

Advanced Phonological Theory B – Lecture 2– 3: Phonological representation and assimilation of place

Wouter Jansen

wouter.jansen@kuvik.net

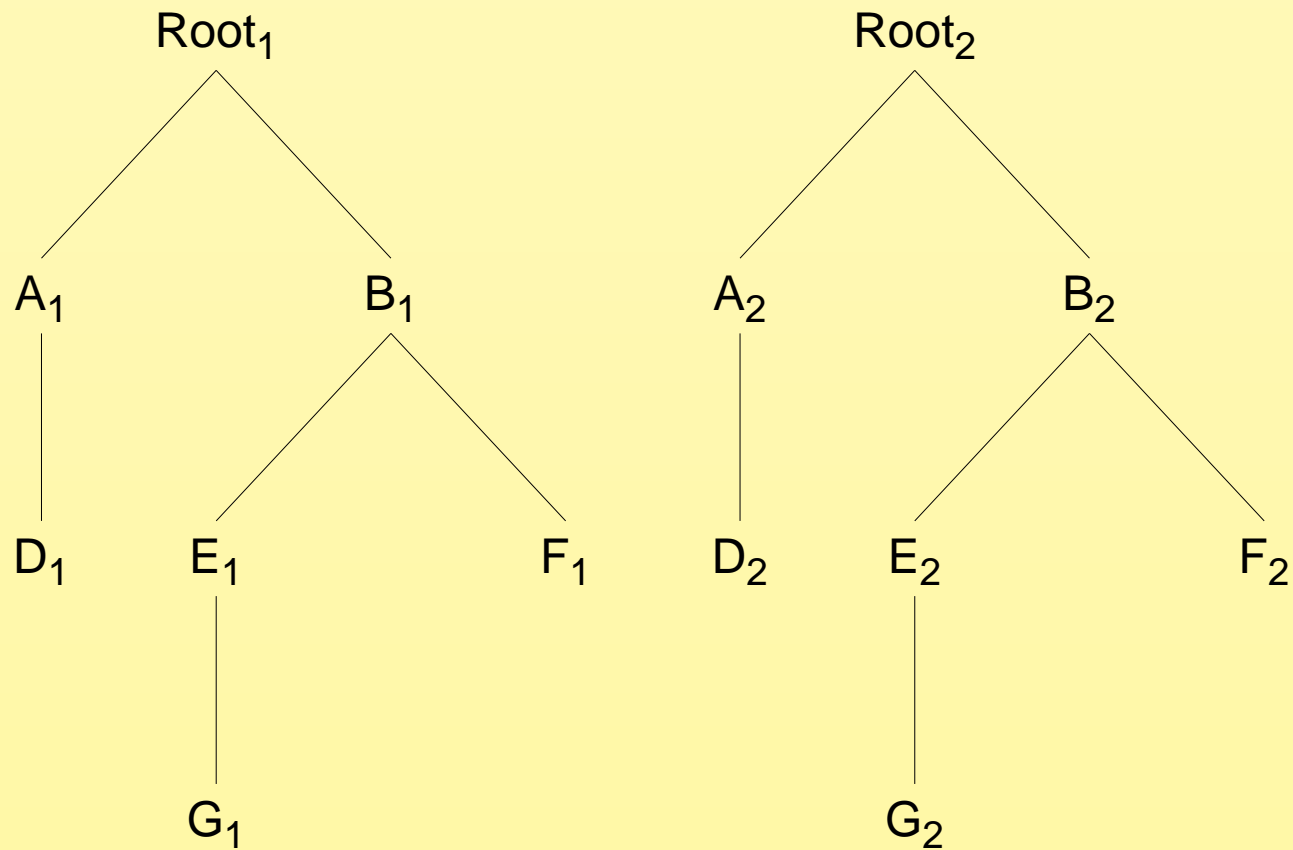
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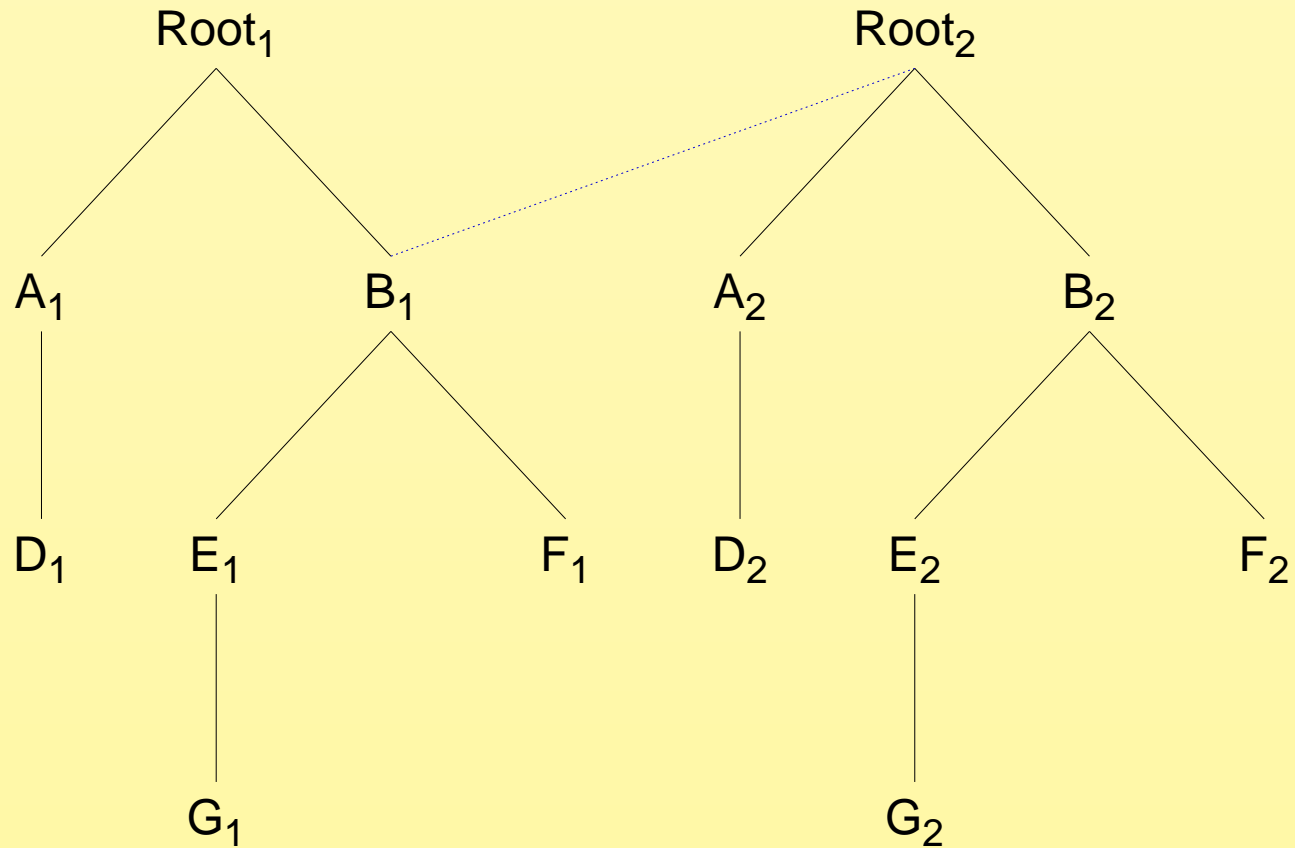
Week 1 recap: feature classes

- Feature Geometry provides a way of formalising feature class behaviour
- Features that tend to pattern together are bundled together under **class nodes** ('subconstituents') in a feature 'tree' that replaces the SPE-style linear conception of the segment
- Phonological processes such as assimilation, dissimilation, and neutralisation are represented as operations on the **association lines** that tie together the featural content of segments

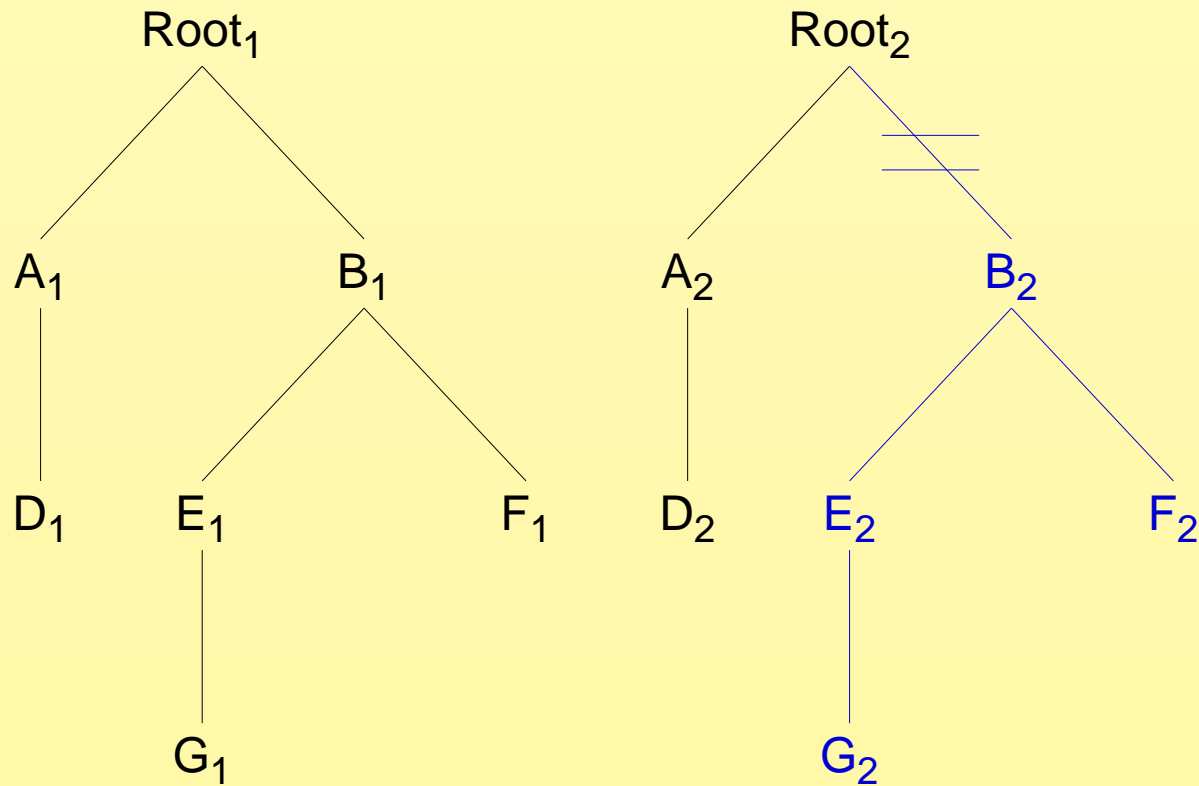
Week 1 recap: feature geometry



Week 1 recap: spreading



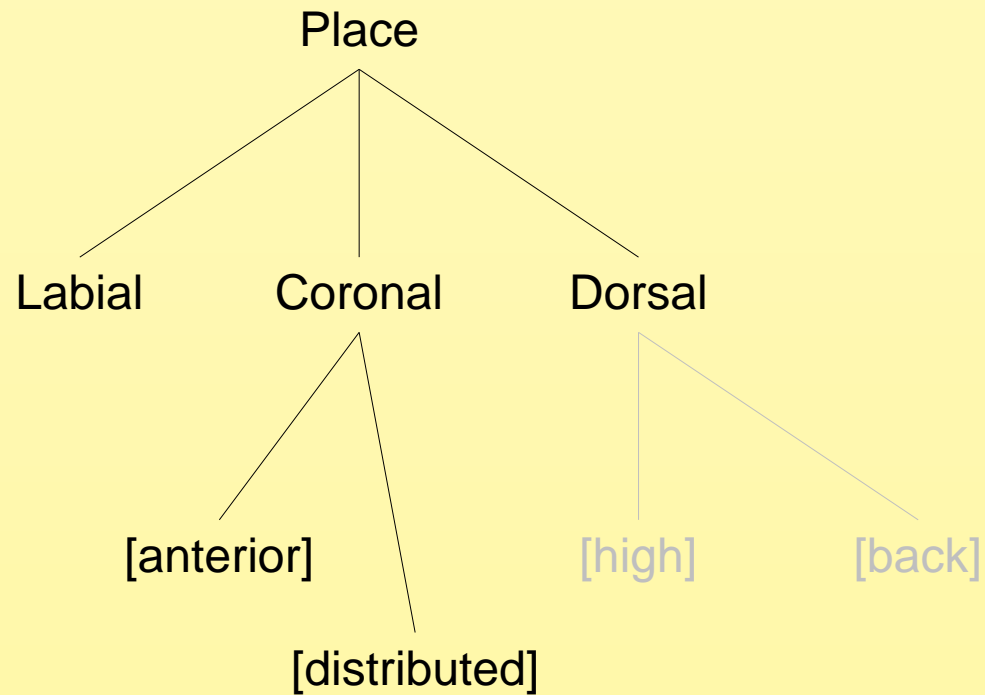
Week 1 recap: delinking



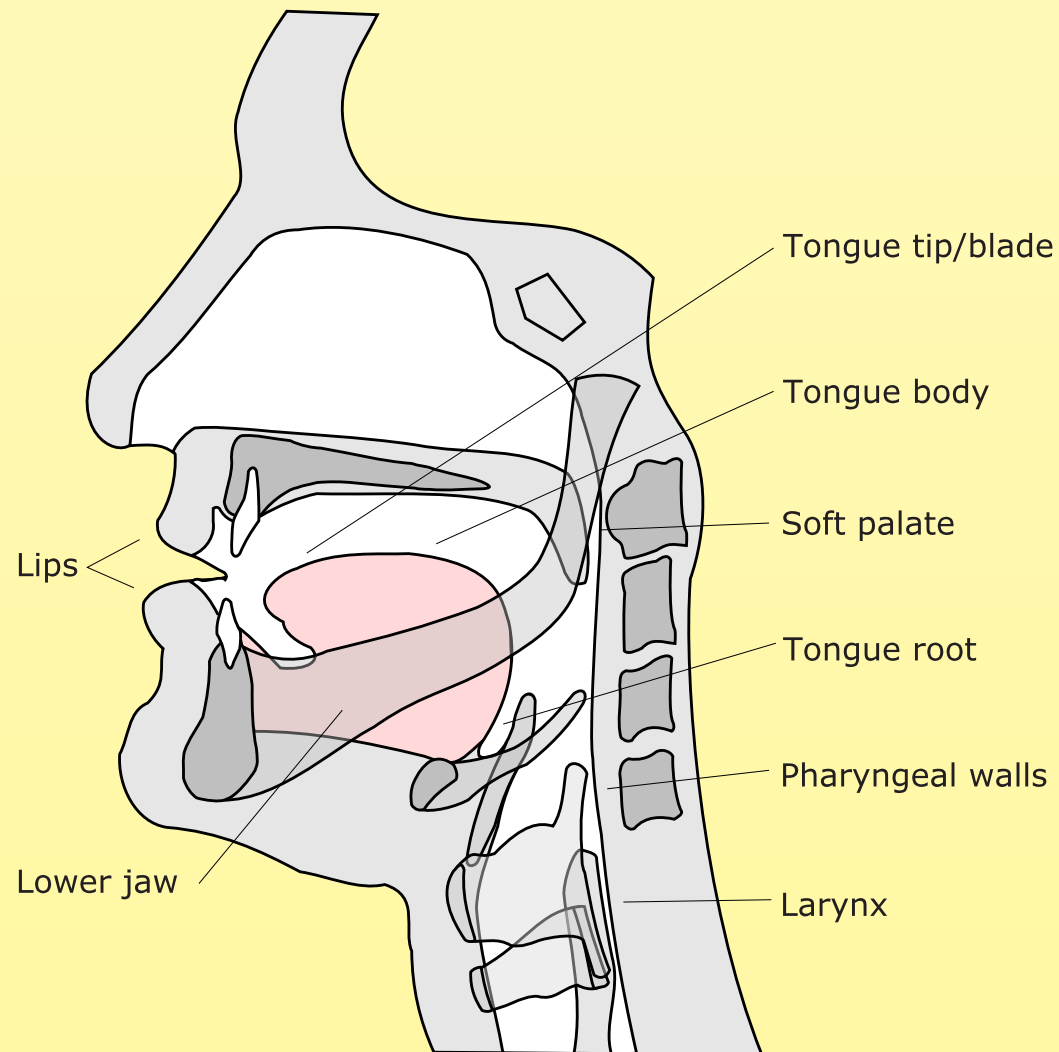
Geometry and place assimilation

- Feature-geometrical models offers a uniform characterisation of the notion **place assimilation** in terms of spreading of the **Place** class node
- In many models, **Place** dominates three place features (cf. **Clements & Hume 1995**), which correspond to three active articulators:
 1. **Labial**: involving the lips (labials, labiodentals)
 2. **Coronal**: involving the front of the tongue (dentals, alveolars, postalveolars, retroflexes)
 3. **Dorsal**: involving the tongue body (palatals, velars, uvulars)

The place node



Active articulators



Capturing place assimilation

- Hindi nasal place assimilation (data from [Gussenhoven & Jacobs 1998](#)):

/sam/ + /a:ka:r/ [sama:ka:r] ‘homophonous’

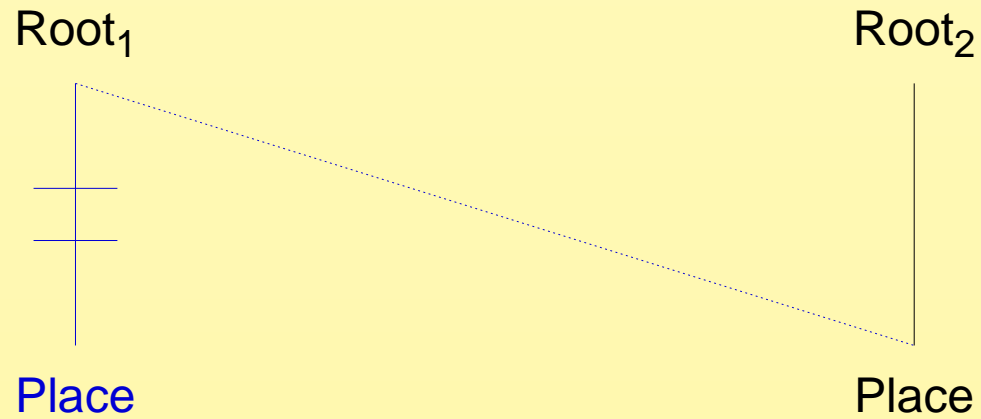
/sam/ + /ki:r̥ʈan/ [saŋki:r̥ʈan] ‘collective
devotional
singing’

/sam/ + /to:l/ [saŋto:l] ‘equilibrium’

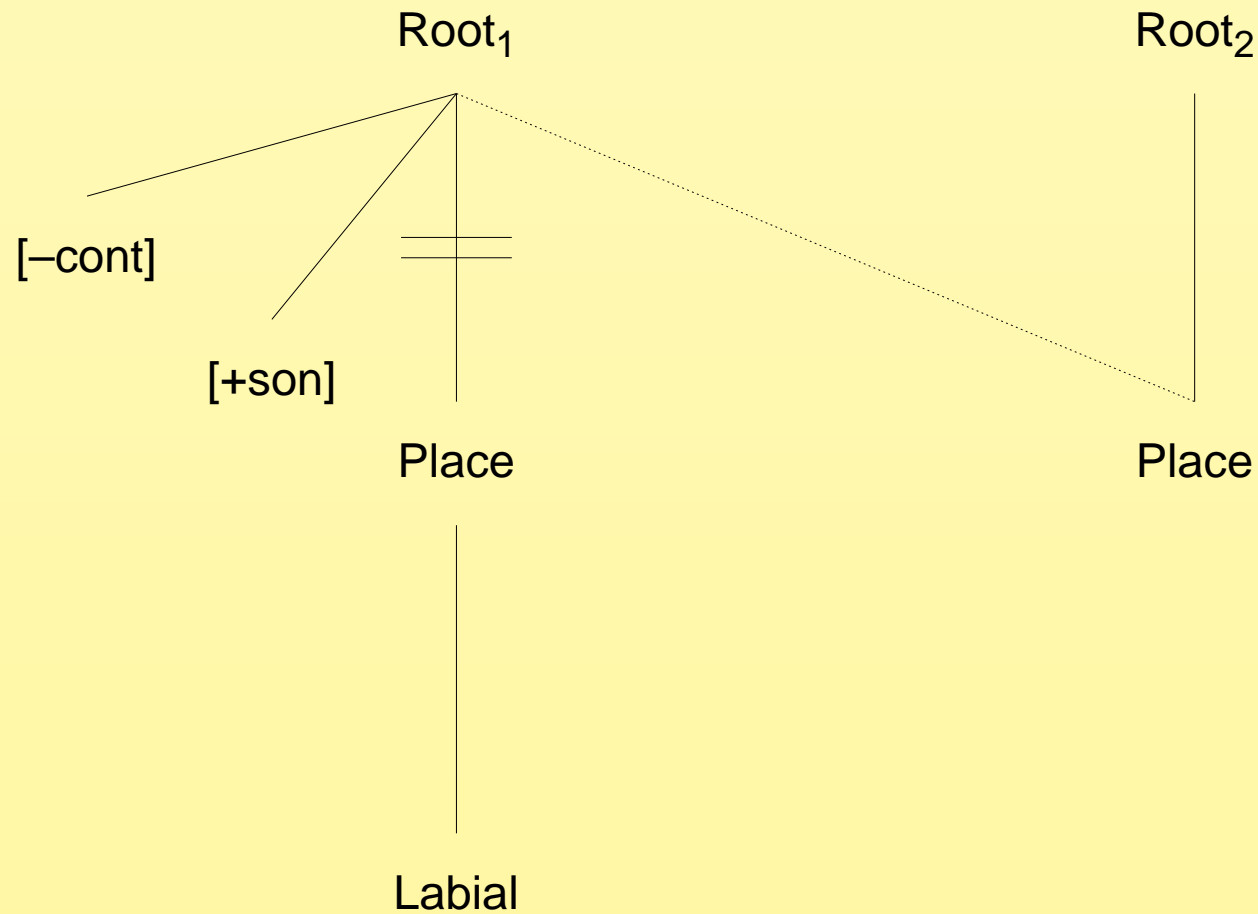
/sam/ + /calan/ [saŋcalan] ‘movement’

/sam/ + /na:d̥/ [sanna:d̥] ‘consonance’

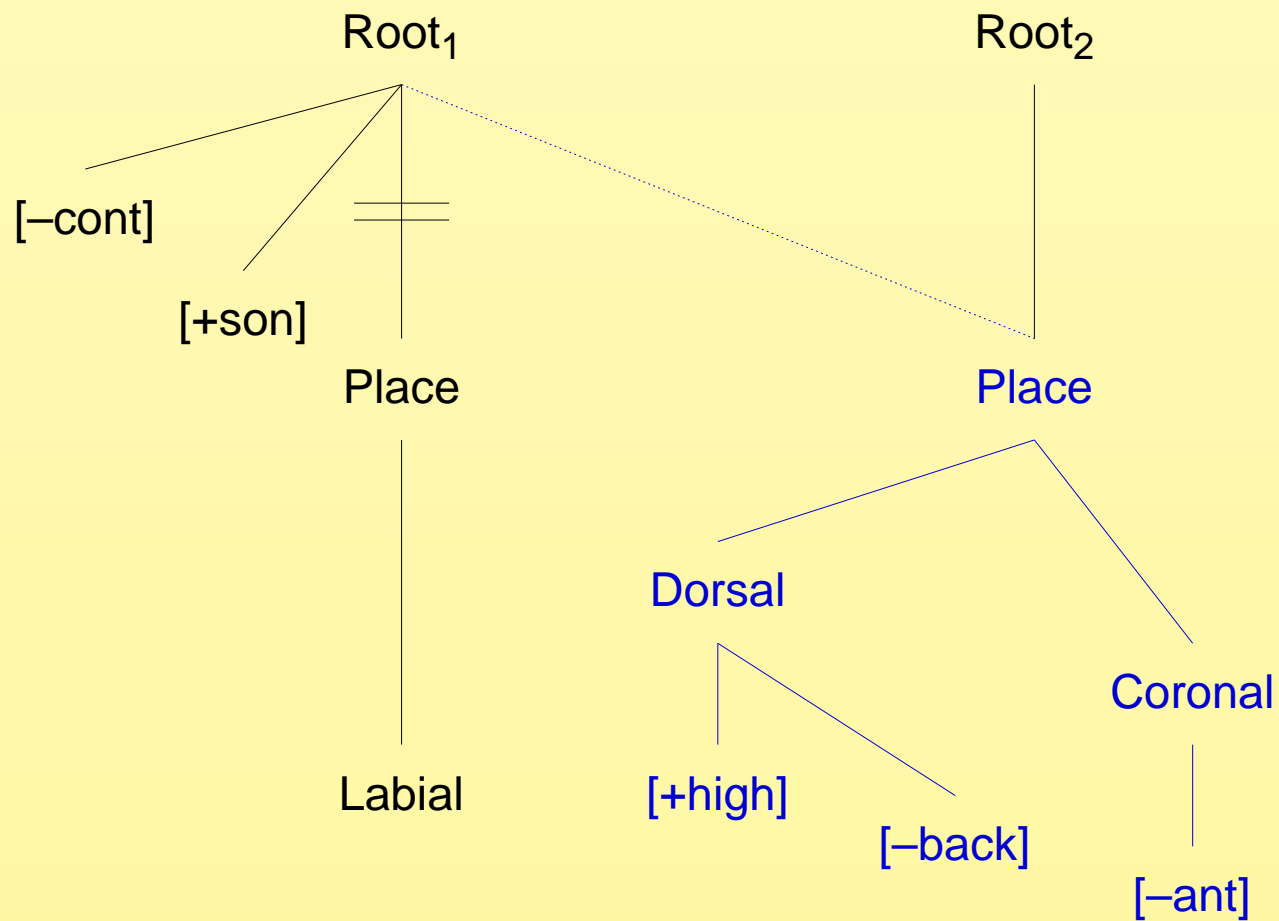
Capturing place assimilation



Capturing place assimilation



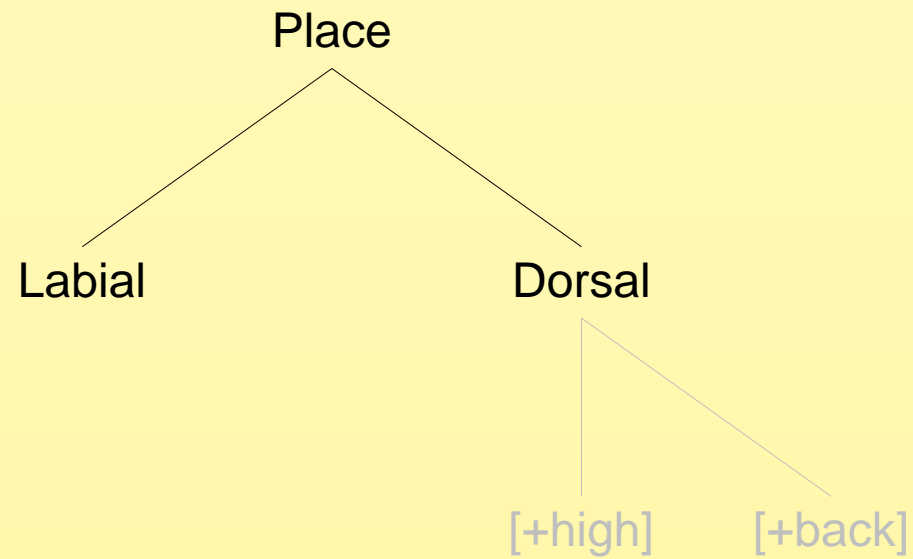
Capturing place assimilation



Some interesting cases

- Place assimilation to labiovelars ([w, k̂p, ĝb]) – labial, velar, or labiovelar?
- Place assimilation to clicks – coronal or velar?
- Place assimilation to pharyngeals/glottals?

Labiovelars



Labiovelars: [w]

- [ŋ̂m, ŋ, m] all attested (Padgett, 2001)
- English: <in prison> → [ɪmpɹɪzən]; <in water> →
?[ɪmwɔtə]

Labiovelars: Kpelle

- Nasal place assimilation in Kpelle (Liberia, app. 800,000 speakers; cf. [Welmers 1962, 1969](#); [Sagey 1986](#): tones not shown)

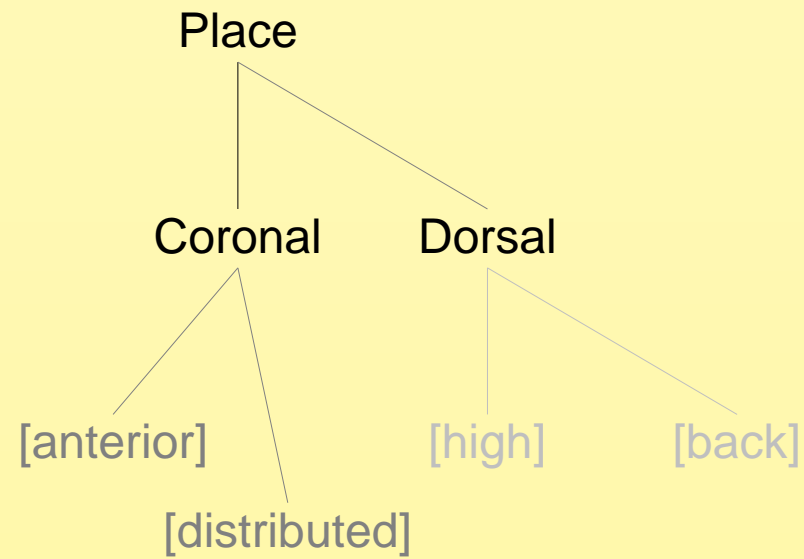
/n/ + /fela/	[mvela]	‘my wages’
/n/ + /bolu/	[mbolu]	‘my back’
/n/ + /dia/	[ndia]	‘my taboo’
/n/ + /kɔː/	[ŋgɔː]	‘my foot’
/n/ + /k̂piŋ/	[m̂ŋĝbiŋ]	‘myself’

Labiovelars: Konni

- Nasal place assimilation in Konni (Ghana, 2,500 speakers; cf. [Padgett 2001](#):)

[dém ^h bíŋ]	‘man’
[danti-má]	‘greet!’
[koŋkógiŋ]	‘mountain’
[tɪŋgbáŋ]	‘floor’
[biŋk ^h piáŋ]	‘shoulder’

Clicks



Clicks: Zulu

- Nasal place assimilation in Zulu (South Africa, app.9,000,000 speakers; cf. [Doke 1931](#) :)

[izim-paphε]	‘feathers’
[izin-ti]	‘sticks’
[iziŋ-kεzɔ]	‘spoons’
[iziŋ- ezu]	‘slices’
[iziŋ-ɸuŋɸulu]	‘bird species-pl.’
[iziŋ- aŋ a]	‘green frogs’

Pharyngeals and glottals

- Nasal place assimilation to oral consonants in Sudanese Arabic (data here and on next slide from [Kenstowicz 1994](#)):

Perfect	Imperfect	Gloss
[nabaħ]	[ya-mbaħ]	'bark'
[nafad]	[ya-ɱfid]	'save'
[nazal]	[ya-nzil]	'descend'
[nafar]	[ya-ɲʃur]	'spread'
[nagal]	[ya-ŋgul]	'transfer'

Pharyngeals and glottals

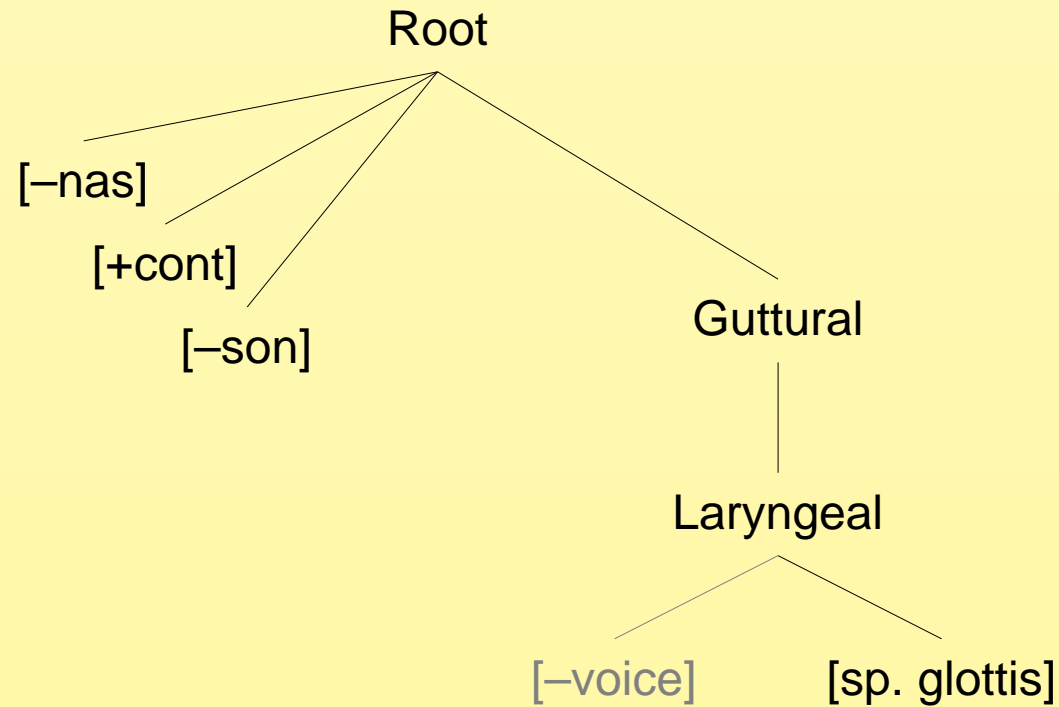
- But no assimilation to pharyngeal or glottal consonants:

Perfect	Imperfect	Gloss
[naħar]	[ya-nħar]	'slaughter'
[niʕis]	[ya-nʕas]	'fall asleep'
[nahab]	[ya-nhab]	'rob'

Pharyngeals and glottals

- Formation of the Sudanese Arabic imperfect (from the perfect) shows place assimilation of nasals to labial, labiodental, alveolar, postalveolar, and velar consonants, but not to **pharyngeals** ([ħ, ʕ]) or **glottal** [h]
- This observation is rather puzzling within a framework that relies on traditional feature bundles
- ...but it receives a natural account if we assume that pharyngeal and glottal consonants possess a **Guttural or Pharyngeal** node but **lack an oral cavity node** altogether (cf. **McCarthy 1994**; **Halle 1995**)

Geometry for [h]

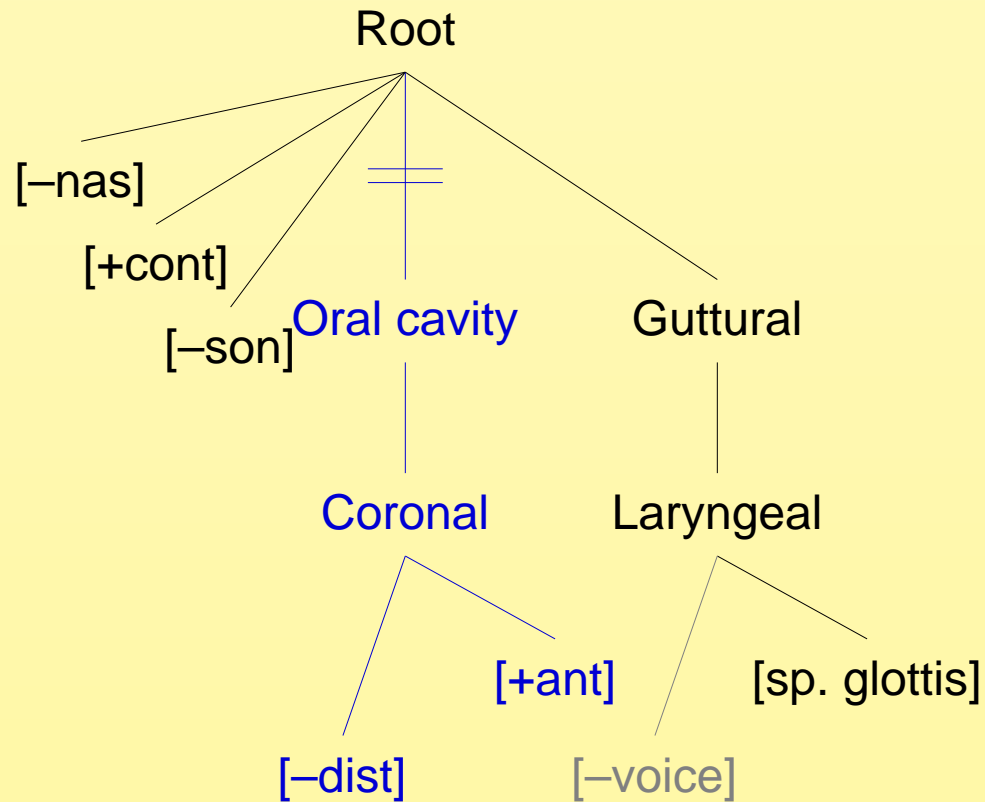


More about glottals

- In several New World dialects of Spanish, /s/ debuccalises to [h] in coda positions:

Orthography	Realisation	Gloss
<mismo>	[mihmo]	'same'
<mosca>	[mohka]	'fly'
<mes>	[meh]	'month'
<tos>	[toh]	'cough'

/s/ → [h]



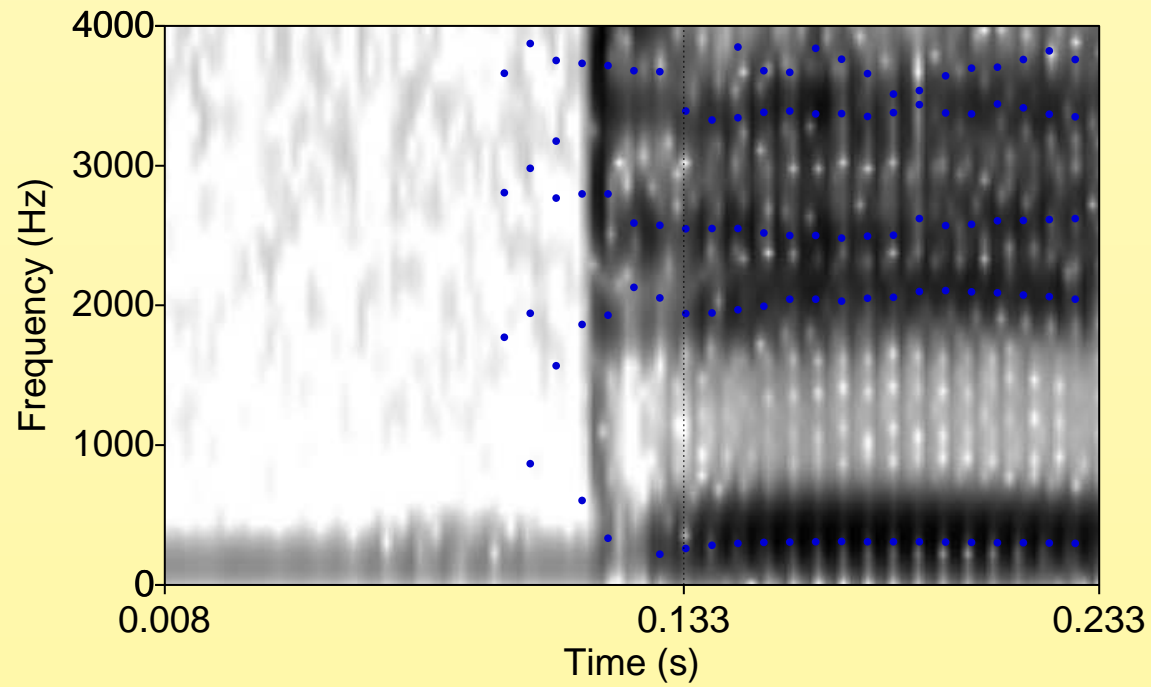
Privativity and underspecification

- In recent models of phonological representation, class nodes (and their dependents) as well as several terminal features are treated as **privative** rather than binary
- This means that one value (or set of values) is treated as **underspecified** and phonologically **inactive**: this value should not spread or trigger any processes
- In some models (**Pierrehumbert & Beckman, 1988; Harris, 1994**), phonological underspecification also translates into **phonetic underspecification**: the absence of acoustic/articulatory targets

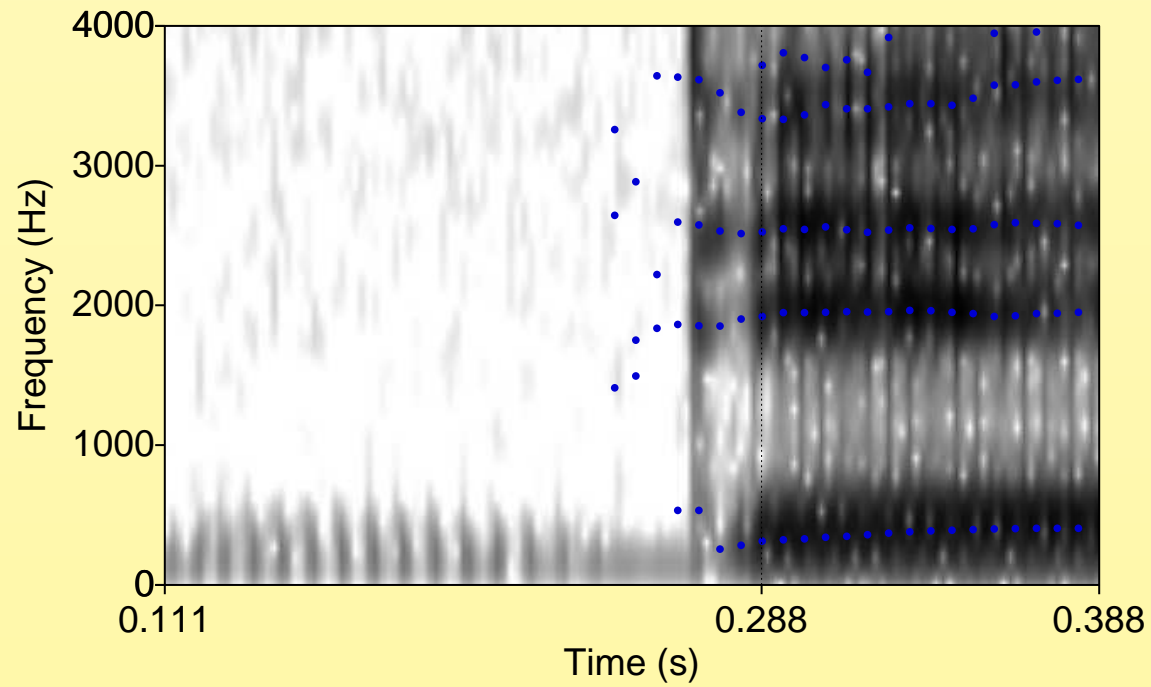
Privativity and phonetic underspecification

- In the case of [h], the absence of an **Oral cavity** in the phonological representation translates into the absence of articulatory targets for the oral tract
- consequently h is ‘transparent’ to the articulations of following (and preceding) vowels

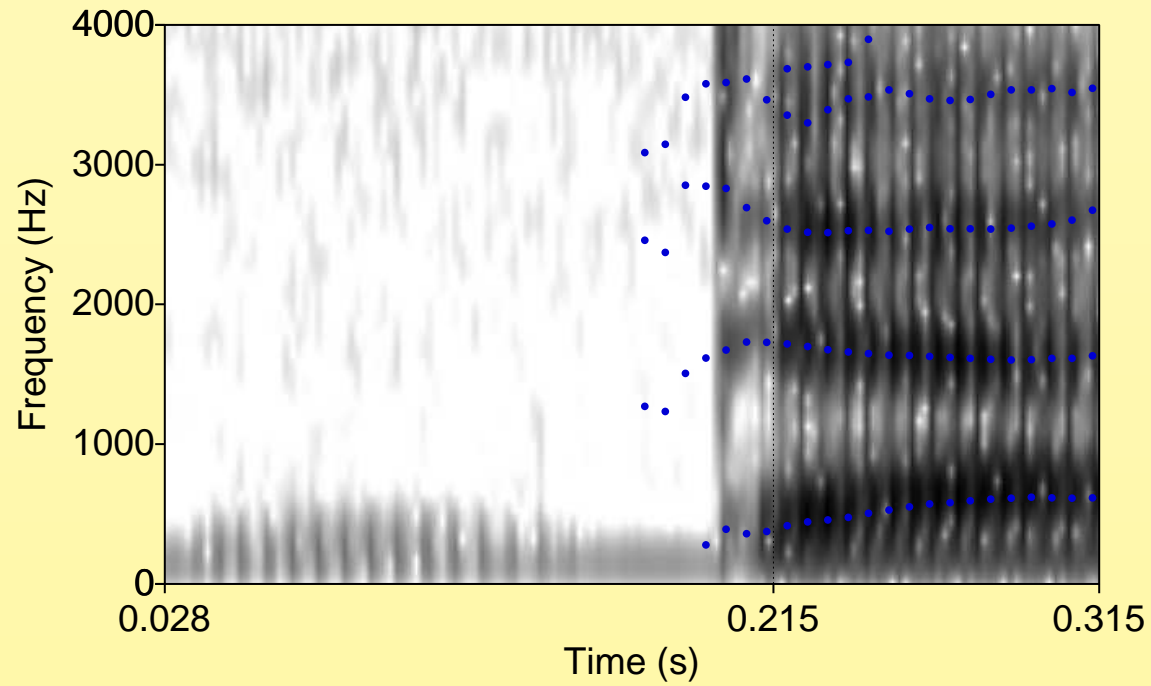
Formant transitions: [di]



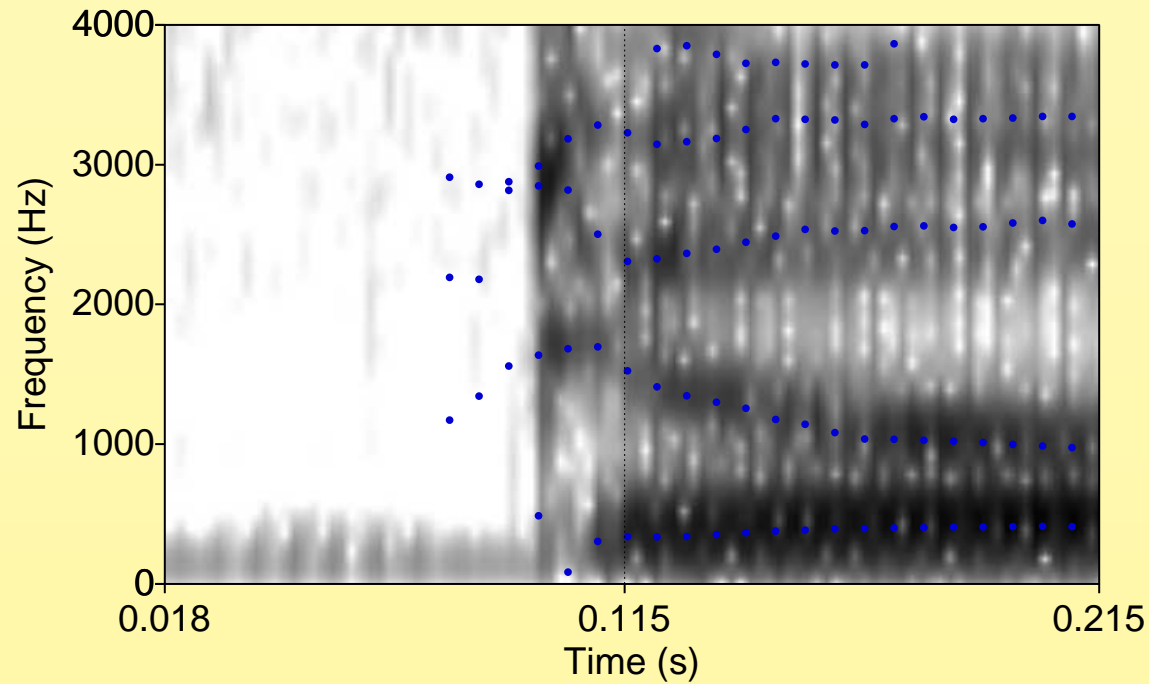
Formant transitions: [de]



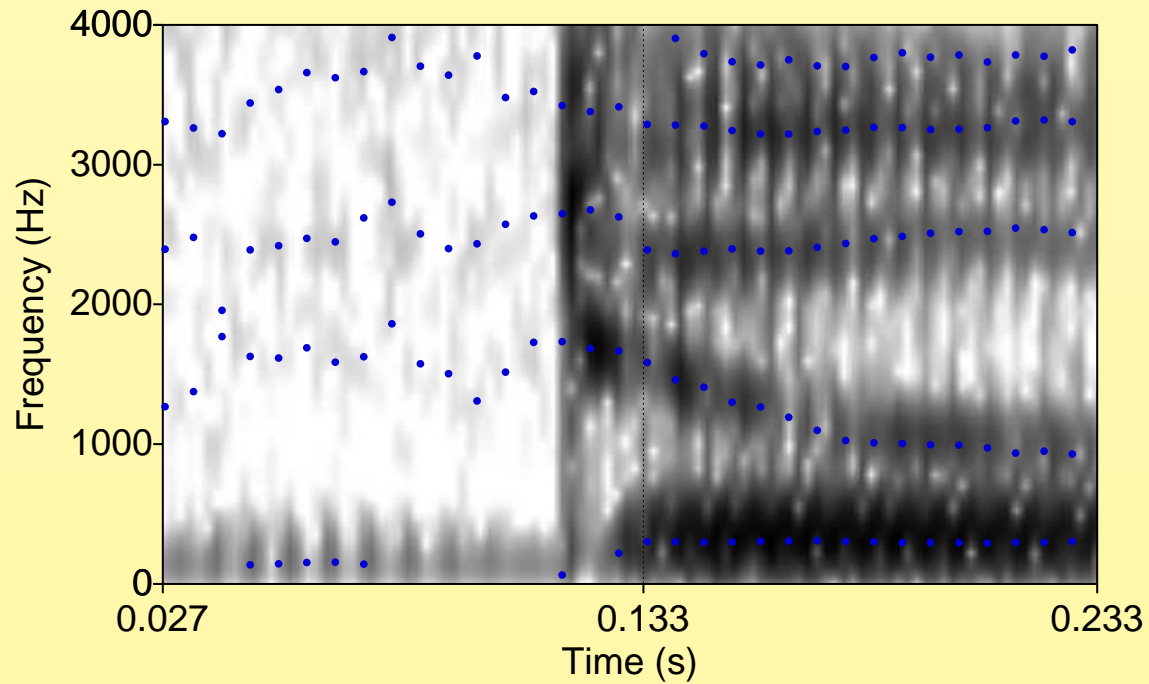
Formant transitions: [da]



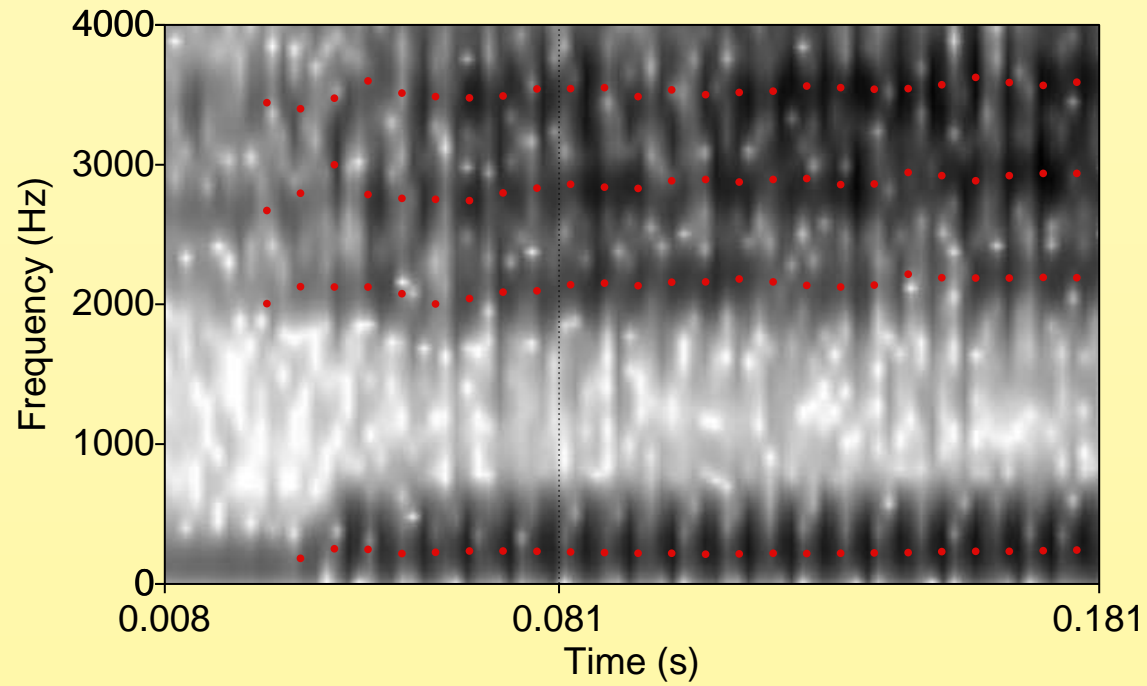
Formant transitions: [do]



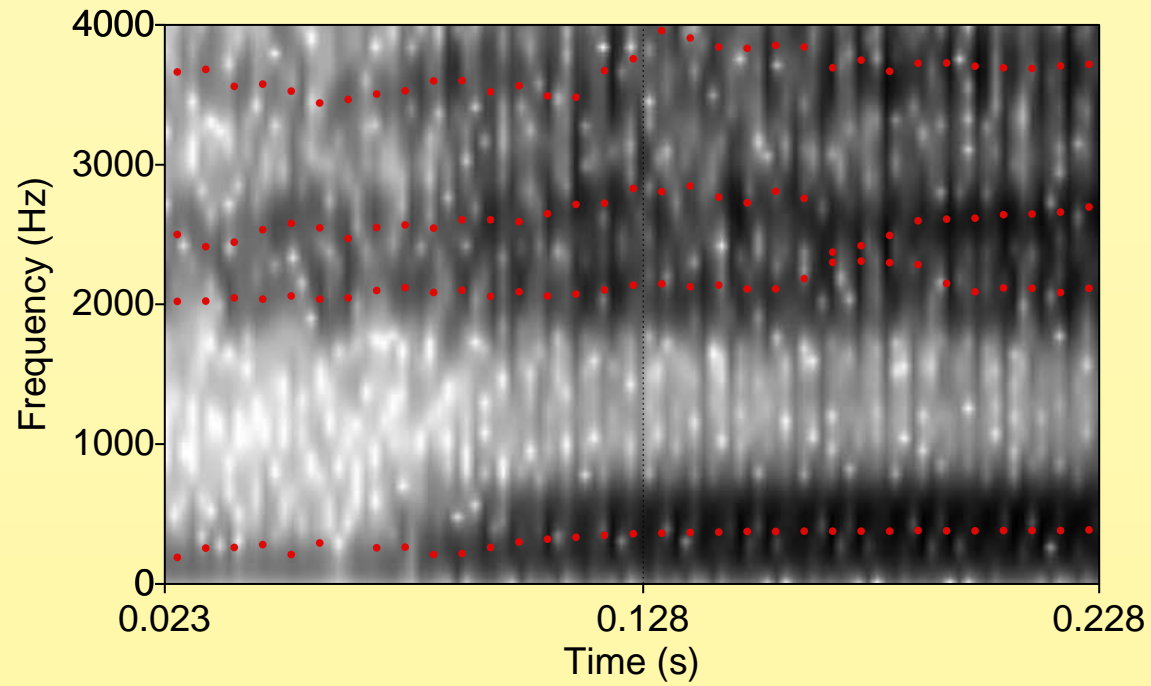
Formant transitions: [du]



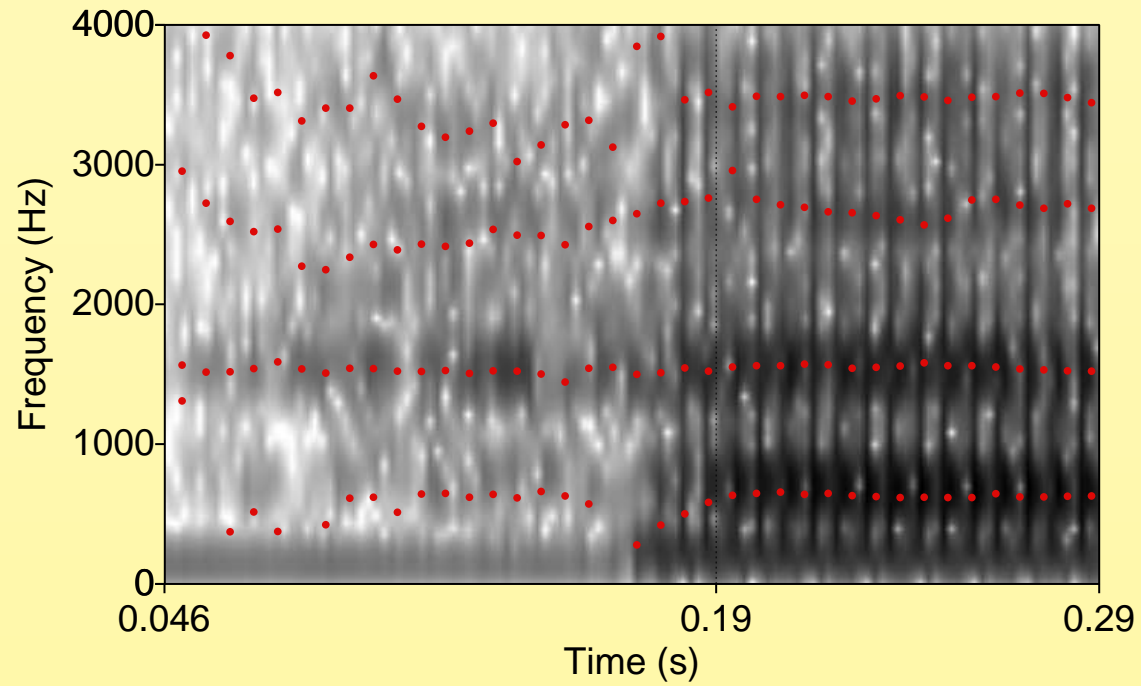
Formant transitions: [hi]



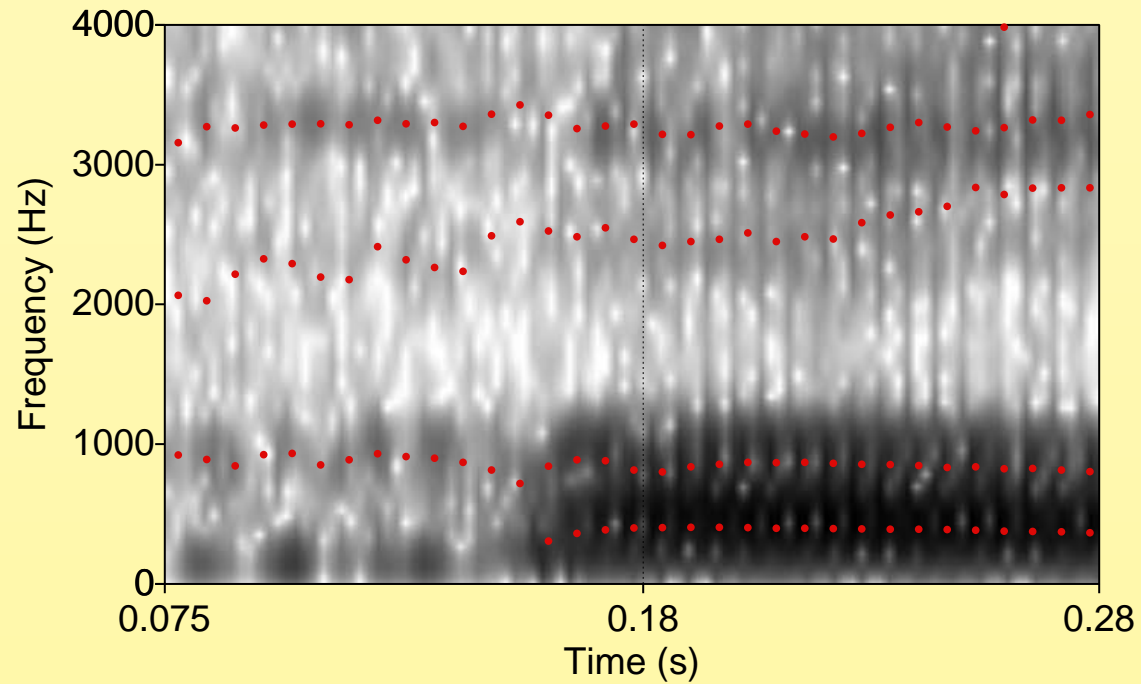
Formant transitions: [he]



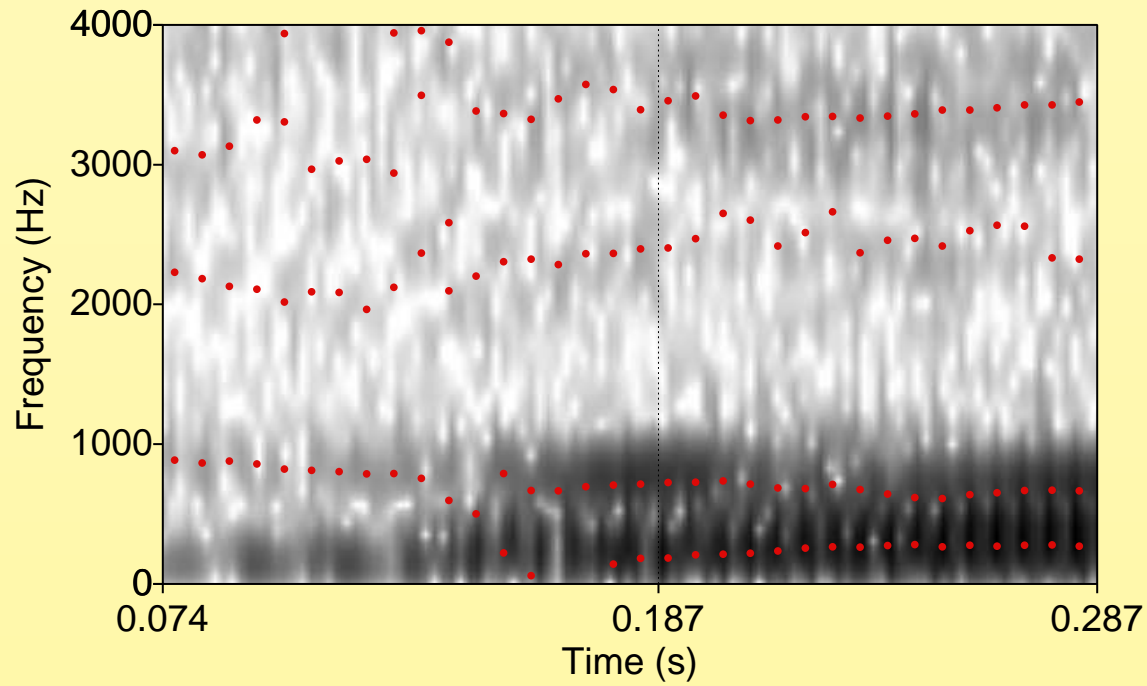
Formant transitions: [ha]



Formant transitions: [ho]



Formant transitions: [hu]



Phonological transparency

- Sanskrit coronal consonant inventory:

[+anterior]	[-anterior]	
	[-distributed]	[+distributed]
Alveolar	Retroflex	(Pre)palatal
t	ʈ	tʃ
s	ʂ	ʃ
n	ɳ	ɲ

Phonological transparency

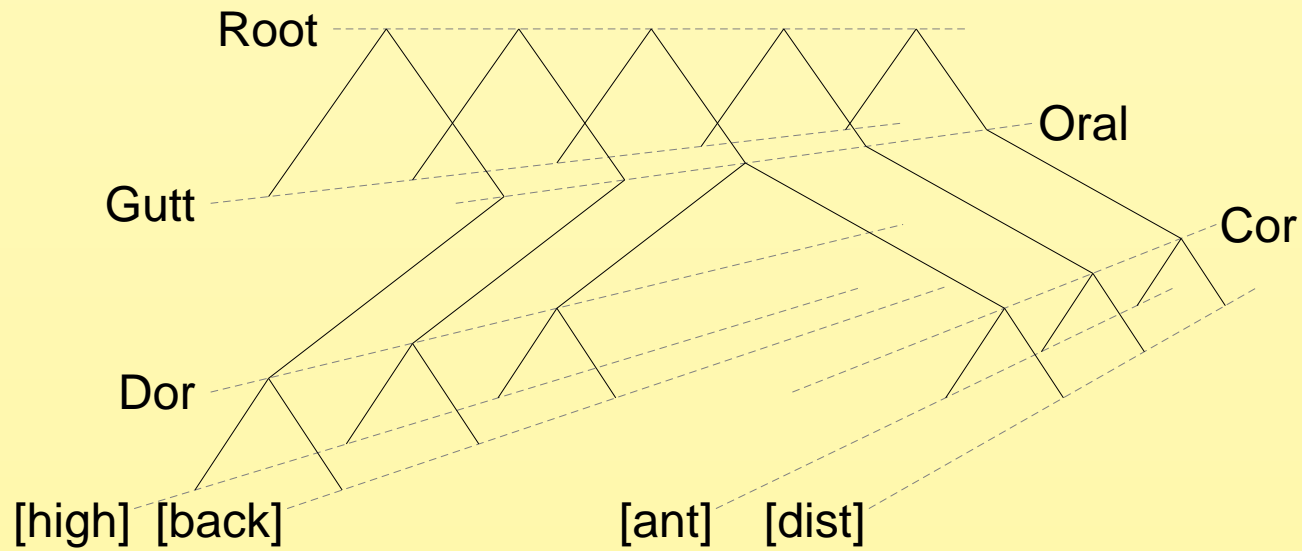
- Suffixes containing /n/ have surface [ŋ] if the base contains a retroflex sound, as long as that retroflex sound is not followed by another coronal:

[mrd-na:]	'be gracious'	[iʂ-ŋa:]	'seek'
[b ^h ug-na-]	'bend'	[vrk-ŋa-]	'cut up'
[marj-a:na-]	'wipe'	[pur-a:ŋa-]	'fill'
[kʂved-a:na-]	'hum'	[kʂ ^h -a:ŋa-]	'quake'
[krt-a-ma:na-]	'cut'	[krp-a-ma:ŋa-]	'lament'

Phonological transparency

- The key to understanding the analysis of transparency and blocking in feature spreading is to see sequences of segmental trees as **three-dimensional structures**
- ...in which every node and terminal feature occupies a line or **tier of its own**
- ...and association lines between nodes and between nodes and features form **planes**

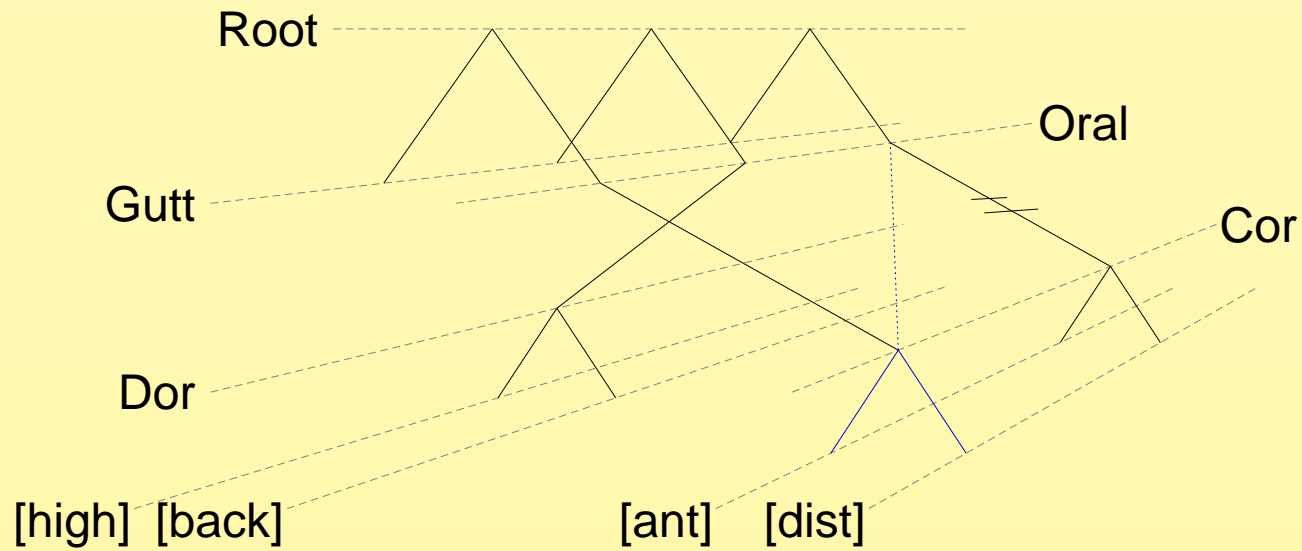
Phonological transparency



Phonological transparency

- This allows us to say that sounds that are transparent to a spreading process if they are underspecified to the feature/node that is targeted by the spreading process
- Sanskrit labials, velars, and vowels lack a Coronal node and therefore allow a preceding retroflex to spread its Coronal node to a following nasal
- The next slide depicts a retroflex spreading its Coronal node ‘through’ a velar sound, as in [krp-a-ma:ŋa-]

Phonological transparency



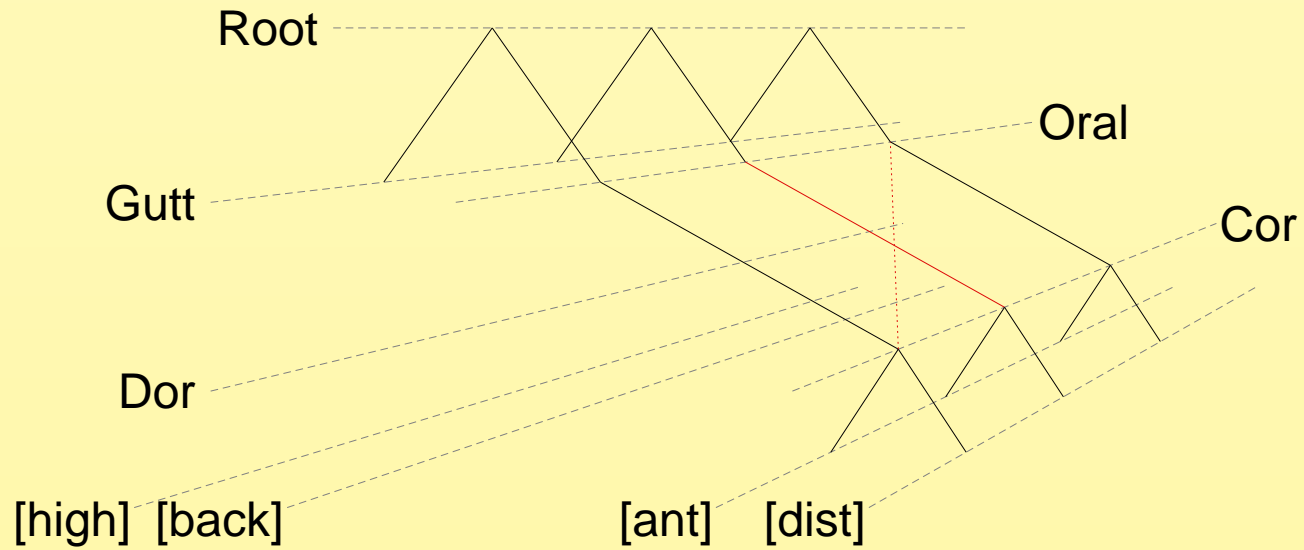
Phonological transparency

- Alveolar and prepalatal sounds on the other hand, do possess a Coronal node, and therefore spreading the Coronal node of a preceding retroflex to a following nasal would result in crossed association lines in the Oral-to-Coronal plane
- By adopting a (universal) constraint forbidding **the crossing of association lines in the same plane** we can therefore predict that non-nasal alveolars and palatals block the process of n-retroflexion

Phonological transparency

- The next slide depicts an example of the blocking of n-retroflexion by an intervening alveolar or prepalatal, as in [krt-a-ma:na-], with crossing association lines drawn in red

Phonological transparency



Accounting for assimilation: two problems for next week

1. It has been claimed that progressive assimilation of place is relatively rare (e.g., [Ohala 1990](#)), yet this can not be derived from feature-geometrical models
2. Nasal stops are more prone to regressive assimilation of place than oral stops, which are in turn more prone to regressive place assimilation than fricatives; this observation is not easily derived from feature-geometrical models

A rare process (?)

- Dutch diminutive formation (partial paradigm):

[ra:mpjə]	‘little window’
[bo:mpjə]	‘little tree’
[be:ntjə]	‘little leg’
[χɛintjə]	‘(practical) joke’
[ko:nɪŋkjə]	‘little king’
[le:nɪŋkjə]	‘little loan’

A rare process (?)

- Syllabic nasals in northern/eastern varieties of Dutch (cf. German, Frisian, English):

Standard	N/E	Gloss
[lo:pə(n)]	[lo:ʔpm]	'to walk'
[me:tə(n)]	[me:ʔtn]	'to measure'
[trɛkə(n)]	[trɛʔkŋ]	'to pull'
[le:və(n)]	[le:m]	'to live'
[ʋasə(n)]	[ʋazn]	'to wash'
[laxə(n)]	[la(ɪ)ŋ]	'to laugh'

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