

Palatalization Conference

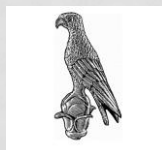
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PALATALIZATION ACROSS GREEK DIALECTS: PHONETICS, PHONOLOGY & TYPOLOGY

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Palatalization (PAL)

- Kochetov (2011: 1666): **The challenge**

“...palatalization processes show a wide range of manifestations across languages and within a given language. [...] complex phonological and morphological conditioning, and pervasive opacity effects, reflecting complicated historical sound changes and paradigmatic restructuring.”

Kochetov's (2011) PAL Typology

Type	Palatalization		labial	coronal	dorsal
I	Secondary		$p \rightarrow p^j$	$t \rightarrow t^j$	$k \rightarrow k^j$
II	To a posterior coronal	a. to a non-sibilant	$p \rightarrow c$	$t \rightarrow c$	$k \rightarrow c$
		b. to a sibilant	$p \rightarrow tʃ$	$t \rightarrow tʃ$	$k \rightarrow tʃ$
III	To an anterior coronal	a. to a non-sibilant	$p \rightarrow t$ (absent)	n/a	$k \rightarrow t$ (absent)
		b. to a sibilant	$p \rightarrow ts$	$t \rightarrow ts$	$k \rightarrow ts$

- Typology: 64 languages and dialects, 17 languages families; frequencies omitted
- Some generalizations:
 - TARGET ASYMMETRY: COR, DOR vs. LAB ✓
 - TRIGGERS: (Hi) front V/j vs. mid front vs. others ✓
 - TRIGGER-TARGET DEPENDENCIES: Hi V/j – COR; Front V – DOR ✓
 - OUTPUTS: PAL or COR ✓

Greek in PAL Typology

- However, Greek extends and refines Kochetov's (2011) PAL typology
 - Greek does not exhibit *true* “secondary” PAL. Instead of a F2 movement, Greek PAL presents frication or even aspiration or lengthening
 - Greek exhibits several PAL processes across and within dialects

Goals I

- To contribute to the phonetic and phonological typology of PAL with Greek as the empirical basis of exploration
- **Q:** Why Greek?
- **A:** Extensive variation of PAL-like processes within and across dialects. It also seems to illustrate instances of most patterns in the typology, plus a new one!

Goals II

- More specifically, we:
 - Show that impressionistic accounts of Greek palatalization have not been accurate and demonstrate how the processes can be better understood
 - Extend Kochetov's typology by adding a new pattern tentatively called **strengthened secondary PAL** (SS-PAL; see next slide)
 - Kochetov (this conference) argues that PAL and glide strengthening (GS) are related processes. We corroborate his claim and argue that in Greek in particular **SS-PAL** and **glide-strengthening (GS)** are comparable processes

Kochetov's (2011) PAL Typology Revised



Type	Palatalization		labial	coronal	dorsal
I	Secondary		$p \rightarrow p$	$t \rightarrow t$	$k \rightarrow k^j$
II	Strengthened secondary		$p \rightarrow p^+$	$t \rightarrow t^+$	$k \rightarrow ??$
III	To a posterior coronal	a. to a non-sibilant	$p \rightarrow c$	$t \rightarrow c$	$k \rightarrow c$
		b. to a sibilant	$p \rightarrow tʃ$	$t \rightarrow tʃ$	$k \rightarrow tʃ$
IV	To an anterior coronal	a. to a non-sibilant	$p \rightarrow t$ (absent)	n/a	$k \rightarrow t$ (absent)
		b. to a sibilant	$p \rightarrow ts$	$t \rightarrow ts$	$k \rightarrow ts$

- Blue shading: PAL in Greek; cells with dotted lines: reported in literature, but we have no clear speech data; spotted cells indicate an apparent type of PAL
 - I: Koz.Gr [pat^hera]; IIIa: All dialects, IIIb: Cretan; IVb: Cretan
- Pink shading: the version of secondary PAL arising in Greek
 - II: Koz.Gr: [mat⁺]
- **We propose the addition of Strengthened Secondary PAL to the Typology**
- *Note:* the index [⁺] is a shorthand for various acoustic cues (e.g. frication and aspiration) → not intended for an IPA representation

Organization of the talk

- Greek: Background & the present data
- Palatalization (PAL) patterns I, III & IV in Greek [*aka* the **blue cells**]
 - Allophony vs. contrast
 - Instantiations and examples in SMG and dialects
- A new PAL pattern: SS-PAL [*aka* the **pink cells**]
 - Counterbleeding opacity
 - PAL spreading in sC clusters & hierarchies of targets
- Glide strengthening (GS)
- Summing up – Discussion – Conclusions
 - GS and SS-PAL as steps in a continuum
 - Uniformity & variation
 - Future research

GREEK: BACKGROUND & CURRENT DATA

Greek dialects (phonology)

- Very similar consonantal and vocalic inventories (5 vowels: i, e, a, o, u) across dialects (from Arvaniti 1999, 2007)

Table 1. The phonologically contrastive consonants of Greek (after Arvaniti 1999a).

	Bilabial		Labio-dental		Interdental		Alveolar		Velar	
Plosive	p	b					t	d	k	g
Fricative			f	v	θ	ð	s	z	x	ɣ
Nasal		m						n		
Tap								r		
Lateral approx								l		

- NB: palatals are missing, even the /j/!

Greek dialects (phonetics)

- The phonetic inventory (Arvaniti 2007)

Table 5. The phonetic inventory of Greek consonants.

	Bilabial		Labio-dental		Dental		Retracted Alveolar		Post-alveolar	Retracted Palatal		Velar	
Plosive	p	b					t	d		c	ɟ	k	g
							ts	dz					
Fricative			f	v	θ	ð	s	z		ç	j	x	ɣ
Nasal		m		ɱ		ɳ		n	ɳ		ɲ		ŋ
Tap								r					
Trill								r					
Approximant								ɹ					
Lateral approx.								l	ʎ				

NB: [j] is still missing! (cf., however, recent work by Baltazani & Topintzi 2010, 2012; Soultatis 2013; Revithiadou et al. 2014, and references therein)

PAL /j/

- While much of the literature on Greek (e.g., Kazazis 1968; Warburton 1976; Malavakis 1984; see Topintzi & Baltazani 2011a, b for detailed discussion and references) accepts no place for the glide /j/, more recent work (by Baltazani & Topintzi 2010, 2012; Soultatis 2013; Revithiadou et al. 2014, and references therein) highlights its existence and significance
- However, it is crucially involved in processes of **palatalization** and **glide strengthening**

PAL across Greek dialects

Greek has approx. 11,000,000 speakers (2011 census)



- Standard Modern Greek (SMG)
- Cretan Greek (CretGr)
- Peloponnesian Greek (PelGr)
- Kozani Greek (KozGr)

The dialectal data

Cross-dialectal survey of Greek PAL on the basis of:

- (a) *recorded conversational data* from four dialects (40 speakers, Standard, Cretan, Kozani & Peloponnese Greek; SMG, CretGr, KozGr, PelGr respectively), part of the **Vocalect Project** (<http://www.vocalect.eu/?lang=en>)
- (b) (*on-line*) ‘*read aloud*’ data (e.g., recording of KozGreek used in Topintzi & Baltazani 2012; online material: http://www.skrka.gr/kozanitiko_idioma.html, <http://www.skrka.gr/skrka.html>)
- (c) *published data* of these and other dialects (e.g., Siatista Greek, Margariti-Roga 1985; Kozani Greek, Ntinis 2005, Christodoulou 2013, 2014; Cretan Greek, Lengeris & Kappa 2014; Peloponnese Greek, Pantelidis 2001, etc.)

Wherever possible, we compare with recorded data collected by other researchers (e.g., Lengeris & Kappa 2014).

The methodology

- 5 males and 5 females recorded per dialect (50-80 years old)
- Conversation with dialectal intermediate who performed the experiment (different for each dialect) \approx 40 minutes of conversation per speaker
 - speech which approximates natural communication
 - avoidance of influences from standard variety
- Field recordings at participants' houses
- Recordings made directly on a laptop using Audacity, v.2.0.4, as the recording software, set at 44100 sampling rate, and a Blue Yeti USB microphone set at cardioid direction
- 2 min. of speech x 2 speakers per dialect analyzed for this talk
 - corresponds to roughly 3000 Vs and more than 4000Cs
 - within the corpus, we found extensive variability of all phenomena, including PAL

PALATALIZATION

PATTERNS I, III & IV

PAL Patterns I, III & IV

Type	Palatalization		labial	coronal	dorsal
I	Secondary		$p \rightarrow p^j$	$t \rightarrow t^j$	$k \rightarrow k^j$
III	To a posterior coronal	a. to a non-sibilant	$p \rightarrow c$	$t \rightarrow c$	$k \rightarrow c$
		b. to a sibilant	$p \rightarrow tʃ$	$t \rightarrow tʃ$	$k \rightarrow tʃ$
IV	To an anterior coronal	a. to a non-sibilant	$p \rightarrow t$ (absent)	n/a	$k \rightarrow t$ (absent)
		b. to a sibilant	$p \rightarrow ts$	$t \rightarrow ts$	$k \rightarrow ts$

- We will show that Patterns III & IV are attested in Greek
- What looks as Pattern I exists in KozGr, but we argue this is pseudo-palatalization (hence the spotted cell). The phenomenon is better characterized as diphthongization

The basics of Greek PAL: Allophony

- The basic PAL pattern is Pattern IIIa
- Allophony across Greek dialects: Velar obstruents /k g x ɣ/ become palatal [c ɟ ç ʝ] before the front vowels [i e], but remain velar before the back [a o u]

(1) *Velars vs. palatals (example with k~c)*

Velars + back Vs	Gloss	Palatals + front Vs	Gloss
káno	‘I do’	címa	‘wave’
lákos	‘pit’	cerí	‘candle’
kupí	‘oar’		

Allophony suggests that:

(a) velars should never occur before front vowels (✓)

The basics of Greek PAL: Contrast

(b) palatals should not occur before back vowels (✗) (see (2))

(2) Velar obstruents and alveolar sonorants vs. palatals: Contrast before back Vs

a. Velars	Gloss	b. Palatals	Gloss
káli	‘beauty’	cáli	‘binoculars’
egóni	‘grandchild’	jónis	‘the bird <i>Otus Scops</i> ’
xóni	‘stick in-3.SG.’	çóni	‘snow’
yóma	‘rubber gum’	jóma	‘afternoon (poetic)’
náta	‘there they are’	játa	‘youth’
ílos	‘nail (archaic use)’	íλος	‘sun’

PAL triggers

- PAL is caused by the front Vs, e.g.

/kipos/	→	['cipos]	‘garden’
/paketo/	→	[pa'ceto]	‘packet’

- **Simple PAL** (next slide)
- PAL can also be caused by the glide /j/ before a V, e.g.

/kjali/	→	['cali]	‘binoculars’
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- **Extreme PAL** (next slide)
- Evidence for glides comes through minimal pairs, diagnostics of stress, etc. (see Baltazani & Topintzi 2012; Soultatis 2013, among others)

Two types of PAL depending on *target & environment*

- Baltazani & Topintzi (2012) distinguish between two types of *PAL*:
 - **Simple**: Preserves the *PAL* trigger (front vowels)
 - **Extreme** (cf. Bateman 2007 and references therein): Either deletes or fuses the *PAL* trigger (i.e. the glide) with the target of *PAL*

(3) *Simple vs. extreme palatalization in Standard Modern Greek*

	<i>Trigger</i>	<i>Target</i>
<i>Simple</i>	Front vowels	DOR
<i>Extreme</i>	Glide	DOR, sonorants /l, n/

The phonology and phonetics of PAL

- PAL is a common process across dialects, but we find differences with respect to the *targets*, *triggers* and its *outcomes*
- This means that PAL in Greek dialects has no uniform phonological and phonetic realization
- Any two dialects may exhibit:
 - Similar phonologies but differ in phonetic realization
 - Comparable phonetics but distinct phonologies

Similar phonology; different phonetics

SMG vs. CretGr

- Share similar phonology of PAL but differ in phonetics:

/k g x ɣ/ → [tʰ dʒ ɕ ʒ] / __i, e **Simple**

[tʰe] [a'dʒizi] [ɕera] [eʒine]



/k g x ɣ/ → [tʰ dʒ ɕ ʒ] / __j **Extreme**

[ʔitʰo] [dʒu'ɲar] [ɕo'ɲa] [ʒa'ti]



(data drawn from Lengeris & Kappa 2014, and Vocalect)

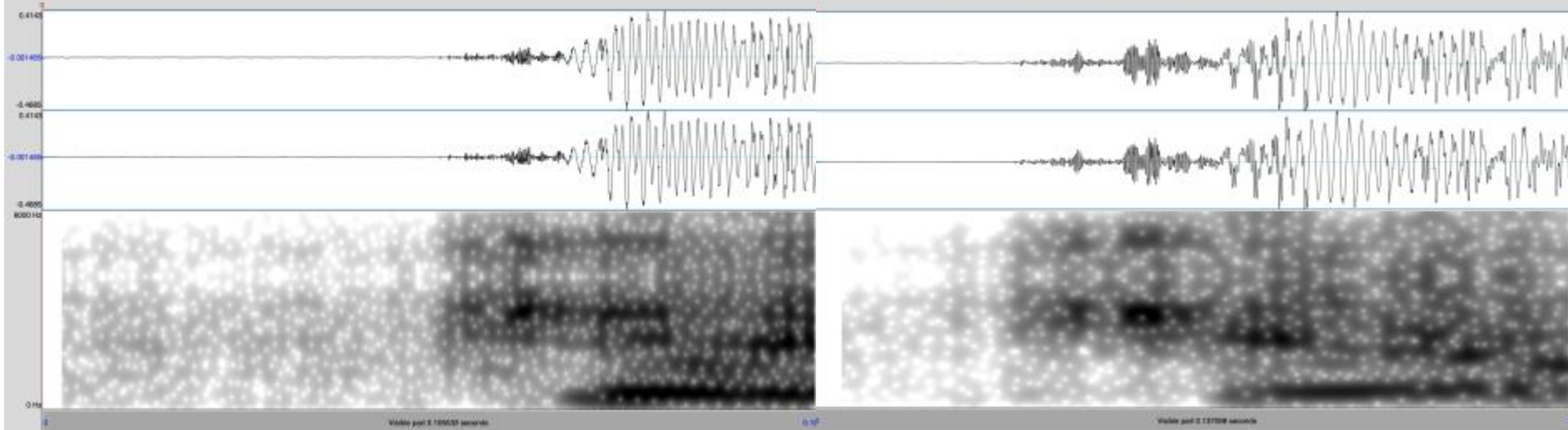
Similar phonology; different phonetics

- Phonetics:
 - CretGr PALs typically emerge affricated (Syrika et al. 2011, Trudgill 2003), exemplifying Patterns III & IV
 - *Gradient* instantiations of affrication are common


E.g.

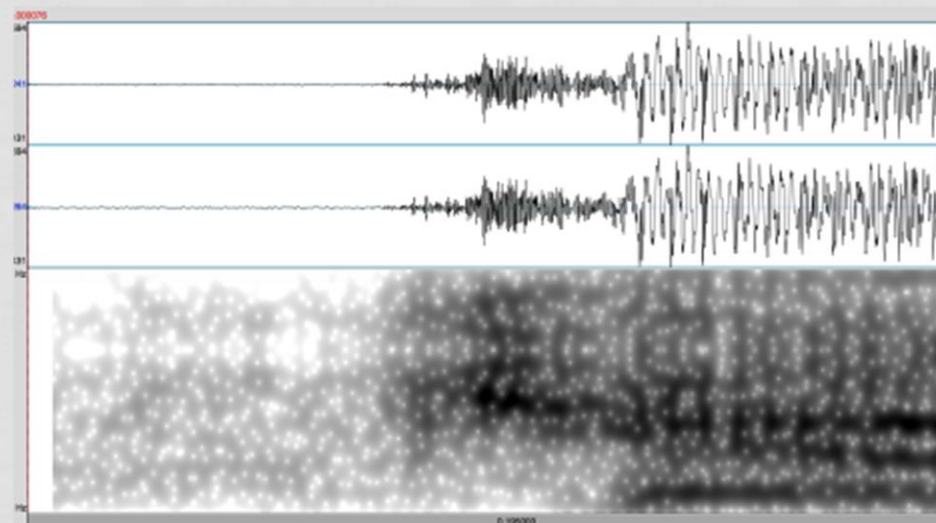
/k/ → palatal [c] or
affricated alveolo-palatal [t^ɕ] or
palatal affricate [c^ɕ]


depending on stress and word position (Lengeris & Kappa 2014)



[ce] 

[cʰe] 



[tʃe] 

PHONETIC REALISATIONS OF /ce/ - SAME SPEAKER

Similar phonetics; different phonology

SMG vs. PelGr, KozGr & CretGr

- Phonetically comparable palatals
- But different with respect to phonology:


The triggers and targets of **Simple PAL** differ (Pantelidis 2001)

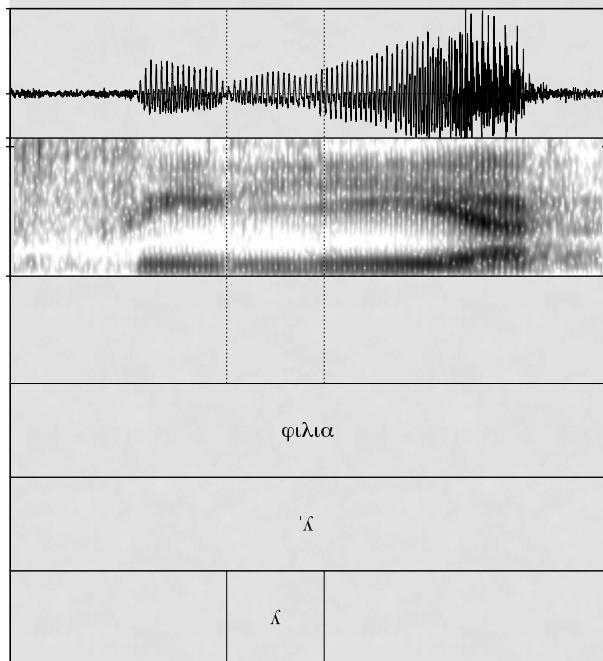
$/l n/ \rightarrow [\lambda \eta] / _ i$

NB: /e/ is inert

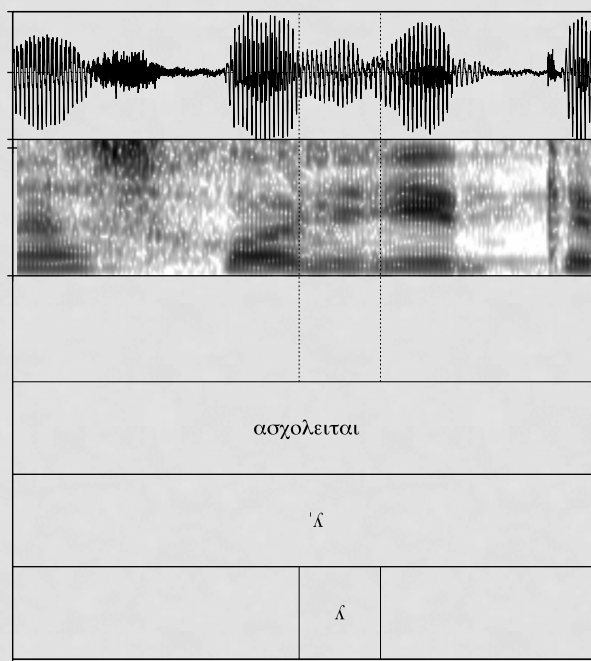
(4) PelGr, KozGr, CretGr


/limani/	[li'maɲi]	‘harbor’
/lerono/	[le'rono]/ *[\lambda e'rono]	‘stain-1sg’

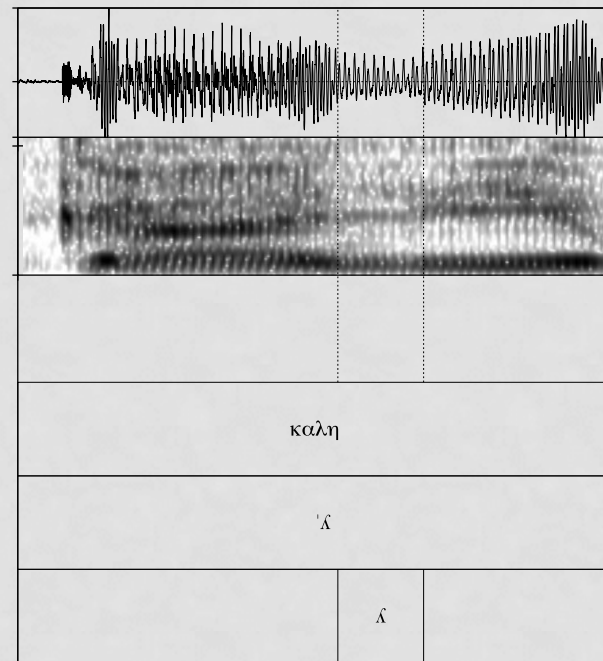
PelGr [fi'lia] 



CretGr [asxo'lite] 



KozGr ['kaɫi] 



/l, n/ SIMPLE PAL

Summary: PAL rules & dialectal distribution

Simple PAL

1. /k g x ɣ/ → PAL / __ i/í, e/é

SMG, all dialects

2. /l n/ → PAL / __ i/í

PelGr, CretGr

3. /l n s z/ → PAL / __ i/í

KozGr, SiatistaGr

Extreme PAL

4. /k g x ɣ/ → PAL / __ j

SMG, all dialects

5. /l n/ → PAL / __ j

SMG, all dialects

Summary: PAL rules & dialectal distribution

Simple PAL

1a. /k g x ɣ/ → [c ɟ ç ʝ] / __ i/í, e/é

SMG, PelGr, KozGr, SiatistaGr

1b. /k g x ɣ/ → [tʰ dʒ ɕ ʒ] / __ i/í, e/é

CretGr

2. /l n/ → [ʎ ɲ] / __ i/í

PelGr, CretGr

3. /l n s z/ → [ʎ ɲ ʃ ʒ] / __ i/í

KozGr

Extreme PAL

4a. /k g x ɣ/ → [c ɟ ç ʝ] / __ j

SMG, PelGr, KozGr, SiatistaGr

4b. /k g x ɣ/ → [tʰ dʒ ɕ ʒ] / __ j

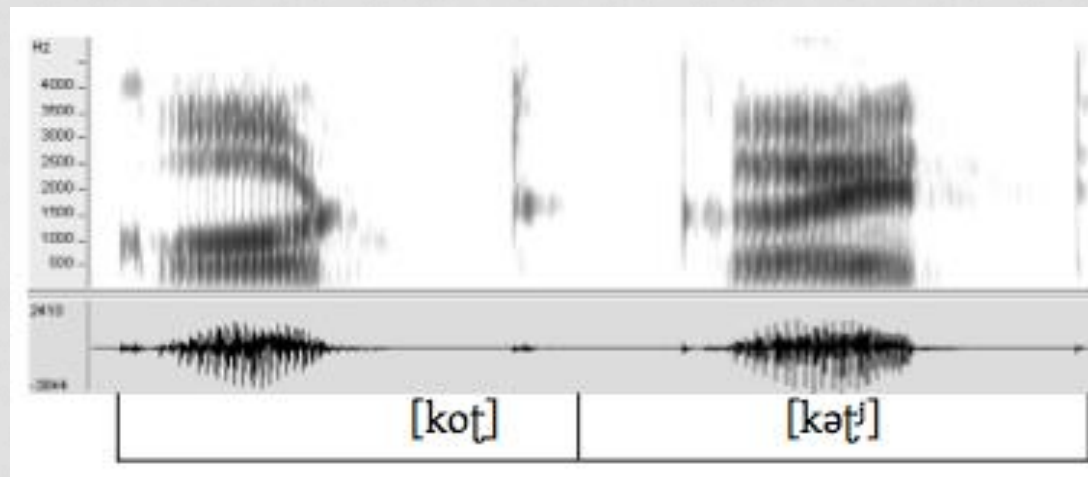
CretGr

5. /l n/ → [ʎ ɲ] / __ j

SMG, all dialects

Excursus: lack of true secondary PAL in Greek

- Greek has no secondary PAL, as the term is understood in the literature (Kochetov 2002, 2004; Ní Chiosáin & Padgett 2012; Takatori 1997) and exemplified by Russian, Kashmiri, Irish, and others
 - Kashmiri: [tʰ] is truly palatalized as evinced by the movement of F2 & F3 in the preceding vowel (right token)
 - Possible exception in KozGr (next slide), but in fact the process is really diphthongization



Spectrograms of the words [kot] 'boy' and [kətʰ] 'boys' (taken from Bhaskararao 2009)

A deceptive case of Secondary PAL

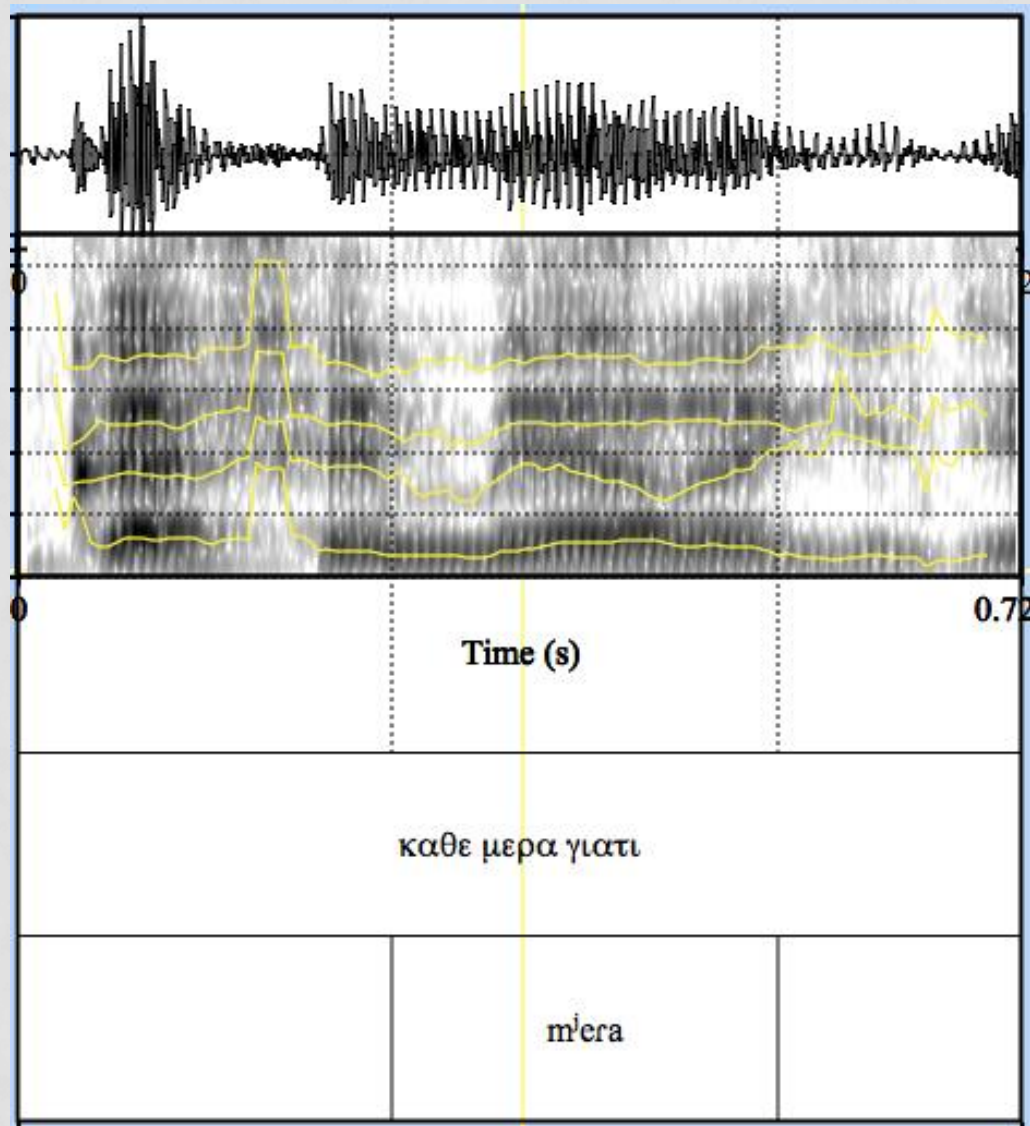
- KozGr however displays a pattern that looks like **Pattern I PAL**

Simple PAL

Targets: Besides velars, also non-velar Cs

Triggers: Stressed front V /é/ (Baltazani & Topintzi 2010; Revithiadou & Markopoulos 2014)

(5)	[ˈsʲefka]	‘enter-1SG.PAST’
	[ˈzʲesta]	‘heat’
	[paˈtʲeras]	‘father’
	[ˈðʲenu]	‘tie-1SG’
	[ˈfʲevyu]	‘leave-1SG’
	[ˈmʲera]	‘day’
	[ˈʎeu]	‘say-1SG’



APPARENT PAL PATTERN I → INSTEAD DIPHTHONGIZATION

Why this is Diphthongization and not PAL

- Although this looks like Secondary PAL, we argue it is not; instead we characterize this as diphthongization
- Reasons (cf. Baltazani & Topintzi 2010; Revithiadou & Markopoulos 2014)
 - KozGr Vs are generally quite diphthongized
 - The same pattern also arises in onsetless syllables word-initially, e.g. / 'enas/ → ['jenas] 'one', i.e. when there is no C as a PAL target
 - The phenomenon overall looks different; it is clearly conditioned by stress and is the only case where apart from a glide /j/ we can get /w/ too, e.g. /'posa/ → ['pwosa]
 - SiatistaGr: Allomorph distribution of negation: *ǫén* + V-initial words, *ǫé* + C-initial ones:

/ǫén éxun/ ǫén^j jéxun *ǫé jéxun '(they) don't have';
cf. ǫé xa na skorpís '(it) will not spread'

STRENGTHENED SECONDARY PALATALIZATION (PATTERN II)

AS ILLUSTRATED IN NORTHERN GREEK

Counterbleeding opacity

- KozGr and other Northern Greek dialects (e.g., Siatista, Velventos) exhibit **vowel reduction** phenomena (e.g., Andriotis 1932a,b; Newton 1972, a.o.).

(11) vowel reduction in Northern Greek dialects

/i u/ → ∅

/e o/ → [i u] / ^(CV) [-stress] { ^{(C(V))} # }

(12) deletion and raising in KozGr (accompanied by PAL-like process)

/kunav-i/	[⁺ knav]	‘ferret’	(Ntinas 2005: 60)
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/anem-i/	[⁺ anem]	‘spinning wheel’	(Ntinas 2005: 60)
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/poð-ar-i/	[⁺ puðar]	‘foot-AUGM’	(Christodoulou p.c.)
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/ðond-i/	[⁺ ðond]	‘tooth’	(Ntinas 2005: 62)
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/votan-i/	[⁺ vuʔan]	‘herb’	(Ntinas 2005: 43)
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Counterbleeding opacity

- Important: Raised-/e/ and deleted-/i/ trigger **Simple PAL**. However, vowel reduction is not systematic since UnPAL Cs are also attested

- Environments and triggers of PAL

		<u>notation</u>
C ^j (i) (CV)#	where (i) = deleted-/i/	C(i)
C ^j [i] (CV)#	where [i] = raised-/e/	C[i]

NB: Stressed *i* is also a trigger

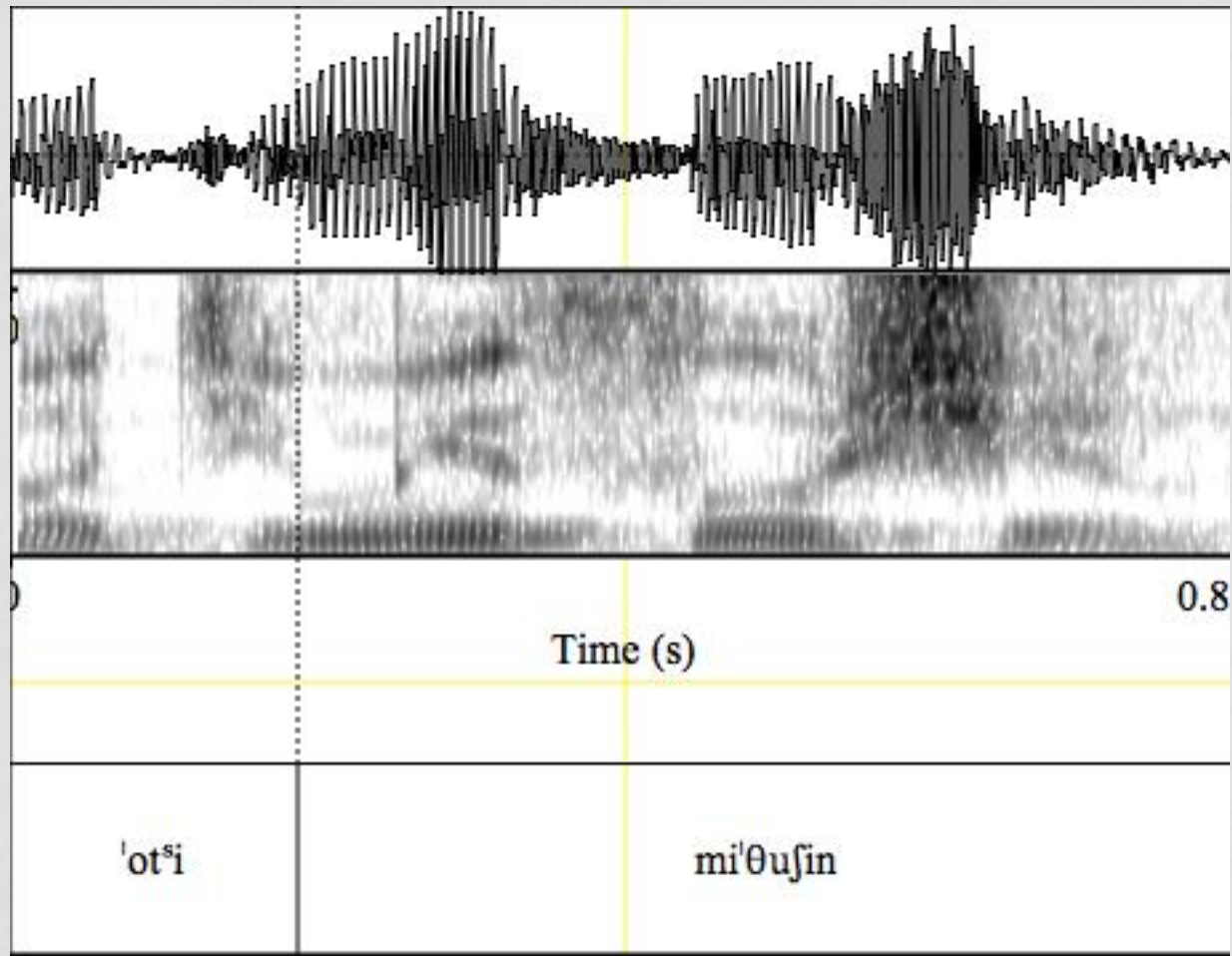
- Targets of PAL:
 - KozGr:** DOR, sibilants, liquids, nasals, COR, LAB
 - SiatistaGr:** DOR, sibilants, liquids, COR nasals/stops, (*LAB)
- Always unaffected: rhotics

Strengthened Secondary Palatalization (SS-PAL)

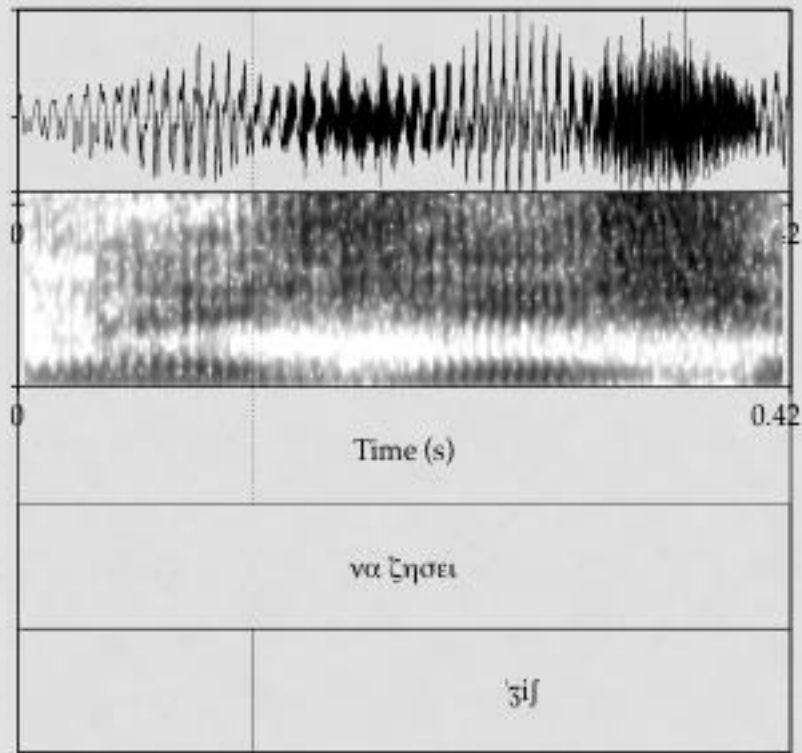
- The outcome of this opaque interaction has been traditionally called PAL in the literature and has been transcribed as [C^j] (e.g., Papadopoulos 1926; Newton 1976; Kontosopoulos 1994 a.o.)
- Consequence: it should correspond to secondary PAL (Pattern I in Kochetov's typology)
- We claim next:
 - This is inaccurate, since the undergoing Cs do not present the anticipated formant movements
 - Instead, we see frication, aspiration or even lengthening
 - We dub this pattern SS-PAL and add it to Kochetov's typology as the new pattern II (cf. slide 9). Greek PAL of this type is better represented as [C⁺]

II	Strengthened secondary	p → p ⁺	t → t ⁺	k → ??
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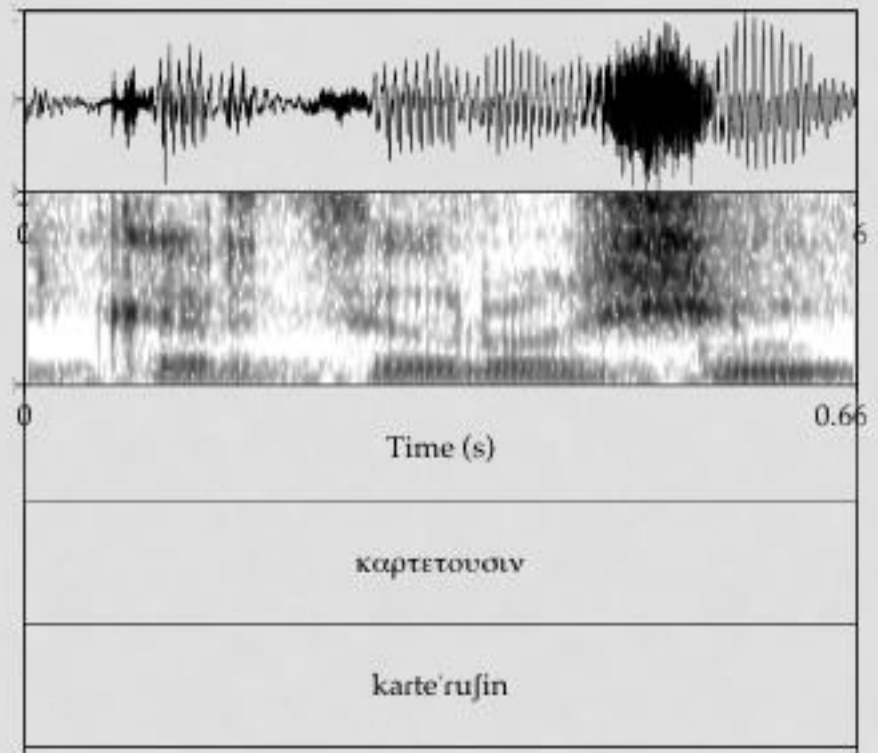
PAL: [ʃ] [i]



['zɪʃ]

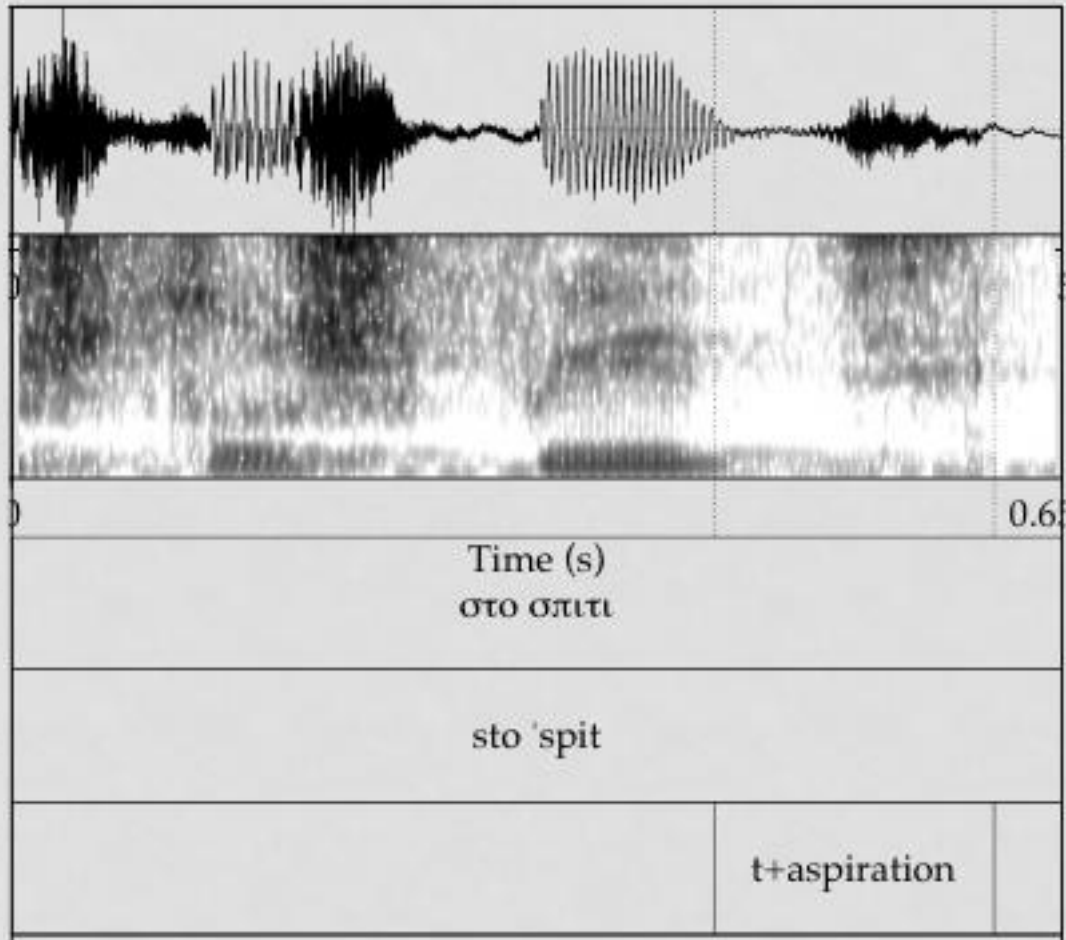


[karteruʃin]

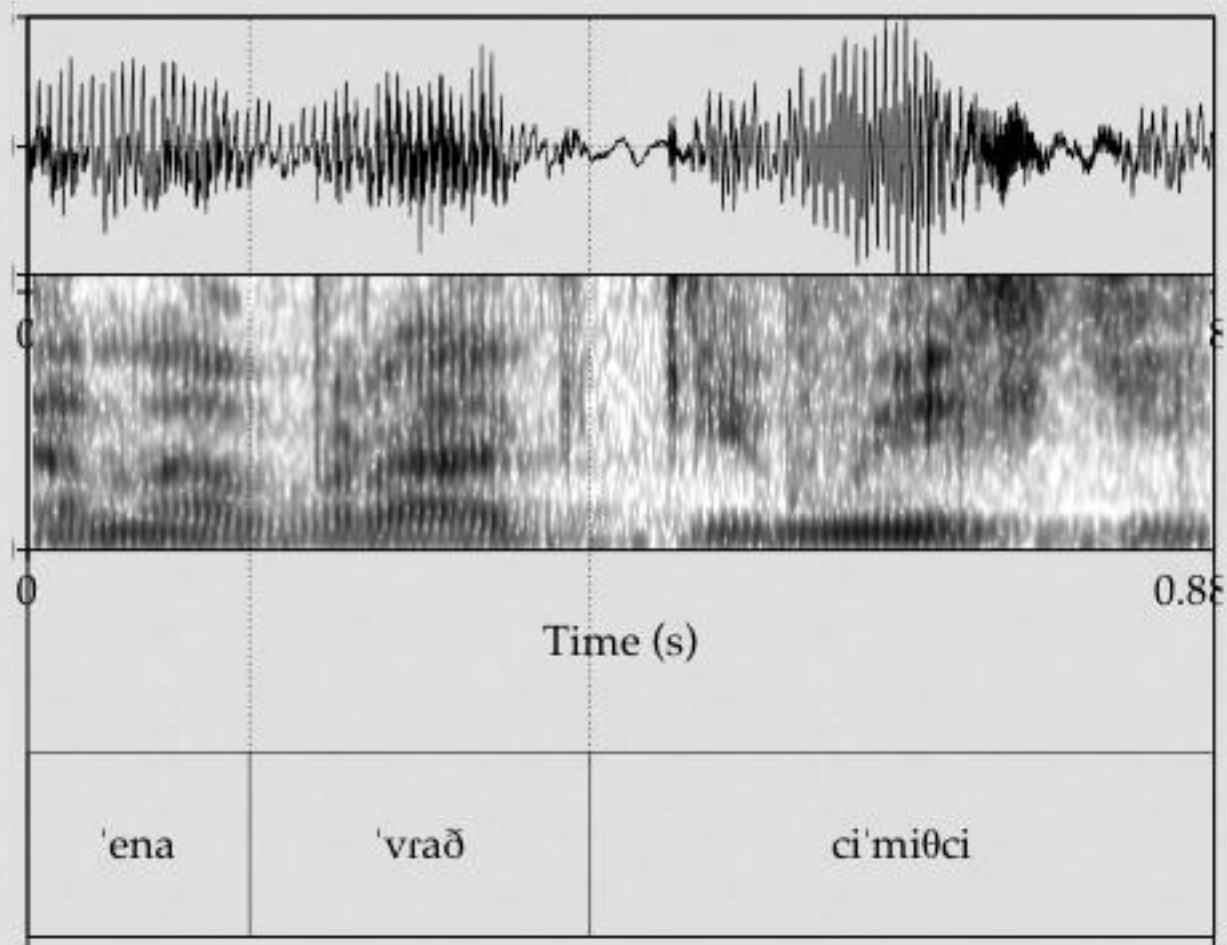


/S Z/ SIMPLE PAL

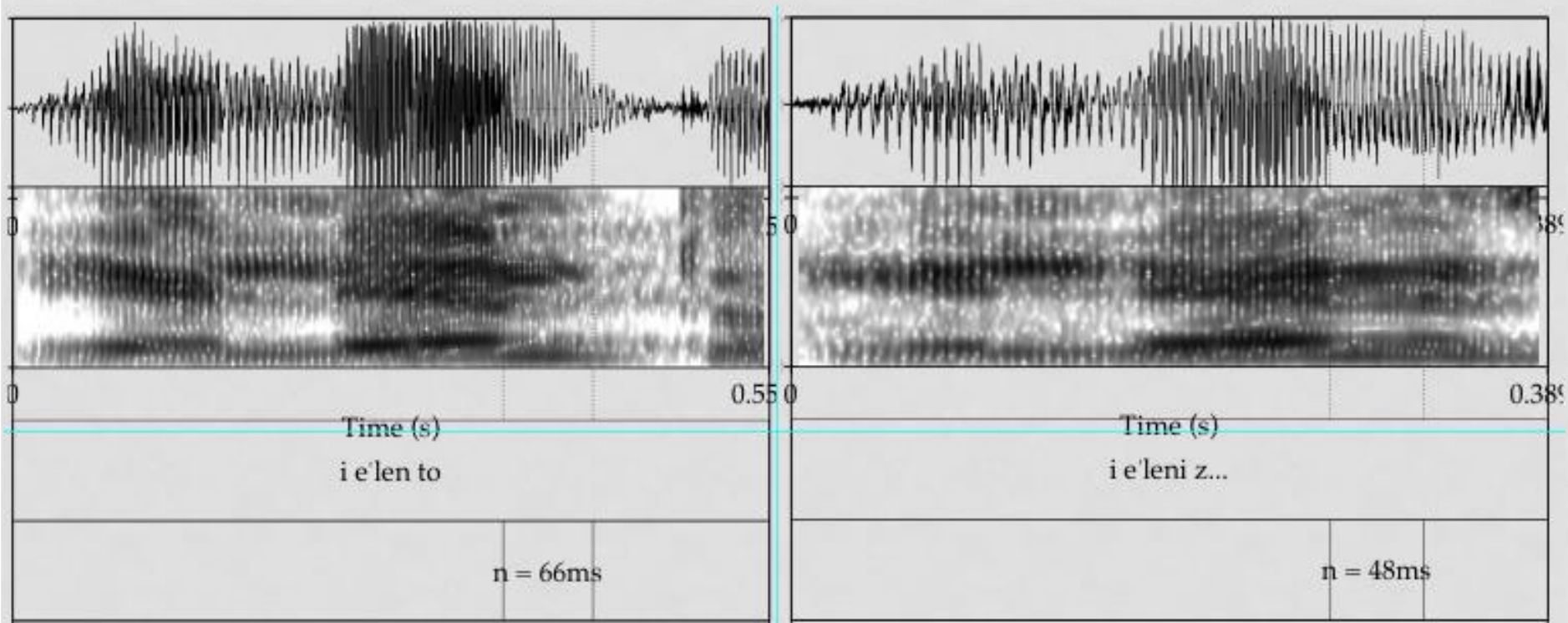
Aspiration: [t^h] (i)



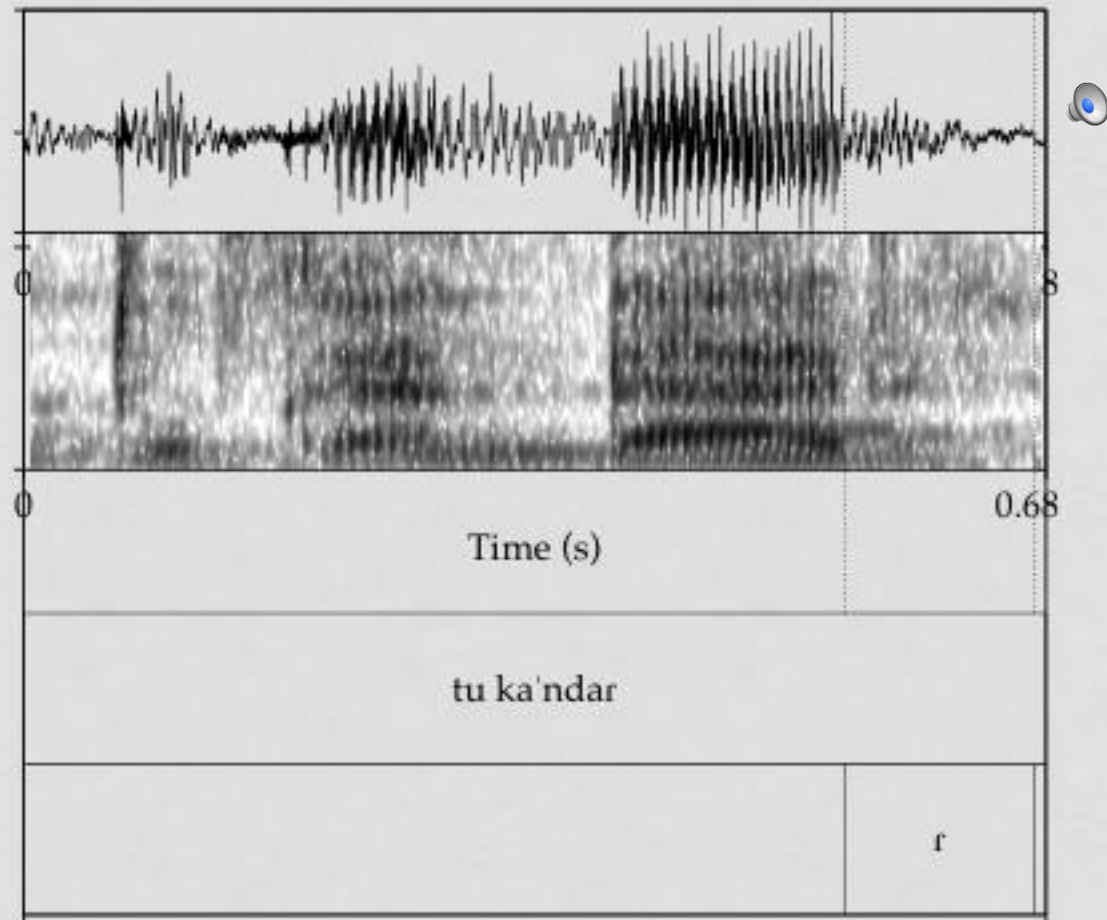
Stop-like release: [ð̥] (i)



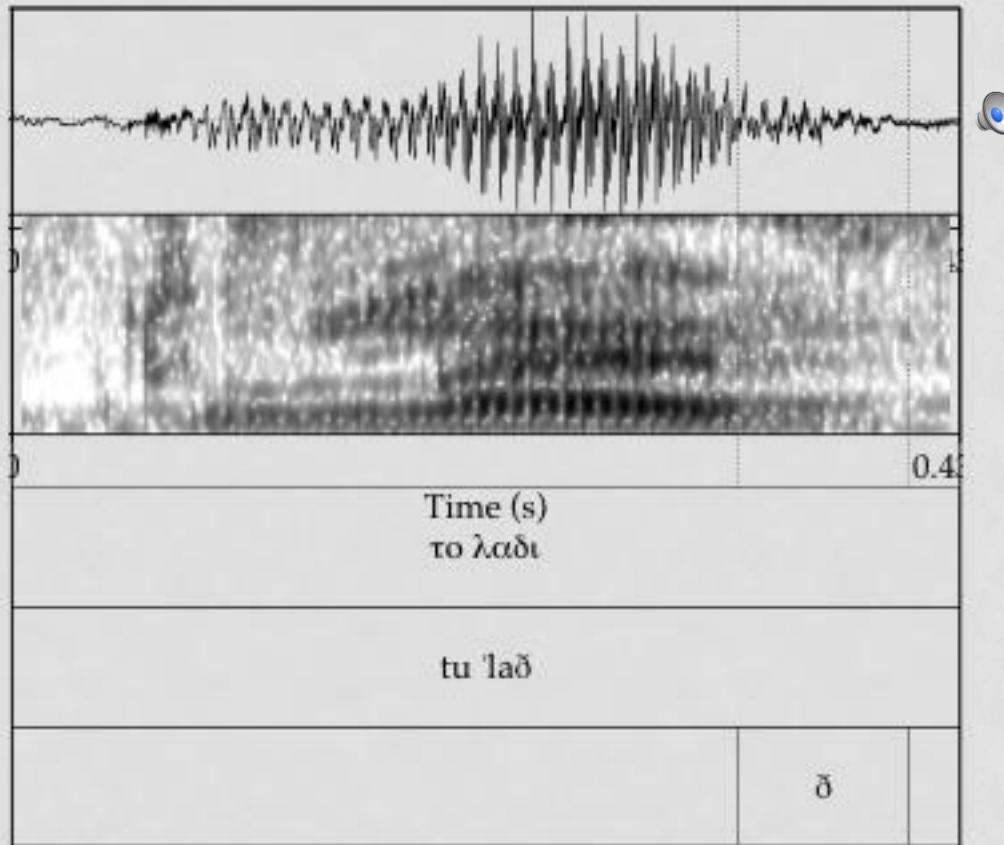
Lengthening of C (i)



No palatalization: [ɾ] (i)



No application of SS-PAL



Here there is no aspiration, no release, nor any other cue for PAL after [ð]

SS-PAL Summary

- SS-PAL Phonology
 - Affects All DOR, COR nasals, laterals and sibilant fricatives
 - Displays variation; it may occur or not
- SS-PAL Phonetics: involves various acoustic cues
 - Aspiration
 - Frication
 - Lengthening
 - Stop-release
 - Formant structure possibly for non-sibilants

FURTHER EFFECTS IN NORTHERN GREEK

PALATALIZATION SPREADING

PAL spreading in sC clusters

- Interestingly SS-PAL under vowel reduction spreads to a **sibilant** within a **sC** sequence:

(13) PAL spreading

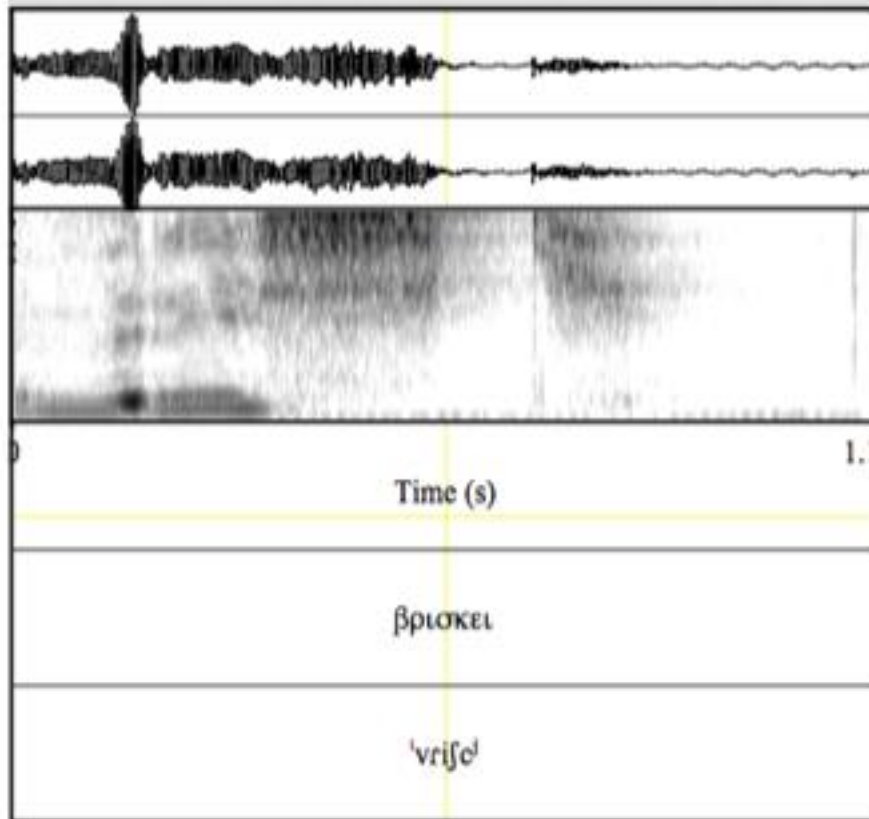
		KozGr	SiatistaGr
/stivázo/	‘pile up’	[ʃt ⁺ i'vazu]	[ʃtʃi'vazu]
/spiti/	‘house’	[⁺ ʃp ⁺ it ⁺]	[⁺ spitʃ]
/skepári/	‘adze’	[ʃci'par]	[ʃci'par]
/vriski/	‘find-3SG’	[⁺ vriʃc]	[⁺ vriʃc]
/laspi/	‘mud’	[⁺ laʃp ⁺]	[⁺ laʃp]

(14) No PAL spreading

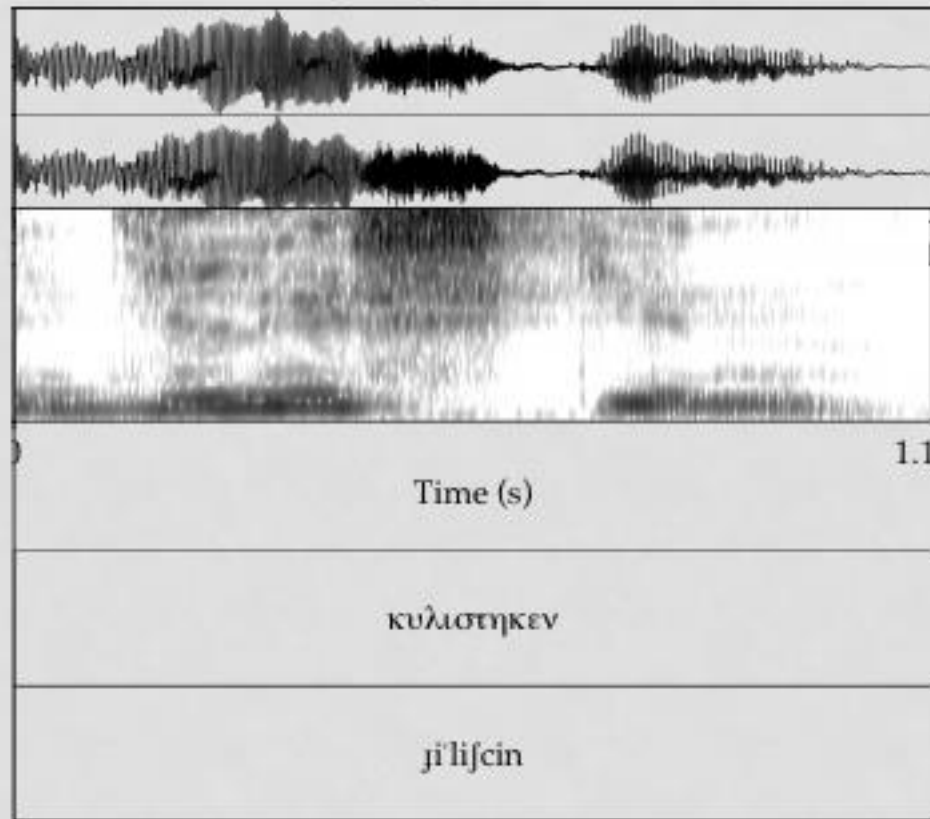
/psiles/	[⁺ pʃɬes]	‘tall-FEM.PL’
/ksilo/	[⁺ kʃilo]	‘wood’



[¹vriʃc⁺]

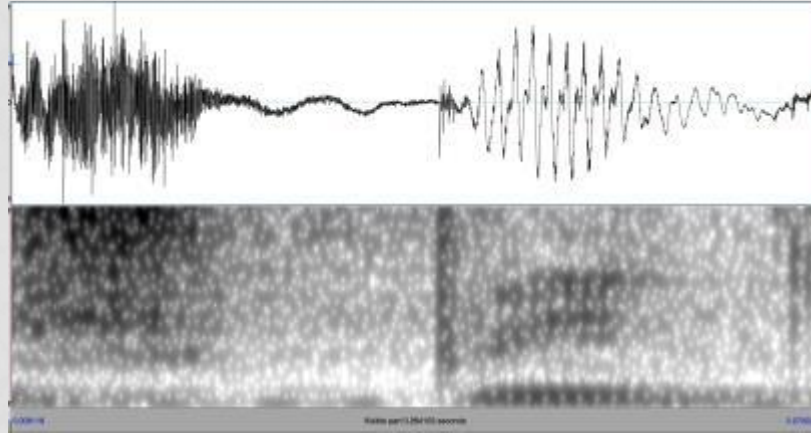


[ji¹liʃcin]

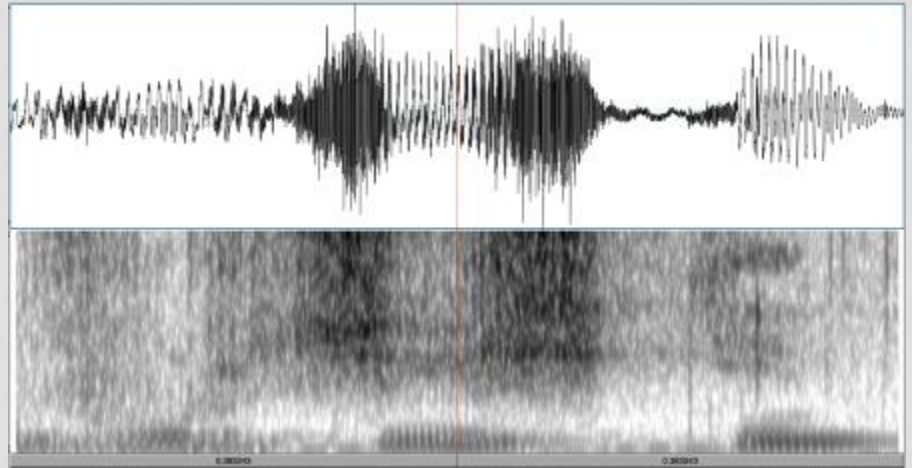


PAL SPREADING IN SC CLUSTERS - SIATISTA

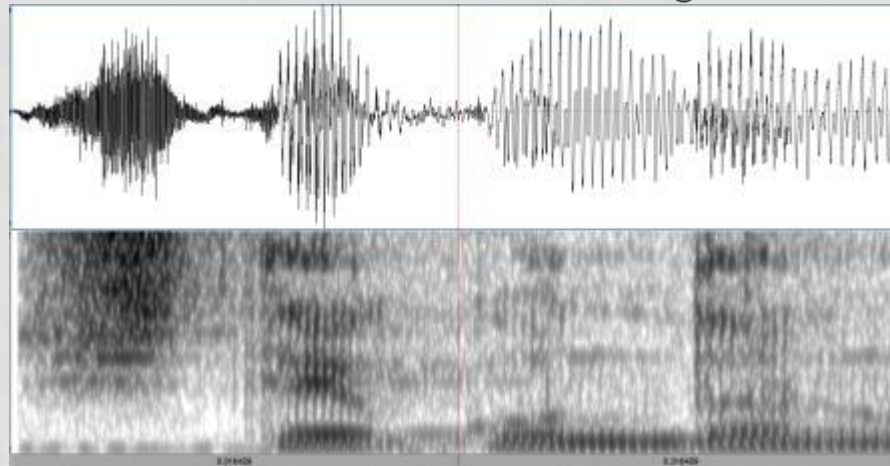
🔊 ['ʃpit⁺]



[vur'tʃiʃcin] 🔊

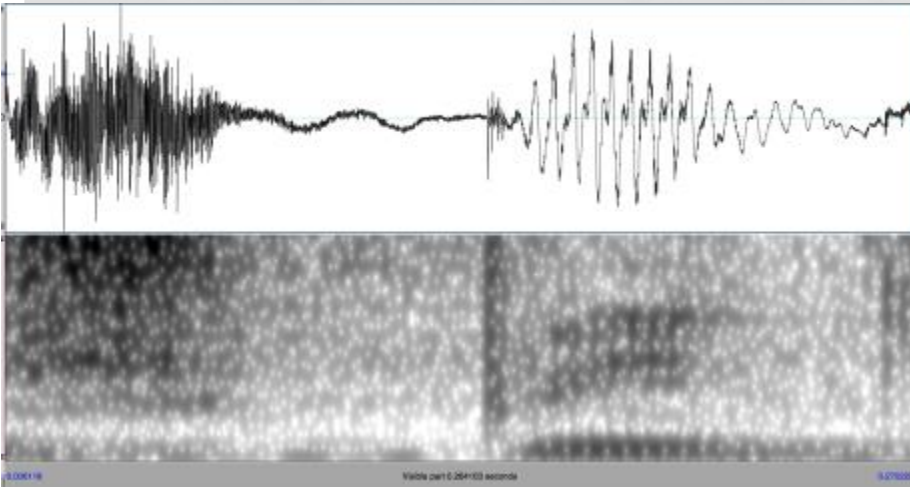


['ʃtekundan] 🔊

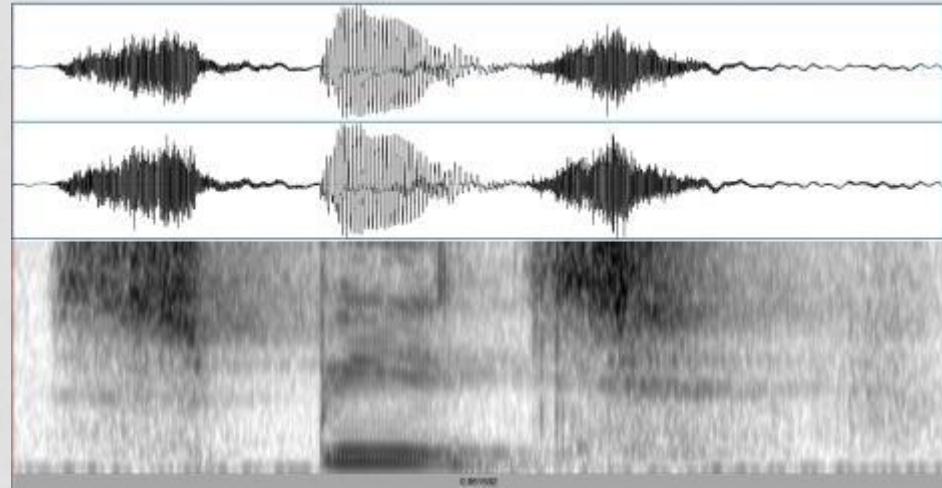


PALATALISATION IN SC CLUSTERS - KOZANI

🔊 ['ʃpit⁺]



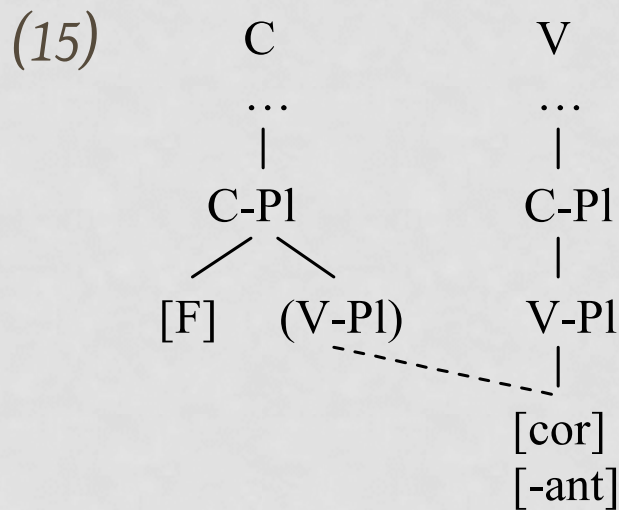
['spit^s] 🔊



KOZANI VS. SIATISTA

SS-PAL spreading in sC clusters

- PAL: Spreading of V-place[COR] from the vocoid to the preceding C (Hume 1994):



- **Q:** Why is /s/ the target of PAL spreading?
- **A:** Sibilants (like DOR and /l n/) are PAL attractors (see hierarchies, next slides)

SS-PAL in KozGr & SiatistaGr

(16)	/l n s z/ → PAL /___i	COR → COR/V- PL[COR] / ___i	DOR → DOR/V- PL[COR] / ___i	LAB → LAB/V- PL[COR] / ___i
SiatistaGr	✓	✓	✓	
KozGr	✓	✓	✓	✓

- Proposed mini hierarchy (as revealed by SS-PAL & sC spreading):

(17)

*LAB/V- PL[COR]	>>	*COR/V-PL[COR], *DOR/V-PL[COR]	>>	*{s z}/V-PL[COR], *{l n}/V-PL[COR] (see next slide)
		Siatista Greek		
Kozani Greek				

SS-PAL in KozGr & SiatistaGr

- Implicational relation:

If a stop becomes PAL, then a preceding /l n s z/ should also become PAL

- Expectation is met:

(16)	PAL spreading to /l n/		
	/mulki/	['mu ^h lc]	'estate'
	/vintsi/	['vi ^h ntʃ]	'winch'

- Important finding: /l n s z/ exhibit the behavior of a natural class!

Interim conclusions

- Greek does not exhibit true secondary palatalization (Pat. I). Instead, it employs SS-PAL, a new pattern in the typology of PAL
- Greek allows us to make finer-grained generalizations:
 - a. PAL spreading to sibilants, liquids and COR nasals
 - b. Mini hierarchies, e.g. sonorants and sibilants are more prone to PAL than COR stops
- Greek confirms Kochetov's (2011) asymmetry generalizations
 - TARGET ASYMMETRY: COR, DOR vs. LAB ✓
 - TRIGGERS: (Hi) front V/j vs. mid front vs. others ✓
 - TRIGGER-TARGET DEPENDENCIES: Hi V/j – COR; Front V – DOR ✓

GLIDE STRENGTHENING (GS)

Glide Strengthening (I)

- Recall: SMG /i, e/ cause velars to undergo simple PAL; /j/ causes velars, /l, n/ to undergo extreme PAL
- When other target consonants (labials, non-cor sonorants, r) appear in the context of extreme PAL, we have *glide strengthening* (GS) instead

(6) SMG: /j/ emerges as [ç] or [ɟ] post-consonantly

Plain consonant		input /CjV/	No palatalisation & GLIDE survives	
páno	‘up’	/pjáno/	pçáno	‘I catch’
sóni	‘enough’	/isjóni/	isçóni	‘it straightens’
ďákos	‘dacus’	/ďjákos/	ďɟákos	‘deacon’
małá	‘hair’	/mjalá/	mɲalá	‘brains’
xoró	‘I fit in’	/xorjó/	xorɟó	‘village’

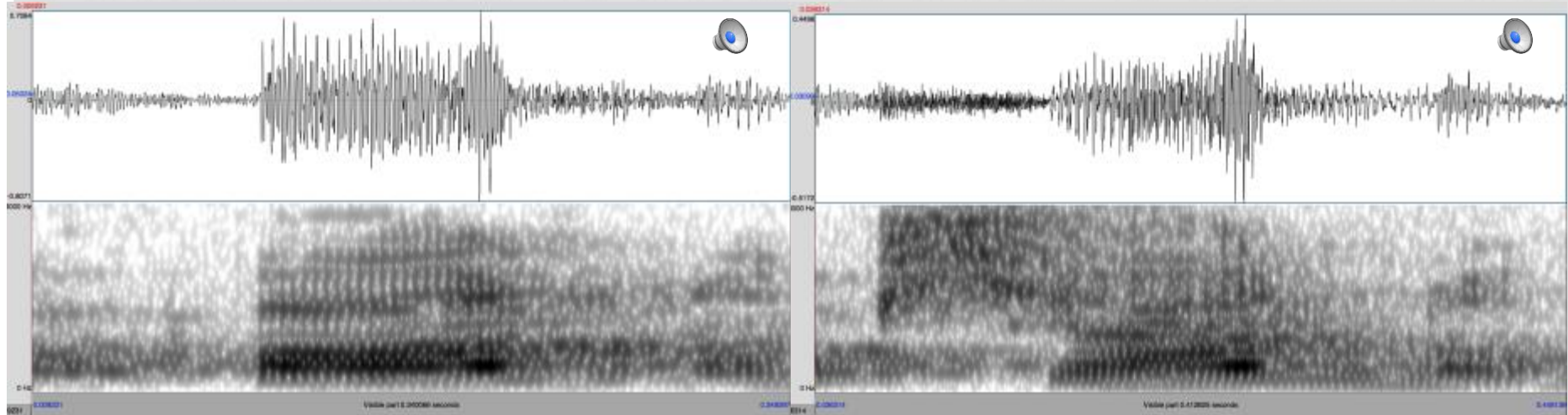
Glide Strengthening (II)

- Distribution is predictable: [ç] after voiceless Cs; [j] after voiced ones
- The contrast between /i/-/j/ is highlighted through minimal pairs too

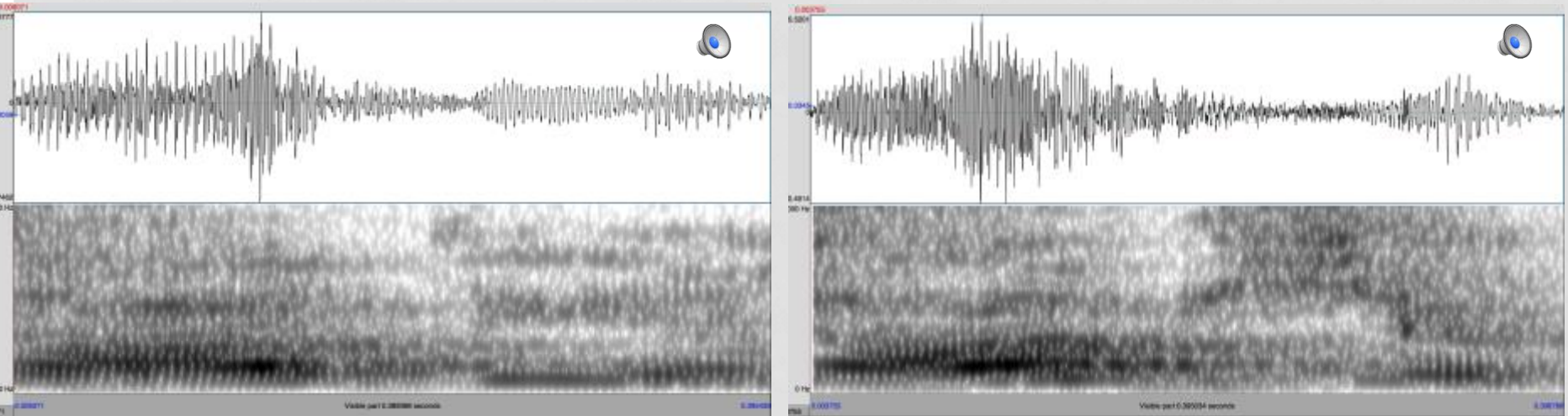
(7) Contrast between /i/ - /j/

á.ði.a	‘permission’	á.ðja	‘empty-FEM-NOM-SING’
sci.á.zo	‘shade’	scá.zo	‘scare’
pi.é.ste	‘press-2PL-IMP’	pçé.ste	‘drink-2PL-IMP’
ó.pi.o	‘opium’	ó.pço	‘whichever’

['p̞ano] vs. ['p̞ɕano]



['aɖia] vs. ['aɖja]



MINIMAL PAIRS

CG: The extreme cases

(Glide → DOR)

- South-eastern dialects (e.g., Dodecanese Greek, Cypriot Greek)

Rhodian varieties (glide → C[DOR]) (Revithiadou et al. 2014)

- (8) /kariði-a/ →
- (i) ka'riðja (South Rhodes)
 - (ii) ka'riðja (Trianta, Salakos)
 - (iii) ka'rija (Archangelos)
 - (iv) ka'riðca (Sianna, NW Rhodes)
'walnut-PL' (Tsopanakis 1940: 41, 70-72)
- (9) /aliði-a/ →
- (i) a'liðja (South Rhodes)
 - (ii) a'liðca (Trianta, Salakos)
 - (iii) a'licca (Archangelos)
'truth' (Tsopanakis 1940: 41, 70-72)

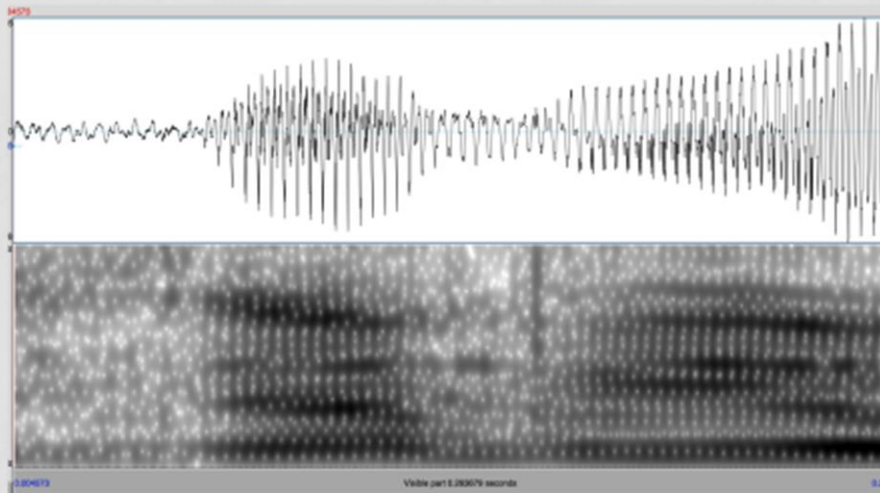
CG: The extreme cases (Glide → COR)

Vati (Rhodes island), Astypalaea (glide → C[COR]) (Revithiadou et al. 2014)

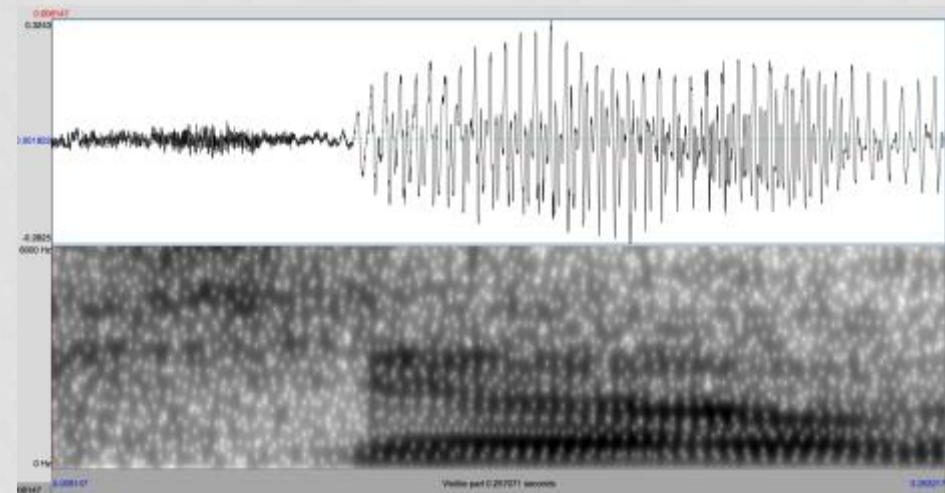
(10)	/karavi-a/	→	ka'ra ^v ʒa	‘ship-PL’
	/peði-a/	→	pe'ðʒa	‘kid-PL’
	/ðó ⁿ di-a/	→	'ðo ⁿ dʒa	‘tooth-PL’
	/xorafi-a/	→	xo'ra ^f ʃa	‘field-PL’

(Tsopanakis 1940: 69-71)

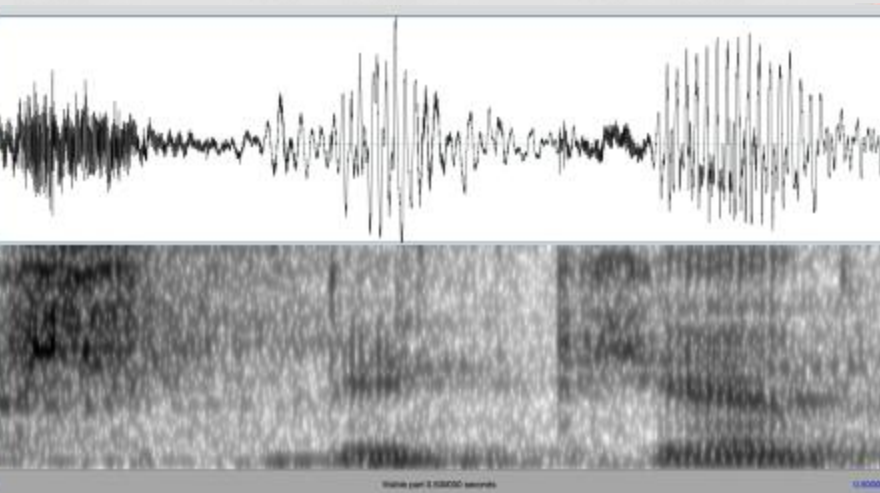
- See also ka'ra^vʒa (Kalymnos)



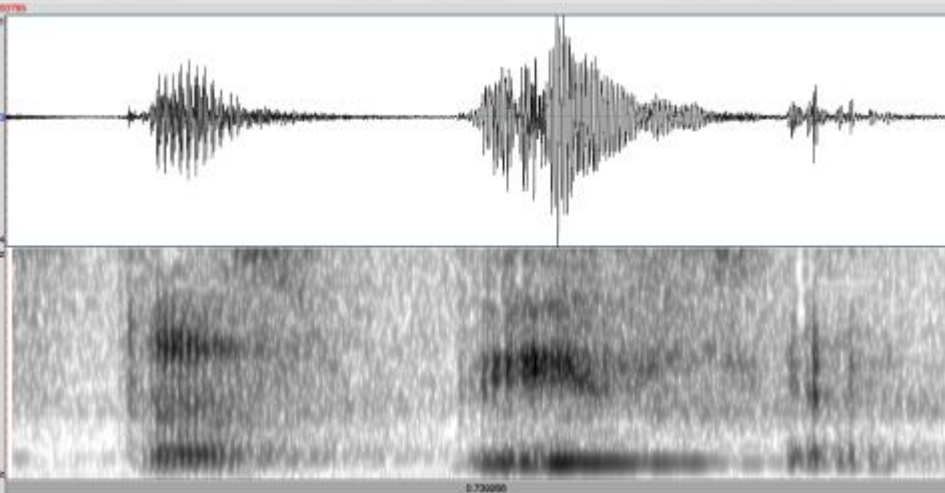
['kapja]



['pça]



['spitça]



[sta'spiθça]



GS AND PAL – STEPS IN A CONTINUUM

SUMMING UP

Simple PAL: Triggers and Targets

SIMPLE PAL	Trigger	Target	Environment
KozGr, SiatistaGr	(Underlying or surface) Hi V	Almost all Cs but rhotics (and LAB in SiatistaGr)	_ (i) (C(V))# _ [i] (C(V))#
PelGr, CretGr KozGr, SiatistaGr	(Un)stressed i	/l n/ /l n s z/	_ i _ (i)/[i]
SMG, KozGr, SiatistaGr, Dodecanese, etc.	(Un)stressed i, e	DOR	_ i/í, e/é

Extreme PAL (GS) : Targets and Triggers

EXTREME PAL	Trigger	Target	Environment
SMG KozGr, SiatistaGr CretGr	—j	DOR, /l n/	—j

Hierarchy of targets

Dialects	DOR	/l n/	/s z/	COR stops/fricat ives	LAB
All	✓				
PelGr, CretGr	✓	✓			
SiatistaGr	✓	✓	✓	✓	
KozGr	✓	✓	✓	✓	✓

(cf. Malikouti-Drachman & Drachman 1977)

- Most conservative system: SMG
- Most radical system: KozGr

Hierarchy of triggers x targets

	Targets				
Triggers	DOR	/l n/	/s z/	COR	LAB
j	✓ ALL	✓ ALL	✓ Koz Siat		
i, í	✓ ALL	✓ Koz Siat Pel Cret	✓ Koz Siat	✓ Koz Siat	✓ Koz
e, é	✓ ALL				

- Front V/j – DOR, l n • i has largest pool of targets • e has smallest one

DISCUSSION

The relation between PAL and GS

- Kochetov (this conference) argues that PAL and GS are competing strategies, both of which avoid the marked sequence C +glide
- We reach the same conclusion through the data of Greek, but
 - We clarify how this works in this language in particular
 - Suggest that while Kochetov's proposal is correct, the reason behind it might be different

SS-PAL and GS as steps in a continuum

- In Greek at least, the PAL counterpart of GS is SS-PAL, i.e. our Pattern II
- SS-PAL and GS roughly involve the same acoustic cue, namely the presence of noise (either as frication or aspiration)
- GS has similar outputs across dialects and it occurs categorically; perhaps then it has been phonologized and is realized as a separate segment appearing next to the target C
- In contrast, SS-PAL has variable/gradient outputs within and across dialects, while sometimes it does not apply at all
- Based on the above, GS could be argued to be a phonological process while SS-PAL a phonetic one

On the trigger of SS-PAL and GS

- Functional explanation: avoidance of marked C+j sequences
- The problem in Greek
 - While GS occurs in /C+j/ contexts, SS-PAL actually occurs in /C+i/ contexts
 - So, Kochetov's functional explanation proves insufficient for Greek (unless /C+i/ sequences are considered marked too → unlikely!)
 - Ideas??

Hierarchies

- The Greek data confirm the trigger-target hierarchies proposed in the literature (cf. Kochetov 2011)
- Also, /l n s z/ are more prone to PAL
- Issue to resolve: what is the natural class these sounds form?

CONCLUSION & FUTURE RESEARCH

Directions of future research

- Addressing some of the issues raised in the ‘discussion’ section more thoroughly
- Domain of PAL: Bounded phenomenon within the word.
 - ❖ Need to explore, however, whether tokens such as e.g., /otan imun/ → [otaŋ'imun/ are attested
- Variability and gradience in the PAL outcome.
 - ❖ In KozGr we get both [ʃ(i)ara] and [siara]; in CretGr we get [tʃ] and [ts], etc.

Conclusions

- In this talk we
 - Presented an overview of PAL processes in Modern Greek dialects
 - Underlined the difference between simple and extreme PAL
 - Extended and refined the typology of palatalization according to Kochetov (2011) through the addition of Secondary Strengthening and offered initial insights regarding its phonetics
 - Explored SS-PAL and its manifestation in a case of counterbleeding opacity and of spreading
 - Confirmed existing hierarchies on correlations between triggers & targets of PAL
 - Corroborated the idea that (SS-)PAL and GS are related processes (cf. Kochetov, this conference) and raised questions with regard to the common trigger of the processes, the uniformity of the phenomena etc.

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Appendix:

Phonetic realization of C(i) & C[i]

Phonetic realizations of C(i)/C[i] under SS-PAL, cf. slide 45

Effect	Target
Aspiration/frication	Stops – longer aspiration Non sibilants – fricated noise at the end
Lengthening	All?
Formant structure	Under investigation e.g. non-sibilants
No effect	rhotic non-sibilants?