

## Stress and Syllable Strengthening in Quileute

James E. Hoard

University of Oregon

0. Introduction
1. Andrade's treatment
2. A mora-stress interpretation
3. Syllable strengthening

0. Quileute words exhibit a variety of pitches: high, mid, low, and falling. On a purely phonetic basis it is not clear whether Quileute is a stress language or a tone language. Indeed, in the absence of theoretical principles, deciding whether a given language is a stress language or a tone language can often be a problem. Let us follow Hyman (1975:204) in defining a stress language as one for which "there is a culmination of prominence on one syllable, and only one syllable per word (or stress unit) can receive this prominence." Many languages have culminative prominence---English, German, Spanish, French, Russian, Czech, Hungarian, Finnish, Puget Salish, Nyangumarda, etc. In all of these languages a prominent syllable generally has a higher pitch (and often greater force and/or longer duration) than any other syllable in the stress domain and we would not hesitate to call each of them a stress language.

For some stress languages, however, prominence is not quite so simple a matter. Let us define a "stress-tone" language as a stress language for which prominence may be realized (distinctively) in more than one way. In (Standard) Swedish, for example, the prominent syllable of a disyllabic or longer word may have either a rising or a falling pitch. Thus, we have änden 'the duck' with a rising pitch on the first (and prominent) syllable and änden 'the breath, spirit' with a falling pitch on the first (and prominent) syllable. Other "stress-tone" languages are Norwegian, Serbo-Croatian, Lithuanian, and Taos (Trager, 1946).<sup>1</sup>

In contrast to stress languages, we have also to characterize tone languages. Let us define tone languages as languages which have distinctive pitch accents occurring over words in a non-culminative distribution. By this definition we assign Mandarin, Igbo, Trique, Nupe, etc. to the class of tone languages.

In tone languages, the distinctive tones are lexicalized. That is, no general rules predict the appearance and locations of tones in tone languages, although tone sandhi rules are usually apparent. For stress languages, on the other hand, the placement of stress is either totally or partially predictable by rule. The rules for stress placement are always morphological at least to the extent that word (and/or phrase) boundary locations must be

known. The culminative nature of prominence in stress languages is explained if we note that stress placement is largely rule governed and if we postulate a stress-level convention (as in Sloat and Hoard, 1972; Hoard and Sloat, 1973). The stress-level convention claims that if a stress domain contains a stress (this may be a lexical stress or a stress placed by a rule), the application of a stress rule places a secondary stress.<sup>2</sup> In English, for example, the first application of the rule which stresses long unanalyzable words places a stress on the penultimate syllable of Monongahela; a second (iterative) application of the same rule gives a secondary stress (by the stress-level convention) on the second syllable. For a word such as Japanese, the suffix -ese is lexically marked for stress (and it has, therefore, a primary stress). A rule for analyzable words places a stress (secondary by the convention) on the initial syllable of Japanese. In Puget Salish the same principles apply. The lexically stressed suffix əb has primary stress in Tus̥teqiwáb čed 'I got on a horse' and a secondary stress (assigned by rule) appears on teqiw 'horse'. If əb is not present teqiw is stressed on the second syllable by the rule which stresses roots in Puget Salish. The same principles assure culminative prominence for both English and Puget Salish words.

Both Southern Paiute (Sapir, 1930, and Chomsky and Halle, 1968) and Delaware (Voegelin, 1946) have stress rules that assign stress on the basis of morae. In the stress rules of these languages, long vowels are equivalent to two short vowels so far as stress placement is concerned (V=VV). In Southern Paiute, primary stress is placed on the second mora of each word and a secondary stress is placed on each alternate mora to the right. A simple iterative rule which assigns stress from left-to-right (together with the stress-level convention) stresses Southern Paiute words correctly.<sup>3</sup> For Delaware, "the favorite position for stress is on the third mora from the end of the word (137)". Let us term languages with mora-sensitive stress rules, like Delaware and Southern Paiute, "mora-stress" languages.<sup>4</sup>

With the terminology suggested above in mind, we turn now to an examination of Quileute tonal accent phenomena.

1. Andrade (1959:162-171) takes Quileute to be a "stress-tone" language. He begins his discussion of Quileute accent by mentioning Lithuanian and Swedish (162) and closes (171) by noting that Quileute is not like Chinese, Ewe, and other tone languages. Andrade postulates four tones: high-falling (á·), low (à·), middle (á', á''), and high (á, á·). High-falling and low tone occur only on long vowels; middle and high tone occur on either long or short vowels. Andrade gives examples of these tones by way of fourteen patterns. For Andrade, Quileute stress is culminative (as by our definition it is for any stress language) and secondary stress is given in parentheses in the phonetic description of the patterns, although not in the transcriptions.

The fourteen patterns Andrade recognizes are:<sup>5</sup>



1

- b̄aae'ə 'bed'  
b̄āei'ə 'scared away'  
bāci'ə 'it flew'  
b̄iko's 'became big'  
k̄aya'sx 'again'



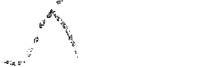
2

- bā.ol 'to accompany'  
bā.ik'Wal 'to be pregnant'  
bā.al 'to emerge'  
bā.a 'ripe'  
k̄ā.ic 'to wedge'



3

- bā.w̄o' 'to bring'  
bā.p̄o'q 'salal berry'  
bā.x̄o'q 'high sea'  
bā.b̄o'q 'rain'  
bā.x̄a'c 'summer'



4

- bā.x̄o 'empty'  
bā.x̄e 'ocean'  
tā.o'1 'anemone'  
kō.x̄o' 'to roll down'  
cē.x̄a ''to throw'



5

- bā.x̄a' 'to push'  
bā.ȳa' 'braid'  
bā.t̄a' 'round'  
bā.d̄o' 'need'  
bā.x̄ol 'to mend clothes'



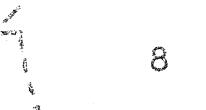
6

- dā.ki' 'then, so'  
bā.ya' 'raven'  
kā.ya' 'water'  
cō.tuk 'nose pendant'  
ḡā.ha' 'whale'



7

- h̄ók'bat 'blanket'  
q̄ā.s̄ayat 'early summer'  
t̄ötisil 'drill'  
t̄ax'x̄o' 'bow (for arrows)'  
kf̄iðol 'to anchor'



8

- bā.awi't 'to bark'  
qā.aws'c 'cedar basket'  
x̄os'ita't 'to bathe'

9	10
t̪w̪a'·dak teg̪e'·čis Ko'·lít lik̪u'·do' po'·Aš̪·so'	'blue huckleberry' 'thimble berry' 'a bridle' 'married woman' 'yellow'
yaló'lat si'kó'ya' tukó'yo' ?a'ó'wa' ha'é'tat	'wife' 'cedar bark' 'snow' 'platform' 'arrow'
11	12
h̪e'·čó'·dat ?e'·če'·dit čó'·bá'·yo' čí'·ká'·baí ?čí'·čó'·ait	'arrow point' 'belly' 'barnacle' 'water tight basket' 'bill of a bird'
?čí'·xuyo' ?čí'·če'xi'·t čó'·lita' ta'·yidi'·č ?ó'·čayi'·t	'box, pot' 'mountain' 'fish, salmon' 'fish club' 'the back'
13	14
čá'·če'pí' čá'·če'·pí' čá'·če'·pí' čá'·če'·pí' čá'·če'·pí'	'it blows (the wind)' 'blind' 'to bother' 'to brush' 'slowly'
sísa'·?wá' ciya'·?wá' Kayo'·?wá' ?aco'·?wá' tiko'·?wá'	'before' 'beneath' 'after' 'to be in bed with' 'to wait'

In the main, the phonetic patterns described by Andrade (from his 1928 field work) were replicated in field work done in 1968. Andrade's phonetic patterns are apparently based on the speech of Mr. Jack Ward (p.163). All of the phonetic transcriptions which I offer in this paper are based on the speech of Mr. Fred Woodruff, whose assistance is gratefully acknowledged.

The first six of Andrade's patterns I also found to be distinct. Pattern seven was not distinct; all of the words have apparently only two syllables and actually follow pattern 2 (at least in the speech of Mr. Woodruff): [hók"-cét] 'blanket', [qá'čó-yéč] 'early summer', [thót-síč] 'drill', [t̪áx"-čóč] 'bow (for arrows)', and [Ké'če-čóč] 'to anchor'. [-] indicates a syllable boundary; ['] and ["] indicate primary and secondary stress, respectively.

Pattern eight is also problematical as Andrade has it. [sá<sup>7</sup>-wít], which actually means 'tree bark', seems to me to have only two syllables. So does [qʰá<sup>7</sup>wàc] 'cedar basket'.<sup>6</sup> There are, however, other words with the stress pattern primary-weak-secondary: [qʰó-lo-wètx] 'to climb down, descend', [té-ča-xès] 'he knows'.

Patterns nine through fourteen all seem to me to be distinct, as Andrade has them.

2. I do not find it necessary to distinguish four tones, as Andrade does, to describe the Quileute word-stress patterns. Let us reinterpret a long vowel as a sequence of independently stressable short vowels. If so, then I interpret the patterns 1-6 and 9-14 as follows:

1 [ba-sé <sup>7</sup> ] [bi-sé <sup>7</sup> ] [dá-sé <sup>7</sup> ] [dó-kho <sup>7</sup> ] [xa-yax <sup>7</sup> ]	2 [hé <sup>7</sup> -'é <sup>7</sup> l] [hé <sup>7</sup> -'é <sup>7</sup> el] [q'hé <sup>7</sup> -'é <sup>7</sup> l] [čá <sup>7</sup> -'é <sup>7</sup> l] [kfa-' <sup>7</sup> é <sup>7</sup> c]	3 [lú-wòc <sup>7</sup> ] [khó-'é <sup>7</sup> ad] [ya-xòc <sup>7</sup> ] [q'bó-bòoq] [té-xac <sup>7</sup> ]
4 [čé-o-xóo <sup>7</sup> ] [q'hé-áéo <sup>7</sup> ] [čé-' <sup>7</sup> cl] [čé-bó- <sup>7</sup> hol] [čé-bó- <sup>7</sup> hol]	5 [cheé-' <sup>7</sup> ll] [phá- <sup>7</sup> é <sup>7</sup> l] ['oo- <sup>7</sup> lit] ['oo- <sup>7</sup> dó <sup>7</sup> ] [té-' <sup>7</sup> kíl]	6 [dáa-kh <sup>7</sup> z] [báa-yeq] [k'wáa-ye <sup>7</sup> ] [q'who-tóć-set] [k'wháa-λe <sup>7</sup> ]
7 [tú-čé-' <sup>7</sup> de <sup>7</sup> ] [čé- <sup>7</sup> qá-' <sup>7</sup> é <sup>7</sup> ] [čé-' <sup>7</sup> é-' <sup>7</sup> xt] [li- <sup>7</sup> iná-' <sup>7</sup> do <sup>7</sup> ] [phé-' <sup>7</sup> éé- <sup>7</sup> so <sup>7</sup> ]	8 [ya-' <sup>7</sup> oo- <sup>7</sup> lt] [se-' <sup>7</sup> éoo- <sup>7</sup> ye <sup>7</sup> ] [tr-' <sup>7</sup> kóo- <sup>7</sup> yo <sup>7</sup> ] ['a-' <sup>7</sup> oo- <sup>7</sup> wo <sup>7</sup> ] [ha-' <sup>7</sup> ée- <sup>7</sup> that]	9 [hé <sup>7</sup> -' <sup>7</sup> éeo-dat] ['òó- <sup>7</sup> qée-drt] ['éó <sup>7</sup> -báa- <sup>7</sup> yo <sup>7</sup> ] ['éif-k <sup>7</sup> é- <sup>7</sup> báy] <sup>8</sup> ['ò <sup>7</sup> -' <sup>7</sup> éeo-srt] <sup>9</sup>
10 [čé-' <sup>7</sup> xWí- <sup>7</sup> g <sup>7</sup> ] [čé-' <sup>7</sup> é-' <sup>7</sup> e- <sup>7</sup> xit] [čé-' <sup>7</sup> é-' <sup>7</sup> ir- <sup>7</sup> á <sup>7</sup> ] [čé-' <sup>7</sup> haá- <sup>7</sup> y- <sup>7</sup> díz] [čé-' <sup>7</sup> oo- <sup>7</sup> á- <sup>7</sup> yít]	11 [čé-' <sup>7</sup> éé- <sup>7</sup> so] <sup>10</sup> [bib- <sup>7</sup> bo- <sup>7</sup> áa] [k <sup>7</sup> íd-de- <sup>7</sup> áa] [šé-' <sup>7</sup> é- <sup>7</sup> áa] [há-' <sup>7</sup> ce- <sup>7</sup> áa]	12 [si-sá <sup>7</sup> -wàa] [čhí- <sup>7</sup> á- <sup>7</sup> wàa] [čá- <sup>7</sup> yó <sup>7</sup> -wàa] [ <sup>7</sup> a-čó <sup>7</sup> -wàa] [či-khó <sup>7</sup> -wàa]

In this analysis (essentially phonetic), a short stressed vowel has a high pitch. A long vowel stressed on the first mora has a high-falling pitch, one stressed on the second mora has a

relatively high and rather level pitch; one with a secondary accent has a low pitch. This immediately reduces Andrade's four tones to a system of mora stress.<sup>11</sup>

In favor of the mora-stress account is the fact that relatively level pitch versus high-falling pitch is restricted to long vowels. In the system I am advocating, a relatively level pitch is transcribed as aa and a high-falling pitch as æ. By way of comparison, note that the tonal accents of Swedish occur on both long vowels and short vowels. Word shape and morphological information are pertinent to the choice of tonal accent in Swedish (it is basically a lexical choice) but vowel length is not a factor.

At this point, it would be nice if I could offer some specific rules for Quileute stress placement. Unfortunately, Quileute stress placement seems closely tied to the morphology of the language (as it is also in English) and I am unable to give more than a few remarks.

1.) The suffix waa seems often to place stress on the immediately preceding vowel (noted also by Andrade, fnl., p.165); but not always, as in (chá-doo-waa) 'to be near'.

2.) The suffix yan places stress two morae to the left, if possible (and on the immediately preceding vowel of a disyllabic word: (yu-yañ) 'happy').

3.) In patterns two, eleven, and twelve the secondary stress seems to be due to the fact that the forms are morphologically complex: həgʷəl, həgʷəlta?, həgʷəgʷəxít, etc.

4.) tañ and tao are stressed on the second mora unless they are shortened to ta and to.

It seems that some understanding of Quileute stress placement could be gained if a detailed morphological analysis were available. Certainly, many apparently unanalyzable words like nałigolat 'woman' and kadesdə 'dog' have identical stress patterns. Many others, which are morphologically complex, seem to have different stress patterns: bəs-ičə? 'bad' versus bəs+sičà? 'bad water'.

In any event, the mora stress analysis proposed here is a major simplification of Andrade's description even if many Quileute words turn out ultimately to have lexical stress (as in English).

3. Finally, I should like to consider syllable strengthening in Quileute. Andrade notes that "lengthening of a consonant occurs chiefly when a single consonant closes an accented syllable followed by an affixed element (p.161)." It seems to me, however, that accented syllables are always "heavy" in Quileute. That is, an accented syllable has either a long vowel or is closed by at least one consonant. I have recorded such examples of closed syllables (in addition to examples already given above) as:

[tʰəčə-čil]	'smart, intelligent'	[séb-bəs]	'shark'
[kəd-dil]	'full moon'	[χóxʷ-xʷə]	'hard (to pull)'
[hál-ləl]	'scooter'	[təx-xə]	'hot'

[yót-čʰə]	'dogfish'	[l éh-qʷè]	'clear (weather)'
[čé-ʔéʔ]	'cooked'	[čón-phè]	'green-blue'
[tʰé-bób-bil]	'car'	[ʔáh-kʰíl]	'bear'
[šúk-kʷà]	'sugar'	[tóh-pe]	'ten'
[čóp-phís]	'cedar' (citation)	[ká-čʰé]	'stone'
[čáh-phís]	'cedar' (allegro)	[ʔó-čʰúš]	'neck'
[pʰáh-kʷád]	'skatefish'	[phé-čʰé]	'full'
[kʷáh-phí]	'coffee'	[tʰéh-tʰéth]	'winter'
[yah-pʰól]	'tired'		

Compare the above words with such examples as:

[hé-ʔésb]	'pidgeon'
[čé-ʔéb]	'grass, hay'
[pʰéé-títh]	'daytime'
[kʰáá-pʰé]	'surf'
[qʷhéé-fé]	'sunshine'
[čéé-pe]	'tight'
[čéé-če]	'to fly'
[čéé-čeʔ]	'waterfall'

The processes of syllable strengthening can be stated as follows:

1)  $\emptyset \rightarrow C_1 / CV - C_1 V$  (gemination)

2)  $\begin{bmatrix} C \\ -vá \\ -əcənt \\ wglott \end{bmatrix} \rightarrow \begin{bmatrix} G \\ -glo \\ -glott \end{bmatrix}$  (vl. obstruent reduction)

$G = "glide"$   
 $= ?, h$

In the data I have collected, a glottalized consonant is always reduced to [?] by 2) and a voiceless stop is nearly always reduced to [h]. Because of rules 1) and 2), a primary stressed syllable in Quileute is always quite prominent.

The rules just given permit significant reductions in the complexity of underlying forms: [bál-léll] is simply /balal/, [<čóh-pʰáʔ] is /čupa/. Some internal [ʔ]'s are now seen to be "etymological", as in [kʰé-ʔéʔ] 'far off'. And for a final glottal stop contrasting with ɸ compare [<čá-ʔé] 'sitting' with [<čá-ʔéʔ] 'sit down'. Lastly, we should note that monosyllables with a short vowel followed by a single consonant require strengthening. In this case, glottalized consonants have a glottal stop inserted before them: [ha'č] 'good' /hač/, [<či'kʷ] 'skunk' /čikʷ/, and other consonants are lengthened: [boc'] 'short' /buc/,

[g<sup>h</sup>ax̥] 'bone' /gax̥/, [k<sup>h</sup>as̥] 'skin' /kis̥/, [p<sup>h</sup>et̥u] 'noon, month'  
/pit̥/. Monosyllables like long vowels followed by a single consonant often do show some kind of vowel glottalization (?) before a glottalized consonant: [θaθ̥ə] 'goat' /θaθ̥ə/, [ʃɛθ̥ə] 'rat, grease' /ʃɛθ̥ə/. No strengthening is evident for non-glottalized consonants: [θoθ̥ə] 'rat, grease' /θoθ̥ə/.

#### REFERENCES CITED

##### FOOTNOTES

<sup>1</sup>Actually "stress-tone" is too narrow a term. The definition of this type of language is intended to cover also the situation in Danish, where one kind of prominence involves higher pitch and laryngealization of the vowel ("stød") and the other kind involves higher pitch and no laryngealization.

<sup>2</sup>The stress-level convention is the inverse of the Chomsky-Halle (1968) stress assignment principle. For Chomsky and Halle any new application of a stress rule in a cyclic application re-assigned primary stress and lowers previously assigned stresses by one level. However, as Chomsky and Halle point out (1968:115), their convention and the cyclic principle cannot be made to account for all stress levels automatically.

<sup>3</sup>Voiceless vowels are apparently unstressable in all languages; they are not stressed in Southern Paiute. Hence, in a two syllable Southern Paiute word of the shape *papā*, the first mora is stressed because the second is unstressable.

<sup>4</sup>It might be that the rules in all stress languages can be stated over more with no loss of generality. If not, however, we could speak of languages with "syllable-stress" as opposed to those with "more-stress".

<sup>5</sup>I have transcribed Andrade's consonant symbols in the current fashion, where necessary: (?) for ('), (ł) for (c), (č) for (tch), (łł) for (tsch), etc. I have also added initial (?), omitted by Andrade. Andrade's lower period (.) is a "dieresis" or pause. A raised period after a consonant shows consonant length or gemination.

<sup>6</sup>The problem, of course, is whether the vowel after a glottal stop is a true vowel or an "echo" vowel. In many cases, it seems to me to be an "echo" vowel, one that can be omitted in slow, careful speech.

<sup>7</sup>A 'small night bird'; not a 'platform', according to Mr. Woodruff.

<sup>8</sup>This word actually goes in pattern 8.

<sup>9</sup>This word also means 'nose'.

<sup>10</sup>This word actually goes in pattern 6.

<sup>11</sup>As far as I can tell, the accent system of Quileute is somewhat like that of Homeric Greek as described by Pharr (1959).

## Bibliography

- Andrade, M. J. 1939. Quileute. in MAIL3.
- Chomsky, N. and M. Halle. 1968. The Sound Pattern of English. New York: Harper and Row.
- Hoard, J. and C. Sicut. 1973. Variation in English Stress Placement. In C.-J. N. Bailey and R. W. Shuy (eds.) New Ways of Analyzing Variation in English, 265-275. Washington: Georgetown University Press.
- Hyman, Larry M. 1975. Phonology: Theory and Analysis. New York: Holt, Rinehart.
- Pharr, C. 1959. Homeric Greek. Norman: Oklahoma University Press.
- Sapir, E. 1930. Southern Paiute, a Shoshonean Language. Proceedings of the American Academy of Arts and Sciences, 65.
- Seast, C. and J. Hoard. 1972. English Stress. Presented at the summer meeting of the LSA, Chapel Hill, N.C.
- Trager, G. L. 1946. In VPPA6.
- Voegelin, G. F. 1946. In VPPA6.