Two ways to be transparent to Finnic vowel harmony

Daniel Currie Hall
Saint Mary's University

1. Finnish

Finnish /i/ and /e/ are famously transparent to vowel harmony, as shown here with examples from D'Arcy (2004) and Krämer (2002):

(1) Front-harmonic words
  a. syyte-ttæ 'action'+ABESS.
  b. grøtsi-næ 'porridge'+ESS.
  c. væitel-lyt 'dispute'+PTCP.

(2) Back-harmonic words
  a. suure-tta 'entry'+ABESS.
  b. tsaari-na 'tsar'+ESS.
  c. ajatel-lut 'think'+PTCP.

This has often been linked to the fact that /i/ and /e/ do not have back counterparts in the phonemic inventory.

	FRONT		BACK	
	UNRD	RD	UNRD	RD
HIGH	i	y		u
MID	e	ø		o
LOW	æ		ɑ	

the Finnish vowel inventory

Jakobson, Fant, and Halle (1952: 41):

In Finnish those acute vowels which *ceteris paribus* are paired with grave vowels cannot belong to the same simple word-unit as the grave vowels […], while the plain acute vowels /e i/, which have no plain grave counterparts, are compatible with any Finnish vowel.

The Finnish facts are consistent with multiple approaches to the role of contrast:

- Calabrese (1995); Nevins (2010):
  What's special about contrastive features? All features are specified, but some rules ignore redundant features.
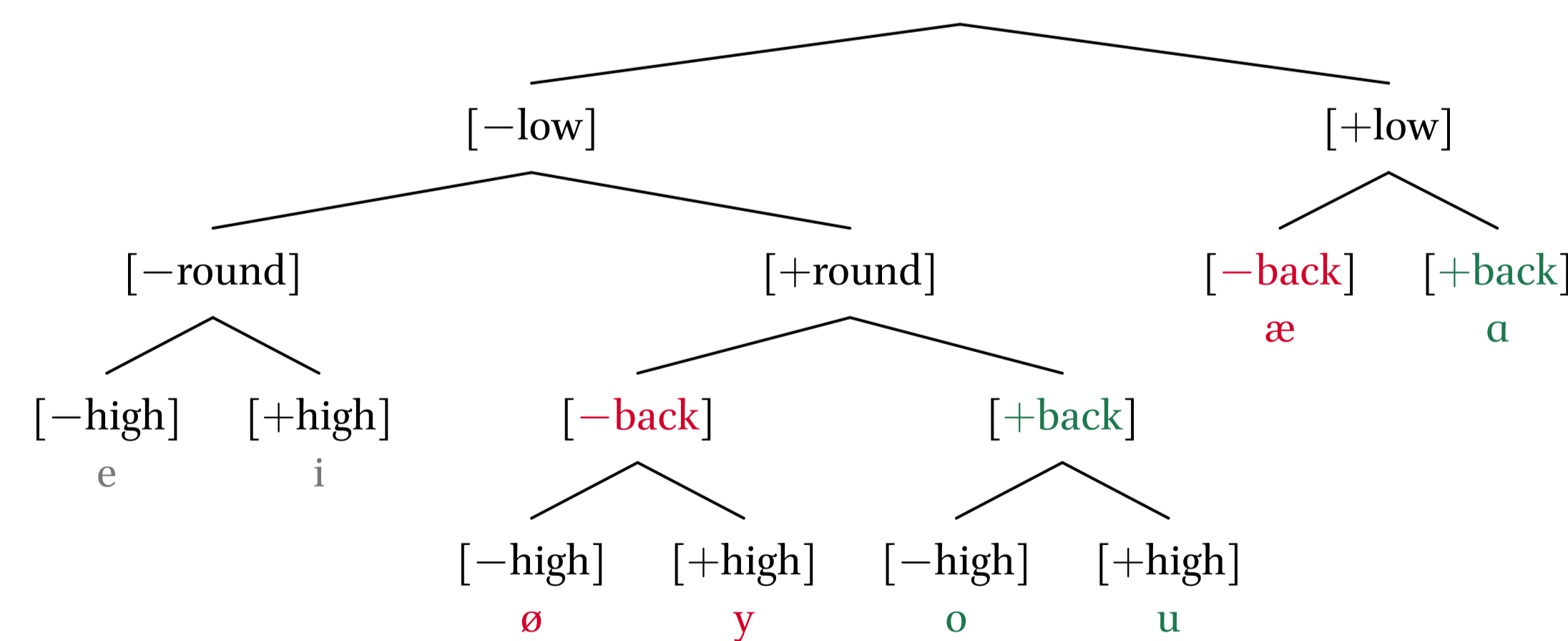 **How are contrastive features identified?** By finding minimal pairs of segments (cf. Archangeli 1988).
- Hall (2011, 2017):
  What's special about contrastive features? Only contrastive features are specified.
  How are contrastive features identified? Features are assigned in a contrastive hierarchy (Dresher 2009).

(3) Contrastive hierarchy for Finnish vowels

Nevins (2015: 59) writes that Hall (2011) "falls prey to" the "temptation" of treating vowel harmony in isolation, and contends that [−back] must be specified on Finnish /i/ to account for its ability to trigger assibilation of /t/:

(4) a. halut-a 'want'+INFINITIVE
    b. halus-i 'want'+PAST

- This assumes (per Calabrese 2005) that assibilation is palatalization.
- But assibilation changes only manner; there is no spreading of place from /i/ to /t/.
- And we don't need [−back] to identify /i/ as the trigger; [+high, −round] suffices.

2. Votic

Blumenfeld and Toivonen (2016) identify a 'paradox' in the behaviour of /i/ in Votic (an endangered Finnic language spoken in western Russia, near the Estonian border). As in Finnish, Votic /i/ is transparent to vowel harmony, as shown below with examples from Ariste (1968) and Ahlqvist (1856):

(5) /i/ in front stem + ELATIVE
  a. izæ-ssæ 'father'
  b. tæi-ssæ 'louse'
  c. pehmiæ-ssæ 'soft'

(6) /i/ in back stem + ELATIVE
  a. siɫɫa-ssa 'bridge, floor'
  b. poiga-ssa 'boy, son'
  c. vəttimə-ssa 'key'

(7) Front stem + PL. /-i/ + ELATIVE
  a. tʃivæ-i-ssæ 'stones'
  b. seemen-i-ssæ 'seeds'
  c. lyhy-i-ssæ 'short'

(8) Back stem + PL. /-i/ + ELATIVE
  a. su-i-ssa 'mouths'
  b. ampa-i-ssa 'teeth'
  c. lintu-i-ssa 'birds'

Because /i/ has no back counterpart in the native inventory, an obvious inference would be that it is unspecified for [−back], as in Finnish. However, Blumenfeld and Toivonen show that this cannot be the case, based on how /i/ affects /l/.

Votic /l/ is normally clear [l] in front-harmonic words but velarized [ɫ] in back-harmonic words, as shown here with data from Ariste (1968):

(9) [l] in front-harmonic words
  a. leppæ 'alder'
  b. elæ: 'to live'
  c. ellytæn 'I pamper'
  d. tʃylæ-llæ 'village'+ADESS.
  e. miltinle:b̥ 'some kind of'

(10) [ɫ] in back-harmonic words
  a. əɫuḓ 'beer'
  b. xa:moɫain 'devil'
  c. pəɫɫoɫə-ssa 'field'+TERMIN.
  d. poiga-ɫɫa 'boy, son'+ADESS.
  e. miɫta 'from me' (1SG.ABL.)

But before /i/, even in an otherwise back-harmonic word, /l/ is clear:

(11) a. əlimma 'we were'
    b. tappəlikko 'combative person'
    c. tuli-i-sə: 'fire'+PL.+ILLATIVE
    d. lintu-i-ɫa 'bird'+PL.+ALLATIVE

The frontness of /i/, though ignored by harmony, blocks or overrides velarization of /l/. (Forms like (10e) [miɫta] show that we can't just say that velarization is triggered by an immediately following [+back] vowel, *pace* Černjavskij n.d.: 6.)

Furthermore, /i/ triggers palatalization of /k/ to [tʃ] (here fed by word-final raising and fronting of /ə/; data from Odden 2005: 100–101):

(12) | PARTITIVE | NOMINATIVE | |
| --- | --- | --- |
| a. kurkə-a | kurtʃi | 'stork' |
| b. əɫkə-a | əɫtʃi | 'straw' |
| c. kahkə-a | kahtʃi | 'birch' |

Unlike Finnish /t/ → [s] assibilation, the Votic /k/ and /l/ patterns both involve place of articulation, so the frontness of /i/ cannot simply be unspecified.

Blumenfeld and Toivonen propose that [−back] is 'weakly' (i.e., non-contrastively) specified on /i/ in Votic. They follow Calabrese (1995), Nevins (2010), and Rhodes (2010) in allowing redundant features to be visible to some processes but not others: harmony ignores weak specifications.

The contrastivity-only approach (Hall 2011) predicts that if place is phonologically active on /i/, it must also be contrastive.

It is. Votic has /ɨ/, though only in loanwords from Russian (Ariste 1968: 1; Blumenfeld and Toivonen 2016: 1169 fn. 2).

	FRONT		BACK	
	UNRD	RD	UNRD	RD
HIGH	i	y	ɨ	u
MID	e	ø	ə	o
LOW	æ		ɑ	

the Votic vowel inventory

These loans are "well assimilated to Votic phonological and morphological patterns" (Harms 1987: 382):

(13) Loanword with harmonizing native suffix (Harms 1987: 382; Ariste 1968: 1)
  rinko-i-ɫa 'marketplace' + PL. + ADESSIVE < Russian рынок /ˈrinok/ [ˈrinək]

We can say that borrowings from Russian are exceptions to a high-ranking constraint against unrounded high back vowels. Even so, there must be a lexical contrast between /i/ and /ɨ/, because they can co-occur within a loanword:
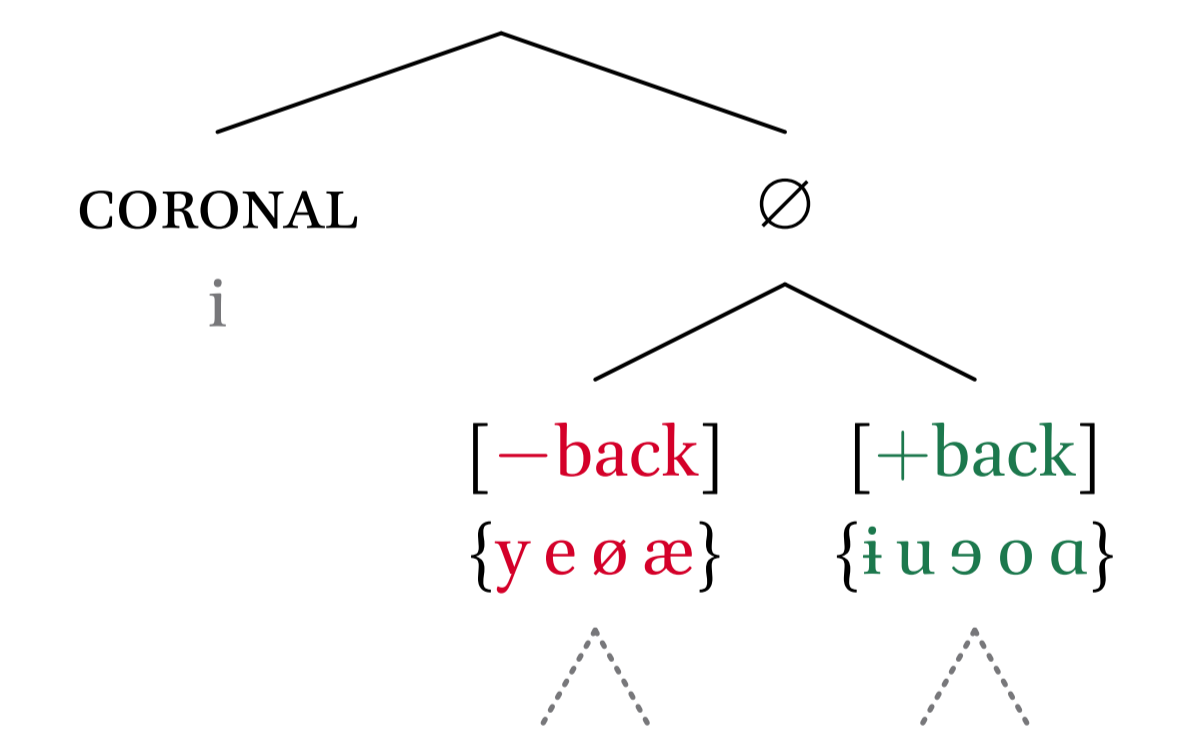
(14) viʃifkɑ 'embroidery' < Russian вышивка /ˈvɨʂivka/ [ˈvɨʂifkə]   (Ariste 1968: 1)

If the frontness of /i/ is contrastive, why is it transparent to harmony?

Proposal: The feature that (contrastively) marks frontness on /i/ is not the same feature that is involved in harmony.

Specifically:

Features: The frontness of /i/ is encoded by CORONAL. All other vowels are specified for [±back].

Harmony: Harmony spreads [±back] to vowels with underlying values for this feature—or, in OT, requires all vowels specified for [±back] to agree.

/l/ allophony: Harmonic [+back] spreads to /l/ as a secondary articulation, but this is overridden by an immediately following CORONAL vowel. That is, place agreement between /l/ and /i/ {follows/outranks} propagation of [+back] to /l/.

/k/ palatalization: Non-low unrounded vowels become CORONAL word-finally; derived /i/ spreads coronality to palatalize a preceding /k/.

(15) Partial contrastive hierarchy for Votic

Is there independent support for specifying /i/ as CORONAL rather than [−back]?

- Not much phonetic work has been done on Votic, but Ahlqvist (1856) and Ariste (1968) describe the vowels as similar to their Estonian counterparts. Estonian /i/ is more forward than the other front vowels, including /y/ (Asu and Teras 2009: 368).
- Černjavskij (n.d.: 8) suggests that intervocalic /i/ in Votic can be realized as [dʲ:].

In sum: Finnish /i/ is transparent because its frontness is non-contrastive and thus not specified. Votic /i/ is contrastively front, but specified with a different feature from other front vowels. These accounts, though non-unified, both sustain the strong claim that only contrastive features are specified in phonological representations.