

Insights on Coda Cluster Phonology in Kazakh and Kyrgyz from a Split-Margin Approach

Abstract

Kazakh and Kyrgyz exemplify two rather different systems of coda-cluster phonology. The differences are due to historical changes—largely on the part of Kazakh—from a common system. When analysed synchronically using a split-margin Optimality Theoretic approach, similarities between the systems may be seen, despite appearing very different on the surface. These similarities are presumably due to the shared origin of the two systems. This paper describes both systems and the historical changes that resulted to produce them. It also provides a synchronic theoretical account of each system which in turn provides potential insight into how the separate systems may have arisen historically from a single system.

1 The problem

(1) Background

- Kazakh and Kyrgyz are “closely-related” Turkic languages
- Between them many differences in grammar, especially phonology
- Specifically, here, coda cluster phonology

(2) Coda clusters = Any time multiple consonants occur together at the end of a syllable

(3) Comparison of Kazakh and Kyrgyz coda cluster “mess”:

	Kazakh	Kyrgyz	gloss
a.	[iʃrək]	[érk]	‘free will’
b.	[bólt]	[bulút]	‘cloud’

- Kazakh has extra high vowel in [iʃrək]
- Kyrgyz has extra high vowel in [bulút]
- Accent difference (though inconsistent in Kazakh)
- ...Many such examples
- At first glance, *seems random* (read by linguists: a challenge)

2 Goals (what I’d like to do and why)

(4) Sorting out the “mess” (*objectives*):

- *Describe* and *compare* both systems
- Quantify the *historical changes* that resulted in both systems
- Come up with a *theoretical account* of each system

(5) Use (*reasoning*):

- Add to *descriptive literature* on Kazakh and Kyrgyz
- (*Help learners* of both languages and of each language)
- Examine strengths and weaknesses of theoretical framework
- Add to *linguistic knowledge* of sonority and syllable margins

3 The data

(6) Comparison of Kazakh and Kyrgyz coda clusters

- Allowed coda clusters in Kazakh ($C_1C_2]_\sigma$)

$C_1 \setminus C_2$	p	K	t	s	ʃ	z
w	*	*	*	*	*	*
j	*	*	✓	*	*	*
r	*	*	✓	*	*	*
l	*	*	✓	*	*	*
n	*	*	✓	*	*	*
m	*	*	*	*	*	*
ŋ	*	✓	*	*	*	*

- Allowed coda clusters in Kyrgyz ($C_1C_2]_\sigma$)

$C_1 \setminus C_2$	p	K	t	s	ʃ	tʃ	z
j	*	*	✓	*	*	*	*
r	✓	✓	✓	✓	*	✓	*
l	✓	✓	✓	*	*	*	*
n	*	*	✓	*	*	✓	*
m	✓	*	*	*	*	*	*
ŋ	*	✓	*	*	*	*	*

3.1 Similarities and Differences

(7) Shared properties

- First consonant must be sonorant
- Second consonant must be voiceless obstruent

(8) Unique to Kazakh

- Second consonant must be a stop
- Consonants must be homorganic (same place of articulation)

(9) Unique to Kyrgyz

- Nasals:
 - Second consonant must be a stop
 - Consonants must be homorganic if first is nasal (or not liquid?)
- Everything else:
 - More complicated...
 - Maybe everything's "allowed"; gaps historical accidents?

3.2 Nuances

(10) Kazakh onomatopoeia

- Kazakh onomatopoeia exempt from this description ([barq], [tars])
- Normal pattern (high vowel epenthesis)
 - * $[q̄ər̄q]$ → $[q̄ár̄əq]$ 'forty'
 - * $[t̄īərs]$ → $[t̄īár̄əs]$ 'opposite'
- Pattern of onomatopoeic forms (no epenthesis)
 - [barq] 'a sudden loud (low pitch?) sound'
 - [qarq-qarq] 'onomatopoeia for laughter'
 - [tars] 'knock, bang, or pop'
- Presumably due to historical or synchronic exemption

(11) Kazakh -/CIC/CC/ merger

- Most clusters broken up in Kazakh:

Kazakh	Kyrgyz	gloss
[χáləq]	[qalq]	'people'
[tənə]	[tuwŋ]	'calm'
[burə]	[burŋ]	'corner'
[kɪənə]	[kentŋ]	'treasure'
[áləp]	[alp]	'giant/hero'

- But in some cases, clusters formed:

	Kazakh	Kyrgyz	gloss
	[ult]	[ulút]	'ethnicity'
cf.	[salt]	[salt]	'a tradition'
	[qórt]	[qurút]	'cheese jerky balls'
cf.	[qúrt]	[qúrt]	'worm'

- Collapses distinction between -/CC/ and -/CIC/
- Created complex coda in words that didn't have them
- Mostly /rt/ and /lt/ clusters formed

(12) Novel word class in Kazakh

- New morphological class in Kazakh
- Occurs when coda cluster in stem was broken up by high vowel
- No extra high vowel if C₂ can syllabify as onset of next syllable
- Accompanying stress shift
- Occurs with all word classes (nouns, verbs, ...)

(13) New Kazakh word class of nouns:

Kyrgyz

Type 1. [baləq] ([baləq]) 'fish'
 [kaspij baləɁ-ə]
 Caspian fish-IZO 'a fish of the Caspian'

[balúq]
 [kaspij baluɁ-ú]

Type 2. [χáləq] ([χalq]) 'group of people'
 [qazaqstán χalq-ə]
 Kazakhstan people-IZO 'the people of Kazakhstan'

[qálq]
 [qazaqstán qalq-ú]

(14) New Kazakh word class for verbs:

Kyrgyz

Type 1. [qəzəq] ([qəzəq-]) 'to be interested'
 [qəzəq-tə] 's/he got interested'
 [qəzəɁ-á-də] 's/he is interested'

[qawzúq-]
 [qawzəq-tú]
 [qawzəɁ-á-t]

Type 2. [qʊsəq] ([qʊsəq-]) 'to be scared'
 [qʊsəq-tə] 's/he was scared'
 [qʊsəq-á-də] 's/he is scared of'

[qórq-]
 [qorq-tú]
 [qorq-ó-t]

(15) Kyrgyz /jm]_σ/

- "C₁ must be sonorant, C₂ must be voiceless obstruent"
- ... I lied
- First person singular aorist forms of verbs which end in vowel:
 - [ta:nw] - 'be acquainted with', [tœlœ] - 'pay'
 - [ta:nwjm] 'I'm acquainted with', [tœlœjm] 'I pay'
 - (Unreduced forms: [ta:nwjmwn], [tœlœjmyŋ])

- /j+m]σ/ coda forms attested
- Possibilities:
 - /jm/ — i.e., /j/ pushed into nucleus, appearance of true diphthong
 - Higher preference for dropping post-tonic /ln/ than against /jm]σ/
- But: morpheme boundary
- Ignore for now, but still needs to be accounted for

(16) Past “converb” of Kyrgyz verbs which end in /Am]σ/ (low vowel + /m/)

- a. i. [em]- (Kazakh [jəm-]) ‘to suckle (v.i.)’
- ii. [e:mp] (Kazakh [jəməp]) ‘having suckled’
- b. a. [təm]- (Kazakh [təm-]) ‘to form a drop of liquid / to drip’
- b. [tə:mp] (Kazakh [təməp]) ‘having dripped’

- Fills gap otherwise unattested
- Homorganic nasal + voiceless stop (-/nt/, -/ŋk/, but no -/mp/)
- Again, syllable boundary

4 Theoretical Account

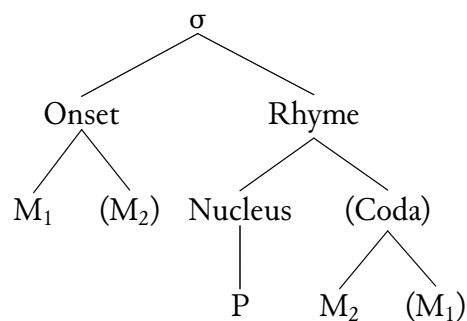
4.1 Framework

(17) Split-Margin Approach

à la Baertsch (2002), Baertsch and Davis (2008), Baertsch and Davis (2009), etc.

- Explains cross-linguistic conspiracy: coda and 2nd element of onset similarities
- Splits both onset and coda into two positions
- Inner positions (M₂) prefer high-sonority consonants
- Outer positions (M₁) prefer low-sonority consonants
- Single onset = M₁, Single coda = M₂

(18) The split-margin syllable:



(19) Positional sonority preferences accounted for—align each position with sonority hierarchy:

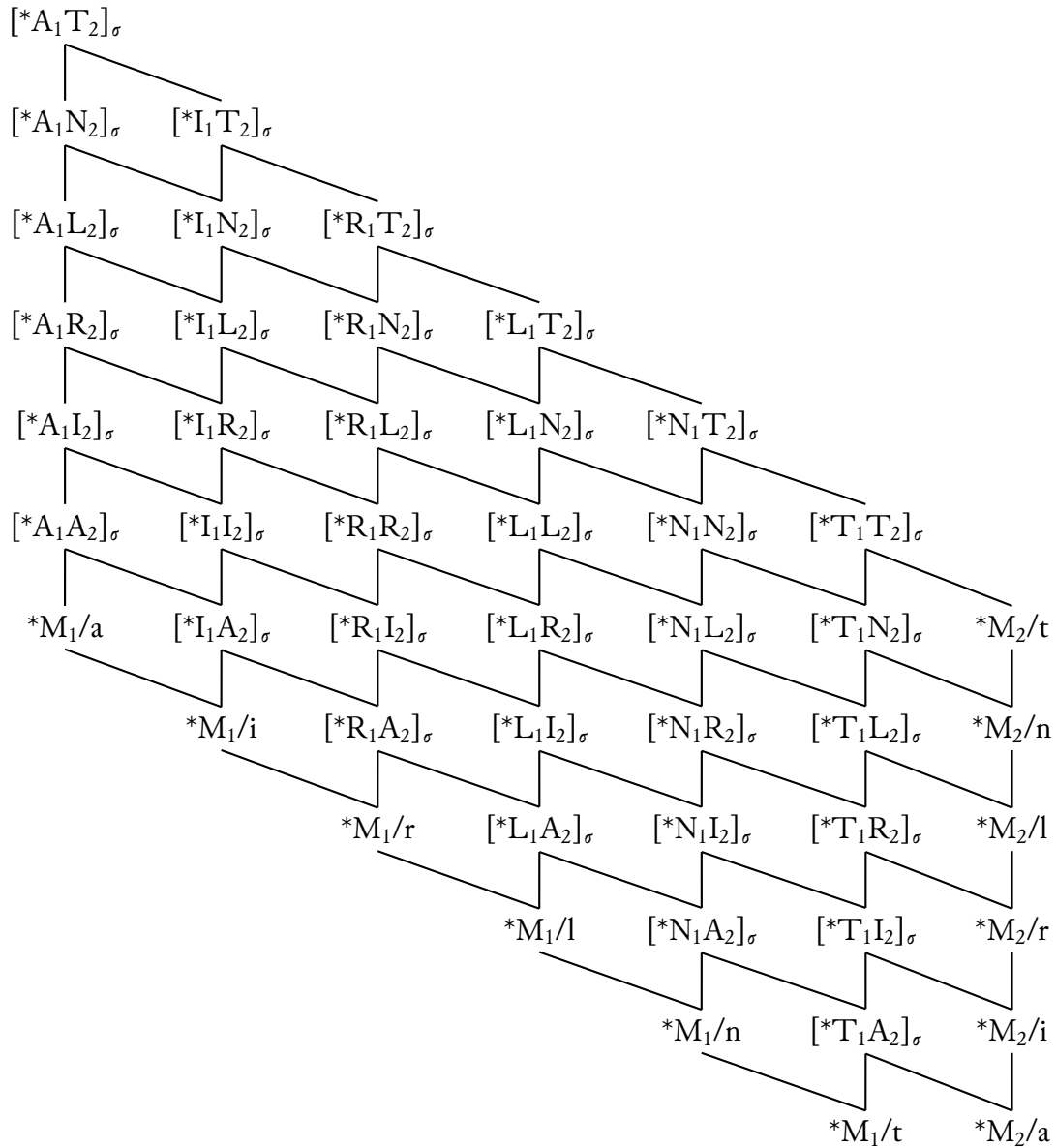
a. M_1 constraint hierarchy

$M_1/[+lo] \gg *M_1/[+hi] \gg *M_1/r \gg *M_1/l \gg *M_1/Nasal \gg *M_1/Obstruent$

b. M_2 constraint hierarchy

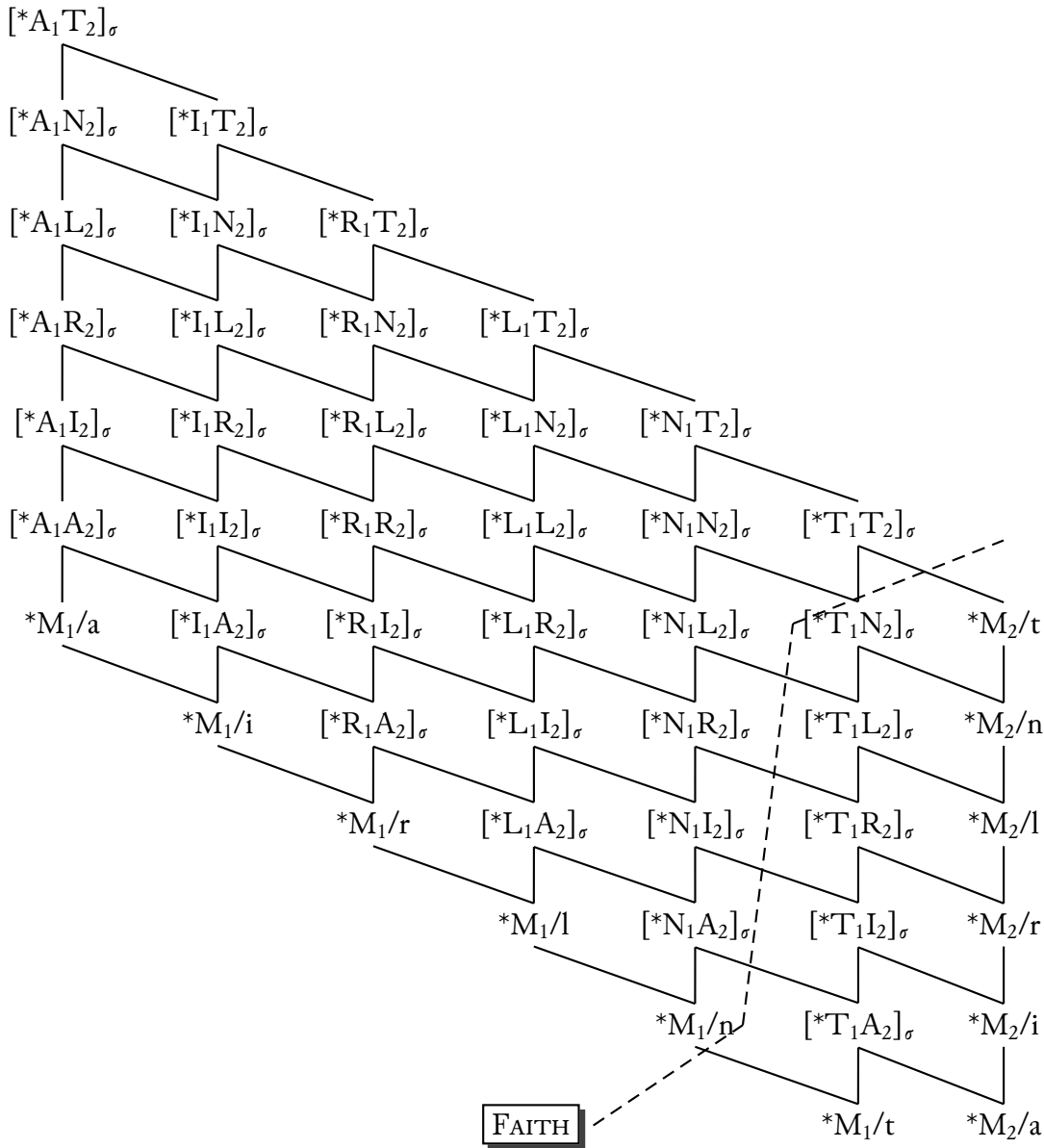
$M_2/Obstruent \gg *M_2/Nasal \gg *M_2/l \gg *M_2/r \gg *M_2/[+hi] \gg *M_2/[+lo]$

(20) Constraint conjunction produces 2-dimensional hierarchy:



4.2 Analysis

- (21) Faithfulness constraints for Kazakh and Kyrgyz must be ranked above constraints which would otherwise block attested forms.



- (22) Kazakh FAITH (etc.): DEP, *CODAVCD, $M_1[\alpha\text{place}] = M_2[\alpha\text{place}]$
- (23) Kyrgyz FAITH (etc.): DEP, *CODAVCD, $M_1[\alpha\text{place}] = M_2[\alpha\text{place}]$ (version that excludes liquids? conjoin with *[-liq]??)
- (24) Problem of /s/ and /ʃ/ in Kazakh: analysis predicts clusters with them
- Further break apart sonority scale (and hence Split Margin hierarchy):
 $V \gg r \gg l \gg \text{Nasal} \gg \text{Vcd Fric} \gg \text{Vcls Fric} / \text{Vcd Stop} \gg \text{Vcls Stop}$
 - Also mostly does away with need for *CODAVCD

(25) Unattested forms predicted in Kyrgyz (⊗):

$C_1 \setminus C_2$	p	K	t	s	ʃ	tʃ
j	⊗	⊗	✓	⊗	⊗	⊗
r	✓	✓	✓	✓	⊗	✓
l	✓	✓	✓	⊗	⊗	⊗
n	*	*	✓	*	*	✓
m	✓	*	*	*	*	*
ŋ	*	✓	*	*	*	*

5 Historical Account

- (26) What happened to make Kazakh and Kyrgyz coda cluster phonology different? How to account for systematic differences?
- System reconstructable as identical to Kyrgyz system
 - Kazakh likely restructured system
- (27) Some Kyrgyz fixed (non productive) bound forms reflect earlier level of change
- [murun] ‘nose’ ~ [murdu] ‘his/her/its nose’
 - [orun] ‘place’ ~ [ordu] ‘his/her/its place’
 - [mojun] ‘neck’ ~ [mojdu] (*dial.*) ‘his/her/its neck’
- (28) Suggests /rn]_σ/ and /jn]_σ/ once allowed. Where is FAITH now?
- (29) Older Turkic forms like /ogil/ ‘boy/son’ ~ /ogli/ ‘his/her/its son’

6 Conclusions

- (30) Generalisations about coda-cluster phonology:
- Kyrgyz historically conservative
 - Kazakh historically innovative
 - Kyrgyz more complicated in attested patterns
 - Kazakh more complicated morpho-phonologically
- (31) Split Margin framework:
- Accounts for Kazakh and Kyrgyz’s similarities through identical basic ranking
 - Doesn’t account for further detail (which still needs to be worked out)
 - Allows us to make predictions about behaviour of earlier stages of the language
- (32) [Some] remaining questions:
- What’s going on with non-nasals in Kyrgyz?
 - Why’s /jm]_σ/ okay in Kyrgyz (if /jn]_σ/ is not)?
 - What instigated change in Kazakh??

References

- BAERTSCH, KAREN (2002). *An Optimality Theoretic Approach to Syllable Structure: The Split Margin Hierarchy*. Dissertation: Indiana University .
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- (2009). *Strength relations between consonants: A syllable-based OT approach*. In Kuniya Nasukawa and Philip Backley (Eds.) *Strength Relations in Phonology*. Mouton de Gruyter.