



Daniel Gleim (U Leipzig)

daniel.gleim@uni-leipzig.de

Universitetet i Tromsø Boundaries 13th March 2025

## Argument

- If all phonological domains are cyclic, then all interactions of processes across domains must be compatible with the Cyclic Hypothesis 🐀.
- Some interactions are countercyclic, that is, incompatible with the Cyclic Hypothesis 🐁.
- Thus, some domains are not cyclically derived.

## Cyclic Hypothesis 🐀

- (1) No-COUNTERCYCLICITY  
If there is a cyclic domain  $D_i$  contained by a cyclic domain  $D_{i+x}$ , phonological processes apply first to  $D_i$ . From this follows:
  - If a process P applies in a cyclic domain  $D_i$ , it must transparently enable, block or influence (feed, bleed or shift) a process Q that applies in a cyclic domain  $D_{i+x}$ .
  - If a process Q applies in a cyclic domain  $D_i$ , it cannot transparently enable, block or influence (thus must counterfeed, counterbleed or countershift) a process P that applies in a cyclic domain  $D_{i-x}$ .
- (2)  $[D[ABC]_i EF]_j$
- Crucial assumption: Cyclic domains are purely procedural and cannot be referred to by phonological rules/constraints.

## Proposal

- Cyclic domains coexist with prosodic domains.
- Prosodic structures must obey Proper Bracketing (Nespor & Vogel 1986, Itô & Mester 1992).
- Optimality Theory with Strata (Bermúdez-Otero 1999, Kiparsky 2000).

### Predicted Transparent Interactions 🐀

An interaction between P and Q can look countercyclic transparent if:

- There is a domain D that maps to a cyclic domain  $\varphi$  and to a prosodic domain  $\pi$ .
- P applies at the same cycle as Q restricted to  $\pi$ .
- Q cyclically feeds/bleeds/shifts Q.

### Predicted Opaque Interactions 🐁

An interaction between P and Q can look countercyclic opaque if:

- There is a domain D that maps to a cyclic domain  $\varphi$  and to a prosodic domain  $\pi$ .
- P applies restricted to  $\pi$  in a cyclic domain that contains the domain in which Q applies.
- P cyclically counterfeeds/bleeds/shifts Q.

⇒ Given that I assume Stratal OT,  $\pi$  must be equivalent to a stem level cycle, Q must be a word level process and P must be a phrase level process.

### Excluded Interactions

- Misaligned pattern: the prosodic domain  $\pi$  is at the relevant cycle and edge non-isomorphic with the edge of the cyclic domain  $\varphi$  (cf. Gleim & Rasin 2024).
- Opaque interactions that do not meet the criterion above, i.e. Interactions where either Q is a phrasal process 🐀, or P cannot be a phrasal process.

## Countercyclic Process Interactions 🐁

Language	P	Q	Interaction
C'Lela	Vowel deletion	Vowel Preservation	Bleeding
Akan	Tone polarity	Tone spreading	Feeding
Hijazi B.A.	a-Raising	i-Syncope	Counterfeeding
Icelandic	Epenthesis	Resyllabification	Bleeding
Chamorro	Stress insertion	Umlaut	Counterfeeding
	Stress deletion	Umlaut	Counterbleeding
Kimatuumbi	Gliding	ITI	Bleeding
	Gliding	Shortening	Counterfeeding
Kashaya	Foot-flipping	Resyllabification	Bleeding
Kinande	Vowel harmony	Vowel harmony	Feeding
Hausa	Tone raising	Shortening	Bleeding
Seenku	Tone docking	Sandhi	Shifting
Eton	Tone spreading	Tone polarity	Feeding

- A sample of 11 languages with 13 interactions that are not conform with the cyclic hypothesis 🐀.
- 10 interactions are transparent and can be derived by Stratal OT with prosodic domains 🐐. 2 are opaque in the predicted fashion 🐁.
- Hijazi B. A. is not technically transparent, but its interaction is a chainshift of the type that can be derived in parallel OT (Kirchner 1996).
- Matuumbi Shortening can be reanalysed as a genuine stem level process (Gleim 2024), so its no true case of 🐐.

### Transparent: C'Lela 🐐

P: Final vowel Deletion in words.

- (3) rémín  $g^W\acute{e}\acute{l}$  írù dá  
rémin  $g^W\acute{e}\acute{l}\acute{e}$  í-rù dá  
because goat DIM-his not  
'because of his little goat'

Q: Final vowel preservation in phrases.

- (4) àj mhívkìʔù  $g^W\acute{e}\acute{l}\acute{e}$   
àj m-hívkìʔù  $g^W\acute{e}\acute{l}\acute{e}$   
COMP 1SG-steal-PFV=3SG goat  
'that I stole his goat'

Q bleeds (or blocks) P!

**Only cyclic domains fail**

(5) Cycle 1: Deletion

$g^W\acute{e}\acute{l}\acute{e}$	*V#	Max
a. $g^W\acute{e}\acute{l}\acute{e}$	*!	
b. $g^W\acute{e}\acute{l}$	*	

(6) Cycle 2: Preservation impossible

$g^W\acute{e}\acute{l}$	*C#	*V#	DEP	MAX
a. $g^W\acute{e}\acute{l}$	*!			
b. $g^W\acute{e}\acute{l}\acute{t}$	*	*		
c. $g^W\acute{e}$	*			*

**Prosodic domains succeed**

(7) Phrase level: deletion in phonological words

$[[g^W\acute{e}\acute{l}\acute{e}]_\omega [írù]_\omega]_\phi$	*C <sub>1</sub> <sub>φ</sub>	*V <sub>1</sub> <sub>ω</sub>	MAX
a. $[[g^W\acute{e}\acute{l}\acute{e}]_\omega [írù]_\omega]_\phi$		**!	
b. $[[g^W\acute{e}\acute{l}]_\omega [írù]_\omega]_\phi$		*	*
c. $[[g^W\acute{e}\acute{l}]_\omega [ír]_\omega]_\phi$	*!		**

### Opaque: Impossible 🐁

P: iterative VH

- (13) putu-ku → putuku

Q: Non-iterative phrasal VH

- (14) lütu mutu → lütu mutu

P counterfeeds Q

- (15) lütu putu-ku → lütu putuku

### Opaque: Chamorro 🐁

P: Secondary stress on Prima.

- (8) bápotañña  
bapót-níña  
'their ship'

Q: Stress sensitive Umlaut

- (9) i këbblinmámi ~ i kòbblinmámi  
i kóbbli-nmámi  
'our (exc.) money'

Q counterfeeds P.

- (10) i pùlulónja  
i pulónnun-na  
'his trigger fish'

**Only cyclic domains fail**

Cycle 1	
pulúnnun-na	Input
pùlunnúnja	Stress processes
Other processes	
Cycle 2	
i=pùlulónja	Input
ipìlulónja	Stress sensitive umlaut

**Prosodic and cyclic domains succeed**

Stem level	
pulúnnun-na	Input
[pulónnunja] <sub>ω</sub>	Prosodic word is built
[pulùnnúnja] <sub>ω</sub>	Stress shift
Word level	
i [pulùnnúnja] <sub>ω</sub>	Input
—	Stress sensitive umlaut
i [pulùlónja] <sub>ω</sub>	Other processes
Phrase level	
i [pulùlónja] <sub>ω</sub>	Input
i [pululónja] <sub>ω</sub>	Destressing (ω bound)
i [pùlulónja] <sub>ω</sub>	Stress insertion (ω bound)

**Derivation of countercyclic counterfeeding fails**

	VH	VH	CRSP	EDGE	FATH
[lütu] <sub>ω</sub> [putu-ku] <sub>ω</sub>					
a. [lütu] <sub>ω</sub> [putuku] <sub>ω</sub>	*!				
b. [lütu] <sub>ω</sub> [putuku] <sub>ω</sub>		*!			
c. [lütu] <sub>ω</sub> [putuku] <sub>ω</sub>			*	***	***
d. [lütu] <sub>ω</sub> [putuku] <sub>ω</sub>			**	**	***