Markedness and substance

Plan for today

- Contrast and markedness diagnostics
- The contrastive hierarchy, ternary contrasts and unary features
- Building geometrical structure

Contrast and markedness diagnostics

Beyond formal diagnostics

Let's recall the Big List of Markedness Diagnostics

Marked	Unmarked
less natural	more natural
more complex	simpler
more specific	more general
less common	more common
unexpected	expected
not basic	basic
less stable	stable
appear in few grammars	appear in more grammars
later in acquisition	earlier in acquisition
early loss in language deficit	late loss in language deficit
implies unmarked feature	implied by marked feature
harder to articulate	easier to articulate
perceptually more salient	perceptually less salient
smaller phonetic space	larger phonetic space

Which of these do we need to explain?

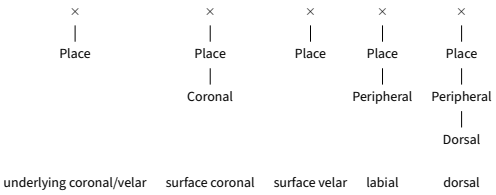
Default Variability

Table 2: Outcomes of coda neutralization: two-term systems

	Inventory	Examples
Stops	/p t/	Kiowa
	/p k/	German dialects, Korowai…
	/t k/	Nanchang, Badimaya…
	/p ʔ/	Jabêm
	/k ʔ/	Yaw Burmese

	Inventory	Examples
Nasals	/m n/	Trio, Sonora Hiaki…
	/m ŋ/	Nganasan, Palauan…
	/n ŋ/	various Sinitic

Proposal by Rice[1]



- Coronals show unmarked behaviour if Coronal is filled in by a default rule
- Not all bare Place nodes in all languages are supplied with Coronal
- Depending on this, either dorsals or coronals are unmarked
- Underspecified dorsals are distinct from highly marked specified dorsals, which are highly marked, potentially within the same language

Predicted behaviours

- Neutralization to velar: delete Place
- Neutralization to coronal: delete Place + insert Coronal
  - Coda condition, Selayarese version
  - A coda consonant is [ʔ], unless the following consonant is a voiceless stop
  - /taʔ-doʔdoʔ/ ‘be sleepy’ → [taʔdoʔdoʔ]
  - /taʔ-tuda/ ‘bump against’ → [tattuda]
  - Coda has a bare place node but may accept spreading
- Marked dorsals: surface [Dorsal]

‘Placeless’ and ‘real’ dorsals can be phonetically distinct

Yes!

- Japanese
- Spanish[2]

Taking stock: what about contrast?

- Rice:[3] lack of phonological contrast → more variation
  - At the level of the inventory…
  - …or in neutralizing positions

[1] Keren Rice. 1996. Default variability: The coronal-velar relationship. *Natural Language and Linguistic Theory* 14(3). 493–543.

[2] Michael Ramsammy. 2013. Word-final nasal velarisation in Spanish. *Journal of Linguistics* 49(1). 215–255.

[3] Keren Rice. 2009. Nuancing markedness: A place for contrast. In Eric Raimy & Charles Cairns (eds.), *Contemporary views on architecture and representations in phonology* (Current Studies in Linguistics 48), 311–321. Cambridge, MA: MIT Press.

> **A hypothesis**
>
> - Lack of contrast arises via markedness reduction → underspecification
> - Lack of contrast is compatible with any phonetic realization **in principle**
> - Substantive asymmetries are not phonological

Basically, the reason that neutralization tends to result in glottals or coronals is not that Glottal or Coronal are special features, but that they have properties that are more compatible with being in neutralizing positions.

Ambitiously, other markedness asymmetries could also be not hard-wired but emergent in this way:

- Frequency
- Informativity
- Acquisition

The two jobs of underspecification

So far, underspecification does two jobs:

- Formalization of unmarkedness
- Formalization of contrast

Can we unify the two?

Ternary contrasts and unary features

A ternary contrast: Turkish

	‘wing’	‘state’	‘name’
NOM	kanat	devlet	ad
PL	kanatlar	devletler	adlar
ACC	kanadɯ	devleti	adɯ

- Tripartite behaviour, unpredictable: must be in UR
- Classical analysis: /t/ vs. /d/ vs. /T/
- /T/ → [-voi] word-finally, /T/ → [+voi] otherwise

Ternary contrasts and unary features

- Cases like Turkish are normally taken as a killer argument against unary features: we **need** [+voi], [-voi] and [0voi]

- The contrastive hierarchy approach has the same issue[4]

The entire idea of the contrastive hierarchy is that there is a distinction between

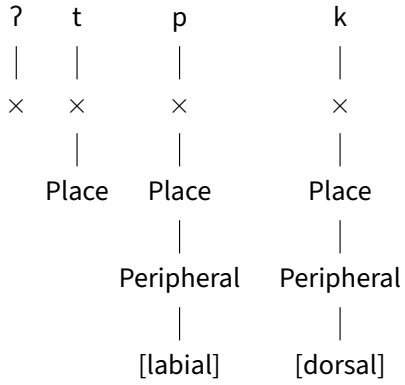
- [+F] (active, marked)
- [-F] (active, marked)
- [0F] (inactive, unmarked)

> ⚠ A problem
>
> If the contrastive hierarchy must have binary features, then a markedness difference between [+F] and [-F] can only be stipulated, reversing much of the progress on the link between markedness and size

Geometry to the rescue

Geometry and ternarity

Geometry actually gives us a straightforward way to do more-than-binary contrasts



An example: Breton

Krämer[5] on Île de Groix Breton:

- Final devoicing
  - pout ~ poudew ‘pot’
  - kurt ~ kurtew ‘court’
- Turkish-style ternary voicing contrast in word-initial stops
  - /p/ fətak paːris → fətak paːris ‘to Paris’
  - /b/ unačypaš baːk → unačypaž baːk ‘boat crew’
  - /B/ unačypaš bənak → unačypaš pənak ‘any crew’

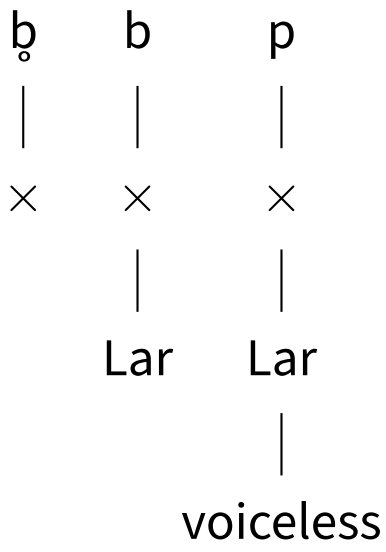
[4] Daniel Currie Hall. 2007. *The role and representation of contrast in phonological theory*. Toronto: University of Toronto dissertation.

[5] Martin Krämer. 2000. Voicing alternations and underlying representations: The case of Breton. *Lingua* 110(9). 639–663.

Reanalysis of Breton

For the gory detail, see Iosad.[6]

[6] Pavel Iosad. 2017. *A substance-free framework for phonology: An analysis of the Breton dialect of Bothoa* (Edinburgh Studies in Theoretical Linguistics 2). Edinburgh: Edinburgh University Press.



- Two-way contrast underlyingly, [voiceless] is marked
- Final devoicing is delinking Lar

Irregular devoicing occurs when a [voiceless]-initial item is preceded by a floating Lar node

- When there is nothing suitable to the left, the floating node docks to the right and expunges [voiceless]
- When there is something suitable to the left, the floating node docks and accepted [voiceless] spreading

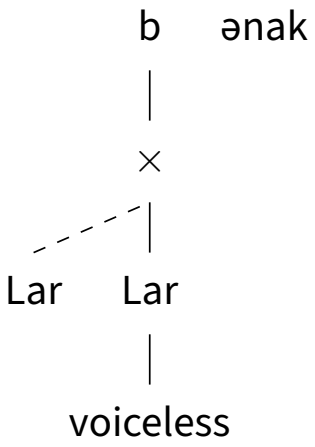


Figure 1: Voiced stop in absolute initial

- Critically, the same phenomenon occurs in initial mutation

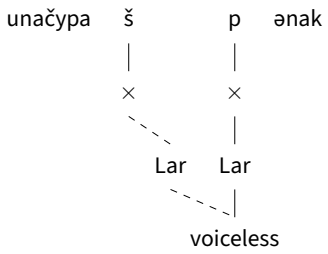


Figure 2: Voiceless cluster

  - *kozh* ‘old’
  - *ur vamm gozh* ‘an old mother’
  - *ur iliz kozh* ‘an old church’

- Floating Lar = trigger of mutation
- Can dock to a preceding delaryngealized obstruent, cannot dock to a preceding sonorant
- Not lexically specific in these cases

Where do bare nodes come from?

We’ve seen bare nodes before, but they were basically stipulated

- Features are privative
- Nodes are assigned to all segments contrastively (un)specific for a feature
- Otherwise we do standard Successive Division

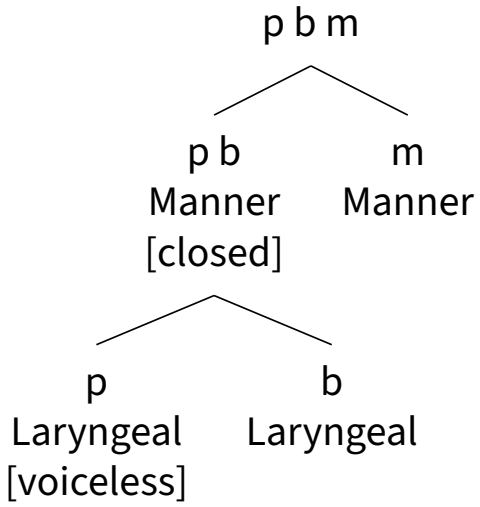


Figure 3: Ternary contrast and the contrastive hierarchy

What does this buy us?

- Ternary contrast in a unary framework
- Modified Contrastive Specification insights

- **Geometric predictions**

It is reasonable to ask whether the bare-nodes framework is just a notational variant of MCS. What does this add?

Well, traditional MCS does not traffic in feature geometry. There is a link **from** geometric proposals like Node Activation or Default Variability towards the system of contrast in the language, but in 'pure' MCS there is no geometry.

Where does structure come from?

Extending the proposal

Sandstedt:[7]

> Every split in the contrastive hierarchy introduces a tier

[7] Jade J. Sandstedt. 2018. *Feature specifications and contrast in vowel harmony: The orthography and phonology of Old Norwegian height harmony*. Edinburgh: The University of Edinburgh dissertation.

Ifẹ Yoruba yet again

Variation in feature ordering → variation in phonological behaviour

Table 4: Ifẹ Yoruba ATR harmony, yet again

ATR		RTR	
ògùrò	'spurtle'	ɔrúkɔ	'name'
eúrò	'bitter-leaf'	èlùbɔ́	'yam flour'
oríwo	'boil, tumour'	ɔdídɛ	'parrot'
èbúté	'harbour'	ɛúrɛ́	'goat'

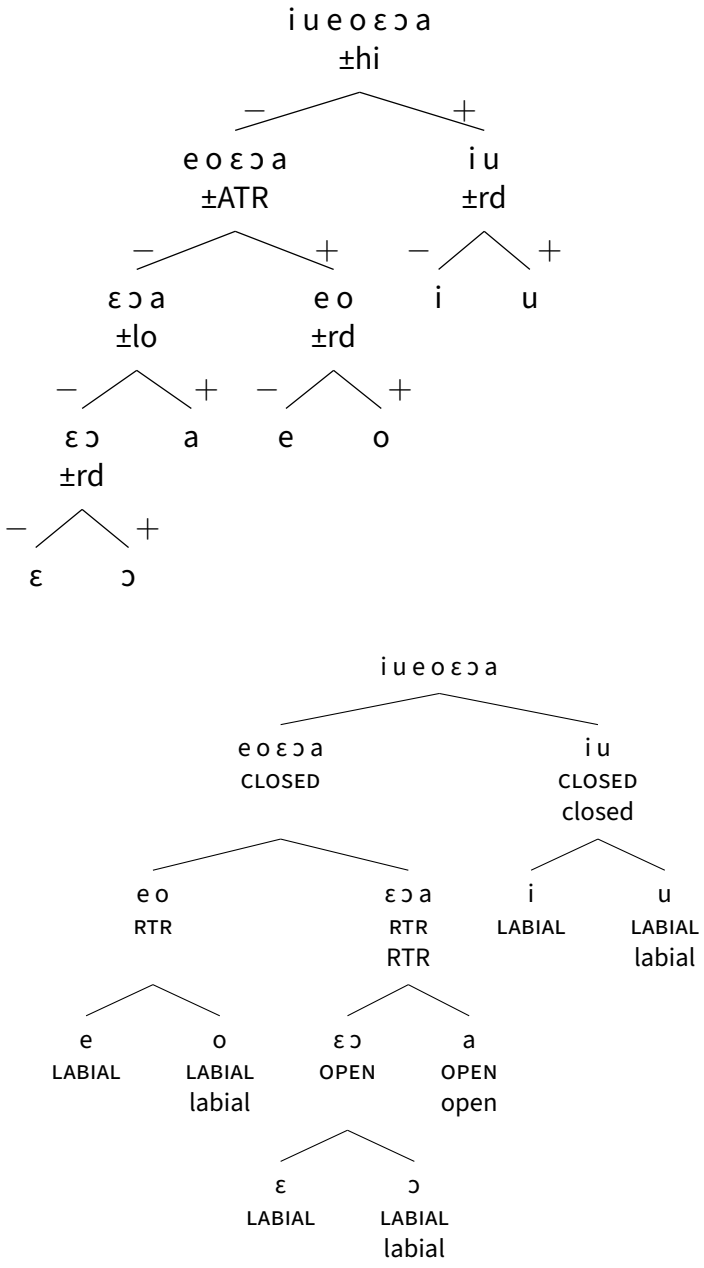


Figure 4: Geometric analysis of Ifẹ Yoruba

So what?

The key point that this buys us is that the ordering CLOSED » RTR derives transparency of [closed] vowels with no further stipulation

Cross-linguistic variation: Standard Yoruba

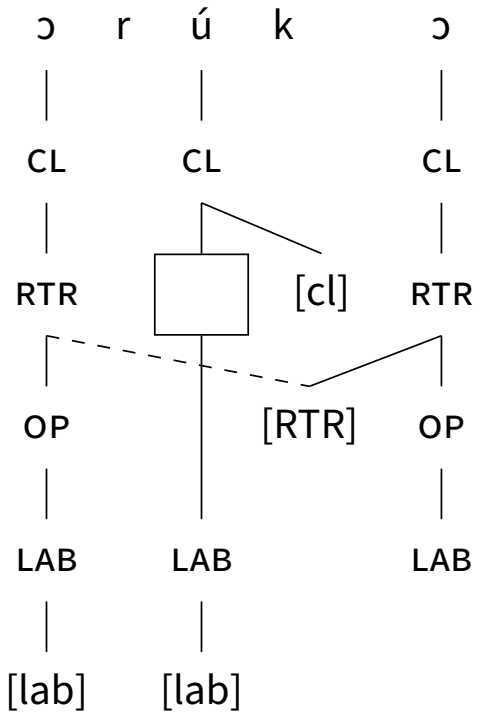
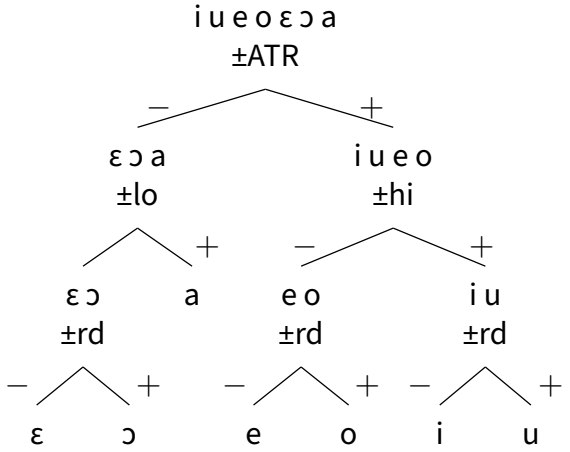


Figure 5: Locality effects in Ifẹ Yoruba

Ifẹ Yoruba	Standard Yoruba	Gloss
orúkɔ	ɔrúkɔ	‘name’
èlùbɔ́	ɛ̀lùbɔ́	‘yam flour’
odídɛ	ɔdídɛ	‘parrot’
ewúrɛ́	ɛúrɛ́	‘goat’



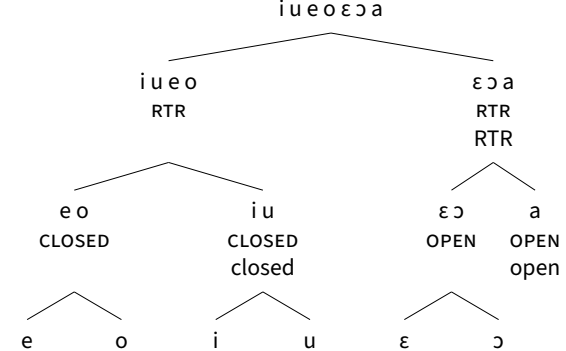


Figure 6: Geometric analysis of Standard Yoruba

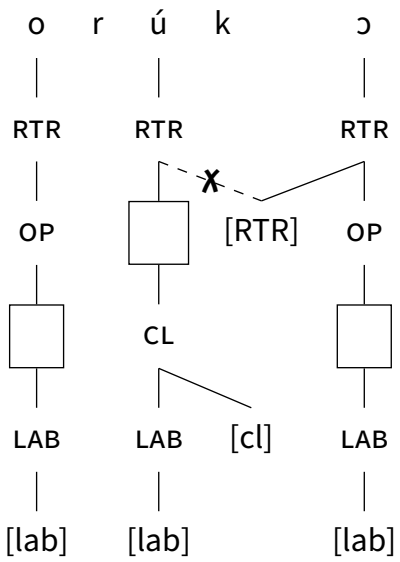


Figure 7: Locality effects in Standard Yoruba

- Sandstedt[8] reports several successful case studies
- However, challenges remain[9]
- But note that 'less structure' ≠ 'total absence of structure'!

Markedness, contrast and substance

- Phonological behaviour — including phonological markedness effects — is determined by structure
- Structure comes from contrast
- Substance is useful to **implement** contrast, but does not **define** markedness
- Predictions
  - Same behaviour, different substance[10]
  - The less contrast, the more variation…
  - …and the more contrast, the more substantive bias[11]

[8] Sandstedt, "Feature specifications and contrast in vowel harmony".

[9] Stephen Nichols. 2021. *Explorations in the phonology, typology and grounding of height harmony in five-vowel Bantu languages*. Manchester: University of Manchester dissertation; Paolo Danesi. 2022. *Contrast and phonological computation in prime learning: Raising vowel harmonies analyzed with emergent primes in Radical Substance Free Phonology*. Nice: Université Côte d'Azur dissertation.

[10] B. Elan Dresher. 2014. The arch not the stones: Universal feature theory without universal features. *Nordlyd* 41(2). 165–181.

[11] Rice, "Nuancing markedness".

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