

Rethinking verbal domains: Successive cyclicity and DP intervention

Stefan Keine
UCLA
(presenting joint work with Hedde Zeijlstra)

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1. Introduction

- **Verbal locality domains**

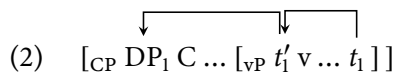
It is standard to view verbal domains as locality domains analogous to CPs. Standard phase theory views both vP and CP as subject to the PIC (Chomsky 2000, 2001):

- (1) *Phase Impenetrability Condition* (Chomsky 2000: 108)

In phase α with head H, the domain of H is not accessible to operations outside of α , only H and its edge are accessible to such operations.

- **Consequences for extraction:**

1. Extraction must proceed successive-cyclically through the vP phase edge.



2. If movement through the vP edge is not possible, extraction out of vP is prohibited.
3. Agree initiated by a vP-external head may only access the edge of the vP edge.

- **Arguments against vP phases**

Some of the recent literature has argued against vP phases:¹

1. Long-distance agreement can cross arbitrarily many vPs but not CPs (Keine 2020b);
2. Phase-bounded movement can cross vPs but not CPs (Grano & Lasnik 2018);
3. Negative concord and strong NPI licensing can cross vPs but not CPs (Zeijlstra 2004, 2012, Giannakidou & Zeijlstra 2017);
4. Dependent-case assignment can cross vPs but not CPs (Poole 2022).

- **Proposal: DP intervention**

We will explore an approach that dispenses with verbal locality domains. Instead, the apparent effect of verbal locality domains is attributed to *DP intervention*.

¹ Also see Keine (2020a) and Mendes & Ranero (2021).

(3) *DP-intervention*

Obligatory successive-cyclic movement through a clause-internal position is the result of leapfrogging around an intervening DP.

- Recent work by Aldridge (2004, 2008a), Branan & Erlewine (2021), and Coon et al. (2021) has argued that \bar{A} -probes may be specified in such a way that they may only attract the structurally closest DP:

(4) *\bar{A} -attraction of the closest DP*

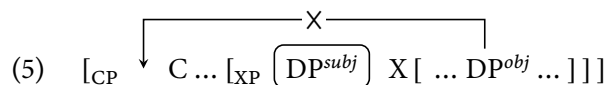
An \bar{A} -probe can be specified to only attract the structurally closest DP.

- Effect 1: Extraction restriction**

The key evidence for (4) comes from extraction restrictions: C may only attract the highest DP (e.g., a subject-only extraction pattern).

- Effect 2: Successive cyclicity**

We argue that (4) also offers a fresh look at successive cyclicity. Extraction of DPs other than the highest one is possible if those DPs can *leapfrog* around the intervening DP (for leapfrogging, see Bobaljik 1995, McGinnis 1998, and Branan 2022). This produces successive cyclicity, but without appeal to verbal locality domains.



- Consequence**

On this account, successive-cyclic movement of non-subjects is derived without appeal to verbal locality domains or vP phases.

- Roadmap:**

§2: **Voice and DP intervention in Standard Indonesian**

motivates DP intervention through subject-only extraction restriction, demonstrates empirical overlap with vP phase, shows how DP intervention results in successive-cyclic movement

§3: **Successive cyclicity in Dinka**

extends DP-intervention account to a pattern where object extraction is possible but with morphological reflex (of leapfrogging, we propose)

§4: **Extraction marking in Defaka**

argues that we find such morphological reflexes outside of the verbal domain as well if the intervener DP is sufficiently high

§5: **Conclusion**

2. Voice and DP intervention in Standard Indonesian

- We consider the interaction between voice and \bar{A} -extraction in Standard Indonesian (SI), based on Cole et al. (2008) (for an analogous pattern in Sarolangun Malay, see Cole et al. 2008; for Acehnese, see Legate 2011; and for Balinese, see Wechsler & Arka 1998).²
 - ▷ The crucial generalization is that the only DP that may undergo \bar{A} -extraction in a clause is the subject (i.e., the highest DP) of that clause (related subject-only extraction patterns are also observed in other Austronesian languages, see, e.g., Keenan & Comrie 1977, Aldridge 2004, 2008a, and Rackowski & Richards 2005).
 - ▷ The discussion in this section first serves to illustrate the kind of empirical pattern that motivates the closest-DP restriction on \bar{A} -probes (4). We then develop a DP-intervention account and compare it to a vP-phase account as proposed by Cole et al. (2008).

2.1. Voice and \bar{A} -extraction

2.1.1. Active voice

- **Background**

In SI, the verb in active-voice clauses bears the prefix *meN-*, which is obligatory with transitive verbs:

(7) *Active voice*

Tono ***(mem-)**beli buku di toko buku.

Tono ***(ACT-)**buy book LOC store book

‘Tono bought a book at the bookstore.’

[Cole et al. 2008: 1504, ex. (3), (4)]

- The subject of an active clause must precede negation and temporal markers:

(8) *Subject precedes negation and temporal markers*

a. **Kami** tidak akan mem-baca buku ini
we not will ACT-read book this
‘We will not read this book.’

b. *Tidak akan **kami** mem-baca buku ini
not will we ACT-read book this
‘We will not read this book.’

[Cole et al. 2008: 1512, ex. (38), (39)]

- **Clause structure**

Following Cole et al. (2008) and others, we assume the clause structure in (9).

(9) *Active-voice clause structure*

[_{TP} kami_i [_{NegP} tidak [_{ModalP} akan [_{VP} t₁ mem- [_{VP} baca buku ini]]]]]]]
we not will ACT- buy book this

² By “Standard Indonesian”, Cole et al. (2008) refer to prescriptive Standard Indonesian, which differs from other (standard-like) varieties commonly discussed in the syntactic literature in certain respects (some of which will be relevant here).

- **\bar{A} -extraction restriction**

The only DP argument that can be extracted is the subject (Cole et al. 2008):

(10) *\bar{A} -extraction of DPs is limited to subject*

- a. **Siapa₁** yang ___₁ mem-beli buku di toko buku?
 who C ACT-buy book LOC store book
 ‘Who bought the book at the book store?’
- b. ***Apa₁** yang Tono mem-beli ___₁ di toko buku?
 what C Tono ACT-buy LOC store book
 ‘What did Tono buy at the book store?’

[Yanti, p.c.]

- ***PP extraction***

\bar{A} -movement of PPs is not subject to this restriction. PPs may be extracted in the active voice even if they originate in a vP-internal position (also see Cole & Hermon 1998, Soh 1998, Fortin 2007, Sato 2012).

(11) *PP extraction possible in agent voice*

- Kepada siapa₁** Mary akan mem-beri buku itu ___₁?
 to whom Mary FUT ACT-give book the
 ‘To whom did Mary give the book?’

[Yanti, p.c.]

2.1.2. Object voice

- A second voice in SI is the *object voice* (Chung 1976a,b, Cole & Hermon 1998, 2005, Cole et al. 2008, Sato 2012).

- ***Properties:***

- ▷ The verb does not bear *meN*-.
- ▷ The external argument (EA)—*kami* ‘we’ in (12)—is obligatorily present, but it must appear in the immediately preverbal position, following negation and temporal markers if these are present (Cole et al. 2008).
- ▷ The regular subject position (preceding negation and temporal markers) is occupied by the internal argument (IA)—*buku ini* ‘this book’ in (12).

(12) *Object voice*

- a. *Buku ini* tidak akan **kami** baca
 book this not will we ov.read
 ‘This book will not be read by us.’
- b. **Buku ini* **kami** tidak akan baca
 book this we not will ov.read
 ‘This book will not be read by us.’

[Cole et al. 2008: 1512, ex. (37)]

- **Clause structure**

The previous literature has argued that in this construction (i) the agent is an argument DP rather than an adjunct (Alsagoff 1992, Guilfoyle et al. 1992, Arka & Manning 1998, Cole et al. 2008), and (ii) the preposed IA is in an A-position (Chung 1976a,b).³

- Following Cole et al. (2008), we adopt the clause structure in (13). The IA moves to the subject position in [Spec,TP] and the EA remains in [Spec,vP].⁴

(13) *Object-voice clause structure*

[_{TP} buku ini_i [_{NegP} tidak [_{ModalP} akan [_{vP} kam baca t₁]]]]
 book this not will we read

- **\bar{A} -movement**

Like the active voice, the object voice exhibits an extraction restriction: the only DP that may be extracted is the subject, in this case the IA. Extraction of the EA is ill-formed (Cole et al. 2008, also see Yanti 2010 and Legate 2014).⁵

(14) *Only subject may be extracted in object voice*

- a. **Apa_i** yang ____i akan kamu lihat?
 what that will you ov.see
 ‘What will you see?’
- b. ***Siapa_i** yang buku ini akan ____i lihat?
 who that book this will ov.see
 ‘Who will see this book?’

[Cole et al. 2008: 1508, ex. (22b,c)]

- **Conclusion**

DP \bar{A} -extraction is limited to the subject: EA in the active voice; IA in the object voice.⁶

³ For (i), the agent may bind a preposed reflexive IA (Arka & Manning 1998); for (ii), the preposed IA may be PRO (Chung 1976a,b).

⁴ Also see Guilfoyle et al. (1992), Cole et al. (2008), Sato (2012), Legate (2014).

⁵ If the wh-EA remains in situ, (14b) is grammatical. This makes it clear that we are dealing with a constraint on movement.

⁶ Further support for this conclusion comes from word order (Cole et al. 2008). (ia) involves relativization of an IA. Such relativization is possible in (ia), but not in (ib). The placement of the subject *kami* ‘we’ to the right of *akan* ‘will’ makes it clear that (ia) involves an object-voice source, with movement of the IA relative operator to [Spec,TP], followed by relativization from there. By contrast, in the ungrammatical (ib), the subject position is occupied by the EA *kami*, which relativization of the IA crosses. The resulting structure is ungrammatical.

(i) *Only subject may undergo \bar{A} -extraction*

- a. [_{DP} Buku [_{CP} yang ___ tidak akan *kami* baca]] sangat menarik
 book that not will we read very interesting
 ‘The book that we will not read is very interesting.’
- b. *[_{DP} Buku [_{CP} yang *kami* tidak akan baca ___]] sangat menarik
 book that we not will read very interesting
 ‘The book that we will not read is very interesting.’

[Cole et al. 2008: 1513, ex. (42)]

In this respect, SI differs from other varieties of Indonesian (see in particular Cole & Hermon 2005, Cole et al. 2008, and Yanti 2010 for relevant discussion).

2.2. Extraction restrictions and vP phases

- Cole et al. (2008) develop an analysis of the SI extraction pattern based on vP phases. We argue instead that these facts are better understood as DP intervention rather than a verbal locality domain.

- **Basic clause structure**

Following Cole et al. (2008), we assume the basic clause structures in (15), also see Legate (2014).⁷

- (15) a. *TP structure of active voice*

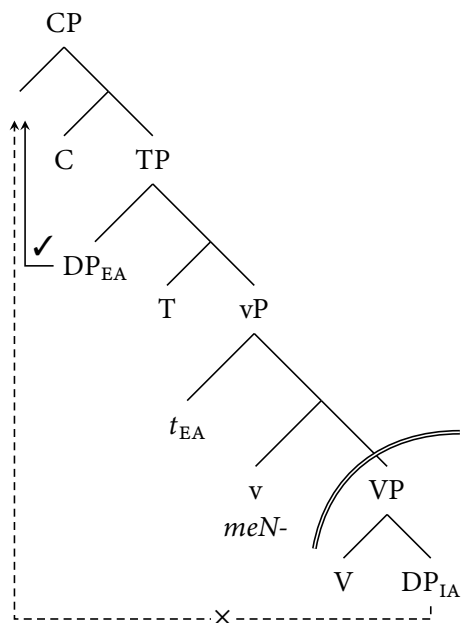
$$[_{TP} DP_{EA} T [_{vP} t_{EA} v (\Rightarrow meN-) [_{VP} V DP_{IA}]]]$$
- b. *TP structure of object voice*

$$[_{TP} DP_{IA} T [_{vP} t_{IA} DP_{EA} v (\Rightarrow \emptyset-) [_{VP} V t_{IA}]]]$$

- **Extraction restriction**

We saw that in the active voice the EA is the only DP that may undergo \bar{A} -movement. Cole et al. (2008) propose that this is the result of vP phases.

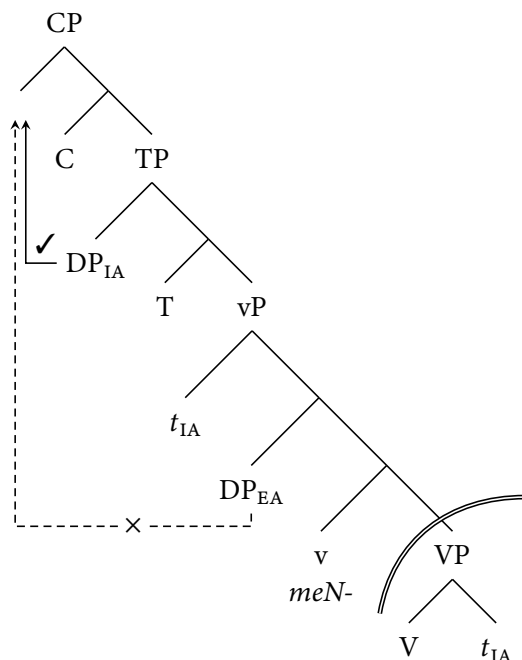
- (16) *\bar{A} -extraction limitation in active voice*



- In the object voice, by contrast, only the IA may undergo \bar{A} -extraction, the EA may not.

⁷ The view that *meN-* realizes *v* or Voice is also found in Aldridge (2008b), Sato (2012), Georgi (2014), and Legate (2014), among others.

(17) *\bar{A} -extraction limitation in object voice*



- ***vP phases: Puzzle 1***

Cole et al.'s (2008) vP-phase account correctly derives the extraction restriction in the active voice, but not the restriction in the object voice (see (14)). This is because the EA is located at the phase edge. The fact that it cannot undergo \bar{A} -movement therefore does not follow from vP phasality unless further assumptions are made (see Cole et al. 2008 and Legate 2014: 59–64 for proposals).

- ▷ A vP-phase account misses the overarching generalization that only the highest DP may undergo \bar{A} -movement across the two voices.

- ***vP phases: Puzzle 2***

The extraction restriction applies only to DPs. PPs may freely undergo \bar{A} -movement in the active voice, even if they originate within the vP (see in particular (18)). But the locality effects of phases are the same for all moving elements.

(18) *PP extraction possible in agent voice*

Kepada siapa_i Mary akan mem-beri buku itu _____i?
 to whom Mary FUT ACT-give book the
 'To whom did Mary give the book?'

[Yanti, p.c.]

⇒ *Being in the vP domain is neither sufficient nor necessary for the restriction.* This suggests that the restriction should not be attributed to vP phases.

2.3. DP-intervention analysis

- ***Claim***

vP is not a phasal locality domain. Instead, the locality restriction is the result of DP intervention.

- **Heads**

We adopt the basic clause structure assumed by Cole et al. (2008), implementing it with the v heads in (19).

(19) v heads

- a. meN :- does not contain movement-inducing features
- b. \emptyset :- contains a movement-inducing $[uD]$ feature

(20) T head

T $[uD]$

- **Closest DP restriction**

Based on the proposals in Aldridge (2004, 2008a), Branan & Erlewine (2021), Coon et al. (2021), we propose that C and T are subject to the closest-DP restriction in SI: C may only attract the structurally closest DP.

(21) \bar{A} -attraction of the closest DP

An \bar{A} -probe can be specified to only attract the structurally closest DP.

- **Implementation**

We adopt the proposal in Erlewine (2018), Coon et al. (2021), and Branan & Erlewine (2021) that an \bar{A} -probe may be specified not just for an \bar{A} -feature but also for a categorial feature (also see Baier 2018). C in SI has the makeup in (22) (to be extended below).⁸

(22) C: $[u\delta + uD]$

- Building on Erlewine (2018), Coon & Keine (2021), Coon et al. (2021), and Branan & Erlewine (2021), complex probes like (22) may not attract a fully-matching goal over a partially matching one.

(23) A complex probe cannot attract a fully-matching element across a partially-matching element.

(24) $*[XP \text{ --- } X_{[uA+uB]} [\dots YP_{[A]} \dots ZP_{[A+B]} \dots]]$

- **Possible implementations**

(23) may be derived from more basic principles of Agree in at least two ways.

1. Erlewine (2018) and Branan & Erlewine (2021) implement (23) at the level of the Agree operation: a complex probe that encounters a partially-matching element stops probing.
2. Coon et al. (2021) derive this result from Coon & Keine's (2021) feature-gluttony system, according to which the complex probe $[uA+uB]$ enter into Agree with both YP and ZP, which rules out the movement step in (24) (for details, see Coon & Keine 2021 and Coon et al. 2021).

⁸ Following Miyagawa (2017), we use the cover term “[$u\delta$]-feature” to refer to movement-inducing information-structural features, including wh-movement, focus fronting, and relativization.

- **Application**

Both C and T may hence only attract the closest DP in SI. This entails that C can attract only the subject in [Spec,TP] and that the subject has to be whichever DP is highest inside the vP, which is in turn determined by the choice of head in (19).

(25) *Extraction in active voice*

- a. $[_{CP} \text{ } \underline{\hspace{1cm}} C_{[u\delta+uD]} [_{TP} DP_{EA}^{[\delta]} T_{[uD]} [_{vP} t_{EA} \underline{\hspace{1cm}} v (\Rightarrow meN-) [_{VP} V DP_{IA}]]]]$
- b. $[_{CP} \text{ } \underline{\hspace{1cm}} C_{[u\delta+uD]} [_{TP} \boxed{DP_{EA}} T_{[uD]} [_{vP} t_{EA} \underline{\hspace{1cm}} v (\Rightarrow meN-) [_{VP} V DP_{IA}^{[\delta]}]]]]$

(26) *Extraction in object voice*

- a. $[_{CP} \text{ } \underline{\hspace{1cm}} C_{[u\delta+uD]} [_{TP} DP_{IA}^{[\delta]} T_{[uD]} [_{vP} t_{IA} DP_{EA} \underline{\hspace{1cm}} v (\Rightarrow \emptyset-) [_{VP} V t_{IA}]]]]$
- b. $[_{CP} \text{ } \underline{\hspace{1cm}} C_{[u\delta+uD]} [_{TP} \boxed{DP_{IA}} T_{[uD]} [_{vP} t_{IA} DP_{EA}^{[\delta]} \underline{\hspace{1cm}} v (\Rightarrow \emptyset-) [_{VP} V t_{IA}]]]]$

- Thus, the extraction restriction in the active voice and the object voice receive a uniform account, without appeal to a clause-medial phase.

- **Non-DP extraction**

Recall from (11) that extraction of PPs is permitted in the active voice.

(27) *PP extraction possible in agent voice (= (11))*

Kepada siapa_i Mary akan mem-beri buku itu ____i?
 to whom Mary FUT ACT-give book the
 ‘To whom did Mary give the book?’

[Yanti, p.c.]

- There is evidence that PP extraction proceeds differently than DP extraction: fronted DPs can or must (depending on the register) precede the complementizer *yang*, whereas fronted PPs may not (Cole & Hermon 1998, Fortin 2007, Jeoung 2018).
- We thus propose that there are several flavors of C in SI, which differ in their content and phonological form.

- (28) a. $C_{yang}: [u\delta+uD]$ (= (22))
 b. $C_{\emptyset}: [u\delta+uP]$

- PP extraction is achieved by (28b). Crucially, nonfocused DPs do not constitute a partial match to (28b). This enables PP extraction across an intervening DP:

(29) *One-fell-swoop PP extraction*

- $[_{CP} \text{ } \underline{\hspace{1cm}} C_{[u\delta+uP]} [_{TP} DP_{EA} T [_{vP} t_{EA} v (\rightarrow meN-) [_{VP} V PP^{[\delta]}]]]]$

- **Implications:**

- ▷ The extraction restriction does not correlate with vP domains:
 1. The restriction appears with elements inside and outside of vP domains (IA in active clause, EA in object voice).
 2. No restriction with some elements in vP domains (PPs).

⇒ *Being in the vP domain is neither sufficient nor necessary for the restriction to arise.*
- ▷ One-fell-swoop PP extraction is possible because vP is not a phase.
- ▷ It is not a coincidence that only DP extraction is subject to the extraction restriction. Because the intervening element (i.e., the EA) is a DP, it constitutes a partial match only for (28a), and hence it only interferes with DP extraction.

2.4. Conclusions

- There is a clear overlap in the empirical effects of vP phases and DP intervention: both rule out IA extraction in the agent voice. But while a DP-intervention account extends to the extraction restriction in the object voice, a vP-phase account does not, at least unless additional assumptions are added.
 - ▷ DP intervention then makes superfluous additional appeal to vP phases.
- DP intervention may result in successive cyclicity:
 - ▷ Because C may only attract the closest DP, only an element in [Spec,TP] may be \bar{A} -extracted; and because T as well may only attract the closest DP, only an element in the outermost [Spec,vP] may become the subject.
 - ▷ The result is successive cyclicity, but without vP phases: in the object voice, an \bar{A} -extracted IA passes through [Spec,vP] and [Spec,TP] on its way:

$$(30) \quad \begin{array}{c} \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\ [_{CP} DP_{IA}^{[\delta]} C_{[u\delta+uDP]} [_{TP} t T_{[uD]} [_{vP} t DP_{EA} \underline{v} (\Rightarrow \emptyset-) [_{VP} V t]]]] \end{array}$$

⇒ Clause-medial successive cyclicity without verbal locality domains.

- SI wears the DP-intervention restriction on its sleeves: extraction of a DP other than the highest one is ill-formed. The next section considers a pattern that is more nuanced: extraction of DPs other than the highest one are well-formed, but it requires a special morphological reflex.
 - ▷ We will suggest that such patterns are the result of DP intervention as well.



3. Successive cyclicity in Dinka

- One particularly well-developed argument for successive cyclicity through [Spec,vP] and vP phasehood is presented by Van Urk (2015, 2018) and Van Urk & Richards (2015) for the Nilotic language Dinka.
- We instead propose that the pattern is not the result of a verbal locality domain, but instead of DP intervention.

3.1. Empirical evidence

3.1.1. Background: V2 in Dinka

- **V2 in CP**

Dinka is a V2 language, with exactly one constituent preceding a verbal element in the second position of the clause.

- (31) a. Àyén à-càm cuḷin nẹ pǎal.
Ayen 3P-eat food P knife
'Ayen is eating food with a knife.'
- b. Cuḷin à-céem Áyèn nẹ pǎal.
food 3P-eat.OV Ayen.GEN P knife
'Food, Ayen is eating with the knife.'
- c. Pǎal à-céemè Áyèn cuḷin.
knife 3P-eat.OBLV Ayen.GEN food
'With a knife, Ayen is eating food.'

[Van Urk 2018: 942, ex. (6a–c)]

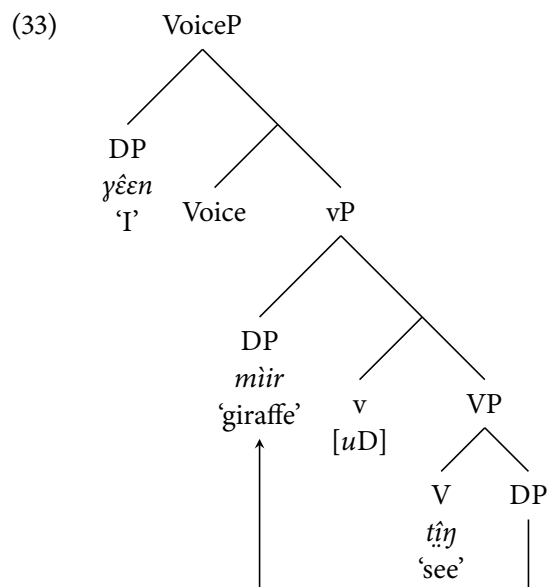
- **V2 in vP**

Van Urk (2015, 2018) and Van Urk & Richards (2015) argue that the vP shows a V2 pattern as well.

- (32) a. Yēen cé m̩ir t̩ɪŋ.
I PFV giraffe see
'I saw a giraffe.'
- b. *Yēen cé t̩ɪŋ m̩ir.
I PFV see giraffe
'I saw a giraffe.'

[Van Urk & Richards 2015: 122, ex. (14a,b)]

- The EA never counts for this preverbal position. We adopt here a structure in which the EA is introduced in a vP-external position, following (Van Urk 2015: 82).



- If the vP is ditransitive, exactly one of the two objects must occupy the preverbal position.

(34) a. Yêen cé Ayén yiên kítáp.
I PFV Ayen give book
'I gave Ayen a book.'

b. Yêen cé kítáp yiên Ayén.
I PFV book give Ayen
'I gave a book to Ayen.'

[Van Urk & Richards 2015: 122, ex. (15a,b)]

c. *Yêen cé yiên kítáp Ayén.
I PFV give book Ayen

d. *Yêen cé yiên Ayén kítáp.
I PFV give Ayen book

[Van Urk & Richards 2015: 122–123, ex. (16a,b)]

e. *Yêen cé kítáp Ayén yiên.
I PFV book Ayen give

f. *Yêen cé Ayén kítáp yiên.
I PFV Ayen book give

[Van Urk & Richards 2015: 122n11, ex. (i.a,b)]

- Only DPs may occupy this preverbal position (hence the [uD]). If there is no object, the preverbal position remains empty (i.e., v's [uD] may fail to find a goal, see Preminger 2014).

(35) a. Wóok cé kêt dôm-íc.
we PFV sing garden-in
'We sang in the garden.'

b. *Wóok cé dôm-íc kêt.
we PFV garden-in sing
'We sang in the garden.'

[Van Urk & Richards 2015: 123, ex. (17a,b)]

3.1.2. Extraction restrictions

- **Empty [Spec,CP]**

\bar{A} -movement requires every [Spec,CP] along the movement path to be empty.

- (36) a. **Yenà** cúkkù luéel, [_{CP} cé kítáp ɣòɔc]?
 who PFV.1PL say PFV book buy.TR
 ‘Who did we say bought a book?’
 b. ***Yenà** cúkkù luéel, [_{CP} kítáp (à-)cǐ ɣòɔc]?
 who PFV.1PL say book (3SG-)PFV.NSV buy.TR
 ‘Who did we say bought a book?’ [Van Urk & Richards 2015: 125, ex. (21a,b)]

- **Empty [Spec,vP] with DP movement**

DP movement also yields an empty [Spec,vP]. That is, \bar{A} -movement of an object DP must move the object in [Spec,vP].

- (37) a. **Yenà** cǐ môc yiên kítáp?
 who PFV.NSV man.GEN give book
 ‘Who did the man give the book to?’
 b. ***Yenó** cǐ môc Ayén yiên?
 what PFV.NSV man.GEN Ayen give
 ‘What did the man give Ayen?’ [Van Urk & Richards 2015: 125, ex. (20a,d)]

- (38) a. **Yenó** cǐ môc yiên Ayén?
 what PFV.NSV man.GEN give Ayen
 ‘What did the man give Ayen?’
 b. ***Yenà** cǐ môc kítáp yiên?
 who PFV.NSV man.GEN book give
 ‘Who did the man give the book to?’ [Van Urk & Richards 2015: 125, ex. (20b,c)]

- **No empty [Spec,vP] with PP movement**

Interestingly, extraction of PPs does not empty the preverbal position.

- ▷ Incidentally, this mirrors what we saw for Standard Indonesian, where PP extraction also is less restricted than DP extraction.

- (39) a. **Yenó** cǐ yìn kòɔr nòɔk?
 what PFV.NSV you lion kill
 ‘What did you kill a lion with?’
 b. **Yétenô** cénnè Ból Dèŋ tuòɔc?
 where PFV.OBLV Bol Deng send
 ‘Where did Bol send Deng?’ [Van Urk & Richards 2015: 130, ex. (29b,c)]

3.1.3. *ké*-morphology

- In addition to the extraction restriction, a second component of \bar{A} -movement in Dinka is that \bar{A} -extraction of nonsubjects results in *ké* to the left of the verb if the moving element is plural.

(40) *Object \bar{A} -movement triggers *ké**

- a. **Yeyínà** cǐ Ból **ké** tǐn?
 who.PL PFV.NSV Bol.GEN PL see
 ‘Who all did Bol see?’

[Van Urk & Richards 2015: 127, ex. (23b)]

- b. **Kêek** áa-cǐ Áyèn **ké** tǐn.
 them 3PL-PFV.OV Ayen.GEN PL see.NF
 ‘Them, Ayen has seen.’

[Van Urk 2018: 947, ex. (19c)]

(41) *\bar{A} -movement of local subject does not trigger *ké**

- Ròḡḡor** áa-cé (***ké**) yǐn tǐn.
 men 3P-PFV (*PL) you see.NF
 ‘The men have seen you.’

[Van Urk 2018: 950, ex. (25a)]

(42) *Movement of singular DPs does not trigger a corresponding SG marker*

- Yê** **ḡà** cǐ Ból (***yé(en)**) tǐn?
 be.3SG who PFV.OV Bol.GEN (*3SG) see.NF
 ‘Who has Bol seen?’

[Van Urk 2018: 940–941, ex. (5a,b)]

(43) *\bar{A} -movement of 1st/2nd plural DP triggers *ké**

- Wôḡk/Wêek** cǐ Áyèn **ké** tǐn.
 1PL/2PL PFV.OV Ayen.GEN PL see.NF
 ‘Us/You all, Ayen has seen.’

[Van Urk 2015: 225, ex. (62a,b)]

- The distribution of *ké* shows the hallmark property of successive cyclicity: it must appear in every clause crossed by movement.

(44) **ké* appears in every clause crossed by movement*

- Yeyínà** yé **ké** tâak, [_{CP} cǐ Ból **ké** tǐn]?
 who.PL HAB.2SG PL think PFV.NSV Bol.GEN PL see
 ‘Who all do you think Bol saw?’

[Van Urk & Richards 2015: 128, ex. (25b)]

- PP extraction likewise gives rise to *ké* if the head noun of the PP is plural.

(45) *\bar{A} -moved adjunct PPs trigger *ké**

- a. **Yê** **thêek-kò** cǐ Ból **ké** bǝ jàal?
 be times-which PFV.OV Bol.GEN PL go.NF leave.NF
 ‘At which times has Bol left?’

[Van Urk 2015: 218, ex. (49a)]

- b. **Ye** **piú** **kê-dí** cǐ Ból **ké** bàmbèe thàal?
 Q water much.how PFV.NSV Bol.GEN PL sweet.potatoes cook.TR
 ‘With how much water did Bol cook sweet potatoes?’

[Van Urk & Richards 2015: 130, ex. (30b)]

3.2. *vP-phase account*

- Van Urk (2015, 2018) and Van Urk & Richards (2015) propose a vP-phase account of this restriction:

▷ **Extraction restriction**

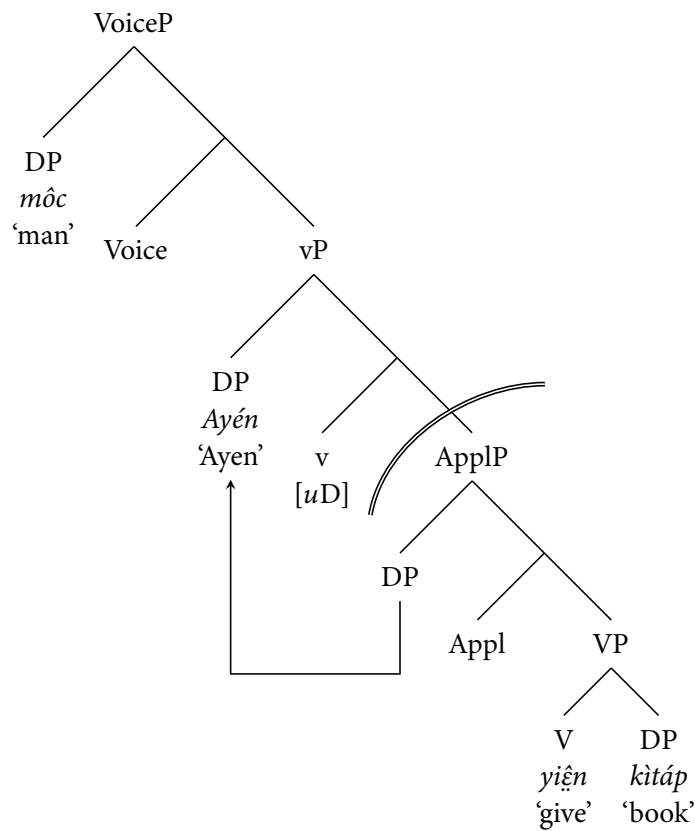
Only objects in the preverbal position ([Spec,vP]) may be extracted due to the PIC.

(46) a. **Yenà₁** cǐi môt **t₁** yiên kítáp?
 who PFV.NSV man.GEN give book
 ‘Who did the man give the book to?’

b. ***Yenô₁** cǐi môt **Ayén** yiên t₁?
 what PFV.NSV man.GEN Ayen give
 ‘What did the man give Ayen?’

[Van Urk & Richards 2015: 125, ex. (20a,d)]

(47) *vP-phase account (somewhat simplified)*



▷ **ké-morphology**

The marker *ké* is a reflex of an intermediate copy in [Spec,vP], hence of successive cyclicity through the vP phase edge.

(48) **Yeyínà₁** cǐi Bôl **ké** tǐn t₁?
 who.PL PFV.NSV Bol.GEN PL see
 ‘Who all did Bol see?’

▷ **PP extraction**

This analysis needs to say more about PP extraction, which results in *ké* but does not empty the pre-verbal position (see Van Urk & Richards's 2015 *Multitasking* and Van Urk's 2015 *Best Match*).

• **Question 1: Distribution of *ké***

Since Van Urk (2015, 2018) and Van Urk & Richards (2015) treat *ké* as the realization of a lower copy, additional assumptions are necessary to ensure that only copies in [Spec,vP] are pronounced in this way and not other intermediate landing sites (in particular [Spec,CP]).

• **Question 2: Unaccusative vP**

Unaccusative predicates pose an interesting challenge to this account. Here, \bar{A} -movement of the IA does not result in *ké*, whereas movement of a PP does.

(49) *Argument movement out of unaccusative vP does not lead to *ké**

Yê **pěɛɛl-kó** bɛ́ (***ké**) dhuôŋ?
 be knives-which FUT (*PL) break.NF
 'Which knives will break?'

[Coppe van Urk, p.c.]

(50) *PP-adjunct movement out of unaccusative vP leads to *ké**

Yê **thèek-kó** bɛ́ pèɛl **ké** dhuôŋ?
 be times-which FUT.OV knives PL break.NF
 'At which times will the knives break?'

[Van Urk 2015: 168, ex. (81)]

- If *ké* is the realization of a copy in [Spec,vP], then (49)/(50) indicates that arguments of unaccusatives must exit vP in one-fell-swoop whereas adjuncts must do so successive-cyclically.

▷ vP phases do not give to such a distinction: If vP is a phase, *all* extraction must proceed through its edge; if vP is not a phase, *no* extraction needs to proceed through its edge.⁹

⇒ Given that the verbal domain is the same in (49)/(50), we conclude that *ké* is not conditioned by verbal locality domains, but instead by DP intervention.

• **Question 3: vP vs. VoiceP**

Given the structure in (47), it is crucial that the projection that introduces the external argument is *not* a phase, but that the phase head is lower. This is certainly feasible, but it is at odds with the original conceptual definition of phasehood (propositional completeness, see Chomsky 2000, 2001) as well as with other arguments for vP phasehood that crucially require the phase to be higher (e.g. Nissenbaum 2000, Korsah & Murphy 2020).

3.3. DP-intervention account

• **Overview**

We develop a DP-intervention account for successive cyclicity in Dinka.

- Just as in SI, the guiding idea is that C in Dinka may only attract that structurally closest DP. Given that Dinka is V2, we assume (51).

⁹ Van Urk's (2015, 2018) and Van Urk & Richards' (2015) account assumes that PP move through [Spec,vP] as well but that PP extraction has access to a second [Spec,vP], which is not available to DP extraction.

(51) Dinka C bears an [EPP] feature that may attract only the structurally closest DP.

- At first glance, (51) appears empirically incorrect. Clearly, it is possible for elements other than the local subject (which is structurally closest to C) to occupy [Spec,CP]. But it is precisely in such cases that *ké* must appear, which suggests that the two are connected.
- We thus propose that such cases involve leapfrogging: the lower DP first moves across the subject, after which it can then be attracted by C. *ké* is the reflex of the probe that gives rise to this leapfrogging.
- **Subject position**
We assume, following Van Urk (2015), that subjects move to [Spec,TP]. For example, subjects precede vP-level adverbs like *dâac* ‘quickly’.

(52) Bë lëc dâac dhuôn?
FUT.SV stick.GEN quickly.NF break.NF
‘Will the stick break quickly?’

[Van Urk 2015: 87, ex. (56a)]

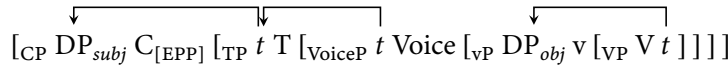
(53) *Transitive base clause structure*



- ***Ā-extraction and leapfrogging***

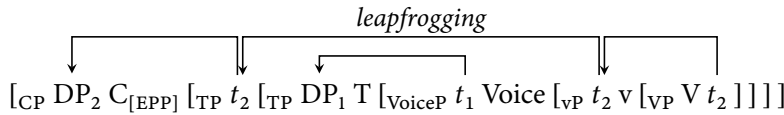
In (53), only the subject may move to [Spec,CP], given (51).

(54) *Transitive base clause structure feeds subject Ā-movement*



- Object extraction requires leapfrogging of the object around the subject (by assumption to an outer [Spec,TP]).

(55) *Object leapfrogging feeds object Ā-movement*



- We analyze *ké* as the realization of the probe that underlies the leapfrogging step.

- ***Probes on T***

This leapfrogging is triggered by a secondary, optional probe on T. This probe is a strong ϕ -probe, which leads to movement of its goal to an outer [Spec,TP].

(56) *T head*
T [$uD (> u\phi)$]

- ***Probe ordering***

If [uD] and [$u\phi$] are both present on T, [$u\phi$] is extrinsically ordered after [uD] (e.g., Müller 2009, Georgi 2014, 2017, Hoover 2021).

- ▷ Assuming that Agree is downward and copies of A-movement are invisible (Chomsky 2000), [$u\phi$] (if it is present) does not agree with the EA but instead with the highest lower ϕ -bearing element.

- ***ké* as plural agreement**

We then treat *ké* as the realization of a plural feature (on T).

(57) /*ké*/ \leftrightarrow [PL]

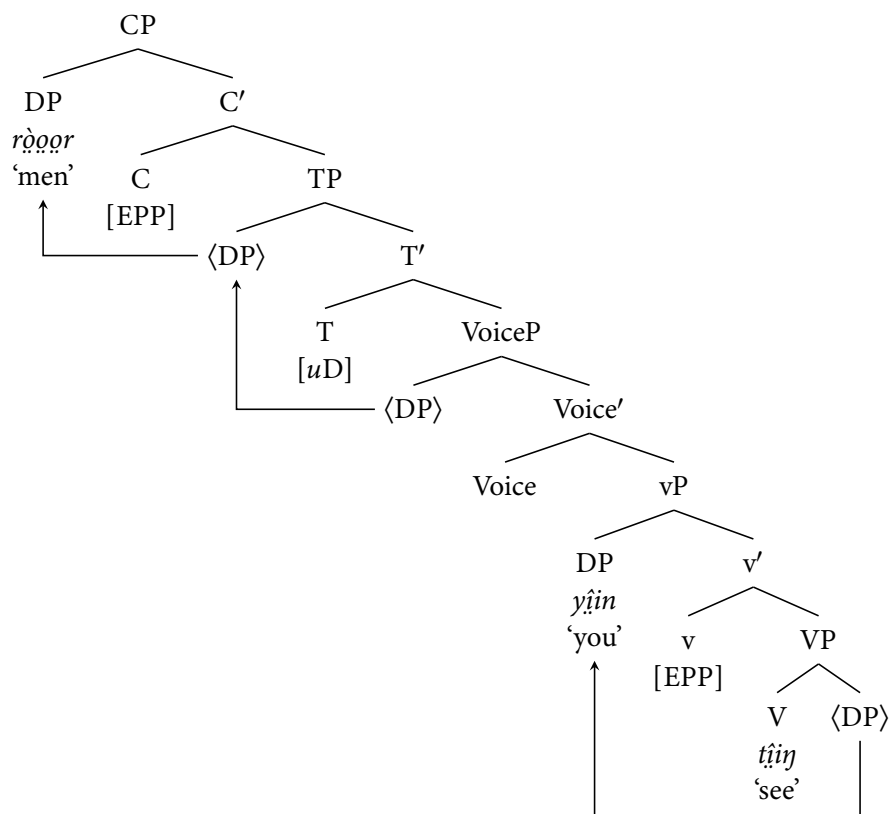
3.3.1. Application 1: Subject extraction

- [$u\phi$] is absent, and the subject is hence the closest goal for C. The object moves to [Spec,vP], but this is orthogonal to the \bar{A} -extraction.

(58) **Ròòòr** áa-cé (***ké**) yîin tîîŋ.
 men 3P-PFV (*PL) you see.NF
 ‘The men have seen you.’

[Van Urk 2018: 950, ex. (25a)]

(59) *Derivation of (58)*



3.3.2. Application 2: Object extraction

- Here, v bears [$u\phi$], leading to leapfrogging of the object above the subject. This makes the object the closest goal to C, resulting in object \bar{A} -movement.

- [Van Urk & Richards 2015:127, ex. (23b)]

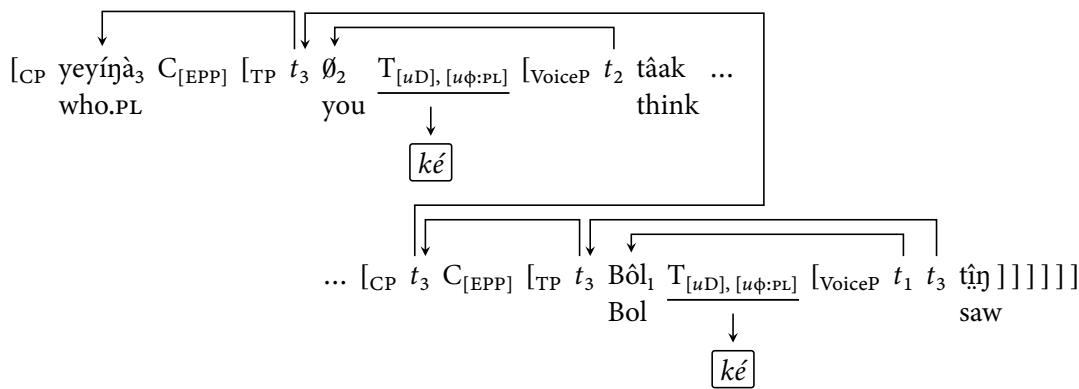
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- The diagram illustrates the syntactic structure of the sentence 'Who saw who?' in a language with EPP and voice features. The tree is organized into two main clauses: an upper clause (CP) and a lower clause (TP).
- Upper Clause (CP):**
- CP:** The root clause, consisting of a DP subject and a C' complement.
 - DP:** The subject of the upper clause, labeled *yeyíṅà* 'who.PL'.
 - C':** The complement of the CP, consisting of a C head and a TP complement.
 - C:** The complementizer, labeled [EPP].
 - TP:** The complement of the C' head, consisting of a DP subject and a T' complement.
 - DP:** The subject of the lower clause, labeled <DP>.
 - T':** The complement of the TP, consisting of a DP subject and a T' complement.
 - DP:** The subject of the lower clause, labeled *Ból* 'Bol'.
 - T':** The complement of the TP, consisting of a T head and a VoiceP complement.
 - T:** The complementizer, labeled [uD] and [uφ:PL].
 - VoiceP:** The complement of the T' head, consisting of a Voice head and a vP complement.
 - Voice:** The complementizer, labeled <DP>.
 - vP:** The complement of the VoiceP, consisting of a v head and a VP complement.
 - v':** The complement of the vP, consisting of a v head and a VP complement.
 - v:** The complementizer, labeled [EPP].
 - VP:** The complement of the v' head, consisting of a V head and a DP complement.
 - V:** The complementizer, labeled *tîṅ* 'see'.
 - DP:** The complement of the V head, labeled <DP>.
- Key Features and Movement:**
- The DP *yeyíṅà* 'who.PL' is the subject of the upper clause.
 - The DP *Ból* 'Bol' is the subject of the lower clause.
 - The DP *tîṅ* 'see' is the verb of the lower clause.
 - The DP *ké* is the object of the verb *tîṅ* and the subject of the upper clause.
 - The DP *ké* is marked with [EPP] and [uφ:PL] features.
 - The DP *ké* is the complement of the V head *tîṅ*.
 - The DP *ké* is the complement of the v head.
 - The DP *ké* is the complement of the Voice head.
 - The DP *ké* is the complement of the T' head.
 - The DP *ké* is the complement of the TP.
 - The DP *ké* is the complement of the CP.

- ▷ This account does not involve lookahead. [$u\phi$] may be either present on or absent from T, the choice being free but with a different outcome in each case.
- ▷ Our analysis of *ké* as the realization of a verbal ϕ -probe that is connected to movement of the goal is reminiscent of patterns we find in a number of other languages, including Romance (past) participle agreement (Kayne 1989), Arabic subject-verb agreement (Zeijlstra 2012, Bjorkman & Zeijlstra 2019), and Bantu verb agreement (Carstens 2005).

- The account generalizes to long extraction. Because leapfrogging over the subject is required in each clause, *ké* appears in every clause crossed by movement.

- (62) **Yeyíṅà** yé **ké** tâak, [_{CP} **cí** Bôl **ké** tɪ̃ŋ]?
 who.PL HAB.2SG PL think PFV.NSV Bol.GEN PL see
 ‘Who all do you think Bol saw?’
 [Van Urk & Richards 2015:128, ex. (25b)]

(63) *Derivation of (62)*



- *Consequence: Distribution of k_e*

Because our analysis treats *ké* as the realization of T and not of an intermediate copy, it automatically derives that *ké* does not appear in the CP region.

3.3.4. Application 4: Ditransitives

- Recall that in ditransitive constructions, only the preverbal object may be extracted, which Van Urk (2015) and Van Urk & Richards (2015) take as an effect of vP phases.

- (64) a. **Yenà₁** cǐi mōc ____₁ yǐen kítáp?
 who PFV.NSV man.GEN give book
 ‘Who did the man give the book to?’
 b. ***Yenó₁** cǐi mōc Ayén yǐen ____₁?
 what PFV.NSV man.GEN Ayen give
 ‘What did the man give Ayen?’

[Van Urk & Richards 2015:125, ex. (20a,d)]

- **Solution: $[u\phi]$ and DP intervention**

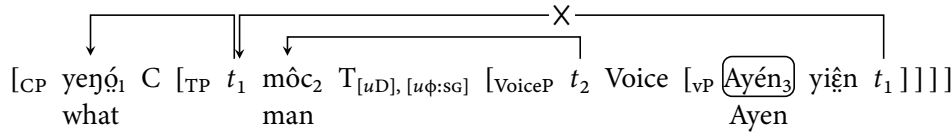
As it turns out, (64b) is ruled out by DP intervention. $[u\phi]$ on T may only attract the closest DP.

- (65) $[u\phi]$ on T attracts the structurally closest ϕ -bearing element in its c-command domain.

- *Consequence*

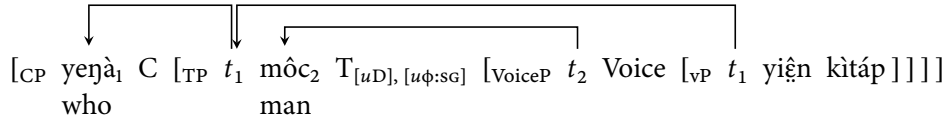
Only the highest object below T can undergo leapfrogging. (64b) requires movement over *Ayén* at some point, and so cannot be derived.

(66) Violation of (65) in (64b)



- By contrast, (64a) complies with (66).

(67) Licit derivation for (64a)



⇒ Thus, only the DP in [Spec,vP] may undergo leapfrogging, but not due to vP phases but due to DP intervention.

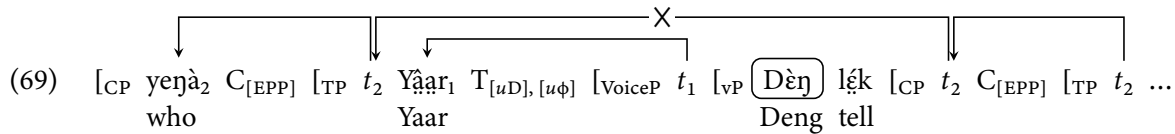
- ▷ This also means that we avoid questions about the distribution of phasehood among vP and VoiceP.

• Extension to crossclausal extraction restriction

This account also extends to crossclausal extraction restrictions. Extraction out of a finite clause is banned across an object DP in the matrix [Spec,vP]:

- (68) a. Yăar à-cé (Dèŋ) lĕk, [CP yè Bòl à-cé Ayén tuòɔc wúɣut]
 Yaar 3SG-PFV Deng tell C Bol 3SG-PFV Ayen send cattle.camp.LOC
 ‘Yaar told Deng that Bol sent Ayen to the cattle camp.’
- b. *Yenà₁ cĭi Yăar (Dèŋ) lĕk, [CP yè cĭi Bòl —₁ tuòɔc wúɣut]?
 who PFV.NSV Yaar.GEN Deng tell C PFV.NSV Bol.GEN send cattle.camp.LOC
 ‘Who did Yaar tell Deng that Bol sent to the cattle camp?’

[Van Urk & Richards 2015: 133, ex. (37a,c)]



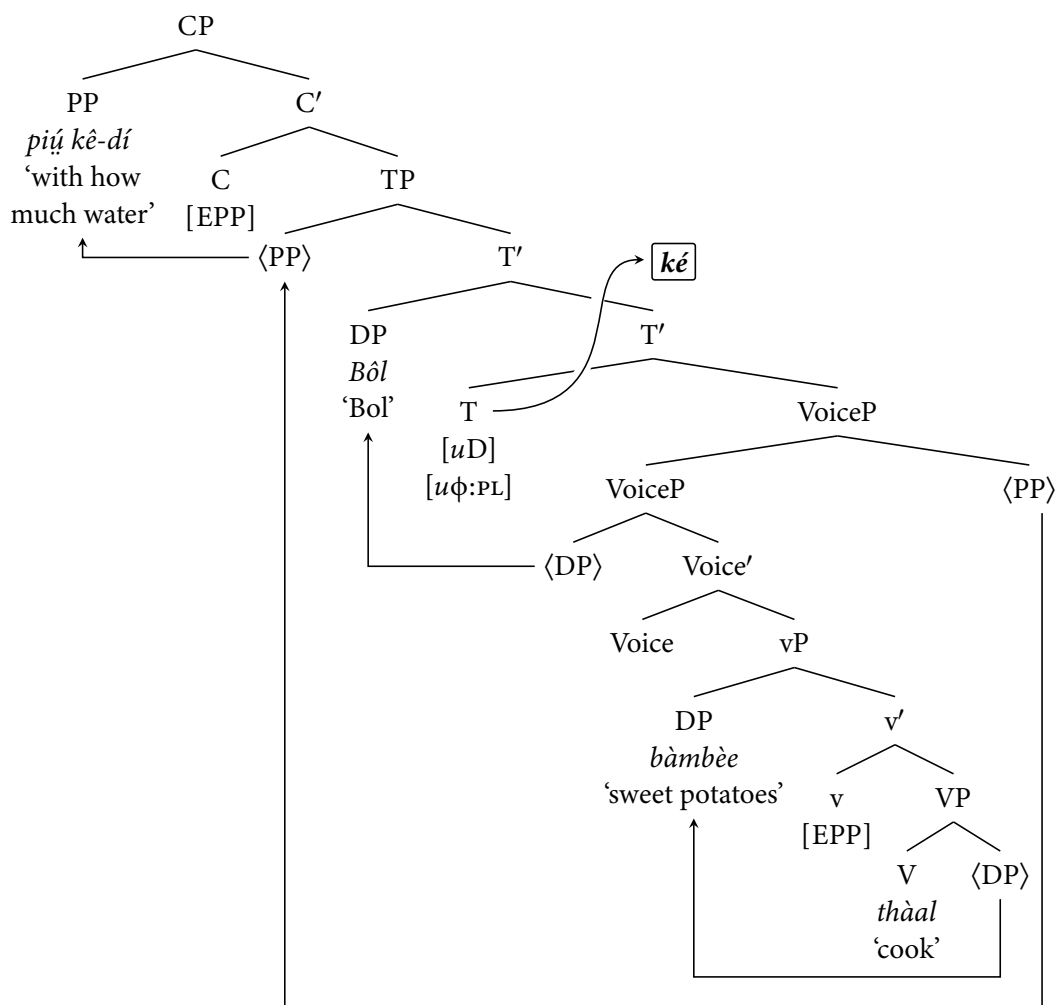
3.3.5. Application 5: PP extraction

- Recall that PP extraction does not create an empty preverbal position but does lead to *ké* if the head noun is plural. This follows because PPs need to leapfrog over the subject as well.¹⁰

- (70) Ye piú kĕ-dí cĭi Bòl kĕ bàmbèe thàal?
 Q water much.how PFV.NSV Bol.GEN PL sweet.potatoes cook.TR
 ‘With how much water did Bol cook sweet potatoes?’ [Van Urk & Richards 2015: 130, ex. (30b)]

¹⁰ The question why [uφ] can agree with a PP in the first place is presumably related to another curious property of PP movement: the P that is present in the base position disappears under \bar{A} -movement. See Van Urk (2015) for detailed discussion and analysis.

(71) Derivation of (70)



• Consequence

Recall that PP extraction does not empty the preverbal position. We have hence assumed that PPs do not move through [Spec,vP] (where they cannot independently occur). Because our analysis treats *ké* as the realization of T, it is compatible with the lack of movement through [Spec,vP].

3.3.6. Application 6: Unaccusative vPs

- The DP-intervention account allows us to make sense of the paradoxical behavior of unaccusative predicates. Extraction of the DP argument does not permit *ké* (72), whereas extraction of a PP does require *ké* (73).
 - ▷ On a vP-phase account, (72) would suggest that unaccusative vP is not a phase, but (73) would require that it must be a phase. This seems contradictory.

(72) Yè pǝǝl-kó bǝ (*kǝ) dhuôŋ?
 be knives-which FUT (*PL) break.NF
 'Which knives will break?'

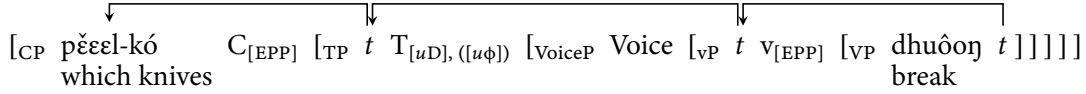
[Coppe van Urk, p.c.]

- (73) Yè **thèek-kó** bǝi pèel ké dhuôŋ?
 be times-which FUT.OV knives PL break.NF
 ‘At which times will the knives break?’

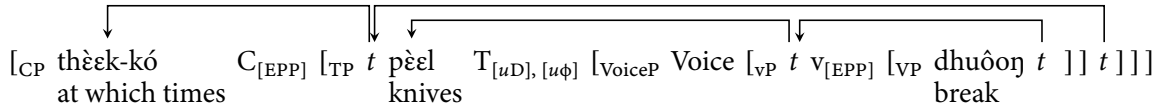
[Van Urk 2015: 168, ex. (81)]

- A DP-intervention account avoids this paradox: PP extraction requires leapfrogging over the subject DP, hence *ké*; DP extraction does not require leapfrogging.

- (74) *Derivation of (72): no leapfrogging required*



- (75) *Derivation of (73): leapfrogging required*



3.4. Summary

- Our DP-intervention account of successive cyclicity in Dinka does not involve a verbal locality domain/phase, but instead attributes clause-medial successive cyclicity to intervention by the subject and the concomitant need for leapfrogging.
- As in our account of SI, the key component of the analysis is that C in Dinka may only attract the closest goal.
 - ▷ This restriction manifests as a subject-only extraction restriction in SI.
 - ▷ Dinka has the option of leapfrogging the object over the subject, which results in successive cyclicity and *ké*.
- In line with this convergence, Dinka transparently exhibits closest-DP restrictions for other heads, namely T and v: object extraction may not cross an intervening object.
 - ▷ The crucial locality property of C thus also holds for other heads in the language, paving the way for a uniform account of the various components of Dinka’s complex \bar{A} -extraction system in terms of DP intervention.



4. Beyond the verbal domain: Extraction marking in Defaka

- The DP-intervention account links the position of the intermediate landing site to the position of the subject (which must be leapfrogged over). In principle, we should therefore see these effects outside of the verbal domain. This seems to be borne out.

- **Extraction and extraction morphology**

In Defaka (Ijoid), focus fronting triggers special verbal morphology (*-kè*) if any element other than the local subject is fronted (Bennett 2009, Bennett et al. 2012).

(76) a. *No focus-fronting*

ì Bòmá ésé-kà-rè

I Boma see-FUT-NEG

‘I will not see Boma.’

b. *Local-subject focus*

ì kò Bòmá ésé-kà-rè

I FOC.SBJ Boma see-FUT-NEG

‘I will not see Boma.’

c. *Object focus*

Bòmá ndò ì ésé-kà-rè-kè

Boma FOC I see-FUT-NEG-KE

‘I will not see Boma.’

[Bennett et al. 2012: 294, ex. (1)–(3)]

(77) *Adjunct focus extraction*

a. ándù kíkìà ndò à èbèrè rì bòi-mà-kè

canoe under FOC the dog KE hide-NFUT-KE

‘The dog is hiding under the canoe.’

[Bennett et al. 2012: 296, ex. (15)]

b. òmòmò ndò Bòmá ìbò tínà árí-kè

now FOC Boma big fish catch-KE

‘Boma caught a big fish just now.’

[Bennett 2009: 18, ex. (59b)]

(78) *Nonlocal-object focus*

ándù ndò Bòmá fàà-kè [_{CP} ìní été-kè]

canoe FOC Boma say-KE they have-KE

‘It’s a canoe that Boma said that they have.’

[Bennett et al. 2012: 297, ex. (21)]

- **Locus of extraction morphology**

Importantly, *-kè* appears outside of tense morphology and negation (e.g., (76c)). Based on the Mirror Principle (Baker 1985), this indicates that the syntactic locus of *-kè* is higher than T and Neg, clearly outside the verbal domain.

- **Position of subjects**

This correlates with the position of subjects in Defaka according to Bennett (2009) and Bennett et al. (2012). They propose that subjects are located in high Subj projection:

(79) *Position of subjects in Defaka (based on Bennett 2009, Bennett et al. 2012)*

CP > **SubjP** > {TP, AspP, MoodP, ...} > vP > VP

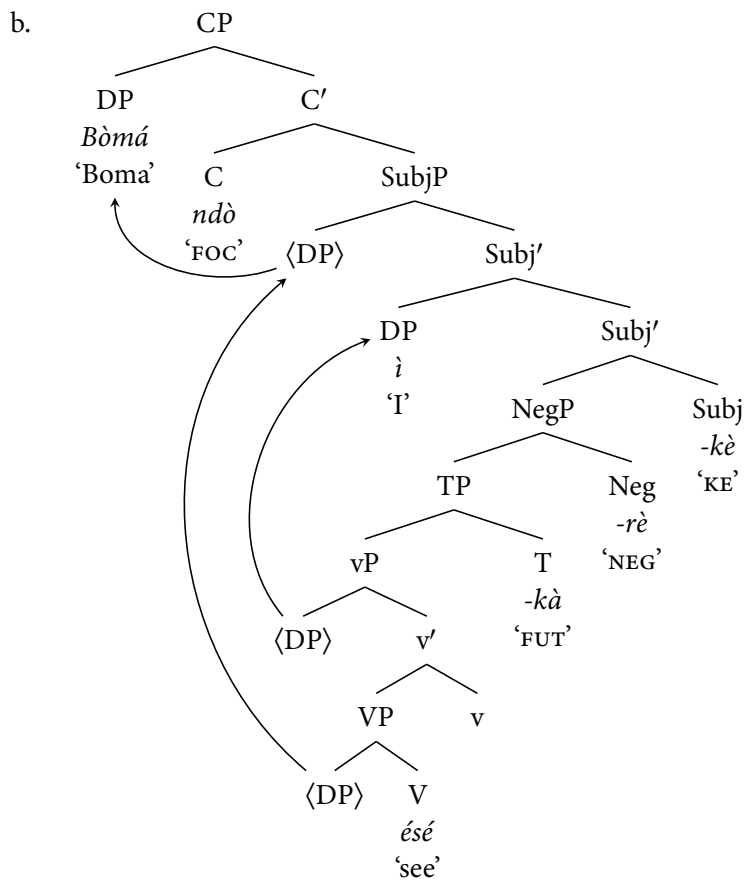
- **DP-intervention account**

Assuming that subjects are located above TP, the DP-intervention account immediately derives the location of the extraction morphology:

- ▷ Because leapfrogging must cross the subject in order to affect which element is closest to C, the leapfrogging probe must be located on the head that hosts the subject position, hence on Subj⁰ in (79).
- ▷ By the Mirror Principle, it follows that *-kè* is outside of tense morphology and negation.

(80) *Structure of object focus fronting*

- a. Bòmá ndò ì ésé-kà-rè-kè
 Boma FOC I see-FUT-NEG-KE
 'I will not see Boma.'



• **Conclusion**

Extraction effects analogous to those we observe in the verbal domain are also found outside of the verbal domain.

- ▷ This supports an approach to these effects that does not attribute them to verbal locality domains.
- ▷ A DP-intervention approach generalizes appropriately.



5. Conclusion

- We proposed a rethinking of clause-medial successive cyclicity. Instead of attributing it to a verbal locality domain, we suggested that it is the result of DP intervention: the need of a non-subject DP to first leapfrog around the subject in order to be attractable by C.

(81) a. *Domain/phase-based approach*

Obligatory successive-cyclic movement through a clause-internal position is the result of a clause-internal phase.

b. *DP-intervention approach*

Obligatory successive-cyclic movement through a clause-internal position is the result of leapfrogging around an intervening DP.

- ***Intervention and leapfrogging***

Our proposal builds on recent work that has argued that \bar{A} -probes can be specified in such a way that they can only attract the closest DP (Aldridge 2004, 2008a, Rackowski & Richards 2005, Branan & Erlewine 2021, Coon et al. 2021), a restriction that may itself be derivable from the internally-complex structure of such probes.

- ▷ Ordinarily, this restriction results in a transparent extraction restriction: if the subject is the highest DP, only the subject may undergo \bar{A} -movement, yielding a subject-only extraction restriction (as in Standard Indonesian).
- ▷ But if the language permits optional leapfrogging of the object over the subject, all extraction is permitted, but non-subject extraction must be successive-cyclic.

- ***Consequences***

The shift from phases to DP-intervention offers a principled explanation of some striking patterns:

1. The requirement for successive cyclicity is selective: in SI, PPs do not trigger the reflex even if they cross vP,
2. the effect does not correlate with a DP's structural relationship to vP: in SI, movement of an EA is not restricted in the active voice (where the EA is the highest DP), but movement of the EA is restricted in the object voice (where the EA is not the highest DP in the vP), despite the fact that the external argument is in the same structural position in both cases,
3. the reflex may appear outside of the verbal domain (in Defaka),
4. DP extraction in unaccusatives does not trigger the effect,
5. in Dinka, unaccusative vPs trigger the effect for PP extraction but not for DP extraction.

- ***Clause-medial successive cyclicity and phases***

Successive cyclicity does not necessarily diagnose phasehood (see Legate 2012 for a similar view).

- ***Note***

While previous work has aimed to rethinking phase locality in terms of intervention (e.g., Abels 2003, Halpert 2019, Thivierge 2021), a distinctive feature of our account is that it is a DP that is the intervener, not the phase head.

- **Successive cyclicity and verbal domains**

Verbal domains are only indirectly associated with successive cyclicity: verbal domains are where DP arguments are introduced, resulting in DP-intervention effects.

- **Successive cyclicity and extraction restrictions**

Our account makes available a unified approach to both clause-medial successive cyclicity and extraction restrictions, such as subject-only extraction patterns (Keenan & Comrie 1977), Austronesian voice systems (Aldridge 2004, Rackowski & Richards 2005) and potentially also syntactic ergativity (on accounts that attribute it to movement of the object over the subject; see Coon et al. 2021 and the references there for Mayan, and Yuan 2022 and the references there for Inuit).

- ▷ In all of these cases, C may attract only the closest DP, and an extraction restriction results if the closest DP is invariably either the subject or the object.
- ▷ Crucially, if object movement over the subject is possible but optional, object \bar{A} -movement is possible, but it must be successive-cyclic.

- **From absolute locality domains to intervention**

Müller (2004, 2011) notes that there is an inherent tension between absolute locality domains like phases and relative notions of locality like minimality or intervention: the latter requires search space, the former limits search space. He proposes that intervention-based locality constraints should therefore be dispensed with in favor of absolute locality constraints like phases. We have argued for the opposite direction of elimination—weakening the overall role of phasehood (either by reducing the number of phase heads or by eliminating it entirely) and placing greater emphasis on intervention in the account of successive cyclicity.

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