Palatalization Conference

December 4-5, 2014
University of Tromsø/CASTL

University library, room UB244

PALATALIZATION ACROSS GREEK DIALECTS:
PHONETICS, PHONOLOGY & TYPOLOGY

MARY BALTAZANI, EVIA KAINADA, ANTHI REVITHIADOU & NINA TOPINTZI

University of Ioannina
Aristotle University of Thessaloniki
University of Oxford
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

<table>
<thead>
<tr>
<th>Type</th>
<th>Palatalization</th>
<th>labial</th>
<th>coronal</th>
<th>dorsal</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Secondary</td>
<td>p → p̊</td>
<td>t → t̊</td>
<td>k → k̊</td>
</tr>
<tr>
<td>II</td>
<td>To a posterior coronal</td>
<td>p → c</td>
<td>t → c</td>
<td>k → c</td>
</tr>
<tr>
<td></td>
<td>a. to a non-sibilant</td>
<td>p → t̊</td>
<td>t → t̊</td>
<td>k → t̊</td>
</tr>
<tr>
<td></td>
<td>b. to a sibilant</td>
<td>p → ts</td>
<td>n/a</td>
<td>k → ts</td>
</tr>
<tr>
<td>III</td>
<td>To an anterior coronal</td>
<td></td>
<td>t → ts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. to a non-sibilant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. to a sibilant</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• 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:
  o Show that impressionistic accounts of Greek palatalization have not been accurate and demonstrate how the processes can be better understood
  o Extend Kochetov’s typology by adding a new pattern tentatively called strengthened secondary PAL (SS-PAL; see next slide)
  o 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

<table>
<thead>
<tr>
<th>Type</th>
<th>Palatalization</th>
<th>labial</th>
<th>coronal</th>
<th>dorsal</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Secondary</td>
<td>p → p⁺</td>
<td>t → t⁺</td>
<td>k → kʲ</td>
</tr>
<tr>
<td>II</td>
<td>Strengthened secondary</td>
<td>p → c</td>
<td>t → tʃ</td>
<td>k → tʃ</td>
</tr>
<tr>
<td>III</td>
<td>To a posterior coronal</td>
<td>p → t(缺席)</td>
<td>n/a</td>
<td>k → t(缺席)</td>
</tr>
<tr>
<td></td>
<td>a. to a non-sibilant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. to a sibilant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>To an anterior coronal</td>
<td>p → ts</td>
<td>t → ts</td>
<td>k → ts</td>
</tr>
</tbody>
</table>

- 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 [patʃera]; 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>
<thead>
<tr>
<th></th>
<th>Bilabial</th>
<th>Labio-dental</th>
<th>Interdental</th>
<th>Alveolar</th>
<th>Velar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plosive</td>
<td>p</td>
<td>b</td>
<td></td>
<td>t</td>
<td>d</td>
</tr>
<tr>
<td>Fricative</td>
<td>f</td>
<td>v</td>
<td>θ</td>
<td>s</td>
<td>z</td>
</tr>
<tr>
<td>Nasal</td>
<td>m</td>
<td></td>
<td></td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>Tap</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>r</td>
</tr>
<tr>
<td>Lateral approx</td>
<td></td>
<td></td>
<td></td>
<td>l</td>
<td></td>
</tr>
</tbody>
</table>

- NB: palatals are missing, even the /j/!
Greek dialects (phonetics)

• The phonetic inventory (Arvaniti 2007)

<table>
<thead>
<tr>
<th></th>
<th>Bilabial</th>
<th>Labiodental</th>
<th>Dental</th>
<th>Retracted Alveolar</th>
<th>Post-alveolar</th>
<th>Retracted Palatal</th>
<th>Velar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plosive</td>
<td>p</td>
<td>b</td>
<td></td>
<td>t</td>
<td>d</td>
<td>c</td>
<td>j</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ts</td>
<td>dz</td>
<td></td>
<td>k</td>
</tr>
<tr>
<td>Fricative</td>
<td>f</td>
<td>v</td>
<td>θ</td>
<td>θ</td>
<td>s</td>
<td>z</td>
<td></td>
</tr>
<tr>
<td>Nasal</td>
<td>m</td>
<td>n</td>
<td>ñ</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>j</td>
</tr>
<tr>
<td>Tap</td>
<td></td>
<td></td>
<td></td>
<td>r</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trill</td>
<td></td>
<td></td>
<td></td>
<td>r</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approximant</td>
<td></td>
<td></td>
<td></td>
<td>j</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral approx.</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>k</td>
<td></td>
</tr>
</tbody>
</table>

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.
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/kozanitiko_idioma.html), [http://www.skrka.gr/skrka.html](http://www.skrka.gr/skrka.html))

(c) *published data* of these and other dialects (e.g., Siatista Greek, Margariti-Roga 1985; Kozani Greek, Ntinas 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) ≈ 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
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/ become palatal [c ɟ ç ʝ] before the front vowels [i e], but remain velar before the back [a o u]

<table>
<thead>
<tr>
<th>Velars + back Vs</th>
<th>Gloss</th>
<th>Palatals + front Vs</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>káno</td>
<td>‘I do’</td>
<td>címa</td>
<td>‘wave’</td>
</tr>
<tr>
<td>lákos</td>
<td>‘pit’</td>
<td>cerí</td>
<td>‘candle’</td>
</tr>
<tr>
<td>kupí</td>
<td>‘oar’</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>a. Velars</th>
<th>Gloss</th>
<th>b. Palatals</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>káli</td>
<td>‘beauty’</td>
<td>cáli</td>
<td>‘binoculars’</td>
</tr>
<tr>
<td>egóni</td>
<td>‘grandchild’</td>
<td>jónis</td>
<td>‘the bird Otus Scops’</td>
</tr>
<tr>
<td>xóni</td>
<td>‘stick in-3.sg.’</td>
<td>çóni</td>
<td>‘snow’</td>
</tr>
<tr>
<td>yóma</td>
<td>‘rubber gum’</td>
<td>jóma</td>
<td>‘afternoon’ (poetic)</td>
</tr>
<tr>
<td>náta</td>
<td>‘there they are’</td>
<td>náta</td>
<td>‘youth’</td>
</tr>
<tr>
<td>ílos</td>
<td>‘nail (archaic use)’</td>
<td>íʎos</td>
<td>‘sun’</td>
</tr>
</tbody>
</table>
PAL triggers

• PAL is caused by the front Vs, e.g.
  
  /kipos/ → ['cipos] ‘garden’
  /paketo/ → [paˈceto] ‘packet’

• **Simple PAL** (next slide)

• PAL can also be caused by the glide /j/ before a V, e.g.
  
  /kjali/ → ['cali] ‘binoculars’

• **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

<table>
<thead>
<tr>
<th></th>
<th>Trigger</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple</td>
<td>Front vowels</td>
<td>DOR</td>
</tr>
<tr>
<td>Extreme</td>
<td>Glide</td>
<td>DOR, sonorants /l, n/</td>
</tr>
</tbody>
</table>
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:

  \[
  /k\ g\ x\ \gamma/ \rightarrow \begin{cases} \text{Simple} \quad [t^\varepsilon\ d^z\ s\ z] / \_i,\ e \quad & \text{Simple} \\ \text{Extreme} \quad [\partial\it^\varepsilon\o] [\d^z\u'\h\ar] [\s^o'\n\a] [\z^a'ti] \end{cases}
  \]

(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/ $\rightarrow$ palatal [c] or
affricated alveolo-palatal [tʃ] or
palatal affricate [ts]

depending on stress and word position (Lengeris & Kappa 2014)
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/ $\rightarrow$ [ʎ ɲ] / __ i

  NB: /e/ is inert

---

(4) PelGr, KozGr, CretGr

/limani/ [ʎiˈmaɲi] ‘harbor’
/lerono/ [leˈɾono]/ *[ʎeˈɾono] ‘stain-$1$sg’
/l, n/ SIMPLE PAL

PelGr [fi'lia]

CretGr [asxo'litε]

KozGr ['kaʎi]
Summary: PAL rules & dialectal distribution

Simple PAL
1. /k g x y/ \rightarrow PAL / __ i/í, e/é
2. /l n/ \rightarrow PAL / __ i/í
3. /l n s z/ \rightarrow PAL / __ i/í

SmG, all dialects
PelGr, CretGr
KozGr, SiatistaGr

Extreme PAL
4. /k g x y/ \rightarrow PAL / __ j
5. /l n/ \rightarrow PAL / __ j

SmG, all dialects
SmG, all dialects
Summary: PAL rules & dialectal distribution

Simple PAL
1a. /k g x ɣ/ \(\rightarrow\) [c ɟ ç ʝ] /__i/í, e/é
1b. /k g x ɣ/ \(\rightarrow\) [tɕ dʑ ɕ ʑ] /__i/í, e/é
2. /l n/ \(\rightarrow\) [ʎ ɲ] /__i/í
3. /l n s z/ \(\rightarrow\) [ʎ ɲ ʃ ʒ] /__i/í

Extreme PAL
4a. /k g x ɣ/ \(\rightarrow\) [c ɟ ç ʝ] /__j
4b. /k g x ɣ/ \(\rightarrow\) [tɕ dʑ ɕ ʑ] /__j
5. /l n/ \(\rightarrow\) [ʎ ɲ] /__j

SMG, PelGr, KozGr, SiatistaGr
CretGr
PelGr, CretGr
KozGr
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: [ʈ] 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 [koʈ] ‘boy’ and [kəʈj] ‘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) 

[ˈʃefka] ‘enter-1SG.PAST’
[ˈʃesta] ‘heat’
[paˈtʲeras] ‘father’
[ˈðʲenu] ‘tie-1SG’
[ˈfʲevɣu] ‘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. /ˈenas/ → [ˈjenas] ‘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. /ˈposa/ → [ˈpwosa]
  - SiatistaGr: Allomorph distribution of negation: ðén + V-initial words, ðé + C-initial ones:
    /ðén éxun/ ðénʲ jéxun *ðé jéxun ‘(they) don’t have’
    cf. ðé xa na skorpíʃ ‘(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

\[
\begin{align*}
/i\ u/ & \rightarrow \emptyset \\
/e\ o/ & \rightarrow [i\ u] \\
\end{align*}
\]

\[
(CV) \quad \langle \text{-stress} \rangle \quad \{ (C(V)) \}
\]

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

/kunav-i/ ['knəv^+] ‘ferret’ (Ntinas 2005: 60)
/anem-i/ ['enem^+] ‘spinning wheel’ (Ntinas 2005: 60)
/poð-ær-i/ ['puðar] ‘foot-AUGM’ (Christodoulou p.c.)
/ðond-i/ ['ðond^+] ‘tooth’ (Ntinas 2005: 62)
/votan-i/ ['vu'taɲ] ‘herb’ (Ntinas 2005: 43)
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 notation

$C^i (i) (CV)^\#$ where (i) = deleted-/i/

$C^i [i] (CV)^\#$ where [i] = raised-/e/

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 \([C^+]\)
PAL: [ʃ] [i]
/'ʒiʃ/ [ʒiʃ]

[S Z] SIMPLE PAL

[karteruşin] [karteruşin]
Aspiration: $[t^h]$ (i) #
Stop-like release: [ð] (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

<table>
<thead>
<tr>
<th>Greek Word</th>
<th>KozGr</th>
<th>SiatistaGr</th>
</tr>
</thead>
<tbody>
<tr>
<td>stivázo</td>
<td>[ʃtʰiˈvazu]</td>
<td>[ʃtʃiˈvazu]</td>
</tr>
<tr>
<td>spiti</td>
<td>[ʃpʰiˈtʰ]</td>
<td>[ʃpiˈtʰ]</td>
</tr>
<tr>
<td>skepári</td>
<td>[ʃciˈpar]</td>
<td>[ʃciˈpar]</td>
</tr>
<tr>
<td>vriski</td>
<td>['vriʃc]</td>
<td>['vriʃc']</td>
</tr>
<tr>
<td>laspi</td>
<td>['laʃpʰ]</td>
<td>['laʃp']</td>
</tr>
</tbody>
</table>

(14) No PAL spreading

<table>
<thead>
<tr>
<th>Greek Word</th>
<th>‘tall-FEM.PL’</th>
<th>‘wood’</th>
</tr>
</thead>
<tbody>
<tr>
<td>psiles</td>
<td>['pʃʎes]</td>
<td></td>
</tr>
<tr>
<td>ksiilo</td>
<td>['kʃilo]</td>
<td></td>
</tr>
</tbody>
</table>
PAL SPREADING IN SC CLUSTERS - Siatista
PALATALISATION IN SC CLUSTERS - KOZANI
KOZANI VS. SIATISTA
SS-PAL spreading in sC clusters

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

(15)  

• 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

<table>
<thead>
<tr>
<th></th>
<th>16</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>/l n s z/ → PAL</td>
<td>COR → COR/V-PL[COR]</td>
</tr>
<tr>
<td>SiatistaGr</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>KozGr</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

• 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/ ['muʎc] ‘estate’
       /vintsi/ ['viɲtʃ] ‘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 [ʝ] post-consonantly

<table>
<thead>
<tr>
<th>Plain consonant</th>
<th>input /CjV/</th>
<th>No palatalisation &amp; GLIDE survives</th>
</tr>
</thead>
<tbody>
<tr>
<td>páno</td>
<td>‘up’ /pjáno/</td>
<td>pçáno ‘I catch’</td>
</tr>
<tr>
<td>sóni</td>
<td>‘enough’ /isjóni/</td>
<td>isçóni ‘it straightens’</td>
</tr>
<tr>
<td>ōákos</td>
<td>‘dacus’ /Ǔjákos/</td>
<td>Ǔjákos ‘deacon’</td>
</tr>
<tr>
<td>maʎá</td>
<td>‘hair’ /mjalá/</td>
<td>mɲalá ‘brains’</td>
</tr>
<tr>
<td>xoró</td>
<td>‘I fit in’ /xorjó/</td>
<td>xorʝó ‘village’</td>
</tr>
</tbody>
</table>
Glide Strengthening (II)

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

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

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>á.ði.a</td>
<td>‘permission’</td>
<td>á.ðja</td>
</tr>
<tr>
<td>sci.áзо</td>
<td>‘shade’</td>
<td>scá.zo</td>
</tr>
<tr>
<td>pi.э.ste</td>
<td>‘press-2PL-IMP’</td>
<td>pçé.ste</td>
</tr>
<tr>
<td>ó.pi.o</td>
<td>‘opium’</td>
<td>ó.pço</td>
</tr>
</tbody>
</table>
['pano] vs. ['pçano]

['aðia] vs. ['aðja]
CG: The extreme cases
(Glide $\rightarrow$ DOR)

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

**Rhodian varieties** (glide $\rightarrow$ C[DOR]) ([Revithiadou et al. 2014](#))

(8) /kariði-a/ $\rightarrow$

(i) kaˈriðja (South Rhodes)
(ii) kaˈriţja (Trianta, Salakos)
(iii) kaˈri̞ja (Archangelos)
(iv) kaˈri̞ca (Sianna, NW Rhodes)

`walnut-PL` ([Tsopanakis 1940: 41, 70-72](#))

(9) /aliθi-a/ $\rightarrow$

(i) aˈliθja (South Rhodes)
(ii) aˈliθca (Trianta, Salakos)
(iii) aˈlicca (Archangelos)

`truth` ([Tsopanakis 1940: 41, 70-72](#))
CG: The extreme cases
(Glide $\rightarrow$ COR)

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

(10) /karavi-a/ $\rightarrow$ ka'ravza 'ship-PL'
    /peđi-a/ $\rightarrow$ pe'dʒa 'kid-PL'
    /ðόndi-a/ $\rightarrow$ 'ðoŋdʒa 'tooth-PL'
    /xorafi-a/ $\rightarrow$ xo'rafʃa 'field-PL'

(Tsopanakis 1940: 69-71)

• See also ka'ravza (Kalymnos)
GS AND PAL - STEPS IN A CONTINUUM
SUMMING UP
## Simple PAL: Triggers and Targets

<table>
<thead>
<tr>
<th>SIMPLE PAL</th>
<th>Trigger</th>
<th>Target</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>KozGr, SiatistaGr</td>
<td>(Underlying or surface) Hi V</td>
<td>Almost all Cs but rhotics (and LAB in SiatistaGr)</td>
<td>__ (i) (C(V))#</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>__ [i] (C(V))#</td>
</tr>
<tr>
<td>PelGr, CretGr, KozGr,</td>
<td>(Un)stressed i</td>
<td>/l n/ /l n s z/</td>
<td>__ i</td>
</tr>
<tr>
<td>SiatistaGr, Dodecanese,</td>
<td></td>
<td></td>
<td>__ (i)/[i]</td>
</tr>
<tr>
<td></td>
<td>(Un)stressed i, e</td>
<td>DOR</td>
<td>__ i/í, e/é</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Extreme PAL (GS) : Targets and Triggers

<table>
<thead>
<tr>
<th>EXTREME PAL</th>
<th>Trigger</th>
<th>Target</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMG, KozGr, SiatistaGr</td>
<td>__ j</td>
<td>DOR, /l n/</td>
<td>__ j</td>
</tr>
<tr>
<td>CretGr</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Hierarchy of targets

<table>
<thead>
<tr>
<th>Dialects</th>
<th>DOR</th>
<th>/l n/</th>
<th>/s z/</th>
<th>COR stops/fricatives</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PelGr, CretGr</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>SiatistaGr</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>KozGr</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

(cf. Malikouti-Drachman & Drachman 1977)

- Most conservative system: SMG
- Most radical system: KozGr
## Hierarchy of triggers x targets

<table>
<thead>
<tr>
<th>Triggers</th>
<th>DOR</th>
<th>/l n/</th>
<th>/s z/</th>
<th>COR</th>
<th>LAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>j</td>
<td>✔ ALL</td>
<td>✔ ALL</td>
<td>✔ Koz Siat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i, í</td>
<td>✔ ALL</td>
<td>✔ Koz Siat</td>
<td>✔ Koz Siat</td>
<td>✔ Koz</td>
<td></td>
</tr>
<tr>
<td>e, é</td>
<td>✔ ALL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Front V/j – DOR, l n
- i has largest pool of targets
- e has smallest one
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??
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/ → [otanˈimun] 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.

Andriotis, N. 1933β. Φωνητικά των βορείων ιδιωμάτων της νέας ελληνικής. [Phonetics of the Northern dialects of Modern Greek]. Αθηνά 45 : 253-262.


Christodoulou, Ch. 2014. Τα ημίφωνα στα Τουρκικά δάνεια. [Glides in Turkish loans]. Ms., Aristotle University of Thessaloniki.


References (II)

References (III)

- Topintzi, N. & M. Baltazani. 2011a. The glide's big fat Greek wedding... to the palatals. Poster presented at OCP8, Marrakech, Morocco, 19-21 January, 2011.
# Appendix: Phonetic realization of C(\textit{i}) & C[\textit{i}]

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

<table>
<thead>
<tr>
<th>Effect</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspiration/frication</td>
<td>Stops – longer aspiration</td>
</tr>
<tr>
<td></td>
<td>Non sibilants – fricated noise at the end</td>
</tr>
<tr>
<td>Lengthening</td>
<td>All?</td>
</tr>
<tr>
<td>Formant structure</td>
<td>Under investigation</td>
</tr>
<tr>
<td></td>
<td>e.g. non-sibilants</td>
</tr>
<tr>
<td>No effect</td>
<td>rhotic</td>
</tr>
<tr>
<td></td>
<td>non-sibilants?</td>
</tr>
</tbody>
</table>