Formalizing two types of mixed A/Ā movement

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Abstract Many scholars have argued that some instances of Ā movement include an interaction with some A feature, e.g., D (Aldridge 2004, 2008; Bossi and Diercks 2019; Coon, Baier, and Levin 2021; Branan and Erlewine 2024) or ϕ (van Urk 2015, Colley and Privoznov 2020). However, the interaction between the A and Ā features is not the same in every case. Assuming that Ā movement is predicated on an Agree relationship, I analyze two types of mixed A/Ā Agreement. In the first type, one probe searches for the A and Ā features conjunctively, such that both features must be found together. With novel fieldwork data, I illustrate that this pattern is found in Ndengeleko (Bantu). The conjunctive pattern is challenging to capture from a standard, two-probe perspective on mixed positions (following Chomsky 2001). Building on work on probes' satisfaction conditions (Deal 2015, 2021), I show that the Ndengeleko pattern is best captured by a probe with a conjunctive satisfaction condition. In the second type of A/Ā movement, one syntactic head happens to host two probes (one A and one Ā). This pattern is found in Kipsigis (Bossi and Diercks 2019). The notion of conjunctive satisfaction allows us to capture agreement patterns that target two features, which extends beyond mixed A/Ā agreement. What emerges is a typology of mixed Agree operations in which features can be sought conjunctively, disjunctively, or independently. The empirical landscape places both conjunctive and disjunctive satisfaction as central to the Agree operation.

Keywords Mixed A/Ā movement · Agree · Satisfaction conditions

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[0] This manuscript was originally written in 2021. This version preserves the paper largely as it was at that time, with only minor updates for accuracy and clarity. Revisions include the correction of typographical errors and the updating of several references from manuscripts to published versions. The argument and analysis remain unchanged. All errors are my own.

1 Introduction

Support for a distinction between A and Ā positions comes from patterns of case, agreement, binding, and crossover. In a familiar way, in English and many other languages, these behaviors diagnose Spec,TP as an A position and Spec,CP as an Ā position. Yet, in contrast to this apparently binary division between A and Ā positions, a body of recent work has demonstrated the existence of syntactic positions that show a mix of A and Ā properties (Pesetsky and Torrego 2001; Aldridge 2004, 2008; Legate 2011; Erlewine 2018; Bossi and Diercks 2019; Aldridge 2017). For van Urk (2015), mixed positions provide evidence that the A/Ā distinction is not a privative one, but comes down to which feature(s) are specified on a given probe. Mixed positions, he proposes, are the result of Agree for more than one feature.

This paper takes up the question of how Agree for more than one feature is to be implemented theoretically. Of central interest is a distinction between two types of "mixed" A/Ā patterns. The first pattern involves heads which attract elements both by A features and by Ā features, where these types of attractions are in principle independent. Thus, when the closest element with Ā features lacks A features, for instance, a separate element with A features is attracted in addition. This type of situation is readily modeled on standard approaches to Agree following Chomsky 2001: the head simply hosts both an A probe and an Ā probe. The second and more challenging type of mixed pattern involves positions to which movement is possible only if both A and Ā features are present on the same moving element. This behavior is challenging from a standard, two-probe perspective on mixed positions, as additional mechanisms are needed to integrate or "fuse" the two probes on the probing head (see, e.g., Coon and Bale 2014). By contrast, I demonstrate that the interaction/satisfaction model of Agree (Deal 2015, 2021) allows for a straightforward approach to this pattern. My central proposal is that probe satisfaction conditions may be conjunctive: not just a single feature, but rather two (or more) features must be found on the goal in order to halt probing. This accounts for the second type of mixed A/Ā pattern.

Empirical evidence from two languages helps to clarify the contrast between the two types of mixed A/Ā patterns. As mentioned above, the first type of mixed pattern is found in Ndengeleko, a Bantu language for which I draw on my own primary fieldwork. Like many Bantu languages, Ndengeleko has a dedicated structural position for focused constituents immediately after the verb. In Ndengeleko, this Ā position must be filled by a nominal. In cases where the element bearing the Ā feature is not nominal, it is not possible to satisfy the probe by moving the Ā element, and then separately moving a nominal. Instead, the focused element must be nominalized before undergoing movement. This suggests the existence of one single probe which is satisfied by the conjunction of two features, namely (as I will argue), [n] and [FOCUS]. Drawing on and developing an interaction/satisfaction model, I propose that the probe in Ndengeleko has a conjunctive satisfaction condition: it will only be satisfied when it reaches an element with both relevant features.

The second type involves two separate probes that Agree independently but are situated on the same syntactic head. In this paper, the primary evidence for this pattern comes from Kipsigis (Kalenjin, Nilo-Saharan; Bossi and Diercks 2019). Bossi and Diercks show that the element that moves to the immediately postverbal position has two requirements: it must bear an Ā feature that they call [δ], which indicates discourse prominence, and, like Ndengeleko, it must be a nominal. Crucially, Kipsigis differs from Ndengelko in that if the discourse prominent element in the clause is not a nominal, both the discourse prominent element and the highest nominal (always the subject) undergo movement. This pattern results straightforwardly from the presence of two independent probes on the head responsible for this movement in Kipsigis; one probe is satisfied by [D] (the feature on nominals) and another separate probe is satisfied by [δ].

The main contribution of my analysis is that it gives a simple and predictive solution to mixed agreement (agreement for more than one feature). In both the Kipsigis and Ndengeleko case studies, agreement involves both A and Ā features, and feeds movement of the agreeing element(s). A prediction arises that we should find probes with conjunctive satisfaction conditions not only outside of the A/Ā domain, but outside of movement phenomena altogether. Evidence from mixed ϕ agreement confirms this prediction. Agreement patterns in Mi'gmaq (Algonquian) suggest that ϕ-probes can search for a conjunction of person and number features (Coon and Bale 2014). A further prediction naturally arises that we should see disjunctive satisfaction conditions: either feature X or Y will halt the probe's search. Also in the ϕ agreement domain, evidence from Aiwoo (Roversi 2020) and Svan (Bondarenko and Zompì 2021) suggests that probes can be satisfied by either person or number features. What emerges is a typology of mixed Agree operations in which features can be sought conjunctively, disjunctively, or independently. The empirical landscape places both conjunctive and disjunctive satisfaction as central to the Agree operation.

The paper is organized as follows. In Section 2, I give an example of conjunctively satisfied probes from Ndengeleko showing that focus movement requires both features [FOCUS] and [n]; the moved element will always have both, and it is ungrammatical for one feature to be missing from the structure. In Section 3, I give an analysis of Ndengeleko focus movement as reflecting a conjunctive satisfaction condition. In Section 4, I give an example of independently satisfied probes (two probes) with a case study from Kipsigis (Bossi and Diercks 2019), showing that information-structure driven movement seems to require both an A and an Ā feature to be located on the goal(s). When these features are found separately, each independent probe moves the highest element with the relevant feature, resulting in two movements. In Section 5, I discuss evidence outside of these two case studies for conjunctively and independently satisfied probes in the A/Ā domain as well as evidence outside of A/Ā movement for conjunctive and disjunctive satisfaction.

2 Conjunctive satisfaction: evidence from Ndengeleko

2.1 Ndengeleko clause structure

Ndengeleko is a Bantu language spoken in the Rufiji region of Tanzania.[1] It has a base SVO word order; though, like many Bantu languages, word order is largely dictated by information structure. Bantu verbs show a number of properties suggesting that they raise to the edge of the vP domain but no higher (Julien 2002, Kinyalolo 2003, Myers 1990, Buell 2005). The first property suggesting such verb movement is that derivational morphemes such as the causative, applicative, reciprocal, and passive (low heads) are suffixes, often appearing in reverse merge order. Inflection, such as agreement, tense, and negation (higher heads) are prefixes whose order exactly matches the standardly assumed hierarchy of functional projections.

Myers (1990) analyzes the final vowel (FV) as a marker of mood (e.g., indicative, subjunctive), demonstrating that the FV reflects distinctions in clause type. Building on this analysis, later work (e.g. Julien 2002, Kinyalolo 2003, Buell 2005) argues that the verb raises to a Mood$^{\circ}$ head associated with the FV. This line of analysis links the position of the FV to a syntactic projection encoding mood, providing evidence that the verb moves to the top of the vP domain but not higher.

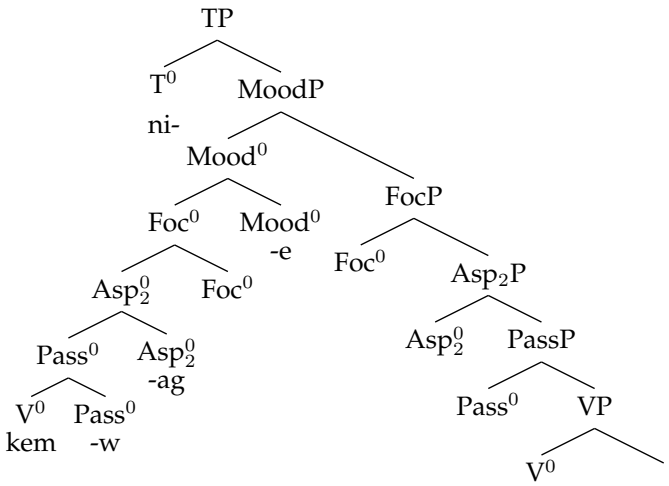
In Ndengeleko and several other Bantu languages, some aspectual marking is suffixal, indicating that Mood^{0} is above a subset of aspect heads. In the following example, the imperfective

[1] All uncited data come from my fieldwork in the Rufiji region between 2017 and 2019.

suffix *-ag* appears after the passive suffix. Following Carstens' (2005) analysis of Kilega, I label the low aspectual marking Asp_2. The clause structure for (1) is shown in (2).

(1) Ni-kem-w-ag-e...
1SG.SM-call-PASS-IMP-FV
'I was being called...'[2]

(2) Ndengeleko clause structure



In (2), the verb root moves cyclically up to $Mood^0$, creating the verbal stem. Tense and Asp_1[3] are higher heads in the clause, as are subject and object agreement. Finally, I follow Julien (2002) in treating the word formation of inflectional prefixes and the verb stem (complex $Mood^0$) as a purely phonological process.

I follow Aboh (2007) and van der Wal (2006) in positing a low FocusP immediately below the final landing site of the verb. This position captures the strict linear adjacency between the verb and focused elements in Ndengeleko. This focus position has been referred to as the immediately after verb (IAV) position, and is commonly found in Bantu languages (see Watters 1979, Hyman and Polinsky 2010, Hyman 2010 for Aghem, Costa and Kula 2008 for Bemba; Yoneda 2011 for Matengo; Buell 2006, 2009 for Zulu; and van der Wal 2009 for Makhuwa). In Ndengeleko, all focused elements appear IAV; the pattern is illustrated with subject, indirect object, and adverbial *wh-* words in (3).

(3) a. [A-telek-a]$_V$ **nyaí**?
1.SM-cook-FV who
'Who is cooking?'

b. [U-m-pa-y-a]$_V$ **nyaí** kilyó?
2SG.SM-1.OM-give-APPL-FV who food
'Who are you giving food to?'

[2] Glossing follows the Leipzig Glossing Rules, with additional conventions common in the Bantu literature. Numerals have two functions in this paper: when combined with SG/PL (e.g., 1SG.SM, 2PL.OM), they indicate person. When they appear on their own (e.g., 1-, 2-, 7-, 15-, or 1.OM, 2.SM), they refer to Bantu noun-class markers. Additional abbreviations used in the paper include CJ = conjoint, DJ = disjoint, FV = final vowel, IMP = imperfective, OM = object marker, SM = subject marker.

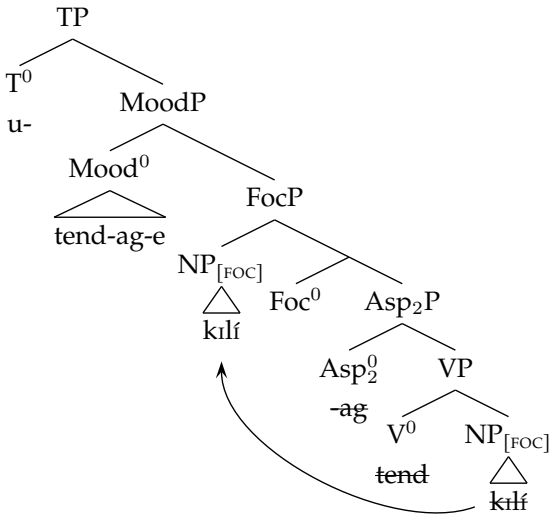
[3] The following aspectual morphemes are prefixes in Ndengeleko: the completeive *te-* and itive (go and X) *ka-* (Ström 2013). I assume these are generated by Asp_1 which is above the final landing site of the verb and I leave them out of the present discussion.

c. Halima [a-a-leng-a]$_V$ **líniki** itunguu?
Halima 1.SM-PST-peel-FV when onions
'When will Halima peel onions?'

I assume that the Focus head hosts a probe that Agrees with a focused element and moves it to its specifier. In (4), the *wh-* object *kılí* 'what' is inherently focused and it appears after the verb. The proposed structure is given in (5).

(4) [U-tend-ag-e]$_V$ **kılí**?
2SG.SM-do-IMP-FV what
'What were you doing?'

(5) Low focus movement



We will now see evidence that IAV focus movement is obligatory in Ndengeleko, using data from *wh-* questions and their answers. Further, this position is restricted to nominals: non-nominals must be nominalized before undergoing focus movement.

2.2 Requirements of focus movement

We turn now to the requirements of focus movement in Ndengeleko. In what follows, two types of focused constituents are distinguished: inherent focus and contextual focus. The main type of inherently focused words I will focus on are *wh-* elements, following a body of literature which either argues that *wh-* elements and foci are formally identical (see Aboh 2007, Aboh 2016, and Erlewine 2018) or that *wh-* words have a focus feature and a *wh-* feature (Bošković 2002, Sabel 2000). On the other hand, contextually focused elements are those that receive a focus interpretation by virtue of the context of the utterance, not due to inherent properties of the word. Examples include answers to *wh-* questions and corrections. To illustrate this, we begin with the observation that the base word order in Ndengeleko is S-V-DO-IO-X. Note that Ndengeleko interestingly diverges from the standard unmarked word order in Bantu, which places the indirect object before the direct object: S-V-IO-DO (Bresnan and Moshi 1990).

(6) Hadija$_S$ [a-m-pakul-i-a]$_V$ [mbaa]$_{DO}$ [Kusokuwa]$_{IO}$ [pa-ki-inza]$_{loc}$
Hadija 1.SM-1.OM-serve-APPL-FV 9.rice Kusokuwa 16-7-kitchen
'Hadija is serving Kusokuwa rice in the kitchen'

In this section, I show that a generalization emerges that both inherently and contextually focused elements in Ndengeleko obligatorily surface in the IAV position.

2.2.1 Inherent focus

The first type of inherently focused words are *wh-* elements. In order to form a content question, an appropriate *wh-* element appears IAV. This is illustrated for *nyai* 'who' in (7) and (8); regardless of grammatical role, the *wh-* element must appear IAV.

(7) Subjects

a. V-**S** [A-telek-a]$_V$ **nyaí**?
1.SM-cook-FV who
'Who is cooking?'

b. *__S__-V *__Nyaí__ [a-telek-a]$_V$?
who 1.SM-cook-FV

(8) Indirect objects

a. V-**IO**-DO [U-m-pa-y-a]$_V$ **nyaí** kilyó?
2SG.SM-1.OM-give-APPL-FV who food
'Who are you giving food to?'

b. *V-DO-**IO** *[U-m-pa-y-a]$_V$ kilyó **nyaí**?
2SG.SM-1.OM-give-APPL-FV food who

Adjunct *wh-* elements like adverbs and locatives show the same IAV restriction; placing the *wh-* element anywhere besides IAV is ungrammatical. (9-b) shows that *liniki* 'when' cannot appear in its base position, which is after the direct object.

(9) Adverbs

a. V-**ADV**-DO Halima [a-a-leng-a]$_V$ **líniki** itunguu?
Halima 1.SM-FUT-peel-FV when onions
'When will Halima peel onions?'

b. *V-DO-**ADV** *Halima [a-a-leng-a]$_v$ itunguu **líniki**?
Halima 1.SM-PST-peel-FV onions when

(10) Locatives

a. V-**LOC**-DO Habíba [a-telek-a]$_V$ **kwák**ʊ mbáa.
Habiba 1.SM-cook-FV where rice
'Where is Habiba is cooking rice?.'

b. *V-DO-**LOC** *Habíba [a-telek-a]$_V$ mbáa **kwák**ʊ.
Habiba 1.SM-cook-FV rice where

With respect to direct objects, I assume that the direct object *wh-* words move vacuously to the structural IAV position. Since no constituents intervene between the verb and direct object in the baseline order, this movement is not detected in the surface word order.

(11) Direct objects

a. V-**DO** [U-m-pa-y-a]$_V$ **kılí** Nadya?
2SG.SM-1.OM-give-APPL-FV what Nadya
'What are you giving to Nadya?'

In addition to *wh-* words, I follow Hyman and Watters (1984) in assuming that negation is inherently focused.[4] In Ndengeleko, negation is expressed with the adverb *kwá* which must appear IAV.[5] If the negative adverb *kwá* is inherently focused, we expect it to pattern just like the inherently focused *wh-* elements. This is indeed the case, shown in (12), where the object cannot intervene between the verb and *kwá*.

(12) a. [N-delek-a]$_V$ **kwá** mbáa.
1SG.SM-cook-FV NEG rice
'I do not cook rice.'

b. *[N-delek-a]$_V$ mbáa **kwá**.
1SG.SM-cook-FV rice NEG

In some languages with *wh-* movement, multiple *wh-* elements in the clause leads to multiple *wh-* movement. We must ask whether this is possible for the IAV position in Ndenengeleko. I argue that the answer is no: only a single element can appear in Spec,FocP – the IAV position – in Ndengeleko. We can test this by looking at i) multiple *wh-* questions and ii) negative *wh-* questions. The first piece of evidence for this is that multiple *wh-* questions involving both subject and object *wh-* words cannot be expressed with both *wh-* words in Spec,FocP, shown in (13). Such *wh-* questions must be expressed using a relative clause construction, shown in (14):

(13) a. *A-telek-a **nyai kılí**?
1.SM-cook-FV who what
Int: 'Who cooked what?'

b. *A-telek-a **kılí** **nyai**?
1.SM-cook-FV what who
Int: 'Who cooked what?'

(14) Nyai á-á-telek-a kılí?
who 1.REL-1.SM-cook-FV what
'Who is it that's cooking what?'

The ungrammaticality of (13) cannot be due to any general problem with subject questions, evidenced by the grammatical intransitive subject *wh-* question in (7). The use of the relative clause in (14) is a repair that specifically arises when multiple elements need to be in Spec,FocP, which is not possible.[6]

[4] Specifically, these authors argue that when a verb appears with a clausal negation morpheme, the verb is thus in focus. I take this to mean that clausal negation morphemes are inherently focused even when they do not appear as affixes to verbs (e.g., negative adverbs). In such cases, I assume it is the negative adverb that has inherent focus, not the verb.

[5] The negative adverb *kwá* is historically from the *wh-* word for 'where' *kwákʊ* (Ström 2013). Many speakers reduce it to *kwá*, though not all.

[6] A multiple *wh-* question formed from two VP-internal *wh-* elements is grammatical only if the argument *wh-* word appears IAV, shown in (i). Lacking data on intervening adverbs, we cannot determine whether *kwaaku* is in Spec,FocP, or in its base position in (i-a). Either way, it raises the question of what is responsible for why (13) is ungrammatical. One possible source of the ungrammaticality is the height of the transitive subject *nyai* in (13). However, nothing in the present analysis of Ndengleko hinges on an explanation for the difference between (13) and (i-a).

In addition to multiple *wh-* questions, negative *wh-* questions consist of two focused constituents that might compete for the IAV position. What we find is that the use of the negative adverb in *wh-* questions is ungrammatical with any word order, shown in (15-a)-(15-d). The regular negation strategy cannot be used due to the requirement that FocP have only a single specifier. Instead, a repair is used: a verbal negation strategy shown in (16). This allows the *wh-* word *nyai* to be the sole focused element in Spec,FocP.

(15) a. *[A-telek-a]$_V$ **kwákʊ nyaí**?
1.SM-cook-FV NEG who
Intended: 'Who isn't cooking?'

b. *[Ateleka]$_V$ **nyaí kwákʊ**?

c. ***Nyaí** [ateleka]$_V$ **kwákʊ**?

d. ***Kwákʊ** [ateleka]$_V$ **nyaí**?

(16) [Wanga-télék-a]$_V$ **nyaí**?
1.SM.NEG-cook-FV who
'Who isn't cooking?'

To summarize, inherently focused words like *wh-* elements and the negative adverb *kwá* must appear IAV. I take this to reflect the fact that these elements bear a [FOCUS] feature, which is the target of movement to Spec,FocP, immediately structurally adjacent to the final landing site of the verb. Now we will see that in answers to *wh-* questions, constituting contextual focus, the answer word must appear IAV as well.

2.2.2 Contextual focus

Here I am considering elements with contextual focus to be those that receive a focus interpretation by virtue of the context of the utterance, not due to inherent properties of the morpheme. The contextual focus examples below are all responses to *wh-* questions, which Dik (1997) calls completive focus, as it completes the proposition left open by the *wh-* question. In the English translations, the contextually focused constituent in SMALL CAPS corresponds to the *wh-* word in the question. In Ndengeleko, in answers to *wh-* questions, the new information must appear IAV.

The following examples show that contextually focused subjects, direct objects, indirect object, and adverbs all must appear IAV. Nothing can intervene between the verb and the focused element in these examples.[7]

(17) In response to 'Who is singing?'

a. V-**S** [Ba-yɪɪmb-a]$_V$ **a-míséembe**.
2.SM-sing-FV 2-boy
'BOYS are singing.'

(i) a. [W-e-somike]$_V$ **kɪlí** kwáakʊ?
2SG.SM-PST-study.PFV what where
'What did you study where?'

b. *[W-e-somike]$_V$ kwáakʊ **kɪlí**?
2SG.SM-PST-study.PFV where what

[7] Crucially, the (b) examples in (18)-(20) are infelicitous when the bolded words are in focus. This is because a different word appears linearly in the IAV position and gets interpreted as focused. However, (17-b) is not just infelicitous, it is ungrammatical. In Section 3.3, I analyze the IAV position as having an inviolable EPP, which explains the ungrammaticality of (17-b): the IAV position is empty.

b. *S-V *A-míséembe [ba-yɪɪmb-a]$_V$.
2-boy 2.SM-sing-FV
'Intended: BOYS are singing.'

(18) In response to 'Who are you giving food to?'

a. V-**IO**-DO [Ni-m-pa-y-a]$_V$ **Nádya** ki-lyó.
1SG.SM-1.SM-give-APPL-FV Nadya 7-food.
'I'm giving NADYA food.'

b. #V-DO-**IO** #[Ni-m-pa-y-a]$_V$ ki-lyó **Nádya**.
1SG.SM-1.SM-give-APPL-FV 7-food Nadya.
Intended: 'I'm giving NADYA food.'

(19) In response to 'When is Habiba cooking rice?'

a. V-**ADV**-DO Habíba [a-telek-a]$_V$ **lííno** mbáa.
Habiba 1.SM-cook-FV today rice
'Habiba is cooking rice TODAY.'

b. #V-DO-**ADV** #Habíba [a-telek-a]$_V$ mbáa **lííno**.
Habiba 1.SM-cook-FV rice today
Intended: 'Habiba is cooking rice TODAY.'

(20) In response to 'Where is Habiba cooking rice?'

a. V-**LOC**-DO Habiba [a-telek-a]$_V$ **pa-kíinza** mbáa.
Habiba 3SG.SM-cook-FV 16-kitchen rice
Habiba is cooking rice **in the kitchen**.

b. #V-DO-**LOC** #Habiba [a-telek-a]$_V$ mbáa **pa-kíinza**.
Habiba 3SG.SM-cook-FV rice 16-kitchen
Intended: Habiba is cooking rice **in the kitchen**.

We cannot directly compare the baseline and focus word orders with direct object focus because its base position is immediately after the verb. However, placing the indirect object IAV when the direct object is in focus is infelicitous, shown in (21-b).

(21) In response to 'What are you giving to Nadya?'

a. V-**DO**-IO [Ni-m-pa-y-a]$_V$ **ki-lyó** Nadya.
1SG.SM-1.OM-give-APPL-FV 7-food Nadya.
'I'm giving Nadya FOOD."

b. #V-IO-**DO** #[Ni-m-pa-y-a]$_V$ Nadya. **ki-lyó**.
1SG.SM-1.OM-give-APPL-FV Nadya 7-food.
Intended: 'I'm giving Nadya FOOD."

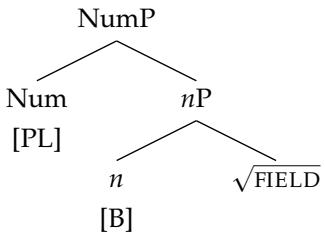
In summary, elements move to the IAV position because they have a [FOCUS] feature. If a [FOCUS] element fails to move IAV, the sentence is either ungrammatical (in the case of inherently focused elements like *wh-* elements and the negative adverb *kwá*) or infelicitous (in the case of information-focused elements in answers to *wh-* questions). This linear position in the utterance reflects a Focus projection under the final landing site of the verb: the Focus head drives movement of the highest element bearing [FOCUS] to its specifier, resulting in an IAV focus position. Next, we'll see that this head only moves nominals, represented by the feature [*n*]. An element with only [*n*] or only [FOCUS] cannot undergo movement to Spec,FocP.

2.3 Focus movement is restricted to nominals

In this section, I show that the focus movement described in the previous section is restricted to nominals. If it were the case that movement to Spec,FocP is purely driven by Ā features, we would expect verbs to move to this position while still remaining fully verbal. What we see instead is that verbs must be nominalized to move to Spec,FocP. This suggests that movement to Spec,FocP in fact requires both Ā features and A features, the latter being those associated with nominality. I will argue in particular that the feature in question is [*n*].

In Ndengeleko, like elsewhere in Bantu, nominals can be identified by the presence of a noun class marker, which I take as the spell-out of *n*. More specifically, van der Wal and Fuchs (2019) analyze Bantu noun class prefixes as the joint spell-out of *n* and Num. They follow Kramer (2015) in positing *n* as the locus of grammatical gender (with a range of values labeled A-E) and Num as the locus of grammatical number. Bantu noun class markers are the spell-out of gender and number together. For example, the noun class prefix on the noun *mi-gʊnda* 'fields' is the spell-out of gender [B] and [plural] number.

(22) a. mi-gʊnda
4-field
'fields'

b.


c. mi ⟷ [Num:PL,*n*:B]
gʊnda ⟷ √FIELD

Each combination of gender and number is given its own noun class number. In (22), *mi-* is glossed as "class 4" which is simply the plural of gender B. In view of all the fact that noun classes are gender/number hybrid morphemes, I take the presence of a noun class marker to indicate the presence of both a Num head and an *n* head in the syntax.

2.3.1 Argument and adjunct focus

With noun class markers as the diagnostic for nominals, we can now see that the subjects, objects, adverbs, and locative phrases that undergo IAV focus movement are all nominal because they all include a noun class prefix. The nominal status of elements like subjects and objects is not in question. For what seem to be adverbs, – including adjunct *wh-* words – we find evidence for nominal status: they have noun-class prefixes and they can be possessed. Recall that adverbs and locatives appear IAV when in focus:

(23) In response to 'When is Habiba cooking rice?'

a. V-**ADV**-DO Habíba [a-telek-a]$_V$ **lííno** mbáa.
Habiba 1.SM-cook-FV today rice
'Habiba is cooking rice TODAY.'

b. #V-DO-**ADV** #Habíba [a-telek-a]$_V$ mbáa **lííno**.
Habiba 1.SM-cook-FV rice today
Intended: 'Habiba is cooking rice TODAY.'

(24) In response to 'Where is Habiba cooking rice?'

a. V-LOC-DO Habiba [a-telek-a]$_V$ **pa-kíinza** mbáa.
Habiba 1.SM-cook-FV 16-kitchen rice
Habiba is cooking rice **in the kitchen**.

b. #V-DO-LOC #Habiba [a-telek-a]$_V$ mbáa **pa-kíinza**.
Habiba 1.SM-cook-FV rice 16-kitchen
Intended: Habiba is cooking rice **in the kitchen**.

While not canonically nominal cross-linguistically, manner and temporal adverbs in Ndengeleko include noun class prefixes, shown in (25). This is found across Bantu as well (see Cope 1957 and Mathonsi 2001).

(25) Nominal adverbs

a. li-iso '5-yesterday'
b. li-ino '5-today'
c. ma-alabu '6-tomorrow'
d. bw-iso '14-well'
e. ka-ndende '12-slowly'

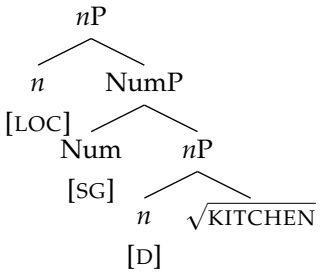
Additional evidence for the nominal status of adverbs – beyond the presence of noun class prefixes – comes from the ability of temporal adverbs to be possessed. I assume that the ability to be possessed indicates the nominal status of the adverbs.[8]

(26) li-iso y-aake
5-yesterday 9-3SG.POSS
'the previous day' lit: 'its yesterday'

(27) ma-alabu y-aake
6-tomorrow 9-3SG.POSS
'the next day' lit: 'its tomorrow'

Like verbal arguments and adverbs, locative phrases include a locative noun class prefix which van der Wal and Fuchs (2019) analyze as a locative *n* stacked on top of the NumP.

(28) a. pa-ki-inza
16-7-kitchen
'in the kitchen'

b.


[8] In the adverbial possessive contexts, the agreement on the possessor is always *y-*, which Ström (2013) shows is the agreement for gender [E] which collapses the sg/pl distinction and is called class 9/10. She also shows that borrowed words tend to show class 9/10 morphology and agreement. I take from this that class 9/10 represent default noun classes, and that the agreement in (26) and (27) is thus default agreement.

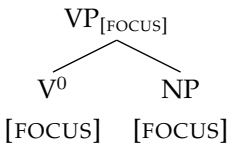
c. pa ⟷ [*n*:LOC]
ki ⟷ [Num:SG, *n*:D]
inza ⟷ $\sqrt{\text{KITCHEN}}$

2.3.2 *VP and verb focus*

To further investigate the restriction on the focus position to nominals, we turn to two additional types of focus: i) VP focus and ii) verb focus. VP focus is targeted by asking the question in (29); since the missing information is the action that Habiba is doing (the VP), answers constitute VP focus. I assume that when the VP is in focus, the VP node bears a [FOCUS] feature and crucially that this feature also appears on all elements inside of the VP, schematized in (30).

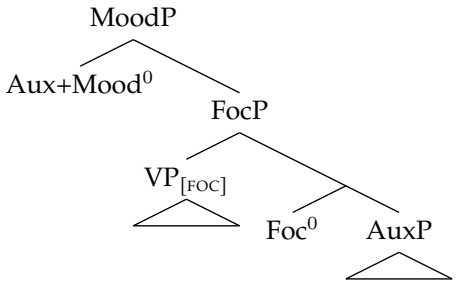
(29) Habiba [a-tend-a]$_V$ kılí?
Habiba 1.SM-do-FV what
'What is Habiba doing?'

(30)



VP focus in Ndengeleko does not results in VP or V movement. Instead, and somewhat surprisingly at first glance, the NP object moves to Spec,FocP. VP focus provides a good testing ground for the requirements of Spec,FocP because, as seen in (30), three elements bear a [FOCUS] feature: the VP, the verb, and the object. Presumably, the VP is the most local constituent with [FOCUS], and given no other restrictions on focus movement, we predict the VP to be targeted to move to Spec,FocP. Such VP focus movement might necessitate the use of an auxiliary verb to move to Mood to create the main verb of the clause. This hypothetical construction is schematized in (31).

(31) Hypothetical VP in Spec,FocP



Instead of full VP movement, only the nominal object appears in the IAV structural focus position when the VP is focused. (32-b) is given as an answer to the question in (32-a); in this answer, both the verb *pul* and the object *ngʊbô* are new information; however, only the object *ngʊbô* appears in the IAV focus position. Similarly to the context of new information focus, VP correction also requires that only the object is in the structural focus position immediately after the verb (32-c). This is striking because even though the entire VP is the focused constituent, a

subconstituent of the VP, namely the NP object, is the element that is targeted for movement to Spec,FocP.

(32) a. Habiba [a-tend-a]$_V$ kılí?
Habiba 1.SM-do-FV what
'What is Habiba doing?'

b. [A-pul-a]$_V$ **ngʊbô**.
1.SM-wash-FV 9.clothes
'She's WASHING CLOTHES.'

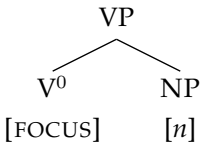
c. Weyuu, [a-sulus-a]$_V$ **igoombô**.
No, 1.SM-rinse-FV 8.dish
No, she's RINSING DISHES.'

In instances of VP focus, the VP bears a focus feature yet is unable to meet the requirements of the focus position; however, the nominal object does meet the requirements. This further supports the idea that the focus position is restricted to nominals.

Turning now to a final type of focus, verb focus, we see that if the only element bearing focus is a verb (a non-nominal), it must first undergo nominalization before it can ungergo focus movement to Spec, FocP. Verb focus can be elicited through verb corrections. The prompt is a statement with minimally a verb (with subject agreement) and its object; the response assumes the same subject and object, but the verb is replaced with the corrected verb. All verb focus data presented here have been elicited in this way.

A focused verb in a transitive VP results in a VP that minimally has: one focused non-nominal (V) and one non-focused nominal (NP object) (33). If the target of focus movement in Ndengeleko must have both [FOCUS] and [*n*], and neither feature alone will satisfy the probe's requirements, we predict that neither the verb head nor the out-of-focus object can move to Spec,FocP in these cases. This is indeed true in Ndengeleko.

(33)



In these cases, the verb cannot move to Spec,FocP in its bare form, shown in (34-a), which shows us that the feature [FOCUS] is not enough for the verb to appear in Spec,FocP. (In this example, an auxiliary occupies Mood^0. The sentence remains ungrammatical if the auxiliary is omitted.) In addition, the nominal object cannot move to Spec,FocP without receiving a focus interpretation (34-b), showing us that the [*n*] feature is not enough for the object to move to Spec,FocP either.

(34) a. *[N-and-á]$_V$ **telek-a** pilau.
[1SG.SM-AUX-FV]$_V$ cook-FV rice.
Int: 'I am COOKING rice.'

b. #[N-delek-a] **pilau**.
[1SG.SM-cook-FV rice.
Int: 'I am COOKING rice.'
Meaning: 'I am cooking RICE.'

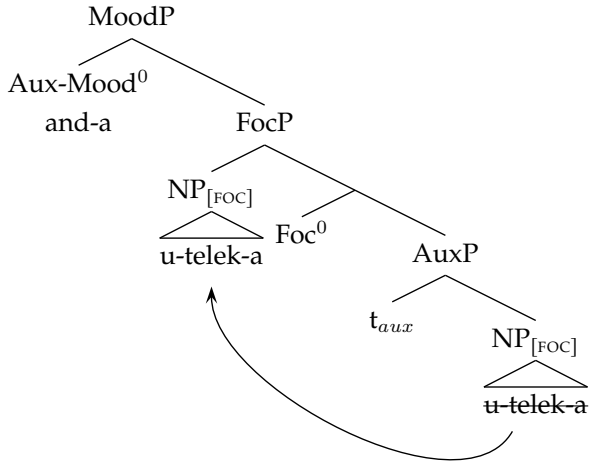
To express verb focus, the verb must be nominalized, shown in (35). This again supports the idea that both [FOCUS] and [*n*] must be found together for an element to appear in Spec,FocP. Nominalized verbs appear with the prefix *(k)u-*, which van der Wal and Fuchs (2019) analyze as the *n* head specified for infinitive (noun class 15), which nominalizes verbal projections of various sizes.

(35) *Nandóteleká pilau.*[9]

a. [N-and-á]$_V$ ***(ú)-telek-a** pilau.
[1SG.SM-AUX-FV]$_V$ 15-cook-FV rice.
'I am COOKING rice.'

In these nominalized focus constructions, an auxiliary verb, *anda*, takes subject inflection and moves to Mood^0. Here, the nominalized focused verb moves to Spec,FocP, shown in (36).

(36) Nominalized verb focus



Independent evidence that the *(k)u* prefix has a nominalizing function comes from the fact that this prefix allows verbs to be in subject position, control subject agreement, as well as appear with possessive modifiers.[10]

(37) [**Ku**-telek-a **kw**-aake]$_{SUBJ}$ [**ku**-nog-ike]$_V$
[**15**-cook-FV **15**-3SG.POSS] [**15.SM**-be.good-PFV]
'Her cooking is good.'

Though in many cases, complex morphophonology results in it being hard to detect the presence of the *(k)u* nominalizer, there is some direct evidence from verb focus constructions that *(k)u* is present. The unreduced nominalizing morpheme appears as the full *ku* before certain object markers, like class 1 *m-*, shown in (38) and (39).

[9] Ström (2013) shows that the final vowel *a* and the nominalizing (noun class 15) prefix *u* undergo fusion, pronounced as *o*. Accepting Strom's analysis of *o*, verb focus forms will appear throughout the paper in this underlying structural representation, though the reader should know that *a-u* sequences are pronounced as *o*.

[10] The [u] becomes the glide [w] before vowels as seen in *kwaake*.

(38) [A-and-a]$_V$ **kú**-m-pend-a kila muundu.
1.SM-AUX-FV **NMLZ**-1.OM-like-FV each person
'He LIKES each person.'

(39) [N-and-a]$_V$ **kú**-m-mon-a.
1SG.SM-AUX-FV 15-1.OM-see-FV
'I SEE him (often).' Ström (2013: 231)

It is important to note that when the past imperfective *-age* suffix appears on the auxiliary *and*, the class 15 *u-* is not visible (40). However, like the present tense examples in (38) and (39), object marking on the nominalized verb triggers the *ku-* allomorph seen in (41).[11]

(40) [N-and-ag-é]$_V$ ∅-gʊlʊá.
1SG.SM-AUX-IMP-FV 15-wash.
'I was washing.'

(41) [N-and-ag-e]$_V$ kw-í-gʊlʊá.
1SG.SM-AUX-IMP-FV 15-8.OM-wash.
'I was washing them.'

The presence of the nominalizing *(k)u-* prefix on the verbs in verb focus constructions indicates the presence of [*n*]. As illustrated in (36), the nominalized focused verb (now bearing *n* and FOCUS) undergoes movement to Spec,FocP. This operation structurally mirrors typical nominal focus of subjects and objects.

2.4 Rethinking the conjoint/disjoint alternation

The auxiliary verb used in verb focus has been called the disjoint morpheme in Bantu languages (van der Wal and Hyman 2017). Languages that have disjoint morphemes (typically a verbal prefix) show a contrast between disjoint verb forms and conjoint verb forms (those that lack the prefix). One of the ways to define the conjoint/disjoint alternation is the following, given by van der Wal (2017: 33) (emphasis added):

> "The conjoint/disjoint alternation is an alternation between verb forms that are formally distinguishable, that are associated with an **information-structural difference in the interpretation of verb and/or following element** and of which one form is not allowed in sentence-final position."

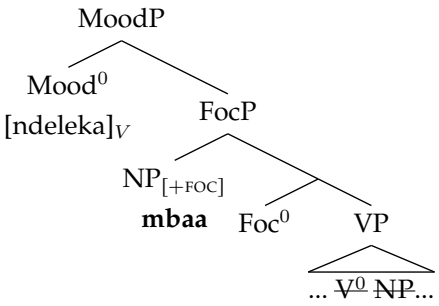
In her overview chapter on the conjoint/disjoint alternation in Bantu, Van der Wal shows that disjoint verb forms are typically used when the verb itself is in focus. In contrast, the conjoint verb forms are used when material following the verb is in focus. The analysis I present here offers a way to understand this pattern across languages: the disjoint morpheme is not simply a morpheme that encodes verb focus; the disjoint morpheme is an auxiliary verb that allows the verb to move into the structural focus position (Spec,FocP). A desirable consequence of this analysis of the disjoint verb form is that it unites both conjoint and disjoint forms structurally: in all constructions, a focused nominal moves to Spec,FocP, illustrated in examples (42-a) and (42-b) and schematized in (43) and (70). The "disjoint verb" is then simply the result of pronouncing the auxiliary verb and the nominalized verb together.

[11] There is variation in form between *and*, *end*, and even *ond* in nominalized verb focus. See Ström 2013: 230 for discussion.

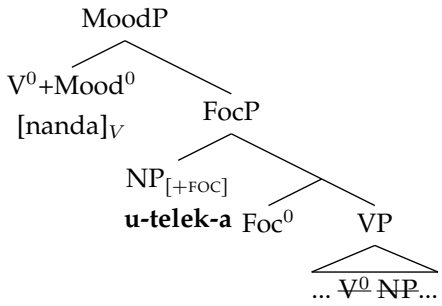
(42) a. CJ N-delek-a [mbaa]$_{FOC}$.
1SG.SM-cook-FV 9.rice
'I am cooking RICE.'

b. DJ N-and-a [u-telek-a]$_{FOC}$.
1SG.SM-AUX-FV 15-cook-FV.
'I am COOKING.'

(43) Object focus (conjoint)



(44) Verb focus (disjoint)



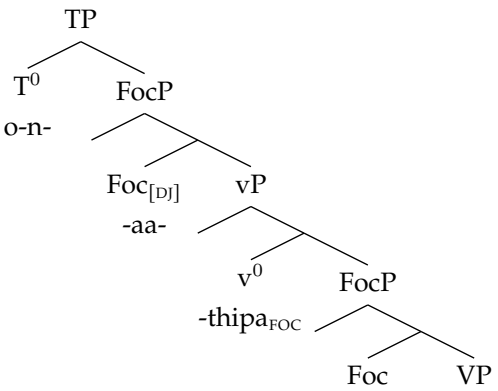
This analysis of Ndengeleko offers a novel structural analysis of "disjoint" verb focus in a Bantu language. van der Wal (2006) gives a different structural analysis of the distinction between the two verb forms in Makhuwa, a language very closely related to Ndengeleko. van der Wal posits a high FocP below TP and a low FocP below *v*P (*v*P here is the equivalent of MoodP). Under her analysis, conjoint verb forms, like in (45-a), represent nominal movement to the low FocP, like my analysis of Ndengeleko. However, she proposes that disjoint morphemes, like *áá* in (45-b), are the spell-out of the high FocP when the low FocP is empty, illustrated in (46).

(45) Makhuwa (van der Wal 2006: 234)

a. CJ o-n-thípa [nlittí]$_{FOC}$
3SG-PRES-dig 5.hole
'she digs a hole'

b. DJ o-n-áá-thípa [ ]$_{FOC}$
3SG-PRES-DJ-dig
'she's digging'

(46) Makhuwa disjoint clause in van der Wal 2006



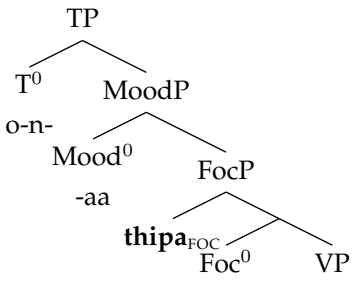
van der Wal explains that while the two focus projections are separate, they are related in that the higher one is spelled out differently depending on whether focus movement to the lower projection has occurred. The higher Foc head is null when the lower Spec,FocP is filled (conjoint forms); the higher Foc head is realized as *-aa-* when the lower Spec,FocP is empty (disjoint forms). I argue that this machinery and non-local conditioning of two Foc heads is not necessary if we apply the Ndengeleko analysis to Makhuwa, illustrated below. The focused Makhuwa verb moves to the specifier of the sole low FocP while the morpheme *-aa-* represents an auxiliary verb in *v*. The consequence is that the IAV focus position (Spec,FocP) in these cases is not empty– it is filled by the focused verb.

(47) Makhuwa (revised analysis)

a. CJ o-n-thípa [nlittí]$_{FOC}$
3SG-PRES-dig 5.hole
'she digs a hole'

b. DJ o-n-áá [thípa]$_{FOC}$
3SG-PRES-AUX dig
'she's digging'

(48) Makhuwa disjoint clause revised analysis (data from van der Wal 2006)



Regardless of the nominal status of the verb *thipa*, the benefit of this analysis of the conjoint/disjoint alternation is that the focus movement operation is unified across the two constructions: the probe on the focus head always moves a focused element to IAV position. Though an exciting area of future research, extending the analysis to other constructions and other languages that have prefixal disjoint marking is outside of the scope of this paper.

To summarize Section 2, the structural focus position in Ndengeleko is here analyzed as the specifier of a low focus projection within the verbal domain, which is linearly immediately after the verb (IAV). *Wh-* words and the new information in their answers obligatorily appear in this position. This position requires the focused element to be nominal, which is reflected structurally as a *n* head and identified morphologically by a noun-class prefix.

The key observation in this section is that all focused elements in the IAV position are inherently nominal or otherwise nominalized. Attempts to place non-nominal material in Spec,FocP (for instance, an entire VP, or a non-nominalized verb) result in ungrammaticality. This suggests that the syntactic operation responsible for focus movement is sensitive to two features at the same time: [*n*] and [FOCUS]. Crucially, both features must be found together on a single element for that element to undergo focus movement. In the next section, I will offer an analysis of these constructions in Ndengeleko in which syntactic Agreement (which the movement operation is predicated on) targets two features at once.

3 Formalizing conjunctive satisfaction

3.1 Assumptions and framework

The Ndengeleko data presented in Section 2 highlight the need for a theory of movement in which two features are required to be present together on an element in order for it to move. I start with the assumption that movement is built on an Agree relationship between a probe and a goal. I assume that probes are hosted on syntactic heads, along with other features that the head may bear; probes are therefore distinguishable from the heads that bear them. A probe hosted on a head can find one or more goals within its search domain thus establishing one or more Agree relationships. From there, I assume a separate movement operation may take place in which a goal undergoes movement to the specifier of the head on which the probe is located. Crucially, I assume that movement cannot take place unless an Agree relationship has first been established.

Recall in Ndengeleko that movement to Spec,FocP requires the moved element to have both [FOCUS] *and* [*n*]. An adequate theory of movement should account for the requirement that two features be present on a goal for it to undergo movement. Here,, I propose a movement analysis for two-feature systems like Ndengeleko that is predicated on Agree as conceptualized by Deal (2015, 2021). I propose an extension of this theory of Agree that offers a straightforward way to capture two-feature Agree. Deal (2015) proposes that probes come with two types of specifications. The first is the interaction condition, which specifies the features that a probe copies back to it. The second specification is the satisfaction condition: features that cause a probe to stop probing. In Deal 2015, the satisfaction condition is always given as a single feature, the copying of which halts further Agree by the probe.

(49) Probe specifications (Deal 2015)
   a. Interaction condition: features that a probe copies back
   b. Satisfaction condition: features that cause a probe to stop probing

I propose that the satisfaction condition of the probe on the Focus head in Ndengeleko has a conjunctive satisfaction condition: [FOCUS] and [*n*], as shown in (50).[12] The probe will not stop probing until it finds an element with both features together. The element that satisfies the probe undergoes movement.

(50) Probe specifications on Ndengeleko Foc^0:
[INT:$\mathcal{F}$] [SAT:FOCUS and *n*]

Two types of evidence support the conjunctive satisfaction analysis. The first is that the probe can continue probing past, or "skip," elements that only have one of the two relevant features (FOCUS and *n*). In Section 3.2, I show that focused non-nominals (FOCUS only) and non-focused nominals (*n* only) do not trigger movement. These elements also do not halt probing; the probe continues until it finds both features together.[13] The second piece of evidence, discussed in Section 3.3, is the strict requirement to fill the IAV position. If no focused nominal is available in the structure, the derivation is ruled out. Both pieces of evidence support the

[12] Baier (2018) proposed a feature set $\mathcal{F}$ to which all ϕ features (Φ) and $\bar{A}$ features ($\bar{A}$) belong: $\mathcal{F}$ = {Φ, $\bar{A}$}. Baier also locates [FOCUS] as a type of $\bar{A}$ feature. I further assume that *n*, insofar as it is synonymous with grammatical gender in Bantu, and that Φ includes at least person, number, and gender, fits under the Φ node. The analysis presented here does not depend on these assumptions, so long as the interaction condition contains both [FOCUS] and [*n*].

[13] In this way, the pattern is different from other mixed agreement patterns in which either feature will halt probing (see Branan and Erlewine 2024 on $\bar{A}$ probing for the closest DP). See Section 5 for more discussion.

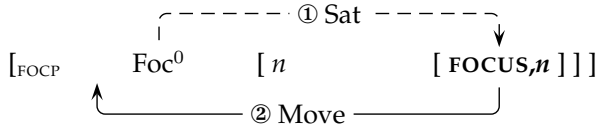
conclusion that the focus probe's satisfaction condition is specified as the conjunction of two features.

3.2 Only focused nominals satisfy the probe

3.2.1 Skipping of a non-focused nominal

The result of the conjunctive satisfaction condition is that non-focused nominals will not cause the probe to stop its search. In (51), the probe may interact with the non-focused nominal (illustrated with *n*) but it is only satisfied by the lower focused nominal and Agree is halted. Once that relationship is established, the focused nominal undergoes movement to Spec,FocP.

(51) Skipping of non-focused nominals



In Section 2, we saw data that exemplify the configuration in (51): focused indirect object movement, repeated in (52). Based on the baseline word order (S-V-DO-IO), I assume that the direct object is more local to the focus probe than the indirect object.[14] Thus, in (52-a), the non-focused direct object *kilyó* is skipped and the indirect object, which is both focused and nominal, moves to Spec,FocP.

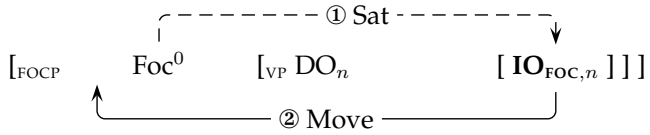
(52) In response to 'Who are you giving food to?'

a. V-**IO**-DO [Ni-m-pa-y-a]$_V$ **Nádya** ki-lyó.
1SG.SM-1.OM-give-APPL-FV Nadya 7-food.
'I'm giving NADYA food.'

b. #V-DO-**IO** #[Ni-m-pa-y-a]$_V$ ki-lyó **Nádya**.
1SG.SM-1.OM-give-APPL-FV 7-food Nadya.
Intended: 'I'm giving NADYA food.'

The pattern in (52) is predicted given the structure of the probe in (50) because the direct object only has *n*. The probe interacts with non-focused nominals, but since it is not satisfied by them, probing continues. The skipping of non-focused direct objects is illustrated in (53).

(53) Skipping of non-focused DO in (52)

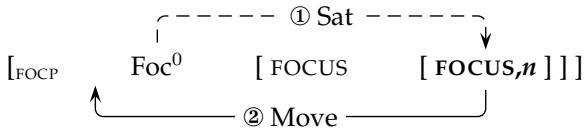


3.2.2 Skipping of a focused non-nominal

A second desired result of the conjunctive satisfaction condition is that focused non-nominals will not stop probing. In other words, the probe will skip instances of FOCUS that are not bundled together with *n*, schematized in (54).

[14] Nothing hinges on this assumption; if the IO c-commands the DO, then cases of DO focus movement over the IO would exemplify the probe skipping a non-focused nominal.

(54) Skipping of focused non-nominals



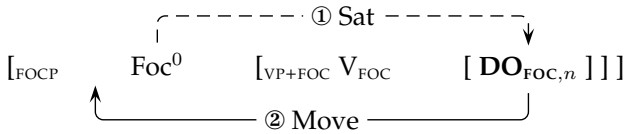
We saw this configuration in the case of VP focus, in which it is the direct object that is the target for focus movement. While the VP is the constituent in focus, and the focused verb (in V) is more local to the probe, it is the object (complement to V) that moves in (55-b) because it is a focused nominal, illustrated in (56).

(55) VP focus

a. Habiba [a-tend-a]$_V$ kılí?
Habiba 1.SM-do-FV what
'What is Habiba doing?'

b. [A-pul-a]$_V$ **ngʊbô**.
1.SM-wash-FV 9.clothes
'She's WASHING CLOTHES.'

(56) Skipping of focused verb in (55-b)



So far, we have seen that the probe will be satisfied by a focused nominal [FOCUS and *n*], but if it encounters either feature alone, it will continue probing. Further evidence for the conjunctive satisfaction condition comes from the ungrammaticality of the lack of a focused nominal.

3.3 EPP on Spec,FocP

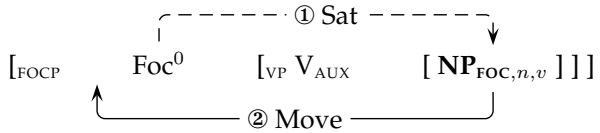
In addition to the Agree and Move operations, the Spec,FocP position has a strict EPP requirement: it can never be empty. Evidence for the EPP comes from intransitive verbs. In intransitive constructions, either the subject (57-a), or the nominalized verb (57-b) must appear IAV, reflecting the Spec,FocP position.

(57) a. [N-delek-a]$_V$ **neenga**.
1SG.SM-cook-FV 1SG.PRO
'It's me who is cooking.'

b. [N-and-á]$_V$ **ú-telek-a**.
[1SG.SM-AUX-FV]$_V$ **15-cook-FV**.
'I am COOKING.'

When the verb is focused, as in (57-b), it is nominalized and moves to spec,FocP. The schema in (58) illustrates the sequence of Agree and Move in such cases of focus movement. First, the focus probe is satisfied by the focused nominalized verb. Then, the focused nominal moves to spec,FocP.

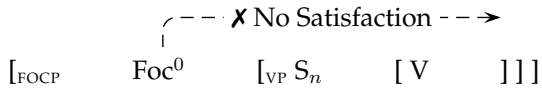
(58) Nominalized focused verb (57-b):



Surprisingly, in Ndengeleko, there is no way to express intransitive statements like "I'm cooking" without focus. In other words, leaving the IAV slot empty results in ungrammaticality, shown in (59). The only notable difference between (59) and (57) is that in (59) there is no focused nominal in IAV position. In these cases, the probe on Foc^0 remains unsatisfied and no movement occurs, schematized in (60).

(59) *[N-delek-a]$_V$.
1SG.SM-cook-FV
Int: 'I am cooking.'

(60) No satisfaction in (59):



Why should failed satisfaction lead to ungrammaticality? Following Béjar (2003) and Preminger (2014), I assume that Agree can fail without crashing the derivation. In the interaction/satisfaction framework, this means that a probe may or may not be satisfied, and nothing rules out a derivation with an unsatisfied probe. Instead, I argue the derivation crashes in (59)/(60) because nothing was moved to Spec,FocP, leaving it empty. We can formalize this with an EPP feature on the specifier of FocP. The EPP is not met in structures without a focused nominal, and this causes those derivations to be ruled out.

Here, I am making a crucial three-way distinction between Agree, Move, and the EPP, all of which are needed to give rise to the Ndengeleko pattern. Agree is the operation that establishes dependencies between probes and goals. Probes may interact with multiple elements in the clause before being satisfied. Therefore, the movement operation needs specific instructions regarding which element(s) in the Agree dependency to move (e.g., all interacted-with elements, just those that satisfied the probe, nothing at all). If nothing satisfies the probe, there is nothing to be moved, and the movement operation is not carried out. If it is not failed Agree nor failed movement that accounts for the ungrammaticality, it is the EPP: the empty specifier crashes the derivation. Under this view, the EPP is not the driving force of movement, but a filter on derivations that states that certain syntactic positions must not be empty. For the probe on Foc^0 in Ndengeleko, the three specifications are the following:

(61) The probe on Foc^0 in Ndengeleko:
a. Agree: [SAT: FOCUS and n]
b. Movement instructions: Move the element that meets the satisfaction condition.
c. EPP: Spec,FocP cannot be empty.

The conjunctive satisfaction condition offers a simple way to capture the movement fact in Ndengeleko. It captures the generalization that a single probe can search its domain and only stop probing if it reaches an element with exactly two features. If the two features are not found together, satisfaction is not obtained. The focus position in Ndengeleko has a strict EPP and thus forces focused elements to be nominals to fill the position.

In the next section, we'll see that not all mixed A/Ā phenomena are due to conjunctively satisfied probes. Taking Kipsigis (Bossi and Diercks 2019) as a case study, we find that some mixed A/Ā patterns arise due to independent A and Ā probes situated on the same head. The result is that the two probes can and often do target the same element, but if the element with Ā does not have the relevant A feature, the derivation does not crash like in Ndengeleko. Instead, each probe causes an independent movement operation and two elements are moved.

4 Two probes: evidence from Kipsigis

The key empirical observation in cases of A/Ā movement involving two probes is that when the A and Ā features are found separately, schematized in (62), hosts of both features move independently. In this section, I show evidence of this structure in Kipsigis (Bossi and Diercks 2019), in which the mixed A/Ā position is due to independent A and Ā probes situated on the same head. When the Ā and A features are found separately, they are targeted separately and produce two movements.

(62) [X^0[D][Ā] [DP ... YP[Ā]]]

In Kipsigis, when both features are found on one single element, that element seems, on the surface, to satisfy both probes simultaneously. I argue that this is an illusion brought about by cyclic Agree (Rezac 2003, Béjar 2003). Once the first probe has moved the element to the specifier of the head hosting the two probes, it now counts as the closest to the remaining probe. The two probes do not interact, yet the result is movement of one element bearing both an A and Ā feature.

4.1 Kipsigis structural Ā position

Kipsigis is a Kalenjin language spoken in western Kenya. While the verb appears systematically in initial position, Bossi and Diercks (2019) show that the order of elements after the verb is dependent on information structure. They identify the immediately postverbal position (IPP) as the position to which discourse-prominent constituents move. Discourse prominence, which the authors represent with [δ], does not neatly map onto the notions of topic or focus. Any argument of the verb can appear in the IPP if it is, for example, a *wh-* word (shown in (63)-(65)) or a response to a *wh-* question.

(63) S Kii-∅-goo-chi **ngo** Kibet kitabut?
PST-3SG-give-APPL who Kibet book
'Who gave Kibet a book?' (Bossi and Diercks 2019: 8)

(64) DO Koo-∅-goo-chi **nee** Chepkoech Kibet?
PST-3SG-give-APPL what Chepkoech Kibet?
'What did Chepkoech give Kibet?' (Bossi and Diercks 2019: 8)

(65) IO Kii-∅-goo-chi **ngo** Chepkoech kitabut?
PST-3SG-give-APPL who Chepkoech book
'Who did Chepkoech give a book?' (Bossi and Diercks 2019: 8)

Bossi and Diercks also observe an important restriction on this position: it can only be occupied by nominals (which they represent as elements with [D]). This restriction can be seen by looking at the difference between the behavior of manner and temporal adverbs. Temporal adverbs show properties of nominals, while manner adverbs do not. Temporal adverbs can

function as the subject of a copular sentence, shown for *amut* 'yesterday' in (66). No such construction is possible in Kipsigis with a manner adverb.

(66) Koo beetut nemie amut.
PST day good yesterday
'Yesterday was a good day.' (Bossi and Diercks 2019: 9)

Temporal adverbs are also distinguished from manner adverbs in their ability to appear in the structural focus position. The word order in (67) shows that the focused temporal adverb can move to the IPP when it is discourse prominent. As (67) also shows, the remaining elements in the sentence (here the subject and object) can appear in any order after the IPP.

(67) a. [Koo-∅-e]$_V$ **amut** tuga bek.
PST-3PL-drink yesterday cows water
'The cows drank water YESTERDAY.' (Bossi and Diercks 2019: 9)

b. [Koo-∅-e]$_V$ **amut** bek tuga.
PST-3PL-drink yesterday water cows
'The cows drank water YESTERDAY.' (Bossi and Diercks 2019: 9)

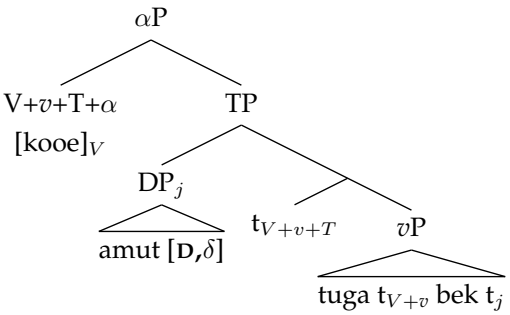
By contrast, manner adverbs, in addition to not being able to function as subjects, cannot appear in the IPP when discourse prominent. The focused adverb *komie* 'well' in (68) is infelicitous in the IPP.

(68) a. #[Koo-∅-min]$_V$ **komie** lagok bandek.
PST-3PL-plant well children maize
Int: 'The children planted the maize WELL.' (Bossi and Diercks 2019: 9)

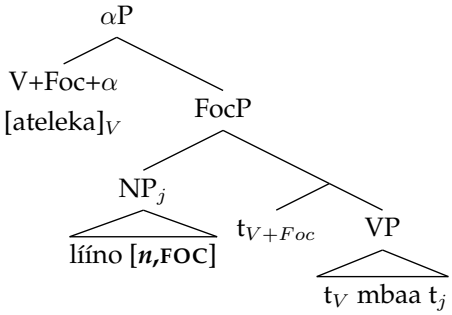
b. #[Koo-∅-min]$_V$ **komie** bandek lagok.
PST-3PL-plant well maize children
Int: 'The children planted the maize WELL.' (Bossi and Diercks 2019: 9)

Bossi and Diercks assume that the surface IPP for elements bearing [δ] is Spec,TP, and based on the adverb data, conclude that the requirements on this position are [D] and [δ]. That the verb is immediately before this Spec,Tp is due to the verb moving to the projection (αP) immediately above TP. The [δ] position in (69) structurally matches the analysis given for IAV focus in Ndengeleko, shown again in (70) with the focused word *lííno* 'today'.

(69) Kipsigis IPP [δ] (71-a)



(70) Ndengeleko IAV focus (72-a)



(71) *Kipsigis*

a. [Koo-∅-e]$_V$ **amut** tuga bek.
PST-3PL-drink yesterday cows water
'The cows drank water YESTERDAY.' (Bossi and Diercks 2019: 9)

(72) *Ndengeleko*

a. Habíba [a-telek-a]$_V$ **lííno** mbáa.
Habiba 1.SM-cook-FV today rice
'Habiba is cooking rice TODAY.'

The head responsible for the movements in each language is different (T in Kipsigis and Foc in Ndengeleko), yet the adjacency between the verb and the Ā element results from movement of the Ā element to a specifier structurally adjacent to the final landing site of the verb.

4.2 When A and Ā are found separately: two movements

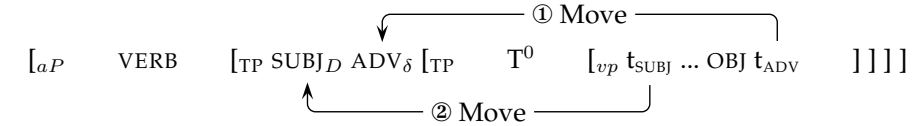
Though the Ā positions are structurally alike in Kipsigis and Ndengeleko, Kipsigis shows different behavior when non-nominals are discourse prominent. Recall in Ndengeleko that non-nominals (verbs) must be nominalized in order to undergo focus movement. This is not the case in Kipsigis. Recall that it is infelicitous to move focused manner adverbs to the IPP.

When manner adverbs are focused, they do not appear immediately after the verb, but in the "second position after verb" (Bossi and Diercks 2019: 9), while the subject is immediately postverbal. In (73), the non-focused subject *lagok* 'children' is the highest element with [D] and *komie* 'well' is the highest element bearing [δ].

(73) [Koo-∅-min]$_V$ lagok$_D$ **komie**$_\delta$ bandek.
PST-3PL-plant children well maize
'The children planted the maize WELL.' (Bossi and Diercks 2019: 18)

Bossi and Diercks argue that the construction in (73) involves two movements. First, the focused adverb moves to Spec,TP. Then the highest nominal moves to an outer specifier, resulting in the V-S-Adv-O linear order in (73).[15]

(74) Two movements in (73)



In all cases of non-nominal focus, the closest element with [D] is the subject, resulting in the subject appearing immediately after the verb. The object cannot serve as the element with [D] which moves to Spec,TP, as shown by the infelicity of (75).

(75) #[Koo-∅-min]$_V$ bandek **komie** lagok.
PST-3PL-plant maize well children
Int: 'The children planted the maize WELL.' (Bossi and Diercks 2019: 18)

An adequate formalization of the two movements in Kipsigis must answer the following questions: What drives movement to Spec,TP in Kipsigis? How is the [D] requirement satis-

[15] As Bossi and Diercks admit, the ordering of the probes must be stipulated.

fied? How are the two probes seemingly able to target the same goal? In short, I argue that the answers are as follows:

(76) 1.What drives movement to Spec,TP in Kipsigis?
Answer: Two independent probes, one A and one Ā, Agree with and trigger movement of elements with A and Ā features, respectively.

2.How is the [D] requirement satisfied?
Answer: The A probe is an independent Agreem probe and triggers movement of the highest [D] element.

3.How are the two probes seemingly able to target the same goal?
Answer: cyclic Agree (Rezac 2003, Béjar 2003): The element moved by probe 1 becomes the highest element in the domain of probe 2.

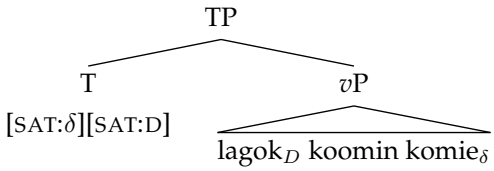
I follow Bossi and Diercks in analyzing derivations with discourse prominent non-nominals in Kipsigis as reflecting two movement steps whereby the first movement step is driven by a [δ] probe on T. However, I differ from their analysis with respect to what drives movement of elements bearing [D]. For Bossi and Diercks, Spec,TP has an EPP feature which can only be checked by a nominal (with [D]). If the [δ] probe moves a non-nominal, the [D] feature is checked via "Last Resort" movement in which the most local nominal raises to a higher specifier position of Spec,TP. In this sense, there is no [D] probe which drives movement.

Alternatively, I propose that the second movement step that moves the highest nominal reflects a separate [D] probe on T. The [δ] and [D] probes initiate separate Agree searches and separate movement operations.

(77) Two probes on Kipsigis T^0[16]
a. [SAT: δ]
b. [SAT: D]

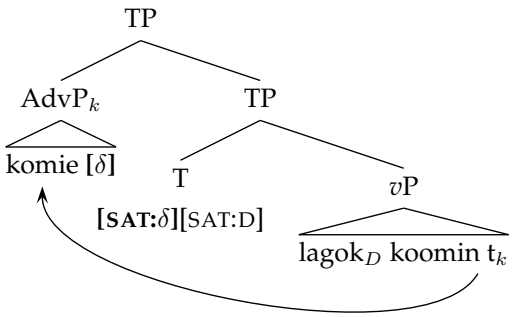
The derivation of focused manner adverb clauses like (73) proceeds as follows: T merges with two probes (78). Following Bossi and Diercks, the [δ] probe searches its domain first. The [δ] probe Agrees with (i.e. is satisfied by) *komie*$_\delta$, and *komie*$_\delta$ moves to Spec,TP (79).

(78) T merges with two probes



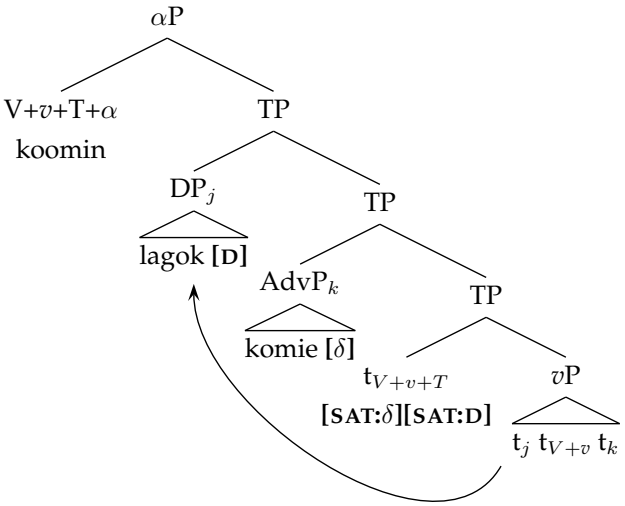
[16] In this paper, I am only focusing on Satisfaction conditions; various hypotheses about interaction conditions are compatible with my proposal.

(79) Focused adverb movement



Once the focused manner adverb has moved to Spec,TP, the [D] probe searches its domain (to be further defined in Section 4.3). The [D] probe is satisfied by *lagok*$_{\text{D}}$ 'children,' and moves it to an outer specifier of TP (80). Then, the verb moves to α and the result is V-S-Adv word order.

(80) IPP filled by two elements (structure adapted from Bossi and Diercks 2019: 18)



In the derivation in (78)-(80), two Agree relationships are established, each triggering a separate movement operation. This example of two movements is exactly what we do not find in Ndengeleko, which has one conjunctively satisfied probe as opposed to Kipsigis' two probes. In Ndengeleko, if the A and Ā feature are found on separate elements, a structure with two movements is ungrammatical. The examples in (81) show two movement steps are ungrammatical; an un-nominalized verb cannot move to the IAV position or the second position after the verb.

(81) a. *[Ba-and-a]$_V$ **yɪɪmba**$_{FOC}$ a-míséembe$_n$
2.SM-AUX-FV sing 2-boy
Intended: 'The boys are SINGING.'

b. *[Ba-and-a]$_V$ a-míséembe$_n$ **yɪɪmba**$_{FOC}$
2.SM-AUX-FV 2-boy sing
Intended: 'The boys are SINGING.'

The difference between (73) (Kipsigis) and (81) (Ndengeleko) reveals that non-nominal focus provides a good diagnostic for identifying the structure of the probe driving A/Ā movement in a given language. If both the highest A element and the highest Ā element undergo movement, this suggests two independent A and Ā probes. If two movements are ungrammatical, and movement proceeds if and only if there is a [A+Ā] element, this suggests one conjunctively satisfied probe.

4.3 When A and Ā are found together: one movement

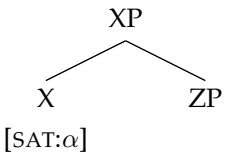
We have seen what happens in Kipsigis if [D] and [δ] are found separately. However, in the more typical case of focus, a nominal is focused, and only that focused nominal moves. An example is repeated below for the object *wh-* word *nee* 'what.'

(82) DO Koo-∅-goo-chi **nee** Chepkoech Kibet?
PST-3SG-give-APPL what Chepkoech Kibet?
'What did Chepkoech give Kibet?'

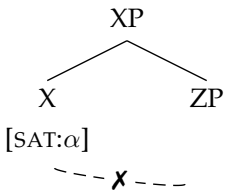
In this example, *nee* satisfies the [D] probe and the [δ] probe alike. Bossi and Diercks (2019) propose that the [D] probe only ever triggers movement as a "last resort" mechanism if the element moved by [δ] lacks [D]. While the implementation of any last resort mechanism is not obvious, I will show that the facts can be explained by assuming cyclic Agree (Rezac 2003, Béjar 2003). This also removes the need to add extra "fusion" mechanisms.

On a cyclic Agree analysis, a head X bears a probe and initiates an Agree search in its c-command domain, which is the constituent it merges with first, ZP in (83). If the probe fails to establish an Agree relationship in the first cycle or is not satisfied and thus continues probing (84), then when the head reprojects (85), the probe reprojects as well. I assume in Step 3 that the probe is simultaneously in both positions and its c-command domain is the union of the first cycle domain and the second cycle domain of Agree. In Step 4 (86), the specifier is merged and the probe now interacts with the specifier first. If the constituent in the specifier meets the requirements of the probe, Agreement is established.

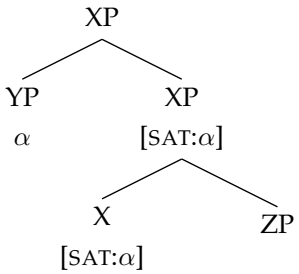
(83) Step 1: Merge



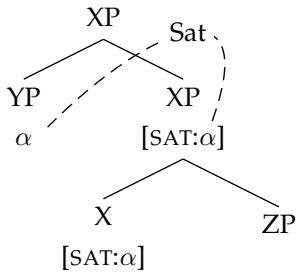
(84) Step 2: First cycle Agree fails to stop probing



(85) Step 3: reproject and merge

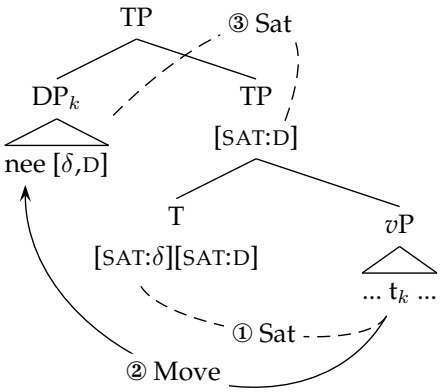


(86) Step 4: Second cycle Agree



I propose to extend this cyclic Agree analysis to cases with two probes on one head to capture the movement of one element with both [δ] and [D], like in (82). The timing of movement is crucial to the analysis: the first probe must finish searching, copying back features, and moving an element to the specifier before the second probe begins searching. For Kipsigis I propose the following: the [SAT:δ] probe on T searches its domain and Agrees with the focused nominal, DP_k (step ① in (87)). Then, DP_k moves to Spec,TP (step ②). Since the [D] probe has not initiated its search at this point in the derivation, it is considered unsatisfied and reprojects to the new intermediate TP node created by movement of DP_k. When the [D] probe reprojects, its c-command domain now includes the element in the specifier, DP_k.

(87) DP [δ,D] movement: [SAT:D] reprojects



When the [D] probe searches its new domain, the closest nominal in its domain is the DP in Spec,TP and the probe is satisfied (step ③). If we assume the movement instructions of the [D] probe to be "move the element which satisfied the probe to Spec,TP," then these instructions are already met and no further movement takes place. This results in the appearance of the [δ] and [D] probes "working together" to move the focused nominal.

In comparing Ndengeleko to Kipsigis, we see a different pattern of mixed A/Ā movement in Kipsigis, which I argue reflects a different probe structure. In Ndengeleko, the two features are truly sought together, reflecting a probe with a conjunctive satisfaction condition: [A and Ā]. However, we see that the empirical picture differs in Kipsigis when the two features are hosted on separate elements. For example, when a non-nominal hosts the Ā feature, it moves to a secondary position after the verb, while the highest nominal appears in the IPP. This word order indicates two movements to Spec,TP, which reflects two independently satisfied probes situated on T. When both A and Ā features are found on one single element, the mechanics of cyclic Agree allow the [D] probe to be satisfied by the nominal moved by the [δ] probe. In these cases, the two probes do not interact, yet the result is movement of one element bearing both an A and Ā feature. For any movement with mixed A/Ā properties, it is thus crucial to look at instances in which the A and Ā features are found separately. If two independent movement steps are possible, the relevant head hosts two independent probes.

5 Conclusion

Clear empirical differences exist between various types of mixed A/Ā movement. In this paper, I argue that two main types are distinguished by whether the A and Ā features are sought conjunctively or independently. I argue that the idea of an Agree probe seeking features con-

junctively is best captured by specifying a probe's satisfaction condition as the conjunction of two features [A and Ā], building on Deal 2015 and Deal 2021.

Ndengeleko exemplifies the first type of A/Ā movement in which the relevant probe is satisfied by the conjunction of features [A and Ā]. This type of probing is characterized by the fact that the two features must be found together on one element. If an Ā bearing element does not have the relevant A feature, it can not satisfy the probe and thus cannot undergo Ā movement. The pattern in Ndengeleko is indeed found in other languages with mixed A/Ā agreement as well. Colley and Privoznov (2020) show that in Khanty, for example, movement to subject position requires both [TOPIC] and [ϕ].

In Section 4, we saw the second type of mixed A/Ā movement, exemplified by Kipsigis, in which the A and Ā features are sought separately. I argued that this reflects two independent probes situated on the same syntactic head. This two-probe structure is distinguished from conjunctive satisfaction in constructions in which the two features are hosted by separate elements: because there are two probes, each element (one bearing A and one bearing Ā) undergoes movement. This is captured by stating that each probe has an independent satisfaction condition [SAT:A] [SAT:Ā] and therefore independent movement operations may result. I argued that although the two probes seem to operate as one when both features are found together, this is an illusion brought about by the mechanics of cyclic Agree. Once again, this pattern is not uniquely found in Kipsigis; it is indeed found in other languages with mixed A/Ā agreement. van Urk (2015) shows that in Dinka Bor, movement to spec,*v*P seems to target both [Ā] and [ϕ] features, yet when the two are found separately, there is evidence that two movements occur, suggesting the presence of two independent probes.

The analysis presented here of two types of mixed A/Ā movement allows us to begin to make finer distinctions within the umbrella of what have been called "composite" or "fused" probes (Coon and Bale 2014, van Urk 2015). If the analysis proposed here for Ndengeleko and Kipsigis can be extended with full generality, we do not need extra fusion mechanisms that take two independent probes and create one composite probe. Building on existing ideas such as satisfaction conditions and cyclic Agree, we can account for two robust and distinct empirical patterns of mixed A/Ā movement. This paper also offers a diagnostic for distinguishing the two types of mixed agreement. In the case that the A and Ā features are found separately, a conjunctively satisfied probe will only ever result in one movement operation of a single element bearing both features, while if there are two probes, two movement operations take place.

The notion of a conjunctive satisfaction condition applies to the Agree operation broadly, which makes predictions outside of the domain of mixed A/Ā movement. First, we predict the existence of conjunctively satisfied ϕ probes. Preliminary evidences suggest that this prediction is borne out. Coon and Bale (2014) show that Mi'gmaq (Algonquian) subject agreement is based on a person/number hierarchy. Highest on that scale is not a single person or number feature, but the conjunction of [SPKR] and [PL]. While they implement their analysis with a fusion algorithm, the preference for 1PL is easily captured by a conjunctive satisfaction condition: [SAT:SPKR and PL]. In addition, conjunctive satisfaction might be able to capture case discriminating agreement. For example, in Hindi, T agrees with the highest non-overtly case marked nominal argument (Bhatt 2005). This can be formalized with a probe satisfied by the conjunction of an unmarked case feature and ϕ.

This research gives a systematic framework to think about complex probes and agreement for more than one feature at a time. The empirical patterns presented here suggest that conjunctive (and perhaps disjunctive) satisfaction is a fundamental aspect of natural language. The predictions and extensions of the current analysis provide a fruitful area of further research and rethinking of how two features can interact in the Agree operation.

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