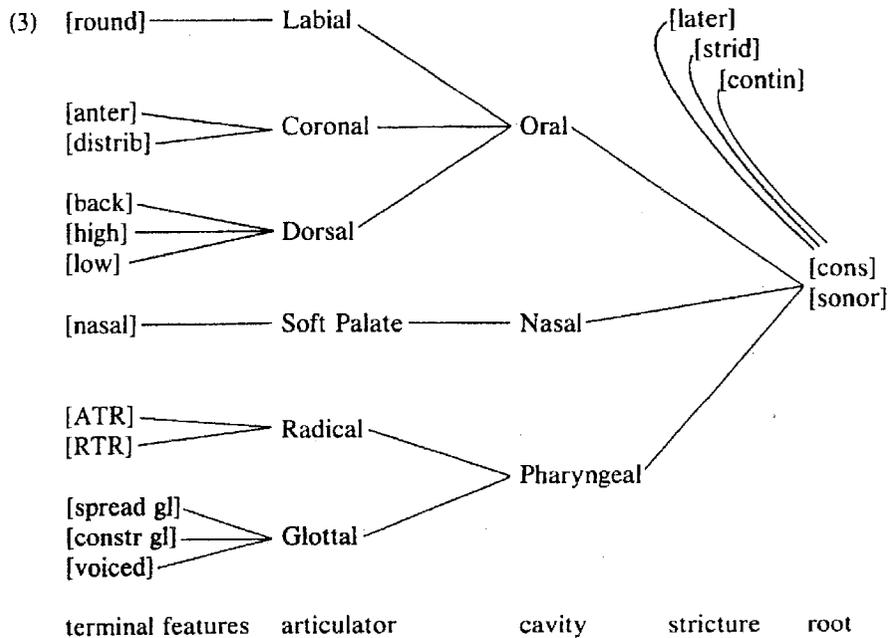


~~Oct 14, 2009~~ Oct 18, 2010

[1] In the early generative model the distinctive features formed an unordered bundle; research in the 1980's suggested that the features were organized into a dependency tree with the root node at the top and many features as leaves at the terminal nodes. Various intermediary levels of organization were also postulated. A new format for the formalization of phonological rules was also proposed based on this notation. It was hoped that this "feature" geometry would help to restrict the range of possible rules. We follow here the model proposed by Halle (1992).

[2] major pieces of the structure

- root node is location of major class features [cons] and [sonorant] that partition sounds into vowels vs. consonants and obstruents vs. sonorants
- various terminal features are the dependents of six articulators that are the principle actors in the production of speech: Labial, Coronal, Dorsal, Soft Palate, Radical, Glottal
- the articulators are grouped into a cavity specification where the constriction is formed: oral, nasal, pharyngeal
- certain manner (stricture) features more or less freely cross-classify the articulators and are off to side of the root node



[3] overview and motivation

- certain recurrent groups of features in rules of assimilation and reduction
- these groups are dominated by some node in the feature tree

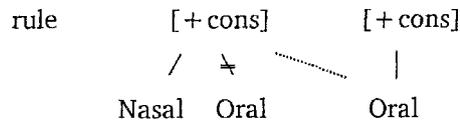
- assimilation formalized as “spreading” of a tree node to the corresponding node in a neighboring segment; reduction formalized as the elimination of some tree node in the segment
- segments linked to a timing tier of X slots that represent the linear order of speech sounds
- length/geminate contrast is represented as one root node of feature tree linked/associated to two successive timing slots

[4] Assimilation types

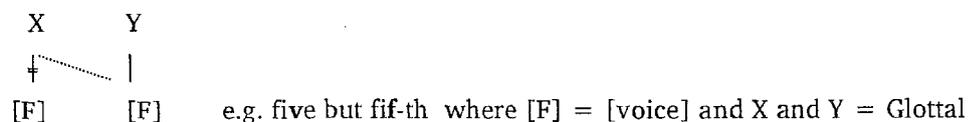
- nasal assimilation: a nasal acquires the place features of a following (oral) consonant but not its manner features like [lateral] or [continuant]

Catalan (simplified)

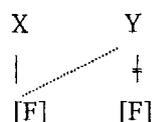
	so[n]	amics	'they are friends'
bilabial	so[m]	pocs	'they are few'
dental	so[n̪]	dos	'they are two'
alveolar	so[n]	sincers	'they are sincere'
palatal	so[ɲ]	[iʎ]iures	'they are free'
velar	so[ŋ]	grans	'they are big'



- dotted line in rule denotes the spreading node; = denotes the delinked node
- whatever articulator Oral dominates (Labial, Coronal, Dorsal) becomes the articulator for the preceding nasal
- predicts no assimilation for a nasal preceding a pharyngeal or laryngeal consonant (cf. Sudanese Arabic p. 158)
- regressive assimilation in general: node X acquires the same feature specification as node Y, losing its original specification



- progressive assimilation: node Y acquires the same feature specification as node X losing its original specification

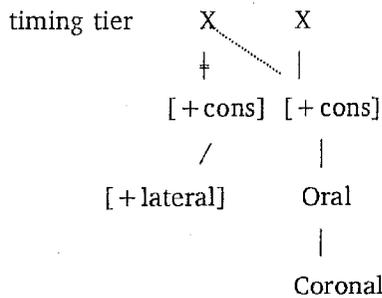


e.g. dog-[z] vs. cat-[s] where [F] = [voice]

- complete assimilation

Arabic sun and moon letters

?al-qamr	'the moon'	?aʃ-ams	'the sun'
?al-faras	'the horse'	?ad-daar	'the house'
?al-kitaab	'the book'	?az-zayt	'the oil'
?al-harb	'the war'	?an-nahr	'the river'
?al-ab	'the father'	?aθ-θawb	'the garment'

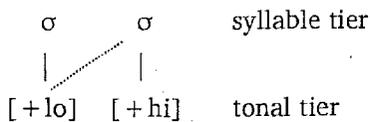


lateral consonant of definite prefix is replaced by following coronal consonant

[5] assimilation without delinking

low tone spread in Buli: a high tone [á] becomes rising [ǎ] after a low tone [à]  
 mid tone [ā] neither undergoes nor triggers the rule

fí:k	'small'	bàŋ fí:k	'small lizard'
zá	'millet'	wà zǎ	'his millet'
lām	'meat'	wà lām	'his meat'
nūm	'grind'	nūm zá	'grind millet'



as a result of this rule the second syllable is associated with two tonal specifications: lo followed by hi which is a natural representation for a rise; similarly hi followed by lo associated to same syllable is a natural representation for a falling tone

[6] reduction deletion of part of tree without replacement

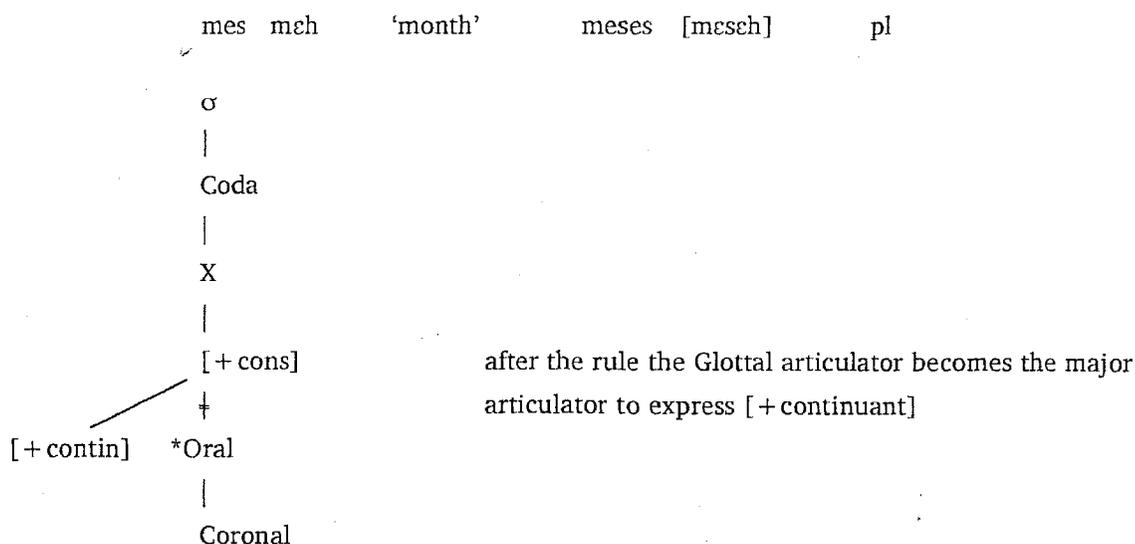
- reduction of unstressed vowels to schwa in English (Flemming 2004)
- Rosa's roses [ə] ... [ɪ]
- height difference but front-backness determined by coarticulation with adjacent consonants
- delinking of [back] from unstressed vowel

Dorsal

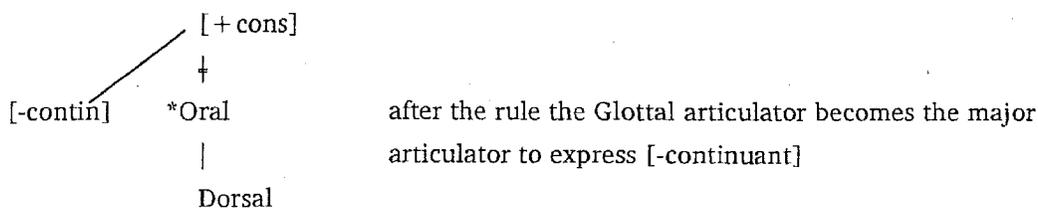
↓

debuccalization: s, f > h; t > ?                      [±back]

- s-aspiration in Caribbean Spanish



- k > ? in Hawaiian \*kele > ?ele 'black'



[7] geminates

- represent long vowel or consonant as one root node associated to two successive timing slots
- motivation: Pámela      Amánda      Ramó:na
- Latin stress rule: heavy penult takes stress
- Heavy syllable: CVC or CV: Light syllable CV

o	[o:]	[an]	e
	rhyme	rhyme	rhyme
	/ \	/ \	
timing tier	X X	X X	X
	\ /		
root node	[-cons]	[-cons] [+cons]	[-cons]

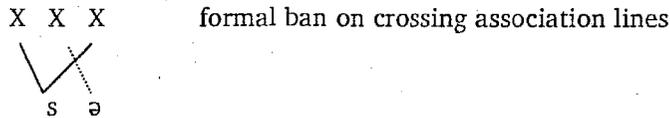
- heavy syllable formally defined as having a branching rhyme
- geminate notation [oo] does not express fact that for rules of assimilation like umlaut long and short vowels behave the same (as a single segment)

*German Sohn [zo:n]*  
*Sohnchen [zø:nçən]*  
*Mann [man]*  
*Männchen [mɛnçən]*

[8] geminate integrity

- geminate consonants parallel a cluster of two consonants for rules of syllable structure
- recall Italian f[a:].to but al.to and fat.to
- but geminates resist separation by rules of epenthesis (vowel insertion)
- Berber dialect of Guerssel (1978) inserts schwa to break up three consonant cluster (recall

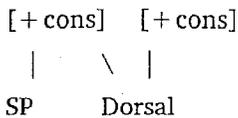
Tangale)	ams	'rub'	ass	'tie'
	aməs-tən	'rub them'	ass-tən	'tie them' *asəs-tən



- Kolami vowel copy (Kenstowicz & Pyle 1973)

1 sg. pres.	1 sg. past	imper.	
suk-atun	suk-tan	suk	'whither'
dakap-atun	dakap-tan	dakap	'push'
katak-atun	katak-tan	katak	'strike'
meleg-atun	melek-tan	meleg	'shake'
kink-atun	kinik-tan	kinik	'break'
iqd-atun	it-tan	iqd	'tell'
aqd-atun	at-tan	aqd	'thirst for'
mind-atun	min-tan	mind	'bury'
pong-atun	poŋk-tan	poŋ	'bowl over'

the linked structure in the homorganic nasal stop cluster like ŋk blocks epenthesis



MIT OpenCourseWare  
<http://ocw.mit.edu>

24.901 Language and Its Structure I: Phonology  
Fall 2010

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.