Features

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Features

- Classes
- Unordered bundles?
  - Are all combinations equally weighted to each other?
- Feature dependencies?
- Feature geometry
  - Deals with redundancy
  - Some features pattern together or only meanoingful in relation to each other
  - Can capture this with hierarchical organization—a feature tree as instructions to the vocal tract
- Underspecification
  - Are all features necessarily specified at all levels of representation?
  - Redundancy rules
  - Radical underspecification (Archangeli 1984)
- Universal?

Features

Trubetzkoy:

- Natural classes suggest sub-phonemic properties

Jakobson

- These properties are (primitive) phonological units
- Align with (potentially) contrastive properties

Describe features in both acoustic and articulatory terms

Shift away from this with SPE & motor theory

Jakobsonian features

	labial	den/alv	palato-alv	palatal	velar	highV	lowV	fV	bv
acute (-grave)	-	+	+	+	-			+	-
diffuse (-compact)	+	+	-	-	-	+	-		

Jakobson, Fant & Halle (1952)

- 21 binary features
- Meant to capture the grammars of all natural languages
- Well-defined perceptual, acoustic & articulatory correlates:
  - e.g. *acute* Cs had high frequency energy (also true of *acute* Vs /i,e,æ/)

SPE (Chamsky & Halle 1968)

- Shift to articulatory (thought better to describe patterns, especially [±back])
- Introduce [coronal]
- Separate place features for Vs & Cs
  - Vs all [-ant], Cs [±ant]; Vs [±back] and all [-cor] → no correlation between [-back] vowels and den/alv Cs

Jakobsonian features

monovalent but opposing

front to back of tongue

First to argue Vs & Cs not separate

	labial	den/alv	palato-alv	palatal	velar	highV	lowV	fV	bv
acute (-grave)				+	-			+	-
diffuse (-compact)	+	+	-	-	-	+	-		

spectral qualities

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SPE

	labial	den/alv	palato-alv	palatal	velar	uvular	frontV	backV
ant	+	+	-	-	-	-	-	-
cor	-	+	+	-	-	-	-	-
back	-	-	-	-	+	+	-	+
high	-	-	-	+	+	-	±	±

Post-SPE (late 70s, early 80s)

	labial	den/alv	palato-alv	palatal	velar	uvular	frontV	backV
lab	+	-	-	-	-	-		
ant	+	+	-	-	-	-	-	-
cor	-	+	+	⊕	-	-	-	-
back	-	-	-	-	+	+	-	+
high	-	-	-	+	+	-	±	±

SPE

	labial	den				ular	frontV	backV
ant	+	+	-	-	-	-		
cor	-	+				-		
	-	-				+		
	-	-	-	+	+	-		

never, ever together in phonology

Abundance of features

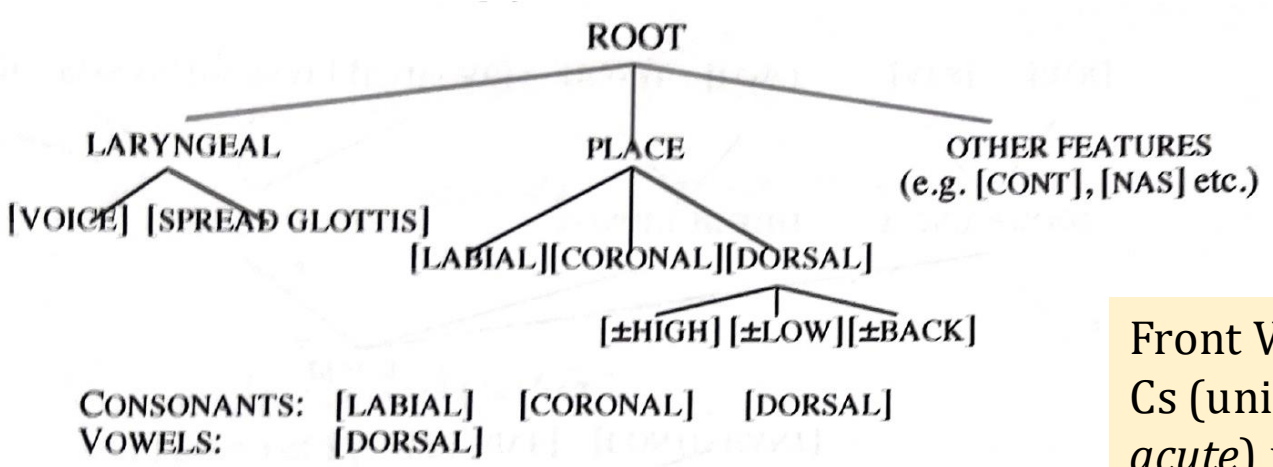
Big change—all binary, C&V separate, all articulatory

Missed linking den, palato-alv & palatal with front Vs / labial & velar with back Vs

Post-SPE (late 70s, early 80s)

	labial	den/alv	palato-alv	palatal	velar	uvular	frontV	backV
lab	+	-	-	-	-	-		
ant	+	+	-	-	-	-	-	-
cor	-	+	+	⊕	-	-	-	-
back	-	-	-	-	+	+	-	+
high	-	-	-	+	+	-	±	±

Established class nodes (Halle-Segey)



[±high] and ±low] now dominated by [dorsal]

Front Vs & 'front' Cs (united as *acute*) now fully separated from [cor] Cs, e.g. dentals, palatals &c.

Late 80s & Early 90s

Cs & Vs different:

	labial	den/alv	palato-alv	palatal	velar	uvular	frontV	backV
lab	+							
cor		+	+	+				
ant		+	-	-				
dor								
back					+	+	-	+
high					+	-	±	±

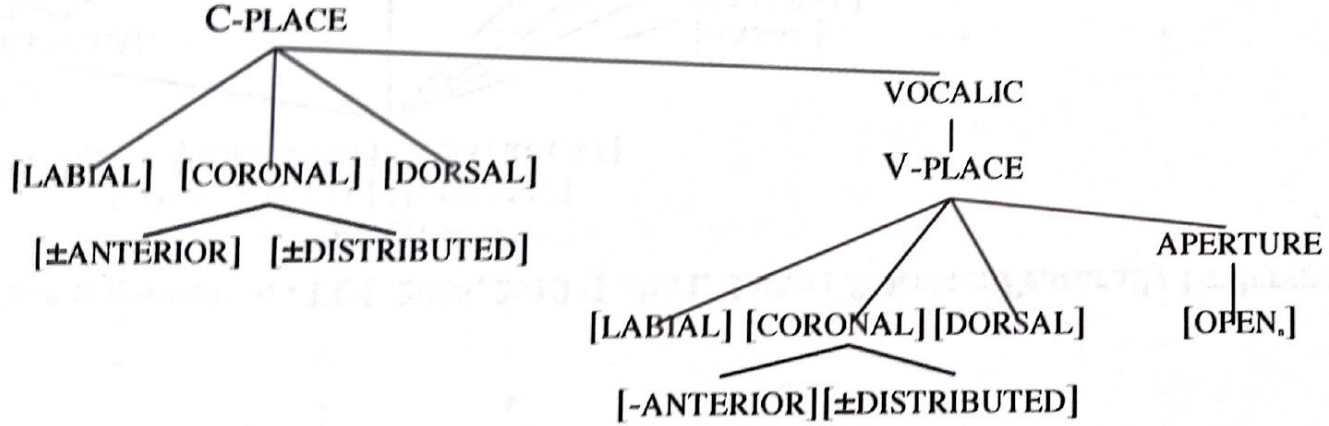
Cs & Vs the same (Clements, Lahiri & Evers):

	labial	den/alv	palato-alv	palatal	frontV	velar	uvular	backV
lab	+							
cor		+	+	+	+			
ant		+	-	-				
dor								
back						+	-	+
Tongue height								
high					±			
low					±			±

Clements (1989) assumes V-features as a separate level from C-features

Clements & Hume (1995)

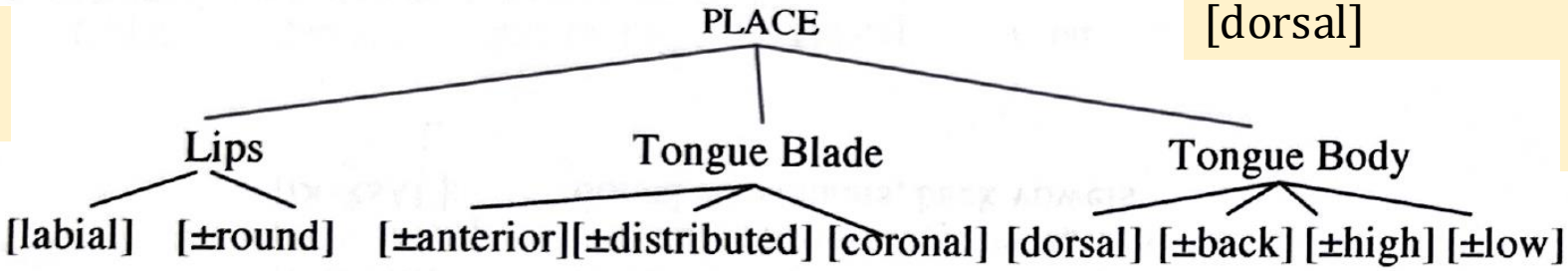
[coronal] entirely replaced [±back]



[LABIAL]: labial consonants, rounded vowels
[CORONAL]: coronal consonants, front vowels
[DORSAL]: dorsal consonants, back vowels

Halle et al. (2000)

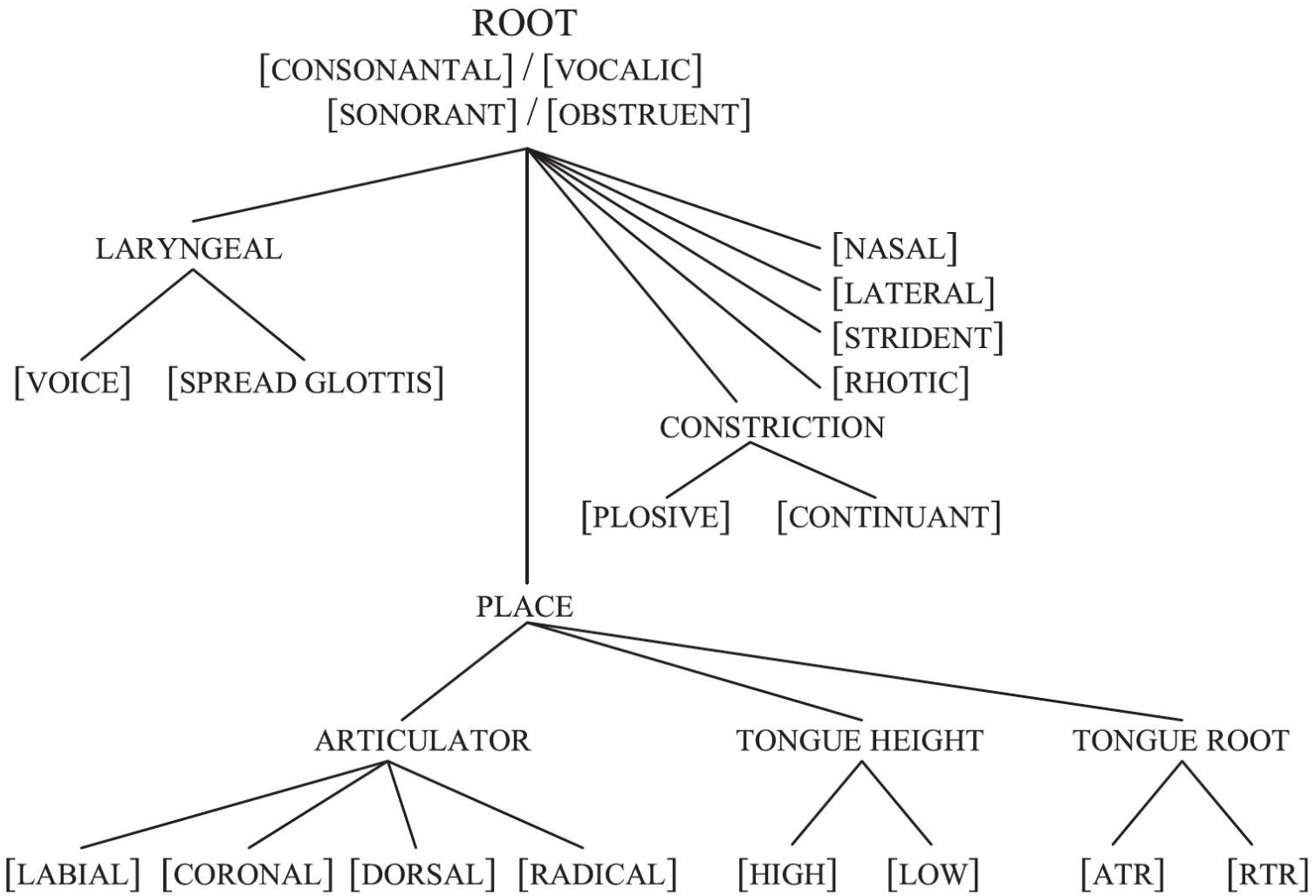
Vs & Cs still separate



Revised, so [±back], [±high] & [±low] no longer dependent on [dorsal]

Spreading of [-back] would thus not spread [dorsal] too.

FUL


ROOT
[CONSONANTAL] / [VOCALIC]
[SONORANT] / [OBSTRUENT]
LARYNGEAL
[VOICE]
[SPREAD GLOTTIS]
[NASAL]
[LATERAL]
[STRIDENT]
[RHOTIC]
CONSTRICTION
[PLOSIVE]
[CONTINUANT]
PLACE
ARTICULATOR
[LABIAL]
[CORONAL]
[DORSAL]
[RADICAL]
TONGUE HEIGHT
[HIGH]
[LOW]
TONGUE ROOT
[ATR]
[RTR]

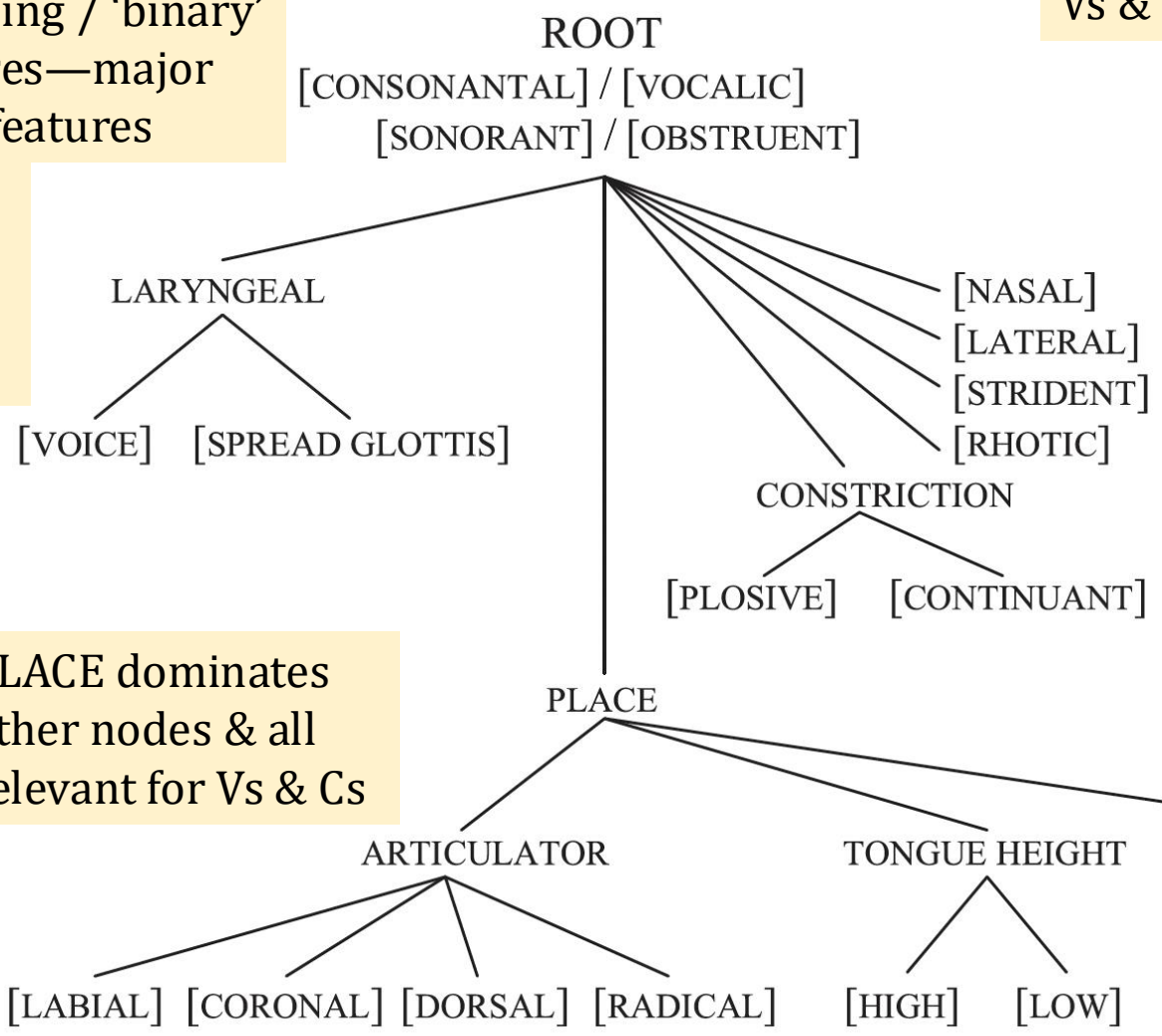
FUL

Only 2 pairs of opposing / 'binary' features—major class features

Vs & Cs united

ALL segments of all languages have one of each (and they conflict)

Aperture also relevant for Cs



No dependencies except inherent ones, e.g. [NAS] = [SON]

ARTICULATOR determines constriction on the horizontal, TONGUE HEIGHT vertical

PLACE dominates other nodes & all relevant for Vs & Cs

Both defined by acoustic cues

Not binary (can't be both, but can be neither)

[LABIAL]	labial consonants, rounded vowels
[CORONAL]	front vowels, dental, palatal, palatoalveolar, retroflex consonants
[DORSAL]	back vowels, velar, uvular consonants
[RADICAL]	pharyngealized vowels, glottal, pharyngeal consonants
[HIGH]	high vowels, palatalized consonants, retroflex, velar, palatal, pharyngeal consonants
[LOW]	low vowels, dental, uvular consonants
[ATR]	palatoalveolar consonants
[RTR]	retroflex consonants

Underspecification

Underspecification: Superfluous & misguided?

- Halle et al. (2000): Full specification is the norm (for contrastive features)

BUT:

- Asymmetries & markedness differences exist across features, their distribution & direction of phonological rules

FUL:

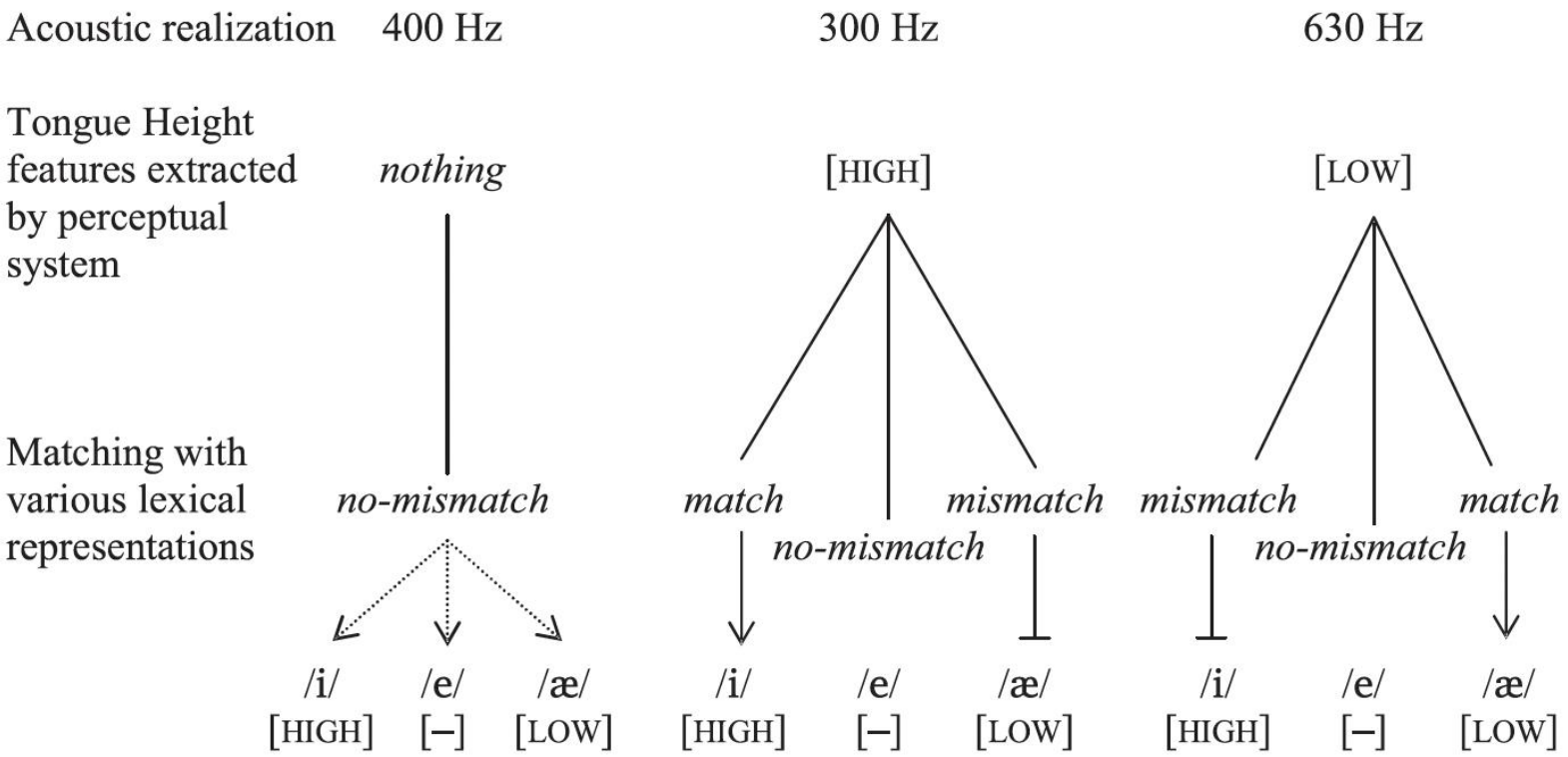
- Assumes underspecification of contrastive features to account for phonological systems, but also comprehension & production.

Alternatives (no underspecification):

- Calabrese 1995; Mohanan 1993; Clements 2001.

Underspecification

Match, Mismatch, No-Mismatch



Additional Reading

- Rialland, Annie, Rachid Ridouane & Harry van der Hulst (eds) *Features in Phonology and Phonetics: Posthumous Writings by Nick Clements and Coauthors* (Berlin: Mouton de Gruyter) [Summary in Part I]
- Steriade, D. (1995). Underspecification and markedness. In J. Goldsmith (Ed.), Handbook of phonological theory (pp. 114–174). Oxford: Blackwell.
- Halle, M., Vaux, B., & Wolfe, A. (2000). On feature spreading and the representation of place of articulation. Linguistic Inquiry, 31, 387–444.
- Clements, G. N. (2001). Representational economy in constraint-based phonology. In T. A. Hall (Ed.), Distinctive feature theory (pp. 71–146). Berlin: Mouton.
- Lahiri, Aditi & Henning Reetz (2010). Distinctive Features: Phonological underspecification in representation and processing. *Journal of Phonetics* 38, 44–59 [The non-experimental parts]
- Lahiri (2018) Predicting universal phonological contrasts in Larry M. Hyman and Frans Plank (eds.) *Phonological Typology* (Berlin: Mouton de Gruyter) pp.229-272
- Lahiri, Aditi & Henning Reetz (2010). Distinctive Features: Phonological underspecification in representation and processing. *Journal of Phonetics* 38, 44–59 [The experimental parts]
- Friedrich, Claudia K., Aditi Lahiri, & Carsten Eulitz (2008). Neurophysiological evidence for underspecified lexical representations: Asymmetries with word initial variations. *Journal of Experimental Psychology: Human Perception and Performance* 34, 1545–1559.