Phoneme Classes in Sayula Popoluca

Lawrence E. Clark

STUDIES IN LINGUISTICS
Vol. 14, Nos. 1-2, 1959

[Department of Anthropology and
Linguistics, Univ. of Buffalo]

PHONEME CLASSES IN SAYULA POPOLUCA

Lawrence E. Clark, Summer Institute of Linguistics

[PJ4183.23. Popoluca of Veracruz--Phonemics.]

0. The Sayula Popoluca language is a member of the Mixe-Zoquean linguistic family of southern Mexico. It is spoken by approximately 4000 people who live in the town of Sayula, Vera Cruz, about 35 miles from the port town of Coatzacoalcos, Vera Cruz.

The material for this paper was gathered during the years 1954-7 when the writer was residing in the town of Sayula doing linguistic investigation for the Summer Institute of Linguistics. Principal informants have been Panuncio Isidoro and Fortino Vidaña, native bilinguals and residents of Sayula.

This paper describes the phonemic system of Sayula Popoluca. Phonemes are considered under two sections: (1) phonemes classified by phonetic criteria, and (2) phonemes classified by distributional criteria.

1. Phonemes classified by phonetic criteria. There are two major classes of phonemes: consonants and vowels. These two classes are further divided into the following contrastive classes:

1.1 The voiceless stops /p, t, k/ contrast with their voiced counterparts /b, d, g/. Examples: pón 'knot', ?ámpay 'old', kap 'reed'; ?ámbanu 'ancient', cábac 'red'. ták 'dog', hútuk 'insect', sígit 'type of locust'; húdut 'to poke at', káduc 'sour', cúkan 'knife', cʌ·nka 'crazy', cék 'shirt'; cúgin 'a fight', cʌ·ngap 'they sit'.

The oral voiceless stops /p, t, k/ have aspirated allophones in utterance final position which are actualized with the voiceless quality of the preceding vowel. Examples: híp [hípI] 'a cold', ?ápit [?ápitI] 'thorn', ?ák [?ákA] 'skin'.

The voiced stop phoneme /d/ fluctuates freely with the flapped /r/ phoneme in words of Popoluca origin. Thus, káduc or káruc 'sour'.

1.2 In the glottal sounds the stop contrasts with the spirant: /?, h/. Examples: ?ʌ́kšp 'he shells corn', ?ík?ik 'type of bird'; hʌ́·kšp 'he brays', píhik 'flower'.

1.3 The alveolar and alveopalatal affricates /c, č/ contrast with their sibilant counterparts /s, š/ ('š' is phonetically [s̬]). Examples: cák 'plank', cʌ́?kš 'to be tight', pác 'to be full'; čák 'greeting form', páč 'lizzard'; sí?ks 'to fumigate'; šák 'a woman's mother-in-law', šíkš 'to shake', čí?kš 'squash'.

1.4 Nasals contrast as to labial and non-labial points of articulation: /m, n/. Examples: múguš 'back', kómon 'pillar', pém 'drum'; nípin 'blood', tú?nuk 'turkey', nʌ́·n 'tortilla'.

Nasals when utterance final after vowels are partially unvoiced. Examples: mʌ́n [mʌ́nN] 'sweet potatoe', pém [pémM] 'drum'. Nasals in utterance final position after marginal consonants or nuclear /h/ are completely unvoiced. Examples: tʌ́km [tʌ́kM] 'the town of Sayula', hóhn [hóhN] 'bird'. /n/ assimilates to velar position before velars. Example: té?nk [té?eŋk] 'ladder'.

1.5 There are two glided continuents: /y, w/. These are distinct from the vowels /i, u/ in that /y, w/ are marginal and /i, u/ are nuclear. Examples: yáw 'tender', wʌ́·y 'mange'; wék 'frog', tó·w 'road'; píštik 'flea', cúgut 'worm'.

/y/ occurs word final after nuclear /h/ as a voiceless high close non-syllabic vocoid approaching local friction at the palate. Example: ?áhy [?áhY] 'leaf'. /w/ occurs word final after marginal consonants or nuclear /h/ as a voiceless high close back rounded non-syllabic vocoid. Examples: šʌ́hw [šʌ́hW] 'sun', ?ipʌ́kw [?ipʌ́kW] 'he took it'.

1.6 The liquids /r̄, l/ contrast as to trilled and lateral types of articulation. Examples: r̄óp 'to beat', mo·kwintʌ́r̄ 'type of tree', kár̄uc 'type of bird'; lóp 'to soak', pógol 'to roll'.

1.7 Spanish loan words introduce further phonemic contrasts: fricatives at labial and dental-alveolar points of articulation, and also a flapped /r/ contrast at the latter point of articulation: /f, v/ (phonetically [ɸ, β]), /đ, r/. Examples: fí·lu 'cutting edge' (compare pí·lu 'Philemon'); sávana 'sheet', (compare cábac 'red'); káđa 'each', (compare káduc 'sour'); péro 'but', bára de medír 'measuring stick'.

It must be noted here that because of káduc 'sour', and bára 'stick' and comparable examples, /d/ and /r/ contrast. Hence the free fluctuation of these two sounds in words of Popoluca origin must be described as fluctuation between two phonemes rather than two allophones.

1.8 There are three high vowels and three lower vowels, two of which are front, two are central and two are back: /i, ʌ, u; e, a, o/. Examples: čík 'badger', čék 'shirt'; cʌ́k 'to touch', cák 'plank'; húk 'deep', hók 'spotted skin'.

Each of these vowels forms the core of six types of contrastive syllable nuclei. The first type is comprised of the simple core; the second, of the core followed by /h/ which has the vocoid quality of the core vowel: /v, vh/. Examples:

ʔóy 'good', ʔóhy 'a woman's sister-in-law'. Two other nucleus types are like the first two except for the fact that the core vowel is long rather than short, as: /v·, v·h/. Examples: tʌ́·cway 'it's dried', tʌ́·hc 'tooth'. A fifth type is /vʔ/ which is followed by a phonetic rearticulation of the core vowel, thus [vʔv]. Example: nʌ́ʔ [nʌʔʌ] 'water'. The sixth nuclear type is the above sequence followed by a voiceless vocoid of the same quality as the core: /vʔh/, phonetically [vʔvV]. Example: nʌ́ʔh [nʌ́ʔʌ] 'watery'.

In addition to the contrasts illustrated above, further illustrations are as follows:

Contrast of /v/ with /v, vʔ, v·h, vʔh/: nás̆ 'to pass', ná·s̆ 'earth; kʌ́t 'hole', kʌ́ʔt 'dough'; s̆ák 'a woman's mother-in-law', s̆á·hk 'seashell', s̆áʔhk 'a beverage' (note also the contrast of /v·h/ with /vʔh/ in the latter example).

Contrast of /vh/ with /v·h/ and /vʔh/: máhk 'clay jar', mó·hk 'corn'; s̆ʌ́hk 'bean', s̆áʔhk 'a beverage'.

Contrast of /v·/ with /vʔ, vh, vʔh/: pú·cpuc 'trash', púʔcpuc 'yellow'; ʔó·y 'shrimp', ʔóhy 'a woman's sister-in-law'; kó·y 'egg', ʔikóʔhy 'when he sucked'.

Contrast of /vʔ/ with /vh/ and /v·/: púʔy 'to chew', púhy 'thigh'; tóʔk 'mat', tó·hk 'iguana'.

It needs specific mention here that nuclear /ʔ, h/ are treated as being distinct from marginal /ʔ, h/. The nuclear /ʔ/ occurs following the vowel and is again followed by a phonetic rearticulation of the vowel. The marginal /ʔ/ occurs syllable initially before vowels or between diverse vowels and is not rearticulated. In the same manner the nuclear /h/ occurs following the core vowel whereas marginal /h/ occurs only syllable initially before vowels.

1.9 Contrastive supra-segmental features are stress and intonation.

Certain minimal forms have been observed in which stress alone is the contrastive feature. Note: káhuk 'he says, "no"', kahúk 'it isn't deep'; kʌ́ʔak 'sand', kʌʔák 'skin of the hand'.

Intonational features in Sayula Popoluca have not been completely analyzed; therefore only a tentative statement is presented here. However, evidence tends toward a hypothesis of four contrastive intonational pitches. Intonation groups show contrast at marginal points of phonemic pause groups or breath groups. Note contrast in the following examples after low pitch (in which /^{1}/ marks lowest pitch, /^{2}/ marks mid pitch, /^{3}/ marks high pitch, /^{4}/ marks extra-high pitch, /$^{3-1}$/ a glide from high to low).

4 1 4
ʔitp kaɾetera 'Is there a road? [question]'

1 3
ʔiʔaktanga 'When they grabbed him...[dependent]'

4 1 2
ʔitp nat nʌʔhy 'Is there...[what's its name?]'

4 1 3-1
ʔitp kaɾetera 'There is a road [statement, said insistingly]'

2. Phonemes classified by distributional criteria. The distribution of consonants is treated in reference to their occurrence in the syllable and then the distribution of syllables is treated in reference to their occurrence in the utterance. The consonant phonemes introduced by loan words are presented as constituting a special distribution class.

One and only one vowel may occur as the core of any syllable nucleus but without limitation as to which of the six vowels may occur. All syllables in Sayula Popoluca occur with an initial consonant. Zero, one or two consonants may occur following a vowel nucleus with /h/. Examples: poh 'vine', pahk 'bone', ʔikihpš 'when he measured'. Zero, one, two or three consonants may occur following a vowel nucleus without /h/. Examples: té 'if', tak 'dog', wéks 'griddle', kipsp 'he measures'.

2.1 The distribution of consonants within the syllable framework is here described. In the following description a consonant will be symbolized by 'C'. 'V' symbolizes any vowel nucleus of a /v/, /v·/ or /vʔ/ type whereas 'Vh' symbolizes any nucleus of a /vh/, /v·h/ or /vʔh/ type. Consonant slots in the syllable are numbered with a subscript numeral which corresponds to the number of their distribution class. Subscript letters 'a', 'b', or 'c' following the numeral indicate sub-classes. Thus, syllable patterns /CV/, /CVC/, /CVhC/, /CVCC/ are labeled 'C_1V', 'C_1VC_1a', 'C_1VhC_1b', '$C_1VC_1aC_1c$' respectively. Because distinct classes of consonants fill the slots following /V/ in /CVhCC/ or /CVCCC/ syllables, these patterns will be labeled as '$C_1VhC_2C_3$' and '$C_1VC_2C_3C_4$' respectively.

All consonants may occur in initial consonant slot (C_1) in all syllable patterns. Therefore consonants in C_1 slot constitute a major distribution class of consonants and are labeled Class 1. They are here presented with examples.

Class 1:

/p t c č k ʔ b d g s š h m n ɾ l w y/

pihik 'flower', mutu 'squirrel', pu·cʌk 'navel', čikin 'owl', kam

'cornfield', ʔík'ʔik 'type of bird', píbi 'aunt', wíndugʌ́t 'face', cúgin 'a fight', sí'ʔks 'to fumigate', šíwit 'year', hópoy 'morning', kómon 'pillar', tú'ʔnuk 'turkey', r̄óp 'to beat', lemé·ta 'bottle', wék 'frog', pʌ́·yan 'bamboo'.

Consonants that occur in C_1a slot of C_1VC_1a or $C_1VC_1aC_1$c syllables constitute a subclass of Class 1.

Class 1a:

/p t c č k - - - - s š - m n r̄ l w y/

káp 'reed', máps 'thick'; pó·t 'lime ground', ʔítp 'there is'; pú'ʔc 'sore', púcp 'she washes clothes'; páč 'lizzard', méčk 'two'; tó'ʔk 'mat', tʌ́km 'the town of Sayula'; húsus 'hissing sound', húsusp 'it hisses'; tʌ́·š 'bat', kóšk 'knee'; pém 'drum', mímp 'he comes'; ká·n 'salt', wínt 'stem'; mo·kwintʌ́r̄ 'type of tree'; pógol 'to roll', pógolp 'it rolls'; ná'ʔw 'husband', šágawp 'it jingles'; pó'ʔy 'sand', há'ʔyp 'he writes'.

Consonants that occur in C_1b slot in C_1VhC_1b syllables constitute a further sub-class of Class 1.

Class 1b:

/p t c č k - - - - - - - m n - - w y/

táhp 'hawk', hó·ht 'liver', pá·hc 'skunk', ʔáhč 'older brother', páhk 'bone', tʌ́hm 'fruit', hóhn 'bird', šʌ́hw 'sun', púhy 'thigh'.

Consonants that occur in C_1c slot in $C_1VC_1aC_1$c syllables constitute a further sub-class of Class 1.

Class 1c:

/p t - č k - - - - s š - m - - - w -/

pášp 'he pounds', wínt 'stem', wínč 'blind', kóšk 'knee', láks 'a slap', máps 'thick', tʌ́km 'the town of Sayula', yúnw 'he swam'.

Consonants that occur in C_2 slot in $C_1VC_2C_3C_4$ or $C_1VhC_2C_3$ syllables constitute a second class of consonant groupings.

Class 2:

/p - - - - k - - - - - - - - - - - -/

kípšp 'he measures', ʔikíhpš 'when he measured'; šíkšp 'it shakes', ʔišíhkš 'when it shook'.

Consonants that occur in C_3 slot in the above patterns constitute a third class of consonant groupings.

Class 3:

/- - - - - - - - - s š - - - - - - -/

lé'ʔpsp 'he licks it', šíkšp 'it shakes'; ʔilé'ʔhps 'when he licked it',

ʔisíhkš 'when it shook'.

Consonants in C_4 slot are here presented as constituting a fourth class of consonant groups.

Class 4:

/p - - - - - - - - - - - - - - - - w -/

kípsp 'he measures', kípsw 'he measured'.

Consonants that occur in the post-nuclear /h/ slot constitute a fifth class of consonant groupings.

Class 5:

/- - - - - ʔ - - - - - - h - - - - - -/

pó? 'moon', pá?k 'sweet', pó?kš 'to rest', póh 'vine', páhk 'bone', ʔikíhpš 'when he measured'.

/ʔ/ and /h/ may occur in sequence post-nuclear as /ʔh/ filling a double slot. nʌ́ʔh 'watery' (cf. nʌ́ʔ 'water'), tú?hc 'tail' (cf. tú·hc 'palm tree'), ʔipó?hkš 'when he rested'.

The above groupings reveal certain limitations of consonant occurrence in /CV/, /CVC/, and /CVCC/ patterns. Voiced stops /b, d, g/ and marginal glottals /ʔ, h/ are limited in that they occur only syllable initially. However /ʔ, h/ also are distributed in the syllable nucleus and thus constitute a phonemic class (Class 5) different from /b, d, g/. /h/ is morphophonemically lost contiguous to /s/ or /š/. Thus there is no occurrence of the /s/ or /š/ phonemes in C_1b slot in C_1VhC_1b syllables. /r̄/ and /l/ occur only in C_1 or C_1a slot.

2.2 Sequences of specific consonants are treated here followed by a treatment of stress sequences.

Consonants occur syllable final in clusters of two and three consonants (symbolized -CC and -CCC). The following table shows the -CC clusters that have been found to occur.

--	-tp	-cp	-čp	-kp	-sp	-šp	-mp	--	-lp	-yp	-wp
--	--	--	--	--	--	--	--	-nt	--	--	--
--	--	--	--	--	--	--	--	-nč	--	--	--
--	--	--	-čk	--	--	-šk	--	-nk	--	-yk	--
-ps	--	--	--	-ks	--	--	--	--	--	--	--
-pš	--	--	--	-kš	--	--	--	--	--	--	--
-pm	-tm	--	--	-km	--	--	--	-nm	--	--	--
-pw	-tw	-cw	-čw	-kw	-sw	-šw	-mw	-nw	-lw	-yw	--

Examples:

láps 'flat', máps̆ 'thick', hʌ́pm 'ahead', képw 'he hunted'; wé·tp 'he lies', pa?tm 'below', ?itw 'there was'; púcp 'she washes clothes', 'púcw 'she washed clothes'; pi?c̆p 'it goes out (fire)', méc̆k 'two', pi?c̆w 'it went out (fire)'; hu?kp 'he smokes', láks 'a slap', wéks̆ 'griddle', tʌ́km 'the town of Sayula', hu?kw 'he smoked'; húsusp 'it hisses', húsusw 'it hissed'; pás̆p 'he pounds', kós̆k 'knee', pás̆w 'he pounded'; mímp 'he comes', komw 'he put it in'; wínt 'stem', wínc̆ 'blind', té?nk 'ladder', yukwínm 'above', yúnw 'he swam'; pógolp 'it rolled'; há?yp 'he writes', háyk 'owner', há?yw 'he wrote'; s̆ágawp 'it jingles'.

Clusters of -CCC are:

-psp	-psw	-ps̆p	-ps̆w
-ksp	-ksw	-ks̆p	-ks̆w

Examples:

lé?psp 'he licks it', lé?psw 'he licked it', kípsp̆ 'he measures', kípsw̆ 'he measured'; láksp 'he slaps', láksw 'he slapped', s̆íks̆p 'it shakes', s̆íks̆w 'it shook'.

Stress is multiple,[1] i.e., one or more primary stresses may occur in a single stress group. Examples: pém 'drum', tʌnʌs̆ámpéy 'I will go also', tʌkayó?hkahanupéy 'we are also hungry', tʌnʌs̆áh háran 'I'll go now'. Contrast is seen within different stress types in two syllable utterances. Three types of stress patterns occur with two syllable words: stress-stress, stress-nonstress, nonstress-stress. Examples: c̆ímná? 'the gourd', c̆íhmat 'the gourds', ?ic̆ím 'his gourd'. Note also: nʌ́s̆péy 'he goes too', nʌ́s̆kap 'they go', nʌs̆káh 'they will go'.

No more than two stressed syllables can occur contiguously in a stress group since morphophonemic changes affect any further potential stress sequences. The following rule has been noted when three stressed syllables are juxtaposed, viz., two contiguously stressed syllables become stress-nonstress preceding another stressed syllable. Examples: c̆ímná? 'the gourd + ná·s̆a 'dirty' becomes c̆ímna ná·s̆a 'the dirty gourd'. Also, tʌnʌ́s̆péy 'I go too' + háran 'now' becomes tʌnʌ́s̆pey háran 'I go now too'. However, the pitch of the formerly-stressed syllable becomes unstable in that the pitch tends to remain high, or higher in the rhythm contour than the preceding stressed syllable or the syllable may drop in pitch.

Further rules have been noted for compounded forms. When two lexically-

stressed monosyllabic roots are juxtaposed in a compound form, the first root becomes unstressed forming a pattern of nonstress-stress. Thus, hʌ́hn 'fire', +tʌ́pš 'rope' becomes hʌntʌ́pš 'a brightly-colored worm'. In the same manner ka? 'hand' + múgus 'back' becomes kʌ?múgus 'back of the hand'. However, compounds of pattern stress-nonstress-stress contrast with patterns of nonstress-stress-stress and nonstress-stress-nonstress. Examples: káhawpʌ́hk 'jaguar hair', kawá·hpʌ́hk 'horse hair'; or, ?áhkothúhy 'type of tree', ?akótmúk 'put points together'; cáygutúk 'old grass', kuygútuk 'splinter'.

2.3 We have handled distributional restrictions of consonants within the syllable. Here we treat distributional restrictions of the syllable within the utterance. The distribution of syllables in the utterance reveals two types of limitation: (1) limitation of syllables with /Vh/ nucleus, and (2) limitation of syllables with initial voiced stops.

Most syllable patterns of a /Vh/ nucleus type have limited distribution within the utterance. Of these, however, /CVh/ syllables have no restriction but can occur in all slots in the utterance. Examples: páh·kak 'wasp', cʌ·h 'mountaineer'. (The dot . within the utterance indicates syllable division.) With a few exceptions, /CVhC/ and /CVhCC/ syllables occur only utterance final. Note that páhk 'bone' occurs utterance final, but when this word occurs utterance initial, the /h/ is lost. Thus, pák·ná?hat 'the bones'. Exceptions are: cáhp·ná? 'the sky' (cáhp 'sky'), tʌn·?áhč·ná? 'my older brother' (?áhč 'older brother'). The majority of /CVhC/ syllables are of the former type, simplifying the phoneme sequence and leading to the limitation mentioned. /CV/, /CVC/, /CVCC/ syllables have unlimited distribution within the utterance. /CVCCC/ syllables occur only utterance final. (The /?/ is nuclear in the following examples.) tʌ·pó?ksp 'I rest', tʌ·nʌ́s·kap 'we go', tʌ·pó?ks·kap 'we rest'.

In words of Popoluca origin syllables with voiced stops /b, d, g/ occur only utterance medial or final. Thus, ?ám·ba·nu 'ancient', cú·gin 'a flight'. However, because Spanish loans introduce a further distribution, this statement needs to be supplemented to include all positions in the utterance. Thus, bí·da 'life', dok·tór 'doctor', gus·tát 'to like'.

2.4 Loan phonemes /f, v, đ, r/ constitute a special class of consonants of restricted distribution. Also sequences of specific consonants resulting from these loan phonemes are presented.

Loan phonemes /f, v, đ/ occur only syllable initially. However, /f/ may occur in syllables in all positions in the utterance whereas /v, đ/ may occur

only in syllables in medial or final position. /r/ may occur syllable initial or final but only in syllables in utterance medial or final position. Examples: fín·ka 'plantation', ʔe·le·fán·te 'elephant'; sá·viw 'wise', ʔan·tí·vu 'ancient'; ká·da 'each'; pé·ro 'but', bá·ra de me·dír 'measuring stick', lu·gár·náʔ·hat 'the places'.

Loan clusters occur in sets of two-consonant clusters and occur only syllable initially. The second member of a loan cluster may be one of the liquids /r, l/ or one of the glided continuants /w, y/. The first member may be a stop, spirant or nasal. Loan clusters are here presented with examples:

pr-	tr-	kr-	br-	dr-	gr-	fr-	--	--	--	--
pl-	--	kl-	bl-	--	gl-	fl-	--	--	--	--
pw-	tw-	kw-	bw-	dw-	gw-	fw-	sw-	hw-	mw-	nw-
py-	ty-	ky-	by-	dy-	--	fy-	sy-	--	my-	ny-

Examples:

syémpre 'always', trónko 'trunk', kreyénte 'believer', lí·bru 'book', pédro 'Peter', gravá·t 'to engrave', frúta 'fruit'; pláya 'beach', klá·ru 'clear', blankíyo 'egg', glórya 'glory', fláwta 'harmonica'; pwés 'well', ʔaktwál 'actual', kwé·ntu 'story', bwéno 'good', dwé·nyu 'owner', ʔigwál 'equal', fwérte 'strong', swérte 'luck', hwéves 'Thursday', mwérte 'death', nwéve 'nine'; lí·mpyu 'clean', tyémpo 'time', kyére desír 'it means', byén 'well', dyés 'ten', fyésta 'fiesta', palásyo 'palace', myédo 'fear', nyéve 'sherbet'.

---

[1]For a presentation of the theory of multiple stresses, cf. Kenneth L. Pike and Willard Kindberg, 'A problem in multiple stresses', Word 12.415-28 (1956).

[November, 1958]