

# The Representation of Distinctive Features in Writing Systems: Omission and Commission

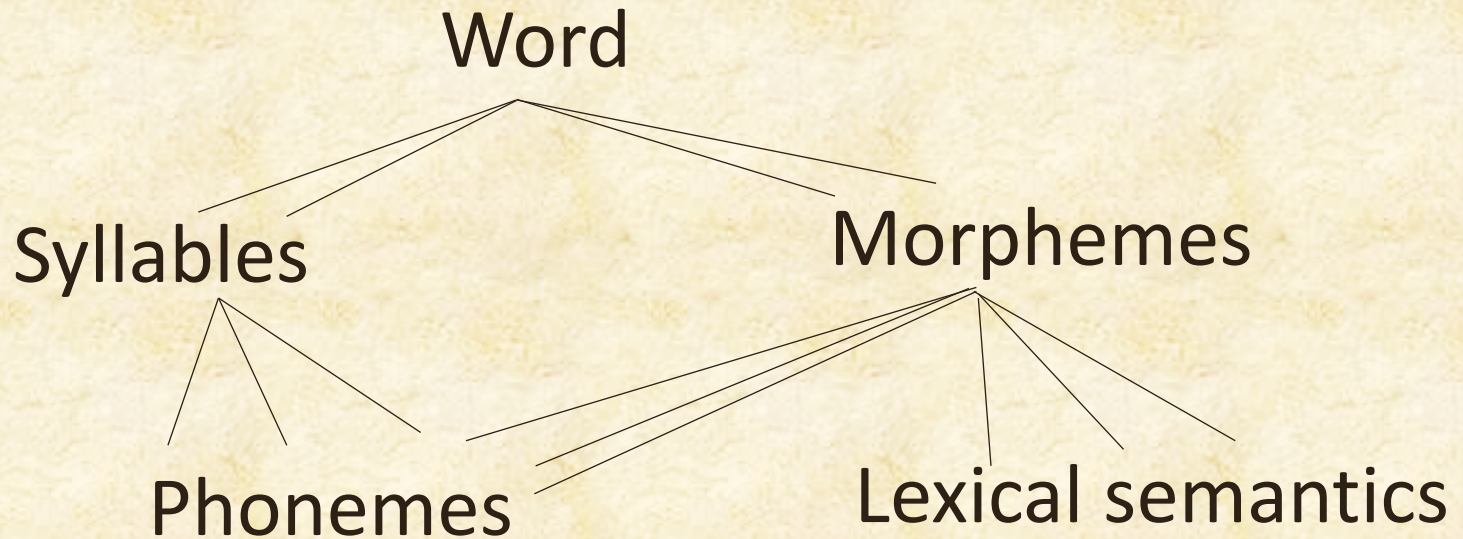
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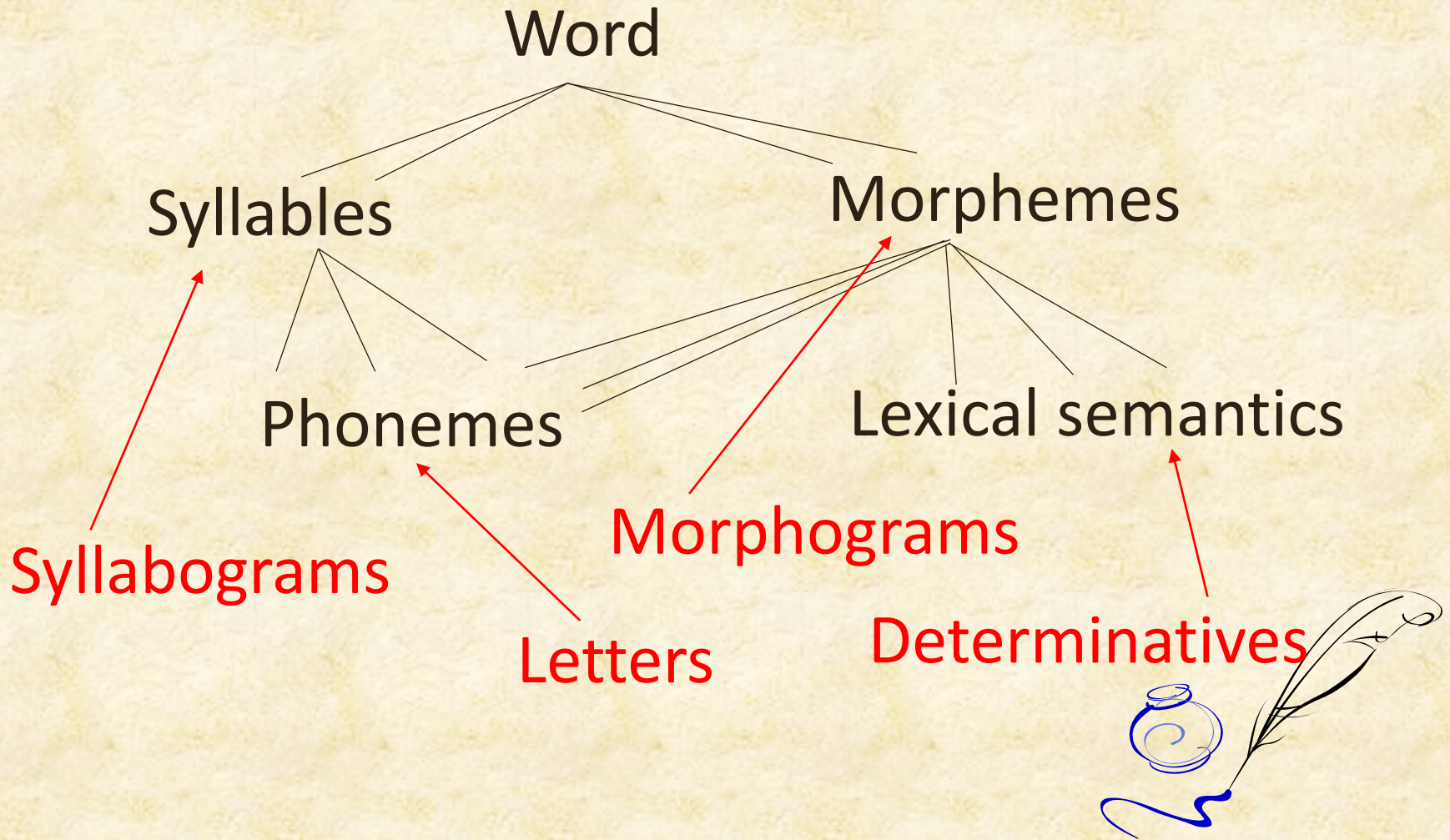
11 November 2023



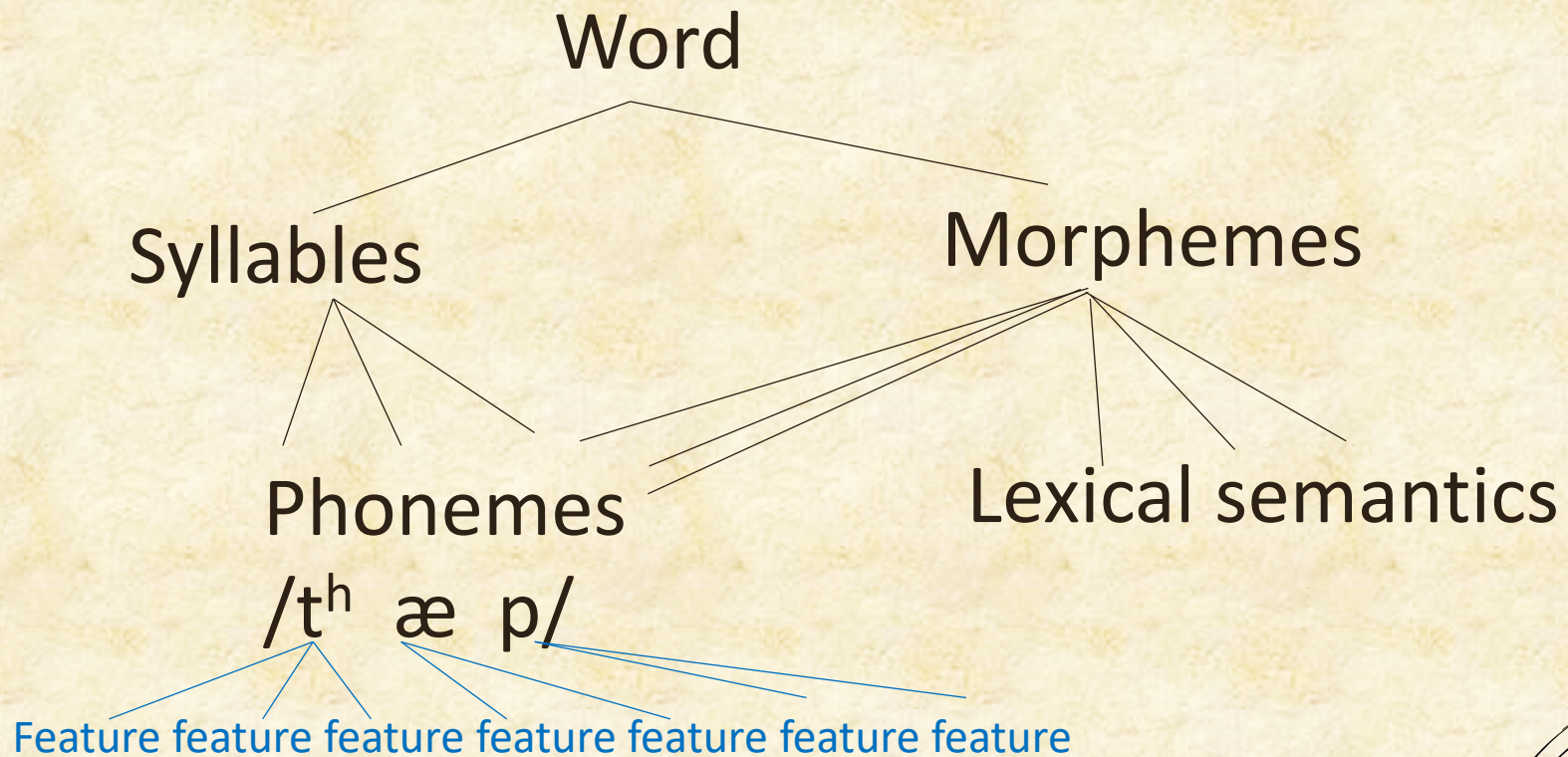
# In the study of spoken language



# Encoding into Writing



# Jakobsonian Phonology: Distinctive Features



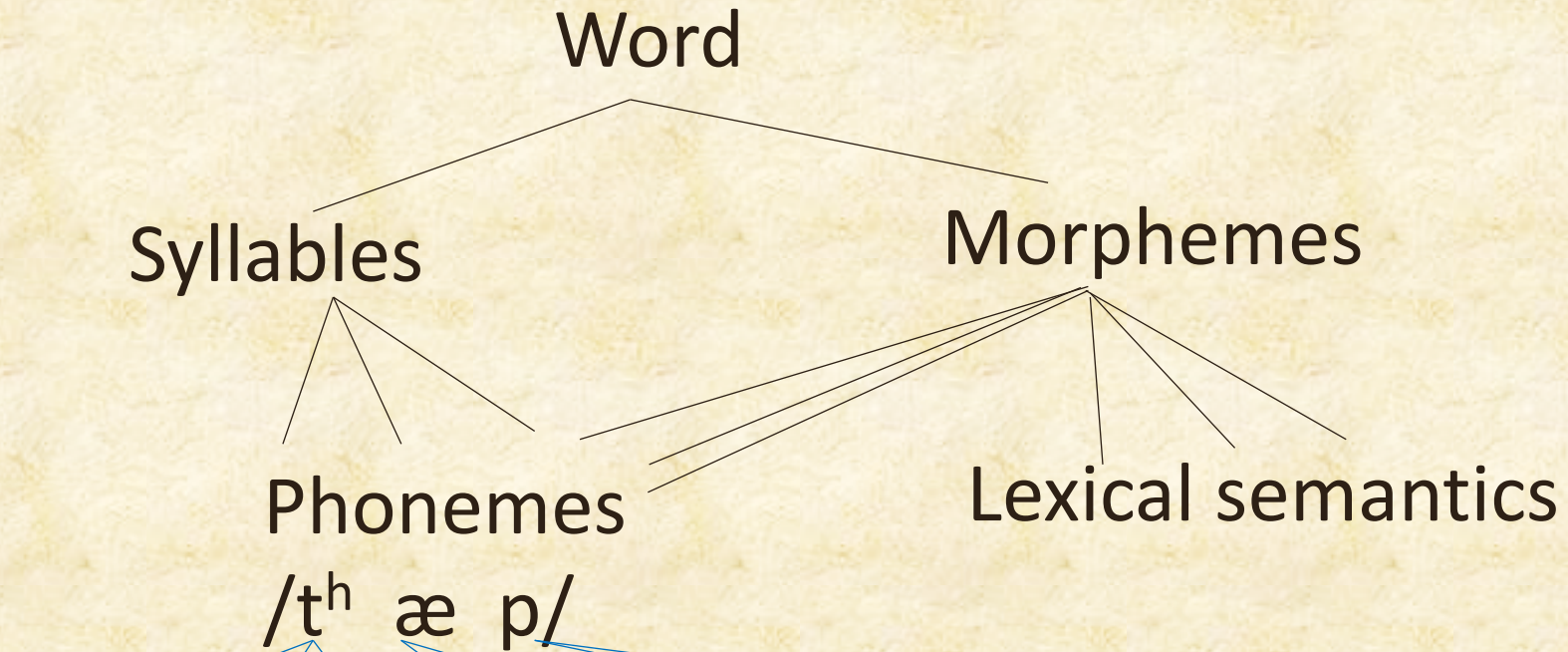
# Distinctive features

- ✍ Recognize that phonemes are (1) not equally un/related and (2) contrastively defined
- ✍ Group phonemes into natural classes  
/m/ /n/ /ŋ/ = [+nasal]
- ✍ Distinguish phonemes  
/z/ vs /s/, [ $\pm$  voice]
- ✍ Can be used to describe phonological derivations, [+voice]  $\rightarrow$  [-voice]/ \_\_\_ [-voice]
- ✍ Not intuitive
- ✍ Intuitive  $\leftrightarrow$  Written?





# Writing Distinctive Features?



Feature feature feature feature feature feature feature



Sign or part of sign?



# Encoding Relationships Between Phonemes


In history of Roman alphabet: occasionally

 Latin

{C} → {G} = /k/ → /g/ [+voice]

 Old English

{D, d} → {Ð, ð} = /d/ → /ð~θ/ [+continuant]

 But {O} vs {Q}; {E} vs {F} !

 Awareness of similarities

 But not reuse of featural sign pieces



# Hints at Relationships

## Devanagari (Hindi)

म /m/	भ /b <sup>h</sup> /	प /p/	फ /p <sup>h</sup> /	Labial?
स /s/	व /v/	ब /b/		

ट /t/	ठ /t <sup>h</sup> /	ढ /d <sup>h</sup> /	Retroflex?
ड /d/	ढ /d/		

ख /k <sup>h</sup> a/	ख /xa/	ज /dʒa/	ज़ /za/	Fricative?
फ /p <sup>h</sup> a/	फ़ /fa/	क /ka/	क़ /qa/	

## Thaana (Dhivehi)

ނ /n/	ނ /ɲ/	ދ /d/	ޅ /dʒ/	Palatalization
ރ /r/	ޅ /z/	ޅ /t/	ޅ /tʃ/	?

 Similarities between phonemes





# Does Writing Actually Encode Features?

## Only one pair

- Can't be sure whether general similarity or actually identifying a distinctive feature

## Multiple pairs

- Demonstrate encoding of systematic similarity between phonemes...
- That vary in voicing, continuance, palatalization, etc.



# Vowel Features

## Fronting of vowels (Roman/German)

<b>A</b>	<b>Ä /ε/</b>	<b>U</b>	<b>Ü /y/</b>	<b>O</b>	<b>Ö /ø/</b>
[+back]	[-back]	[+back]	[-back]	[+back]	[-back]

## Nasalization of vowels (Devanagari/Hindi)

<b>अ /a/</b>	<b>अँ /ã/</b>	<b>इ /i/</b>	<b>इँ /i/</b>	<b>उ /u/</b>	<b>उँ /u/</b>
[-nasal]	[+nasal]	[-nasal]	[+nasal]	[-nasal]	[+nasal]



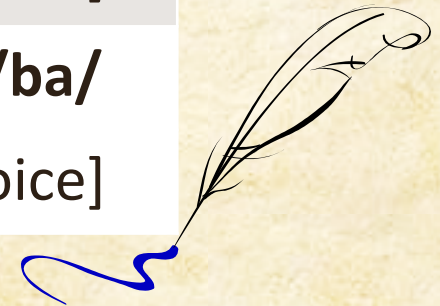
# Consonant Features

## Roman/Czech

C /ts/	Č /tʃ/	D /d/	Ď /ɟ/	N /n/	Ň /ɲ/	Palatalization
R /r/	Ř /r̝/	S /s/	Š /ʃ/	T /t/	Ť /c/	

## Voicing of obstruents (Hiragana/Japanese)

か /ka/	が /ga/	さ /sa/	ざ /za/
[-voice]	[+voice]	[-voice]	[+voice]
た /ta/	だ /da/	は /ha/	ば /ba/
[-voice]	[+voice]	[-voice]	[+voice]



# Features in Han'gŭl

	Non-Stop/ Affricate	Plain Stop/ Affricate	Aspirated	Glottalized/ Tense
Labial	ㅁ /m/	ㅂ /p/	ㅃ /p <sup>h</sup> /	ㅍ /p*/
Alveolar	ㄴ /n/	ㄷ /t/	ㄸ /t <sup>h</sup> /	ㅌ /t*/
Velar		ㄱ /k/	ㅋ /k <sup>h</sup> /	ㆁ /k*/
Glottal	ㅇ /ŋ/		ㅎ /h/	
Sibilant (“Dental”)	ㅅ /s/	ㅆ /tʃ/	ㅈ /tʃ <sup>h</sup> /	ㅊ /s*/ ㅌ /tʃ*/
Liquid	ㄹ /r~l/			

Includes place, aspiration, glottalization, sibilance, “strengthening” (Col 1 – Col 2)



# Features in Carrier Syllabics

	Plain C	Aspirated C	Glottalized C
<b>Coronal Stops</b>	ᑕ /ta/ (da)	ᑕᑦ /t <sup>h</sup> a/	ᑕᑦ' /t'a/
<b>Velar Stops</b>	ᑭ /ka/ (ga)	ᑭᑦ /k <sup>h</sup> a/	ᑭᑦ' /k'a/
<b>Coronal Affricates</b>	ᑭᑦ /tʃa/ (dʒa)	ᑭᑦᑦ /tʃ <sup>h</sup> a/	ᑭᑦᑦ' /tʃ'a/

Plain Lateral	Aspirated Lateral	Lateral Affricate	Aspirated Lateral Affricate	Glottalized Lateral Affricate
ᑕ la	ᑕᑦ lha	ᑕᑦᑦ dla	ᑕᑦᑦᑦ tla	ᑕᑦᑦᑦ' tl'a

(Poser 2010)



# Writing **Sometimes** Shows Features

- ✍ Especially Han'gŭl and Carrier Syllabics, but also others
- ✍ Is there another category of writing system (featural)? (Sampson 2015)
- ✍ Probably not, but that doesn't mean it's irrelevant
- ✍ Writing systems operate at many levels.
- ✍ Some featural awareness predates featural theory



# Observed Features (By Commission)

 Consonantal/Vocalic: “alphasyllabaries”

 Vowels

➤ [-back] Roman/German

➤ [+nasal] Devanagari

 Major Place: Han’gǔl

 Aspiration: Han’gǔl, Carrier

 Glottalization: Han’gǔl, Carrier

 Voicing: kana

 “Minor Place”, e.g. Palatalization: Roman/Czech, Thaana(?)

 Laterality: Carrier

 Sibilance: Han’gǔl



# Another Way to Show Awareness of Features

## By omission

✍ Akkadian (c.2300 BCE – 75 CE) (Marcus 1978)

✍ CV, **CVC** and **VC** syllabograms


✍ Coronals & velars: voiceless, voiced, glottal

/tu/	/du/	/tu/	/ut/ ~ /ud/ ~ /ut/
/ki/	/qi/	/qi/	/ik/ ~ /ig/ ~ /ig/


# Further (Systematic) Omissions

 Younger Futhark/Old Norse: voicing (Dresher 2016)


ᚰ	ᚱ	ᚲ
/p/ ~ /b/	/t/ ~ /d/	/k/ ~ /g/
ᚷ	ᚸ	*
/φ/	/θ/	/h/

 Cypriot syllabary/Greek: voicing and aspiration (Chadwick 1987)

ϕ	ϑ	ϕ̣
/pa/ ~ /p <sup>h</sup> a/ ~ /ba/	/ta/ ~ /t <sup>h</sup> a/ ~ /da/	/ka/ ~ /k <sup>h</sup> a/ ~ /ga/



# Partial Omission 1

 Linear B: Aspiration and (most) Voicing  
(Chadwick 1987)

‡	⊕	ϣ
/pa/ ~ /p <sup>h</sup> / ~ /b?/	/ka/ ~ /k <sup>h</sup> a/ ~ /ga/	/k <sup>w</sup> a/ ~ /k <sup>hw</sup> a/ ~ /g <sup>w</sup> a/
Ϝ	ϝ	
/ta/ ~ /t <sup>h</sup> a/	/da/	

“Special status of Coronals”  
(Paradis & Prunet 1991)



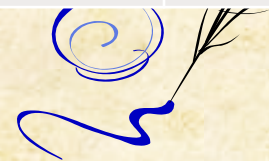


# Partial Omission 2

 Cherokee: Some Aspiration (Montgomery-Anderson 2008)

I /k <sup>w</sup> a/~ /k <sup>hw</sup> a/	ᵛ /k <sup>w</sup> e/~ /k <sup>hw</sup> e/	ᵛ /k <sup>w</sup> i/~ /k <sup>hw</sup> i/	ᵛ /k <sup>w</sup> o/~ /k <sup>hw</sup> o/	ᵛ /k <sup>w</sup> u/~ /k <sup>hw</sup> u/	ᵛ /k <sup>w</sup> ǎ/~ /k <sup>hw</sup> ǎ/
ᵛ /ka/ (ga)*	ᵛ /ke/~ /k <sup>h</sup> e/	ᵛ /ki/~ /k <sup>h</sup> i/	ᵛ /ko/~ /k <sup>h</sup> o/	ᵛ /ku/~ /k <sup>h</sup> u/	ᵛ /kǎ/~ /k <sup>h</sup> ǎ/
ᵛ /k <sup>h</sup> a/					
ᵛ /ta/ (da)	ᵛ /te/	ᵛ /ti/	ᵛ /to/~ /t <sup>h</sup> o/	ᵛ /tu/~ /t <sup>h</sup> u/	ᵛ /tǎ/~ /t <sup>h</sup> ǎ/
ᵛ /t <sup>h</sup> a/ (ta)	ᵛ /t <sup>h</sup> e/	ᵛ /t <sup>h</sup> i/			

\* /ka/ is one of the most common Cherokee syllables  
(Montgomery-Anderson 2008: 95)








# What We Don't See

☾	**	◇	✿	⊖
/p/~t~/k/	/b~/d~/g/	/f~/s~/x/	/v~/z~/ɣ/	/m~/n~/ŋ/
-sonorant -continuant -voice	-sonorant -continuant +voice	-sonorant +continuant -voice	-sonorant +continuant +voice	+sonorant +nasal

- ❖ Assuming we are not in an assimilation context! (cf. Hiragana *ん* and *っ*; Thaana *ﻧ* and *ﻧﻮ*)
- ❖ Is that *tap* or *pat* or *cat*...?




# What We Also Don't See

				
/p/ /t/ /k/	/b/ /d/ /g/	/f/ /s/ /x/	/v/ /z/ /ɣ/	/m/ /n/ /ŋ/
-sonorant -continuant -voice	-sonorant -continuant +voice	-sonorant +continuant -voice	-sonorant +continuant +voice	+sonorant +nasal

- Major place is not denoted by diacritics or sign modification



# Not All Features are Alike

 (Major) Place cannot be omitted...

 ...Or be diacritical/modification

 Voice/aspiration/glottal **are** often omitted

 Voice, aspiration, glottalization can bundle together



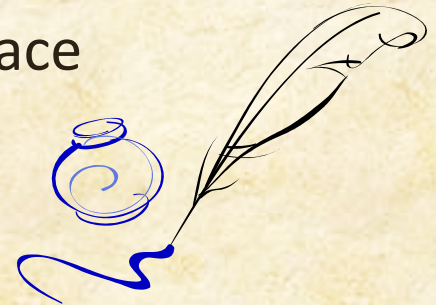
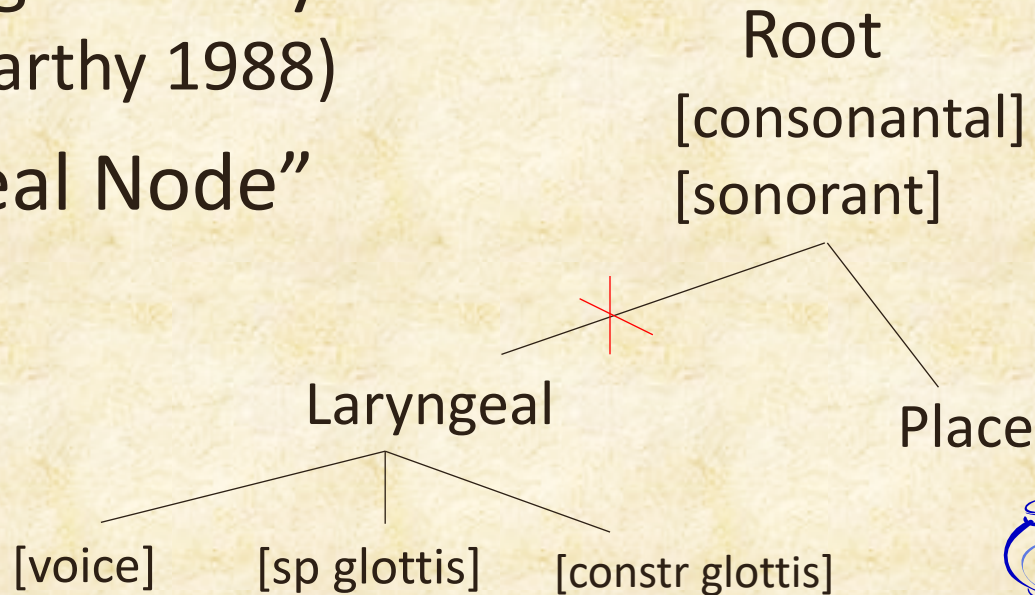
# Laryngeal Class in Phonology

✍ Voicing, aspiration, glottalization tend to behave as a class in speech

➤ E.g. final neutralization

✍ Feature geometry  
(e.g. McCarthy 1988)

✍ “Laryngeal Node”





# Phonological Classes

- ✍ Place and Laryngeal also behave differently in spoken language
- ✍ “Why Place and Voice are Different” (Lombardi 2001)



# Why are Place and Laryngeal Different?

One answer:

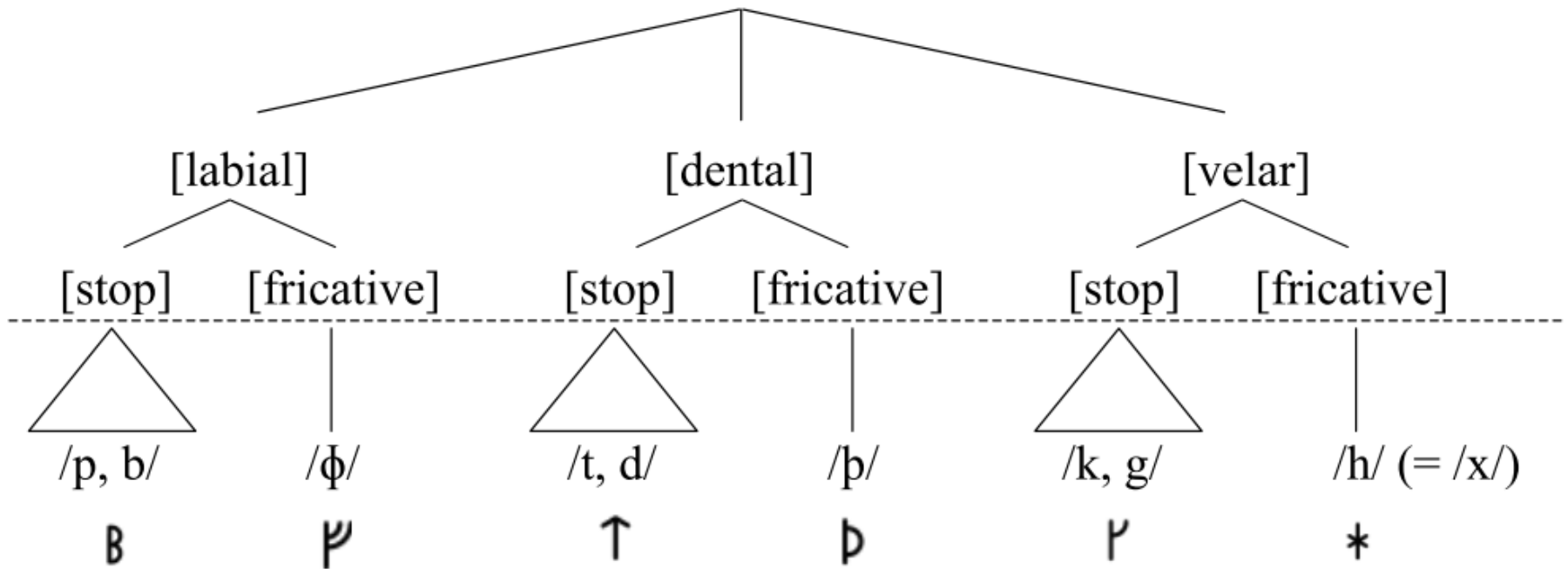
✍ Laryngeal features can be absent; Place features cannot be (there are no truly placeless Cs) (Lombardi 2001)

✍ But why?

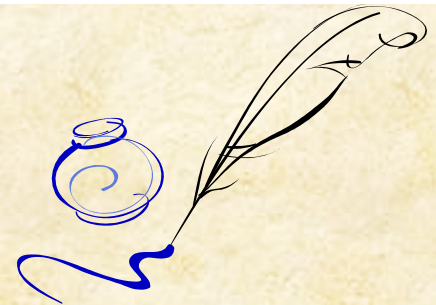
✍ Place features are more essential to defining the contrasts of a language's inventory of phonemes



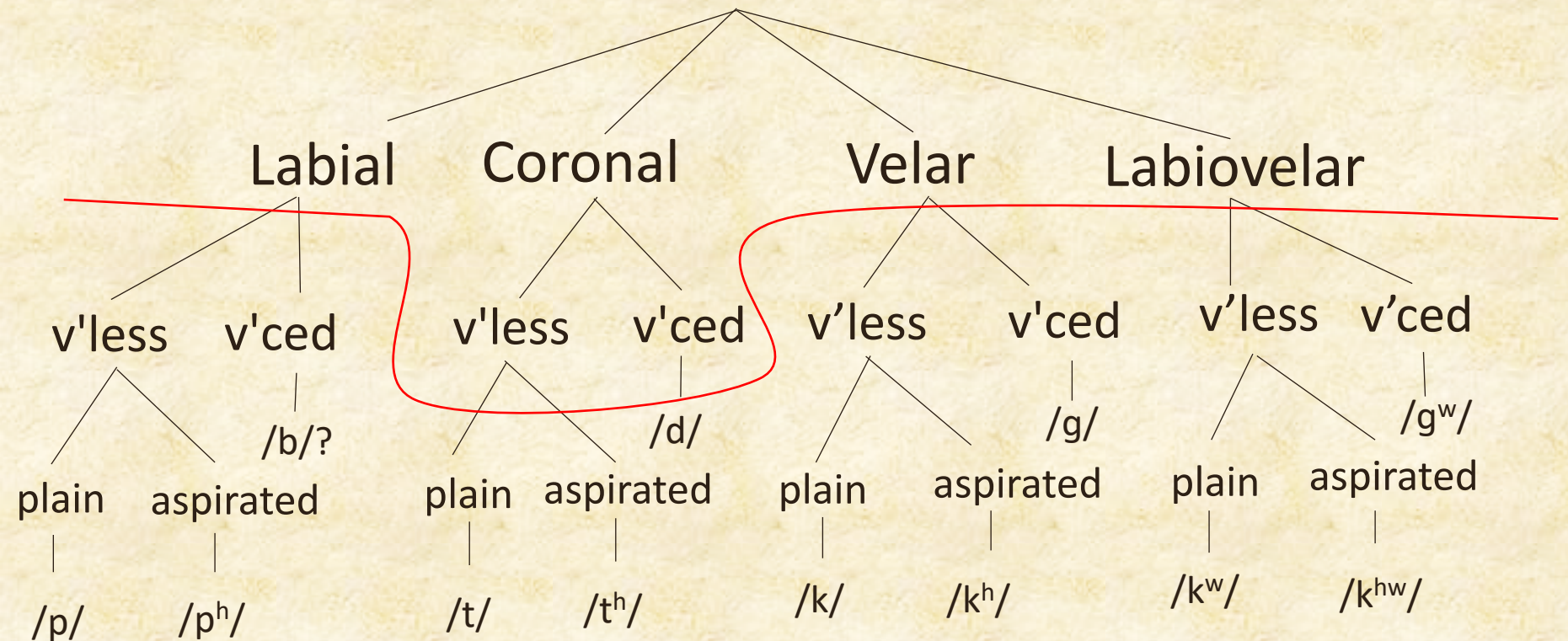
# Contrastive Hierarchy: Younger Fupark



(From Dresher 2016: 6)

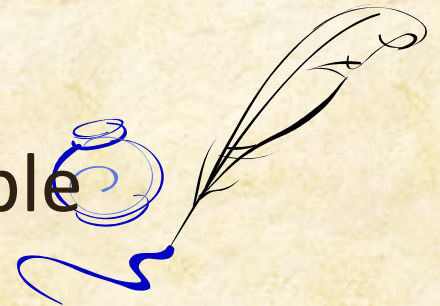


# Another Contrastive Hierarchy: Linear B



# Contrastive hierarchy

- ✍ Allow some features to be more basic than others (Dresher 2009)
- ✍ Writing systems also treat some features as more basic than others
- ✍ Place is basic; laryngeal peripheral
- ✍ Hierarchies must be constrained—how?
- ✍ Not all imaginable writing systems are possible
- ✍ Not all feature hierarchies are possible





# Conclusions

## Writings systems

- ✍ Were millennia ahead of phonological theory
- ✍ Confirm that features belong to different classes that
  - ✓ behave differently
  - ✓ are hierarchical
- ✍ Can usefully guide phonological inquiry



*Thank you!*



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# How Place and Laryngeal are Different

  $C_1VC_2.C_3V$

  $C_2 C_3$  often required to share features

 When assimilation fails

 laryngeal features default to “plain” (voiceless, unaspirated, unglottalized)

 Place may default to “glottal” (/h/ or /ʔ/) but may also trigger epenthesis or deletion:

  $C_1V.C_3V$  or  $C_1V.C_2V.C_3V$

