Change and contact in Pomoan stress patterns

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Outline of talk

• 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
Pomoan family

• seven languages in northern California
  – time depth compared to Germanic
• 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?
Language families of California

INDIGENOUS LANGUAGE FAMILIES

**Algic**
- Wiyot
- Yurok

**Athabaskan**
- Bear River–Mattole
- Chetco–Tolowa
- Eel River
- Hupa
- Kato

**Chumashan**
- Barbareño
- Ineseño
- Interior Chumash
- Island Chumash
- Obispeño
- Purisimeño
- Venturaño

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

**Penutian**
- Klamath–Modoc
- Maiduan languages
- Miwokan languages
- Ohlone languages
- Wintuan languages
- Yokutsan languages

**Uto-Aztecan**
- Numic languages
- Takic languages
- Tübatulabal

**Yuki–Wappo**
- Coast Yukian
- Northern Yukian
- Wappo
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 syllables → unstressed
  – complete loss of CV 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 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>buṭaqa</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></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>?ihpʰúj</td>
<td>?oho’</td>
<td>?ahqʰa’</td>
</tr>
<tr>
<td>S</td>
<td>húʔuj</td>
<td>?íhpʰuj</td>
<td>?óh:o</td>
<td>?áhkʰa</td>
</tr>
<tr>
<td>C</td>
<td>ʔúj</td>
<td>pʰúj</td>
<td>hó</td>
<td>kʰá</td>
</tr>
<tr>
<td>N</td>
<td>ʔúj</td>
<td>pʰúj</td>
<td>hó</td>
<td>kʰá</td>
</tr>
<tr>
<td>NE</td>
<td>ʔúj</td>
<td>fí:</td>
<td>?óho</td>
<td>kʰá</td>
</tr>
<tr>
<td>E</td>
<td>ʔúj</td>
<td>pʰúj</td>
<td>xó</td>
<td>xá</td>
</tr>
<tr>
<td>SE</td>
<td>ʔúj</td>
<td>fúj</td>
<td>χó</td>
<td>χá</td>
</tr>
<tr>
<td>PP</td>
<td>*huʔúj</td>
<td>*?ihpʰúj</td>
<td>*?ohχó</td>
<td>*?ahqʰá</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 4222 unsuffixed verb stems
  – of these, 3681 (or 87%) contain prefixes
  – also in nouns derived from such verbs
• here the root is the second syllable of the word
  – stress aligned with left edge of root: σ{όσ
  – location can be expressed by reference to morphology
### Prefixed verbs

<table>
<thead>
<tr>
<th>Region</th>
<th>Prefix</th>
<th>Verb</th>
<th>Prefix</th>
<th>Verb</th>
<th>Prefix</th>
<th>Verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>qane-</td>
<td>biʔdi-</td>
<td>pʰudi-</td>
<td>mihʃe-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>ka:ne-</td>
<td>biʔdi-</td>
<td></td>
<td>mehʃe-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>ka:né-</td>
<td></td>
<td>pʰdé-</td>
<td>mʃé-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>kané-</td>
<td></td>
<td>pʰide-</td>
<td>mʃé-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NE</td>
<td>kána-</td>
<td></td>
<td>fuʔdú-</td>
<td>méhʃe-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>qa:né-</td>
<td>bi:dí[:l]</td>
<td>pʰu:dí-</td>
<td>mʃé-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SE</td>
<td>qné-</td>
<td>bdéy-</td>
<td>-di-</td>
<td>mxé-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PP</td>
<td>*qa:-né-</td>
<td>*bi-ʔdí-</td>
<td>*pʰu-dí-</td>
<td>*mi-hʃé-</td>
<td></td>
<td></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 be based on earlier stress system
Post-tonic syncope: Kashaya

• similar pattern, but lexicalized, in K kinship
  mi-t’ikí ‘your younger sibling’ < *mi-t’íki?
  mi-tʃú-t’ki ‘your sister’s son’ < *mi-tʃú-t’iki?

• presumed origin
  – 2nd syllable stress, deletion of (nonfinal) post-tonic vowel
    *mi-t’íki > mi-t’iki
    *mi-tʃú-t’iki > mi-tʃu-t’iki

• 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, which would have originally been stressed
### Monosyllabic stems

<table>
<thead>
<tr>
<th></th>
<th>‘come’</th>
<th>‘hear’</th>
<th>‘leave’</th>
<th>‘claw’</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>K</strong></td>
<td>wa:d-u´</td>
<td>ñotʃ-</td>
<td>q’a:-´</td>
<td>he:ʃ´t’</td>
</tr>
<tr>
<td><strong>S</strong></td>
<td>hwá:d-u</td>
<td>ño:tʃi-</td>
<td></td>
<td>hé:ʃ´t’</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>wá:d-</td>
<td>ñó:tʃ-</td>
<td></td>
<td>?é:ʃ´t’</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>wá:d-</td>
<td>ñó:-</td>
<td>k’á-</td>
<td>héts’</td>
</tr>
<tr>
<td><strong>NE</strong></td>
<td></td>
<td></td>
<td></td>
<td>hé:ʃ´t’a</td>
</tr>
<tr>
<td><strong>E</strong></td>
<td>wád[u:ki]</td>
<td>ñó:kʰ</td>
<td>q’á-</td>
<td></td>
</tr>
<tr>
<td><strong>SE</strong></td>
<td></td>
<td>(xkó-)</td>
<td>q’á-</td>
<td></td>
</tr>
<tr>
<td><strong>PP</strong></td>
<td>*(h)wá:d-</td>
<td>*ñó:k-</td>
<td>*q’á(:)-</td>
<td>*hé:ts’</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
  - {σσ, σσ}
- but stays on an initial monosyllabic root
  - {σσ}
  - 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: $\sigma\{\acute{\sigma}\sigma$
  – 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: $<\sigma>(\acute{\sigma}\sigma$
  – or quantity-insensitive iamb: $(\sigma\acute{\sigma})\sigma$
  – either approach is uncommon and marked

• monosyllabic stems are also aligned to the root
  – there just happens to be no prefix: $\{\acute{\sigma}\}...$
    • 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 aphtesis)
  - 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}ṭ’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
  - ṭʰíja ‘big’ < *ʔahṭʰíj
  - ṭʰó:no ‘seaweed’ < *ʔo:ṭʰóno
- 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

bóṭʰqo ‘forearm’
líkʰlikʰ ‘sparrow hawk’
ṭíχṭiχ ‘snipe’

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

{ká}mlī: ‘tip over, wreck (a car)’
{ʔé}tʃʰki: ‘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{ʃé:}tal ‘be feeling (emotion)’
  - da{céj} ‘wash’
  - da{ts’áp}na ‘must have slapped’
Northern Pomo first syllable

• monosyllabic root
  \{p^{h}_{\text{ó}}}moʔo ‘marry each other’
  \{t^{h}_{\text{á}}\}a ‘play (COLLECTIVE)’
  \{tʃá\}nhe ‘I heard it jump (in the water)’
  \{lók\}ta ‘fall, drop multiple times’

• historical aphesis
  \{má:ta\} ‘woman’ < *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, unprefixed root

• 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
  \{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’
  ja{ʔá}ma:tʃatʃ ‘(we) used to gather’
  qa:{wá}tan ‘eat (habitually)’
  da{lí}da{li}w ‘wave the hand’
Central Pomo first syllable

- **monosyllabic roots**
  - {lów}aːtʃaːtʃ' ‘(we) don’t talk’
  - {mí}taq’ ‘they say’
  - {tʃáːʔ}jem ‘old man’

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

- **initial in loanwords, or other reasons**
  - {sómlə: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
- Lost long vowels
  - The only Pomoan language to lose historical length
  - Marginally reintroduced
Southeastern Pomo diachrony

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

• complete aphesis with laryngeal onset
  *hiːmó  >  mó       ‘hole’
  *hiʔbál > bál       ‘tongue’
  *ʔohó   >  háo       ‘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
    {ʃiʔbá} ‘body’ < *ʃiʔbá
    {?ahá:} ‘wood’ < *ʔahχáj
• syllabic prefix, yielding disyllabic stem
  – also typical of the other languages
    fu{ʔdú} ‘float’ < *pʰu-ʔdú
    {ʃoʔk’ó}m 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’ < *kahno
    {máʔa} ‘acorn’ < *maʔá

• monosyllabic roots
  – often from aphasis, based on proto stress
    {ʔá} ‘horn’ < *haʔá
    {fó:} ‘magnesite’ < *ʔipʰó:(l)
  – no aphasis 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
    šilíma  ‘sit down!’
    ṣáma šilíma  ‘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-oriented (but NE?)
- secondary stress
  - on alternating syllables preceding the penult
Southern Pomo penult

• main stress on penult
  \( (k^h\text{áʔ}be) \) ‘rock’
  \( k^h\text{aʔ}(bé-ʔwan) \) ‘rock-DET.OBJECT’
  \( k^h\text{aʔ}(bé-jej) \) ‘Rock (Man)-AGENT’

• clashing secondary stress in trisyllables
  – transcribed explicitly for just a few words
  – but described as a general pattern
  \( (bù:) (ṭáka) \) ‘bear’
  \( (kìt)(tśídu) \) ‘small (COLLECTIVE)’
Southern Pomo phrasal

• phrasal stress
  – can include enclitics and multiple words
    (bàh)(ṭʰé=k’o) ‘with many’
    (sí:ma) (pʰìʔt’a)(wá?=to) ‘I feel sleepy’
      ‘when it came to make (noise) I heard it’
• alternation in stress due to phrasal context
  – I’ll return to this later
    (béhʃe) ‘deer’
    beh(ʃè dah)(lá:li) ‘deer, I think’
Southern Pomo analysis

• quantity-insensitive trochees, primary stress at right
  \((\dot{o}\sigma) (\dot{o}\sigma) (\acute{o}\sigma)\)
  – 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
  \((\dot{o}) (\acute{o}\sigma)\)
  – 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
  \(? (\dot{o}) (\dot{o}\sigma) (\acute{o}\sigma)\)
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’aṭ}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
  
  <ʔah>(qʰá) ‘water’
  <qa>(né) ‘bite!’

• phrasal grouping avoids this
  
  <bih>(ʃé) ‘deer’
  <bih>(ʃe bó)(ʔotaʔ)(tʰuʔ) ‘don’t hunt deer!’

• degenerate foot can be unaccented
  – that is, no pitch accent on that metrical structure
  
  <bih>(ʃe) <bo>(ʔotáʔ)(tʰuʔ) ‘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>{σό}</td>
<td>σ{ό}</td>
<td>{ό}σ</td>
</tr>
<tr>
<td>E</td>
<td>{σό} ( ~ {όσ})</td>
<td>σ{ό}</td>
<td>{ό}σ</td>
</tr>
<tr>
<td>N</td>
<td>{σό} ( ~ {όσ})</td>
<td>σ{ό}</td>
<td>{ό}σ</td>
</tr>
<tr>
<td>C</td>
<td>{σό}, {Cό}</td>
<td>σ{ό}, C{ό}</td>
<td>{ό}σ</td>
</tr>
<tr>
<td>SE</td>
<td>{Cό}</td>
<td>C{ό}</td>
<td>{ό}σ</td>
</tr>
<tr>
<td>NE</td>
<td>{σό} ~ {όσ} ?</td>
<td>σ{ό} ?</td>
<td>{ό}σ ?</td>
</tr>
<tr>
<td>S</td>
<td>{σό}σ, {όσ}</td>
<td>σ{ό}σ, ó{σ}</td>
<td>{σ}όσ, {ό}σ</td>
</tr>
<tr>
<td>K</td>
<td>{σό}σ, {σό}σ</td>
<td>σ{ό}σ, σ{ό}σ</td>
<td>{ό}σ, {ό}σ</td>
</tr>
</tbody>
</table>
Diachronic tendencies

• shift from 2nd to 1st syllable
  – scattered examples in E, N, C
  – common in NE
• deletion yields 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
  - but perhaps old contact
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’
ʔellé:     ‘fish’

• longer words mostly penultimate
  – rightward shift under suffixation

támal       ‘west, coast’
ko:já:ko   ‘girls’
jólum       ‘eat’
jolúm-ne   ‘feed’
táwuh       ‘think, guess’
tawúh-mi  ‘guess!’
tólpa       ‘answer’
tolpé-mmi   ‘answer!’
tolle-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
Miwok and Southern Pomo

• around 89% penultimate stress in Bodega Miwok
  – partly due to large number of disyllables
  – final long vowels are quite uncommon
• thus 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”
    \( k^{h}a:l\acute{e}?wan \ k\acute{u}?mu \ di:l\acute{a}ts’aw, \ k^{h}a?b\acute{e}jej \)
    ‘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)
  <beh>(ʃé) <dah>(lá:li)
  ~ beh(ʃé dah)(lá:li)
  (béhʃe)

  original pattern

  independent footing on 2nd

  or iterative from penult

  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} , {όό}
  – later develops **second-in-word** for longer roots: {όό}
• 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:
    ṭwéni
  – pre-K: still put stress on second syllable:
    *duwéni

  – difference is purely phonological
    • learner can’t refer to a prefix
Kashaya speaker learning Central

• 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
Kashaya speaker learning Central

• example of simple word
  – historical *duwéni on second syllable
  – Central /ʔwéni/ after loss of vowel
    • faithful to proto location, but not relative position
  – Pre-Kashaya /duwéni/ without a change

• suppose K speaker applies K rule to C form
  – “second syllable” among surviving vowels
    • this will most often be one syllable further to the right
  – therefore Central ?/ʔwení/ with Kashaya rule

• transferred back to cognate Kashaya syllable
  – would yield /duwení/
  – this is the modern form
Kashaya syllable weight

• presumed variation in stress location before the completed reanalysis
  – duwéni ~ duwení

• in complex verbs, syllable shape varies by suffixes
  – mi{hʃé}C.CV ~ mi{hʃe}C.CV
  – mi{hʃé}.CV ~ mi{hʃe}.C.V

• maintains rightward shift only when 2nd syllable is light
  – new role for syllable weight
  – not previously relevant in C or K

• shift from light 2nd to heavy 3rd also perceptually supported
  – may have played a role in the development of iambic lengthening
Why syllable weight?

• stresses on closed 2nd syllable are more perceptible
  – reinforced by greater energy of syllable (Gordon 2004)
  – more tokens of non-shifted stress are successfully perceived by learners exposed to variation

• child learners making sense of this biased perceived distribution
  – stress varies between 1st and 2nd syllable, by weight
  – formalized as quantity-sensitive iambics

• no other nearby language has this pattern
  – weight is relevant in Wintun and Miwok
  – but in quite different ways than in K
Pitch alignment

• perhaps also a role for phonetic delay in realization of H pitch accent
  – suppose realization of H was delayed a bit past the first mora of the stressed syllable
  – would remain in 2nd syllable if heavy, but overlaps into 3rd syllable if 2nd is light
  – eases re-assignment of stress to 3rd syllable precisely where 2nd is light

• parallel in modern Kashaya
  – H shifts from (CV:) foot onto next foot (Buckley 2019)
Summary: Extrametricality

• Proto-Pomo had left extrametricality
  – this itself was probably an innovation
  – skipping of prefix → skipping of any first syllable
  – I assume this rather than quantity-insensitive iamb

• 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
Selected references

Selected references


