally straightforwardly interpreted as elements belonging to the same Extended Projection. Consider, for example, the data in (35-38):

(35) a. Hulle het [$_{PP}$ **in** die bos] geloop.
          they have   in the bush walked
          'They walked (around) in the bush.'

     b. Hulle het   geloop [$_{PP}$ **in** die bos].
          They have walked   in the bush
          'They walked (around) in the bush.'

(36) a. Hulle het [$_{PP}$ die bos   **in**] geloop. [34]
          they   have   the bush   in walked
          'They walked into the bush.'

     b. *Hulle het   geloop [$_{PP}$ die bos   **in**].
           they   have walked   the bush in

Here we see a striking difference in extraposition possibilities, apparently depending on whether the PP is headed by a preposition or a postposition. Thus the PP headed by the prepositional (locative) *in* in (35) readily undergoes extraposition (cf. also the extraposition cases illustrated in (20-22) above), but it is not possible to extrapose postpositional PPs like (36). The data in (37-38), however, highlight the fact that this pre- versus postpositional distributional dichotomy is too simple:

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[32] See Pretorius (2015, in progress) for more detailed discussion, which also highlights some counterexamples to this generalization, however (see also Oosthuizen 2000, and Oosthuizen 2009).

[33] To the extent that P_{DIR} can be shown to be part of a different phasal domain to P_{LOC}, it will not violate the very restricted FOFC assumed by Richards (2016). In phasal terms, P_{DIR} could well be a plausible candidate for *p* (cf. Svenonius 2007, 2010), but we leave this matter aside here as it will emerge in the main text that there are good reasons not to worry about postpositional P_{DIR} as a violator of less restricted (6)-type FOFC; in other words, the restriction that Richards' proposed analysis would impose are not required as there are independent considerations

[34] The adposition *in* offers a particularly clear illustration of the dominant preposition = location while postposition = direction pattern in Afrikaans. The same pattern holds in Dutch (see i.a. den Dikken 2010b:27).

(37) a.   Hulle het   [PP **vir reën**] gebid.
             they have   for rain   prayed
             'They prayed for rain.'

      b.   Hulle het   gebid [PP **vir reën**].
             they have prayed   for rain
             'They prayed for rain.'

(38) a.   Hulle het   [PP **daarvoor**] gebid.
             they have   there.for   prayed
             'They prayed for it.'

      b.   Hulle het   gebid [PP **daarvoor**].
             they have prayed   there.for
             'They prayed for it.'

(39) a.   Hulle het [PP **vir dit**] gebid.   [Colloquial Afrikaans]
             they have for it prayed
             'They prayed for it.'

      b.   Hulle het   gebid [PP **vir dit**].
             they have prayed   for it
             'They prayed for it.'

As (38b) shows, postpositions can extrapose when they are combined with so-called *R-pronouns*, i.e. pronouns in which a superficially locative R-containing form has replaced the expected pronominal form: here *daar* ('there') has replaced neuter *dit* ('it'), for example. Strikingly, though, it is not just the form of the pronoun that differs from what might be expected here; the P also takes on a different form as *vir* in (37) becomes *voor* in (38). The expected pronominal and prepositional forms are both possible in colloquial Afrikaans, but must co-occur as indicated in (39).[35]

Appealing to similarities with the behaviour of adpositions in Hungarian and other languages, De Vos (2013) proposes that *voor* is in fact the *agreeing* counterpart of *vir*. That this is the correct intuition will become clear from our discussion of (48) below. For the moment, it suffices to note the important point that Afrikaans postpositions appear to be of at least two types: a non-alternating, non-extraposable type of the kind illustrated in (36), and an alternating, extraposable type of the kind illustrated in (38).

Focusing, then, on the extraposition discrepancy between preposition-containing (35) and postposition-containing (36): Pretorius (2015) suggests a potential reason for it, proposing that postpositions in Afrikaans, for the most part, instantiate the particle-component of particle verbs (I suggest that the alternating postpositions just introduced are the exception here, a matter to which we return below). Simplifying greatly, this has implications of the following kind for (36) (in the representations to follow, we leave aside considerations such as the fact that the object DP would

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[35] *Vir daar* ('for there') and *voor dit* ('before it/that') are both possible in Afrikaans, but have different meanings, as the bracketed translations indicate.

probably have to originate to the left of the particle V in (40a'), where the moved object DP would be located, etc.):

(40) a. Hulle het [$_{PP}$ die bos **in**] geloop. (=36a)
          they have the bush in   walked
          'They walked into the bush.'

      a'. Hulle het [$_{VP}$ [$_{DP}$ die bos] [$_{particleV}$ **in** geloop[36]]].

      b. *Hulle het   geloop [$_{PP}$ die bos **in**].   (=36b)
          they   have walked   the bush in

The idea here is that *in* is structurally represented in such a way that it is spelled out as part of V as in (40a'), rather than as part of the object as in (36/40a). This proposal rests on an intuition – fleshed out in more detail in Pretorius (2015, in progress), but developed in a different way here – that also underlies the proposal made in den Dikken (2010b) for (standard spoken) Dutch, and part of what Aelbrecht & den Dikken (2013) propose in their analysis of identical doubling structures in certain Belgian varieties (e.g. Asse, illustrated in (41b)), namely that postpositional elements are structurally deficient. To see how this is the case, consider, firstly, the data in (41):

(41) a. Hulle het   **in** die bos   **in** geloop.   [Afrikaans]
          they have   in the bush in walked
          'They walked into the bush.'

      b. Hij is **op** den berg **op** geklommen.   [Asse Dutch]
          he is on the hill on climbed
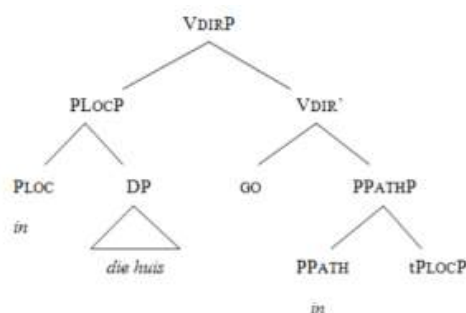   'He climbed onto the hill.'

Here we see sentences in which apparently identical pre- and postpositions create what seems to be a circumpositional structure, with the usual directional interpretation associated with these structures. [37] Importantly, both *in loop* ('walk in') and *op klim* ('climb up') exist as (directional) particle verbs in the respective varieties. Drawing on the further observation that both Dutch and Afrikaans have silent GO, which surfaces in structures like (42) (cf. van Riemsdijk 2002 and Biberauer & Oosthuizen 2011), a (simplified) structure of the kind in (43) suggests itself to account for (41):

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[36] Importantly, *in geloop* ('walked in') here is distinct from *ingeloop* ('done in, cheated'). The distinction is readily captured by appealing to the distinction between separable (*in geloop*) versus non-separable particle verbs, though. Worth noting is that Afrikaans spelling conventions do not reflect the analysis proposed here; instead, they distinguish between "regular" particle verbs, which are written as a single word, and postposition-containing structures, in which the postposition – which, here, is simply another verbal particle – is written separately from the verb. I will continue to follow the Afrikaans spelling conventions in my presentation and discussion of the data.

[37] As Oosthuizen (2000) and Aelbrecht & den Dikken (2013) both note, certain colloquial varieties appear to be in the process of *extending* this pattern to locative PPs; but it is clear in both cases that directional PPs were the starting point for this unusual pattern, an important consideration in view of the availability of silent GO (see main text).

(42) a. Hy is dorp toe [GEGAAN].[38]   [Afrikaans]
         he is town to   gone
         'He has gone to town.'

     b. Sy moet lughawe toe [GAAN].
         she must airport   to   GO
         'She must go to the airport.'

(43)

$V_{DIR}P$
- $P_{Loc}P$
  - P_{Loc} — *in*
  - DP — *die huis*
- V_{DIR}'
  - GO
  - $P_{PATH}P$
    - P_{PATH} — *in*
    - $tP_{Loc}P$

In (42), we see directionally interpreted structures that superficially lack a lexical verb. Van Riemsdijk (2002) provides convincing argumentation that this is only apparently the case, and that a silent motion verb, GO, is in fact present in the structure. If this silent verb is also present in directional circumpositional structures like (41) and in directional postpositional structures more generally, we can understand why the "postpositions" in both types of directional structures are not in fact postpositions at all. Consider (43) to see why this is so. In this simplified structure, we follow den Dikken (2010a,b) in assuming a PP-structure in which $P_{Loc}P$ is selected by $P_{PATH}P$ which is, in turn, potentially dominated by $P_{DIR}P$ (see also Koopman 2010 for a variant of this proposal). The presence of silent GO, however, raises the possibility of structures in which the directionality component is represented not by a fully-fledged $P_{DIR}P$, but instead, by a V that incorporates $_{DIR}$, the silent V_{DIR} GO, i.e. a structure in which the PP-component is defective, with part of what PPs can contribute to directional meaning being contributed by the verbal entity with which they combine rather than by the PP itself.[39] Significantly in the current context, this structure does not violate (6)-type FOFC.

That directional postpositions appear to be defective compared to locative prepositions has already been demonstrated in (35-36) above, and the same discrepancy emerges when we consider the few directional prepositions in Afrikaans relative to their postpositional counterparts. Contrast (44) with (36), repeated here as (45), for example:

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[38] Since Afrikaans differs from Dutch in lacking HAVE vs BE auxiliary selection in compound tenses, it might at first sight seem implausible to assume the presence of van Riemsdijk's silent GO in structures like (42a), which contains a form of BE. Given the systematic discrepancies between null and overt elements of "the same" kind, however, (cf. i.a. Nunes 2004, Kayne 2010, Biggs 2014, Douglas 2015 and Biberauer in press), and also the minimal specification associated with BE in Afrikaans, as in Dutch, this become less troubling, however.

[39] In Pretorius (2015), these options are conceived of as the consequence of different 'spanning' choices (cf. Svenonius 2011, 2016).

(44) a. **Hy het na die swembad** gehardloop.
          he has to the swimming.pool run
          'He ran to the swimming pool.'

      b. Hy het gehardloop **na die swembad**.[40]
          he has run   to the swimming.pool

(45) a. Hulle het die bos **in** geloop.
          they have the bush in   walked
          'They walked into the bush.'

      b. *Hulle het geloop die bos **in**.
           they   have walked the bush in

While prepositional *na*-PPs can extrapose, postpositional *in*-phrases like those in (36/45b) cannot. Aelbrecht & den Dikken (2013) propose that the P$_{DIR}$P-component of identical doubling structures lacks the full functional structure associated with the locative component of the circumposition: in lexicalization (and also "spanning"; see note 39) terms, we can think of this as doubling Ps being unspecified for DIR, with the result that they cannot themselves project PDIRP (*in* in (43) is the head of PPATHP). Here, we propose that this is also more generally true of directional postpositions in Afrikaans (and in West Germanic more generally).

This has two immediate consequences. The first of these is that P$_{PATH}$ will incorporate with V$_{DIR}$, and, from there, into the lexical verb with which the V$_{DIR}$-structure is ultimately merged. Assuming the approach to incorporation in Roberts (2010), P$_{PATH}$ constitutes a defective goal in relation to V$_{DIR}$, as it lacks the DIR-specification present on the latter head;[41] the incorporated P$_{PATH}$-V$_{DIR}$-structure, in turn, is plausibly a defective goal in relation to the lexical verb, which will bear verbal specifications typical of fully-fledged overt lexical items (cf. again the references cited above on the idea that null elements lack properties associated with their overt "counterparts", and i.a. Pesetsky 1995 and Bošković & Lasnik 2003). Taken together, these incorporations predict that postpositional Ps in Afrikaans (and Dutch) will always precede the lexical verb. This, in turn, allows us to understand why extraposition structures such as those in (36/45b) are barred: postpositional *in* must incorporate with a higher verbal head in order to be licensed, and, as such, cannot surface in the kind of non-adjacent, rightward position that extraposition structures would require. Further, thanks to this dependence on the relevant lexical verbs, the P-V combinations are recognized by native-speakers as (separable) particle verbs of the transparent (rather than idiomatic; cf. Wurmbrand 2000) kind.

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[40] Significantly, the circumpositional variant of this structure, in which *na* is reinforced by *toe* – *Hulle het gehardloop na die swembad toe* – is also readily acceptable, in sharp contrast to the pattern to be discussed below and illustrated in (44). We return to this matter below.

[41] If P$_{PATH}$ is to constitute a defective goal in Roberts' terms, it has to be assumed that its categorial status will not render it partially distinct from V$_{DIR}$. Precisely how the formal specification of "what it means to be a V" versus "what it means to be a P" is to be captured is not a matter on which there is currently any consensus. What is clear, however, is the empirical fact that certain P-elements, like certain predicative nominal elements, can incorporate into verbal elements; if Roberts (2010) is correct in analyzing incorporation as involving the presence of defective goals, we can use cases like those under discussion here to make progress on long-standing questions the categorial make-up of P-elements.

The second immediate consequence is that we can understand the unavailability of Afrikaans (and Dutch) postpositional PP-extraposition as another manifestation of a more widely observed pattern in terms of which only "full" structures are extraposable (cf. i.a. Wurmbrand 2001:294, Hinterhölzl 2005:15, Biberauer & Sheehan 2012:32ff, and Sheehan & van der Wal 2015:8-9 for different versions of this idea). In West Germanic and many other OV-systems, for example, we observe that full CP-complements surface in postverbal position (cf. again (4) above, and (46a) below), while reduced clausal complements necessarily appear to the left of the verb (46b):

(46)   a.   Es scheint, [CP **dass** der Hans sich rasiert].   [German]
              it   seems   that the John self shaves
              'It seems that John is shaving himself.'

        b.   ... dass Hans [TP sich zu rasieren] schien.
                  that Hans   self to shave   seemed
              '… that Hans seemed to shave himself.'

        c.   *… dass Hans schien [TP sich zu rasieren].
                  that Hans seemed   self to shave

If, as we have argued above, postpositional (directional) Ps lack the full functional structure associated with prepositional Ps, – which are mostly, but not exclusively locative; cf. *na* in (44) – we expect prepositional PPs to be extraposable, while postpositional PPs are not. Further, we also expect the pattern in (47), which would be puzzling if extraposition simply rested on the presence versus absence of a preposition-containing PP:

(47)   a.   Hulle het **by/in die bos   in** geloop.
              They have by in the bush in walked
              'They walked into the bush.'

        b.   *Hulle het   geloop **by/in die bos   in**.
                they   have walked by in the bush in

        c.   Hulle het   **in**geloop **by/in die bos**.[42]
              they   have in.walked by in the bush
              'They walked into the bush.'

Here we see that circumpositional directional PPs mirror the behaviour of their postpositional counterparts (36/45b) in resisting extraposition (47b), despite the presence of a preposition. Significantly, extraposition of the (locative) prepositional component of the structure becomes possible where the postposition is immediately left-adjacent to the verb (47c), i.e. where, in our terms, it has incorporated, via V$_{DIR}$ (cf. (43) above), with the lexical verb and thus been licensed by it.[43] In this case, the

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[42] Importantly, *Hulle het ingeloop in die bos* in (47c) means 'They walked into the bush', like (47a), and not 'They walked in the bush', like (35b), *Hulle het geloop in die bos*.

[43] Interestingly, this structure may at first sight seem to resemble the extraposition pattern predicted by Sheehan's (2013) FOFC analysis (see again section 2 above). As it is very clearly the *post*position that

prepositional PP, which is, as always, a complete phasal structure, may extrapose; in (47b), by contrast, extraposition is barred because postpositional *in*, located on top of the fully phasal prepositional PP, is defective, meaning the circumpositional structure as a whole is non-phasal and thus, by hypothesis, non-extraposable. An appealing way to think about what is at stake here is via Sheehan & van der Wal's (2015) Extend licensing mechanism, given in (48):

(48)   Extend: All categories must be part of a phase (where phases include vP, CP, nP, DP, pP, and its CP-/upper-phase counterpart – MTB).

In terms of this plausibly interface-imposed requirement, incorporation into V in cases like (47c), allows defective directional *in*, which lacks its own functional structure, to satisfy (48): via incorporation, it becomes part of the vP-phase. Because postpositional *in* is not part of a (complete) phase prior to incorporation with V, it is not extraposable along with the lower (prepositional) phase of the PP-structure it is first-merged with.

As registered in note 40, *na ... toe* circumpositions constitute an exception to the pattern illustrated in (47): a *na ... toe* circumposition can extrapose, unlike *by/in die bos in* in (47b). Strikingly, we also do not see incorporation of the type in (47c) with *na ... toe* circumpositions. This is shown in (49), which is interpretively equivalent to (44) above:

(49)   a.   Hulle het **na die swembad   toe** gehardloop.
              they   have to the swimming.pool to   run
              'They ran to the swimming pool.'

        b.   Hulle het   gehardloop **na die swembad   toe**.
              they   have run   to the swimming.pool to
              'They ran to the swimming pool.'

        c.   *Hulle het   **toe**gehardloop na die swembad.
               they   have to.run   to the swimming.pool

An immediate difference between (47a) and (49a) is that the preposition in (49), *na*, is already inherently directional, i.e. DIR-bearing; postpositional *toe* thus simply echoes its directional meaning in a manner semantically, though not lexically, reminiscent of the so-called German *shadow Ps* discussed in Noonan (2010). Further *toe* is one of the alternating P-forms in Afrikaans: like *vir/voor* illustrated in (37/38) above, it consistently takes a different form (*toe*) when it surfaces postnominally to that which we see when it occurs prenominally (*tot*); *met/mee* ('with') is the final member of this trio. (50) illustrates the alternation between *tot* and *toe*.

_____

precedes the verb, with the prepositional PP following it, this is not a possible analysis of the structure, however. This is demonstrated in (i), which shows the scattered-deletion operation that would be expected on this approach:
(i)   Hulle het   **by/in die bos   in** geloop **by/in die bos   in**.
          they   have by in the bush in walked by in the bush in

(50) a. Sy het **tot** [PP by die see] gehardloop (en daarna   omgedraai).
        she has to   by the sea run   and there.after around.turned
        'She ran to the sea and then turned around.'

    b. Sy het see **toe** gehardloop.
        she has sea to   run
        'She ran to(wards) the sea.'

As noted above, de Vos (2013) analyses this alternation as signifying a difference between agreeing (*voor/toe/mee*) and non-agreeing (*vir/tot/met*) prepositions. Building, on the one hand, on this insight and on the idea that agreement is a property of a non-defective phasal domain (cf. i.a. Chomsky 2001), and, on the other, on the observation that *toe* differs from *tot* in giving non-telic directional interpretations, we propose that *toe* differs from the (particle) postpositions discussed to date in (i) being part of a non-defective upper (i.e. directional) phasal domain, and (ii) selecting a defective *lower* (i.e. locative) phasal domain. More specifically, I propose that *toe* is a P_{PATH}-head which consistently selects a nominal headed by silent PLACE (cf. Kayne 2008); see (52b) below. This nominal and the overt nominal structure it introduces are then always available for probing (and, in keeping with phi-probing heads in Afrikaans more generally,[44] subsequent movement) by the agreement-bearing P_{PATH}-head that is ultimately spelled out as *toe*. A simplified version of the proposed derivation is schematized in (51) (strikethrough signifies a non-spelled-out lower copy, as before; the probing P_{DIR}-phasehead remains unrealized in (50b), but see (52) below for the overt realization option, which represents an innovation in Afrikaans):

(51)   [$_{PDIRP}$ DIR… [$_{PPATHP}$ [$_{DP}$ PLACE [$_{NP}$ *see*]] PATH-*toe* [$_{DP}$ PLACE [$_{NP}$ *see*]]]]
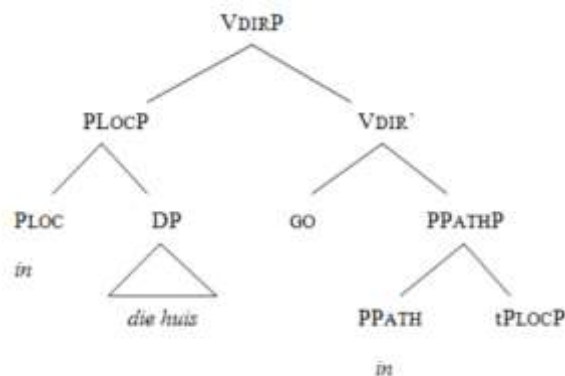
Tot, by contrast, selects a non-defective locative complement, necessarily introduced by an overt preposition (e.g. *by* in (50a)[45]), and lacks the phi-probe associated with *toe*, a factor which does not, however, render it defective in phasal terms, as the extraposition facts clearly show (see note 44 on the relation between P and phi); *tot* instead appears to lexicalize both PATH and DIR, suggesting that it may be the spellout of a composite head, i.e. both PATH and DIR in (51) above.

Significantly, the analysis proposed here means that *toe* in structures like (49) does not in fact combine with a PP headed by *na*, i.e. *na … toe* structures do not involve a FOFC-violating final-over-initial configuration and are actually very different from the superficially very similar identical doubling circumpositions discussed above. The difference is schematized in (52):
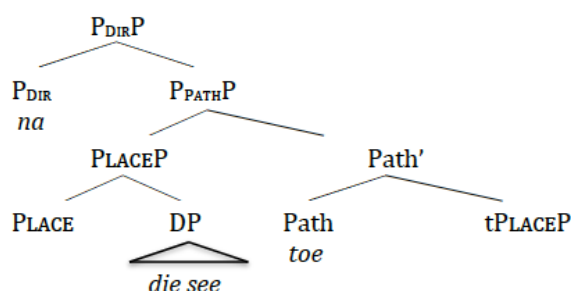
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[44] v, T and C can all be viewed as phi-probes which raise the nominals they probe. Prepositional Ps would then be an exception to this generalization. Since agreeing Ps are crosslinguistically unusual, it is tempting to think that selection relations between Ps and their complements do not typically involve phi, with the cases where we do see agreement signifying a departure from this norm. This would, of course, require rethinking of P's role as a licensor, with Sheehan & van der Wal's (2015) approach presenting a possible way forward.

[45] Temporal *tot* – e.g. *tot Maandag*, 'until Monday' – is different, systematically selecting nominals.

(52) a.   (=(43))

VDIRP

PLocP   VDIR'

PLOC   DP   GO   PPATHP

in

die huis   PPATH   tPLocP

in

b.

PDIRP

PDIR   PPATHP
na

PLACEP   Path'

PLACE   DP   Path   tPLACEP

toe

die see

The proposal for Afrikaans circumpositions, then, is that they come in two types. The first and most common type is that illustrated in (52a), in which the superficial postposition is not in fact part of a PP-structure, but is instead part of a particle-verb structure in which the directional component is contributed by silent V_{DIR} GO. Not expressing DIR itself, this defective P-element incorporates into V_{DIR} and, from there, into the lexical verb, which allows it to become part of a non-defective phasal domain (vP); the fact that it necessarily surfaces adjacent to the lexical verb and cannot be extraposed as part of a circumpositional structure thus follows. This type is also found in Dutch, mostly in the non-doubling form (e.g. *by die bos in* as in (47)), but also in some varieties in the doubling form found in Afrikaans (i.e. the *in die bos in*-variant of (47); cf. the Asse Dutch example in (41b)). The second type is an innovation in Afrikaans and involves a genuine circumpositional structure. This is, however, not a FOFC-violating structure either as head-initial *na* dominates head-final *toe*, as shown in (51b). The Ps in this structure are both non-defective, with the result that we expect it to be able to extrapose as in (49b); since the postpositional element is structurally too distant from the lexical verb to undergo incorporation, the ungrammaticality of (49c) above is also expected. Afrikaans, then, does not present any challenges to (6)-type FOFC.

4.2.   A brief look at circumpositions beyond Afrikaans

We do not have the space to demonstrate this here, but it appears to be the case that Afrikaans' West Germanic relatives do not present additional FOFC challenges: the majority appear to feature only particle-type postpositions and, thus, lack genuine final-over-initial PP-structures as the structure in question is that illustrated in (43/52a). Worth noting, though, is the fact that the varieties of colloquial German that permit the shadow Ps analysed in Noonan (2010) and illustrated in (53) appear to

mirror Afrikaans in featuring both (52a)- and (52b)-type circumpositional structures, with the shadow-containing circumpositions instantiating the latter type:

(53) a. **in** der Kiste **drin**
          in the box   DR-in
          'inside the box'   (=locative; Noonan 2010:164)

      b. **um**   den Tisch **rum**
          round the   table R-round
          'around the table'   (=directional; Noonan 2010:169)

The Gbe languages discussed in Aboh (2005, 2010), in turn, appear only to feature the (52b)-type, i.e. initial-over-final, inverse FOFC structures. In fact, this language family facilitates particularly clear insight into how different the P-elements in circumpositional structures can be. Consider (54):

(54) a. Kɔ̀jó zé   àkwɛ́ **xlán** Kwésí.   [Gungbe]
          Kojo take money P_1 Kwesi
          'Kojo sent money to Kwesi.'

      b. Kɔ̀jó xɛ́   távò lɔ́ **jí**.
          Kojo climb table DET P_2
          'Kojo climbed on top of the table.'

      c. Kpɔ̀nɔ̀n lɛ́   nyì àgbàn cè **xlán** gbó **jí**.
          police   NUM throw luggage POSS P_1 trash P_2
          'The policemen threw my luggage onto the dumpster.'
                                                          (Aboh 2010:227)

As Aboh demonstrates, the prepositional Ps (P_1) behave consistently differently from the postpositional Ps (P_2). The former evidently constitute a small closed class of 5 members all expressing direction/goal/path, all derive from verbs (possibly via serial constructions), seem to assign Case, and, rather unusually given the crosslinguistic trend, must necessarily be stranded. The latter, in turn, are all derived from nouns and closely resemble the elements Jackendoff (1996) originally designated *Axial Parts*;[46] there are about 30 of them, they do not assign Case, and they must be piedpiped. Following Svenonius's (2006) characterization of Ax(ial)PartP as a nominal-peripheral ('light noun') projection located below the P-layers expressing location and direction (55a), Gungbe circumpositions will be initial-over-final structures (55b), with the finality of the high nominal layer being unproblematic in view of Gungbe's head-final nominal system (55c):

(55) a. *pP* > LocP > **AxPartP** > KP > DP
      b. *P_1P (direction/goal/path)* > **P_2P** (Aboh 2010)

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[46] Jackendoff (1996:14) clarifies the notion 'Axial Part' as follows: 'The "axial parts" of an object – its top, bottom, front, back, sides, and ends – behave grammatically like parts of the object, but, unlike standard parts such as a handle or a leg, they have no distinctive shape. Rather, they are *regions* of the object (or its boundary) *determined by* their *relation to the object's axes*. The up-down axis determines top and bottom, the front-back axis determines front and back, and a complex set of criteria distinguishing horizontal axes determines sides and ends.' (my emphasis –TB)

    c.   Mì fɔ́n hàɖòkpóló *sɔ́n* **zàn lɔ** jí!   (Aboh 2010:229)
             2PL stand immediately P_1 bed DET P_2
             'Get out of the bed immediately!'

Neither the West Germanic nor the Gbe languages, then, appear to constitute a challenge to FOFC as defined in (6). Interestingly, they do not challenge Richards's more restrictive phasal-domain-based definition either (see section 2) as we have seen that none of the superficially problematic structures we have considered here involves a final head dominating an initial one that is located in the same spellout domain. What is striking about the adpositional facts discussed here, however, is the way in which Extended Projections repeatedly emerge as a relevant consideration in characterizing the structure of the observed phenomena: in some cases, postpositions can be shown to be defective, lacking the higher functional structure that would lead to their forming part of a complete phasal domain, with the result that they incorporate into another lexical category (here: V) and become part of a second Extended Projection (possibly, in line with Extend, as given in (48); this holds for particle-type postpositions as in (43/52a)); in others, functional structure *below* the final element is defective, meaning that we again have a defective Extended Projection (this holds for (52b)-type postpositions). That apparently FOFC-violating structures should repeatedly exhibit some kind of Extended Projection-related peculiarity is precisely what is expected on the restricted constraint in (6), while it is unexplained on Richards' phasal-domain alternative.[47] The internal structure of apparently FOFC-violating PPs, we contend, therefore provides another argument in favour of this intermediate interpretation of FOFC's restrictiveness.

5.   Conclusion

Our objective in this paper was to take a closer look at adpositional phrases in order to establish what kinds of insights these may add to our understanding of a by now much-discussed word-order constraint, FOFC. Adpositions present numerous superficial challenges to FOFC, in both of its most familiar formulations, (1) and (6) above. Closer inspection of, on the one hand, the external distribution of PPs in OV-languages and, on the other, the internal make-up of post- and circumpositional PPs suggests that the latter, which crucially makes reference to Extended Projections, seems the most promising. The data we have considered reveals a range of ways in which postpositions and circumpositional structures can be unproblematic in the FOFC context. This is the same finding as that which has emerged from closer investigation of two other domains in which apparently FOFC-violating structures seem to abound, final particle-containing structures (Biberauer forthcoming), and 231 verb-clusters in West Germanic (Biberauer 2013). In each case, it has proven productive to investigate each apparently problematic structure independently as it

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[47] It is worth noting that acknowledging the significance of defectivity in the FOFC context also seems like an important step in facilitating progress on the intriguing question of why VO-C should be completely barred where C is a subordinating complementiser of the kind considered in typological studies since Greenberg (1963; see again Dryer 2009 for overview discussion) while it seems extremely common where C is some kind of particle; and, similarly, why inflecting auxiliaries obey FOFC, while their particle counterparts do not. If the conforming elements contribute to Extended Projections, while particle elements do not, the discrepancy becomes less mysterious (see Biberauer forthcoming for discussion).

has become clear that apparently FOFC-violating structures can arise from quite diverse underlying structures (hence also their (relatively) frequent attestation); and, in each case, it has emerged either that there are reasons to reject the possibility that the troublesome final elements examined form part of the same Extended Projection as lower head-initial elements, or that the underlying structure is in fact the inverse-FOFC (initial-over-final) one. Many cases still require detailed investigation, but, at this stage, the hypothesis that something like the restricted, crucially Extended Projection-based FOFC defined in (6) may indeed be universal remains promising.

If this is correct, FOFC is a 'deep' universal, constituting a constraint on syntactic structure-building that has wide-ranging consequences for word order. This makes it, in the terms of Whitman (2008), both a cross-categorial generalization – i.e. 'one that references the internal properties of two or more categories, irrespective of their relationship in a particular structure' (233); Greenberg's Universal 3 is an example[48] – and a hierarchical generalization – i.e. 'one that describes the relative position of two or more categories in a single structure' (234); Greenberg's Universal 1 is an example.[49] For Whitman, cross-categorial and hierarchical generalizations are very different, with only the latter being 'deep' (in hierarchical terms, Universal 3 follows from the universal leftness of specifiers; cf. i.a. Kayne 1994, Ackema & Neeleman 2002, and Biberauer, Roberts & Sheehan 2014). FOFC, however, would seem to be a hybrid of two of the generalization-types identified by Whitman, a truly novel kind of syntactic universal, the existence of which was first registered by the linguist to whom this volume is dedicated, Anders Holmberg.

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[48] **Universal 3:** Languages with dominant VSO order are always prepositional. (Greenberg 1966:78).

[49] **Universal 1:** In declarative sentences with nominal subject and object, the dominant order is always one in which the subject precedes the object.

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