

Incorporation as a Repair Mechanism and Cyclicity

Helene Streffer*

Abstract

Turkana (Eastern Nilotic; Kenya) shows a pattern where non-nominal modifiers incorporate into the head noun prenominally while they appear unbound postnominally. In this paper, I develop a two-step analysis with (i.) regular phrasal movement to SpecDP followed by (ii.) incorporation of the non-nominal modifier from the specifier into the D head. The analysis exploits the limits of cyclicity and constitutes, as such, a good testing ground for fine-grained notions of cyclicity varying in their degree of strictness. After presenting arguments for the analysis and sketching an implementation in Harmonic Serialism (McCarthy 2008, Heck and Müller 2013), I compare the analysis to three different formulations of the Strict Cycle Condition (SCC, Chomsky 1973): the Extension Condition (Chomsky 1995), the Peak Novelty Condition (Safir 2019) and a formulation of the SCC in Müller (2018). Incorporation as an immediate repair mechanism of previously built structure constitutes, thereby, an argument for a less strict version of the SCC which maintains at the same time a strong notion of cyclicity.

1. Introduction

One way to distinguish between different concepts of cyclicity is to investigate the strictness of cyclicity concepts like the Strict Cycle Condition (SCC, Chomsky 1973). Various formulations varying in their degree of strictness

*I am grateful to Jannet Akwom, Geoffrey Edapal Edato, and Amos Nakwa Emoru for their valuable work as linguistic consultants. If not otherwise indicated, data in this paper come from fieldwork with them. Turkana exhibits grammatical tone which distinguishes tense on verbs and case on nouns (Dimmendaal 1983: 37). However, since in-depth research on tone in Turkana is still missing, I will leave tone aside for the moment. Accordingly, I have chosen not to transcribe tone in order to avoid misrepresenting the data.

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have been proposed for the SCC in the literature (e.g. Chomsky 1995, Safir 2019, Müller 2018). In order to distinguish between these different concepts, we need to examine the degree to which grammar exploits the limits of cyclicity. In this paper, I will discuss a word order pattern in the Turkana DP (Eastern Nilotic; Kenya) where non-nominal modifiers incorporate into the head noun preminally while they appear unbound postnominally. I lay out a two-step analysis that derives the pattern through (i.) regular phrasal movement of the modifier to SpecDP, followed by (ii.) an optimization step where non-nominal elements can incorporate into the noun in order to adhere to noun-initiality. The second step of incorporation exploits the limits of cyclicity. Hence, if this analysis is on the right track, it represents a good testing ground in order to investigate the limits of cyclicity, i.e. the strictness of cyclicity concepts like the SCC. While the present analysis violates the strictest versions of this condition, it fits into Müller's (2018) formulation of the SCC that allows operations to target everything within the current phrase.

The rest of the paper is structured as follows: In section 2.1, I describe the puzzle in the Turkana data, then provide a more detailed picture of modifiers in the prenominal domain in 2.2. Subsequently, in section 3, I show that modifiers which appear prefixed to the noun are actually incorporated before phonology. The analysis is laid out in section 4 and is followed by a discussion of cyclicity, where I compare the analysis to three formulations of the SCC which vary in their degree of strictness.

2. Data

2.1. The Puzzle

The head noun in the Turkana DP (Eastern Nilotic; Kenya) precedes all modifiers in the unmarked case. Thus, the DP in Turkana is generally noun-initial. An example that illustrates this strong preference in Turkana is shown in (1).

- (1) *ɲa-kinekine ɲa-tʃɛ ɲa-uni ɲa-kɛŋ*
 F.PL-goat F.PL-other F.PL-three F.PL-3SG.POSS
 ‘his three other goats’

The language exhibits three different genders, which are marked on the noun with a prefixed gender marker (see (2)). This becomes relevant if one considers

the quantifier *-tʃɛ* ‘other’. It is possible to move the quantifier in front of the noun due to information structure reasons. However, while it appears unbound in the postnominal position (3a), it appears prenominally between the nominal gender marker and the noun itself (3b). Thus, it appears as a bound prefix of the noun. Note that this happens in a context where a non-nominal element is moved to a prenominal position which goes against the general preference for noun-initiality in the Turkana DP.

- | | | | | | |
|-----|----|----------------------|-----|----|---|
| (2) | a. | e-kile
M.SG-man | (3) | a. | a-bɛrɔ a-tʃɛ
F.SG-woman F.SG-other
‘another woman’ |
| | b. | a-bɛrɔ
F.SG-woman | | b. | a-tʃɛ-bɛrɔ
F.SG-other-woman |
| | c. | ɪ-ɪʝɔq
N.SG-dog | | | |

As with all other modifiers, nominal possessors appear postnominally in the unmarked case. However, as can be seen in (4b), it is also possible to move the nominal possessor in front of the head noun for information structure reasons. In contrast to the quantifier *-tʃɛ*, which prenominally appears between the gender marker and the noun, the nominal possessor appears unbound in front of the head noun.¹ Unlike the moved quantifier, the prenominal appearance of the nominal possessor is still in line with the general preference for noun-initial DPs.

- | | | |
|-----|----|--|
| (4) | a. | ɪɪ-dɛ a e-tuko
PL-child of M.SG-zebra
‘children of a zebra’ |
|-----|----|--|

¹While I take the example in (4b) to show that the nominal possessor can be moved in front of the head noun, the example is not conclusive. One could also interpret the example as a case of possessor raising where *e-tuko* ‘zebra’ does not form a constituent with *ɪɪ-dɛ* ‘children’. I thank Mariia Privizentseva and anonymous reviewers of GLOW 46 and ACAL 54 for pointing this out. One way to test the constituency would be to try to move *e-tuko* *ɪɪ-dɛ* to the preverbal domain. Barabas-Weil (2022) notes that the preverbal domain in Turkana can only host a single constituent. Thus, if the nominal possessor does not form a constituent with the head noun, one would expect this movement test to be ungrammatical. Unfortunately, this has to await future research. Note, however, that the general puzzle - why non-nominal modifiers appear incorporated into the head noun prenominally while they appear unbound postnominally - is generally independent of the data point concerning nominal possessors. Additionally, the analysis in 4 would still work even if this data point turns out to have a different interpretation.

- b. tɔ-dɛm-ara-i e-tuko ŋɪ-dɛ
 3.SUBS-take-ITIVE-ASP M.SG-zebra PL-child
 ‘The children were taken away from the zebra’

Hence, on the one hand, there are modifiers which can appear unbound in front of the noun (like a nominal possessor), and on the other hand, there are modifiers which preminally appear as a bound prefix (like the quantifier *-tʃɛ*).

2.2. Modifiers in the Prenominal Domain

This section provides an overview of various modifiers when they are moved for information structure reasons to the prenominal domain. Section 2.1 already showed that one can distinguish between two different prenominal positions: an unbound prenominal position vs. an incorporated prenominal position between the nominal gender marker and the noun. We saw that nominal possessors appear in the unbound prenominal position while the quantifier *-tʃɛ* appears in the incorporated prenominal position. The corresponding example with *-tʃɛ* is repeated in (5), with the addition of (5c), which shows that the quantifier *-tʃɛ* cannot surface in the unbound prenominal position.

- (5) a. a-bɛrɔ a-tʃɛ
 F.SG-woman F.SG-other
 ‘another woman’
 b. a-tʃɛ-bɛrɔ
 F.SG-other-woman
 c. *a-tʃɛ a-bɛrɔ
 F.SG-other F.SG-woman

In contrast to the simple quantifier *-tʃɛ*, a more complex quantifier like *-kidikidio* in (6) shows the opposite pattern. This quantifier cannot appear in the incorporated position between the nominal gender marker and the noun, but it can surface in the unbound prenominal position due to information structure reasons even though this violates the general noun-initiality preference.

- (6) a. ŋa-kipi ŋa-kidikidio
 F.PL-water F.PL-few
 ‘small amount of water’

- b. * η a-kidikidio-ki
F.PL-few-water
- c. η a-kidikidio η a-ki
F.PL-few F.PL-water

The same behavior can be found with numerals. As shown in (7), a numeral can only surface preminally in the unbound position.

- (7) a. η a-b ϵ r η a-kan-k-omw $\text{\textcircled{a}}$ n
F.PL-woman F.PL-five-LINK-four
'nine women'
- b. * η a-kan-k-omw $\text{\textcircled{a}}$ n-b ϵ r
F.PL-five-LINK-four-woman
- c. η a-kan-k-omw $\text{\textcircled{a}}$ n η a-b ϵ r
F.PL-five-LINK-four F.PL-woman

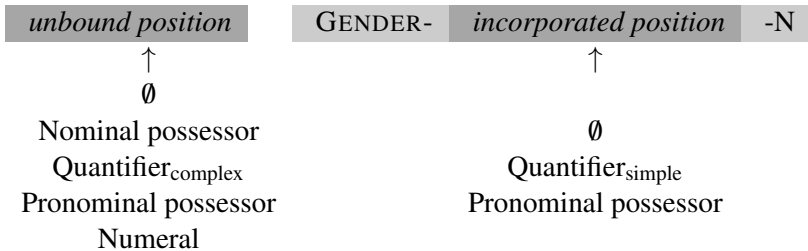
Finally, one can observe that pronominal possessors surface in both prenominal positions. The example in (8b) shows that a pronominal possessor can appear between the nominal gender marker and the noun, and the example in (8c) demonstrates that it can also surface in the unbound prenominal position.

- (8) a. η a-ki η a-kon
F.PL-ear F.PL-2SG.POSS
'your ears'
- b. η a-kon-ki
F.PL-2SG.POSS-ear
- c. η a-kon η a-ki
F.PL-2SG.POSS F.PL-ear

An overview of the pattern in the prenominal domain can be found in (9). Since Turkana exhibits a strong preference for noun-initiality in the DP, no modifier appears in the prenominal domain in the unmarked case (indicated with \emptyset in (9)). If a modifier moves to the prenominal domain for information structure reasons, one can observe two different positions: (i) an incorporated position between the nominal gender marker and the noun where simple quantifiers and pronominal possessors can appear and (ii) an unbound prenominal position where nominal possessors, complex quantifiers, pronominal possessors and numerals surface preminally. While most modifiers are

restricted to one prenominal position, pronominal possessors surface in both prenominal positions. Finally, it can be noted that the appearance of complex quantifiers, pronominal possessors, and numerals in the unbound prenominal position is, at least at first sight, a violation to the general noun-initiality in the Turkana DP.

(9) *The prenominal domain*



3. Incorporation before Phonology

In this section, I will present three empirical arguments that the appearance of a prenominal modifier between the nominal gender marker and the noun (like *-tʃɛ* in (5)) is the result of incorporation which applies before phonology.

The first argument makes use of a specific type of nominal concord called ‘restrictive agreement’ in Dimmendaal (1983: 217), which distinguishes the form of the nominal gender marker from the agreement marker prefixed to modifiers. In previous examples involving non-restrictive agreement, the nominal gender marker and the agreement marker prefixed to modifiers were identical in form. In order to argue for incorporation, one has to show that the gender marker prefixed to the simple quantifier (like *-tʃɛ* in (5), repeated in (10c)) is, in fact, the nominal gender marker and not a modifier with regular agreement marking in front of a noun without a nominal gender marker. The example in (10a) shows an instance of restrictive agreement with a postnominal modifier. While the nominal gender marker is *a-*, the restrictive agreement marker prefixed to the quantifier is *na-*. Crucially, it is impossible to retain the restrictive agreement marking of the quantifier if the quantifier appears prenominally (see (10b)). Thus, the gender marking in (10c) is, in fact, the nominal gender marker.

- (10) a. a-bɛrʊ **na**-tʃɛ
 F.SG-woman F.RESTR-other
 ‘another woman’
- b. ***na**-tʃɛ-bɛrʊ
 F.RESTR-other-woman
 ‘another woman’
- c. **a**-tʃɛ-bɛrʊ
 F.SG-other-woman
 ‘another woman’

Furthermore, taking into account why the quantifier *-tʃɛ* does not show its own gender agreement when it appears in the incorporated prenominal position provides an answer to the timing of incorporation. In principle, there could be different explanations for this pattern. However, they all predict that the moved quantifier forms a complex head with the noun before phonology. One potential explanation could be that at the point where an agreement node would be inserted, the quantifier has already incorporated into the noun and cannot get its agreement node anymore (cf. the argument for morphological wordhood of Bulgarian denominal adjectives in Harizanov 2018). Another explanation could be that an agreement node of the moved quantifier next to the node hosting the nominal gender marker with nearly identical features induces a haplological dissimilation rule sensitive to morphosyntactic features, which deletes the agreement node. The relevant domain for such a process has been argued to be a complex head (see Nevins 2012), which shows that the quantifier incorporates into the noun before phonology.

In addition, one can observe that the size of the modifiers plays a role for the prenominal position where the element appears. While the complex quantifier cannot appear in the incorporated position, the simple quantifier can. Thus, complex elements cannot appear in the incorporated prenominal position. The same size-based requirement for the incorporated position can be found with a modified quantifier. The simple quantifier *-di* can occur in the incorporated prenominal position (see (11b)). As can be seen in the unmarked postnominal word order in (11c), the quantifier *-di* can be modified by *tʃtʃɪk* ‘somewhat’. However, the whole modified phrase cannot appear in the incorporated prenominal position (see (11d)). This pattern is straightforwardly explained if the incorporation step is a result of head movement which can only target single heads and not more complex material.

Since this operation needs to take place before phonology, it is again an argument that incorporation takes place before phonology.

- (11) a. η a-kile η a-di
 F.PL-milk F.PL-some
 ‘some milk’
- b. η a-di-kile
 F.PL-some-milk
- c. η a-kile η a-di tʃɪtʃɪk
 F.PL-milk F.PL-some somewhat
 ‘some small amount of milk’
- d. * η a-di-tʃɪtʃɪk-kile
 F.PL-some-somewhat-milk

The previous paragraphs presented arguments for incorporation taking place before phonology. This predicts that phonological processes treat the incorporated element as already part of the noun because incorporation happened earlier. This prediction can be confirmed by looking at vowel harmony in Turkana. The language exhibits [ATR]-vowel harmony which is generally root-controlled if there is no strong suffix (Dimmendaal 1983: 19-27). The example in (12b) shows that there is no vowel harmony between the incorporated quantifier and the noun.² However, Dimmendaal (1983: 192) notes that compounds do not exhibit vowel harmony. Thus, it is expected to see no vowel harmony with incorporation, either. Instead, the incorporated element interrupts the vowel harmony between the nominal gender marker and the noun. The nominal gender marker in (12a) is in the harmony domain of the [+ATR] noun if there is no incorporated element and surfaces accordingly with the [+ATR] vowel e-. However, as soon as the quantifier is incorporated and opens a new vowel harmony domain (in (12b)), the nominal gender marker is not in the harmony domain of the noun anymore. Accordingly, the nominal gender marker harmonizes with the incorporated [-ATR] quantifier and surfaces with the [-ATR] vowel ɛ- in this case. This demonstrates that the quantifier has already incorporated when it comes to the phonological process of vowel harmony.

²My data differ here from Dimmendaal (1983: 303-304, 343-344), who noted vowel harmony between the incorporated element and the noun.

- (12) a. e-kile ε-tʃε ye
 M.SG-man M.SG-other that
 ‘that other man’
- b. ε-tʃε-kile ye
 M.SG-other-man that

4. Analysis and Discussion

An analysis for the Turkana DP data has to capture three main points: (i) the two different positions in the prenominal domain, (ii) the *unbound* postnominal appearance vs. *bound* prenominal appearance of the modifiers surfacing in the incorporated prenominal position, and (iii) the correct split between the modifiers which appear in the two different prenominal positions, including the twofold behavior of pronominal possessors who can appear in both positions.

The data discussion of the complex quantifier *-kidikidio* and the modified quantifier *-di tʃtʃik* suggests that the size of the prenominal modifiers constitutes a crucial factor for the division between the different prenominal positions. As indicated earlier, it is straightforward to derive this distinction through phrasal movement vs. head movement. Thus, at first sight, one could think about an analysis where some modifiers move via phrasal movement to SpecDP, the unbound prenominal position, while other modifiers move via head movement to D, the bound prenominal position. However, that approach has two major drawbacks. First, long head movement from the base position of the modifier, which is a specifier of a functional projection in the nominal spine, violates locality constraints proposed for head movement (Travis 1984, Koopman 1984).³ Second, it would require an ad hoc stipulation to explain

³Van Urk (2015) describes a phenomenon in the clausal domain in Dinka that shows strong similarities to the pattern in the Turkana DP. Dinka exhibits a V2-effect where the finite verb moves to C, and the clause-initial position in front of the finite verb can be occupied by the argument which serves as a topic or focus of the clause. He reports that this clause-initial position is restricted to nominals. If a PP adjunct moves to this position, it is only the embedded nominal which surfaces in the clause-initial position, and the preposition of the adjunct incorporates into the finite verb in C. Van Urk (2015) proposes an analysis for this pattern where the preposition undergoes a long head movement step followed by phrasal movement of the embedded noun into the clause-initial position. While this movement step violates the HMC (Travis 1984, Koopman 1984), it additionally imposes a look-ahead problem. The preposition incorporates before any conflicting structure, i.e. a non-nominal in the clause-initial position, exists. I propose that changing the order of operations in van Urk’s (2015) analysis solves the

why some modifiers move to the prenominal domain via phrasal movement while others move probably for the same information structure feature via head movement.

In contrast, I pursue an analysis where all modifiers undergo regular phrasal movement in a first step induced by the same information structure feature. This is then followed by an optimization step where the derivation tries to adhere to the general noun-initiality preference. I propose that incorporation is a possible repair mechanism available for small elements. Thus, if a simple quantifier moves to SpecDP, the structure will be repaired via incorporation of the quantifier into D.

4.1. A Harmonic Serialist Approach

I assume that the nominal gender marker in Turkana is located on D (see e.g. Dimmendaal (1983: 307) for similarity between nominal gender markers and demonstratives in Turkana) and that noun-initiality is derived through N-to-D movement (see, e.g., Carstens 2017 for N-to-D movement in Shona and Kouneli 2020 for Kipsigis). I take from Minimalism the assumption that phrases which consist only of one head are both maximal and minimal at the same time. Locality restrictions on head movement (Koopman 1984, Travis 1984) predict that these elements can only be addressed as minimal, i.e. as a head, from a local viewpoint. Any attempt to address a phrase which consists of only one head as minimal, i.e. as a head, from a distant point in the tree will be hindered by locality constraints on head movement. Thus, from a distant viewpoint, they will always be perceived as maximal, i.e. as a phrase.

I implement the analysis in Harmonic Serialism (McCarthy 2008, Heck and Müller 2013), a strictly derivational OT-model. A crucial property of this model is that every evaluation step includes maximally one operation. Thus, output candidates can only vary from the input by applying at most one operation to the input structure. The output candidate with the best constraint profile is chosen as the input for the next evaluation step. The derivation stops when optimization is no longer possible, i.e. when the best output candidate is

locality and the look-ahead problem. The gist of the analysis would then be the same as the analysis proposed in section 4.1 for the Turkana DP. This is a welcome result since it seems to be the case that we are dealing with the same underlying phenomenon in Turkana and Dinka: a structure where a dispreferred element appearing in a restricted initial position can be repaired by incorporation of that element into the next lower head.

identical to the input (Heck and Müller 2013). The present Harmonic Serialist analysis makes use of two constraints: *NOMINALFIRST_{DP}* in (13) which reflects the strong preference in the language for noun-initial DPs and the *MERGE CONDITION* in (14) which drives feature-based merge and movement.

- (13) *NOMINALFIRST_{DP}* (NF):
 (van Urk 2015, Driemel and Kouneli 2022)⁴
 Assign a violation for every non-nominal element in SpecDP.
- (14) *MERGE CONDITION* (MC):
 (Chomsky 1995, 2001, Heck and Müller 2013)
 Assign a violation for every unchecked [**•F•**].

The following tableaux in (15) and (16) illustrate the derivation of a simple quantifier like *-tʃɛ*. Subsequently, I will lay out how the analysis captures the rest of the modifiers. The tableau in (15) starts at the point of the derivation where the \bar{A} -feature on D induces phrasal movement of the modifier to SpecDP.^{5,6} Note that movement of the quantifier to SpecDP will violate the *NOMINALFIRST_{DP}* constraint. However, movement is still carried out because a violation of the higher ranked *MERGE CONDITION* due to not moving and leaving the \bar{A} feature unchecked would be worse (see *O*₁ in (15)).

⁴A restriction on nominals in the initial position has also been observed for the clause-initial position in van Urk (2015) for Dinka (Western Nilotic; South Sudan) and in Driemel and Kouneli (2022) for Kipsigis (Southern Nilotic; Kenya). In addition, Barabas-Weil (2022) seems to observe the same restriction for the preverbal position in Turkana (Eastern Nilotic; Kenya). The account presented in this paper shows that the same restriction can be found in the nominal domain in Turkana. Thus, the strong preference for nominals in the initial position of the clausal or nominal domain could be a general property of Nilotic languages.

⁵The derivation in (15) starts at a point in the derivation where N-to-D movement has happened already. I follow Carstens's (2017) proposal for N-to-D movement here. Following the HMC, this includes the noun raising through every intermediate head to D. Thus, on its way to D it will necessarily pick up the heads of the phrases that build the nominal spine. Accordingly, the noun is part of a complex head structure when it arrives at D. However, for illustrative reasons, I will still represent it as N in the following structures.

⁶I am using a generic \bar{A} -feature here since there is not enough semantic work on Turkana to determine which information structure feature triggers the movement in the Turkana nominal domain.

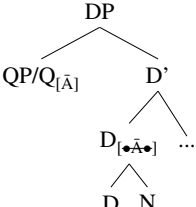
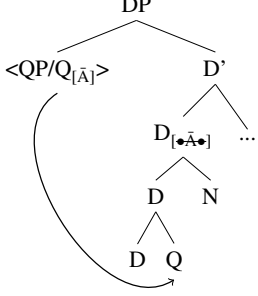
(15) *Regular phrasal movement*

I: [DP D ₁ • \bar{A} •] N [... [XP QP/Q ₁ \bar{A}] [_{X'} X [...NP]]]]	MC	NF
O ₁ : [DP D ₁ • \bar{A} •] N [... [XP QP/Q ₁ \bar{A}] [_{X'} X [...NP]]]]	*!	
☞ O ₂ : [DP QP/Q ₁ \bar{A}] [D' D ₁ • \bar{A} •] N [... [XP <QP/Q> [_{X'} X [...NP]]]]]]		*

An integral part of Harmonic Serialism is that the derivation will only stop when no further optimization is possible. Therefore, it is naturally the case in this model that the derivation tries to optimize the constraint profile and repair the structure with a non-nominal quantifier in the initial position of the DP. I propose that Turkana exhibits incorporation into D as a repair mechanism. Thus, if the non-nominal element in SpecDP is small enough to undergo incorporation into D, i.e. a single head, the structure can be optimized further. Incorporation results in an optimized constraint profile because the non-nominal element is not in SpecDP anymore, which resolves the previous violation of NOMINALFIRST_{DP}. Since a simple quantifier like *-tʃe* is at the same time maximal and minimal, i.e. consists of only a single head, it will be able to undergo incorporation into D and optimize the DP structure. The optimization step with a simple quantifier is shown in (16). Crucially, incorporation only becomes possible at that point and not earlier since the quantifier and D are only now in a local relationship with one another.⁷

⁷The general incorporation step from a specifier into the head is well-known from Matushansky's (2006) M-Merger approach.

(16) An optimizing step: Incorporation as a repair

I: [DP QP/Q _{[\bar{A}]] [D' D_{[$\bullet\bar{A}\bullet$]] N [... [XP <QP/Q> [X' X [...NP]]]]]}}	MC	NF
<p>O₂₁:</p> 		*!
<p>^{Heine} O₂₂:</p> 		

The first step of phrasal movement is the same for all modifiers that are marked with an \bar{A} -feature. It is the second step of optimization where differences between the modifiers arise. Since the incorporation step is restricted to heads, the repair mechanism is not available to phrases consisting of more than a single head. Thus, the constraint profile cannot become better for complex non-nominal elements after \bar{A} -movement to SpecDP, and they will surface in the unbound prenominal position. This is the case for the complex quantifier *-kidikidio* and numerals. In Turkana, numerals starting from six are built through an associative construction, which indicates that there is more structure involved than a single head. Similarly, the form of the complex quantifier *-kidikidio* seems to be much more complex than its simple counterpart *-di*.⁸ Furthermore, Dimmendaal (1983: 168) notes that *-kidikidio* can appear in verbal constructions. I take this to mean that this quantifier is more complex than others. In contrast to complex non-nominal modifiers, movement of the nominal possessor will never violate NOMINALFIRST_{DP} since it fulfills the nominal requirement. Therefore, incorporation will never be needed as a repair mechanism for nominal possessors, and they surface unbound in SpecDP.

⁸Heine (1981) reports that both quantifiers have the same meaning.

Finally, the question arises: what enables pronominal possessors to appear in both the unbound and the incorporated pronominal position? For an answer to this question, it is interesting to take a look at the clausal domain in Turkana. Barabas-Weil (2022) shows that Turkana, which has VSO word order in the unmarked case, exhibits a preverbal focus position. For this clause-initial position, she observes a distinction between weak and strong pronouns. Both pronouns appear in the postverbal position, but only the strong pronoun *ájóŋ* can appear in the preverbal position (see (17)).

- (17) a. *é-múdží (ájóŋ/àŋ) ákírínj*
 1SG-eat I.NOM meat.ABS
 ‘I am eating meat’ (Barabas-Weil 2022)
- b. *ájóŋ/*áj é-múdží ákírínj*
 I.ABS 1SG-eat meat.ABS
 ‘I am eating meat’ (Barabas-Weil 2022)

I assume that strong and weak pronouns correspond to structures with different levels of complexity.⁹ More precisely, I assume that strong pronouns exhibit a complex structure while weak pronouns consist of a single head. If the strong vs. weak pronoun distinction is also maintained with pronominal possessors (even though they cannot be distinguished morphologically here) it is straightforward that pronominal possessors can appear in both the unbound and the incorporated pronominal position. Since strong pronouns consist of more than a single head, they cannot optimize their constraint profile by incorporation and surface unbound in SpecDP. In contrast, weak pronouns can undergo the repair mechanism and optimize their constraint profile because they are at the same time maximal and minimal. Hence, we can observe pronominal possessors in both pronominal positions.¹⁰

To sum up, the two-step analysis straightforwardly captures all three main points of the data summarized at the beginning of section 4. First, it derives both pronominal positions while maintaining the same \bar{A} -movement trigger for all elements. Second, this analysis provides an explanation for why

⁹Depending on the concrete implementation, structures of different complexity with pronominal possessors could also correlate with being nominal vs. non-nominal (see e.g. Déchaine and Wiltschko 2002).

¹⁰This would mean that the nominal domain and the clausal domain in Turkana show a similar phenomenon with respect to pronominal possessors, except that there exists a repair mechanism in the nominal domain which allows weak pronouns to surface in the incorporated position.

modifiers like simple quantifiers appear bound in the prenominal position and unbound in the postnominal position. There is simply no reason to undergo an incorporation repair in their postnominal position because a postnominal modifier does not violate $\text{NOMINALFIRST}_{\text{DP}}$. And third, the correct divide between the elements appearing in the unbound or the incorporated position (summarized in (9)) follows from the characterization of the repair mechanism only being available for single heads.

4.2. Cyclicity

The proposed analysis behaves in a derivational fashion. Structure is built by checking features, and if this produces a dispreferred structure, the derivation tries to repair it. Crucially, the repair mechanism in this analysis applies in the immediate next step after the dispreferred structure has been built. Thus, the analysis has a cyclic characteristic principally. However, it is worth taking a closer look at the structure in order to detect the more fine-grained differences. An influential implementation of cyclicity in derivations is the Strict Cycle Condition from Chomsky (1973) in (18). Interestingly, the degree of strictness is not fixed in this formulation but depends on the notion of a ‘cyclic node’. In the following, I will consider three different formulations of the SCC that vary in their degree of strictness.

(18) *Strict Cycle Condition (SCC)*

No rule can apply to a domain dominated by a cyclic node *A* in such a way as to affect solely a proper subdomain of *A* dominated by a node *B* which is also a cyclic node. (Chomsky 1973: 243)

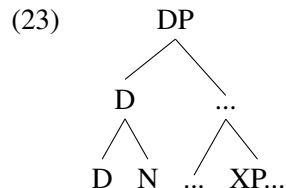
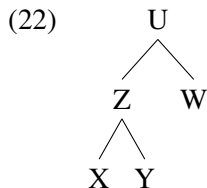
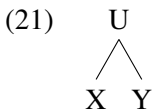
The strictest notion of the SCC is formulated in Chomsky’s (1995) Extension Condition in (19), which states that Merge and movement have to apply at the root. The first step in the analysis presented above, regular phrasal movement to SpecDP, obeys this condition. However, the second step of incorporation in cases where the repair mechanism applies does not target the root node. Accordingly, the incorporation step violates the strictest version of the SCC.¹¹

¹¹Note that without additional assumptions, head movement taking place in the syntax is generally excluded under the definition of the EC. Thus, the N-to-D movement earlier in the derivation would already be problematic under the strictest version of the SCC.

- (19) *Extension Condition (EC)* Chomsky (1995)
Merge and movement have to extend the structure at the root.

A slightly weaker version of the SCC is formulated in Safir's (2019) Peak Novelty Condition in (20). This version of the SCC permits Merge to apply at more places than only the root. Safir (2019: 292-293) explains the difference using the trees in (21) and (22). Both trees show an instance of Merge (M_i) where X has just been merged. The structure in (21) would be in line with both the EC and the PNC. The structure in (22) (with X being the element which has been merged last) violates the EC. However, (22) fulfills the PNC because Z is assumed to be a new node that the undominated node U immediately dominates after the application of Merge. Safir (2019) notes that this makes operations like head movement possible. Thus, a structure like the input in (15), where N has moved to D (abbreviated in (23)), is permitted by the PNC. The subsequent step of regular phrasal movement of the modifier to SpecDP is again in line with the PNC. However, the second step of incorporation is once again problematic under the definition in (20). Moving a modifier to SpecDP extends the structure so that Merge cannot target the D head again since the resulting new node would not be immediately dominated by the undominated node after the specifier position has been filled. Thus, the incorporation step does not obey the PNC either.¹²

- (20) *Peak Novelty Condition (PNC)*
After every instance of Merge, M_i , the undominated node U of the resulting structure immediately dominates a node that U did not immediately dominate before M_i . (Safir 2019: 292)



¹²In addition, the modifier targets an even lower projection of D in the complex D head during its repair step than N-to-D movement targeted. Depending on whether the definition in (20) counts nodes or labels, this could also rule out the repair step independently of the first step in the analysis with regular phrasal movement.

However, the incorporation step fits into Müller's (2018) formulation of the SCC in (24). This formulation allows the derivation to target every node within the current XP. Hence, targeting D for incorporation after movement of the modifier to SpecDP is in accordance with Müller's (2018) formulation of the SCC. Note that this formulation constitutes the least strict version of the SCC out of the three discussed versions in this section. Nevertheless, it maintains a notion of strict cyclicity. For the present analysis, this means that spec-head incorporation can only repair a structure created in the step immediately before it.

(24) *Strict Cycle Condition in Müller (2018)*

Within the current XP α , a syntactic operation may not exclusively target some item δ in the domain of another XP β if β is in the domain of α . (Müller 2018: 241)

5. Conclusion

To sum up, I have presented data from the Turkana DP that show two different prenominal positions: an unbound position in front of the noun and a position between the nominal gender marker and the noun itself. There are various arguments making reference to vowel harmony, nominal concord, and the size of the modifiers in both positions that point towards an analysis of the bound position as incorporation into the noun before phonology. The presented two-step analysis derives the pattern through (i.) regular phrasal \bar{A} -movement to SpecDP followed by (ii.) an optimization step where a structure that violates the general noun-initiality preference in the DP can be repaired by incorporation of the non-nominal element into D if the non-nominal element is maximal and minimal at the same time.

If this analysis is on the right track, it is an interesting test case for the evaluation of different versions of the SCC. A comparison of three different degrees of strictness (EC, PNC, and SCC in Müller 2018) shows, on the one hand, that the incorporation repair mechanism does not fit into the strictest versions of the SCC. On the other hand, however, it also shows that the formulation in Müller (2018) can capture the described repair mechanism by restricting a cycle to the current domain. This demonstrates that analyses exhausting the limits of cyclicity, given that they can be argued to be accurate, can provide the space to evaluate different fine-grained notions of cyclicity.

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