

Williams Cycle effects and successive cyclicity unified

Under standard Phase Theory, the locality constraint deriving *successive cyclicity* is PIC in (1) (Chomsky 2001). For example, a CP phase can only be escaped via Spec,CP. The *Williams Cycle* (henceforth, WC) in (2) (Williams 2003; Poole 2022) generalizes *selective opacity*, a different kind of locality: It is αP 's *relative size* that makes it opaque to probes that are not sufficiently high in the next lowest clause. For example, probes on C but not on T can search into CP because $C > T$ in *fseq*. Most accounts of selective opacity (Keine 2020) or WC effects (Meadows 2023) handle successive cyclicity and WC effects as *independent phenomena*. That is, a CP may independently necessitate successive cyclicity because it's a phase and exhibit WC effects because it's too large. **This paper provides a unified account that derives successive cyclicity and WC effects.**

(1) **PIC:** If αP is a phase, only its *edge* but not its complement is accessible by external probes.

(2) **WC:** Movement to Spec, βP cannot proceed from Spec, αP or across αP , if $\alpha > \beta$ in *fseq*.

A unified constraint: Since the PIC in (1) without further assumptions cannot derive WC effects and selective opacity (e.g. Keine 2019), I propose the new locality constraint Probe Along *Fseq* Fragments (PAFF) in (3), extending on Egressy's (2023) work on Hungarian. PAFF is based on the intuition that operations must be internal to extended projections (Chomsky 1977; Bošković 2014). In Example (4), the probe $[\bullet F \bullet]$ on C or T can reach the goal XP because the heads c-commanded by $[\bullet F \bullet]$ and c-commanding XP form a sub-sequence of the clausal *fseq* $V-v-T-C$. In contrast, if $[\bullet F \bullet]$ is on some CP-external head α in (4), XP cannot leave the CP in one step because the $V-v-T-C-V... \alpha$ sequence is not an *fseq*-fragment because V is not above C in *fseq*. In (5), XP cannot leave the TP-sized clause along $V-v-T-V... \alpha$ because V is not above T in *fseq*.

(3) **PAFF:** The heads between the probe and its goal must make up a well-formed *fseq*-fragment.

(4) $\downarrow \times \alpha_{[\bullet F \bullet]} \dots [VP V [CP \checkmark C_{[\bullet F \bullet]} [TP \checkmark T_{[\bullet F \bullet]} [VP v [VP V XP \dots]]]]$ (5) $\downarrow \times \alpha_{[\bullet F \bullet]} \dots [VP V [TP T [VP v [VP V XP \dots]]]]$

Successive cyclicity obviates WC-violations: Successive cyclicity arises from clauses with an *edge*, a specifier where operators are not *criterially frozen* (Rizzi 1997). In (6), *wh*-phrase moves from a CP to matrix Spec,CP via Spec,CP. **Any movement to the matrix clause is PAFF-compliant if it proceeds via the edge** because the embedded Spec,CP is above all embedded heads and below all matrix heads: Movement to Spec,CP proceeds along a sub-sequence of the embedded $V-v-T-C$ heads; movement from Spec,CP proceeds along a sub-sequence of the matrix $V-v-T-C$ heads. Therefore, **PAFF predicts that while hyperraising to Spec, vP from CP would violate the WC because $C > v$ in *fseq*, this violation in (6) is obviated by successive cyclicity.**

(6) $\downarrow \checkmark C_{[\bullet WH \bullet]} \dots V [CP wh [C_{TP} T [VP v [VP V wh \dots]]]]$ (7) $\downarrow [VP \checkmark v_{[\bullet D \bullet]} [VP V [CP DP [C_{TP} DP \dots]]]]$

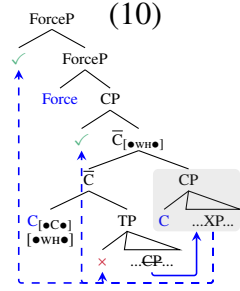
For example, the P'urhepecha CP has an edge, which enables successive cyclic WC-obviation. In (8), the subject of the embedded CP moves to the matrix Spec, vP , violating WC in the fashion of (7) (Zyman 2017:p.4). (9) shows that hyperraising proceeds via Spec,CP: Since the embedded CP has one edge, which is used by the *wh*-phrase, the embedded subject cannot leave the CP (Zyman 2017:p.4). Similar successive cyclic hyperraising occurs in Mongolian (Fong 2019).

(8) Emilia uekasindi_[vP] Xumoni₁ mintsitani jingoni [CP -₁ eska -₁ jaruataaka pauani]].
Emily want.IND3 Xumo.ACC heart.ACC with that help..SBJV tomorrow
'Emily wants Xumo with all her heart to help her tomorrow.'

(9) ¿Ambe₁ uetarinchasinga_[vP] <??Emiliani>₂ [CP -₂ -₁ eska <Emilia>₂ k'uanatsintaaka₋₁]]?
what need.INT.pS Emily.ACC that Emily buy..SBJV
'What do they need Emily to buy?'

Clausal movement and WC effects: Whether a clause has an escapable edge is specific to the clause-type and the language. No successive cyclicity can arise from a clause if all of its move-

ment features criterially freeze its specifiers. Instead, the clause's movement to an equal-sized matrix projection can enable sub-extraction: In (10), the criterial [$\bullet C \bullet$] on the matrix C moves the embedded CP along the **V-v-T-C** sequence, i.e. the CP-CP merger obeys PAFF. If the criterial [$\bullet WH \bullet$] is ordered after [$\bullet C \bullet$], the sub-extraction of the *wh*-phrase to matrix Spec,CP is PAFF-compliant because it proceeds along a sub-sequence of the **V-v-T-C** sequence. The moved CP is also transparent to movement to a higher matrix positions. Thus, sub-extraction to Spec,ForceP is also possible if Force is the next highest head above C in *fseq* because it proceeds along a sub-sequence of clausal **V-v-T-C-Force**. **Sub-extraction prior to the CP-movement is impossible, i.e. WC-violating movement to Spec, α P such that $C > \alpha$ in *fseq* (e.g. to Spec,TP or Spec,vP) is ruled out**, just as it was in (4).



I propose that the German CP exemplifies (10). From a CP that has been moved to matrix CP in (11), the *wh*-phrase can move to matrix Spec,CP. That CP-movement lands above TP-ad adjuncts but below CP-ad adjuncts is shown by Müller (2020:Ex.3 and 4). In contrast, the *in-situ* CP in (12) is opaque to *wh*-movement (Müller 1999). Similarly, topic sub-extraction to Spec,ForceP can proceed from moved but not *in-situ* CPs (Müller 1999:Ex.45b). The movement of CPs leads to criterial freezing: Only non-remerged and hence opaque CPs can be topicalized; no CP can be topicalized after movement and *wh*-sub-extraction (Müller 1999:Ex.29c). As expected under (10), German CPs exhibit WC effects (Müller 2014a,b): Scrambling, which lands in Spec,TP (Keine 2020), can proceed from vPs but not from CPs (Müller 2014b:Ex.1b) as $C > T$ in *fseq*.

- (11) Ich wusste nicht [_{CP} wen₁ er ₋₂ gesagt hat [_{CP} dass Uli ₋₁ liebt]₂]
 I knew.1SG not who.ACC he said have.3SG that Uli love.3SG
 'I did not know who he said that Uli loves.'

- (12)*Ich wusste nicht [_{CP} wen₁ er [_{CP} dass Uli ₋₁ liebt] gesagt hat]
 I knew.1SG not who.ACC he that Uli love.3SG said have.3SG
 Intended: 'I did not know who Uli loves.'

Similarly, the English CP has no edge but CP-movement enables sub-extraction. Prior to *wh*-sub-extraction in (13), the CP must first move to the matrix CP (Stowell 1981), as shown by its position after the matrix TP-ad adjunct *today*. (Without *wh*-extraction in (13), the CP can precede *today*, native speakers report.) CPs not moved to other CPs are opaque: In (14), the *wh*-phrase cannot move to Spec,CP from the subject CP in Spec,TP (Ross 1967) because it would move along the ill-formed **V-v-T-C-C** sequence. The English CP exhibits WC effects (Williams 2003): The CP in (15) is opaque to hyperraising to Spec,TP because $C > T$ in *fseq* (Chomsky 1973).

- (13) [_{CP} Who₁ did Ed say <today> [_{CP} Al saw ₋₁ yesterday] <*(today)>]?

- (14)*[_{CP} Who₁ was [_{TP} [_{CP} that Al saw ₋₁] surprising]]? (15)*[_{TP} Ed₁ seems [_{CP} ₋₁ is sad]].

For similar examples of transparency-upon-movement in Hungarian, see Egressy (2023; 2025).

Discussion: Under my account, how sub-extraction can proceed from an α P clause can be reduced to the features of α heads in the language. Successive cyclicity arises via the Spec, α P edge iff α has an *edge feature* [$\bullet EF \bullet$] (Georgi 2017); [$\bullet EF \bullet$] on α obviates to *all* WC-violations. Hence, unlike Keine (2020), I predict that if a C has [$\bullet EF \bullet$] and the language has raising to both Spec,TP and Spec,vP, these should both be able to proceed from CPs (as in Zulu; Halpert and Zeller 2015; Halpert 2019). If α has no [$\bullet EF \bullet$] but only a criterial [$\bullet \alpha \bullet$], α Ps must move to higher α Ps prior to sub-extraction, which *uniformly* obeys the WC (e.g. German CPs). If a head α in a language has neither [$\bullet EF \bullet$] nor [$\bullet \alpha \bullet$], no sub-extraction can proceed from α Ps (see e.g. the Tzes CP; Polinsky and Potsdam 2001). Since I predict that no α P with [$\bullet EF \bullet$] exhibits WC effects, reflexes of successive cyclicity (a.o. Georgi 2017) in WC-obeying α Ps need new explanations.

References:

- Bošković, Željko. 2014. Now I'm a Phase, Now I'm Not a Phase: On the Variability of Phases with Extraction and Ellipsis. *Linguistic Inquiry* 45:27–89.
- Chomsky, Noam. 1973. Conditions on transformations. In *In A Festschrift for Morris Halle*, eds. Stephen Anderson and Paul Kiparsky, volume In A Festschrift for Morris Halle, 232–286. New York, Holt, Rinehart and Winston edition.
- Chomsky, Noam. 1977. On wh-movement. In *Formal syntax*, eds. Peter W Culicover, Thomas Wasow, and Adrian Akmajian, 71–132. New York: Academic Press.
- Chomsky, Noam. 2001. *Derivation by Phase*. MIT, Department of Linguistics.
- Egressy, János. 2023. Size- and position-dependent opacity in Hungarian. Master's thesis, University of California, Los Angeles.
- Egressy, János. 2025. Williams Cycle effects in Hungarian. *Journal of Uralic Linguistics* 4:51–78.
- Fong, Suzana. 2019. Proper movement through Spec-CP: An argument from hyperraising in Mongolian. *Glossa: a journal of general linguistics* 4.
- Georgi, Doreen. 2017. Patterns of Movement Reflexes as the Result of the Order of Merge and Agree. *Linguistic Inquiry* 48:585–626.
- Halpert, Claire. 2019. Raising, unphased. *Natural Language & Linguistic Theory* 37:123–165.
- Halpert, Claire, and Jochen Zeller. 2015. Right dislocation and raising-to-object in Zulu. *The Linguistic Review* 32.
- Keine, Stefan. 2019. Selective Opacity. *Linguistic Inquiry* 50:13–62.
- Keine, Stefan. 2020. *Probes and Their Horizons*. MIT Press.
- Meadows, Tom. 2023. Size matters: clause structure and locality constraints in Swahili relatives. PhD Thesis, Queen Mary University of London, London.
- Müller, Gereon. 1999. Imperfect checking. *The Linguistic Review* 16:359–404.
- Müller, Gereon. 2014a. A local approach to the Williams Cycle. *Lingua* 140:117–136.
- Müller, Gereon. 2014b. *Syntactic buffers: A local-derivational approach to improper movement, remnant movement, and resumptive movement*. Number 91 in *Linguistische Arbeits Berichte*. Leipzig: Institut für Linguistik.
- Müller, Gereon. 2020. Rethinking restructuring. *Syntactic architecture and its consequences II: Between syntax and morphology* 10:149–190.
- Polinsky, Maria, and Eric Potsdam. 2001. Long-Distance Agreement And Topic In Tsez. *Natural Language & Linguistic Theory* 19:583–646.
- Poole, Ethan. 2022. Improper case. *Natural Language & Linguistic Theory* 41:347–397.
- Rizzi, Luigi. 1997. The Fine Structure of the Left Periphery. In *Elements of Grammar: Handbook in Generative Syntax*, ed. Liliane Haegeman, Kluwer International Handbooks of Linguistics, 281–337. Dordrecht: Springer Netherlands.
- Ross, John Robert. 1967. Constraints on variables in syntax. PhD Thesis, Massachusetts Institute of Technology.
- Stowell, Timothy Angus. 1981. Origins of phrase structure. Thesis, Massachusetts Institute of Technology.
- Williams, Edwin. 2003. *Representation Theory*. MIT Press.
- Zyman, Erik. 2017. P'urhepecha hyperraising to object: An argument for purely altruistic movement. *Proceedings of the Linguistic Society of America* 2:53.