Phonological representations and phonological typology

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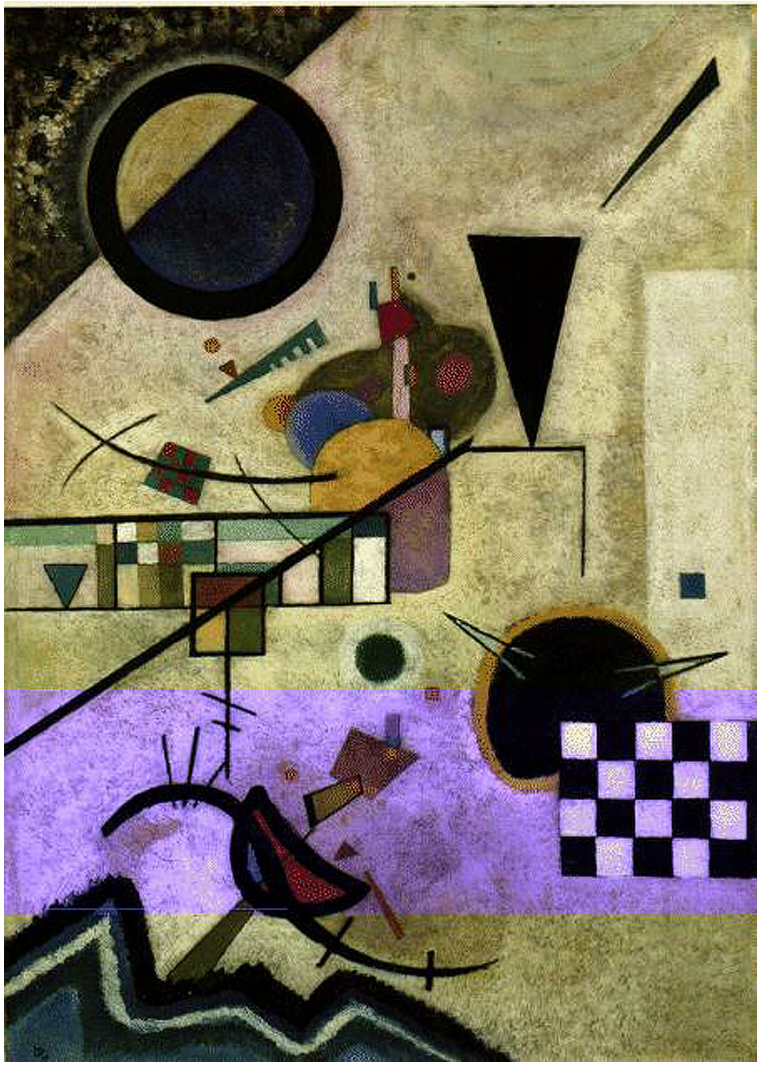

Wassily Kandinsky
Contrasting Sounds (1924)

Outline

Bindseil's generalization

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- Or it could be a typological generalization about phonological inventories.
- Let's try testing it...

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- P-Base (Mielke 2008): 19 languages out of 549 lack voiceless dental or alveolar plosives (3.46%).
- Filtering out the (surprisingly small) overlap, this gives us 24 apparent counterexamples.

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Ngiyambaa (Pama-Nyungan)

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w			ɻ	j	
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Ngiyambaa inventory as shown in P-base

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- Voicing of oral stops varies by language and by phonological context.
- Hyman (2008) on Yidiny and the putative generalization that all languages have voiceless stops:

> "To save the universal,
> can these stops be instead interpreted as /p, t, c, k/,
> which happen to be redundantly voiced?"

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- Herd (2005): In loanword adaptation, /k/ represents any non-labial, non-glottal obstruent.

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Bindseil's generalization, revised

All spoken languages have sounds that can be realized as [t].

☛ This is a purely phonetic claim.

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Bindseil's generalization, revised again

All phonemic consonant systems contain either /t/ or a segment that is non-distinct from /t/.

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What is a /t/, anyway?

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- So can we say that Hawaiian happens to have a velar /t/?
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All phonemic consonant systems contain either /t/ or a segment that is non-distinct from /t/. ☛ This is vacuous.

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- All consonant systems have a nasal/oral contrast (*mama–papa*)...
- ... and a labial/coronal contrast (*mama–nana, papa–tata*).

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  - Let's look at Mohawk.

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- (We know from Hawaiian that languages with small consonant inventories don’t necessarily expand them in response to contact.)

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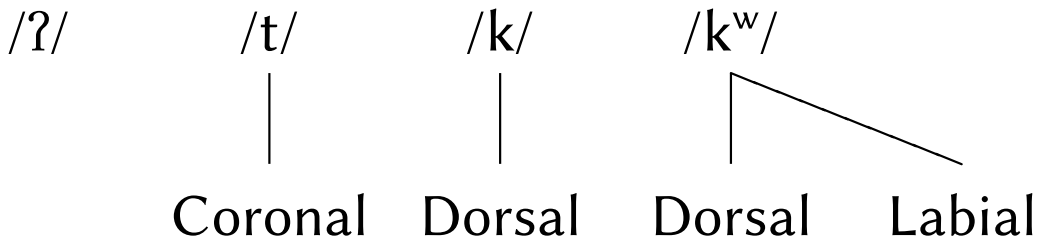

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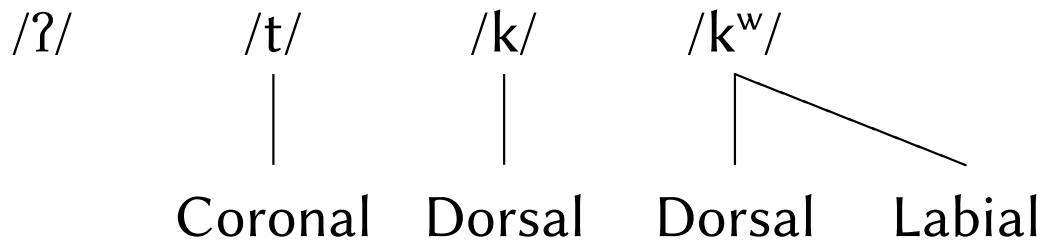

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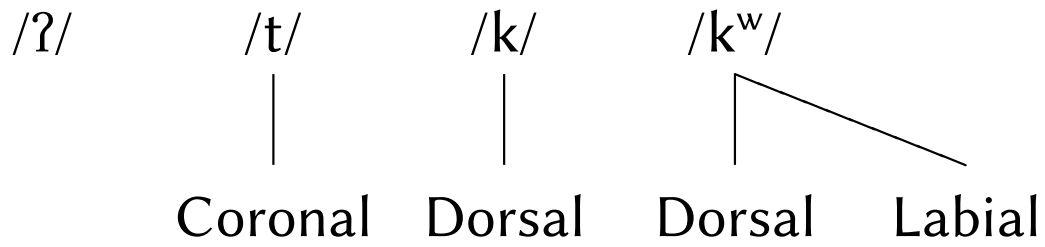

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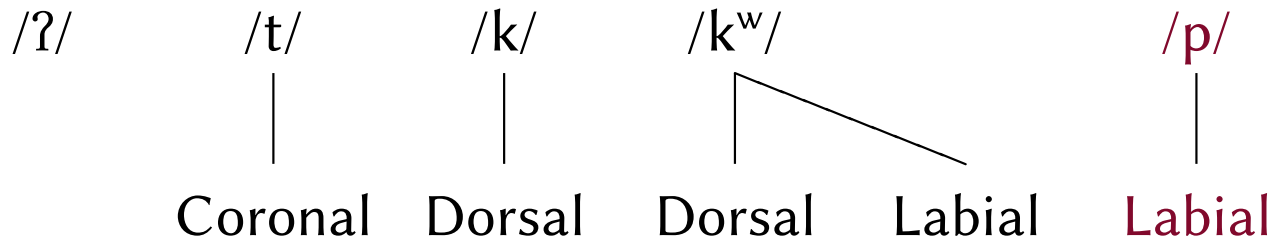

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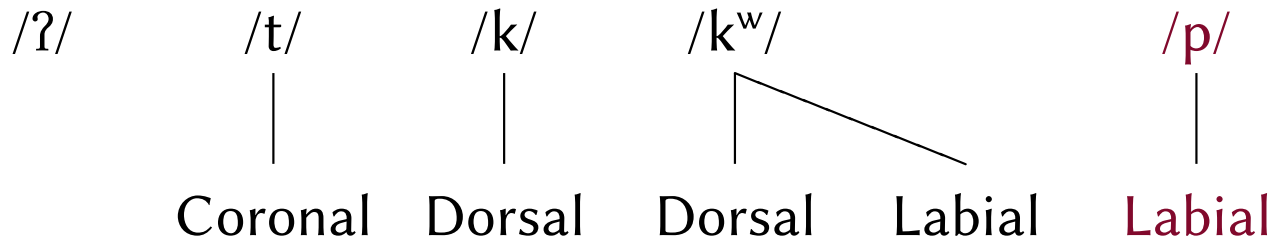

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  - /p/ can be represented using a subset of the features of /k^{w}/.
- Jakobson is partially vindicated: there's no direct labial/coronal contrast, but labial place is contrastive in the native inventory.

Clements's generalizations

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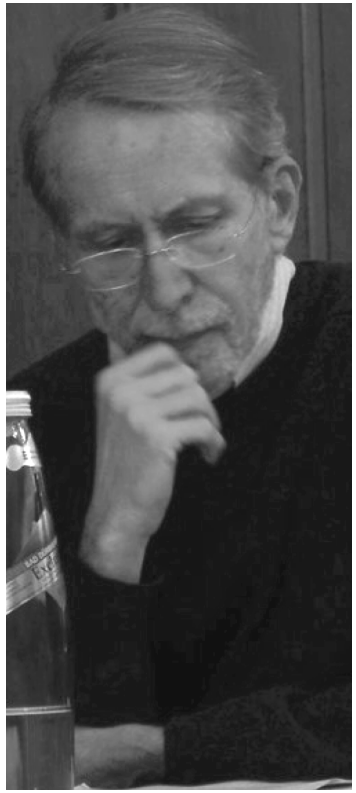

Nick Clements

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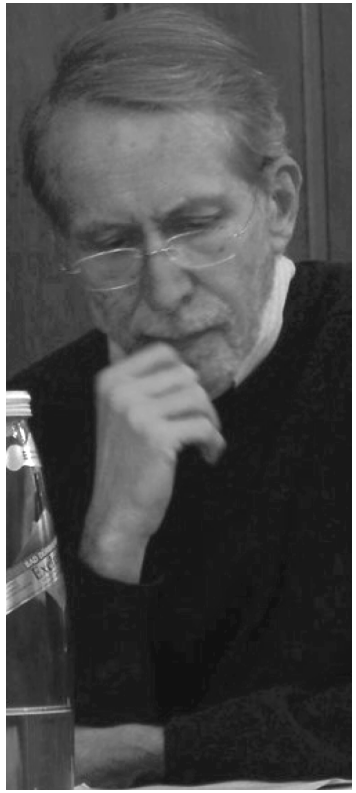

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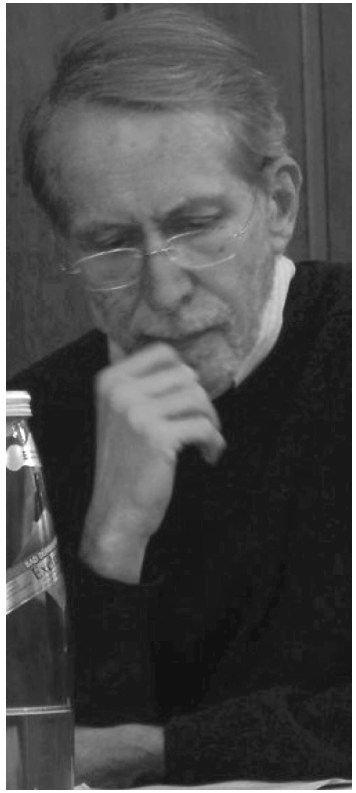

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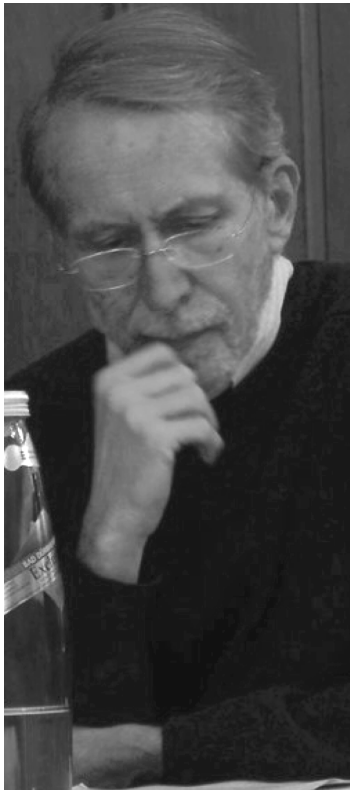

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/k^w/ and its ilk turn out to pose some interesting questions for two of these principles.

Clements's generalizations

Feature economy (Clements 2003, 2009):

> "Features tend to be combined maximally."

(see also Hall 2007: §4.3.3; Mackie & Mielke 2011)

Clements's generalizations

Feature economy (Clements 2003, 2009):

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Less economical

		k^h
p	t	
	d	g
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p	t	k
b	d	g

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More economical

p^h	t^h	k^h
p	t	k
b	d	g
b^h	d^h	g^h

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- This looks circular. (Languages tend to avoid rare sounds?)
- But it does have empirical content....

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Predictions of Marked feature avoidance:

- Patterns of markedness should hold both within and between languages.

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- ...and positively with their mean size.

Clements's generalizations

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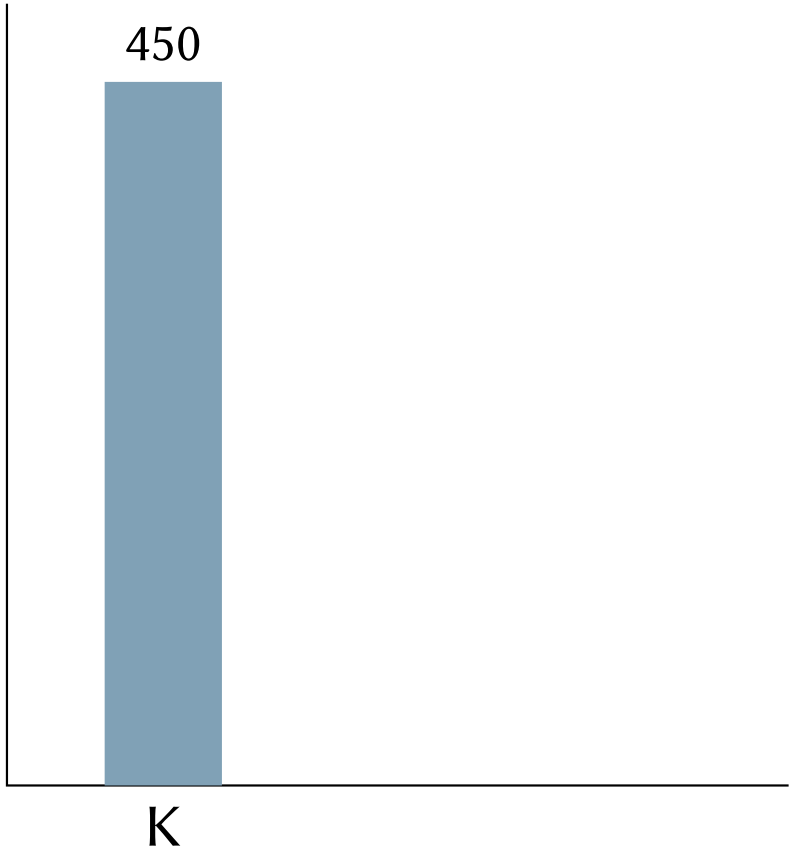

- Number of inventories in UPSID containing segments of the indicated type
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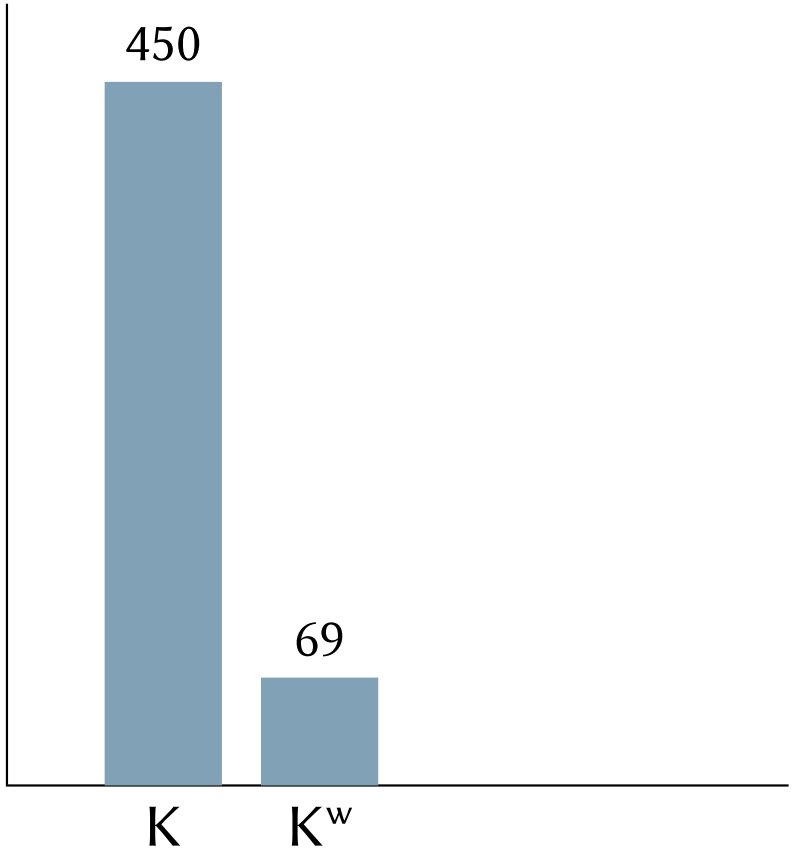

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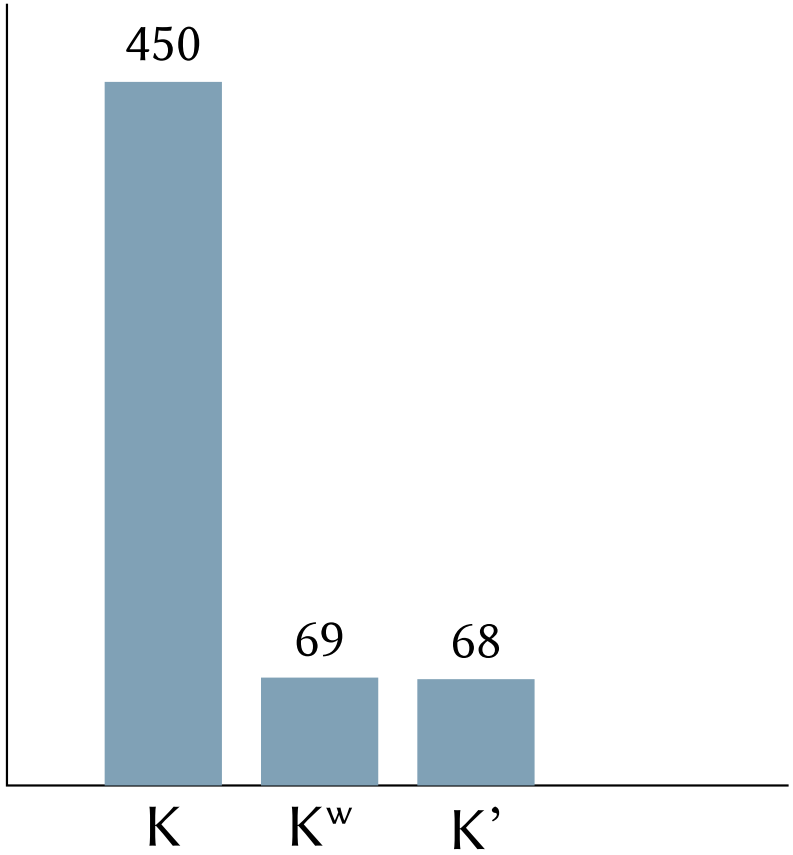

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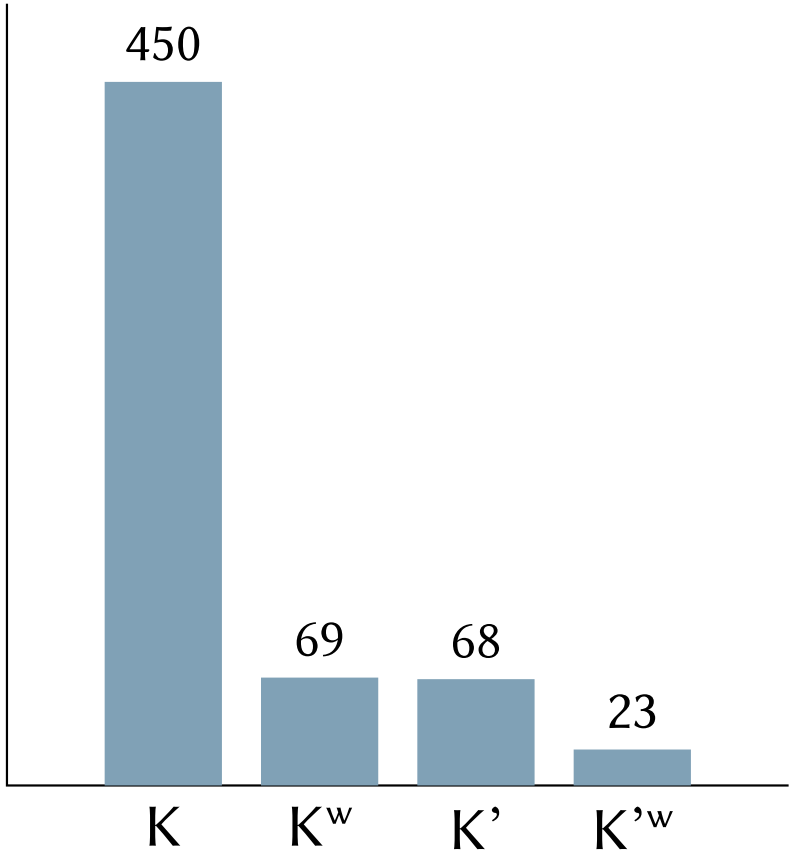

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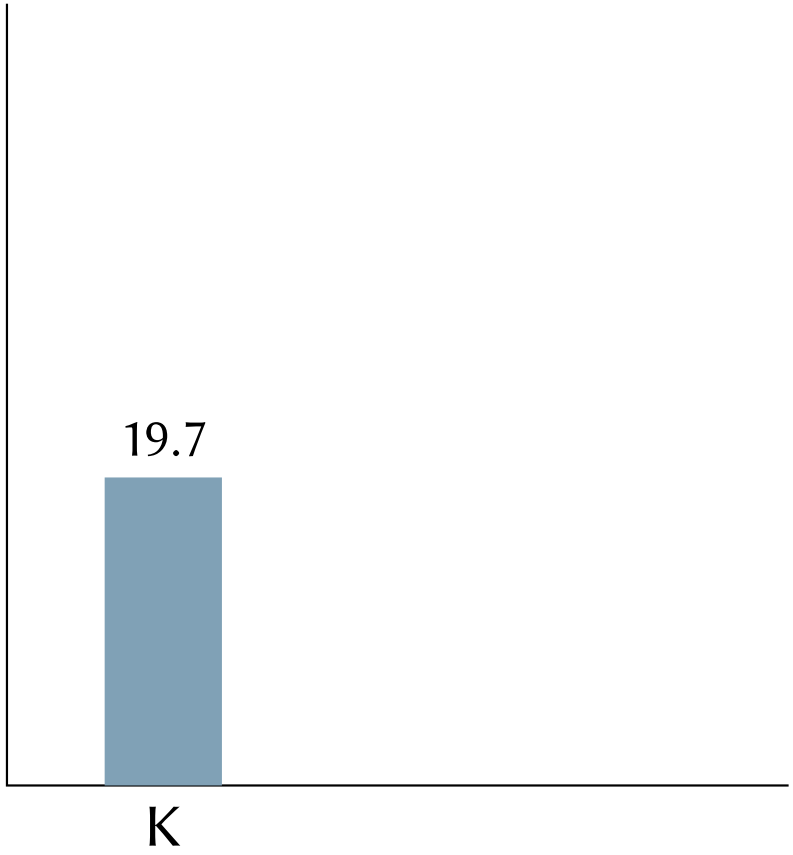

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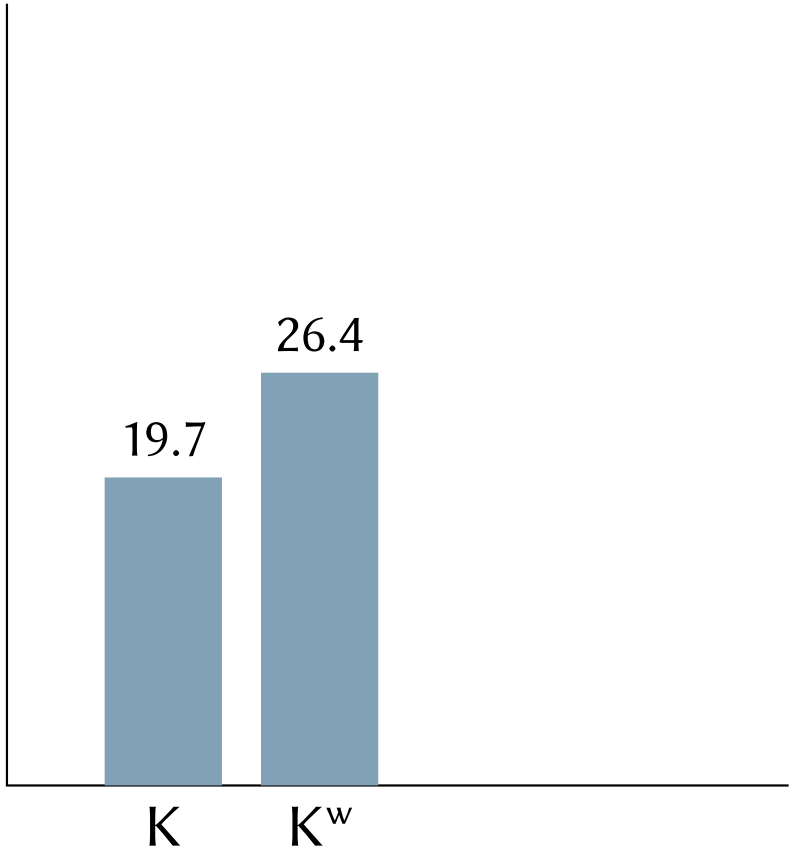

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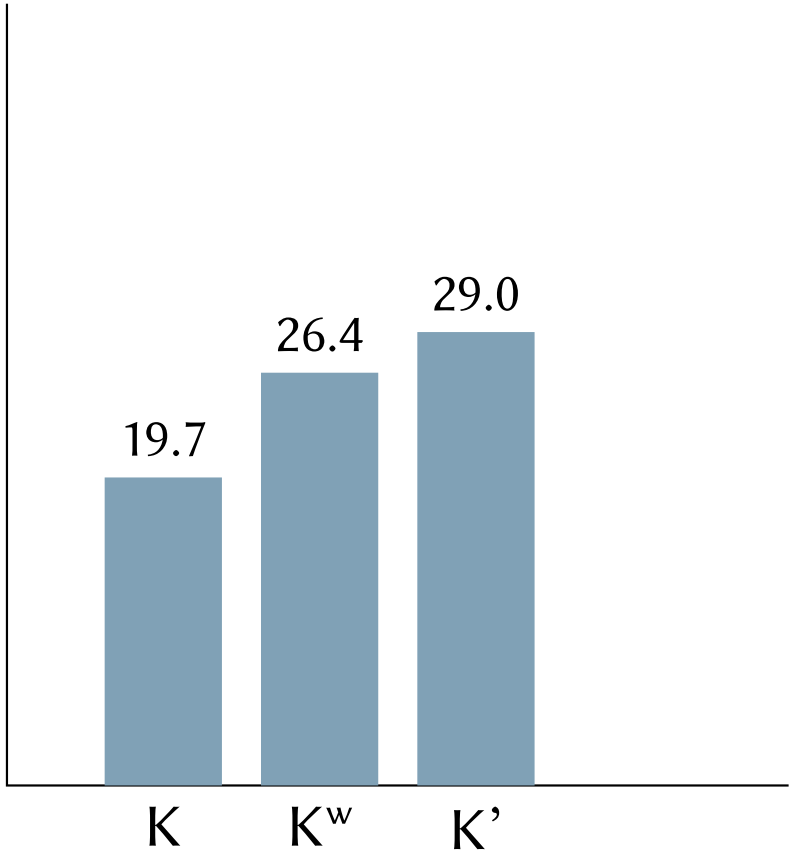

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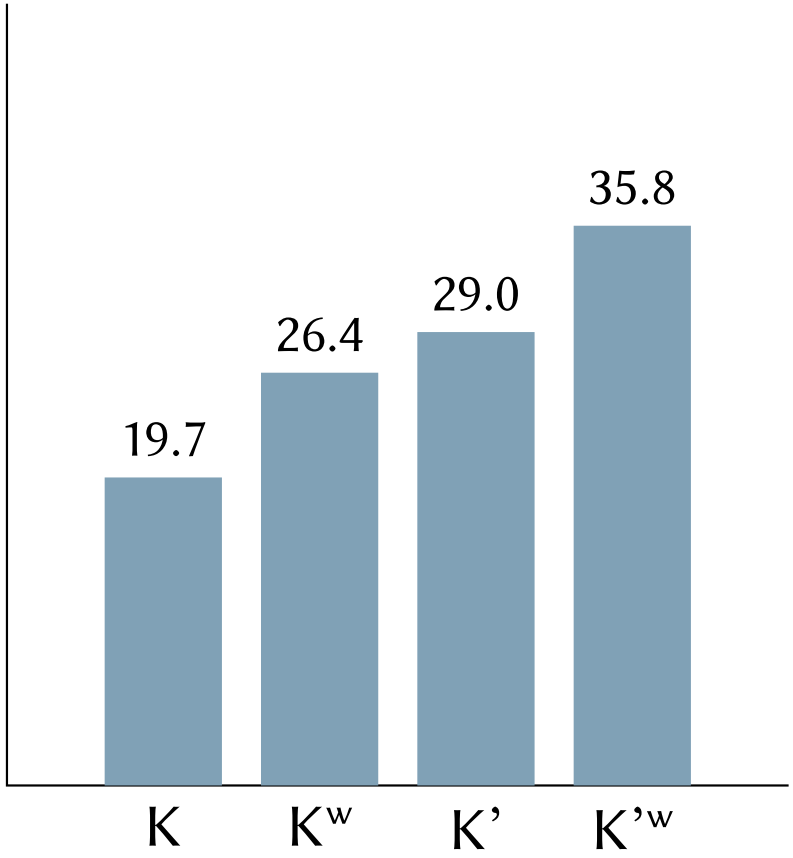

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- The presence of labialization on consonants is marked…
- …but there is no reason to expect any specific combination of primary and secondary place to be more or less marked than the others…
- …except to the extent that some place features are inherently more or less marked than others.

Clements's generalizations

Some inventories in P-base look pretty much like what we'd expect:

Tangale (Chadic)

p		t		k	ʔ
		t^w		k^w	
b	ɗ	d	ʤ	g	
b^w		d^w		g^w	
^{m}b		^{n}d	^{n}ʤ	^{n}g	
ɓ		ɗ			
$ɓ^w$		$ɗ^w$			
		s	ʃ		
		s^w	$ʃ^w$		
		z	ʒ		
		z^w	$ʒ^w$		
m		n		ŋ	
w		r	j		
	l	r^w	j^w		

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$ɓ^w$		$ᶑ^w$			
		s	ʃ		
		s^w	$ʃ^w$		
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m		n		ŋ	
w		r	j		
	l	r^w	j^w		

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- airstream

Clements's generalizations

Others do not:

Wichita (Caddoan)		
t	k	ʔ
	k^w	
ts		
s		h
r		
j	w	

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r		
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Clements's generalizations

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p	t		k
			k^w
	s		
m	n		
	l		
	r		
w		j	

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	s		
m	n		
	l		
	r		
w		j	

Passamaquoddy (Algic)

p	t	ʧ	k	
			k^w	
	s			h
m	n			
	l			
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Comanche (Uto-Aztecan)

p	t	k	ʔ
		k^w	
	ts		
	s		h
m	n		
w		j	

Passamaquoddy (Algic)

p	t	ʧ	k	
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	s		h
m	n		
w		j	

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		k^w	
	s		h
m	n	ŋ	
	l		
w		j	

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Esse Ejja (Tacanan)

p	t	ʧ	k	ʔ
			k^w	
ɓ	ɗ			
	s	ʃ	x	h
m	n	ɲ		
w		j		

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w		j		

Sonora Yaqui (Uto-Aztecan)

p	t	ʧ	k	ʔ
b				
b^w				
	s			h
m	n			
	l			
	ɾ			
w		j		

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			k^w	
ɓ	ɗ			
	s	ʃ	x	h
m	n	ɲ		
w		j		

Sonora Yaqui (Uto-Aztecan)

p	t	ʧ	k	ʔ
b				
b^w	< $*k^w$ (Dedrick & Casad 1999)			
	s			h
m	n			
	l			
	ɾ			
w		j		

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Even in inventories with more labialized consonants, rounding often does not cross-classify with place:

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Kombai (Trans-New Guinea)

^{m}b	^{n}d	ɟ	^{n}g	$^{n}g^{w}$
ɸ			x	x^{w}
	l			
	r			
		j ɥ		w

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^{m}b	^{n}d	ɟ	^{n}g	$^{n}g^{w}$
ɸ			x	x^{w}
	l			
	r			
		j ɥ		w

Ojibwa (Algic)

p	t	ʧ	k	k^{w}
b	d	ʤ	g	g^{w}
	s	ʃ	h	h^{w}
	z	ʒ		
m	n		ŋ	
		j		w

Clements's generalizations

Even in inventories with more labialized consonants, rounding often does not cross-classify with place:

Sinaugoro (Austronesian)

	t	k	k^w
b	d	g	g^w
f	s		
v	r	ɣ	$ɣ^w$
m	n		
	l		

Ojibwa (Algic)

p	t	ʧ	k	k^w
b	d	ʤ	g	g^w
	s	ʃ	h	h^w
	z	ʒ		
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		j		w

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	t	k	k^w
b	d	g	g^w
f	s		
v	r	ɣ	$ɣ^w$
m	n		
	l		

Tigrinya (Semitic)

p	t	ʧ	k	k^w		ʔ
b	d	ʤ	g	g^w		
p’	t’	ʧ’	k’	$k’^w$		
f	s	ʃ			ħ	h
	z	ʒ			ʕ	
	s’					
m	n	ɲ				
	r					
	l	j		w		

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Even in inventories with more labialized consonants, rounding often does not cross-classify with place:

Halkomelem (Salishan)

p		t			k	k^w	q	q^w	ʔ
p’		t’			k’	$k^{’w}$	q’	$q^{’w}$	
			ʧ						
	tθ’	tɬ’	ʧ’						
	θ	ɬ	ʃ	ç	x	x^w	χ	$χ^w$	h
m									
		l							
				j	w				

Tigrinya (Semitic)

p	t	ʧ	k	k^w			ʔ
b	d	ʤ	g	g^w			
p’	t’	ʧ’	k’	$k^{’w}$			
f	s	ʃ				ħ	h
	z	ʒ				ʕ	
	s’						
m	n	ɲ					
	r						
	l	j		w			

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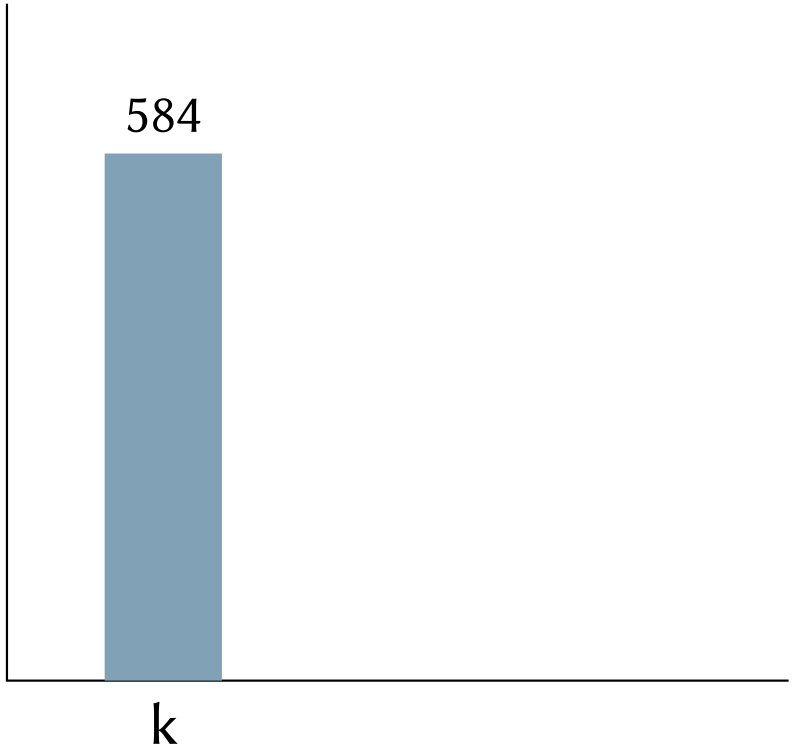

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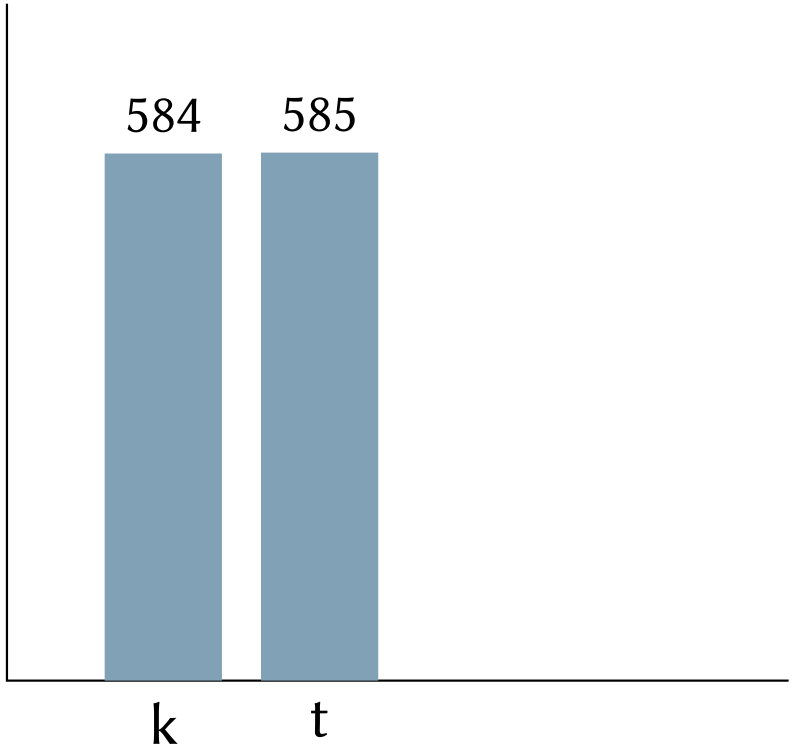

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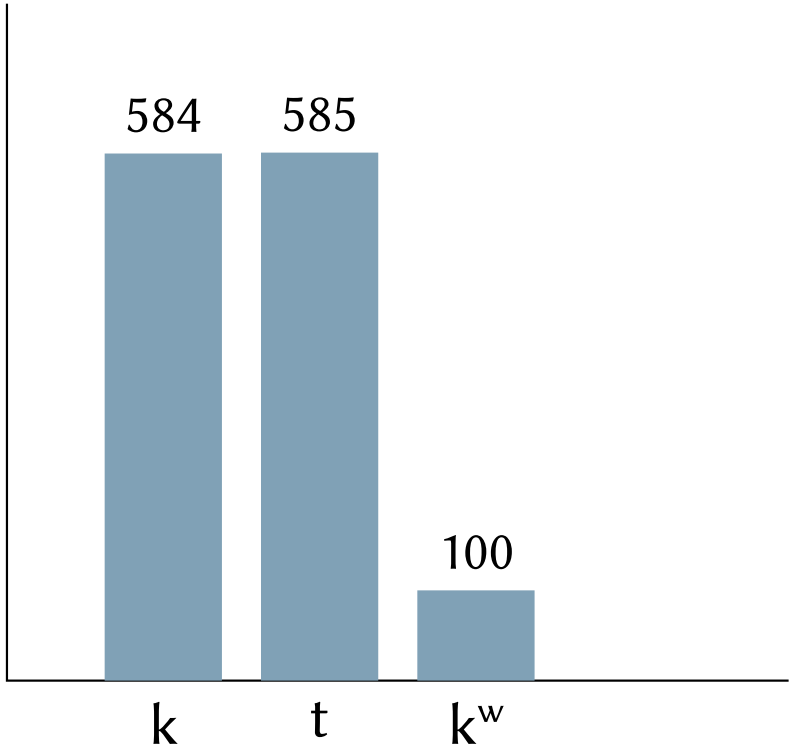

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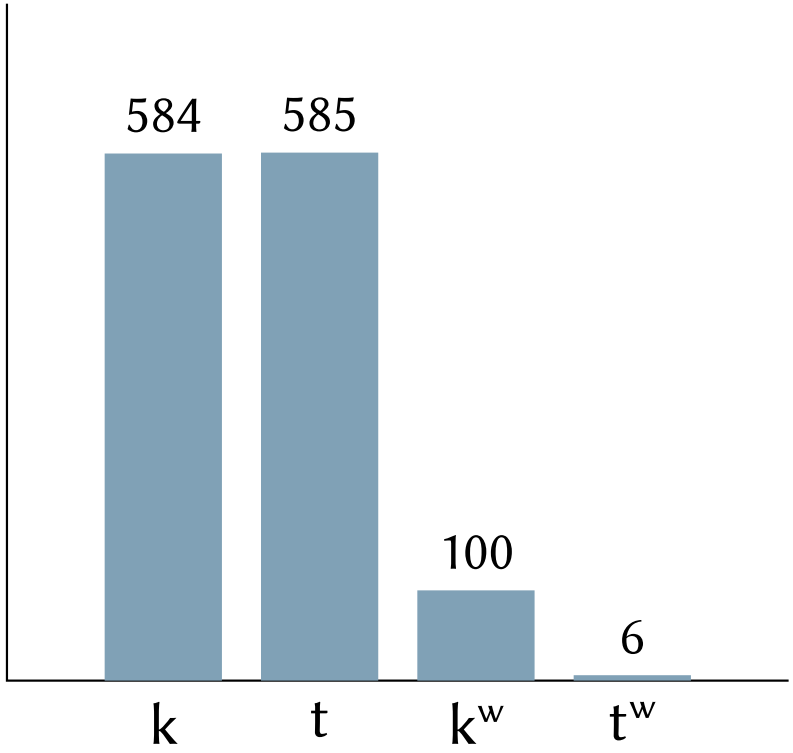

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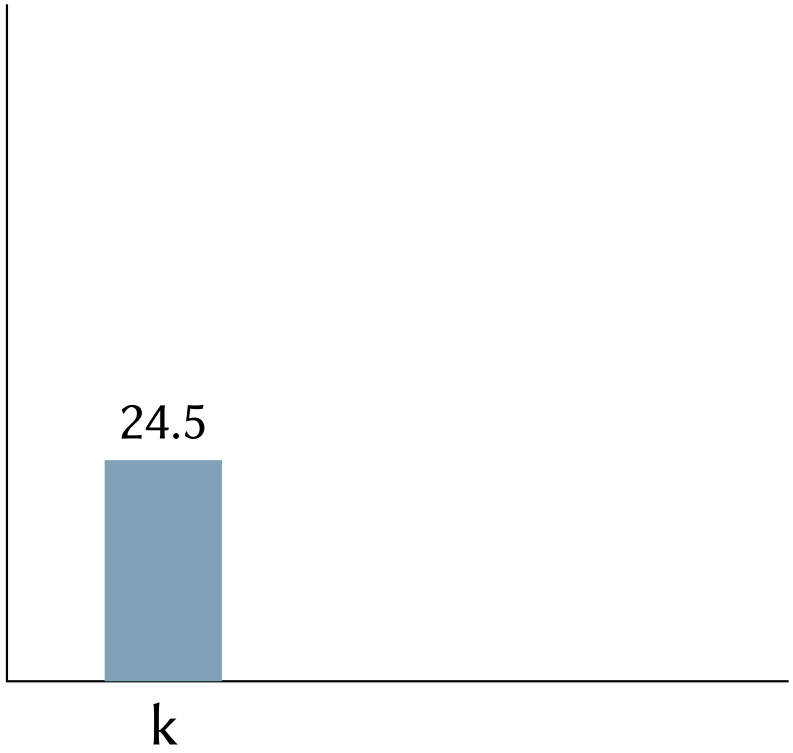

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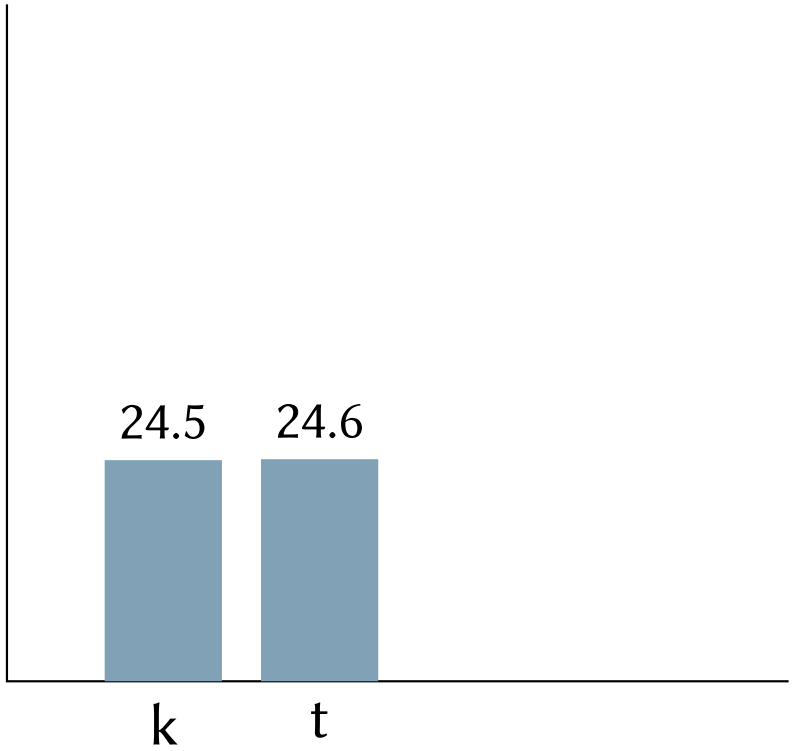

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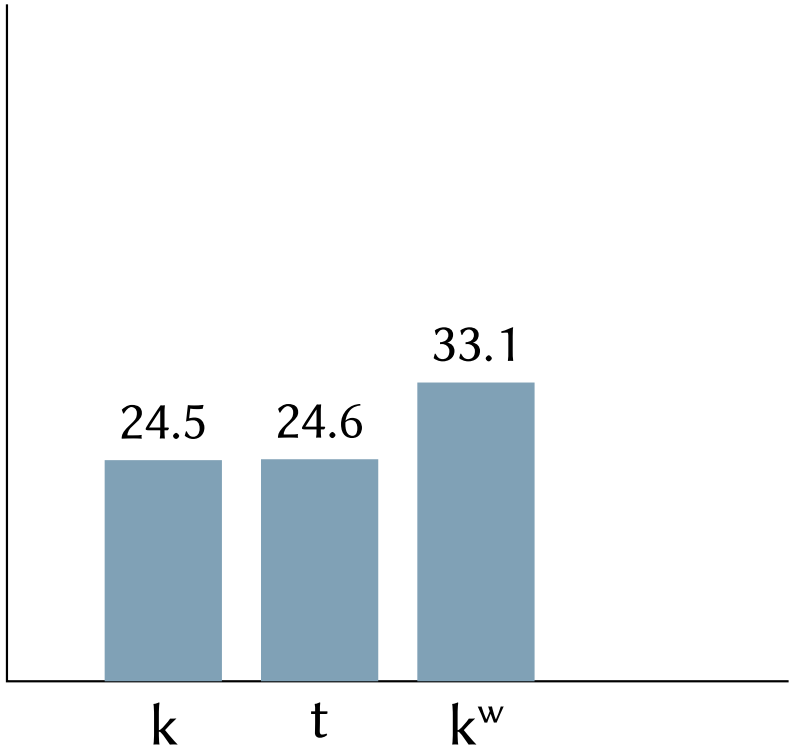

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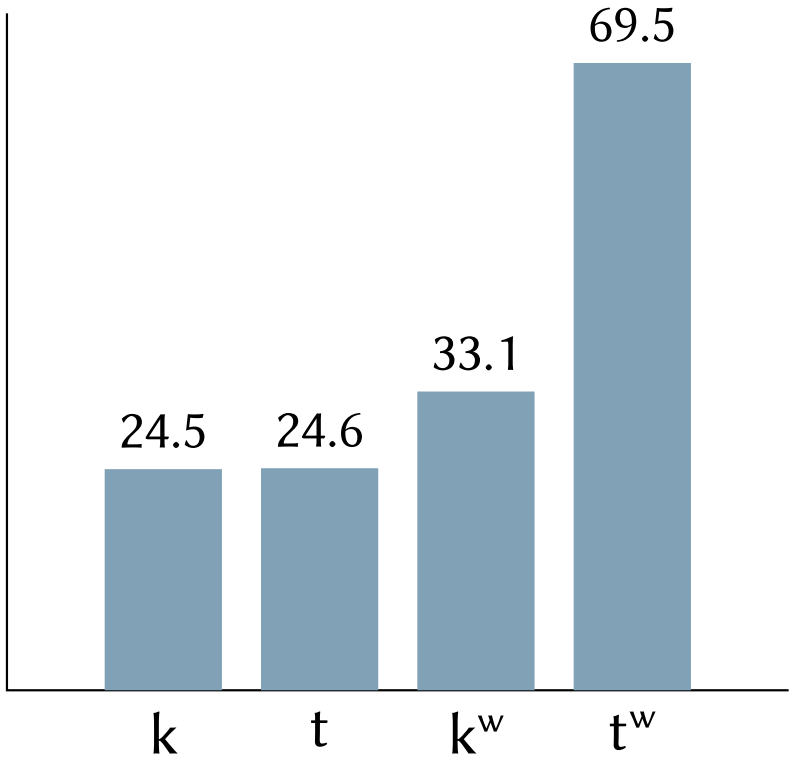

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  2. Why do we find contrastive rounding primarily on velars, then on uvulars and labials, and only rarely on coronals?

Representations and their consequences

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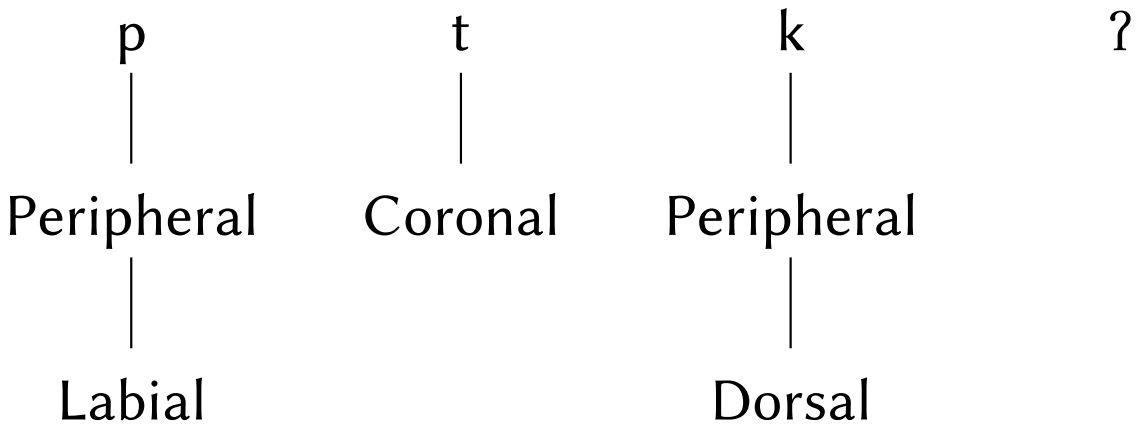
- Basic place representations look something like this (setting aside some aspects of underspecification):



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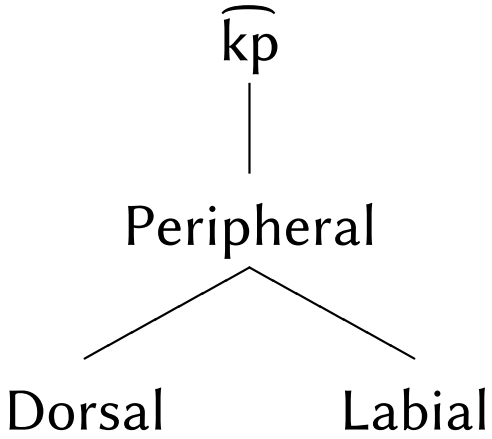

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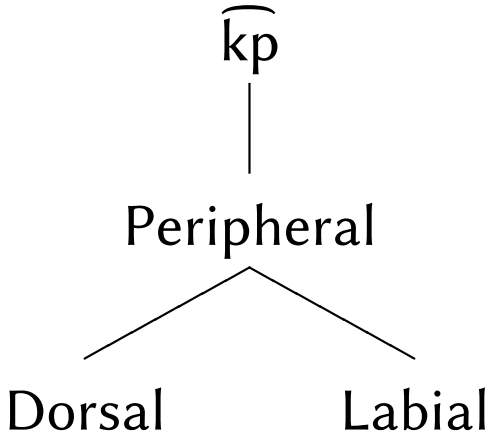

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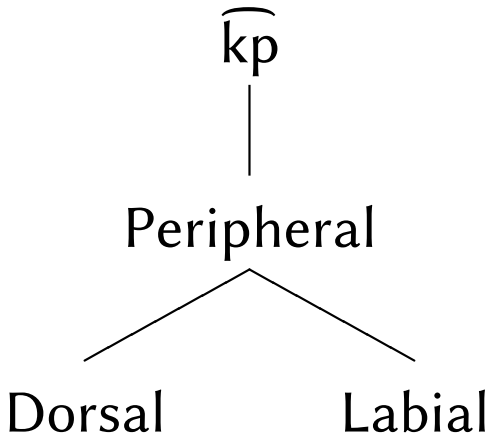

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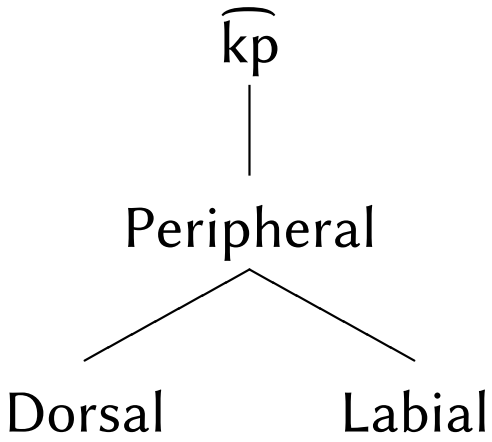

- But what if it can also represent /k^{w}/?
- In other words, labialized velars (in some systems) are represented as a distinct major place of articulation.
- The fact that one of the two places of articulation is phonetically secondary might not need to be explicit in the phonological representations.

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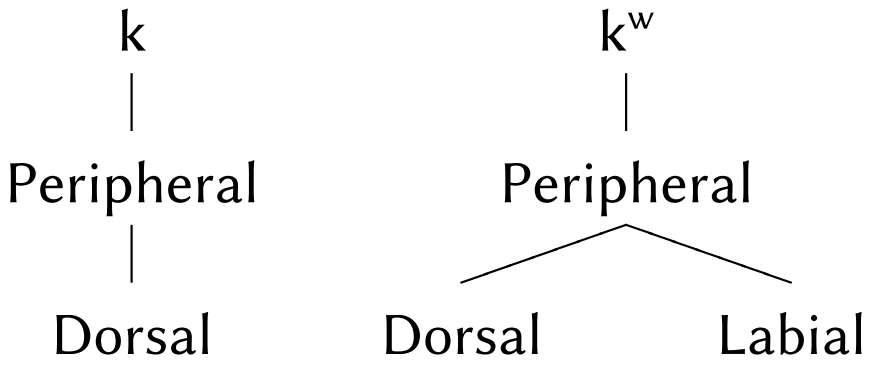

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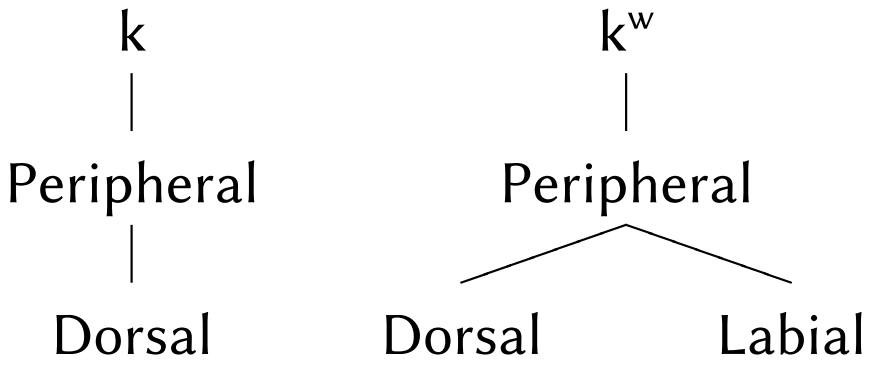

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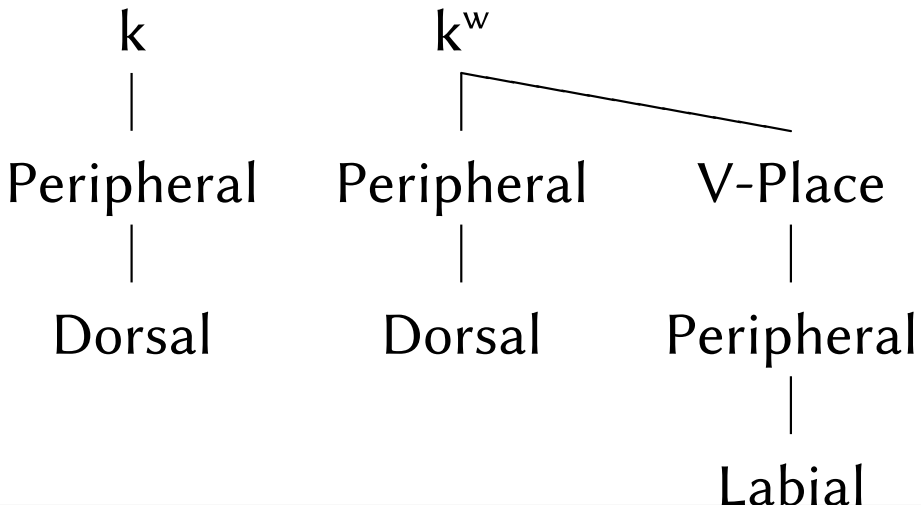

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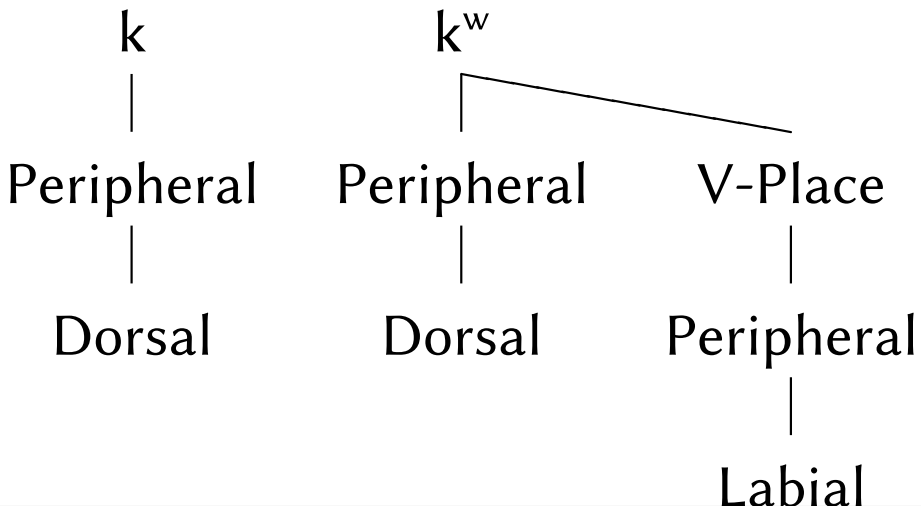

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  - Labialization involves considerable marked structure.

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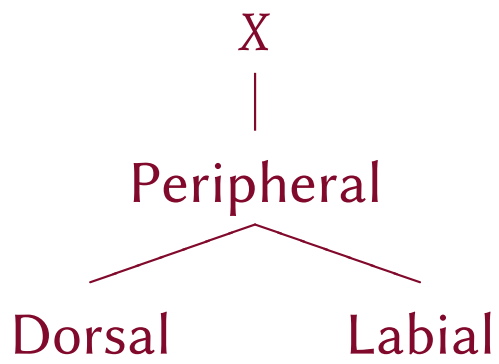
- In the representation 

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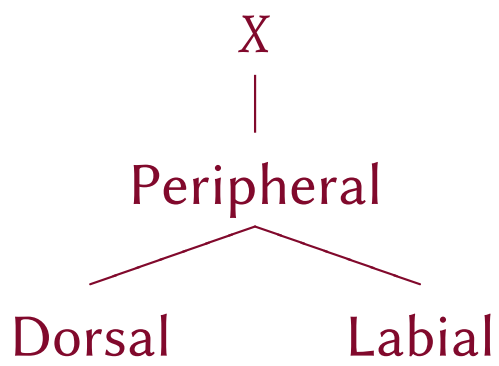
- In the representation 

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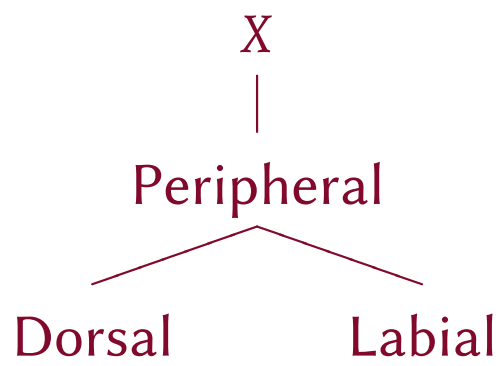
- In the representation 

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- Phonetically, we might expect variation in how it is realized.

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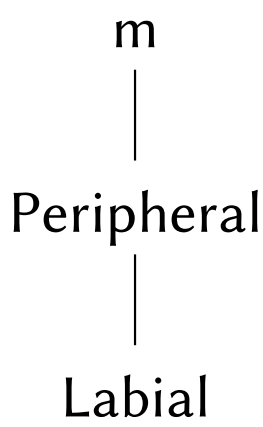

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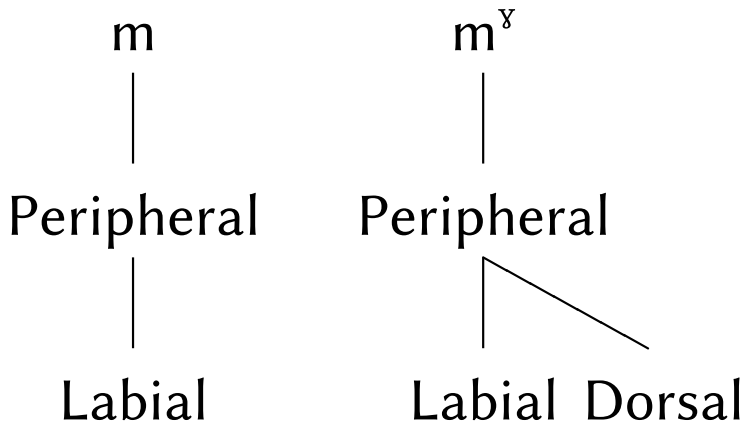

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  - [sawʌkʷikʷit] ~ [sawʌk͡pik͡pit] ‘cassowary’

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  - [gʷʌsɛp] ~ [g͡bʌsɛp] ‘black magic’
  - [begʷʌt] ~ [beg͡bʌt] ‘Tuesday’
  - [niŋgʷigʷidn̩] ~ [niŋg͡big͡bidn̩] ‘my larynx’

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- Why does secondary labiality dissimilate from primary labiality, if one is C-Place and the other is V-Place?

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f	s	$s^ʕ$	ʃ	$ʃ^ʕ$	x	x^w		
	z	$z^ʕ$	ʒ	$ʒ^ʕ$	ɣ	$ɣ^w$		
m	n	$n^ʕ$						
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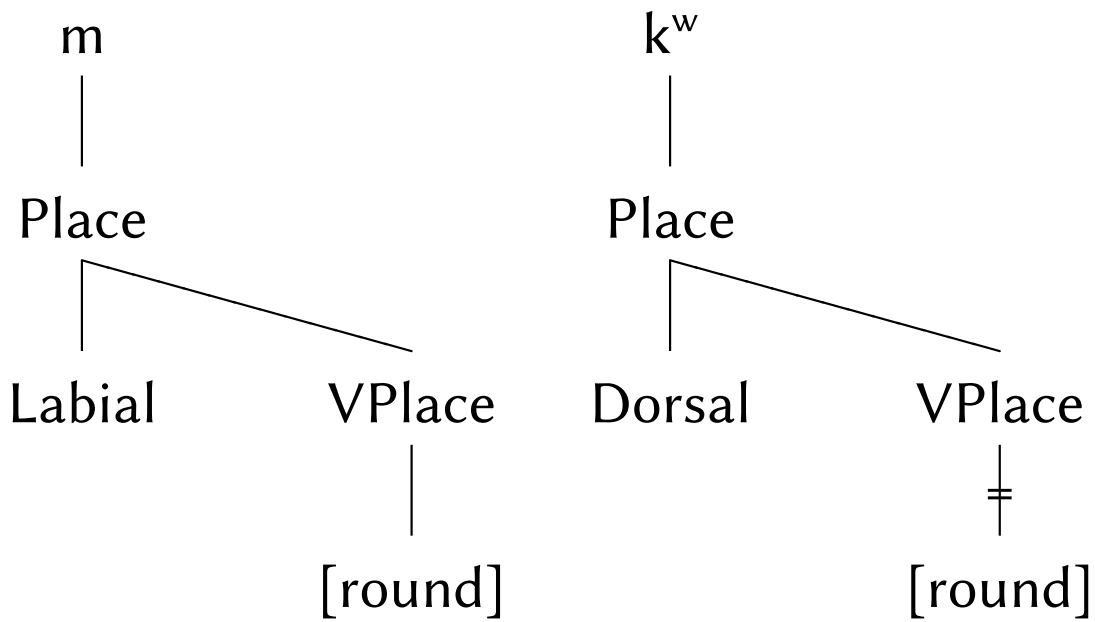

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- Contrastive overspecification: If the absence of a V-Place feature on a given segment is not contrastive, then the absence of that feature is omitted from the representation.

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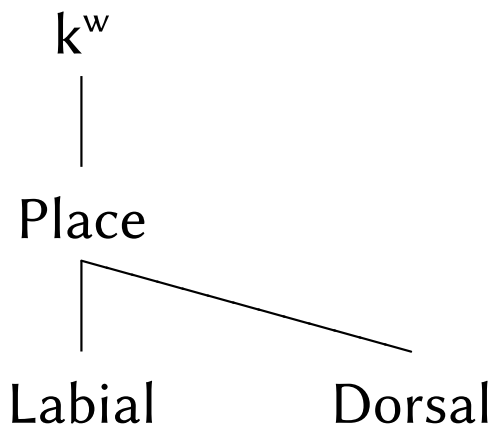

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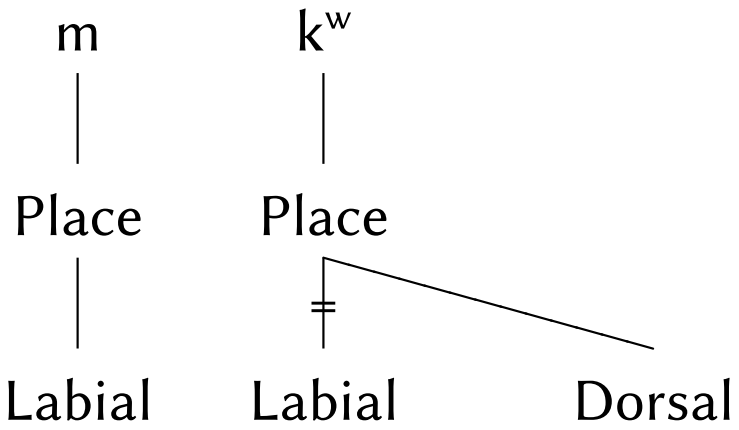

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- Contrastive underspecification: If the secondariness of a place feature is not contrastive, then the additional structure that would distinguish it from a primary place feature is omitted from the representation.

Typology can suggest representations.

Typology can suggest representations, but only examination of phonological patterns in individual languages can tell us whether they're the right ones.

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