Afrikaans mixed adposition orders as a PF-linearization effect: Disharmony is a superficial side effect of deeper harmony*

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1 Introduction

This paper aims to account for the paradoxical, disharmonic word orders evident in the Afrikaans adpositional paradigm. It will be argued that the disharmony is only apparent and is actually derived from deeper harmony of bare output conditions at PF. Drawing on current minimalist theory (Chomsky 2000; 2004) and Relational theory (Codd 1970, De Vos 2008), the disharmonic effects are analysed as a result of bare output conditions imposed by PF linearization.

The structure of the paper is as follows. First, I will outline the nature of the problem, namely that Afrikaans adpositional constructions seem to display 'mixed' headedness (section 2). Since the problem is framed in terms of the strong minimalist hypothesis, I will then zoom out and discuss the nature of the PF interface, claiming that syntactic functional dependencies should be mapped in a one-to-one fashion to linear precedence (section 3). Having discussed the general framework, I will then come back to the specifics of the problem and present evidence for feature checking in the adpositional domain (section 4). With these building blocks in place, I will then demonstrate how the adpositional word orders may be derived (section 5) before ending off with a discussion of the semantics of directed motion and how it relates to syntactic parametric variation (section 6) as well as how the analysis might shed light on the Final-over-Final Constraint (section 7).

2 The problem: PP Word Order in Afrikaans

Afrikaans, like Dutch, displays head-initial, head-final and circumpositional orders in the adpositional domain (1).[1] The central question is whether these contradictory word-orders can be derived from deeper principles or whether they must be stipulated lexically. These phenomena have been reported fairly widely: Oosthuizen (2000) and Biberauer (2008), Biberauer et al. (2008b) for Afrikaans and Helmantel (2002), Koopman (2000), Van Riemsdijk (1990) and Den Dikken (2008), amongst others, for Dutch.

(1) Disharmonic word orders in the Afrikaans adpositional domain

a. *Ek loop **in** die kamer*
I walk in the room

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[1] I will not be dealing with R-words in this paper.

'I walk around inside the room' [head-initial adposition]

b. *Ek loop die kamer* ***in***
I walk the room in
'I walk into the room' [head-final adposition]

c. *Ek loop* ***in*** *die kamer* ***in***
I walk in the room in
'I walk into the room' [circumpositional adposition]

The generalization seems to be that locative semantics correlates with prepositional, P-DP, orders while directed motion interpretations correlate with postpositional, (P)-DP-P, orders (see Den Dikken (2008) who makes a similar generalization about the Dutch facts). In fact, Afrikaans appears to be more systematic in this respect than Dutch: in Afrikaans, P-DP orders are almost always locative in their semantics – with notable exceptions when a prepositional phrase is selected by a verb which itself encodes directed motion (Biberauer 2008, Biberauer et al. 2008b:5,ff5).[2]

Although the examples in (1) show that the pre- and postpostions can be identical, they can also exhibit a lexically specified morphological alternation (2), which, in the absence of a better term, I will call the 'inflected' or 'agreeing' form – putting aside, for the moment, the obvious objection that Afrikaans does not exhibit inflection in other domains (e.g. adjectival agreement, verbal agreement etc). In addition, it is possible that the pre- and postpositions are entirely morphologically unrelated (3).

(2) The final P often takes an 'inflected' form

a. *Ek wil dit* ***vir*** *iemand anders* ***voor*** *wys*
I want it to somebody else to show
'I want to show it to somebody else'

(3) The doubled P does not have to be identical

a. *Die boot seil* ***onder*** *die brug* ***deur***
the boat sail under the bridge through
'The boat sails under the bridge and out the other side'

2.1 Analyses derived by movement

These data have been fairly widely described and are quite well understood. A number of analyses have been proposed over the years and there seems to be a consensus about the common analytical core whereby circumpositional PPs are derived by movement of the lower PP to a specifier position in the higher shell; postpositional PPs are derived by moving the DP complement of P into the specifier of a higher P shell (Biberauer and Folli 2004, Den Dikken 2008, Koopman 2000, Oosthuizen 2000, Svenonius forthcoming).[3]

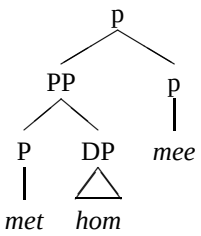
Below is Van Riemsdijk's analysis. It involves a head-final *p* head selecting a head-initial PP. From the perspective of disharmonic orders, the problem is quite clear – why have such mixed headedness especially as it relates to a single functional category?

(4) Van Riemsdijk (1990)

[2]Other exceptions to the generalization that (P)-DP-P orders encode directed motion are for *vir…voor* 'to … to' and *met…mee* 'with…with'.

[3]There are, of course, numerous differences in the specifics of the particular analyses and I am aware that I have oversimplified the particulars.

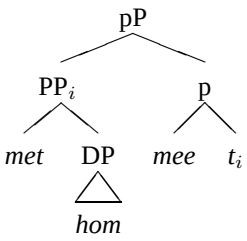
a. Ek loop met hom mee

b. 

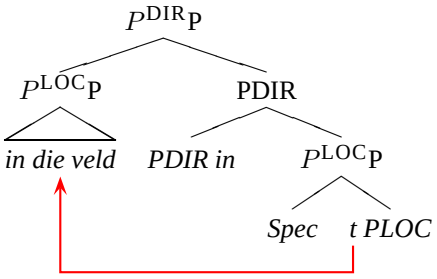
Oosthuizen (2000) reconceptualized the analysis in terms of a universal head-initial base with movement of a PP to a higher specifier of a 'light' *p*.

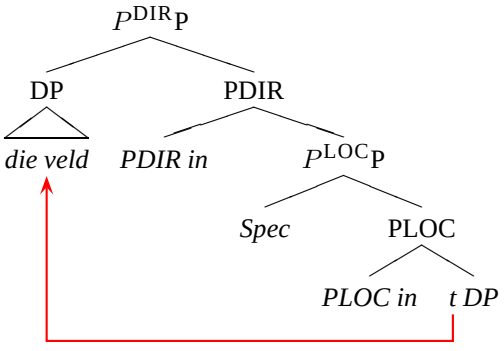
(5) Oosthuizen (2000) (see also Biberauer (2008), Biberauer et al. (2008b), Den Dikken (2008), Koopman (2000), Svenonius (forthcoming) for similar movement-based analyses)

a. *Ek loop met hom mee*
I walk with him with

b. 

Most recently, Biberauer (2008), Biberauer et al. (2008b) argues for movement to Spec P^{DIR}P within a pP shell structure motivated by an EPP feature. The constituent that moves can be either P^{LOC}P (6a) or the DP (6b), both of which can satisfy the EPP feature. In addition, Biberauer (2008), Biberauer et al. (2008b) argues for a PF constraint preventing haplology and which derives the correct word orders.

(6) a. 

b. 

The points of difference in these analyses usually relate to the labels of the shell, the constituent that moves and the motivations for movement, most of which seem to be framed as requirements to obtain the correct word order, leaving room for problematizing the trigger for movement.

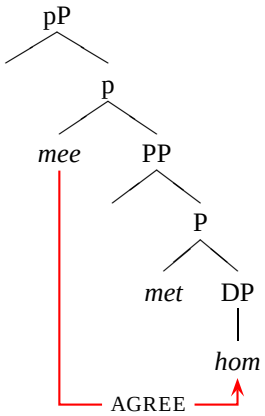
While some authors (Oosthuizen 2000, Van Riemsdijk 1990), remain fairly agnostic about the precise label of *p* others have labelled it descriptively as PathP (Svenonius forthcoming) and directional P (P^{Dir}) (Biberauer 2008, Biberauer et al. 2008b). Others, such as Koopman (2000) and Den Dikken (2008) have expanded the structure into a more articulated set of projections including PathP, DeixisP (Den Dikken 2008) etc. Den Dikken in particular draws an explicit parallel between the projections of the clausal domain and those in the adpositional domain.

Most analyses do not explicitly address the issue of the trigger for movement to SpecPP. Den Dikken (2008) frames movement in terms of licensing (drawing on GB theories of movement). Biberauer (2008), Biberauer et al. (2008b), working in a minimalist paradigm, is more explicit, arguing for an EPP feature to trigger movement to SpecpP – and this feature must presumably be present in all analyses requiring movement.

In this paper, I would like to problematize the trigger for movement: given an articulated PP structure as in (7), there is no a priori need for internal merge/movement since any features could be checked by AGREE. The functional head 'p' could simply probe the DP in its complement and AGREE with it without movement specifically being forced.

(7) a. *Ek loop mee met hom

b.



Thus the the central question being addressed is how to motivate movement without the need for a stipulative EPP feature. In most analyses where these mechanisms are appealed to there is an implicit understanding that this device is a necessary evil whose properties will hopefully be explained by later research. One of the aims of this paper will be to motivate these movements as effects of the interfaces (specifically the PF interface). As such, the intention of this paper is not to critique or undermine previous work on the adpositional domain so much as to complement it. However, in order to achieve this, it will be necessary to develop a clearer set of assumptions about the properties of the interfaces. This is the subject of the following section.

3 Background assumptions

The proposal relies on several sets of assumptions: (i) Distributed Morphology (ii) functional dependencies and (iii) a strongly Minimalist view of bare output conditions.

3.1 Distributed Morphology

I assume a version of Distributed Morphology (Embick and Noyer 2001, Harley and Noyer 1999, Marantz 1997, Marantz and Halle 1993), where narrow syntax operates through MERGE, MOVE and AGREE on feature bundles. At various points in the derivation these feature bundles are spelled out and sent to the LF and PF interfaces. At the PF interface, the feature bundles are matched to the most highly specified morphological form to which they might be applied. In the absence of there being a more highly specified morpheme available, the elsewhere condition applies.

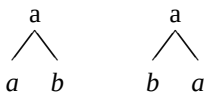
3.2 Dependency

Drawing on a long tradition of dependency in linguistics, the heart of this paper revolves around the notion of a functional dependency (Codd 1983, De Vos 2008), which I take to be a basic relationship in syntactic theory regardless of whether it is instantiated by operations such as MERGE and AGREE (themselves reflections of features: c-selection, s-selection, ϕ features etc). A functional dependency is a deterministic, one-to-one mapping between two syntactic constituents and any subset relationship entails a trivial functional dependency between the superset and the subset. For my purposes and following work in Relational Theory (Codd 1970; 1983:inter alia) I take functional dependencies to be irreflexive, transitive and subject to augmentativity.[4]

Although not often explicitly mentioned, functional dependencies follow from basic assumptions about phrase structure. MERGE and AGREE create ordered pairs of the form {A,{A,B}} by definition (Fortuny 2008, Halmos 1960, Kracht 2003, Langendoen 2003, Zwart xxx), and since this notation also expresses functional dependency, this effectively means that the satisfaction of selection and feature-checking configurations by means of MERGE and AGREE respectively instantiate functional dependencies. Because functional dependencies are basic in syntax, they do not constitute a stipulation per se, but follow from first principles.

To illustrate this, consider the following examples. If A selects B and A and B are merged, yielding {A,{A,B}} (8) then this is by definition an instantiation of a Functional Dependency. Thus MERGE expresses functional dependency. Note that regardless of headedness the Functional Dependency is of the form A $\rightarrow$ B. Henceforth in this paper, I assume trees indicate hierarchy and *not* linear precedence; linear precedence is determined at the PF interface.

(8)



a $\rightarrow$ b

With respect to AGREE, if the ϕ features of A determine agreement with respect to the $u\phi$ features of B, then the feature value of A determines the ultimate feature value of B. For instance, iPerson/number features on DP determines value of uϕ on T. Thus T determines uT on DP, instantiating a functional dependency as illustrated by the French example in (9). Consequently, AGREE also expresses functional dependency.

[4] I leave open the question of whether dependencies are reflexive and transitive (Armstrong 1974). Ultimately this rests on whether syntactic dependencies are considered strong or weak partial orderings. Also, I would like to distinguish these properties of linguistic dependencies from those argued for by Mel'čuk (1988), Mel'čuk and Polguère (2009) who claim linguistic dependencies (a) are subdivided into semantic, morphological and syntactic levels and (b) that syntactic dependencies in particular are by nature non-transitive, antisymmetric and irreflexive. One problem with this is that in order to establish an antisymmetric preorder, a relation needs to be transitive. For a more technical definition of a functional dependency as it relates to Relational Theory see Sagiv et al. (1981).

> A functional dependency (abbreviated FD) is a statement of the form X $\rightarrow$ Y, where both X and Y are sets of attributes. A relation R satisfies the functional dependency X $\rightarrow$ Y (or X $\rightarrow$ Y holds in R) if for every pair r_1, r_2, of tuples of R, if r_1[X]= r_2[X], then r_1[Y]= r_2[Y] (Sagiv et al. 1981:437):

(9) ***Tu*** *mang**es*** *des* *pommes*
$\underline{\phi 2sg}$ eat.~~π~~$\underline{\phi 2sg}$ det apples
'You are eating apples'

3.3 The strong Minimalist hypothesis

I will also adopt the strong minimalist hypothesis (Chomsky 1995:et seq.) that the properties of narrow syntax are determined by the bare output conditions of the PF and LF interfaces – and nothing else. This guiding principle will inform the analysis which, ultimately, will derive a solution in terms of the PF interface. This also leads me to adopt the system outlined in De Vos (2008) which offers a clear view of LF interface conditions, namely that LF imposes well-formedness conditions defined by standards of normalization (expressed through functional dependencies). The role of narrow syntax is simply to produce normalized functional dependencies which are then fed into the LF interface. Nothing is said about PF interface conditions in that particular paper, but I will be arguing for the null hypothesis that PF takes normalized functional dependencies derived in the narrow syntactic component and maps them in a 1-to-1 fashion to linear order, thereby making the system symmetric in the sense that both the LF and PF interfaces are fed by the same outputs of narrow syntax.[5] Finally, given the strong minimalist hypothesis, I am forced to assume that syntactic movement, too, is a result of interface conditions – and the system of De Vos (2008) offers a way of expressing that for at least some types of movement. Thus, I will not be assuming movement inducing features such as EPP etc. Instead, I will adopt the restrictive position that all movement must be a function of interface conditions either at LF or at PF. All this, is a result of the constraining influence of my first assumption, namely the strong minimalist hypothesis.

3.4 PF Legibility conditions

Given the commitment to output conditions at the PF interface, it is necessary to entertain some ideas of what such conditions might be. It seems clear that PF bare output conditions must include linearization principles (e.g. the LCA Kayne (1994) was one such, regardless of whether it is conceived of as being a syntactic mechanism (as in Kayne (1994)) or as a filter on PF outputs (as in Chomsky (1995)). Since Functional Dependencies are, by definition, encoded in MERGE and AGREE, it is the null hypothesis that they should be used for the purposes of linearization. This hypothesis is expressed by Dependency Spellout, (10a), mapping functional dependency to linear precedence in a one-to-one manner. The result of Dependency Spellout, (10a), is that if A functionally determines B then A will also precede B in linear order.

(10) a. **Dependency Spellout:** For any fully normalized relation (A,B) where A $\rightarrow$ B: (A,B) is a PF object and A $>$ B. (i.e. if A functionally determines B, then A precedes B.)

Dependency Spellout, (10a), is similar in style to the LCA of Kayne (1994) (but not in content). Like the LCA, it takes a pre-existing syntactic relationship as the input for the linearization component (Functional dependencies for Dependency Spellout, (10a), ; asymmetric c-command for the LCA). Also, just as the LCA is axiomatic, the significance of Dependency Spellout, (10a), depends on the extent to which it allows insight into grammatical phenomena. I wish to point out that the hypothesis does not refute the LCA or impinge upon it in any way; it is simply another possible mapping that needs to be investigated. Taken with the results of the previous section, it comes down to a requirement that (i) interpretable features are spelled out preceding their checked, uninterpretable counterparts and (ii) selectors

[5] This is similar in spirit to the T-model proposed by Bobaljik (2002)

precede selectees.[6]

Another kind of constraint that might reasonably be present at the LF interface is some restriction on locality since locality is pervasive in grammatical systems generally. Again, the null hypothesis is that this too can be expressed in terms of functional dependencies. This is defined in (11a) which ensures that if A functionally determines B then A should be spelled out as locally as possible to B. Ordinarily this would result in A being strictly linearly adjacent to B.

(11) a. **Locality:** a fully normalized relation (A,B) is a PF object and must be spelled out as locally as possible.

b. **Full Interpretation:** a fully normalized relation (A,B) is a PF object and all components of a syntactic object which is transferred to PF must have an interpretation at PF.[7]

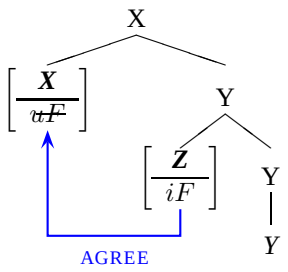
c. **Chain interpretation:** Chains must be interpreted (e.g. in a system like that of Nunes (1999; 2004)): (i) All features in a chain must be spelled out (FI) (ii) chains are construed at feature level (iii) subject to C-command, islandhood and other restrictions.[8]

Furthermore, analogous to the LF interface, there should be some version of Full Interpretation, a general interface requirement, presumably applying to any kind of linguistic interface. This prevents spurious insertion and deletions of representations (11b). Finally, there are requirements on chains, about which I have nothing new to say and I assume they are independently required. One generalization is that the information content of a chain should typically be spelled out only once. Another is that there is, presumably, some requirement that only the topmost copy of a movement chain be overtly spelled out (11c). See Nunes (1999; 2004) and Bever (2003) for proposals in this regard.[9]

3.5 A schematic example

In order to understand how this system works, consider a schematic derivation, where X, containing uninterpretable features, has merged with Y(P) and Z(P) is in the specifier of Y(P). The functional dependencies are indicated on the right-hand side.

(12)



X→Y
Y→Z
Z→X

[6]Note that I am not suggesting that uninterpretable features are passed to the PF interface (causing the derivation to crash), merely that AGREE instantiates a functional dependency between the goal and probe. It is these relations that are passed to the interface.

[7]While it may be possible to conflate these three requirements, I will maintain them as nominally separate for ease of reference.

[8]Regarding dependencies as irreflexive may also have interesting spellout effects. In particular, it raises the tantalizing possibility that the Haplology condition Biberauer (2008), Biberauer et al. (2008b) can be derived from deeper principles: if A cannot (immediately) precede itself (irreflexivity combined with locality). Space precludes a fuller exploration and I leave it to future research.

[9]I anticipate that it may be possible to unite definitions (10 and 11a,b) into a single one. However, for the sake of convenience, I will regard them as being separate in this paper.

First, let's consider only the AGREE relation between X and Z.[10] Uninterpretable F features on X probe for a goal with suitable interpretable F features which can check the uF on X. The goal is Z in SpecY and AGREE occurs. Traditionally, it was at this point that an EPP feature was postulated to motivate movement to SpecX. However, this is not necessary given my assumptions above. Given the existence of the agreement dependency (Z^F, X^F), according to Dependency Spellout, (10a), this yields a linearization pattern where the Z precedes X (13a,b). Examples (13c,d) both violate the Dependency Spellout, (10a), (Angle brackets indicate strict, immediate precedence).

(13) PF economy

a. <Z, X>	Immediate precedence and Optimal solution
b. <Z, Q, X>	General precedence but violates (11a)
c. <X, Z>	Violation of (10)
d. <X, Q, Z>	Violation of (10) and (11a)

Note that the Dependency Spellout, (10a), by itself does not guarantee immediate precedence. Immediate precedence is enforced by the locality requirement (10b) which requires that Z be as local as possible to X. Note that within a Minimalist derivational economy approach, (13a) is the optimal solution, conforming to both Dependency Spellout, (10a), and the locality principle (11a). (13b) conforms to Dependency Spellout, (10a), but violates Locality and is consequently less optimal than (13a).

Actually, the situation in (12) is more complex because X → Y and Y → Z and Z → X together constitute a linearization paradox. Dependency Spellout, (10a), thus requires linearization of the following relations (14). A number of potential solutions are listed below.

(14) (X,Y) (Y, Z) (Z,X) *Linearized as:*

a. < X , Y , Z , X >	An optimal solution
b. < X , Y , Z , $\emptyset$ >	Violates (10a , c)
c. < X , Q , Y , Z , X >	Violates (10b)
d. < X , Y , Q , Z , X >	Violates (10b)
e. < X , Y , Z , Q , X >	Violates (10b)

Example (14a) is an optimal solution notwithstanding the fact that X is represented twice in the representation. Example (14b) maps the (Z,X) relation to an empty set, effectively resulting in there being no PF expression of that relation. This violates Full Interpretation (and incidentally Dependency Spellout, (10a), as well). Examples (14c,d,e) each violate the Locality requirement because in each case there is an intervening entity that disrupts strict precedence. Having established the optimal solution, principles of Chain Spell-Out may come into operation and mark the highest X for overt spell out, while the lower one is spelled out as a phonetically empty element. The following sections explore this mechanism with respect to Afrikaans adpositions.

4 AGREE in adpositional constructions

Having dispensed with the theoretical preliminaries, I would like to return to the problem at hand. In the earlier discussion of the morphological alternations of the *met-mee* type, I referred to the possibility that the 'inflected' form of the adposition may be indicative of abstract agreement. In fact, there are theoretical and empirical reasons to think that this may indeed be the case.

[10] For ease of explication, let us put aside the relations X → Y and Y→ Z for the moment. I will return to them below.

4.1 Theoretical motivations

Den Dikken (2008) makes a specific parallel between the adpositional and clausal domains. In the structures in (15), P is analogous to V: both select DP arguments and mark them for Case and theta roles. These are dominated by projections encoding aspect for space and events respectively. These, in turn, are dominated by projections encoding spatial and temporal and person deixis. To the extent that the parallels posited by Den Dikken (2008) are valid, it follows that since abstract agreement occurs in the clausal domain, the same must be true of the adpositional domain. In fact, the notion of AGREE within adpositional phrases is not necessarily new; both Kayne (2001) and Biberauer (2008), Biberauer et al. (2008b) – not to mention any analysis requiring movement within an extended PP projection – argue for probe-goal checking by AGREE, although the precise nature of the features involved is not necessarily clear.

(15) Parallels between the adpositional and clausal domains (Den Dikken 2008).

a. [CSpace [DeixisSpace [AspectSpace [P DP]]]] [Adpositional functional projections]

b. [CForce [DeixisTense [AspectEvent [V DP]]]] [Clausal functional projections]

4.2 Morphological alternations

There is also suggestive morphological evidence for agreement projections because with DP-P orders, a subset of adpositions evidence a morphological change (16) in a restricted fashion. However, since these alternations are not productive (they do not correlate with singular/plural agreement for example) and given the general paucity of inflectional agreement on verbs in Afrikaans, it is understandable to be sceptical that these alternations by themselves are evidence of abstract agreement. For this reason, it is necesssary to bolster this evidence with cross-linguistic support.

(16) a. *Ek het hom met 'n mes mee/*met gesteek*
I have.aux him with a knife with.agr/with pst-stabbed
'I stabbed him with a knife'

4.3 WH-extraction

From a comparative perspective, there are languages with overt P-agreement such as Kilega. In this language, P-agreement occurs only under extraction from the PP (17b). In fact, Lipták (p.c.) suggests that this may be a strong correlation across many languages with P-agreement, including Hungarian. Note that I am not proposing an analysis of this phenomenon, I am only using it as an indicator. Interestingly, Afrikaans exhibits exactly the same pattern: extraction from a PP is only possible if the adposition evidences a morphological change (17b). The fact that Afrikaans patterns identically in this respect to a language which uncontroversially displays P-agreement strongly suggests that Afrikaans has P-agreement too.

(17) WH-extraction occurs only in the presence of agreement on P.

a. *Aba-syakulu b-o Kambale a-ka-kanay-a na-bo*
2-old.people 2-FOC Kambale 1S-PRES-speak-FV with-2
'It's old people that Kambale is speaking with' ([Kilega]Kinyalolo 1991 cited in Baker (2008:192))

b. *Watter kandidaat moet ek voor/*vir stem*
Which candidate must I to.AGR/*to vote
'Which candidate must I vote for?' (Oosthuizen 2000:72)

4.4 The feature specification of P

There is thus theoretical and empirical evidence for the presence of feature agreement in the adpositional domain. Given the previous discussion, I would like to be quite explicit about what I take the feature specification of the various P heads to be. Locative Ps have the cannonical feature specification: they subcategorize for a DP and assign theta roles and Case and establish a single, locative relationship between Figure and Ground (18a). Afrikaans Path Ps also include a light *p* containing uF features as argued by Biberauer (2008), Biberauer et al. (2008b).[11]

(18) Feature specifications of P (Derivational version)

a. $\begin{bmatrix} P \\ \text{SUBCAT:DP} \\ \text{iCASE} \\ \dots \end{bmatrix}$ [Locative P]

b. $\begin{bmatrix} p \\ \text{SUBCAT:PP} \\ \text{DEIXIS:}uF \\ \dots \end{bmatrix}$ [Light *p*/PathP]

This yields an elegant parallelism with the specifications of P, *p* and V, T respectively. The V+v feature bundle selects arguments and assigns theta roles and Case, just as P does. Similarly, T includes uninterpretable features in the same way that *p* does. In both cases, AGREE checks uninterpretable features against the equivalent interpretable ones on DP resulting in a morphological change on the head: T is spelled out as being inflected for person, number etc, while P is spelled out as the 'agreeing' form of the preposition if the suppletive, agreeing form is available in the lexicon (19c). To complete the parallel, just as T mediates between Reference Time and Speech/Utterance Time to create a complex tense, *p* mediates between Figure and Ground to create a complex spatial configuration.

(19) a. Locative P has no uF features; Afrikaans directed motion P does

b. Locative P is spelled out as 'non-agreeing' forms: *met, vir, tot, in*

c. P^{F} spelled out by highest specified suppletive/'agreeing' forms: *mee, voor, toe*

d. The Elsewhere condition applies: i.e. if no 'agreeing' form is available, then the feature matrix is spelled out using a Locative P e.g. *in*.

4.5 A lexical perspective

Until this point, I have assumed, in line with current theoretical thinking, that each feature is instantiated by a separate *p* head and that these heads can then be derivationally repackaged into a single feature bundle by operations such as head movement etc. However, to the extent that head-movement is problematic it should be restricted as much as possible. To this end, I will assume that a single P feature bundle can contain all these features by lexical stipulation as in (20). In other words, the only difference between a locative and a directed motion P head is a simple, lexical fact: the presence or absence of uF features.[12]

[11] Van Koppen (p.c.) suggests that (17) may be evidence that the agreement in question is WH-agreement. While this is a distinct possibility, the presence of the morphologically restricted forms *mee*, *toe* etc in non-WH-contexts suggests that the feature may not be restricted to WH-contexts. Furthermore, in languages like Kilega, agreement is with the noun-class (i.e. gender agreement). For these reasons I will remain agnostic about the precise nature of the feature, merely referring to it as an F feature. However, if adpositional clauses evidence deictic features Den Dikken (2008) and given the work by Cowper (2005), Harley and Ritter (2002) which argues for the reconceptualization of various ϕ features in terms of spatial, temporal and person deixis, it may well be the case that the F features in question are ϕ features. This remains for future research.

[12] I will speculate about how the presence or absence of uF features yields the correct semantics later in this paper.

In this analysis, I have opted not to use functional heads in the analysis since an application of Occam's Razor suggests that they are unnecessary in the derivation of Afrikaans adpositional orders (as described in section 4.4): the facts follow from the feature specification of the adpositions themselves. However, this is not to say that the analysis would not work if functional heads were included. In addition, it by no means precludes the possibility of the existence of functional heads in PPs in other languages (for example, Kotoko (Holmberg 2002) and other languages (Zwart 2005)) or in syntactic representations more generally. It seems to me that the theoretical complexity of deriving the feature bundle by head-movement and multiple MERGE is greater than a lexical stipulation. If this step worries readers, however, they are welcome to assume a derivational relationship using the feature specifications in (18) above, resulting in a structure like (7) above, as nothing in the analysis hinges on this conjecture.

(20) Feature specifications of P (Lexical version)

a. $\begin{bmatrix} P \\ \text{SUBCAT:DP} \\ \text{iCASE} \\ \dots \end{bmatrix}$ [Locative P: e.g. *in*]

b. $\begin{bmatrix} P \\ \text{SUBCAT:DP} \\ \text{iCASE} \\ \text{DEIXIS:}uF \\ \dots \end{bmatrix}$ [Directed Motion P: e.g. *verby*]

In terms of morphology, a locative P feature bundle (20a) is spelled out with the default adpositions such as *met*, *vir*, *tot*, *in* etc while directed motion P (20b) with uF features (henceforth P^F) is spelled out by the highest-specified lexical forms, namely *mee*, *voor*, *toe* etc if such forms are available in the lexicon. In cases where there is no 'agreeing' form, such as for the preposition *in*, then the feature bundle is simply matched to the default form.

5 Derivations

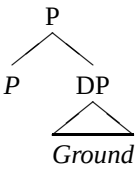
In the previous two sections I have argued that linearization as a PF output condition can be expressed in terms of functional dependencies and that there is uF feature checking in the directed motion adpositional structures of Afrikaans. With these building blocks in place, we can now proceed to deriving the attested prepositional, postpositional and circumpositional structures illustrated in (1).

5.0.1 Locative P

Locative P, with the feature specification in (20a), is merged with a DP (21a). Since P selects DP (and incidentally assigns Case to DP), there is a functional dependency such that iCase on P → uCase on DP. By Dependency Spellout, (10a), this yields a linearization pattern where the P feature bundle precedes the DP feature bundle (21b). The feature bundles are matched to their respective morphological specifications: P is matched to *in* (or a similar preposition) while the DP is matched to *die kamer* (or whatever it corresponds to) (21c). This derives vanilla-flavoured, locative prepositional phrases (1a).

(21) Deriving precedence relations for a locative PP: *in die kamer*.

a.



b. Precedence: P > DP.

c. Feature Bundles: $\begin{bmatrix} P \\ \text{SUBCAT:DP} \\ \text{iCASE} \\ \dots \end{bmatrix} > \begin{bmatrix} DP \\ \text{DEF} \\ \text{N:}\dots \end{bmatrix}$

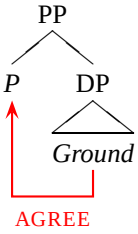
d. Spelled out as: *in die kamer* (1a)

5.0.2 Directed Motion P

Prepositions encoding directed motion have the feature specification in (20b). P is merged with a DP to satisfy its selectional requirements and also checks Case on the DP (22a). Thus, as for locative P, there is a functional dependency such that P → DP. However, DP also checks uF features on P, instantiating a functional dependency where DP → P. This yields a linearization paradox where P both precedes and follows DP (22b). According to Dependency Spellout, (10a), this can be linearized in two different ways, one with doubled DPs (22b) and another with doubled adpositions (23a).

(22) Deriving precedence relations for directed motion PPs

a.



b. **Option 1:** DP > P^F > DP

Feature Bundles: $\begin{bmatrix} DP \\ \text{DEF} \\ \text{N:}\dots \end{bmatrix} > \begin{bmatrix} P \\ \text{SUBCAT:DP} \\ \text{iCASE} \\ \text{DEIXIS:}\not{u}F \\ \dots \end{bmatrix} > \begin{bmatrix} DP \\ \text{DEF} \\ \text{N:}\dots \end{bmatrix}$

Spelled out as: *die kamer in t* (1b)

With respect to (22b), the feature bundles are sent to the interface where they are matched to their respective morphological forms. The preposition feature bundle is matched to the minimal feature set which can both (a) assign Case and select DP and (b) agree with DP. This is the directed motion feature bundle in (20b/18b). Note that it is not possible to simply match the P feature bundle to a non-agreeing adposition because (a) a more highly specified morphological form (i.e. the agreeing form exists) and (b) this would result in the F features not being spelled out – a violation of Full Interpretatation (11b). Since both DP feature bundles are formally identical they constitute a chain and are spelled out according to the independent principles governing the spellout of chains (11c). Typically this involves pronunciation of only the first constituent, while the tail of the chain is spelled out as being phonetically empty.

(23) Deriving complex, directed motion PPs

a. **Option 2:** P > DP > P^F

Feature Bundles: $\begin{bmatrix} P \\ \text{SUBCAT:DP} \\ \text{iCASE} \\ \dots \end{bmatrix} > \begin{bmatrix} DP \\ \text{DEF} \\ \text{N:}\dots \end{bmatrix} > \begin{bmatrix} P \\ \text{SUBCAT:DP} \\ \text{iCASE} \\ \text{DEIXIS:}\not{\pi}F \\ \dots \end{bmatrix}$

Spelled out as: *in die kamer in* (1c)

The same set of relations can also be spelled out as in (23), but the logic of spellout remains the same. In this representation P is represented twice. The leftmost P represents the P that assigns Case to and selects DP. The minimal feature set which matches these properties is (20a/18a). Consequently the leftmost preposition is spelled out as a locative, non-agreeing form. The rightmost adposition represents the P containing F features which are determined by agreement with DP. The minimal feature set matching these properties is (20b/18b). Thus, the rightmost P is spelled out as an 'agreeing' form of the adposition if such exists in the lexicon. If there is no 'agreeing' form in the lexicon (as for the Afrikaans adposition *in*, then the most highly specified morphological form corresponds to the locative adposition). This accounts for the data in (1c).

Importantly, the spellout forms (22b) and (23) are equally optimal linearizations of the same numeration and the same syntactic structure. Both forms are therefore predicted to be optional and have identical semantics, which is indeed the case.

Just as importantly, the analysis can derive the ungrammaticality of certain patterns too.

(24) Some ungrammatical patterns

a.	*P*	>	*DP*	>	P^F
Cannot be spelled out as:	*mee		die mes		met
Cannot be spelled out as:	*met		die mes		met

The structure in (22a) cannot be spelled out as (24a) because if $DP^F \rightarrow P^F$ then the agreeing form of the adposition must follow the DP, not precede it. Thus the agreeing form will always be right-adjacent to DP. In addition, examples like (24b) are ruled out if there exists a more highly-specified form in the lexicon (e.g. *mee*) which matches the P^F feature bundle. If no such highly-specified form exists in the lexicon, as is the case for most adpositions, then the best match is achieved my spelling out P^F as the base adposition.[13]

5.0.3 Deriving disjoint Ps

The analysis can also derive situations where the prepositions are disjoint (3 reprinted here as 25).

(25) The doubled P does not have to be identical

[13] R-words can be accommodated within this analysis under the assumption that movement of the DP is triggered by a Focus or WH-feature (as opposed to an F feature), yielding the same linearization dynamics as described above. It is also worth pointing out that the current analysis cannot easily explain why 'Option 2' is not productively available with the adposition pair *tot* 'until' and *toe* 'to' in Afrikaans (although it exists in Dutch); instead *toe* appears as a postposition (as is predicted under 'Option 1'). However, I suspect this is also a problem for other analyses.

a. *Ek loop tot die brug toe
I walk until the bridge to
'I walk to the bridge'

b. Ek loop skool toe
I walk school to
'I walk to school'

a. *Die boot seil **onder** die brug **deur***
the boat sail under the bridge through
'The boat sails under the bridge and out the other side'

b. **Option 2:** P > DP > P^F

Feature Bundles: $\begin{bmatrix} P \\ \text{SUBCAT:DP} \\ \text{ICASE} \\ \dots \end{bmatrix} > \begin{bmatrix} DP \\ \text{DEF} \\ \text{N:}\dots \end{bmatrix} > \begin{bmatrix} P \\ \text{SUBCAT:DP} \\ \text{ICASE} \\ \text{DEIXIS:}\pi F \\ \dots \end{bmatrix}$

Since these constructions include directed motion, the adposition in question will have uF features and the derivation of an example like (25) would proceed as in (22) yielding an underlying linearization pattern similar to 'Option 2' in (23b).[14]

The leftmost adpositional feature matrix is matched to the most highly specified lexical item available, in this case *onder* 'below'. The second adposition is underspecified insofar as it only contains uF (or deictic) features. As such, it can be matched to any lexical item that is consistent with (a) the feature specification of the preposition and (b) the pragmatics of the preposition – in this case, being beneath a bridge.[15] The following examples illustrate this point.

- xxx either leave these out, or get new data that are unambiguous on this issue xxx

(26) a. Die boot seil onder die brug deur

b. Die boot seil onder the brug in

c. *Dan sien hy dit! 'n Gedierte kom **deur** die bosse **nader** gestorm!*
then see he it a beast come through the bushes nearer pst.charge
'Then he saw it: a beast came charging closer through the bushes'[16]

d. *[...] solank as die jakkalsmannetjie die ooi besig hou by die*
as-long as the jackal-male the ewe busy hold by the
deurmekaarbos, draf die jakkalswyfie [...] deur die gras weg.
deurmekaar-bush run the jackal-female through the gras away
'As long as the male jackal kept the ewe busy near the deurmekaar bushes, the female jackal ran away through the gras'[17]

5.1 Blocking effects

Since doubling only occurs in contexts where there is no more highly-specified, 'agreeing' form, the current analysis predicts the existence of 'blocking effects': if the leftmost adposition in a doubling construction is *tot* 'until' or *met* 'with', then the rightmost adposition must be *toe* and *mee* respectively. The inverse does not apply. This prediction is supported by the comprehensive data collected by Helmantel (2002:178–179) who mapped the cooccurence of various adpositions. In her list, there are no examples of doubling with *tot* or *met* followed by anything other than *toe* or *mee* respectively.[18] This also seems to be borne out in Afrikaans.

[14] 'Option 1' is also a viable possibility, although this would simply yield the postpositional order.

[15] The reason why the postposition must be matched to directed motion semantics is a result of there being checked F features on the rightmost feature bundle. I will discuss the link between F features and directed motion in a later section.

[16] `http://www.woes.co.za/kortverhale/vertoon/8335_Derde_Kronieke_van_die_Mens.htm`(Accessed 26 September 2009)

[17] `(http://gelofteland.co.za`(Accessed 26 September 2009)

[18] Dutch does not distinguish between *vir* 'to/vir' and *voor* 'for.AGR'/'in front of' so patterns for this adposition cannot be tested in Dutch, although it can be for Afrikaans.

(27) Blocking effects

a. *Ek wil dit vir iemand anders voor wys*
I want it to somebody else to show
'I want to show it to somebody else'

b. *Vir iemand anders voor, wil ek dit wys*
For somebody else to, want I it show
'To somebody else, I want to show it' (xxxcheck!)

(28) Blocking effects

a. **Ek wil dit vir iemand anders aan wys*
I want it for somebody else to show
'Intended: I want to show it to somebody else'

b. *Vir iemand anders aan, wil ek dit wys*
For somebody else to, want I it show
'To somebody else, I want to show it' (xxxcheck!)

c. **Vir iemand anders aan, wil ek dit wys*
for somebody else to, want I it show
'Intended: I want to show it to somebody else'

(29) Blocking effects

a. **Ek wil dit vir iemand anders toe wys*
I want it for somebody else to show
'Intended: I want to show it to somebody else'

b. **Vir iemand anders toe, wil ek dit wys*
For somebody else to, want I it show
'Intended: I want to show it to somebody else' (xxxcheck!)

Example (27a) is a grammatical example showing the alternation between *vir* and the more highly specified form *voor*. Fronting as in the (b) examples demonstrates that the fronted PP is a constituent and that the final adposition is not a verbal particle.

Example (28b) substitutes *aan* and the sentence is ungrammatical. It is important to note that the use of *aan* is semantically plausible because it can also be used to encode an indirect object as in the following example. The ungrammaticality of this sentence, despite semantic plausibility points to a structural cause – in this case, morphological blocking. The same logic applies to (29b).

(30) a. *Ek wil dit aan iemand wys*
I want it to somebody show
'I want to show it to somebody'

Similar effects can be seen with the adposition pair *met* and *mee*.[19] Example (31a) is ungrammatical as a doubling structure, but is grammatical if *deur* is a verbal particle. Topicalization in (31b) removes this reading and it is demonstrated that it is ungrammatical in a doubling construction. In fact, the grammaticality of the verbal particle construction shows that this example is semantically and pragmatically plausible. The ungrammaticality of (31b) then must follow from a structural property – in this case a morphological blocking effect. The same logic applies to examples (32) and (33).

[19]Note that the distribution of these adpositions seems to be a bit more restricted as not all Afrikaans speakers accept *mee* being used outside an R-word context

(31) a. **Ek steek Jan met die mes deur*
I stab Jan with the knife through
'Intended: I stabbed John through with the knife'

b. **Met die mes deur, steek ek Jan*
with the knife through, stab I Jan
'Intended: I stabbed John through with the knife'

(xxxcheck!)

(32) a. **Ek loop met my vriende aan*
I walk with my friends on
'Intended: I walked with my friends'

b. **Met my vriende aan, loop ek*
with my friends on walk I
'Intended: With my friends, I walked'

(xxxcheck!)

(33) a. **Ek loop met my vriende af*
I walk with my friends down
'I walked down with my friends'

b. **Met my vriende af, loop ek*
With my friends down, walk I
'Intended: I walked down with my friends'

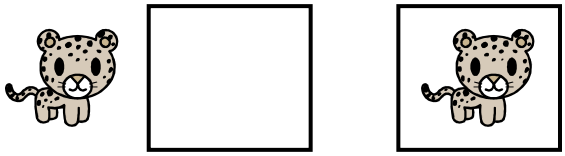
(xxxcheck!)

6 Semantics and parametric variation

Thus far, I have argued on empirical and theoretical grounds for the existence of some feature, uF on P which triggers agreement with the DP bearing the corresponding F feature and thereby motivating overt movement of the DP. The following section is somewhat more speculative in character, outlining the possible semantic implications of a research programme along the lines suggested in this paper.

Semantically, P heads mediate between Figure and Ground. A simple, locative relation between Figure and Ground can be handled by a single P head. Thus in an example where *the cat is in the box*, locative P encodes a relation of containment between the Figure, *the cat*, and the Ground, *the box*. However, a directed motion eventuality is a complex spatial situation. It is useful to make an analogy with successive frames of a movie viewed individually. In an example like *the cat jumped into the box*, the directed motion semantics can be mapped from two simple locative situations (a) a situation where the cat is outside the box and (b) a subsequent situation where the cat is inside the box.

(34) Directed Motion requires at least two syntactic relations



Evidence that directed motion PPs are more complex than locative PPs is provided by the different ways in which they are mapped to aktionsarten of events. Complex adpositions are sensitive to the aktionsart of the verbal predicate to which they are associated. Directed motion PPs are mapped to internally

complex aktionsarten (activities and accomplishments) but not to internally simplex aktionsarten (states and achievements).

(35) PPs are sensitive to Aktionsarten

a. I walked (on/onto) the grass [Activity]
b. I walked 10 kilometers (on/?onto) the beach [Accomplishment]
c. I was (on/onto*) the mountain [State]
d. The rocket failed (on/*onto) the launchpad [Achievement]

(36) PPs are sensitive to Aktionsarten

a. I walked along the path [Activity]
b. I walked 10 kilometers along the path [Accomplishment]
c. *I was intelligent along the path [State]
d. *I fainted along the path [Achievement]
Ungrammatical on a directed motion reading[20]

Examples (35a-d) show that simple, locative prepositions can be associated with all event types (accomplishments, activities, states and achievements). However, directed motion prepositions such as *onto* and *along* are only compatible with activities and achievements (36a-d). Given that only activities and accomplishments involve complex internal event structure (States have no internal event structure and achievements are punctual), it is unsurprising that only these event types can support complex prepositional semantics. The conclusion, then, is that directed motion prepositional 'frames' are mapped to internal event semantics.

The next question that arises is how to instantiate the relationship between the Observer and the Ground. Given that there are two 'frames' it follows that the relationship between Figure and Ground must be specified twice.[21] The strongest, and null hypothesis, is that syntactic relations are mapped directly to semantic relations in a one-to-one manner. There are a number of ways in which this may occur, each yielding typologically different adpositional patterns: (i) by selection: P selects a specifier and a complement (i.e. 2 x syntactic relations between P and a DP) (ii) by agreement: P selects a complement and P agrees with complement (2 x syntactic relations between P and a DP).

Structure (37) illustrates option (i) where P selects a complement representing 'Ground' and a specifier also representing 'Ground'.[22] There are therefore, two syntactic relationships which satisfy the requirement, imposed by the 'frames' view of the semantics that there be two relationships between P and 'Ground'. In this structure, P selects DP (complement) and P selects DP (specifier). Thus, according to the analysis developed in this paper, P > DP. This accounts for English and Norwegian-type directed motion PPs which are prepositional in nature.

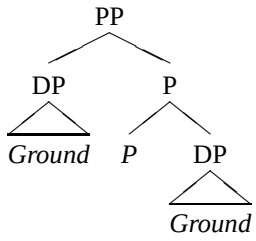
(37) The English-type structure

[20] Example (35d) is only grammatical on a locative reading where the fainting event (an achievement) occurs somewhere on a footpath.

[21] I would like to remain agnostic about whether having two Figure-Ground relations always necessarily results in a directed motion reading; having two Figure-Ground 'frames' could also possibly be mapped to other complex semantics, without necessarily implying directed motion per se. For example *Charlemagne built a wall around the castle* encodes a path of some sort but not motion (Den Dikken 2008:17) while *Stella burped into my ear* encodes some kind of directionality and bringing into existence, but again there is no motion implied. It may be that these types of examples are metaphoric extensions – but it is still the job of the semantics to explain them.

[22] I assume that the relationship between P and the DP representing the 'Figure' is established in another way, perhaps by binding of a Figure variable on P.

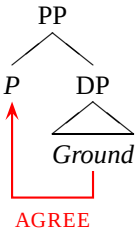
a.



Structure (38) illustrates option (ii) where P selects a DP complement representing 'Ground' and an agreement relationship exists between uF on P and F on the DP. Note that for reasons of parsimony, I have represented this with a single P as I have done throughout this paper. The same effects apply if a *p*-P shell is used.

(38) 2 Syntactic relations instantiated by MERGE and AGREE

a.



In this structure, there are also two syntactic relations (MERGE with a complement and AGREE with a complement) which may, by hypothesis, be mapped to the two semantic relations required for the 'frames' semantics of directed motion to be realized. The linearization options for this structure have already been discussed in this paper and account for the Afrikaans and Dutch-type adpositional paradigms.

This section has outlined an informal view of the semantics of directed motion adpositions which, along with a strong hypothesis about the nature of the syntax-LF interface, accounts for some of the parametric variation occuring in adpositional, directed motion constructions.[23] For languages like Afrikaans, Dutch and German, uF features are included in the feature bundle; for languages like English and Norwegian, there are no uF features in the feature bundle – for these languages the relationship between Figure and Ground is arguably instantiated by selection. Summing up the results of this section, then, there are theoretical, morphological, cross-linguistic and semantic reasons to posit the existence of ϕ agreement in at least a subset of Afrikaans adpositional constructions.

7 The Final-over-Final constraint

Finally, I would like to end this paper with a brief discussion of the Final-over-Final constraint (FOFC). It will be demonstrated that the above-mentioned approach derives the FOFC. The FOFC is a descriptive generalization over the embedding under headed constituents under others.

[23]Thus far in the paper, I have simply argued, on empirical and theoretical grounds, for the existence of some uF/F feature pair. It is interesting to speculate about the possibility that these features may actually be ϕ features. To the extent that ϕ features express deictic relations (Cowper 2005, Harley and Ritter 2002, Sigurðsson 2007), they could also, plausibly be used to express the deictic relationships between the Figure and Ground – in exactly the same way that they serve the purpose of relating the Speaker and Hearer; as well as Speech Time, Reference Time and Event Time in the clausal domain. Thus, in a way, yet to be determined, the ϕ feature checking could possibly result in the appropriate directed motion semantics.

(39) **Final-over-Final Constraint:**If α is a head-initial phrase and β is a phrase immediately dominating α, then β must be head-initial. If α is a head-final phrase, and β is a phrase immediately dominating α then β can be either head-initial or head-final (Holmberg 2000).

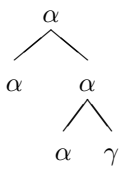
This formulation was adapted by Biberauer et al. (2008a) to capture the fact that the FOFC only seems to apply when β is non-categorially distinct from a constituent in its complement. This is captured by the following generalization about phases.

(40) If a phase head PH has an EPP feature, then all the heads in its complement domain from which it is non-distinct in categorial features must have an EPP feature too (Biberauer et al. 2008a).

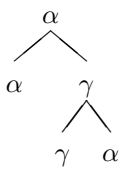
Note that (39) is defined over (a) syntactic structure and (b) headedness within that structure. Yet, in the analysis in this paper, syntactic structure reflects only hierarchy: headedness is a function of linearization. So the first step in defining the problem is to de-link headedness from structure. Under the current proposal, any functional dependency of the form $\alpha \rightarrow \beta$ is equivalent to {α,{α, β}} and consequently there are implications for projection. So, given a linearly ordered constituent <α,β> it must be the case that α projects; conversely given a linearly ordered constituent <β,α> it must be the case that β projects regardless of whether the projecting constituents are heads or XPs. With these assumptions on board, the structures to which the FOFC refers can be represented as in (41) and the dependencies which each instantiates are written alongside. Since the FOFC applies when α and β are non-distinct categorially, the 'dominating' projection is also denoted by α. Note that these structures are the only ones consistent with the proposal developed in this paper. The FOFC generalization is that (41c) is unattested.

(41)

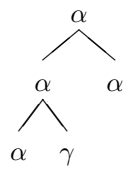
a. $\alpha \rightarrow \alpha$, $\alpha \rightarrow \gamma$



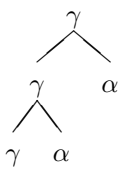
b. $\alpha \rightarrow \gamma$, $\gamma \rightarrow \alpha$



c. * $\alpha \rightarrow \gamma$, $\alpha \rightarrow \alpha$



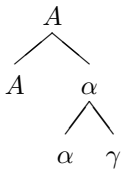
d. $\gamma \rightarrow \alpha$, $\gamma \rightarrow \alpha$

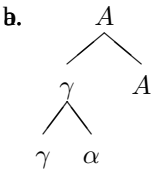


It will be noted that (41c) instantiates a reflexive dependency: α determines itself. Since, by definition, linguistic dependencies are irreflexive, (41c) represents an underivable structure. Note that nothing prevents α from determining β twice in two separate relations (e.g Agreement vs Case marking vs Selection) In fact, the prediction is much stronger since (41a) is also predicted to be underivable. Given that a verb-shell structure might actually represent such a possibility, one is forced to conclude that in a verbal shell, the light *v* is featurally distinct from V. In fact, this is the same conclusion that Chomsky (1995:320–321) arrives at when he argues against self-adjunction. It is worth noting that this result only applies if two constituents are non-distinct.

This raises the question of a situation in which a functional head (say, *v*) selects a lexical head (say, V) as occurs in a typical vP shell. The options corresponding to (41a,c) are represented by (42a,b) respectively with the respective relations instantiated by these in (42c,d) respectively.

(42)



b.


c. $\alpha \rightarrow \gamma$
$A \rightarrow \alpha$

d. $\gamma \rightarrow \alpha$
$A \rightarrow \gamma$

Structure (41a) can be linearized as $A > \alpha$ since A selects α. This is a typical vP shell configuration. However, structure (41b) cannot be linearized with the functional head following the lexical head: $A > \alpha$. This is because A selects α and must therefore precede it; it is taken for granted that functional heads must select their complements and can never be selected by lexical heads. The implication of this is that even if a structure like (41b) were to be merged, it can never be linearized in a way that is distinct from structure (41a). Consequently, (41b) is not empirically attested. This captures the FOFC condition as defined by Biberauer et al. (2008a).

8 Conclusion

This analysis is not, by itself, a theory of linearization. However, it could be the first steps in that direction. Like any new analysis, the analysis is bound to have lacunae until such time as alternative analyses are forthcoming. Thus, it could be perceived to run into trouble with (i) morpheme order below the level of the head and (ii) VSO and expletive constructions where an inflected category precedes the goal with which it agrees. In fact, most of these problems are more apparent than real.

I agree that the current proposal does not seem to shed any light on morpheme order below the level of the head. E.g. English inflectional morphology occurs verb-finally, not verb-initially. So this remains a problem for this approach if we retain morphology in the same module as syntactic linearization. In English *there*-type expletive contexts, the verb seemingly agrees with the associate which follows it. Under the present proposal, the solution is to regard the expletive itself is the spell-out of ϕ features on the associate as has been argued by (Sabel 2000) and so, in a sense, agreement is with the expletive. With respect to VSO structures, there are multiple possibilities as VSO order is probably not a unitary construction. Verb-fronting could be topicalization of either a VP or a head which masks an underlying SV order, or it could be a result of ordering paradox created by movement (see above). What is important here is that the movement itself should be motivated in terms of the linearization process discussed in this paper. For instance, Biberauer (2004), in discussing verb-final orders in Afrikaans argues that EPP in Afrikaans can be satisfied by a larger constituent than simply the subject.

On the positive side, the analysis derives the correct word orders without the need to stipulate an EPP feature to motivate movement: Movement is simply an artifact of the linearization requirements imposed at the PF interface. Moreover, the analysis explains various empirical effects such as optionality, the identical semantics of circumpositional and postpositional phrases, a possible explanation for FOFC effects and, finally, to the extent that this analysis is correct, it offers support for the strong Minimalist Hypothesis.

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