Revisiting Parallel Chains: a long road to repetition

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1 Introduction

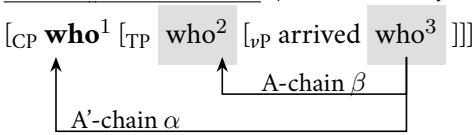
- Movement in **Narrow Syntax** creates copies (Chomsky 2000, *i.a.*)
  ➜ E.g., Successive cyclic movement, each step with different launching and landing sites
- Resolution in the **PF** (Nunes 1999, 2004) (shade =silent copies)

(1) [$_{CP1}$ **who**^{1} do [$_{TP1}$ you [$_{vP1}$ who^{2} think [$_{CP2}$ who^{3} that [$_{TP2}$ Mary [$_{vP2}$ who^{4} saw who^{5}]]]]]]

a. V,Comp ➜ Spec*v*P2: CH(who^{4}, who^{5})
b. Spec*v*P2 ➜ SpecCP2: CH(who^{3}, who^{4})
c. SpecCP2 ➜ Spec*v*P1: CH(who^{2}, who^{3})
d. Spec*v*P1 ➜ SpecCP1: CH(**who**^{1}, who^{2})

- **Parallel movement** and **parallel chains**: two movement steps with the **same launching site**
- Origin: Chomsky (2008)'s analysis of local wh-movement of subjects
  - ➜ Chain Uniformity: eliminate non-uniform A'-A-A chains in successive-cyclic movement.
  - ➜ Feature-inheritance: all [*u*F] reside on phase heads, and [*uϕ*] is "donated" from phase head C ➜ T
  - *cf.* Anti-locality: avoid "too-local" movement from SpecCP to SpecTP
    (e.g., Erlewine 2016, 2020; Bošković 2016; Newman 2020; Branan 2022; Chen and Yip 2025)
- Conditions: multiple movement-triggering features on different heads
  - *who* is attracted by [*ϕ*/K(=CASE)] on T and [WH] on C.

(2) Parallel *wh*-movement (≠successive-cyclic) Cf. *Who arrived?* (Chomsky 2008)



(3) **Parallel chain formation**

Two chains α and β are related by parallel chain formation if and only if:

a. Tail (α) = Tail (β), and

b. Head (α) ≠ Head (β) (Kandybowicz 2008, p.115)

- PCs have been extremely successful in accounting for a wide range of movement phenomena

(4) a. Wh-movement: Local *wh*-subject movement (Chomsky 2008), Icelandic *wh*-movement (Chomsky 2008; Bošković 2012), Medial-*wh* in German dialaects/Romani, Afrikaans, and non-English children data (Lohndal 2017)

b. Predicate clefts/ Contrastive verbs: Gengbe & Gungbe (Aboh 2006; Aboh and Dyakonova 2009), Russian (Aboh 2006; Aboh and Dyakonova 2009; Esipova 2018; Antonenko 2023), Kabiye (Collins and Essizewa 2007), Nupe (Kandybowicz 2008), Ibibio (Duncan 2016)

c. Object shift: Icelandic object shift (Bošković 2012)

d. Floating quantifiers: Korean FQ (Kim 2008), Japanese/English FQ (Mizoe 2013)

- **However**, there is a less-addressed **theoretical tension**.
- In a number of works following Chomsky (2008), PCs have been argued to have **a different chain resolution algorithm** and lead to "**repetition/doubling" effects** (e.g., predicate clefts, Aboh 2006; Aboh and Dyakonova 2009; Kandybowicz 2008)

➜ Yet, the motivating cases of PCs in Chomsky (2008) (beyond just local *wh*-subject movement) do not have repetition.

Overview of the talk

- Theoretical tension. We argue the the PF view of PCs in these works is problematic, as it
  - ❶ Contradicts the **standard theory** of linearization by Nunes (2004)
  - ❷ Misses a generalization that predicate clefts are associated with **affixes** adjacent to either *Head*(α) or *Head*(β)
  - ❸ Wrongly predicts all constructions with **PCs** as well as **overlapping chains** to involve repetition.

Overview of the talk (cont.)

- Proposal. We re-evaluate the status of Parallel Chains and argue that:
  - PC is a **purely syntactic** operation and bears minimal relevance to multiple pronunciation of movement chains
  - Repetition is due to **independent PF components** ➜ successive-cyclic movement and parallel movement only differ in Narrow Syntax, but they **do not differ in chain resolution**

  ➜ The theoretical space for repetition is thereby limited.
- To the best of our knowledge, this study is the first to demonstrate that Nunes's chain resolution algorithm can derive varieties of movement chains without extra stipulations on the PF role of PCs.

- **Road map**

§2: A PF role of PCs?
§3: A theoretical challenge
§4: Repetition by PF triggers
§5: PCs and overlapping chains without repetition
§6: Conclusion

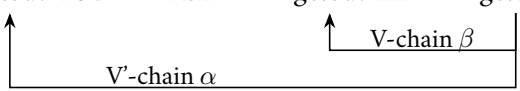
2 A PF role of PCs?

- In the **PF**, PCs are held responsible for the doubling effects in predicate clefts in Gengbe, Gungbe, Russian, Kabiye, Nupe, etc.
- A verb can be attracted by Asp and Foc as in (5).
  - Empirical motivation: the fronted verb is in bare form, without affixes
  - Theoretical motivation: avoid excoporation from complex head (Baker 1988)

(5) Predicate clefts in Gengbe via PCs (Aboh and Dyakonova 2009, 1054)

[$_{\text{FocP}}$ **to**^{1} ye [$_{\text{TP}}$ Kofi [$_{\text{AspP}}$ **to**^{2}-na [$_{v\text{P}}$ to^3]]]].

go.out FOC Kofi go.out-HAB go.out 'Kofi often GOES OUT.'



➜ (5) mirrors (2), if we assume with Koopman (1984) in that predicate clefts involve V'-chains.

- It has been proposed that chains (precisely, movement dependencies) with different heads are resolved **independently** in the PF, despite sharing the same tail.
  - V-chain α: **to**^{2}, to^{3}
  - V'-chain β: **to**^{1}, to^{3}

➜ In Nunes (2004)'s terms—which the above work usually cites—PCs are treated as *separate nontrivial chains* here.

- No explanation is given to why the same repetition effects are not observed in every case of PCs.

3 A theoretical challenge

- In Nunes (1999, 2004)'s theory of linearization of movement chains, Form Chain does not track derivational history.
  ➜ it *cannot* know if the copies were created by successive-cyclic or parallel movement!

(6) A nontrivial chain CH(X,Y) requires: (Nunes 2004:91)

① X and Y are nondistinct;

② X c-commands Y;

③ X has a feature checked by (the head of) X's sister and Y has a corresponding unchecked one.

- Applying Form Chain to PCs, e.g., (7) ...

➜ **PCs are indeed *not* separate chains, but rather, linked chains in the PF.**

  - Single copy pronunciation of *who*^{1} in (2) is the default,
  - which should apply to predicate clefts (e.g., *to*^{1} in (5)) equally

(7) [$_{CP}$ Who^1 $_{[\text{~~WH~~},\phi,\text{~~K~~}]}$ C$_{[WH]}$ [$_{TP}$ who^2 $_{[WH,\phi,\text{~~K~~}]}$ T$_{[\phi,K]}$ [$_{vP}$ ...who^3 $_{[WH,\phi,K]}$]]] CH(**who**^{1}, who^2)—CH(who^2, who^3)

- To reconcile the conflict, one would need to:

  (i) alter the definition of nontrivial chains and moreover,

  (ii) re-analyze (2) **as well as** other PC cases without repetition (see §5) as successive-cyclic*

➜ at the cost of giving up Chain Uniformity and Anti-locality.

*Alternatively, one can also bundle C and T, so there is only one movement step to the bundled SpecC/TP. See Erlewine (2020) and references therein, also Bošković (2024)'s A/A'P. This line of approaches only resolves the tension with local *wh*-subject movement, but not with other PCs cases without repetition.

4 Repetition by independently motivated PF considerations

4.1 The role of affix in predicate clefts with doubling

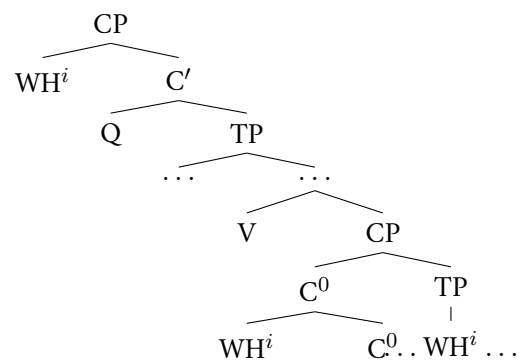
- The PF/repetition role of PCs is undesirable and unnecessary.
- Indeed, existing apparatus like Nunes's **Morphological Fusion** already sufficiently derive doubling in **successive-cyclic** movement like German *wh*-copying (Nunes 2004).

(8) German (from McDaniel 1986)

Wen glaubt Hans **wen** Jakob gesehen hat?
whom thinks Hans wen Jakob seen has
'Who does Hans think Jakob saw?'

➜ **PLC**: Pronounce Lower Copy :)
(Bošković and Nunes 2007)

(9)



- We propose that **doubling in predicate clefts is not due to PC *per se* but rather should be reduced to PF processes** like Nunes's Fusion or, Morphological Merger (Embick and Noyer 2001).
  - For example, in Gengbe, predicate clefts with doubling involve an (aspectual) suffix in the middle copy *-na* in (10)

(10) Predicate clefts in Gengbe via PCs (=(5); Aboh and Dyakonova 2009, 1054)

[$_{FocP}$ **to**^{1} ye [$_{TP}$ Kofi [$_{AspP}$ **to**^{2} -na [$_{vP}$ to^{3}]]]].

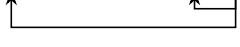
go.out FOC Kofi go.out-HAB go.out 'Kofi often GOES OUT.'

- Similarly, Nupe predicate clefts involve a nominalization prefix in the higher copy *bi-*, as in (11).

(11) Predicate clefts in Nupe via PCs

'It was CUTTING that Musa did to the meat.'

Bi- **ba**[1]	Musa	**ba**[2]	ba[3]	nakàn	o.
RED.NOM-cut	Musa	cut		meat	FOC



(Kandybowicz 2008:109)

- In both cases, the doubling effects follow naturally from Fusion/m-Merger of the verbs and these affixes, which renders the copies distinct, invalidating Form Chain (cf. criterion ①).

(12) Fusion invalidates Form Chain

In (5). [V]+[HAB]→[V,HAB] (=*tona*)
➜ CH(**to**^{1}, to^3) + ***to****na*

In (11).[N]+[V]→[N,V] (=*biba*)
➜ *bi****ba*** + CH(**ba**^{2}, ba^3)

- These copies (*to*^{2}/*ba*^{1}) are not contained in any nontrivial chains and are thus exempted from Chain Reduction, yielding repetition.

➜ It is thus unnecessary to attribute any PF effect to PC.

4.2 Further support: Bulgarian and Russian

- **Attributing doubling in predicate clefts to Fusion/m-Merger** has at least two desirable consequences.
- First, it predicts that in the absence of Fusion/m-Merger (i.e., no affix on the verbs), predicate clefts come with no doubling. This is borne out in Bulgarian (Embick and Izvorski 1997; Harizanov 2019).

(13) Bulgarian predicate fronting without doubling

a. Šte săm **pročel** knigata.
will be.1s.prs read the.book
'I'll have read the book.'

b. **Pročel** šte săm knigata.

- Second, it provides a way to understand an interesting pattern in Russian predicate clefts (Aboh and Dyakonova 2009, p.1039).

(14) *-to* is optional when V1 and V2 differ in forms in Russian

Videt'(-to) ja ee davno ne **videla**, ...
see.INF(-PTCL) I.NOM her.ACC long NEG see.PST.FEM.S

'As for seeing her, it's been a long time since I saw her, ...'

(15) *-to* is obligatory when V1 and V2 are identical in forms in Russian

Slomalas*(-to) ona **slomalas'**, ...
break.PST.FEM.S(-PTCL) she.NOM break.PST.FEM.S

'As for breaking, it did break, ...'

5 PCs and overlapping chains without repetition

- Moreover, many genuinely PC-derived constructions show no repetition at all, e.g.,
  - English local *wh*-subject movement in (2);
  - Icelandic agreement intervention (Chomsky 2008);
  - Icelandic quantifier floating (Bošković 2012)
- Recall that under the PF view of PCs, they are always "separate" chains that should be resolved independently

  ➜ Wrongly predicts repetition whenever two chains share the same tail

- Such a construal of "separate" chains by PCs would undesirably extend to cases involving what we call **overlapping chains (OCs)**, where the *Tail*s of two chains overlap.
- These cases can also be regarded as a subtype of PCs, instantiated in
  - **subextraction** ($Tail(\alpha) \in Tail(\beta)$) α containing the highest copy
  - **remnant movement** ($Tail(\beta) \in Tail(\alpha)$)
- If PC comes with a PF/repetition effect, we expect that **OCs would create a great deal of doublets, since neither heads nor tails are identical**.
- However, repetition still does not necessarily arise.

5.1 Subextraction

- The highest PP copy in (16b) cannot be extracted from the middle DP copy (a subject island, cf. (16a)) but must from the lowest DP copy at the object position (not an island, cf. (16c)).
- Importantly, single copy pronunciation of PP^1 and DP^a (with a silent PP^2) follows from Form Chain & Chain Reduction (=17).

(16) English subextraction from genuine vs. derived subjects (Chomsky 2008:153)

a. *It was [$_{PP}$ the car (not the truck) of] which [$_{DP}$ the driver Δ_{PP}] caused a scandal. *active*

b. It was [$_{PP}$ the car (not the truck) of] which [$_{DP}$ the driver Δ_{PP}] was found Δ_{DP} . *passive*

c. It was [$_{PP}$ the car (not the truck) of] which they found [$_{DP}$ the driver Δ_{PP}].

(17) a. [$_{PP}$ **of the car**]^1 ... [$_{DP}$ **the driver** **of the car**^{2}]^a ... [$_{DP}$ the driver of the car^3]^b ...

DP-chain β

PP-chain α

b. CH(**PP**^{1}, PP^2)—CH(**PP**^{2}, PP^3), CH(**DP**^{a}, DP^b) ➜ only PP^1 & DP^a pronounced

5.2 Remnant VP movement

- Remnant VP movement is known to have variations in how much materials are doubled:
  - languages like German only pronounce the verb once (den Besten and Webelhuth 1990)

(18) A remnant movement analysis of Participle-Auxiliary order in German

$[_{VP}$	t_i	**Gelesen**]	hat	Hans	$[_{DP}$	das Buch]$_i$	nicht	t_{VP}
		read	has	Hans		the book	not	

❶ DP movement; ❷ VP movement

'Hans has not read the book.'

- Languages like Hebrew pronounce the verb twice as in (19) (Landau 2006:37)

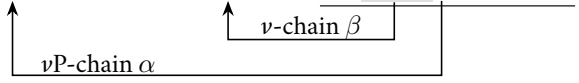
(19) Hebrew phrasal-infinitive fronting

[VP **liknot$_i$** et ha-praxim], hi **kanta$_i$**.
to-buy ACC the-flowers she bought
'As for buying the flowers, she bought.'

❶ V movement; ❷ VP movement

- In the German case in (18), no Fusion or m-Merger applies, as both DP and VP are phrasal elements.
- In the Hebrew case in (19), copies resist deletion for PF constraints (=(20), cf. Landau 2006).

(20) a. [$_{\nu P}$ **buy**^{1} **flowers**]^a ... [$_{TP}$ **buy**^{2}-T ... [$_{\nu P}$ buy^3 flowers]^b]



b. CH(**buy**^{1}, buy^2)—CH(buy^2, buy^3), CH(***v*P**^{a} , νP^b)

c. Stray Affix Filter ➜ **buy**^{2} ; Intonation$_{Top}$ ➜ ***v*P**^{a}

- Such variations are not surprising given languages differ in Externalization/PF, but would otherwise be, if repetition were PC-driven.

6 Conclusion

- We **restricted** PC's role to Narrow Syntax.
- In the **PF**, (i) successive-cyclic, (ii) parallel, and (iii) overlapping chains are resolved in the **same** way

➜ All take a long road to **repetition**, via independent PF constraints

➜ No different, stipulative resolution algorithm is needed.

- **The theoretical space for repetition is thereby limited.**

Types of chains	Head	Tail	E.g.	PF	Repetition
Successive cyclic	Head(α) $\neq$ Head(β)	Tail(α) $\neq$ Tail(β)	*wh*-obj. mvt. (1)	N/A	✘
			wh-copying (8)	Fusion	✔
Identical PCs	Head(α) $\neq$ Head(β)	Tail(α) = Tail(β)	local *wh*-subj. mvt. (2)	N/A	✘
			predicate clefts (5/10), (11)	Fusion/m-Merger	✔
Overlapping PCs	Head(α) $\neq$ Head(β)	Tail(α) $\in$ Tail(β)	subextraction (16)	N/A	✘
		Tail(β) $\in$ Tail(α)	remnant mvt. (18), (19)	SAF/Intonation(19)	✔(19)

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