Assessing the evidence for lateral phonemes in River Yuman: Implications for Piipaash orthography

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1. Research question and approach

How many **phonemic lateral consonants** occur in the languages of the **River branch of the Yuman family**?

According to prior analyses, each language contrasts **at least two** lateral consonants phonemically (alveolar vs. palatal):

Piipaash (aka Maricopa): /l/ ~ /lʸ/ (Gordon 1986; Wares 1968)

Mojave: /l/ ~ /lʸ/ (Munro 1976; Wares 1968)

Quechan (aka Yuma): /l/ ~ /lʸ/ ~ /ɬ/ ~ /ɬʸ/ (Halpern 1946; Wares 1968)

No analysis has provided **phonological** evidence for these contrasts, i.e. minimal pairs contrasting the laterals in question. In fact, the evidence cited by many of these analyses comprise **phonetic** sketches of these languages (Halpern 1946; Kroeber 1911).

Focusing on Piipaash, we compare how laterals have been produced and transcribed in archival materials. We look for evidence both for (i.e. minimal pairs) and against a phonemic contrast (e.g. within- and across-speaker/word variation).

2. Survey and findings

We have found **no minimal pairs** contrasting /l/ ~ /lʸ/ in either Piipaash (e.g. Langdon et al. 1991) or Mojave (Munro et al. 1992):

- Exemplars of [lʸ] are more numerous than [l] in Piipaash, consistent with a claim Kroeber (1911) made for Mojave.
- Laterals exhibit wide variation in their articulation within and across speakers, words, and phonetic contexts.

We compared the lateral consonants in Piipaash words recorded by Crawford (1962) and Wares (1962):

- They interviewed the same speaker, three months apart.
- They disagree in the identity of the lateral segment in 43% of shared words that contain a lateral (13/30; Table 1).
- Crawford records several Spanish loans with [lʸ]: Spanish /l/ should not undergo adaptation if /l, lʸ/ are phonemic.
- Wares records instances of the locative suffix /-lʸ/ as [l].

Piipaash has one lateral phoneme /lʸ/ that shows great variation in its pronunciation, even within one speaker.

3. Broader implications

Alphabets aim to represent a sound system using orthographic characters that correspond to individual phonemes.

- Piipaash alphabets have represented two laterals: *l* and *ly*.
- Representing this distinction has proven tricky for recent language documentation and revitalization purposes.

Piipaash has one lateral phoneme, not two, and so need only be written using **one lateral consonant grapheme**.

- Cf. other variable phonemes (e.g. *d* /ð/: [ð ~ d]; *x* /x/: [x ~ h]).
- Phonological significance cannot be ascribed simply to phonetic variation involving speech sounds that are highly phonetically variable (e.g. laterals, vowels; cf. Miller 2018).

Table 1. Comparison of lateral transcriptions

Segments (*N*)	Crawford	Wares	Gloss
l ~ l (1)	xatə**l**əwíṣ	ʔxʌtʌ**l**ʌwɛ́	‘coyote’
l ~ lʸ (3)	ṣ**l**iʔáy	šʌ**l**ʸʔáy	‘sand’
lʸ ~ lʸ (16)	čiməðú**l**ʸ	čʌmʌðú**l**ʸ	‘ant’
lʸ ~ l (10)	xa**l**ʸtót	xʌ**l**tót	‘spider’

Background on lateral consonants

Laterals are **highly variable** (Ladefoged and Maddieson 1996):

(1) They vary in their production within and across individual speakers, words, and phonetic contexts.

(2) They are subject to a considerable range of assimilatory and coarticulatory variation and position effects.

(3) Variation in pronunciation is more noticeable to listeners than is variation among other types of consonants, due to their resonant nature and vowel-like acoustic structure.

Thus, special care needs to be taken to justify phonemic contrasts among lateral consonant segments.

Languages with **two** phonemic lateral approximants are fairly common (ibid: 186), but phonetic variation may give the impression of more lateral phonemes than are justified.

A language that has **one** lateral phoneme will have many lateral speech sounds corresponding to that phoneme. This is true, for example, of English (Kirkham et al. 2020).

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