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SEGMENTATION OF CONSONANTS IN NORTHERN PAIUTE

Neva and Edward Andrews

1. Introduction
2. Suspect Sequences
3. Nonsuspect CV Patterns
4. Interpretations
5. Summary

1. The basis for analysis of this problem in segmentation has been a dialect of Northern Paiute spoken on the Western Shoshone Indian Reservation in northern Nevada.

2.1. Suspect sequences of consonants in Northern Paiute include the following: [kw, gw, ts, dz, dž, n·, m·, ʔy, ʔw, ʔn, ʔm].

2.2. Examples of suspect sequences are:

- [kw] [pa'kwi] 'fish', [sa'kwa] 'should'
- [gw] [to'go·gwa] 'rattlesnake', [sa'gwa] 'hay in stomach'
- [ts] [wa'tsi] 'to hide', ['na·tsi] 'boy'
- [dz] [i'dza·ʔa] 'coyote', [hu'dzi] 'sagehen'
- [dž] [tɬ'hi·džə] 'deer', ['pi·džaʔi] 'thirsty'
- [ʔy] [pa'hi·ʔyu] 'three', [tsa'pi·woʔyə] 'to drag'
- [ʔw] [pa'ʔwa] 'to swell', [tsi'hi·ʔwi] 'to dig with a stick'
- [ʔm] [sa'ʔmi] 'wet', [wi'dzi·ʔmi] 'to be full'
- [ʔn] [mo'go·ʔni] 'woman', ['ma·ʔno] 'stop (doing that)'
- [n·] [tɬ'n·ə] 'antelope', [ha'n·i] 'do'
- [m·] [ka'm·a] 'taste', [ki'm·ə] 'come'

3. The only nonsuspect CV patterns in Northern Paiute syllables are V and CV as shown in the following examples:

V [ɛ] 'you' (sg.), [ɛ.'mɛ] 'they', [mi.'æ] 'to go'

CV [na.'k̥a] 'ear' or 'to hear', [na.'pa.sa.gɛ.nə] 'dried'

4.1. Since there are no nonsuspect sequences of consonants, the labialized stops [kw, gw], the affricates [ts, dz, dʒ], and lengthened nasals [n̄, m̄] are interpreted as unit phonemes:

/k^w, g^w, c, ʒ, j, n̄, m̄/.

Examples: [pa'k̥wi] 'fish' /Pak^wɪ/

[sa'gwa] 'hay in stomach' /Sag^wá/

[wa'tsi] 'to hide' /Wacɪ/

[i'dza.ʔa] 'coyote' /izáʔa/

[tɬ'hɛ.dʒə] 'deer' /Tɬhɛʃja/

[tɬ'n̄.ə] 'antelope' /Tɬn̄.á/

[ka'm̄.a] 'taste' /Kam̄.á/

4.2. With the series of glottal stop plus continuant, [ʔy, ʔw, ʔm, ʔn], the glottal stop could be combined with the following continuant to form a series of complex unit phonemes, /w̥, y̥, m̥, n̥/ as were the labialized stops and the affricates in 4.1.

Alternatively, it would be possible to combine the glottal stop with the preceding vowel to form a series of glottalized vowels: /ḁ, i̥, ɛ̥, u̥, o̥/. These alternative phonemicizations would produce the following results:

		I	II
[sa.ʔa]	'afterwhile'	/Sáʔa/	/Sáa/
[tsa'pi.woʔyɛ]	'to drag'	/Capɪwoy̥ɛ/	/Capɪwoy̥ɛ/
[tsi'hi.ʔwi]	'to dig with a stick'	/Cihɪwi̥/	/Cihɪwi̥/
[ɛ.ʔwi]	'to sleep'	/ɛ̥wɪ/	/ɛ̥wɪ/
[tu.ʔi]	'almost'	/Tu̥ɪ/	/Tu̥ɪ/
[ʔo.ʔno]	'then'	/ʔo̥no/	/ʔo̥no/

This second interpretation would eliminate five consonant phonemes from the language: the four phonemes listed above as glottal stop plus continuant, and the intervocalic glottal stop which would otherwise pattern as a consonant phoneme.

However, this would at the same time double the number of vowel phonemes. Furthermore, phonetically the vowel and glottal stop are separate segments. That is, there is no synchronous overlapping of the glottal quality and the vocoid quality.

The nonsuspect patterns of the language never allow more than two consecutive vowels. But if the glottalized vowel interpretation is adopted there would be three consecutive vowels in such examples as:

[tsɿ'aʔa]	'girl'	/Cɿaa/
[tɿ'i·ʔa]	'fear'	/Tɿia/

Thus one can see that there is no real advantage in the glottalized vowel interpretation over the interpretation of uniting the glottal stop with the following continuant. There is actually no conservation of phonemes since what is lost in the consonant phonemes is added in the vowel phonemes. In fact, this interpretation even becomes a bit awkward in that it allows for a different combination of syllables than is otherwise found in the language.

On the other hand, if the first interpretation is adopted, there is a symmetry of phonemes which would otherwise be lacking. There are two series of stop phonemes which contrast medially but are neutralized in utterance initial position and certain other positions not yet fully defined. If the glottal stop is united with the following continuant to form a complex unit phoneme, this same type of neutralization can then be observed with /m, n, y, w/.

Phonemic chart of consonants:

Stops	{fortis	p	t	k	k ^w	c	s
	{lenis	b	d	g	g ^w	ʒ	z
Continuants	{fortis	m·	n·	k ^w	j		
	{lenis	m	n	w	y		
	{preglottal	ṁ	ṇ	w̥	y̥		
Others		h	ɣ	ʔ			

Chart showing neutralization:

Utterance initial	Morpheme medial	Verb initial
P	p / b	P
T	t / d	T
K	k / g	K
K ^w	k ^w / g ^w	K ^w
C	c / z	C
S	s / z	S
M ([m])	m / m [•] / [̣] m	M ([[̣] m])
N ([n])	n / n [•] / [̣] n	N ([[̣] n])
Y ([y])	y / j / [̣] y	Y ([[̣] y])
W ([w])	w / k ^w / [̣] w	W ([[̣] w])

Examples showing the parallel neutralizations:

/P/ [pu'gu]	'horse'	/Pugú/
[tɬ'pə]	'mouth'	/Tɬpá/
[tɬ'bə]	'pinenut'	/Tɬbá/
['nɬ wi'hi pu'ni] 'I see the knife' /Nɬ wihí Puní/		
/T/ [tɬ'kə]	'eat'	/Tɬká/
[ku'kə]	'neck'	/Kutá/
[ki'ǎɬ]	'ground hog'	/Kidɬ/
['nɬ pi'šə tɬ'kə] 'I ate well' /Nɬ písá Tɬká/		
/K/ [ku'tsu]	'cow'	/Kucú/
[i'kɛ]	'this'	/iká/
[i'gɛ]	'mine'	/igá/
[u'su pɬ'dɬ·su ki'mə·kwɬ] 'He will come soon'		
/usú pɬdɬsu Kimák ^w ɬ/		

/C/	[tsi'də]	'dish'	/Cidá/
	[hu'tsi'i]	'paternal grandmother'	/hucí'i/
	[hu'dzi]	'sagehen'	/huzí/
	['nɪ 'bɪ·wɪnəɬɪ tsi'pu·gi] 'I go outside'		
	/Nɪ bɪwɪnatɪ Cipúgi/		
/M/	[ma'ni]	'do'	/Maní/
	[ta'mi]	'we' (incl.)	/Tamí/
	[sa'ʔmi]	'wet'	/Samí/
	['nɪ wi'hi ʔmai'yɫ] 'I find a knife' /Nɪ wihi Maiyɬ/		
/N/	[no'bi]	'house'	/Nobí/
	[na'na]	'man'	/Naná/
	[ma'ʔna]	'tree limb'	/Maná/
/Y/	[yɛ'pa]	'carrot'	/Yapá/
	[mai'yɫ]	'find'	/Maiyɬ/
	[wa'haiʔyu]	'two'	/Wahaiyu/
	[na'na pi'ʃə ʔyæ·dua] 'man talks good' /Naná pisá Yádua/		
/W/	[wa'tsi]	'to hide'	/Wací/
	[yɛ'wa]	'all right'	/Yawá/
	[pa'ʔwa]	'to swell'	/Pawá/
	['nɪ wi'hi ʔwa'ɬi] 'I look for a knife' /Nɪ wihi Watí/		

This same parallelism between the stops and the continuants can also be observed in the morphophonemics. If, however, the second interpretation were adopted, this parallelism would be obscured.

Therefore, for simplicity of syllable patterns and parallelism with other consonants throughout the language [ʔm, ʔn, ʔy, ʔw] have been interpreted as complex unit phonemes:

/m̥, n̥, y̥, w̥/.

5. In conclusion, it may be stated that each suspect sequence of consonants in Northern Paiute patterns as one complex unit phoneme. As has been illustrated, this interpretation affords the neatest description of the phonemes both in simplicity of syllable patterns and in over all symmetry of the phonemes.