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

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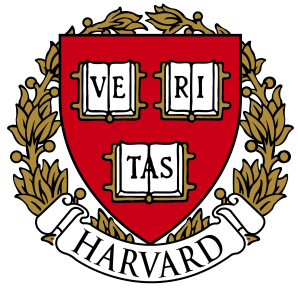

Roadmap

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/} → [ɾ] in certain prosodic environments)
- Flapping removes two markedness penalties on one go
- Opaque winner incurs a gratuitous faithfulness penalty

The Opacity Challenge

(1)

ɹaɪtɚ		FLAP	*aɪ[−voi]	ID-low	ID-son
a.	ɹaɪtɚ	∗!	∗!		
b. 💣	ɹaɪrɚ				∗
c. ☹	ɹʌɪrɚ			∗!	∗

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 sylable 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≫ 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.tɔ́.ka/	[pu.'tɔ́.ka]	'creek.GEN.SG'
	b.	/ɔ́.blaa.ki/	['ɔ́.blaa.ki]	'cloud.NOM.PL'
	c.	/kaan.dí.sa.la/	[kaan.'dí.sa.la]	'agreed.F.SG'
	d.	/di.ʊɔ́ɔj.ka/	[di.'ʊɔ́ɔj.ka]	'girl.NOM.SG'
	e.	/u.bɔ.dɛ́ɛʃ/	[u.bɔ.'dɛ́ɛʃ]	'stab.PRS.2SG'
	f.	/prɛɛ.dɛ́ɛ.mɔ/	[prɛɛ.'dɛ́ɛ.mɔ]	'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.ʋá/	['glaa.ʋá]	'head.NOM.SG'
b.	/lee.pɔ́/	['lee.pɔ́]	'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.'ʊá=mi]	'head=my'
b.	[lee.'pɔ́=jɛ]	'nice=is'
c.	[rɛɛk.'ní=mu]	'tell=him'
d.	[nii.'sám=sɛ]	'not.am=REFL'
e.	[jaa.'rám=sɛ]	'yoke=REFL'

Final Vowel Shortening

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

(6)	a.	/jáa/	['já]	'1SG.NOM'
	b.	/tríi/	['trí]	'three.NOM'
	c.	/spíi/	['spí]	'sleep.PRS.3SG'
	d.	/glɛ́daa/	['glɛ́.da]	'watch.PRS.3SG'
	e.	/ímaa/	['í.ma]	'have.PRS.3SG'

Final Vowel Shortening

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

(7)

a.	['jáa =sam]	'I =am'
b.	['tríi=li]	'three=Q'
c.	['spíi=mi=sɛ]	'sleep.PRS.3SG=1SG.DAT=REFL'
d.	['glɛ́.daa.mɔ]	'watch.PRS.1PL'
e.	['í.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.	/ʊɔ.dɛ́ɛ/	[ʊu.'dɛ́]	'water.GEN.SG'
b.	/slat.kɔ́ɔ/	[slat.'kɔ́]	'sweet.NOM.SG.N'
c.	/ɔd.nɛ.sɛ́ɛ/	[ud.nɛ.'sɛ́]	'carry.away.PRS.3SG'
d.	/glaa.ʊɛ́ɛ/	[glaa.'ʊɛ́]	'head.GEN.SG'
e.	/mr̩r̩.zíi/	[mr̩r̩.'zí]	'hate.PRS.3SG'
f.	/dɛ.snáa/	[di.'sná]	'right.NOM.SG.F'

Final Shortening and stress

* original quantity preserved in enclisis

(9)

a.	[ʊu.'dɛ́ɛ=mi=sɛ]	'water.GEN.SG=1SG.DAT=REFL'
b.	[slat.'kɔ́ɔ=jɛ]	'sweet=is'
c.	[ud.ni.'sɛ́ɛ=ga]	'carry.away.PRS.3SG=it'
d.	[glaa.'ʊɛ́ɛ=mi]	'head.GEN.SG=my'
e.	[mr̩r̩.'zíi=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.	ˈjáa	$*!$	
b. ☞	ˈjá		$*$

Countershifting

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

(12)

ruu.kέε			NONFIN	*V́.#	HEAD-H	MAX-μ
a.		ruu.'kέε		*!		
b.	☹	ruu.'kέ	*!			*
c.	💣	'ruu.kέ			*	*

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.kɛ́ɛ/	ruu.kɔ́ɔm
Stress Assignment	ˈruu.ká	ruu.ˈkɛ́ɛ	ruu.ˈkɔ́ɔm
Final Shortening	N/A	ruu.ˈkɛ́	N/A
Surface form	[ˈruu.ká]	[ruu.ˈkɛ́]	[ruu.ˈkɔ́ɔm]
	‘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 affliation
  - 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.ʊá]	'head.NOM.SG'	[glaa.'ʊá=mi]
	b.	['ɔɔ.mí]	'wash.IMP.2SG'	[ɔ.'mí=sɛ]
(14)	a.	[slaat.'kɔ́]	'sweet'	[slaat.'kɔ́ɔ=jɛ]
	b.	[ruu.'kɛ́]	'arm.GEN.2SG'	[ruu.'kɛ́ɛ=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 counterfeed 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.ˈsám=ti** ˈrɛ́.ka.ʊɔ
not.am=2SG.DAT say.PTCP.PST.M.SG
'I didn't tell you' (Inherently weak pronoun) [Ivić 1957: 395]

b. **ˈnii.sám=ja** ta.ˈlí.kɔ tɛ.ˈʊɛɛ.kɛ́l
not.am=1SG.NOM that.much fool
'I am not such a fool' (Deaccented pronoun) [*op. cit.*: 457]

c. **ˈnii.sám** **ˈjá** ˈdɔ́.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.	['pɛ́ɛ daa.'náa]	'five days'
b.	['pɛ́ɛ**t** suee.'ʧá]	'five candles'

(17) /bɔɔg/ 'god'

a.	['bɔ́ɔ 'gɔ́.spɔt]	'god the master'
b.	['bɔ́ɔ**k**=jɛ]	'god is'

(18) /tríi/ 'three'

a.	['trí ʧu.'ʋɛ́.ka]	'three men'
b.	['tríi=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 ≠ 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.'brá**s**=mu]	'his cheek'	cf. GEN.SG [ɔɔ.'brá.**z**a]
b.	['bɔ́ɔ**k**=jɛ]	'god is'	cf. GEN.SG ['bɔ́.**g**a]
c.	['múu**s**=mi]	'my husband'	cf. VOC.SG ['múu.**z**u]

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 phonologicl 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 lays in prosodic representation (sensitivity to prosodic boundary syipulated 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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