N-to-D movement, scrambling, and DP-internal constituent order in Chichewa *

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1. Introduction

I offer a scrambling account of the constituent order flexibility within the Chichewa DP. As exemplified in (1), while the noun in Chichewa linearly goes first in a DP (Mchombo 2004:24), the relative order of the modifiers is flexible (Downing and Mtenje 2017:27):[1]

(1) a. zi-péwá iizi zi-táatu zá-zí-kúulu [N≫Dem≫Num≫Adj]
8-hats 8.these 8-three 8-8-big
'these three big hats'

b. zipéwá zitáatu iizi zázíkúulu [N≫Num≫Dem≫Adj]

c. zipéwá zitáatu zázíkúulu iizi [N≫Num≫Adj≫Dem]

d. zipéwá iizi zázíkúulu zitáatu [N≫Dem≫Adj≫Num]

e. zipéwá zázíkúulu iizi zitáatu [N≫Adj≫Dem≫Num]

f. zipéwá zázíkúulu zitáatu iizi [N≫Adj≫Num≫Dem]

Examples (1a–1f) show that all logically possible orders of the demonstrative, the numeral, and the adjective give a grammatical expression. It is also difficult to tell which of the orders is the 'basic' one, as the linear order flexibility is independent from considerations of information structure (see Carstens 2017 for a similar observation regarding Shona DPs).

Despite the surface flexibility, this paper argues that there is a c-commanding hierarchy (which mirrors the merge order) that maps to a left-to-right linear order. I will assume that

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[1]Unless stated otherwise, all Chichewa data in this paper are from my fieldnotes (data from the literature, where references are given, are also confirmed by my consultants). In transcribing Chichewa, I follow Downing and Mtenje's (2017) transcription system; the cited data are also adapted for consistency.

the hierarchy Dem>Num>Adj>N is a universal one (Cinque 2005, Abels and Neeleman 2012),[2] and that the noun in Chichewa undergoes N-to-D movement (which is responsible for the strict N-initiality of DP; see Carstens 1991, 1997). In (1), only (1a) where the modifier order is Dem≫Num≫Adj directly reflects the base-generated positions of the modifiers. Crucially, I argue that the other orders (1b–1f) deviating from Dem≫Num≫Adj all result from the DP-internal scrambling of modifiers. To the extent that it is successful, this study can be taken as confirmation that scrambling, which is generally discussed in the literature as a clause-level phenomenon, also exists in the nominal domain.

To support the idea, two pieces of evidence are given and discussed. Section 2 provides novel ellipsis data, showing that although under Num≫Adj, the numeral can license ellipsis of the adjective, the adjective cannot license ellipsis of the numeral under the reverse Adj≫Num order. Assuming that ellipsis of a phrase XP requires a featural relation between a head Y and the specifier of Y, Y c-commanding XP (Lobeck 1990, Saito and Murasugi 1990), the asymmetry between adjectives and numerals is captured if Num≫Adj is base generated while Adj≫Num is a result of scrambling, given that the landing site of scrambling does not involve a Spec-head relation (Fukui 1993, Saito and Fukui 1998, Saito 2003, 2004). Section 3 discusses a case of hybrid concord within Chichewa DP, initially documented by Corbett (1991:239), where an interesting 3/4 agreement pattern is observed (see below for details). I will show that the pattern can only be stated in terms of a universal structural hierarchy of those modifiers (Dem>Num>Adj>N being part of it), the surface linear order of modifiers never playing a role. It will be argued that the concord facts are directly accounted for by the scrambling analysis of order flexibility. Section 4 concludes.

2. N'-ellipsis and the scrambling account

As mentioned, DP-internally, the order of the nominal modifiers is highly flexible in Chichewa. I focus on adjectives and numerals in this section. As further illustrated in (2), both Num≫Adj (2a) and Adj≫Num (2b) are possible orders postnominally:

(2) a. zi-péwá zi-táatu z-óyéela
8-hats 8-three 8-white
'three white hats'

b. zi-péwá z-óyéela zi-táatu
8-hats 8-white 8-three

The pattern in (3–4) confirms that there is a fixed hierarchy between adjectives and numerals. Both (4a) and (4b) can naturally follow (3). Notice that (4a) implies that Chikondi bought three *white* hats, whereas (4b) crucially only implies that Chikondi bought *any number* of white hats, not necessarily three:[3]

(3) Mávúuto a=ná=gúla [zi-péwá z-óyéela zi-táatu] ...
1.Mavuto 1SM=PST=buy 8-hats 8-white 8-three
'Mavuto bought three white hats ...'

[2] I use > for asymmetric c-command and ≫ for linear precedence, respectively.

[3] The following abbreviations are used in the glosses: PST=past tense, SM=subject marker; prefixal numbers indicate noun classes and agreement/concord associated with noun classes.

(4) a. ... Cikondíi=nso a=ná=gúla zi-táatu.
1.Chikondi=also 1SM=PST=buy 8-three
lit. 'Chikondi also bought (three).'
(implication: Chikondi bought *three white* hats)

b. ... Cikondíi=nso a=ná=gúla z-óoyéela.
1.Chikondi=also 1SM=PST=buy 8-white
lit. 'Chikondi also bought (white).' (implication: Chikondi bought *white* hats)

Since *white* is interpreted though not pronounced in (4a), (4a) must involve ellipsis. As in (5), an intermediate phrase XP within DP which includes the adjective *zóyéla* 'white' and the head noun while excluding the numeral *zitátu* 'three' gets elided (I abstract away from the exact labels of XP and YP here), under the identity condition that both the adjective and the noun are 'recoverable' from (3) (I will use the traditional term 'N'-ellipsis' to refer to all cases that involve ellipsis of a certain intermediate projection smaller than DP, though no theoretical inference should be drawn from the literal meaning of the term):[4]

(5) $[_{DP}\ [_{YP}$ zitátu $[_{XP}$ ~~zóyéla zipéwa~~]]]

What is interesting here is that (4b) does not behave parallel to (4a): based on the interpretation of (4b) (i.e., *white hats*, rather than *three white hats*), it can be concluded that (a phrase containing) *zitátu* 'three' has not undergone ellipsis in this case. Such asymmetry between adjectives and numerals is accounted for if the base-generated position of the numeral invariantly c-commands that of the adjective. As in (6), the N≫Num≫Adj order in (2a) *zipéwá zitáatu zóyéela* results from N-to-D, with the two modifiers externally merged as the specifiers of two intermediate functional phrases, labeled for convenience as Mod_1P (hosting the numeral in its specifier) and Mod_2P (hosting the adjective), respectively, the former dominating the latter.

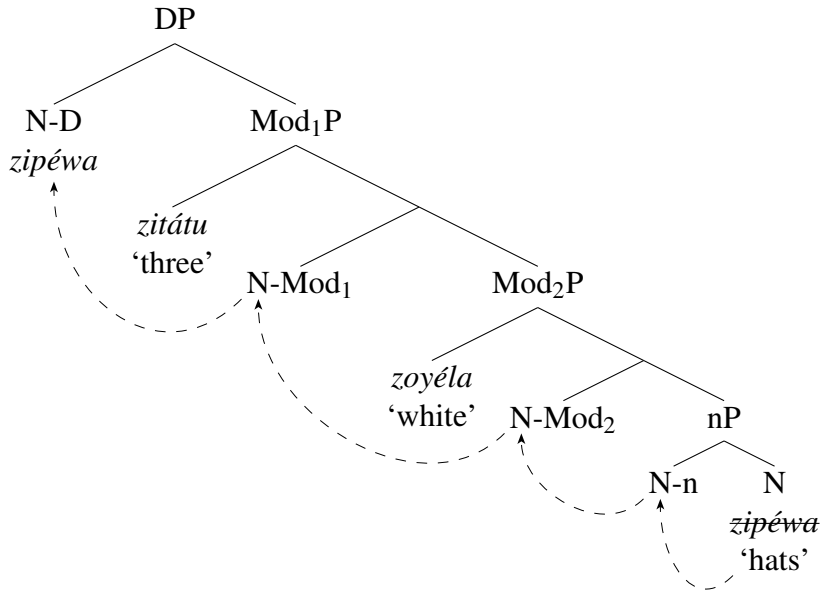
Notice that nominal modifiers in Chichewa all show concord morphology with the noun. I assume concord and canonical agreement at the clause level involve the same mechanism, namely Agree.[5] First, I follow Kramer 2015 in assuming that gender features reside on n, which is directly responsible for the noun class morphology. Second, the relevant φ-features on n must be 'transmitted' to higher heads within DP, including the Mod heads as well as D, during the derivation (Danon 2011)—this is a necessary assumption, as gender features, though generated low, are visible to clause-level probes in Bantu, so they must also be present on D, and naturally, on heads between D and n (see Carstens 2011, 2017 for relevant formulations). More specifically, the Mod heads probe its c-commanding domain for φ-features, so the gender features on n are copied onto them, via Agree. Alongside the

[4]Notice that the head noun in such cases gets elided in the base-generated position (I assume that N-to-D movement generally happens in the Chichewa DP; see immediately below in the text), so the noun is absent in (4a). As observed by Lasnik (1999), certain cases of head movement that normally have to take place do not occur if the head of concern is part of an elided phrase.

[5]see Carstens 2020 and references therein for discussion of this ongoing debate.

Agree procedures, the noun (in later steps, a complex head containing the noun) moves up step-by-step to the Mod heads and eventually to D, deriving N-initiality.

(6)



Third, the modifiers in (6) then merge with the corresponding ModPs. I assume that the modifiers carry unvalued φ-features and are thus probes (Bošković 2011); they Agree with the corresponding Mod heads, again via downward probing, as the latter are the closest goals. The result is that the relevant φ-features are copied onto the modifiers, where overt noun class concord morphology is realized accordingly.

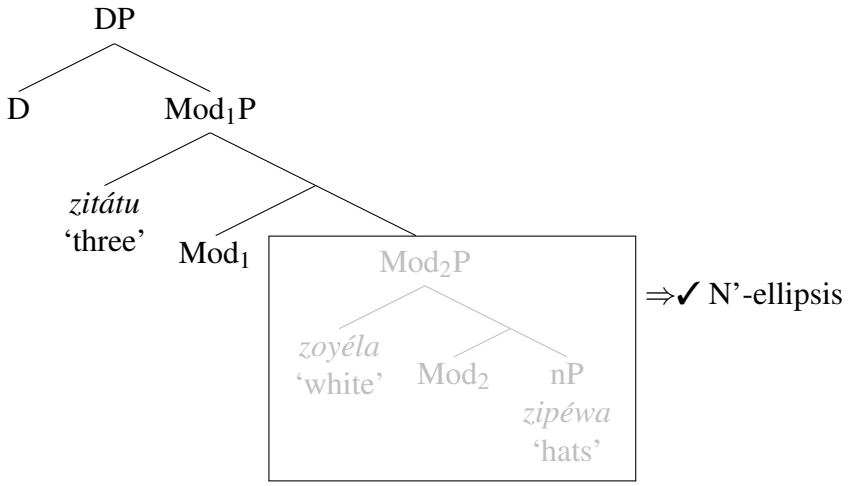
The current discussion provides a natural way of accounting for how N'-ellipsis as in (4a/5) is licensed in Chichewa. As illustrated in (7), *zitátu* 'three' in SpecMod_1P and Mod_1 share the same φ-features, hence forming a Spec-head configuration.[6] Following Lobeck 1990 and Saito and Murasugi 1990, I assume that the licensing of ellipsis requires such a featural relation between a head and its specifier. Since there is a local Spec-head relation between SpecMod_1P and Mod_1, Mod_2P (which contains the adjective *zóyéla* 'white' and the head noun *zipéwa* 'hats') is elided licitly, resulting in the ellipsis effect in (4a).

In (2b), by contrast, the N$\gg$Adj$\gg$Num order does not follow from a left-to-right mapping of the proposed Num>Adj hierarchy. I argue that (2b) involves the adjective being scrambled over the numeral. Furthermore, I suggest the landing site of the scrambling is the specifier position of a projection which I simply label as FP as in (8) (N-to-D will not be annotated from now on, for ease of exposition). The most crucial assumption here is that there is no Spec-head relation between F and *zóyéla* 'white' in SpecFP, following Fukui (1993), Saito and Fukui (1998), Saito (2003, 2004), who essentially take the lack of a Spec-head relation as a defining property of scrambling. Note also that, as discussed above, the concord morphology on the scrambled adjective is already licensed in its base-

[6]Note that the current Spec-head relation is directly derived via Agree; the fact that traditional Spec-head agreement (as an independent mechanism) is abandoned for theoretical reasons does not raise an issue here.

generated position and that, by definition, F, the head involved in scrambling, does not probe its c-commanding domain for φ-features.[7]

(7)



Focusing on (8), it is clear now why the adjective cannot license ellipsis of the numeral under the Adj≫Num order, as (4b) manifests. As in (9), *zóyéla* 'white' is base generated in SpecMod$_2$P and then undergoes scrambling to SpecFP, c-commanding Mod$_1$P. Since the movement in question involves scrambling, there is no Spec-head relation between F and SpecFP—N'-ellipsis cannot be licensed.

The contrast between (4a) and (4a) regarding ellipsis effects is thus accounted for.[8] Note additionally that a similar asymmetry is found if one examines other types of modifiers, although space limitations prevent me from giving examples here. For instance, evaluative adjectives can license the ellipsis of color adjectives, but not vice versa (the former have been shown to be located higher than the lower cross-linguisctically; see Cinque 2010; cf. *beautiful black goats* vs. ??*black beautiful goats* in English); and a numeral may license ellipsis of a possessive, but not vice versa (possessives are base generated in SpecnP in Bantu, thus lower than the numeral; see Carstens 2020).

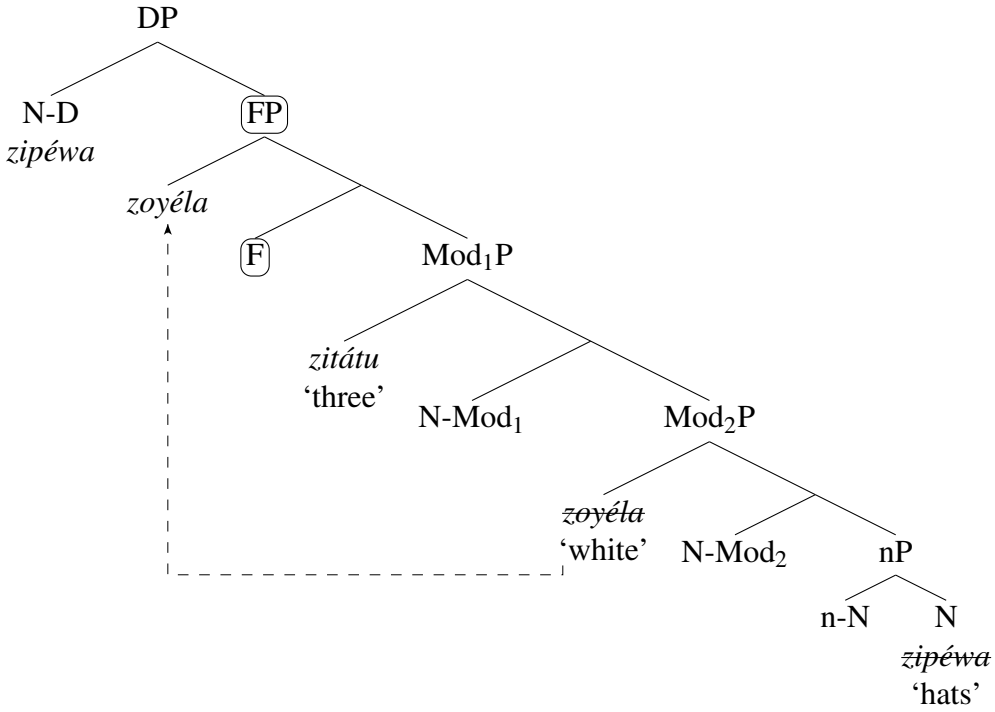
3. Hybrid concord and the cycle of Agree

Chichewa provides an intriguing case of hybrid concord. As shown in (10), *ngwazi* 'hero' is a hybrid noun, which can trigger either morphological concord or semantic concord (*ngwazi* is formally of class 9, while class 1 is the default class for (singular) human nouns). Interestingly, the two modifiers in (10) may show mixed concord, namely the possessive takes morphological concord whereas the ordinal takes semantic concord, as in (10c). Crucially, the reversed hybrid pattern is disallowed (10d).

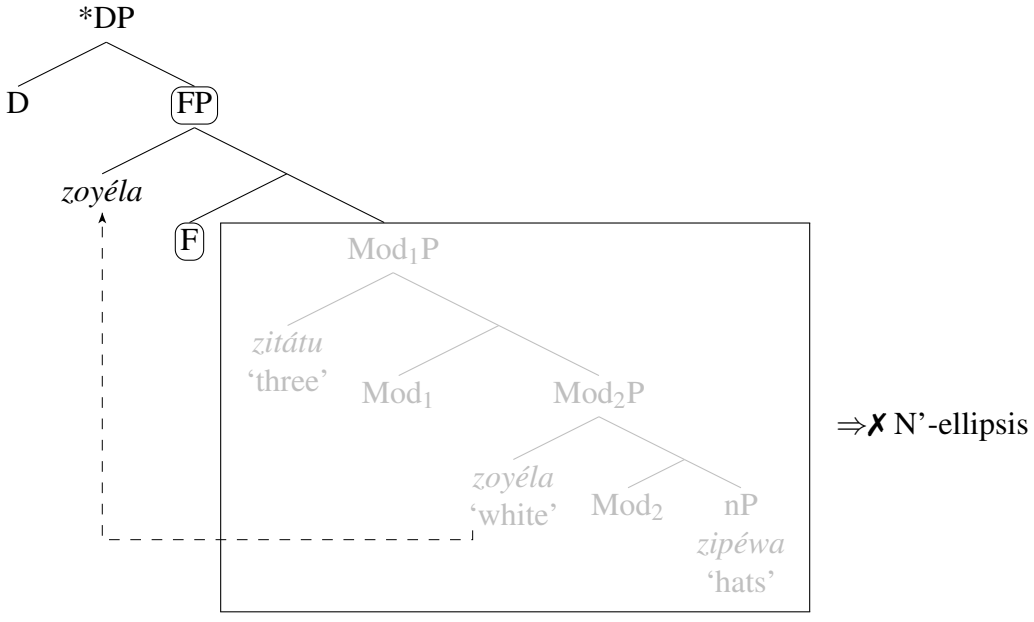
[7] An alternative is to suggest that scrambling simply involves adjunction (Mahajan 1990, Saito 1992, Tada 1993). Nothing essential would change if the alternative analysis were adopted.

[8] Strictly speaking, (4a) may still involve N'-ellipsis, in which case it simply cannot involve scrambling of the adjective, (7) being illicit. To license ellipsis, the stranded adjective must be in its base-generated position, so the elided element cannot contain a numeral.

(8)



(9)



(10)

a. ngwazi yá-thú y-óyáamba
9.hero 9-our 9-first

b. ngwazi wá-thú w-óyáamba
9.hero 1-our 1-first
'our first hero'

c. ngwazi yá-thú w-óyáamba
9.hero 9-our 1-first

d. *ngwazi wá-thú y-óyáamba
9.hero 1-our 9-first

(Corbett 1991)

Based on this type of data, Corbett (1991:239) gives the generalization (11), and notes that similar patterns are found cross-linguistically (targets and controllers correspond to probes and goals in minimalist terms, respectively):

(11) When stacked targets of a given controller stand in different agreement forms, the further target will show semantic agreement.

However, recall that Bantu possessives are arguably first merged in SpecnP, a position lower than adjectives (Carstens 2020). This means that the Poss≫Adj order in (10) at any rate involves movement—in the current analysis the scrambling of the possessive. One then wonders how the asymmetry of mixed concord interacts with the Adj≫Poss order, which reflects directly the base-generated positions of the two modifiers. Now, as illustrated by the novel data in (12), under the Adj≫Poss order, it is still possible for the possessive to bear morphological concord and the adjective to agree semantically (12c), but not the other way around (12d):[9]

(12) a. ?ngwazi y-óyáamba yáa-thu
9.hero 9-first 9-our

b. ?ngwazi w-óyáamba wáa-thu
9.hero 1-first 1-our

c. ?ngwazi w-óyáamba yáa-thu
9.hero 1-first 9-our

d. *ngwazi y-óyáamba wáa-thu
9.hero 9-first 1-our
'our first hero'

That is, the linear order of the modifiers is irrelevant in conditioning the hybrid concord pattern, as under both Poss≫Adj (10) and Adj≫Poss (12), it is not possible for a hybrid noun to be modified by a semantically agreed possessive and a morphologically agreed adjective at the same time. Consider the contrast between (12c) and (12d), both reflecting the base-generated Adj≫Poss order and involving hybrid concord; assuming that both types of concord involve downward probing of the modifier, which happens immediately at the point the modifier is merged into the structure, the structures of (12c) and (12d) can be represented as (14) and (15), respectively (only relevant cycles are annotated).

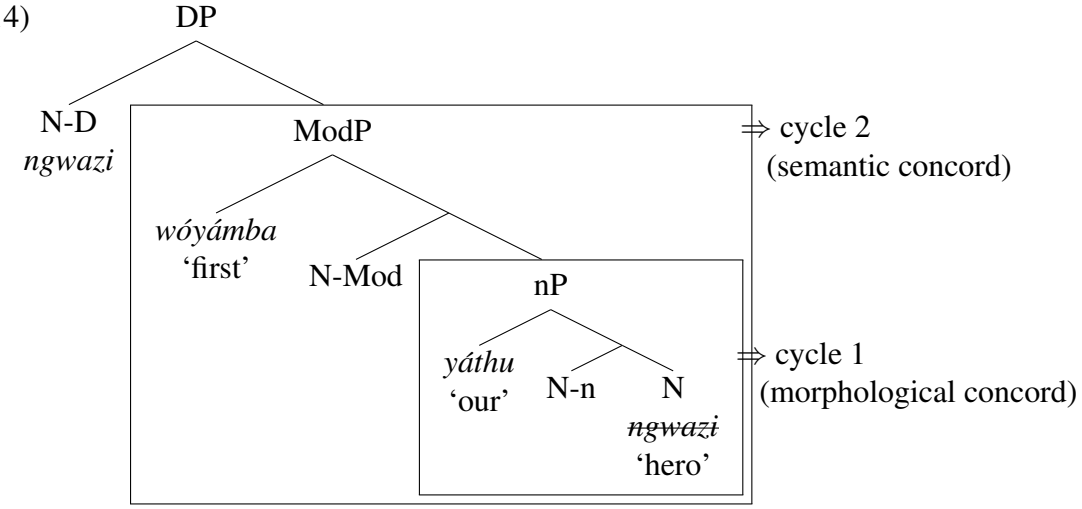
Derivationally speaking, then, while (14) shows that morphological concord happening before semantic concord causes no problems, the opposite order is not a possibility (15). Although exploring the nature of this asymmetry lies outside the scope of this paper (see Smith 2015, Landau 2016 for different views), regarding the distribution of morphological concord and semantic concord in Chichewa, (11) may be restated as in (13); the condition of distance in (11) is now understood in terms of the timing of the Agree process.

(13) A goal cannot induce morphological concord if it has triggered semantic concord earlier in the derivation.

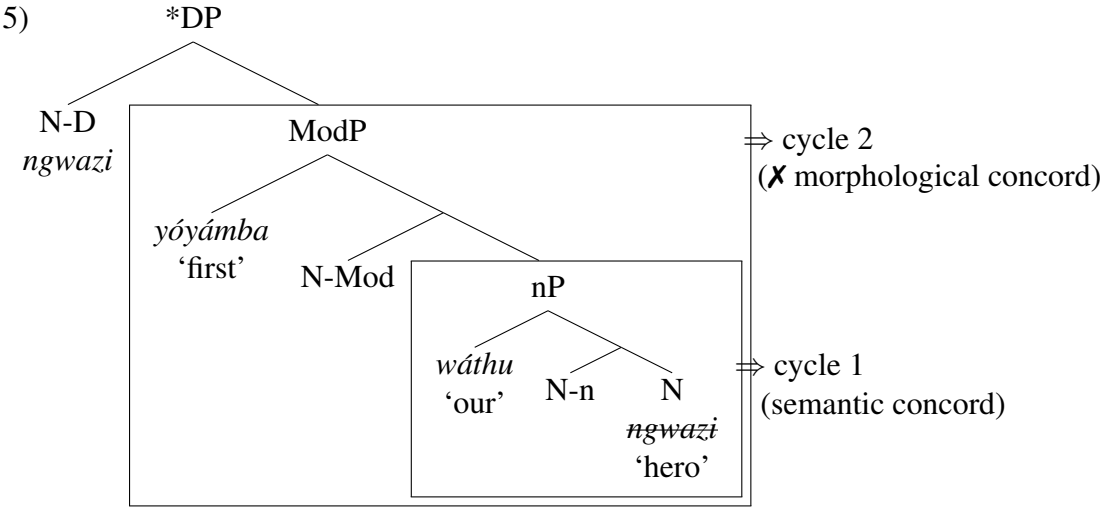
[9]For my consultants, (12a–12c) are not perfectly natural, for independent prosodic reasons which I cannot go into in this short paper.

That is, when two probes α and β both Agree with a goal X, if α is merged and Agrees with X before β enters the structure and α shows semantic agreement, morphological agreement is not available for β. Combining the generalization (13) and the scrambling account, it is clear now why the surface alternation of the modifier order does not affect the hybrid concord pattern (10&12). The derivation of (10c) is given in (16). In cycle 1, the possessive *yáthú* 'our' is base generated in SpecnP; it undergoes Agree and the output is morphological concord. The adjective *wóyámba* 'first' is merged in cycle 2, where the output of Agree is class 1 morphology, i.e., semantic concord. The possessive is then scrambled to SpecFP above the adjective, but at this point, crucially, a new Spec-head relation cannot be established. (A potential derivation of (10d) would be the combination of (15) and the scrambling of the possessive, which violates (13).) In summary, whenever hybrid concord happens, it strictly happens in the morphological-concord-before-semantic-concord time sequence, never the other way around. The hybrid concord pattern is thus nicely captured by the scrambling account of order flexibility of nominal modifiers in Chichewa.

(14)



(15)



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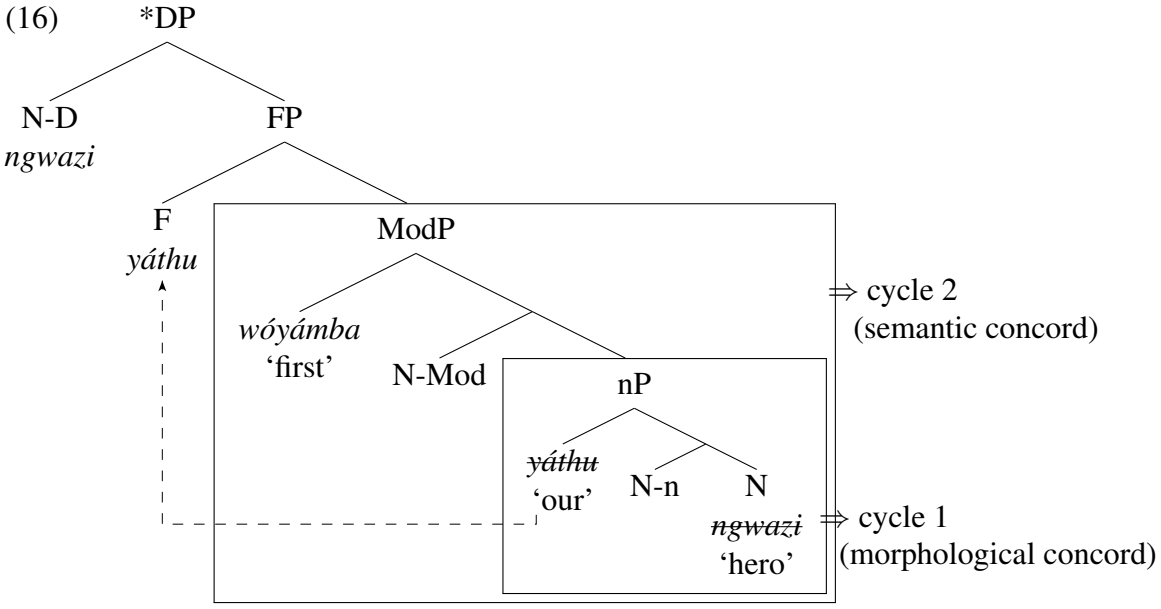

4. Conclusion

This paper argued for a particular scrambling approach to the constituent order flexibility within DP in Chichewa. Two independent components are needed: (i) N-to-D movement, which derives strict N-initiality; (ii) DP-internal scrambling of nominal modifiers. It has been shown that although, being independent from information structure considerations, all logically possible orders of Dem, Num, and Adj are allowed in Chichewa, the well-established Dem>Num>Adj structural hierarchy, which universally maps left-to-right into linear order, still plays an important role underlyingly, and is in fact confirmed by the Chichewa facts. Based on the assumption that modifiers establish a featural Spec-head relation with the local functional heads they merge with in their base-generated positions and that the landing site of scrambling does not involve a local Spec-head relation, a number of data regarding N'-ellipsis and hybrid concord have been accounted for.

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