Metrical Markedness
in the Pomoan Languages

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Linguistics Colloquium
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18 September 2015
Outline of talk

• stress markedness
  – what theories seem to predict about change
• Pomoan stress
  – reconstruction of proto stress
  – synchronic patterns
• changes that have occurred
  – generalizations and analysis
• adjacent languages
  – possible contact influences on reanalysis
• implications for learning
  – responses to ambiguous generalizations
  – factors and biases in reanalysis
Metrical typology

• cross-linguistic stress patterns
  – what is common, rare, and unattested
  – next question is what the theory should say about this

• some conceivable patterns are surely impossible
  – default stress on the fourth syllable, or pre-antepenult
  – primary stress on middle syllable of any word
  – stresses on 2nd, 3rd, 5th, 8th syllables

• a theory that predicts any such system is dubious
  – so there are some patterns that should be excluded
  – are they formally impossible to represent?
What is markedness?

• some theories exclude certain more plausible patterns
  – left-edge extrametricality
  – quantity-insensitive iamb
• even if permitted, they are still typologically uncommon
  – what does this imply about their formal status?
  – are they possible to represent, but somehow more complex?
  – is there a learning bias against them?
• diachronic change as a window into acquisition
  – overall trajectory reflects what is learned each generation
  – if uncommon patterns persist,
  – can they really be “marked” to the learner?
Pomoan family

- Seven languages in northern California
  - Time depth compared to Germanic
- Presents useful testing ground
  - Proto-stress pattern is already somewhat unusual
    - Stress on second syllable regardless of weight
    - Though does not move beyond the root
- Variety of changes in descendents
  - Maintained (nearly) intact in several
  - More significantly modified in others
  - Radically changed in one of them
- Language transmission
  - What does this tell us about learning stress patterns?
Pomoan in the world
Language families of California

INDIGENOUS LANGUAGE FAMILIES

Algonkian
- Wiyot
- Yurok

Athabaskan
- Bear River–Mattole
- Chetco–Tohola
- Eel River
- Hupa
- Kato

Hokan
- Chimariko
- Esselen
- Karuk
- Palaihnihan languages
- Pomoan languages
- Salinan
- Shastan languages
- Washo
- Yana
- Yuman languages

Penutian
- Klamath–Modoc
- Maidu languages
- Miwokan languages
- Ono–Lone languages
- Wintuan languages
- Yokutsan languages

Uto-Aztecan
- Numic languages
- Takic languages
- Tübatulabal

Yuki–Wappo
- Coast Yukian
- Northern Yukian
- Wappo
Pomoan languages

California

Northern

Central

Southern

Northeastern

Eastern

Southeastern

Kashaya
Internal relationships

Proto-Pomo

Western Branch

Southern Group

Kashaya  Southern  Central  Northern  Northeastern  Eastern  Southeastern
Proto-Pomo

• reconstructed by McLendon (1973)
  – I’ll mainly accept her assumptions
  – but will make certain minor changes unrelated to stress
• proto-language probably located around territory of E and SE languages
  – Clear Lake region
• phased movements
Reconstructing proto-stress

• actual location of stress in modern languages
  – N, E, SE, C are relatively consistent
  – NE also lends some support
  – K and especially S are now quite different

• aphesis of initial unstressed syllables
  – complete loss with initial /ʔ, h/
  – pervasive in all languages except K, S, sometimes NE
  – even K, S have it to a more limited degree

• vowel deletion in initial unstressed syllables
  – retention of non-laryngeal onset consonant
  – common in C, pervasive in SE

• syncope in post-tonic syllables
  – precedes change in K, S stress patterns
# Stress on second syllable

<table>
<thead>
<tr>
<th></th>
<th>‘duck’</th>
<th>‘bear’</th>
<th>‘woman’</th>
<th>‘angelica’</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>q’ajál</td>
<td>buṭaqá</td>
<td>?ima:ta’</td>
<td>baʔtʃ’owá</td>
</tr>
<tr>
<td>S</td>
<td>k’á:jan</td>
<td>bu:ṭáka</td>
<td></td>
<td>baʔtʃ’ówha</td>
</tr>
<tr>
<td>C</td>
<td>k’já:n</td>
<td>p’ṭáka</td>
<td>má:ta</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>k’aján</td>
<td>bitá:</td>
<td>má:ta</td>
<td>batʃ’ówa</td>
</tr>
<tr>
<td>NE</td>
<td>k’ajá:-</td>
<td>bóro-</td>
<td>himá:ta</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>q’a:já:n</td>
<td>bu:ráqal</td>
<td>má:- <em>archaic</em></td>
<td>ba:k’ó:</td>
</tr>
<tr>
<td>SE</td>
<td>k’ján</td>
<td>bṭéqal</td>
<td></td>
<td>?k’ó-b</td>
</tr>
<tr>
<td>PP</td>
<td>*q’a:ján</td>
<td>*bu:ṭáqa(l)</td>
<td>*ʔimá:ta</td>
<td>*baʔk’ówa</td>
</tr>
</tbody>
</table>

*excluding K, S, sometimes NE: the languages show stress on second syllable*
### Loss of first syllable

<table>
<thead>
<tr>
<th>Region</th>
<th>‘eye, face’</th>
<th>‘fat’</th>
<th>‘fire’</th>
<th>‘water’</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>huʔúj</td>
<td>ṭihpʰúj</td>
<td>ṭoho’</td>
<td>ṭahqʰa’</td>
</tr>
<tr>
<td>S</td>
<td>húʔuj</td>
<td>ṭihpʰuj</td>
<td>ṭóh:o</td>
<td>ṭáhkʰa</td>
</tr>
<tr>
<td>C</td>
<td>ṭúj</td>
<td>pʰúj</td>
<td>hó</td>
<td>kʰá</td>
</tr>
<tr>
<td>N</td>
<td>ṭúj</td>
<td>pʰúj</td>
<td>hó</td>
<td>kʰá</td>
</tr>
<tr>
<td>NE</td>
<td>ṭúj</td>
<td>fí:</td>
<td>ṭóho</td>
<td>kʰá</td>
</tr>
<tr>
<td>E</td>
<td>ṭúj</td>
<td>pʰúj</td>
<td>xó</td>
<td>xá</td>
</tr>
<tr>
<td>SE</td>
<td>ṭúj</td>
<td>fúj</td>
<td>χó</td>
<td>χá</td>
</tr>
<tr>
<td>PP</td>
<td>*huʔúj</td>
<td>*ʔihpʰúj</td>
<td>*ʔohχó</td>
<td>*ʔahqʰá</td>
</tr>
</tbody>
</table>

*initial syllable must have been unstressed – therefore 2nd syllable was stressed*
Pomoan instrumental prefixes

- around 20 prefixes of the shape CV
  - express manner, cause, or object of action
    *bi- ‘by collecting, by encircling, by sewing’
    *pʰu- ‘by blowing, by floating in the air’
    *qa- ‘between two forces, by biting’
- overwhelmingly common in verbs
  - K dictionary contains 4220 verb stems
  - of these, 3750 (or 89%) are prefixed
  - also in nouns derived from such verbs
- here the root is the second syllable of the word
  - stress aligned with left edge of root: \( \sigma\sigma\sigma \)
  - location can be expressed by reference to morphology
## Prefixed verbs

<table>
<thead>
<tr>
<th></th>
<th>‘bite’</th>
<th>‘carry’</th>
<th>‘fly, float’</th>
<th>‘smell, stink’</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>qane-</td>
<td>bīʔdi-</td>
<td>pʰudi-</td>
<td>mihʃe-</td>
</tr>
<tr>
<td>S</td>
<td>kaːne-</td>
<td>bīʔdi-</td>
<td>pʰde-</td>
<td>mehʃe-</td>
</tr>
<tr>
<td>C</td>
<td>kaːné-</td>
<td></td>
<td>pʰide-</td>
<td>mʃé-</td>
</tr>
<tr>
<td>N</td>
<td>kané-</td>
<td></td>
<td>pʰide-</td>
<td>mʃé-</td>
</tr>
<tr>
<td>NE</td>
<td>kána-</td>
<td></td>
<td>fuʔdú-</td>
<td>méhʃe-</td>
</tr>
<tr>
<td>E</td>
<td>qaːné-</td>
<td>biːdí[:l]</td>
<td>pʰuːdí-</td>
<td>miːʃé-</td>
</tr>
<tr>
<td>SE</td>
<td>qné-</td>
<td>bdéy-</td>
<td>-di-</td>
<td>mxé-</td>
</tr>
<tr>
<td>PP</td>
<td>*qaː-ːné-</td>
<td>*biʔ-ʔdí-</td>
<td>*pʰuː-dí-</td>
<td>*miːhʃé-</td>
</tr>
</tbody>
</table>

*like disyllabic roots, these take stress on second syllable of the word*
Post-tonic syncope: Southern

• deletion of a vowel in the third syllable
  – unexpected if that syllable is stressed
  – complements evidence that stress was not initial
    • if not initial and not on third, then on second
    • assuming left-orientation, which seems secure

• still-productive syncope in S
  /ʔe-hkʰe-matʃ-in/ → ʔehkʰémtʃin ‘move in!’
  /ʔa-htʃa-mok-a/ → ʔahtʃámko ‘flew into’
  /ʔa-hpʰ-alametʃ-in/ → ʔappʰalmétʃ’in ‘carry down!’

• can’t depend on modern penultimate stress
  – often deletes underlying penult
    ʔah tʃa mó ko
  – so must derive from earlier stress system
Post-tonic syncope: Kashaya

• similar pattern, but lexicalized, in K kinship
  
  mi-ṭ’ikí ‘your younger sibling’ < *mi-ṭ’íki ?
  
  mi-tʃú-ṭ’ki ‘your sister’s son’ < *mi-tʃú-ṭ’iki ?

• presumed origin
  
  – 2nd syllable stress, deletion of (nonfinal) post-tonic vowel
    
    *mi-ṭ’íki > mi-ṭ’iki
    
    *mi-tʃú-ṭ’iki > mi-tʃu-ṭ’ki

• might also explain an ablaut pattern in K kinship
  
  – stem with long vowel if monosyllabic prefix, otherwise short
    
    mi-de·ki´ ‘your older sister’ < *mi-dé:ki ?
    
    dikí-n’ ‘my older sister’
    
    miyá:-diki ‘his older sister’
  
  – i.e. long vowel if stem starts at second syllable
### Monosyllabic stems

<table>
<thead>
<tr>
<th></th>
<th>‘come’</th>
<th>‘hear’</th>
<th>‘leave’</th>
<th>‘claw’</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>waːd-ú</td>
<td>Ꚅotʃ-</td>
<td>q’aː-´</td>
<td>heːtʃ´</td>
</tr>
<tr>
<td>S</td>
<td>hwáːd-u</td>
<td>Ꚅoːtʃi-</td>
<td></td>
<td>héːtʃ’</td>
</tr>
<tr>
<td>C</td>
<td>wáːd-</td>
<td>Ꚅoːtf-</td>
<td></td>
<td>?éːtʃ’</td>
</tr>
<tr>
<td>N</td>
<td>wáːd-</td>
<td>Ꚅoː:-</td>
<td>k’á-</td>
<td>héts’</td>
</tr>
<tr>
<td>NE</td>
<td></td>
<td></td>
<td></td>
<td>héːtʃ’a</td>
</tr>
<tr>
<td>E</td>
<td>wád[uːki]</td>
<td>Ꚅόːkʰ</td>
<td>q’á-</td>
<td></td>
</tr>
<tr>
<td>SE</td>
<td></td>
<td>(xkó-)</td>
<td>q’á-</td>
<td></td>
</tr>
<tr>
<td>PP</td>
<td>*(h)wáːd-</td>
<td>*(fjóːk-</td>
<td>*(q’á(:)-</td>
<td>*(héːts’</td>
</tr>
</tbody>
</table>

*here proto-stress is on the first syllable – it can’t be assigned past the root*
Proto-Pomo stress

• appears to be regular
  – though best evidence comes from nouns
• stress on 2nd syllable of word
  – whether prefixed or not
  – {σσ́ , σ{σ́
• but stays on an initial monosyllabic root
  – {σ́}σ
  – no reconstructed prefixed roots with two syllables
    • but in the relevant daughter languages,
      • stress remains on first root syllable regardless of word length
• initial stress in vocative of kinship terms?
  – limited evidence; will set this aside
Analysis of PP stress

• prefixed stems could refer to morphology
  – stress aligned with left edge of root: $\sigma\{\sigma\sigma$
  – possible source of “2nd syllable” generalization
  – but once established, it requires a phonological analysis

• no reference to vowel length or closed syllables
  – requires left-edge extrametricality: $<\sigma>(\sigma\sigma$
  – or quantity-insensitive iamb: $(\sigma\sigma)\sigma$
  – either approach is uncommon and marked

• monosyllabic stems are also aligned to the root
  – there just happens to be no prefix: $\{\sigma\}...$
    • remains on this root syllable despite addition of suffixes
  – revocation of extrametricality, or nonbranching foot
Modern stress: Eastern Pomo

- mainly the same as proto language
- second syllable of most words
  - including all prefixed roots
  - alternating secondary stress
- first syllable
  - monosyllabic roots (some by aphesion)
  - certain disyllabic stems have to be lexically marked
Eastern Pomo second syllable

- instrumental prefixes are now CV:
  - many of these derive from *CV{hCV or *CV{ʔCV
  du:{qá}t’ki: ‘pull off, pluck’
  ma:{t’ó}qaja ‘roasted (the meat)’
  ka:{lú}:ski: ‘sit on something sticky’
  bi:{dí}m ‘hold in hand without moving’
  - no reference to V length in placement on 2nd syllable
- similar in most words with no apparent prefix
  bu:ráqal ‘bear’
  di:lé ‘forehead’
  qa:lí ‘sky’
Eastern Pomo initial stress

- unpredictably on first syllable for certain words
  - káju ‘at the beginning’
  - dú:ʃux ‘quiet’
  - ts’á:mal ‘fly’
- some are historically from aphesis
  - ũʰíja ‘big’ < *ʔahũʰíj
  - ũʰó:no ‘seaweed’ < *ʔo:ũʰóno
- all the numbers have initial stress
  - k’áli ‘one’
  - lé:ma ‘five’
  - ts’á:di ‘six’
  - hádaqal ‘ten’
Eastern Pomo loanwords

• some likely from neighboring languages
  háju  ‘dog’ (widely diffused)
  hí:baja  ‘men’ (identical to NE Pomo)

• initial stress in more recent loanwords
  – similar to SE Pomo; some perhaps borrowed through it
  káhonʔ  ‘box’ < Sp. cajón
  kálawa  ‘nail’ < Sp. clavo
  pásalʔ  ‘to visit’ < Sp. pasar
  pápelʔ  ‘paper’ < Sp. papel
  rí:koʔ  ‘rich’ < Sp. rico

• whatever the source, they exist
  – lexical exceptions to left-edge extrametricality?
Eastern Pomo initial CVC

• initial CVC is not frequent, but takes stress
  – could stress be attracted to VC but not to V: ?
  – perhaps (historical) compounds and reduplicated roots, now lexicalized

bótʰqo ‘forearm’
líkʰlikʰ ‘sparrow hawk’
ṭíxṭiχ ‘snipe’

• verbs with initial CVC are monosyllabic roots
  – therefore expect initial stress anyway

{ká}mli: ‘tip over, wreck (a car)’
{ʔé}ṭʃʰki: ‘sneeze’
Eastern Pomo analysis

- follows general Pomo pattern
  - left-edge extrametricality
  - stress at left edge of domain
  - blocked by monosyllabic, unprefixed root
- lexical exceptions
  - extrametricality blocked for certain roots
    - more common than in some other Pomoan languages?
  - includes classes such as loans and numbers
- heavy initial syllables
  - might be true weight sensitivity
    - though not evident in other contexts, or with CV:
  - probably just marked as exceptions like the other cases
Modern stress: Northern Pomo

• similar to proto language
• second syllable of disyllabic roots
  – as well as prefixed monosyllables
• first syllable of monosyllabic root
  – including where aphesis has occurred
• pitch accent realization
  – predictable based on syllable structure
Northern Pomo second syllable

- disyllabic (or longer) root
  - {diléj} ‘all’
  - {batʃ’ówa} ‘angelica’
  - {da:wák}a ‘go out’
  - {duhú}doj ‘they say he left’
  - {kawí}namjatʃuʔ ‘of the child’
  - {miná}tʃinhe ‘I heard (the baby) cry once’

- prefix, yielding disyllabic stem
  - si{jú:}tʃin ‘recognize taste (of liquid)’
  - mi{jé:}tal ‘be feeling (emotion)’
  - da{séj} ‘wash’
  - da{ts’áp}na ‘must have slapped’
Northern Pomo first syllable

• monosyllabic root
  \{pʰó\}moʔo  ‘marry each other’
  \{tʰáʔ\}a  ‘play (COLLECTIVE)’
  \{tʃá\}nhe  ‘I heard it jump (in the water)’
  \{lók\}tə  ‘fall, drop multiple times’

• historical aphesis
  \{má:ta\}  ‘woman’  \textless  *ʔimá:ta

• other reasons, such as onomatopoeia?
  \{xó:ta\}manhe  ‘I hear him snoring’

• analysis has to permit some exceptions
  – no initial extrametricality, or an underlying stress
  – but most forms can be generated quite regularly
Northern Pomo analysis

• general Pomo pattern
  – left-edge extrametricality
  – stress at left edge of domain
  – blocked by monosyllabic, unprefixe

• exceptions appear to be quite limited
  – though stress is often not written in sources
  – so data is somewhat limited

• realized with predictable pitch accent
  – rising on short V and most VC
  – falling on short VC = laryngeal or ejective
  – falling on V:
Modern stress: Central Pomo

- similar to proto language
- second syllable of disyllabic roots
  - as well as prefixed monosyllables
- first syllable of monosyllabic root
  - including where vowel deletion has occurred
  - therefore more often word-initial
Central Pomo second syllable

- **disyllabic (or longer) roots**
  - \{matúl\} ‘old lady’
  - \{maʔá\} ‘food’
  - \{masá:nja\} ‘white (person)’
  - \{tʃa:nó\}:n ‘talks’
  - No effect of vowel length

- **syllabic prefix, yielding disyllabic stem**
  - ba\{yí\}:tʃ’ ‘learned to talk’
  - jæ{ʔá}ma:tʃatʃ ‘(we) used to gather’
  - qa:{wá}tan ‘eat (habitually)’
  - da{lí}da{lí}w ‘wave the hand’
Central Pomo first syllable

• monosyllabic roots
  \{lów\}a:tʃ’a:tʃ’  ‘(we) don’t talk’
  \{mí\}taq’  ‘they say’
  \{tʃá:i?\}jem  ‘old man’

• historical vowel deletion, in prefix or within root
  m{ʃé}m{ʃe}w  ‘sniff at’  < *mihʃé-
  \{dí:\}jaw  ‘carried (the body)’
  \{ʔwéni\}  ‘yesterday’  < *duwéni

• initial in loanwords, or other reasons
  \{sómle:lo\}  ‘hat’  < Sp. sombrero
  \{háju\}  ‘dog’  locally diffused
  \{ʔúda:w\}  ‘lots’
Central Pomo analysis

• general Pomo pattern
  – left-edge extrametricality
  – stress at left edge of domain
  – blocked by monosyllabic, unprefixed root

• lexical exceptions
  – extrametricality blocked for certain roots
  – predictable in presence of initial CC cluster
    • extrasyllabic C blocks extrametrical syllable?

• more frequent stress on first syllable of word
  – compared to E and N
  – since vowel deletion was more widespread in C
Languages with 2nd syllable stress

Proto-Pomo

Western Branch

Southern Group

Kashaya  Southern  Central  Northern  Northeastern  Eastern  Southeastern
Modern stress: Southeastern Pomo

- stress is always initial
  - historical loss of first vowel or syllable
- remains on same syllable as in proto language
  - but simpler synchronic generalization
- no long vowels
  - the only Pomoan language to lose distinctive length
Southeastern Pomo diachrony

• initial unstressed syllables lose vowel
  *seʔé  >  sʔé  ‘chaparral’
  *nahpʰó  >  mfó  ‘people’
  *mihján  >  mján  ‘throat’
  *ba:láj  >  bláj  ‘blood’

• complete aphesis with laryngeal onset
  *hi:mó  >  mó  ‘hole’
  *hiʔbál  >  bál  ‘tongue’
  *ʔohó  >  hó  ‘fire’
  *ʔahχáj  >  χáj  ‘wood’

• initial stressed syllables are maintained
  *tʃ’áj  >  ts’áj-ts’aj  ‘scrub jay’
  *q’á(:)-  >  q’á-  ‘leave (behind)’
Southeastern Pomo first syllable

- native words with initial stress
  - regardless of word length
  - xéla ‘friend’
  - xélataj ‘friends’
  - tsáqlamat ‘it flew to the ground’
  - háliqmattat ‘(two) discuss, plan’

- same in Spanish borrowings
  - regardless of stress in source language
  - sómlilu ‘hat’ < sombrero
  - mántikija ‘butter’ < mantequilla
  - pílatu ‘dish’ < plato

- very simple generalization of “first syllable”
  - historical loss of unfooted material at the beginning of the word
  - evidence of avoiding degenerate feet for secondary stress
Modern stress: Northeastern Pomo

- less consistent with proto language
- often 2nd syllable of disyllabic roots
  - as well as prefixed monosyllables
- but 1st of many disyllabic roots
  - apparently prior to aphesis
- tendency to penult?
  - open questions
Northeastern Pomo second syllable

- these follow the general Pomo pattern
- in some disyllabic (or longer) roots
  - matches proto stress
    - {ʃahkó}ka: ‘grasshopper’ < *ʃahqót
    - {himá:ta} ‘woman’ < *ʔimá:ta
    - {jiʔbá} ‘body’ < *jiʔbá
    - {?ahá:} ‘wood’ < *ʔahχáj

- syllabic prefix, yielding disyllabic stem
  - also typical of the other languages
    - fu{ʔdú} ‘float’ < *pʰu-ʔdú
    - fo{ʔk’óm}on ‘cut off’
    - da{ʔdí}ma ‘lay (rock) down’
Northeastern Pomo first syllable

• in some disyllabic roots
  – has shifted leftward from proto stress
    {dúwe}    ‘night’    < *duwwé
    {béhʃe}  ‘deer’     < *bihʃé
    {táno}   ‘speech’   < *kahnó
    {máʔa}   ‘acorn’    < *maʔá

• monosyllabic roots
  – often from aphesis, based on proto stress
    {ʔá}      ‘horn’     < *haʔá
    {fó:}     ‘magnesite’< *ʔipʰó:(l)
  – no aphesis if stress shifted leftward:
    {ʔóho}    ‘fire’     < *ʔohχó
Northeastern Pomo variation

• some forms are transcribed variably
  – with stress on 1st and 2nd syllables
  – no apparent difference in context
• possible tendency for penultimate stress
  – based on shift under suffixation
    má:ti ‘day’
    ma:tí-min ‘sunrise’
• but some root stress appears to be stable
  – if we can rely on somewhat limited data
Northeastern Pomo rhythm?

• may shift between 1st and 2nd syllables
  – depending on overall rhythm of sentence
    ḫilíma ‘sit down!’
    ṭáma ḫílima ‘you sit down!’
    mahkú:i ‘handkerchief’
    tína: máhku:i ‘kerchief for head’

• tentative hypothesis
  – rhythm does influence shifting stress

• between 1st and 2nd, with iterative effects
  – but the options remain within the Pomo pattern
  – variable extrametricality, or foot headedness?
Modern stress: Southern Pomo

- regular penultimate stress
  - reported to be on the phrase, not just the word
- outlier in Pomoan
  - right-orientation
  - all others are left-orientated (but NE?)
- secondary stress
  - on alternating syllables preceding the penult
Southern Pomo penult

• main stress on penult
  \( k^h\text{áʔbe} \)  ‘rock’
  \( k^h\text{aʔ}(b\text{é-ʔ}\text{wan}) \)  ‘rock-DET.OBJECT’
  \( k^h\text{aʔ}(b\text{é-jej}) \)  ‘Rock (Man)-AGENT’

• clashing secondary stress in trisyllables
  – transcribed explicitly for just a few words
  – but described as a general pattern
  \( b\text{ù:})(t\text{áka}) \)  ‘bear’
  \( k\text{ít})(t\text{sídu}) \)  ‘small (COLLECTIVE)’
Southern Pomo phrasal

• phrasal stress
  – can include enclitics and multiple words
  
  \[(bàh)(tʰé=k’o)\]  \(\text{‘with many’}\)
  \[(sí:ma) (pʰìʔt’a)(wáʔ=to)\]  \(\text{‘I feel sleepy’}\)
  \[(hùʔt’a)(yì:li)(wáʔ=?a) (ʃó:tʃi:w)\]  \(\text{‘when it came to make (noise) I heard it’}\)

• alternation in stress due to phrasal context
  – I’ll return to this later
  
  \[(béhʃe)\]  \(\text{‘deer’}\)
  \[\text{beh(ʃè dah)(lá:li)}\]  \(\text{‘deer, I think’}\)
Southern Pomo analysis

• quantity-insensitive trochees, primary stress at right
  \((\dot{o}\sigma) (\dot{o}\sigma) (\dot{o}\sigma)\)
  – iterative from right to left, a very common pattern
• can be constructed across phrases
  – shares this property with Kashaya
• antepenult in trisyllables is stressed, and typically heavy
  \((\dot{o}) (\dot{o}\sigma)\)
  – historically, to meet a minimum size of two moras?
  – if correct, would simplify some reconstructions
• not clear whether this foot occurs in longer words
  – theories would generally predict it
    \(? (\dot{o}) (\dot{o}\sigma) (\dot{o}\sigma)\)
Modern stress: Kashaya

- most complex of all
  - but still left-oriented
- iambs from the left
  - first syllable is extrametrical
  - unless that would leave the root unfooted
- clear quantity sensitivity
  - unlike the other languages
  - special role for long vowels
Kashaya iambic feet

• extrametricality of first syllable by default
  – stress on 2nd syllable if heavy, else 3rd
  – iambic lengthening of (most) stressed vowels
    • main evidence for secondary stress feet
• true of unprefixed disyllabic roots
  {qaʔtʃ’áṭ’}kʰetʰin  ‘shouldn’t cry’
  {qaʔtʃ’at}á:dutʃe:du  ‘used to cry and cry’
• as well as all prefixed roots
  – whether the root is monosyllabic or longer
    tʃa{qʰám}muʔ  ‘cut pieces apart from each other’
    tʃa{qʰam}á:lawi:biʔ  ‘start to cut downward’
    bi{lukú}mciʔ  ‘eat with one’s mouth closed’
Kashaya monosyllabic root

• extrametricality is blocked
  – as in the other Pomoan languages
    {kél}mula:dutʃe:du ‘keep peering around’
    {mo}mú:litʃ’e:du ‘run in circles’
    {tʃad}ú:tʃedun ‘while looking’

• but the root itself is still often unstressed
  – the foot (not the stress) has to overlap the root
  – evaluated via the vowel, as the syllable head
    * {tʃad}utʃé:dun = tʃa(dutʃé:)dun

• the other languages keep stress on the root
  – same formal statement if they are trochaic
Kashaya analysis

• iambic feet from left to right
  – extrametricality by default
• retains much of general Pomo pattern
  – left-edge extrametricality
  – stress at left edge of domain
  – blocked by monosyllabic, unprefixed root
• syllable weight plays central role
  – unlike in the other languages
• lexical exceptions
  – extrametricality blocked for a few roots
  – also fixed stress on some loans
Kashaya phrasal stress

- two words grouped as one stress
  - optional but common
    (ma + qáʔ) (tʃ’aṭem) ‘when you cry’
    <ʔo>(ho + dúh)(samu:)tʃi ‘tend the fire!’
    <ʔah>(qʰa + bá)(tʰe:)li ‘with lots of water’

- most often yields initial stress in second word
  - influence of initial stress in other languages?

- more complex pattern with long vowels
  - accent shifts from (CV:) to following foot
  - doesn’t change foot structure
  - will set this issue aside here
Kashaya degenerate feet

• final stress on disyllabic words
  \(<?ah>(q^h\acute{a})\quad \text{‘water’}\>
  \(<qa>(\acute{n}\acute{e})\quad \text{‘bite!’}\>

• phrasal grouping avoids this
  \(<\text{bih}>(\acute{f}\acute{e})\quad \text{‘deer’}\>
  \(<\text{bih}>(\text{fe bó})(\acute{o}\acute{t}\acute{a}?)(t^h\acute{u}?)\quad \text{‘don’t hunt deer!’}\>

• degenerate foot can be unaccented
  – that is, no pitch accent on that metrical structure
  \(<\text{bih}>(\acute{f}\acute{e})\ <\text{bo}>(?otá?)(t^h\acute{u}?)\quad \text{‘don’t hunt deer!’}\>

• strategies to minimize role of such feet
  – even though they are often created
  – such feet are also characteristic of general Pomo
## Summary of stress patterns

<table>
<thead>
<tr>
<th>Stem</th>
<th>Disyllabic</th>
<th>Prefixed</th>
<th>Monosyllabic</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP</td>
<td>{σό́}</td>
<td>σ{ό́}</td>
<td>{ό́}σ</td>
</tr>
<tr>
<td>E</td>
<td>{σό́} (~ {όσ́})</td>
<td>σ{ό́}</td>
<td>{ό́}σ</td>
</tr>
<tr>
<td>N</td>
<td>{σό́} (~ {όσ́})</td>
<td>σ{ό́}</td>
<td>{ό́}σ</td>
</tr>
<tr>
<td>C</td>
<td>{σό́} , {Cό́}</td>
<td>σ{ό́} , C{ό́}</td>
<td>{ό́}σ</td>
</tr>
<tr>
<td>SE</td>
<td>{Cό́}</td>
<td>C{ό́}</td>
<td>{ό́}σ</td>
</tr>
<tr>
<td>NE</td>
<td>{σό́} (~ {όσ́}) ?</td>
<td>σ{ό́} ?</td>
<td>{ό́}σ ?</td>
</tr>
<tr>
<td>S</td>
<td>{σό́}σ , {όσ́}</td>
<td>σ{ό́}σ , ó{σ́}</td>
<td>{σ́}όσ , {ό́}σ</td>
</tr>
<tr>
<td>K</td>
<td>{σὸ́}σ , {σὸ́}ó</td>
<td>σ{ὸ́}σ , σ{ὸ́}ó</td>
<td>{ὸ́}σ , {ὸ́}ó</td>
</tr>
</tbody>
</table>
Diachronic tendencies

• shift from 2nd to 1st syllable
  – scattered examples in E, N, C
  – common in NE

• deletion to yield initial stress
  – with laryngeal onsets in E, N, C, some NE
  – vowel after nonlaryngeal in SE, some in C

• major changes in two languages
  – penultimate in S
  – iambic in K

• does language contact explain some of it?
Languages near Pomoan

- **Athabaskan**
  - Kato
- **Yuki-Wappo**
  - Coast Yuki, Yuki, and Huchnom
  - Wappo
- **Wintun**
  - Nomlaki (N. branch)
  - Patwin (S. branch)
- **Miwok-Costanoan**
  - Lake Miwok
  - Coast Miwok
Stress in Kato (or Wailaki)

- no description of stress in Kato
  - not even marked
- data for closely related Wailaki
  - 1st syllable of root
    - also of word, for basic nouns
    - can be preceded by many prefixes
      - typical Athabaskan verb structure
- not similar to other languages in area
  - including Pomoan
Yuki-Wappo languages

• Yukian
  – several closely related languages
  – stress usually on 1st syllable of root
    • excludes (rare) prefixes
  – some disyllabic roots have stress on 2nd syllable
  – limited pitch accent

• Wappo
  – stress on 1st syllable of root
    • excludes prefixes, more common than in Yukian

• both similar to Pomoan
  – unlikely source of change
Wintun languages

- Nomlaki
  - no stress description
- Wintu
  - just north of Nomlaki, and grouped with it
    - so use as stand-in
  - two-syllable window
  - stress on second syllable if heavy, otherwise first
- Patwin
  - again, stress on first or second syllable
  - seems to correlate fairly well with syllable weight
- weight not central in Pomoan
  - except in distant Kashaya
Interim summary

• Kato, Wailaki not especially relevant
  – first syllable of root is like other languages
  – long string of prefixes is only in Athabaskan
• Yuki-Wappo stresses first root syllable
  – may especially have affected NE
  – Yuki might also relate to pitch accent in N
• Wintun has first/second syllable stress
  – with important role for syllable weight
  – potentially germane to NE, though facts uncertain
• of course, Pomoan may have influenced them
  – such as second-syllable stresses in Yukian
Western Miwok

- two nearby varieties
  - Lake Miwok adjacent to E and SE
  - Coast Miwok adjacent to K and S
- Bodega Miwok
  - northwest dialect of Coast Miwok
  - immediately adjacent to K and S
  - discussion based on forms in dictionary (Callaghan 1970)
Miwok stress

• reported Lake Miwok stress (Callaghan 1971)
  – stress on leftmost CVV
  – otherwise on leftmost CVC
  – otherwise on initial syllable

• data suggests that stress rarely moves past the second syllable
  – consistent with Proto-Pomo except for syllable weight
  – and in E and NE nearby

• Bodega Miwok is similar to Lake Miwok, except that
  – “stress may shift to the penult”

• important since adjacent S has penultimate stress
  – but what exactly does that description mean?
Bodega Miwok stress

• disyllables have initial stress unless final long vowel
  kóle ‘grass’
  kénum ‘every’
  hú:ma ‘fish eggs’
  ?ellé: ‘fish’

• longer words mostly penultimate
  – rightward shift under suffixation
  támal ‘west, coast’      tamál-to ‘on the coast’
  kó:ja ‘girl’            ko:já-­ko ‘girls’
  jólum ‘eat’             jolúm-ne ‘feed’
  táwuh ‘think, guess’    tawúh-mi ‘guess!’
  tólpa ‘answer’          tolpá-mmi ‘answer!’
  tollé-pa ‘let go of’    tollepá-mmi ‘let go of it!’
Bodega Miwok extrametricality

• certain suffixes appear to be ignored for stress
  – stress is antepenultimate unless the penult is heavy

  lú:ṭa ‘poke (a fire)’
  lu:ṭá-ja ‘a poker’
  lú:ṭa-<ṭi> ‘poke’ (PERFECTIVE)
  júlu ‘be angry’
  jullú-m-<ṭi> ‘quarrel’ (RECIP, PERF)
  kénne ‘one’
  kenné-tto ‘together’ (ALLATIVE)
  kénne-<wa> ‘one place’ (LOCATIVE)
  kenne-wá-tto ‘in one place’

• residue of unexplained exceptions
  – antepenultimate without these suffixes
  – penultimate on light syllable before these suffixes
• around 89% penultimate stress in Bodega Miwok
  – partly due to large number of disyllables
  – final long vowels are quite uncommon
• so overwhelmingly one pattern in Miwok data
  – especially if take extrametricality into account
  – those suffixes excluded from penultimate domain
• appears to be the basis of S Pomo innovation
  – adjacency to this pattern is surely not a coincidence
  – past period of significant bilingualism?
• perhaps also related to ambiguities in S words
  – trisyllables with stress on second syllable
  – matches both inherited and penultimate analysis
Southern Pomo reanalysis

• texts in S show many trisyllabic words
  – ambiguous between “second” and “penultimate”

\[ kʰaːlèʔwan \ kuʔmu \ diːlát’s’aw, \ kʰaʔbéjej \]
  ‘Rock broke all the trees by falling on them’

• reanalysis as penultimate system
  – suppose native speakers of Miwok marrying into Pomo communities
  – children exposed to both languages
  – or to Miwok-accented Pomo with tendency to use penultimate stress
Southern Pomo phrases

- stress in phrases possibly related to reanalysis
  - *(beh)(ʃé)* original pattern
  - *(beh)(ʃé) <dah>(lá:li)* independent footing on 2nd
    - ~ *beh(ʃé dah)(lá:li)* or iterative from penult
  - *(béhʃe)* new penultimate pattern

- period of variation *behʃé ~ béhʃe* may even have led to phrase-level pattern
  - speakers conceivably preferred the variant that led to better sentence rhythm
  - form in isolation then stabilized as penultimate
Kashaya reanalysis

• doesn’t abandon the old system like S does
  – keeps left-orientation
  – but develops it further
• repeats what may have occurred in Proto-Pomo
  – perhaps Pre-Proto-Pomo was first-in-root: σ{ό}, {όσ}
  – later develops second-in-word for longer roots: {σό}
• likely a role again for prefix structure
  – overwhelmingly common in verbs
• depends on ambiguous pattern in σ{ό}
  – 2nd in word, or 1st in root
• bilingualism for Central and Kashaya?
Central versus Kashaya: prefixed

• original generalization with prefix
  – put stress on first syllable of root
  – which is the second syllable of the word
    *mi-{hʃé}-c-im ‘smell it’

• loss of vowel or first syllable in C, not K
  – C: put stress on first (remaining) syllable:
    mʃécim
  – pre-K: still put stress on second syllable:
    *mihʃécim
  – or is it the first syllable of the root?
    • facts are ambiguous to the learner
Central versus Kashaya: unprefixed

• original generalization with unprefixed word
  – put stress on second syllable of the word
  – can’t refer to “root” as distinct in this case
    *duwéni ‘yesterday’

• loss of vowel or first syllable in C, not K
  – C: put stress on first (remaining) syllable:
    ʔwéni
  – pre-K: still put stress on second syllable:
    *duwéni
  – difference is purely phonological
    • learner can’t refer to a prefix
Central speaker learning Kashaya

• overwhelming cognate relations
  – loss of vowels or entire first syllable in C
  – creates phonological mismatch with K
  – if significant bilingualism, could play important role

• morphological generalization
  – “put stress on first root syllable”
  – same as historical pattern, predicts no change

• phonological generalization
  – “put stress on second syllable of word”
  – ignores cognate syllable, but a simpler generalization

• further substitution of “root” vs. “word”?
  – C often has initial stress in both root and word
  – K stress reanalyzed as “second syllable of root”?
Kashaya alignment

• new K system combines two patterns
  – left edge of root as reference point
  – assign stress to “2nd syllable” of root, not word
• if prefixed, then this yields the 3rd syllable
  – in other words, “2nd syllable” after extrametricality
• but not if 1st visible syllable is CVC
  – depending on weight: mi{hʃé}C.C ~ mi{hʃe}.CV́
• learning and perception
  – period of variation during reanalysis
  – affected by differences in weight of syllables
Kashaya syllable weight

• likely variation in stress location during change
  – mi{hʃé}C.CV ~ mi{hʃe}C.CṾ
  – mi{hʃé}.CV ~ mi{hʃe}.CṾ

• stresses on closed 2nd syllable more perceptible
  – reinforced by greater energy of syllable (Gordon 2004)
  – child learners making sense of this via weight

• introduction of true iambs
  – stress varies between 1st and 2nd, by weight
  – a crucial development

• no other nearby language has this
  – weight is relevant in Wintun and Miwok
  – but in quite different ways than in K
Summary: Extrametricality

• Proto-Pomo had left extrametricality
  – this itself was probably an innovation
  – skipping of prefix → skipping of any first syllable

• some languages abandon this element
  – SE deletes the extrametrical syllable
  – S completely replaces the system
  – NE might have variable extrametricality

• majority of the languages maintain it
  – despite how marked it is
  – even more marked to have 3rd syllable stress in K
Summary: Degenerate feet

- Proto-Pomo had frequent degenerate feet
  - in disyllables with final CV
  - made necessary by extrametricality
- most languages maintain this element
  - SE develops even more since it loses vowel length
  - create more words shaped CV by aphesis
  - only S clearly avoids it, by footing both syllables
    - yet that required deep contact with Miwok, it seems
- two marked elements
  - both survive widely
  - support each other formally
Implications

• degenerate feet are, typologically, quite marked
  – if markedness has any effect, this should be penalized
  – yet they persist across time in nearly all the languages
  – just minor remedies in synchronic footing (SE, K)

• language transmission here depends on what the child hears, not markedness biases
  – whether inherited or by contact
  – if these biases exist, they must be weak

• special role for patterns in shorter, simpler words?
  – such as Southern behʃé ~ béhʃe ‘deer, meat’
  – learned earlier, so perhaps an outsize role
  – less morphological confounding
Implications

• left extrametricality is quite rare
  – yet it survives in most of the languages
  – where it diminishes, could be due to contact

• the Kashaya system is especially unusual
  – may have arisen due to very special circumstances
  – a closely related language that lost initial syllables
  – combined with proximity and bilingualism

• special explanation for an unusual pattern
  – computationally unexceptional
  – but unlikely to arise historically
  – Kashaya just happened to be in the right place
    at the right time
Thank You!