

Stratification is not enough:
Within-stratum countershifting in Gallipoli
Serbian

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Gallipoli Serbian

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Within-stratum opacity

Rule-based account

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Opaque interaction *within* the Clitic Group domain

Conclusion

The Opacity Challenge

- ▶ surface opacity (Kiparsky 1971, 1973) notoriously problematic for OT (Prince and Smolensky 1993/2004)
 1. Opacity emerges at intermediate derivational stages (contra OT's STRICT PARALLELISM)
 2. Opaque mappings are not as optimizing as their transparent counterparts (contra OT's tenet of OPTIMIZATION)
- (McCarthy 1999, 2007; Kiparsky 2000, 2015; Kager 1999, a.o.)

The Opacity Challenge

- ▶ COUNTERFEEDING/UNDERAPPLICATION: the winning candidate is **insufficiently optimizing**
- ▶ COUNTERBLEEDING/OVERAPPLICATION: the winning candidate is **gratuitously unfaithful** to the input

The Opacity Challenge

- ▶ Case study: overapplication of Canadian Raising (Joos 1942)
- ▶ Canadian Raising (/aɪ/ → [ʌɪ]/_[-voi]) counterbled by Flapping ({/t/, /d/} → [r] in certain prosodic environments)
- ▶ Flapping removes two markedness penalties on one go
- ▶ Opaque winner incurs a gratuitous faithfulness penalty

The Opacity Challenge

(1)

	ɟait̚	FLAP	*a _l [-voi]	ID-low	ID-son
a.	ɟait̚	*!	*!		
b.	● [*] ɟair̚				*
c.	☹ ɟair̚			*!	*

The Stratal OT response

- ▶ Stratal OT (Kiparsky 2000; Bermúdez-Otero 1999, 2003)
- ▶ Phonological grammar is stratified: **the Stem, the Word, and the Phrase strata**
- ▶ strict parallelism: each stratum of phonology is an independent parallel OT grammar
- ▶ WITHIN-STRATUM TRANSPARENCY: processes applying at the same stratum can only interact transparently (Bermúdez-Otero 2003; Kiparsky 2015)
- * Prediction: opacity can only arise between processes applying at different strata (no within-stratum opacity)

The Stratal OT response

- ▶ Canadian Raising : Flapping
- ▶ BETWEEN-STRATUM OPACITY (Bermúdez-Otero 2003)
- ▶ Canadian Raising applies at the Word level
- ▶ Flapping applies at the Phrase level, opacifying Canadian Raising

Outline

- ▶ Strong prediction: if two (synchronically productive) processes interact opaquely, they must apply at different strata
- between-stratum process ordering the sole source of phonological opacity
- ▶ **Today**: productive case of within-stratum opacity in Gallipoli Serbian → Stratum-internal transparency **too strong**
- ▶ Additional contribution: even with additional, language-specific strata (→ more chance to isolate opaquely interacting processes into separate strata), it is impossible to do away with stratum-internal opacity in Gallipoli Serbian

Gallipoli Serbian (GS)

- ▶ a now extinct Old Štokavian dialect of Serbian
- ▶ spoken by the Serbian community in Bayramiç (near the Gallipoli Peninsula)
- ▶ data: a comprehensive descriptive grammar of the dialect by Pavle Ivić (Ivić 1957)
- ▶ two sources: narration (legends and folk stories) and spontaneous dialogues between GS speakers, recorded by P. Ivić
- ▶ P. Ivić transcribed and annotated the recorded data for pitch accent
- ▶ the accented versions of some recorded texts published as an appendix to Ivić's grammar

Tone and stress

- ▶ **restricted tone system** (Hyman 2006, 2009): at most one singly-linked High tone per word
- ▶ **tone-driven stress**: stress falls on the syllable containing the word's only High-toned mora (relevant constraint: HEAD-H; Yip 2001, 2002)
- ▶ **no prominence on final moras**: light final syllables never receive stress (relevant constraint: NONFINALITY (moraic version); Hyde 2007)
- ❖ NONFINALITY \gg HEAD-H: if a final light syllable is High-toned, stress falls on the toneless penult

Tone and stress #1: stress the High-toned syllable

- (2)
- | | | | |
|----|-----------------|------------------|----------------|
| a. | /pu.tó.ka/ | [pu.'tó.ka] | 'creek.GEN.SG' |
| b. | /ǎ.blaa.ki/ | ['ǎ.blaa.ki] | 'cloud.NOM.PL' |
| c. | /kaan.dí.sa.la/ | [kaan.'dí.sa.la] | 'agreed.F.SG' |
| d. | /di.ʋǎj.ka/ | [di.'ʋǎj.ka] | 'girl.NOM.SG' |
| e. | /u.bǎ.déɛʃ/ | [u.bǎ.'déɛʃ] | 'stab.PRS.2SG' |
| f. | /prɛɛ.déɛ.mǎ/ | [prɛɛ.'déɛ.mǎ] | 'knit.PRS.1PL' |

Tone and stress #2: nonfinality

- * final CV and CVC both count as light
- * final heavies receive stress in GS provided that their first mora is High-toned (cf. (2-e))

(3) Final CV

- | | | | |
|----|-----------|------------|---------------|
| a. | /glaa.úá/ | ['glaa.úá] | 'head.NOM.SG' |
| b. | /lee.pó/ | ['lee.pó] | 'nice' |
| c. | /rɛɛk.ní/ | ['rɛɛk.ní] | 'say.IMP.2SG' |

(4) Final CVC

- | | | | |
|----|-----------|------------|---------------|
| a. | /nii.sám/ | ['nii.sám] | 'not.am' |
| b. | /jaa.rám/ | ['jaa.rám] | 'yoke.NOM.SG' |

Tone and stress #2: nonfinality

* word-final High-toned light receives stress in enclisis

- (5)
- | | | |
|----|---------------|---------------|
| a. | [glaa.'uá=mi] | 'head=my' |
| b. | [lee.'pó=jε] | 'nice=is' |
| c. | [rεεk.'ní=mu] | 'tell=him' |
| d. | [nii.'sám=sε] | 'not.am=REFL' |
| e. | [jaa.'rám=sε] | 'yoke=REFL' |

Final Vowel Shortening

$$[+\text{syll}] \rightarrow [-\text{long}] / _ \#$$

- (6)
- | | | | |
|----|----------|-----------|-----------------|
| a. | /jáa/ | [ˈjá] | ‘1SG.NOM’ |
| b. | /tríi/ | [ˈtrí] | ‘three.NOM’ |
| c. | /spíi/ | [ˈspí] | ‘sleep.PRS.3SG’ |
| d. | /glédaa/ | [ˈglé.da] | ‘watch.PRS.3SG’ |
| e. | /ímaa/ | [ˈí.ma] | ‘have.PRS.3SG’ |

Final Vowel Shortening

- * original quantity of shortened vowels preserved in enclisis and word-internally before a suffix

- (7)
- | | | |
|----|---------------|------------------------------|
| a. | [ˈjáa =sam] | ‘I =am’ |
| b. | [ˈtríi=li] | ‘three=Q’ |
| c. | [ˈspíi=mi=sɛ] | ‘sleep.PRS.3SG=1SG.DAT=REFL’ |
| d. | [ˈglé.daa.mɔ] | ‘watch.PRS.1PL’ |
| e. | [ˈí.maa.mɔ] | ‘have.PRS.1PL’ |

Final Shortening and stress

- * Final Shortening interacts with nonfinality
- ▶ final High-toned lights that derive from underlyingly heavy final syllables
- ▶ derived final High-toned lights vs. originally light final High-toned syllables
- ▶ original final lights barred from receiving stress (3)–(4)
- ❖ derived final High-toned lights **stressed on the surface**

Final Shortening and stress

- ❖ COUNTERSHIFTING/MISAPPLICATION (Rasin 2022; Baković and Blumenfeld 2022; Pruitt 2023): later-ordered process \mathbb{B} (Final Shortening) changes the environment for process \mathbb{A} (Stress Assignment)
- ▶ Final Shortening countershifts stress in Gallipoli Serbian:

- | | | | | |
|-----|----|-------------|-------------|----------------------|
| (8) | a. | /ʋɔ.déε/ | [ʋu.'dɛ] | 'water.GEN.SG' |
| | b. | /slat.kóɔ/ | [slat.'kɔ] | 'sweet.NOM.SG.N' |
| | c. | /ɔd.nε.séε/ | [ud.nε.'sé] | 'carry.away.PRS.3SG' |
| | d. | /glaa.úéε/ | [glaa.'úɛ] | 'head.GEN.SG' |
| | e. | /mɾɾ.zíí/ | [mɾɾ.'zɪ] | 'hate.PRS.3SG' |
| | f. | /dε.snáa/ | [di.'sná] | 'right.NOM.SG.F' |

Final Shortening and stress


* original quantity preserved in enclisis

- (9)
- a. [vu.'dɛɛ=mi=sɛ] 'water.GEN.SG=1SG.DAT=REFL'
 - b. [slat.'kɔɔ=jɛ] 'sweet=is'
 - c. [ud.ni.'sɛɛ=ga] 'carry.away.PRS.3SG=it'
 - d. [glaa.'vɛɛ=mi] 'head.GEN.SG=my'
 - e. [mɾɾ.'zɨ=ga] 'hate.PRS.3SG=him'
 - f. [di.'snáa=mi] 'right.NOM.SG.F=1SG.DAT'

Ban on final stress

- NONFINALITY dominates HEAD-H:

(10)

	ruu.ká	NONFIN	HEAD-H
a.	ruu.'ká	*!	
b.	 'ruu.ká		*

Final Shortening

- ▶ *V:≠ outranks MAX-μ:

(11)

	jáa	*V:≠	MAX-μ
a.	'jáa	*!	
b.	☞ 'já		*

Countershifting

- ▶ Expectedly, no parallel OT account for /ruu.kée/ → [ruu.'ké], not *['ruu.ké] 'arm.GEN.SG'
- ▶ the independently established GS constraint hierarchy favors transparent penultimate stress

(12)

ruu.kée		NONFIN	*V: #	HEAD-H	MAX-μ
a.	ruu.'kée		*!		
b.	☹ ruu.'ké	*!			*
c.	💣 st 'ruu.ké			*	*

Rule-based account

► **extrinsic** rule ordering

1. **Stress Assignment** applies first and is initially transparent
2. **Final Shortening** applies later and renders stress opaque

UR	/ruu.ká/	/ruu.kéε/	ruu.kóɔm
Stress Assignment	'ruu.ká	ruu.'kéε	ruu.'kóɔm
Final Shortening	N/A	ruu.'ké	N/A
Surface form	['ruu.ká]	[ruu.'ké]	[ruu.'kóɔm]
	'arm.NOM.SG'	'arm.GEN.SG'	'arm.INS.SG'

Stratal OT

- ▶ Stratal OT: **Stress Assignment** expected to take precedence over **Final Shortening**
- ▶ Unlike rule-based phonology, Stratal OT does not assume that phonological processes are extrinsically ordered
 - * precedence via domain affiliation
 - * e.g., **stress** at the lexical stratum, **Shortening** at the postlexical stratum
- ▶ independent evidence? does **Stress Assignment** really apply in a smaller domain than **Final Shortening**?

Domain stratification #1

- **Stress Assignment** and **Final Shortening** are both sensitive to encliticization:

1. **Stress Assignment**: ban on final stress applies to the Clitic Group domain (13)
2. **Final Shortening** blocked in enclisis (14)

(13)	a.	[glaa.ʋá]	'head.NOM.SG'	[glaa.'ʋá=mi]
	b.	[ʋɔ.mí]	'wash.IMP.2SG'	[ɔ.'mí=sɛ]
(14)	a.	[slaat.'kɔ́]	'sweet'	[slaat.'kɔ́=jɛ]
	b.	[ruu.'ké]	'arm.GEN.2SG'	[ruu.'kéɛ=mi]

Conclusion #1

Clitics are part of the domain of both **Stress Assignment** and **Final Shortening**

Domain Stratification #2

- ▶ **Stress Assignment** and **Final Shortening** are both unaffected by (potentially) context-changing postlexical processes
 1. **Stress Assignment** unaffected by postlexical **Deaccentuation** and **Secondary Cliticization**
 2. **Final Shortening** counterfeet by sandhi **Degemination**

Deaccentuation and Secondary Cliticization

- ▶ Inherently weak pronouns (GEN, DAT, ACC clitic forms) affect stress (15-a)
- ▶ Deaccented strong pronouns are invisible to the host (15-b)

- (15) a. nii.'sám=ti 'ré.ka.ʋə
 not.am=2SG.DAT say.PTCP.PST.M.SG
 'I didn't tell you' (Inherently weak pronoun) [Ivić
 1957: 395]
- b. 'nii.sám=ja ta.'lí.kə tɛ.'ʋɛɛ.kél
 not.am=1SG.NOM that.much fool
 'I am not such a fool' (Deaccented pronoun) [*op. cit.*: 457]
- c. 'nii.sám 'já 'dó.ma
 not.am 1SG.NOM home
 'I am not home' (Strong pronoun) [*op. cit.*: 311]

Stress Assignment and Secondary Cliticization

The latest instances of **Stress Assignment** must occur **before** strong pronouns are subject **Deaccentuation** and **Secondary Cliticization**

Sandhi Degemination

- ▶ Word-final long vowels brought about by **Degemination** do not undergo **Final Shortening** (16)–(17)
- ▶ underlyingly word-final long vowels subject to **Final Shortening** (18)

(16) /pɛɛt/ 'five'

a. [ˈpɛɛ] daa.'náa] 'five days'

b. [ˈpɛɛt sʷee.'tʃá] 'five candles'

(17) /bɔɔg/ 'god'

a. [ˈbɔɔ] 'gɔ́.spɔt] 'god the master'

b. [ˈbɔɔk=jɛ] 'god is'

(18) /tríi/ 'three'

a. [ˈtrí] tʃu.'uɛ.ká] 'three men'

b. [ˈtríi=li] 'three=Q'

Final Shortening and Sandhi Degemination

Final Shortening must precede **Postlexical Degemination**, because the result of **Postlexical Degemination** is invisible to **Final Shortening**

Conclusion #2

Stress Assignment and **Final Shortening** are both PRE-POSTLEXICAL, i.e. both processes take place *before* postlexical phonology

PRE-POSTLEXICAL = word-level phonological domain of some kind, still including clitics

Clitic Group \neq Word

- ▶ Not all lexical processes pattern identically w.r.t cliticization
- ▶ **Stress Assignment** and **Final Shortening** are sensitive to enclitics (i.e. enclitics affect the way these processes apply)
- ▶ **Final Devoicing** applies at the Word level, but enclitics don't affect it

(19) Final Devoicing

- | | | | | |
|----|---------------|--------------|------------|--------------|
| a. | [ɔɔ.'brás=mu] | 'his cheek' | cf. GEN.SG | [ɔɔ.'brá.za] |
| b. | ['bóɔk=jɛ] | 'god is' | cf. GEN.SG | ['bó.ga] |
| c. | ['múús=mi] | 'my husband' | cf. VOC.SG | ['múu.zu] |

Conclusion #3

Stress Assignment and **Final Shortening** both apply in a domain **bigger than the Word domain** (includes clitics) and **smaller than the Postlexical domain** (unaffected by postlexical processes)

Summary

Conclusion #1

Clitics are part of the domain of both **Stress Assignment** and **Final Shortening**

Conclusion #2

Stress Assignment and **Final Shortening** are both PRE-POSTLEXICAL, i.e. both processes take place *before* postlexical phonology

Conclusion #3

Stress Assignment and **Final Shortening** both apply in a domain bigger than the Word domain and smaller than the Postlexical domain (unaffected by postlexical processes)

The Clitic Group

- ▶ **Stress Assignment** and **Final Shortening** take the Clitic Group as their domain of application
- ▶ In GS, the Clitic Group appears to constitute a separate phonological domain, as in some other Slavic languages, such as Polish (Rubach 2016, 2019) and Macedonian (Rubach 2011)
- * **within-stratum opacity**: both opaquely interacting processes apply within the Clitic Group domain

Prosodic conditioning

How does the fact that the Clitic Group constitute a separate phonological domain in GS translate into Stratal OT?

Two approaches:

1. PROCEDURAL (Rubach 2011, 2016, 2019): Clitic Group as a separate stratal domain, situated between the regular Word and Phrase domains
2. REPRESENTATIONAL (Bermúdez-Otero 2006, 2012; Bermúdez-Otero and Payne 2011): prosodic domains do not project stratal domains; the reason why Clitic Group-level processes behave differently from other lexical processes lies in prosodic representation (sensitivity to prosodic boundary stipulated in the process-inducing constraint)

Within-stratum opacity

Importantly, regardless of which approach one takes, neither helps do away with stratum-internal transparency in GS:

- ▶ even if we allow for an additional stratal domain (the Clitic Group domain), the countershifting relationship between **Stress Assignment** and **Final Shortening** would still be arising within that domain
 - ▶ ❖ the introduction of additional strata doesn't salvage stratum-internal transparency
- ⇒ the Stratum-internal transparency hypothesis is too strong (empirically falsified)

Sources of opacity in Gallipoli Serbian

Both between-stratum and within-stratum opacity in Gallipoli Serbian:

1. BETWEEN-STRATUM OPACITY: **Degemination** (postlexical) counterfeeds **Final Shortening** (Clitic Group-level)
2. WITHIN-STRATUM OPACITY: **Final Shortening** (Clitic Group-level) countershifts **Stress Assignment** (Clitic Group-level)

Between-stratum process interaction is not the only source of phonological opacity in Gallipoli Serbian.

Contribution

1. new piece of evidence for within-stratum opacity (Kavitskaya and Staroverov 2010; Broś 2016; Broś and Nazarov 2023; Obiri-Yeboah and Rasin 2023; Stanton 2023)
2. **step further**: unlike most studies that report within-stratum opacity (an exception being Obiri-Yeboah and Rasin 2023), this study shows that within-stratum opacity cannot be eliminated even if the theory allows for additional, language-specific stratal domains

Should multi-level architecture be rejected?

- * "appealing to strata [...] is both unnecessary and insufficient" (Stanton 2023)
 - ▶ GS data don't argue against the need for domain stratification (it helps with between-stratum opacity)
 - ▶ however, domain stratification is **insufficient** (not the sole source of opacity in the dialect)
- ▶ a strain of research in Stratal OT that allows for within-stratum opacity (Bermúdez-Otero 2013, 2019)
- ▶ maintain parallelism within strata, but enrich the framework with some non-standard device (such as local constraint conjunction or distantial faithfulness)
- * phonological opacity is too diverse a phenomenon; no theory of phonology successfully models the full range of opaque interactions (Baković 2007, 2011)

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