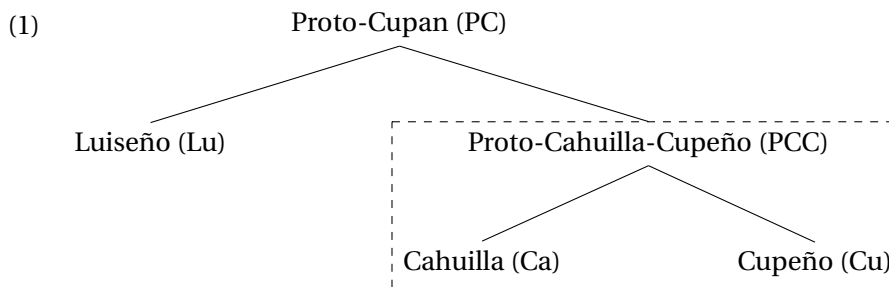


# On the diachrony of word stress in the Cupan languages

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## §1 Introduction

**§1.1 The Cupan languages:** Cupeño (cup), closely related Cahuilla (ch1), and more distantly related Luiseño (lui) form the Cupan subgroup of the Takic subfamily of Uto-Aztecan localized in southern California (cf. Bright and Hill 1967); group-internal tree in (1):



- Few remaining speakers of Cahuilla and Luiseño (Golla 2011), and none at all of Cupeño (Hill 2005).

**§1.2 Stress in Cupan:** Cupan languages show non-trivial differences in their word-prosodic systems (see esp. Hill and Hill 1968, Munro 1990), both in surface stress patterns and — to a greater extent — in the principles by which (primary) stress is assigned. This paper focuses on the divergence between Cupeño and Cahuilla.

- Cupeño and (Desert, Mountain) Cahuilla often show identical surface stress patterns in cognate items.
  - Many cognate CVCV roots show stem(/root)-initial stress in each language, e.g. (2a–b)
  - Both languages show evidence for prefixal/word-initial stress in some CV̄(C) noun roots, e.g. (2c).

(2)

	CUPEÑO	=	CAHUILLA	
a.	[súqa-t]	=	[súka-t]	‘deer-ABSL’
b.	[nə-ʂáʔi]	=	[ne-sáʔi]	‘my-guts’
c.	[tʃém-na]	=	[tʃém-naʔ]	‘our-father’

- But there are also numerous items in which Cupeño and Cahuilla show different stress patterns.
  - Cupeño has CVCV roots with  $2\sigma$  stem stress against Cahuilla stem-initial stress, e.g. (3a).
  - Also prefixal/word-initial stress mismatches in both directions, e.g. (3b–c).

(3)

	CUPEÑO	≠	CAHUILLA	
a.	[kaxá-l]	≠	[qáxa-l]	‘quail-ABSL’
b.	[nə-ʔáʃ]	≠	[né-ʔaʃ]	‘my-pet’
c.	[nó-tama]	≠	[ne-táma]	‘my-mouth’



- Comparison with Luiseño illustrates two important facts about PCC:
  - (i) Examples in (4a) show that PCC inherited contrastive vowel length (preserved in Luiseño), which was subsequently lost in both daughter languages.
  - (ii) Examples in (4b) with initial stress in PCC are an innovation against Proto-Cupan (PC), which had  $2\sigma$  root stress (preserved in Luiseño).
- Stress was attracted to word-internal long vowels in PCC nouns, resulting in  $2\sigma$  root stress, e.g. (5):

(5)	PCC		CUPEÑO	CAHUILLA		LUISEÑO
a.	*[qaxá:l]	>	[kaxá:l]	[qáxa-l]	‘quail-ABSL’	cf. [qaxá:l]
b.	*[qawí:-f]	>	[kawí:-f]	[qáwi:-f]	‘rock-ABSL’	[qawí:-tʃa]
c.	*[yamí:-f]	>	[yamí:-f]	[yámi:-ʎ]	‘forest-ABSL’	[yamí:-tʃa]

- Cupeño preserves the inherited pattern (matched in Luiseño), while Cahuilla has innovated stem-initial stress.

## §2.2 “Regular” stress rules in PCC: PCC thus had the regular stress rules in (6) (cf. Munro 1990:224–6):

- (6) (i) If the second syllable of the stem is long, stress it.  
 (ii) Otherwise stress the initial syllable of the stem.

- From an OTic perspective: WSP  $\gg$  ALIGN-L(PK, STEM)

## §2.3 “Exceptional” PCC stress patterns: PCC stress was generally stem-bounded, but prefixal/word-initial stress could arise with Cupan “stressless” roots (Hill and Hill 1968; cf. Heath 1977, Mamet 2011) and more generally, with PCC \*CV noun roots.

- Specifically, PCC stress was prefixal when such roots occurred in **absolute word-final position**.
  - Cupeño preserves prefixal stress when such roots are final, e.g. (7), but not non-final, e.g. (7f).
  - Cahuilla shows agreement in cognate monosyllabic noun roots, e.g. (7a–d).
  - But Cahuilla has innovated stem-initial stress in cognate disyllabic noun roots, e.g. (7e), and also prefixal stress in suffixed  $C\check{V}$  roots, e.g. (7f).

(7)	PCC		CUPEÑO	CAHUILLA		
a.	*[tʃóm-naʔ]	>	[tʃóm-na]	[tʃém-naʔ]	‘our-father’	
b.	*[né-yəʔ]	>	[né-yə]	[né-yeʔ]	‘my-mother’	
c.	*[né-muʔ]	>	[nú-mu]	[né-muʔ]	‘my-nose’	
d.	*[né-kiʔ]	>	[né-ki]	[né-kiʔ]	‘my-house’	
e.	*[né-t(a)ma]	>	[né-tama]	[ne-táma]	‘my-mouth’	cf. Lu. [nó-tma]
f.	*[nə-kí-ŋaʔ]	>	[nə-kí-ŋa]	[né-ki-ŋaʔ]	‘in my house’	

- The (historical and synchronic) motivation for stress shift onto the prefix in Cupan “stressless” roots is a complex (and still unresolved) issue (see Mamet 2011 for recent extensive discussion). In \*CV roots, it may be due to avoidance of a word-final degenerate head (trochaic) foot (cf. Yates 2016). In Luiseño, prefixal stress is dependent on syncope (cf. Lu. [pom-tamá:] ‘their-teeth’). Luiseño also has a long vowel in the cognate of (7f) — i.e. [no-kí:-ŋa] — which if present in PCC could explain why prefixal stress did not arise in this case.
- I assume that PCC had glottal stop insertion in (7a–d) as in Cahuilla (and Luiseño).
- Cupeño also has verbs with prefixal stress, which points to the same in Proto-Cupan, although the exact conditions are difficult to recover; prefixal stress has been eliminated in Cahuilla verbs except as an archaism in the verb *yax* ‘say’.

**§2.4 Beyond PCC:** Between PCC and its daughter languages contrastive vowel length was lost; historical long vowels were shortened (cf. Munro 1990:226).

- Interaction between stress assignment and vowel shortening in post-PCC schematized in (8):

(8)		‘day’	‘my mother’	‘wildcat’	‘quail’
UR		*/tami-t/	*/nə-yə/	*/tu:ku-t/	*/qaxa:l/
STRESS ASSIGNMENT:		támi-t	nó-yəʔ	tú:ku-t	qaxá:l
V:-SHORTENING:		–	–	túku-t	qaxá-l
SR		*[támi-t]	*[nó-yəʔ]	*[túku-t]	*[qaxá-l]

- Shortening did not affect root-initial or prefixal stresses, but rendered stress assignment to  $2\sigma$  root long vowels opaque.

- ▶ Opacity triggered broader restructuring of inherited stress system in both Cupeño and Cahuilla.

### §3 The development of Cahuilla stress

- How did Cahuilla respond to the loss of contrastive vowel quantity?

- Maintains PCC stem-initial default stress assignment, with **regularization** of historical stem-internal stresses. (§3.1)
- Analogical **extends** prefixal/word-initial stress to all  $C\check{V}C$  nouns. (§3.2)

**§3.1 Diachronic regularization in Cahuilla:** Cahuilla preserved the principle of PCC stress assignment whereby stress is assigned to the word’s **stem-initial** syllable.

- Polysyllabic words with inherited stem-initial stress exhibit no surface change, e.g. (9a–d).
- But words with historical stem-internal stress are **regularized** — they are now assigned stress by same default principle, resulting in historical “retraction” of stress to stem-initial syllable, e.g. (9e–f):

(9)	CAHUILLA			PCC
a.	/suqa-t/	→	[súqa-t] ‘deer-ABSL’	cf. *[sú:qa-t]
b.	/tuku-t/	→	[túku-t] ‘wildcat-ABSL’	*[tú:ku-t]
c.	/tami-t/	→	[támi-t] ‘day-ABSL’	*[támi-t]
d.	/ne-saʔi/	→	[ne-sáʔi] ‘my-guts’	*[nə-sá:ʔi]
e.	/qawi-tʃ/	→	[qáwi-f] ‘rock-ABSL’	*[qawí:-f]
f.	/qaxa-l/	→	[qáxa-l] ‘quail-ABSL’	*[qaxá:l]

} regularized

**§3.2 Extending “exceptional” prefixal stress:** Cahuilla also analogically extended prefixal stress from PCC \*CV roots to all C $\check{V}$ (C) noun roots.

- Inherited \*CV roots — e.g. (10a–b) — undergo no change.
- Prefixal stress extended to inherited \*CVC roots, e.g. (10c–d).

(10)	PCC		CAHUILLA		CUPEÑO
a.	*[tʃém-naʔ]	>	[tʃém-naʔ]	‘our-father’	cf. [tʃém-na]
b.	*[né-kiʔ]	>	[né-kiʔ]	‘my-house’	[né-ki]
c.	*[ne-ʔów]	>	[né-ʔew]	‘my-blood’	[nə-ʔów]
d.	*[nə-ʔáf]	>	[né-ʔaf]	‘my-pet’	[nə-ʔáf]

} “retraction”

- Two further changes induced by new (primarily) phonological generalization about prefixal stress:
  - Innovative prefixal stress pattern introduced into **suffixed** \*CV roots too, e.g. (11a).
  - But disyllabic roots with inherited prefixal stress were brought under scope of regular stem-initial stress rule, e.g. (11b):

(11)	PCC		CAHUILLA		CUPEÑO
a.	*[nə-kí-ŋa]	>	[né-ki-ŋaʔ]	‘in my house’	[nə-kí-ŋa]
b.	*[né-t(a)ma]	>	[ne-táma]	‘my-mouth’	[né-tama]

**§3.3 The diachrony of stress in Wanikik Cahuilla:** Wanikik Cahuilla further generalized regular **word-initial** stress (vs. stem-initial in other dialects).

- Development of word-initial stress rule caused no further change in unprefixated items or in prefixated C $\check{V}$ (C) roots — e.g. (12a–c) / (12d–e) — which would have provided the basis for the new generalization.
- But it drove “retraction” of stress in other prefixated stems, e.g. (12f–g):

(12)	WANIKIK CAHUILLA				CAHUILLA
a.	/tuku-t/	→	[túku-t]	‘wildcat-ABSL’	cf. [túku-t]
b.	/tami-t/	→	[támi-t]	‘day-ABSL’	[támi-t]
c.	/qawi-tʃ/	→	[qáwi-f]	‘rock-ABSL’	[qáwi-f]
d.	/tʃem-na/	→	[tʃém-naʔ]	‘our-father’	[tʃém-na]
e.	/ne-ʔew/	→	[né-ʔew]	‘my-blood’	[né-ʔew]
f.	/ne-saʔi/	→	[né-saʔi]	‘my-guts’	[ne-sáʔi]
g.	/ne-piwi/	→	[né-piwi]	‘my-great-grandfather’	[ne-píwi]

- This expansion of the stress domain from stem to word provides close parallel to what is hypothesized (in §4 below) between PCC and Cupeño.

## §4 The development of stress in Cupeño

- How did Cupeño respond to the loss of contrastive vowel quantity?
  - Cupeño maintains nearly all PCC surface stress patterns.
  - But stress is assigned by innovative principles — certain morphemes are lexically specified as stress-attracting (ACCENTED, PREACCENTING) and stress is determined morphophonologically.

**§4.1 Expanding the stress domain:** In Cupeño the stress domain was expanded from stem to word (just as in Wanikik Cahuilla).

- PCC prefixal stresses are assigned in Cupeño by the new phonological preference for **word-initial** stress, e.g. (13a–c) (cf. Hill and Hill 1968; Alderete 2001):

(13)	CUPEÑO	PCC
a.	$/tʃəm - na/ \rightarrow [tʃóm-na]$	‘our-father’ cf. $*[tʃóm-na]$
b.	$/nə - ki/ \rightarrow [nó-ki]$	‘my-house’ $*[nó-kiʔ]$
c.	$/nə-tama/ \rightarrow [nó-tama]$	‘my-mouth’ $*[nó-t(a)ma]$

- The lexical representation of the relevant morphemes remain unchanged (UNACCENTED).
  - One place where Cupeño has innovated at least with respect to Proto-Cupan (and likely also PCC) is in the corresponding plural forms of (13d) — compare Cu.  $[póm-tama]$  ‘their mouths’ with Luiseño  $[pom-tamá:]$ .

**§4.2 Lexicalization of stress:** PCC word-internal stress patterns — no longer phonologically predictable — were maintained by lexicalization.

- Most morphemes bearing word-internal stress were reanalyzed as underlyingly stress-preferring (ACCENTED), e.g. (14a–d).
- Prefixed PCC  $*CV$  roots retained stress on the root when followed by other suffixes (cf. §2.3).
  - These suffixes were reanalyzed in Cupeño as PREACCENTING (´-) — i.e., as preferring stress on the immediately preceding syllable, e.g. (14e).

(14)	CUPEÑO	PCC
a.	$/kawí - tʃ/ \rightarrow [kawí-ʃ]$	‘rock-ABSL’ cf. $*[qawí:-ʃ]$
b.	$/kaxá - l/ \rightarrow [kaxá-l]$	‘quail-ABSL’ $*[qaxá:-l]$
c.	$/nə - ʃáʔi/ \rightarrow [nə-ʃáʔi]$	‘my-guts’ $*[nə-ʃá:ʔi]$
d.	$/nə - ʔów/ \rightarrow [nə-ʔów]$	‘my-blood’ $*[nə-ʔów]$
e.	$/nə-ki-´\eta a/ \rightarrow [nə-kí-\eta a]$	‘in my house’ $*[nə-kí-\eta a]$

**§4.3 Leftmost wins:** As a result of this reanalysis, Cupeño words may contain multiple lexically stress-attracting morphemes (ACCENTED, PREACCENTING).

- In such cases, the leftmost accented morpheme receives stress, e.g. (15) (see Yates 2017a,b).
- Synchronically, leftmost wins falls out from same phonological preference for left-edge word stress that drives default word-initial stress.

(15) Cu.  $/nə-ʃáʔi-´\eta a/ \rightarrow [nə-ʃáʔi-\eta a]$  ‘in my guts’

- The diachronic analysis outlined here derives the **synchronic** Cupeño stress system in nouns. Not treated here are Cupeño accented suffixes, which occur only in the verbal system (e.g. PST.IPFV.SG  $/-qá/$ ); these historically come from roots via grammaticalization (see Heath 1977). From an OTic perspective, default leftmost and leftmost wins emerge from ALIGN-L(PK,  $\omega$ ).

## §5 Conclusions & discussions

§5.1 **PCC > Cupeño:** Proposed historical developments from PCC to synchronic Cupeño thus (cf. §4):

- After loss of contrastive vowel length, stress domain was expanded from stem to word.
  - Preference for stem-initial stress thus become a preference for **word-initial** stress.
- Cupan “stressless” roots and more broadly PCC \*CV roots that showed stress shift to prefixes developed into Cupeño unaccented roots.
- Possessor(/agreement) prefixes remain unaccented, but receive default initial stress in combination with Cupeño unaccented roots.
- Suffixes that immediately followed these proto-unaccented roots — and thus blocked PCC stress shift to prefixes — were reanalyzed as preaccenting.
- Root/word-internal stresses were lexicalized as features of the historically stressed morphemes.
- The same preference for word-initial stress that assigns default stress also accounts for leftmost wins in accent resolution.

§5.2 **PCC > Cahuilla:** Proposed historical developments from PCC to synchronic Cahuilla thus (cf. §3):

- After the loss of contrastive vowel length, the stem-initial stress rule was maintained.
  - “Irregular” historical stem-internal stresses were regularized, replaced by default stem-initial stress.
- Prefixal/word-initial stress was extended from prefixed word-final \*CV roots to all CVC noun roots.
- Wanikik Cahuilla shows further innovation of preference for word-initial — rather than stem-initial — stress (as in Cupeño).

§5.3 **Chronology of vowel shortening?** Contrastive vowel length was lost between PCC and Cupeño and Cahuilla — but **when?**

- Given that both languages show loss of contrastive vowel quantity, it is possible that this loss was an innovation of “late” PCC (thus Munro 1990:226).
- However, under the analysis proposed in §§3–4, shortening of \* $\bar{V}$  occurred independently in prehistory of Cahuilla and Cupeño (cf. Hill and Hill 1968:237–9).
- Viewing the loss of vowel quantity as separate innovations may better account for how each language preserves different features of the inherited PCC system intact:
  - Cupeño better preserves PCC **surface stress patterns**, developing new stress rules to account for it.
  - Cahuilla better preserves the **rules** of PCC stress assignment, maintaining the stem-initial stress preference.
- If Cahuilla passed through a Cupeño-like stage with word-initial stress preference, it is more difficult (though not impossible) to explain why stem-initial stress would **reemerge** historically, especially if stem-bounded stress is diachronically dispreferred (cf. §5.4). Moreover, the innovations may not have been wholly independent, since vowel shortening could have spread as an areal feature.

**§5.4 Domain broadening as optimization?** Both Wanikik Cahuilla and Cupeño may show expansion of the (regular) stress domain from stem to word.

- Are word-bounded stress systems preferred (e.g., in terms of learnability) to stem-bounded stress?
  - Since (regularly) stem-bounded stem stress is standardly reconstructed for PUA (Munro 1977; cf. Hill 2011), further work on the UA languages in particular may shed light on this hypothesis.

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