Phase impenetrability and resumption in Dinka*

Coppe van Urk, Queen Mary University of London
GLOW 40, Leiden

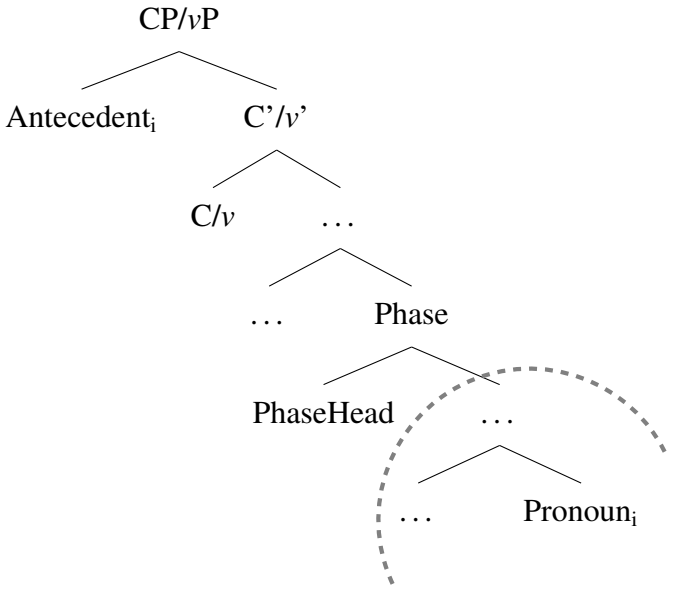
1. This talk first presents novel evidence from the Nilotic language Dinka (South Sudan) for the existence of ***mixed chains*** of movement and resumption (McCloskey 2002; Imanishi 2011). I'll show that a resumptive antecedent may be **introduced at any intermediate CP/*v*P edge** and move successive-cyclically from there:

   (1) $\text{Antecedent}_i \ldots [_{\text{CP/}v\text{P}} <\textit{Antecedent}_i> \ldots \text{Pronoun}_i \ldots]$

2. I then compare McCloskey's (2002) account of mixed chains in Irish with the Dinka data. Contra McCloskey, I present arguments that movement and resumption in Dinka are initiated by the **same operator features**.

3. Mixed chains are shown to be sensitive to **phase impenetrability**: a resumptive pronoun may appear if separated by (at least) one phase boundary from the antecedent:

   (2)



   I argue that this provides evidence for resumption as a **last resort strategy** (e.g. Shlonsky 1992; Pesetsky 1998; Salzmann 2009; Sichel 2014).

   I propose that Dinka's resumptive pronouns occur in phases that **lack a featural trigger for movement**. If all movement is feature-driven (Chomsky 1995), phase impenetrability creates an island in which resumption is a last resort.

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Roadmap:

- ▷ Section 1 introduces Dinka's **two reflexes of successive cyclicity**: V2 satisfaction and *ké*-copying (Van Urk and Richards 2015)
- ▷ In section 2, I show that Dinka has a grammatical strategy of **resumption**, distinct from movement
- ▷ Section 3 provides evidence of **mixed chains**, in that the resumptive antecedent may be introduced at an intermediate CP/*v*P edge and move from there
- ▷ Section 4 implements mixed chains, building on McCloskey (2002), but proposing that movement and resumption satisfies the same **operator features**
- ▷ In section 5, I describe a **restriction** on these mixed chains: the resumptive antecedent must be separated from the pronoun by at least one phase boundary

1 Two reflexes of successive cyclicity in Dinka

Dinka is a Nilotic language spoken in South Sudan. All the data reported here comes from original work on the Dinka Bor dialect. As described in Van Urk and Richards (2015), long-distance movement in Dinka displays **two reflexes of successive cyclicity**:

1. V2 satisfaction.
   Phrases undergoing long-distance movement **satisfy the V2 property of intervening C and *v***.

2. *Ké*-copying.
   Copies left by intermediate movement to *v*P undergo ***ké*-copying**, a process by which plurals trigger **multiple copy spell-out** (Van Urk 2016)

1.1 Double V2 in Dinka

Dinka has a **double V2 effect**, at the CP and *v*P edge (Andersen 1991; Van Urk and Richards 2015).

1. **V2 at the clause edge:**
   At the clause edge, the highest verb/auxiliary is always in 2nd position, regardless of which constituent is fronted (3a–c).[1]

   (3) *The verb is in second position:*
   a. [Àyén] à-**càm** cuı̈̂in nɛ̈̀ păal.
      Ayen 3S-**eat** food P knife
      'Ayen is eating food with a knife.'
   b. [Cuı̈̂in] à-**céɛm** Áyèn nɛ̈̀ păal.
      food 3S-**eat.OV** Ayen.GEN P knife
      'Food, Ayen is eating with a knife.'
   c. [Păal] à-**céɛmɛ̈̀** Áyèn cuı̈̂in.
      knife 3S-**eat.OBLV** Ayen.GEN food
      'With a knife, Ayen is eating food.'

[1] Unlike in Germanic V2 systems, V2 in Dinka co-occurs with an Austronesian-style voice system. See Van Urk (2015) as well as Erlewine, Levin, and Van Urk (2017) for discussion.

Dinka also has V2 in embedded clauses:

(4) *V2 in embedded clause:*

a. À-cùukù yôok [$_{CP}$ kè [mòc] **bé** ríŋ tháal ɣòot].
3S-PRF.1P find.out.NF C man **FUT** meat cook.NF house.ESS
'We have found out that the man will cook meat in the house.'

b. À-cùukù yôok [$_{CP}$ kè [ríŋ] **bíi** môc tháal ɣòot].
3S-PRF.1P find.out.NF C meat **FUT.OV** man.GEN cook.NF house.ESS
'We have found out that, meat, the man will cook in the house.'

c. À-cùukù yôok [$_{CP}$ kè [ɣòot] **bénè** môc ríŋ tháal thîn].
3S-PRF.1P find.out.NF C house **FUT.OBLV** man.GEN meat cook.NF in.it.ESS
'We have found out that, in the house, the man will cook meat.'

d. *À-cùukù yôok [$_{CP}$ kè [___] **bé** môc ríŋ tháal ɣòot].
3S-PRF.1P find.out.NF C **FUT** man.GEN meat cook.NF house.ESS
'We have found out that the man will cook meat in the house.'

Note: Whether V2 is obligatory depends on the complementizer. See Van Urk (2015) for discussion.[2]

2. **V2 in the verb phrase:**
In the *v*P, the highest object must be initial. The edge of the verb phrase can be diagnosed by the position of the in situ verb (5a–b).

(5) *Direct object must precede in situ main verb:*

a. Yîin bé [$_{vP}$ [mìir] tîiŋ].
you FUT giraffe see.NF
'You will see a giraffe.'

b. *Yîin bé [$_{vP}$ [___] tîiŋ **mìir**].
you FUT see.NF **giraffe**
'You will see a giraffe.'

The object occupies a **derived position**. If a second auxiliary is present, it must follow the object:[3]

(6) *Object appears before all non-finite verbs and auxiliaries:*

a. Tìik à-cé [$_{vP}$ [cuîin] dâac tháal].
woman 3S-PRF food do.quickly.NF cook.NF
'The woman has cooked the food quickly.'

b. *Tìik à-cé [$_{vP}$ [___] dâac **cuîin** tháal].
woman 3S-PRF do.quickly.NF **food** cook.NF
'The woman has cooked the food quickly.'

c. *Tìik à-cé [$_{vP}$ [___] dâac tháal **cuîin**].
woman 3S-PRF.SV do.quickly.NF cook.NF **food**
'The woman has cooked the food quickly.'

[2] As I note in Van Urk (2015), we could take this to show that clause edge V2 is established at a lower position in Dinka. Nothing hinges on this for the theoretical conclusions defended here.

[3] Dinka has a wide range of auxiliaries to express meanings associated with adverbs in other languages. See Andersen (2007) for an overview.

In a ditransitive, **the highest object appears before the verb** (7a–b). All other objects and adjuncts follow the main verb:

(7) *Only one object before the verb in ditransitives:*

a. Yîin cé [$_{vP}$ Bòl] gàam **cáa** ákól].
you PRF Bol give.NF **milk** afternoon
'You have given Bòl milk in the afternoon.'

b. Yîin cé [$_{vP}$ cáa] gàam **Bòl** ákól].
you PRF milk give.NF **Bol** afternoon
'You have given milk to Bol in the afternoon.'

1.2 Intermediate movement satisfies V2

The first reflex of successive cyclicity in Dinka is that these V2 requirements must be satisfied by a phrase moving across CP and *v*P edges:

(8) [$_{CP}$ DP C … [$_{vP}$ <DP> *v* … [$_{CP}$ <DP> C … [$_{vP}$ <DP> *v* … ___]]]]

For example, a DP topicalized out of the embedded clause must first move to the CP edge:

(9) *Long-distance movement satisfies V2 at the CP edge:*

a. **Kɔ̂ɔc-kɛ̀** áa-cíi Bôl ké yóok [$_{CP}$ kɛ̀ ___] nhiàr ___ Àyén].
people-these 3P-PRF.OV Bol.GEN 3PL find.out.NF C love Ayen
'These people, Bol has found out love Ayen.'

b. ***Kɔ̂ɔc-kɛ̀** áa-cíi Bôl ké yóok [$_{CP}$ kɛ̀ Àyén] nhiɛ́ɛr ___].
people-these 3P-PRF.OV Bol.GEN 3PL find.out.NF C Ayen love.OV
'These people, Bol has found out love Ayen.'

c. **Àyén** à-cíi Bôl yóok [$_{CP}$ kɛ̀ ___] nhiɛ́ɛr kɔ̂ɔc-kɛ̀ ___].
Ayen 3S-PRF.OV Bol.GEN find.out.NF C love.OV people-these
'Ayen, Bol has found out that these people love.'

d. ***Àyén** à-cíi Bôl yóok [$_{CP}$ kɛ̀ kɔ̂ɔc-kɛ̀] nhiàr ___].
Ayen 3S-PRF.OV Bol.GEN find.out.NF C people-these love.OV
'Ayen, Bol has found out that these people love.'

Similary, an object extracted out of the *v*P first moves to the *v*P edge:

(10) *Intermediate movement satisfies V2 at the vP edge:*

a. Yè **ŋó** cíi môc [$_{vP}$ ___] yiɛ̂ɛn Àyén]?
be **what** PRF.OV man.GEN give.NF Ayen
'What has the man given Ayen?'

b. *Yè **ŋó** cíi môc [$_{vP}$ Àyén] yiɛ̂ɛn]?
be **what** PRF.OV man.GEN Ayen give.NF
'What has the man given Ayen?'

c. Yè **ŋà** cíi môc [$_{vP}$ ___] yiɛ̂ɛn kìtáap]?
be **who** PRF.OV man.GEN give.NF book
'Who has the man given the book to?'

d. *Yè **ŋà** cíi môc [$_{vP}$ kìtáap] yiɛ̂ɛn]?
be **who** PRF.OV man.GEN book give.NF
'Who has the man given the book to?'

Conclusion (Van Urk and Richards 2015):
CP and *v*P are phases, and copies of moving phrases occupy intervening V2 positions.

1.3 Ké-copying

The second reflex of successive-cyclic movement in Dinka is ***ké*-copying**. All long-distance movement of plurals is accompanied by the presence of **a 3rd plural pronoun *ké* at each *v*P edge**:[4]

(11) $[_{CP}\ DP_{PL}\ \ldots\ [_{vP}\ \textbf{\textit{ké}}\ \ldots\ [_{CP}\ <DP_{PL}>\ \ldots\ [_{vP}\ \textbf{\textit{ké}}\ \ldots\ \_\_\ ]]]]$

This happens with **all types of Ā-movement**:

(12) *Movement of plural triggers pronoun copying:*
- a. **Kêek** áa-cíi Áyèn [$_{vP}$ **ké** tîiŋ].
  3PL 3P-PRF.OV Ayen.GEN **3PL** see.NF
  'Them, Ayen has seen.'
- b. Bòl à-cé **ròoor** [$_{CP}$ cè [$_{vP}$ **ké** lâat]] tîiŋ.
  Bol 3S-PRF **men** PRF.3SG **3PL** insult.NF see.NF
  'Bol has seen the men he has insulted.'
- c. Yè **kɔ̂ɔc-kò** [$_{CP}$ cíi Bôl [$_{vP}$ **ké** tîiŋ]]?
  be **people-which** PRF.OV Bol.GEN **3PL** see.NF
  'Which people has Bol seen?'

Ké-copying is **obligatory at each *v*P edge**, and occurs in exactly the *v*P-level V2 position:

(13) *Ké-copying is obligatory at each vP edge:*
- a. Yè **kɔ̂ɔc-kò** [$_{CP}$ yíi Bôl [$_{vP}$ **ké** luêeel [$_{CP}$ è cíi Áyèn [$_{vP}$ **ké** tîiŋ]]]]?
  be **people-which** HAB.OV Bol.GEN **3PL** say.NF C PRF.OV Ayen.GEN **3PL** see.NF
  'Which people does Bol say Ayen has seen?'
- b. *Yè **kɔ̂ɔc-kò** [$_{CP}$ yíi Bôl [$_{vP}$ **ké** luêeel [$_{CP}$ è cíi Áyèn [$_{vP}$ tîiŋ]]]]?
  be **people-which** HAB.OV Bol.GEN **3PL** say.NF C PRF.OV Ayen.GEN see.NF
  'Which people does Bol say Ayen has seen?'
- c. *Yè **kɔ̂ɔc-kò** [$_{CP}$ yíi Bôl [$_{vP}$ luêeel [$_{CP}$ è cíi Áyèn [$_{vP}$ **ké** tîiŋ]]]]?
  be **people-which** HAB.OV Bol.GEN say.NF C PRF.OV Ayen.GEN **3PL** see.NF
  'Which people does Bol say Ayen has seen?'
- d. *Yè **kɔ̂ɔc-kò** [$_{CP}$ yíi Bôl [$_{vP}$ luêeel [$_{CP}$ è cíi Áyèn [$_{vP}$ tîiŋ]]]]?
  be **people-which** HAB.OV Bol.GEN say.NF C PRF.OV Ayen.GEN see.NF
  'Which people does Bol say Ayen has seen?'

[4] We might wonder why there is no analogous *ké*-copying at the CP edge. In Van Urk (2016), I link this to the presence of agreement at the CP edge, which I suggest fulfills a multiple spell-out requirement.

In Van Urk (2016), I argue at length that this is a process of **intermediate copy spell-out**. What matters here is that is a reflex of successive cyclicity in Dinka.

2 Resumption in Dinka

In addition to movement dependencies, Dinka has a grammatical strategy of **resumption**, employed in all Ā-constructions. In this section, I show that resumption is distinct from movement and *ké*-copying.

2.1 Resumption is not movement

Resumption can be distinguished from movement in **two ways**:

1. Island-insensitivity.
   Resumption is not sensitive to islands. For example, (13) shows that a resumptive pronoun is permitted in a **relative clause island**:

   (14) Yè **kɔ̂ɔc-kò$_i$** cɪ̈́i Bôl ké [$_{DP}$ ràaan [$_{CP}$ cɛ̈́ cuɪ̈̂in câam kɛ̀nɛ̀ **kêek$_i$**]] tɪ̈̂iŋ?
   be **people-which** PRF.OV Bol.GEN 3PL person PRF food eat.NF with **3PL** see.NF
   '(lit.) Which people has Bol seen someone who has eaten food with them?'

   In contrast, movement **obeys islands**:

   (15) *Yè **ŋɔ́** [$_{CP}$ cɪ́i Áyèn [$_{DP}$ ràaan [$_{CP}$ mɛ̀r ___]] tɪ̈̂iŋ]?
   be **what** PRF.OV Ayen.GEN person.CS1 decorate see.NF
   'What has Ayen seen someone [who is decorating it]?'

2. No successive cyclicity.
   Second, reflexes of successive cyclicity may be **absent** in resumptive contexts. V2 positions that intervene between an antecedent and a resumptive pronoun may be **occupied**:

   (16) **Àyén$_i$** à-cɪ̈́i Bôl yɔ̈̂ɔ̈k [$_{CP}$ kɛ̀ kɔ̂ɔc-kɛ̀] nhiàr **yêen$_i$**].
   Ayen 3S-PRF.OV Bol.GEN find.NF C people-these love **3SG**
   'Ayen, Bol found out that these people love.'

   In addition, *ké*-copying can be **absent** with resumption (17a),

   (17) *Ké-copying may be absent in resumption:*
   a. Wɔ̂ɔk$_i$ cɪ́i Bôl [$_{vP}$ cuɪ̈̂in câam kɛ̀nɛ̀ **wɔ̂ɔk$_i$**].
      1PL PRF.OV Bol.GEN food eat.NF with **1PL**
      'Us, Bol has eaten food with us.'
   b. Wêek$_i$ cɪ́i Bôl [$_{vP}$ cuɪ̈̂in câam kɛ̀nɛ̀ **wêek$_i$**].
      2PL PRF.OV Bol.GEN food eat.NF with **2PL**
      'You all, Bol has eaten food with.'

In contrast, as we saw above, *ké*-copying is **obligatory** in the same environment with movement (18a–b).[5]

(18) *Ké-copying is obligatory with movement:*

a. Wɔ̂ɔk$_i$ cɪ̈́i Bôl [$_{vP}$ ***(<u>ké</u>)** cuɪ̂in câam].
1PL PRF.OV Bol.GEN **3PL** food eat.NF
'Us, Bol has eaten food with.'

b. Wêek$_i$ cɪ̈́i Bôl [$_{vP}$ ***(<u>ké</u>)** cuɪ̂in câam].
2PL PRF.OV Bol.GEN **3PL** food eat.NF
'You all, Bol has eaten food with.'

2.2 Ké-copying is not resumption

We can also show that resumption and *ké*-copying reflect distinct processes, in **three ways**:

1. <u>Resumption is possible with singulars.</u>
Ké-copying is restricted to plurals and is impossible with singulars (19a). Resumption shows no such restriction (19b):

(19) *Only resumption is possible with singular pronouns:*

a. *Yè **ŋà** [$_{CP}$ cɪ́i Bôl [$_{vP}$ **<u>yè(en)</u>** tɪ̂iŋ]]?
be **who** PRF.OV Bol.GEN **3SG** see.NF
'Who has Bol seen?'

b. Yè **ŋɔ́$_i$** cɛ́ɛmɛ̀ Bôl cuɪ̂in [$_{PP}$ nɛ̀ **yêen$_i$**]?
be **what** eat.OBLV Bol.GEN food P **3SG**
'What is Bol eating with?'

2. <u>Resumptives match in person.</u>
Resumptive pronouns always match the person features of the antecedent:

(20) *Resumptive pronouns match in person:*

a. Wɔ̂ɔk$_i$ cɪ́i Bôl cuɪ̂in câam kɛ̀nɛ̀ **wɔ̂ɔk$_i$/*kêek**.
1PL PRF.OV Bol.GEN food eat.NF with **1PL/3PL**
'Us, Bol has eaten food with.'

b. Wêek$_i$ cɪ́i Bôl cuɪ̂in câam kɛ̀nɛ̀ **wêek$_i$/*kêek**.
2PL PRF.OV Bol.GEN food eat.NF with **2PL/3PL**
'You all, Bol has eaten food with.'

Ké-copying must involve the 3rd plural *ké(ek)* and does not match in person (see Van Urk 2016):

(21) *Ké-copying does not match person:*

a. Wɔ̂ɔk cɪ́i Áyèn [$_{vP}$ **<u>kêek</u>/*<u>wɔ̂ɔk</u>** tɪ̂iŋ].
we PRF.OV Ayen.GEN **3PL** see.NF
'Us, Ayen has seen.'

b. Wêek cɪ́i Áyèn [$_{vP}$ **<u>kêek</u>/*<u>wêek</u>** tɪ̂iŋ].
you.PL PRF.OV Ayen.GEN **3PL** see.NF
'You all, Ayen has seen.'

[5]Note that movement of the complement of the comitative is accompanied by stranding of the preposition, which suffixes onto the verb/auxiliary (although the auxiliary *cɪ́i* is unusual in that it allows this prepositional suffix to be absent).

3. *Ké*-copying targets different position.
   Ké-copying only occurs in the local Spec-*v*P position, but resumption is impossible there:

   (22) *Yè **ŋà**$_i$ [$_{CP}$ cíi Bôl [$_{vP}$ **yè(en)**$_i$ tîiŋ]]?
   be **who** PRF.OV Bol.GEN **3SG** see.NF
   'Who has Bol seen?'

$\Longrightarrow$ Resumption in Dinka does not show any of the hallmarks of long-distance movement with obligatory steps of intermediate movement.

Conclusion: Dinka resumption may involve a **base-generated** structure, involving an island-insensitive binding relation between the antecedent and pronoun.

3 Mixed chains in Dinka

Can resumption and movement co-occur?

Using Dinka's reflexes of successive cyclicity, I will show that Dinka allows **mixed chains**. On this basis, I propose that the antecedent can be introduced **at any phase edge** and move successive-cyclically from there:

(23) Antecedent$_i$ ... [$_{CP/vP}$ <*Antecedent*$_i$> ... Pronoun$_i$ ...]

3.1 Successive cyclicity is optional in resumption

Reflexes of successive cyclicity may **optionally** accompany resumption. For example, a plural resumptive antecedent can optionally trigger *ké*-copying in clause-internal resumption:

(24) *Resumptive chains may optionally be accompanied by ké-copying:*

a. Wɔ̂ɔk$_i$ cíi Bôl [$_{vP}$ **(ké)** cuîin câam kènè **wɔ̂ɔk$_i$**].
   1PL PRF.OV Bol.GEN **3PL** food eat.NF with **1PL**
   'Us, Bol has eaten food with.'

b. Wêek$_i$ cíi Bôl [$_{vP}$ **(ké)** cuîin câam kènè **wêek$_i$**].
   2PL PRF.OV Bol.GEN **3PL** food eat.NF with **2PL**
   'You all, Bol has eaten food with.'

c. Kêek$_i$ áa-cíi Bôl [$_{vP}$ **(ké)** cuîin câam kènè **kêek$_i$**].
   3PL PL-PRF.OV Bol.GEN **3PL** food eat.NF with **3PL**
   'Them, Bol has eaten food with.'

I propose that this reflects two derivations: one in which the antecedent is **first introduced in Spec-*v*P** (25), moving to Spec-CP from there, and one in which the antecedent is **introduced in Spec-CP** (26):

(25) **Derivation for (25a–c) with *ké*-copying:**

ke

[$_{CP}$ Antecedent$_i$ ... [$_{vP}$ <*Antecedent*$_i$> *v* ... Pronoun$_i$ ...]]

(26) **Derivation for (25a–c) without *ké*-copying:**
[$_{CP}$ Antecedent$_i$ … [$_{vP}$ *v* … Pronoun$_i$ …]]

Similarly, a resumptive dependency can **satisfy V2** at an intermediate Spec-CP:

(27) Yè **kɔ̂ɔc-kó$_i$** yṳ̀ṳkṳ̀ **<u>ké</u>** tàak [$_{CP}$ kè̤ (___) cí̤i̤ Áyèn càm kè̤nè̤
be **people-which** HAB.1P **3PL** think.NF C PRF.OV Ayen.GEN eat.NF with
kêek$_i$]?
3PL
'Which people do we think Ayen has eaten with?'

I take this as evidence that the resumptive antecedent may also be introduced in an intermediate Spec-CP and move successive-cyclically from that point:

(28) **Derivation for (28):**
[$_{CP}$ Antecedent$_i$ … [$_{CP}$ <*Antecedent*$_i$> C … Pronoun$_i$ …]]

> **Proposal:** Dinka C/*v* are both capable of ***initiating either movement or resumption***, like Irish complementizers (McCloskey 2002; Asudeh 2012). This results in mixed chains of resumption and movement.

3.2 More evidence for mixed chains

This view of resumptive dependencies in Dinka makes predictions about the **interaction** of optional reflexes of successive cyclicity in resumption. Resumptive dependencies start to **<u>behave like movement</u>** once a movement reflex is triggered:

1. If a resumptive dependency satisfies V2 at a CP edge, *ké*-copying **is obligatory above it and optional below it**:

   (29) a. Yè kɔ̂ɔc-kó yṳ̀ṳkṳ̀ ***(<u>ké</u>)** tàak [$_{CP}$ kè̤ (___) cí̤i̤ Áyèn cuî̤n
   be people-which HAB.1P **3PL** think.NF C PRF.OV Ayen.GEN eat.NF
   câam kè̤nè̤ kêek]?
   with 3PL
   'Which people do we think Ayen has eaten with?'

   b. Yè kɔ̂ɔc-kó$_i$ yṳ̀ṳkṳ̀ ké tàak [$_{CP}$ kè̤ (___) cí̤i̤ Áyèn **(<u>ké</u>)**
   be people-which HAB.1P 3PL think.NF C PRF.OV Ayen.GEN **3PL**
   càm kè̤nè̤ kêek$_i$]?
   eat.NF with 3PL
   'Which people do we think Ayen has eaten with?'

   This follows, because V2 satisfaction at the intermediate CP edge requires that the antecedent has been introduced **at least as low as the intermediate Spec-CP**.

2. When a different XP satisfies V2, *ké*-copying **is ungrammatical below it, but possible above it**:

(30) Yè **kɔ̂ɔc-kó$_i$** yùukù ké tàak [$_{CP}$ kè Àyén cé **(*ké)** cuîin câam kènè
be **people-which** HAB.1P 3PL think C Ayen PRF **3PL** food eat.NF with
kêek$_i$]?
3PL
'Which people do we think Ayen has eaten food with?'

This is predicted by the approach outlined so far. If the intermediate Spec-CP is occupied, this rules out a derivation in which the antecedent starts in the embedded clause. As a result, reflexes of successive cyclicity should be absent.

3. When a resumptive dependency reaches into an island, *ké*-copying **is ungrammatical inside the island, but grammatical outside of it**:

(31) Yè **kɔ̂ɔc-kò$_i$** cíi Bôl **ké** [$_{DP}$ ràaan [$_{CP}$ cé **(*ké)** cuîin câam
be **people-which** PRF.OV Bol.GEN **3PL** person.CS1 PRF **3PL** food eat.NF
kènè **kêek$_i$**]] tîiŋ?
with **3PL** see.NF
'(lit.) Which people has Bol seen someone who has eaten food with them?'

This effect reflects the fact that the antecedent must be introduced outside the island, so that movement can proceed without violating island constraints:

(32) **Legitimate derivation of a mixed chain with antecedent outside of island:**
[$_{CP}$ Antecedent$_i$ … [<*Antecedent*$_i$> … [$_{Island}$ … Pronoun$_i$ …]]

(33) **Illegitimate derivation of a mixed chain with antecedent inside island:**
*[$_{CP}$ Antecedent$_i$ … [$_{Island}$ … [<*Antecedent*$_i$> … Pronoun$_i$ …]]

4 Implementing mixed chains

How do we encode the observation that C and v can initiate both movement and resumption?

In this section, I show that Dinka provides evidence that movement and resumption are triggered by the **same features**, unlike in McCloskey (2002).

4.1 Mixed chains in Irish

Similar evidence for mixed chains has been documented in Irish (e.g. McCloskey 2002). In Irish, resumption is signalled by the complementizer *aN*, and movement by *aL*:

(34) *Irish complementizers signal movement and resumption:*

a. an t-ainm [$_{CP}$ **a** hinnseadh dúinn [$_{CP}$ **a** bhí ___ ar an áit]]
the name ***aL*** was-told to-us ***aL*** was on the place
'the name that we were told was on the place'

b. an t-ór seo$_i$ [$_{CP}$ **ar** chreid corr-dhuine [$_{CP}$ **go** raibh sé$_i$ ann]]
the gold DEM ***aN*** thought some-people ***go*** was it there
'this gold that some people thought was there' (Irish; McCloskey 2002:185,190)

As McCloskey (2002) shows, a number of **mixed patterns** are also possible:

(35) *Mixed patterns in Irish:*

Resumption followed by movement

a. an galar$_i$ [$_{CP}$ **a** chuala mé [$_{CP}$ **ar** cailleadh bunadh an oileáin leis$_i$]]
the disease ***aL*** heard I ***aN*** died people the island by-it
'the disease that I heard that the people of the island died of it'

Resumption followed by resumption

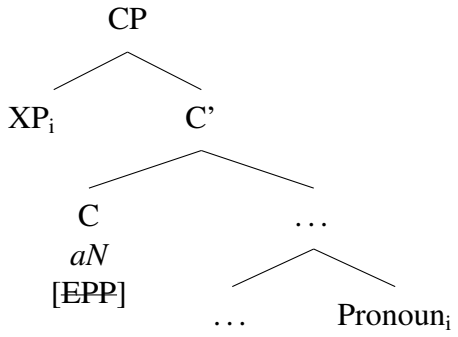
b. san áit$_i$ [$_{CP}$ **ar** dúradh leis [$_{CP}$ **a** bhfaigheadh sé Jim ann$_i$]]
in-the place ***aN*** was-told with-him ***aN*** find.COND he Jim in-it
'in the place where he was told that would find Jim'
(Irish; McCloskey 2002:198)

To capture this, McCloskey proposes that **C can initiate resumption or movement**, depending on its **featural content**. Specifically, he suggests that the three Irish Cs vary in terms of an [OP]-feature and an [EPP]-feature:[6]

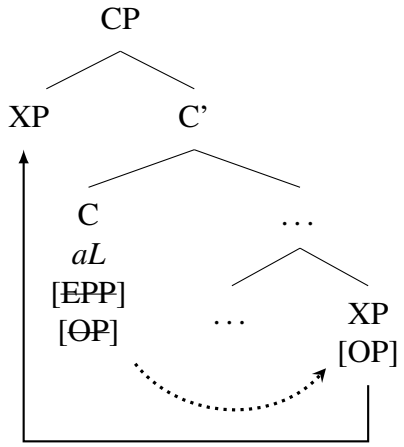
(36) C[OP, EPP] → *aL*
C[EPP] → *aN*
C → *go*

The [OP]-feature is satisfied under Agree (which must operate downward), and so distinguishes movement from resumption:

(37) **Resumption:**



(38) **Movement:**



4.2 Extending the McCloskey account to Dinka

I adopt the McCloskey account for Dinka and assume that both Dinka C and *v* have the option of initiating either resumption or movement. However, there is evidence in Dinka that resumption and movement are **established by the same features**.

[6] If we assume that each feature can fail to be satisfied, we can also take these to be one C with three realizations.

4.2.1 Resumption satisfies an operator feature at the vP edge

Recall that resumption may be accompanied by *ké*-copying:

(39) Wɔ̂ɔk$_i$ cɪ̈́i Bôl [$_{vP}$ **ké** cuɪ̈̂in câam kɛ̀nɛ̀ **wɔ̂ɔk$_i$**].
1PL PRF.OV Bol.GEN **3PL** food eat.NF with **1PL**
'Us, Bol has eaten food with.'

I analyze this as Merge of the resumptive antecedent at the *v*P edge, from which it moves successive-cyclically. However, there is evidence that only phrases that **satisfy an Ā-feature at the *v*P trigger *ké*-copying**:

1. Subjects never trigger *ké*-copying at the *v*P edge at which they are generated:

   (40) *Subjects only trigger ké-copying at higher vP edges:*
   a. Yè **kɔ̂ɔc-kò** [$_{CP}$ cɛ́ **(*ké)** cuɪ̈̂in câam]?
   be **people-which** PRF **3PL** food eat.NF
   'Which people have eaten food?'
   b. Yè **kɔ̂ɔc-kò** [$_{CP}$ yʊ̀ʊ̀kʊ̀ [$_{vP}$ **ké** tàak [$_{CP}$ càm [$_{vP}$ **(*ké)** cuɪ̈̂in]]]]?
   be **people-which** HAB.1PL **3PL** think.NF eat **3PL** food
   'Which people do we think are eating food?'

   We can make sense of this if Merge of the subject is not driven by Ā-features.
2. In addition, *ké*-copying may accompany another phrase in Spec-*v*P. When a non-object is moved out of the *v*P, the highest object still moves to Spec-*v*P. In such cases, **intermediate movement creates an additional specifier**, as revealed by *ké*-copying (41a). In cases like (41b), the resumptive antecedent is introduced in this V3 structure as well (41b):

   (41) *Intermediate movement may result in a V3 structure at vP edge:*
   a. Yè tɔ́ɔ̈ny kê díi [$_{CP}$ cɪ́i Bôl [$_{vP}$ **ké** cuɪ̈̂in thâal]]?
   be pots QUANT.PL how PRF.OV Bol.GEN **3PL** food cook.NF
   'How many pots has Bol cooked food with?'
   b. Wêek$_i$ cɪ́i Bôl [$_{vP}$ **ké** cuɪ̈̂in câam kɛ̀nɛ̀ wêek$_i$].
   2PL PRF.OV Bol.GEN **3PL** food eat.NF with 2PL
   'You all, Bol has eaten food with.'

   The introduction of a resumptive antecedent **cannot then solely satisfy an EPP feature**.

4.2.2 Resumption satisfies an operator feature at the CP edge

We can build a similar argument for the CP edge. In addition to the V2 effect, every CP edge hosts a **prefix** on the 2nd position verb/auxiliary that expresses tense and agreement with the DP in Spec-CP:

(42) *Prefix on the V2 positions hosts information about tense/agreement:*
   a. Mòc **à**-cɛ́ yɪ̈̂in tɪ̈̂iŋ.
   man **3S**-PRF you see.NF
   'The man has seen you.'
   b. Miɛ̀ɛr **áa**-càa kɛ́ tɪ̈̂iŋ.
   giraffes **3P**-PRF.1SG 3PL see.NF
   'Giraffes, I have seen.'

This prefix has an **extraction form**, which appears when Spec-CP is targeted by relativization or intermediate movement.[7] For 3rd person operators in the present tense, the form is ∅- instead of *à-/áa-*, for example:

(43) Yè kɔ̂ɔc-kò [$_{CP}$ **∅**-yíi Bôl [$_{vP}$ ké luêeel [$_{CP}$ è̤ **∅**-cíi
be people-which **EXT.3**-HAB.OV Bol.GEN 3PL say.NF C **EXT.3**-PRF.OV
Áyèn [$_{vP}$ ké tîiŋ]]]]?
Ayen.GEN 3PL see.NF
'Which people does Bol say Ayen has seen?'

I suggest that this extraction form reflects the presence of **an operator feature**, [OP].[8] Importantly, the extraction form must still appear when a resumptive antecedent satisfies V2:

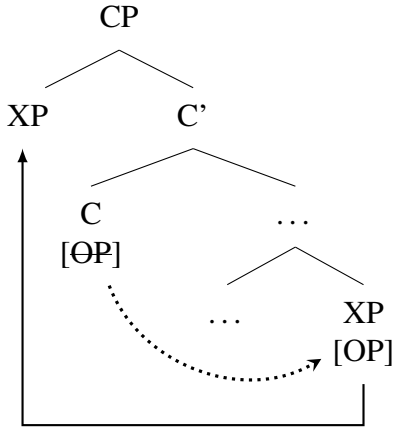
(44) Yè kɔ̂ɔc-kó$_i$ yùṳkṳ̀ ké tàak [$_{CP}$ kè̤ ___ **∅**-cíi Áyèn (ké) càm
be people-which HAB.1P 3PL think.NF C **EXT.3**-PRF.OV Ayen.GEN 3PL eat.NF
kè̤nè̤ kêek$_i$]?
with 3PL
'Which people do we think Ayen has eaten with?'

We can conclude that a resumptive antecedent **satisfies more than an EPP feature at the CP edge**.

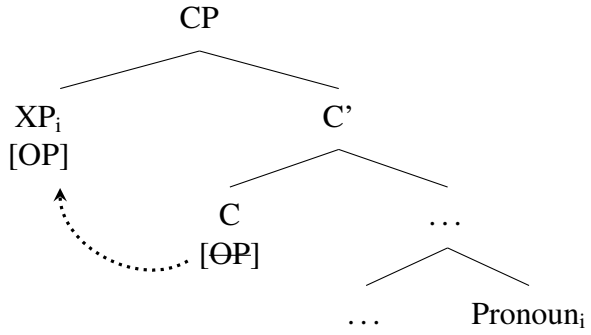
Initiating movement and resumption

On this basis, I propose that C and *v* both carry an operator feature in Dinka, which can be satisfied by Agree followed by Internal Merge, or **directly through External Merge**:

(45) **Movement:**



(46) **Resumption:**



▷ **Consequences for a theory of features:** I propose movement is triggered by Agree with a probe that has the EPP subproperty (Pesetsky and Torrego 2001). Such features must then also initiate Internal Merge, to establish Agree in a Spec-Head configuration.[9]

[7] Topicalization does not trigger the extraction form, so that intermediate and terminal movement steps of the same long-distance topicalization dependency have different effects on this prefix. As noted by Van Urk (2015), this suggests that intermediate movement is triggered by different features.

[8] Note that an EPP-feature cannot distinguish these Cs, as in Irish, because even a plain declarative hosts V2.

[9] These facts may also fit within a theory in which Merge is free, but its distribution is regulated by labelling. Contemporary approaches of this sort typically assume that Merge in a position like Spec-CP is conditioned on feature sharing between the specifier and the head.

Support for the idea that C can **Agree with its specifier** comes from the extraction suffix we just looked at. It registers agreement with the antecedent:

(47) *Extraction suffix registers agreement at intermediate Spec-CP:*

a. Yè kɔ̂ɔc-kò [$_{CP}$ **Ø**-yɻ́i Bôl [$_{vP}$ ké luêeel [$_{CP}$ è̤ ___
be people-which **EXT.3**-HAB.OV Bol.GEN 3PL say.NF C
Ø-cɻ́i Áyèn [$_{vP}$ ké tɻ̂iŋ]]]]?
EXT.3-PRF.OV Ayen.GEN 3PL see.NF
'Which people does Bol say Ayen has seen?'

b. Yè kɔ̂ɔc-kò [$_{CP}$ **é̤-kè**-yɻ́i Bôl [$_{vP}$ ké luêeel [$_{CP}$ è̤ ___
be people-which **PST-EXT.3P**-HAB.OV Bol.GEN 3PL say.NF C
é̤-kè-cɻ́i Áyèn [$_{vP}$ (ké) tɻ̂iŋ]]]]?
PST-EXT.3P-PRF.OV Ayen.GEN 3PL see.NF
'Which people did Bol say Ayen had seen?'

This is independent evidence for an Agree relation between C and its specifier.

So what then distinguishes aL and aN in Irish?

▷ **A syntactic approach:**
We could maintain McCloskey's analysis, but adopt Baker's (2008) suggestion that languages may vary in how they regulate the direction of Agree. In Irish, Agree would be strictly downward. In contrast, we could take Spec-Head agreement in Dinka to reflect the operation of upward Agree.

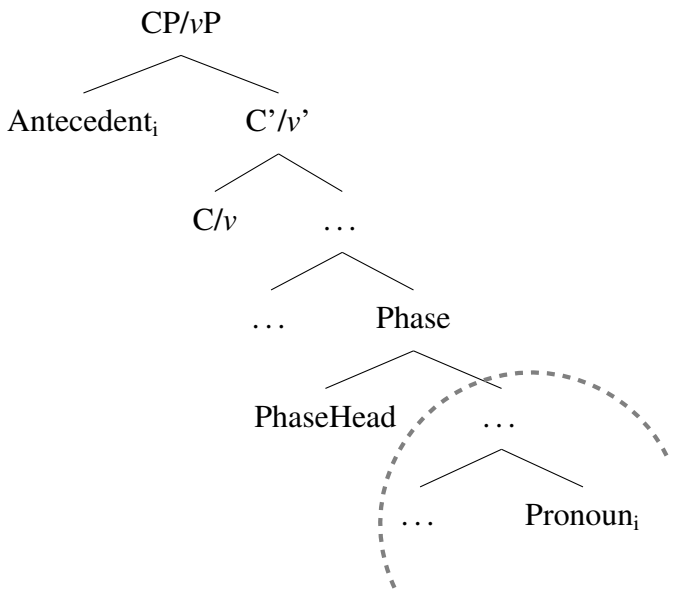
▷ **A semantic approach:**
Ā-movement is ordinarily unable to bind pronouns, giving rise to Weak Crossover effects. We could imagine that heads that can introduce resumptives have a special property that allows them circumvent crossover effects (see also Asudeh 2012 for such an account).

For example, Weak Crossover has been attributed to the idea that Ā-movement involves abstraction over choice functions (Sauerland 1998; Ruys 2000). We could imagine that *aN* is different in that it creates abstraction over individuals, allowing a resumptive pronoun to be bound from an Ā-position.

5 Restrictions on resumption

I now turn to the restrictions on resumption in Dinka. In this section, I show that a resumptive pronoun must be separated from the antecedent by **at least one phase boundary**:

(48)



I propose that this pattern follows from **phase impenetrability**, which can create an island context in which the resumptive pronoun is trapped (see also Rouveret 2002, 2008 and Deal 2015). This provides evidence for a **last resort view of resumption** (Pesetsky 1998; Salzmann 2009; Sichel 2014; Georgi and Salzmann 2016).

5.1 Highest Subject Restriction

It is well-known that many languages with resumption display restrictions on where resumptive pronouns can appear. In Dinka, resumption is unrestricted if the resumptive is **inside a PP or DP** (49a–b):

(49) *Resumptive pronouns may occur inside PPs and DPs:*

a. Yè **ŋà$_i$** cɛ́ɛmɛ̈ Bôl [$_{DP}$ cuîin-**dè$_i$**]?
be **who** eat.OBLV Bol.GEN food-SG.**3SG**
'Whose food is Bol eating?'

b. Yè **ŋɔ́$_i$** cɛ́ɛmɛ̈ Bôl cuîin [$_{PP}$ nɛ̈ **yêen$_i$**]?
be **what** eat.OBLV Bol.GEN food P **3SG**
'What is Bol eating with?'

However, there are several restrictions on resumption of subjects and objects. As in many languages, resumption obeys the **Highest Subject Restriction**. As (50a–b) demonstrate, only embedded subjects can be resumptive pronouns.[10]

(50) *Highest Subject Restriction in Dinka:*

a. *Yè kɔ̂ɔc-kó$_i$ **cìikɛ̀$_i$** Bòl tîiŋ?
be people-which **PRF.3PL** Bol see.NF
'Which people has Bol seen?'

[10]Non-initial pronominal subjects are realized as clitics on the V2 verb/auxiliary, bolded here.

b. Yè kɔ̂ɔc-kò$_i$ yi̱i Bôl ké luêeel [$_{CP}$ è̱ **lɛ̀ɛtkè$_i$** Àyén]?
be people-which HAB.OV Bol.GEN 3PL say.NF C **insult.3PL** Ayen
'Which people does Bol say is insulting Ayen?'

As in Irish, what is banned is a **local relationship** between resumptive subject and antecedent. If the resumptive antecedent is first merged in the embedded Spec-CP, resumption is again out:

(51) *Yè kɔ̂ɔc-kò$_i$ yù̱u̱kù̱ ké tàak [$_{CP}$ kè̱ ⟨*kɔ̂ɔc-kò$_i$*⟩ **càmkè$_i$** cuî̱in]?
be people-which HAB.1P 3PL think.NF C **eat.3PL** food
'Which people do we think have eaten food?'

Note: The difference between (50) and (51) arises because the complementizer *è̱* may be followed by V1.

5.2 Restrictions on objects

As in Welsh (Rouveret 2002, 2008; Willis 2011), Dinka also has something like a **highest object restriction**. Embedded direct objects can also be resumptive pronouns (52a), but the highest object cannot (52b):

(52) *Only embedded objects can be resumed:*

a. **Wêek$_i$** yi̱i Bôl ké luêeel [$_{CP}$ è̱ cè̱ **wêek$_i$** tî̱iŋ].
2PL HAB.OV Bol.GEN 3PL say.NF C PRF.3SG **2PL** see.NF
'You all, Bol has said that he has seen.'

b. *Yè **ŋó̱$_i$** cí̱i ró̱o̱o̱r [$_{vP}$ **yêen$_i$** tî̱iŋ]?
be **what** PRF.OV men.GEN **3SG** see.NF
'What have the men seen?'

The restriction on the highest object affects ditransitives **asymmetrically**. Recall that, in a ditransitive, either object can appear in Spec-*v*P:

(53) *One object in Spec-vP in ditransitives:*

a. Yî̱in cé̱ [$_{vP}$ **Bòl** gàam cáa ákó̱l].
you PRF **Bol** give.NF milk afternoon
'You have given Bòl milk in the afternoon.'

b. Yî̱in cé̱ [$_{vP}$ **cáa** gàam Bòl ákó̱l].
you PRF **milk** give.NF Bol afternoon
'You have given milk to Bol in the afternoon.'

The highest object in a ditransitive **cannot be a resumptive pronoun**, as we would expect:

(54) *Resumptive pronoun cannot appear in local Spec-vP:*

a. *Yè **ŋà$_i$** cí̱i Bôl [$_{vP}$ **yêen$_i$** yiê̱ɛ̱n cà]?
be who PRF.OV Bol.GEN **3SG** give.NF milk
'Who has Bol given milk to?'

b. *Yè **ŋó̱$_i$** cí̱i Bôl [$_{vP}$ **yêen$_i$** yiê̱ɛ̱n Àyén]?
be **what** PRF.OV Bol.GEN **3SG** give.NF Ayen
'What has Bol given Ayen?'

A resumptive pronoun can be **a low indirect object** (55a). However, a postverbal direct object still cannot be resumed (55b).

(55) *Only low indirect object may be resumed:*

a. Yè ŋà$_i$ cíi Bôl [$_{vP}$ cáa yiɛ̈ɛ̈n **yêen$_i$**]?
be who PRF.OV Bol.GEN milk give.NF **3SG**
'Who has Bol given milk to?'

b. *Yè ŋó$_i$ cíi Bôl [$_{vP}$ Àyén yiɛ̈ɛ̈n **yêen$_i$**]?
be what PRF.OV Bol.GEN Ayen give.NF **3SG**
'What has Bol given Ayen?'

I suggest that this asymmetry in ditransitives arises because low indirect objects are introduced by a **null P** (*cf.* Marantz 1993; Bruening 2001). In this view, the structure of (55b) is really (56):

(56) Yè ŋà$_i$ cíi Bôl [$_{vP}$ cáa yiɛ̈ɛ̈n [$_{PP}$ P **yêen$_i$**]]?
be who PRF.OV Bol.GEN milk give.NF **3SG**
'Who has Bol given milk to?'

The advantage of this suggestion is that it allows us to formulate a simple generalization about the distribution of resumptive pronouns in Dinka.

> **Proposed generalization:** A resumptive antecedent may be merged only if it is separated from the resumptive pronoun at least by a **DP, PP, or CP boundary**. Importantly, a *v*P boundary is insufficient (55b).

Note: These restrictions on resumption are ***positional***, and can be dissociated from differences in clitichood and case (*cf.* Sichel 2014; Georgi & Salzmann 2016).

On an antilocality account

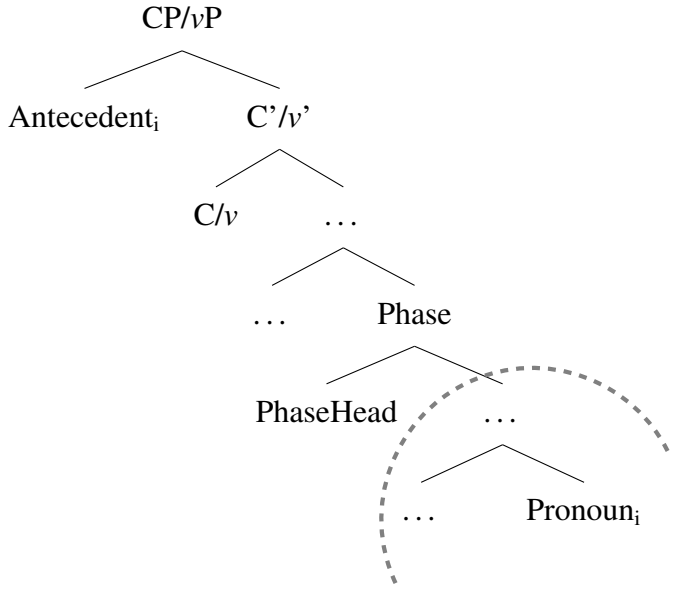
The Highest Subject Restriction has often been interpreted as an **antilocality effect** (e.g. Ā-Disjointness in McCloskey 1990, 2006), or a ban on a resumptive antecedent appearing to close to the pronoun. However, the Dinka facts suggest that the relevant locality domains/phases do not quite line up.

⇒ We need an account that can capture the idea that a resumptive pronoun separated by a *v*P phase is **still too close**.

5.3 The role of phase impenetrability

1. **Why would a phase boundary matter?**
   Assuming that CPs, DPs, and PPs all represent **phases**, the generalization above means that a resumptive pronoun in Dinka is introduced in a configuration like (57):

(57)



I propose that a configuration like (57) is necessary because a resumptive pronoun is only **licit when movement is impossible**. In particular, (57) represents a derivation, in which the higher head cannot access the resumptive pronoun site, because of **phase impenetrability** (see also Rouveret 2002, 2008 and Deal 2015).

$\Longrightarrow$ In this environment, resumption acts as a ***last resort strategy***. In all other positions, movement is used instead. (For various possible implementations of resumption as last resort: Pesetsky 1998; Salzmann 2009; Sichel 2014; Georgi and Salzmann 2016 a.o.).

2. ***Why the vP asymmetry?***
   As pointed out above, a *v*P boundary alone is insufficient to license resumption:

(58) *Yè ŋo̤$_i$ cï̤i Bôl [$_{vP}$ Àyén yiê̤ɛ̤n **yêen$_i$**]?
be what PRF.OV Bol.GEN Ayen give.NF **3SG**
'What has Bol given Ayen?'

We do not want to deny the phasal status of *v*P, since Dinka provides clear evidence for it.

> **Proposal:** The difference resides in the featural specifications of the relevant phase heads. What distinguishes *v* is that it always carries a **featural trigger** to initiate intermediate movement. In contrast, I suggest that C, P, and D may lack features that drive intermediate movement.

This idea explains the ungrammaticality of (58), because it means that the competing movement derivation will **always be successful**.

Conclusion

- ▷ In this talk, I have presented new evidence for **mixed chains** of movement and resumption in Dinka (McCloskey 2002; Imanishi 2011).

- ▷ Following McCloskey (2002), I proposed that Dinka C and *v* can **initiate either resumption or movement**. In Dinka, the introduction of the resumptive antecedent and movement of an $\bar{A}$-operator seem to satisfy similar features. This suggests that Internal and External Merge may satisfy the same properties of a head.

- ▷ I argued that restrictions on these mixed chains provide evidence that **phase impenetrability** can create islands for resumptive pronouns, if featural triggers may be absent on phase heads.

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Appendix: Some typological predictions

The phase impenetrability approach defended for Dinka suggests a crosslinguistic perspective that links resumption to the distribution of featural triggers on phase heads. Klein (2014, 2016) presents the patterns in (59a–e) below in his typology of resumption, to which we can add (59f), Dinka:

(59) **Klein's (2014:332;2016:251) typology of resumption, with Dinka.**

	SU	SU_{EMB}	OB	OB_{EMB}	Language
a.	no	yes	yes	yes	Hebrew, Irish, etc.
b.	no	yes	no	no	Nupe
c.	yes	yes	yes	yes	Akan, Lebanese Arabic
d.	yes	yes	no	no	Vata, Yoruba
e.	no	no	no	no	Welsh[11]
f.	no	yes	no	yes	Dinka

To model this, we can allow variation in whether a featural trigger for intermediate movement is present on *v* and declarative C. The highest C will always carry a featural trigger (this derives the Highest Subject Restriction in this approach, *cf.* Deal 2015). This variation predicts three different systems:

(60)

Probes with movement triggers	Resumptive positions	Language(s)
matrix C	SU_{EMB}, OB	Hebrew, Irish
matrix/embedded C	SU_{EMB}, OB	Hebrew, Irish
matrix C, *v*	SU_{EMB}, OB_{EMB}	Dinka
matrix/embedded C, *v*	only non-subjects and non-objects	Welsh

These correspond to (59a), (59f), and (59e). The three systems not in (60) involve:

- ▷ Languages that violate the Highest Subject Restriction, which we could treat as having only resumptive complementizers
- ▷ Languages in which only (embedded) subjects require resumption. I suggest that the existence of such languages can be attributed to independent issues with subject extraction.

[11] Following Borsley (2010) I assume at least some varieties of Welsh only tolerate resumption into possessors and PPs.