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## ABSTRACTS

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## OTOMANGUEAN INFLUENCE ON POCHUTLA AZTEC

DORIS BARTHOLOMEW

SUMMER INSTITUTE OF LINGUISTICS

## 0. Introduction

1. Possible influence from Chatino
2. Development of Pochutec from Proto-Aztecan
  - 2.1. Internal motivation of accent shift
  - 2.2. External motivation of accent shift
3. Summary

0. The Aztec of Pochutla, Oaxaca, is the most divergent of the Aztec languages. Pochutec stresses the last syllable of the word in contrast to the penultimate stress in the rest of Aztec. It permits initial and final consonant clusters. In addition, there has been an extensive shift in the vowels.

There is a remarkable coincidence in the typology of the word in Pochutec with that of Chatino, an Otomanguean language of the Zapotecan family.<sup>1</sup> Chatino also has

<sup>1</sup> Leslie Pride, "Chatino Tonal Structure," *Anthropological Linguistics* 5, no. 2 (1963): 19-28. Pride says of Yaitepec Chatino: "Word-final syllables are always stressed and carry a heavy functional load: they are the sole carriers, not only of contrastive tone, but also of contrastive presence or absence of both nasalization and glottal stop. Word-final stressed syllables may be preceded by one syllable, which is often voiceless. In the speech of some individuals, certain words may have two syllables preceding the final stressed syllable" (p. 19). McKaughan describes the syllable structure of Chatino, which allows clusters of up to four consonants in word-initial position (Howard P. McKaughan, "Chatino Formulas and Phonemes," *IJAL* 20 [1954]: 23-27). Other publications about Chatino which the reader may want to consult are: Howard McKaughan and Barbara McKaughan, *Diccionario de la lengua chatino* (Mexico, 1951); Kitty Pride, "Numerals in Chatino," *Anthropological*

ultimate stress and permits word-initial consonant clusters, though it does not have final consonants at all except for the glottal stop.

There are two alternatives for explaining the similarity of word typology between the two languages. One is to consider that these typological features are the result of independent developments in each language which follow natural phonetic tendencies. The other alternative is to attribute the similarity to diffusion from one language to the other.

In this article, arguments are presented in favor of the influence of Chatino on the development of Pochutec. Section 1 discusses the characteristics of Chatino (as opposed to Zapotec), the geographical and historical situation of Chatino with relation to Pochutec, and the nature of stress placement in linguistic diffusion. Section 2 treats the sound changes which took place in Pochutec and in Classical Aztec, first reviewing the system of changes proposed by Campbell and Langacker, which assumes only internal motivation, and then

*Linguistics* 3, no. 2 (1961): 1-10, and *Chatino Syntax* (Norman, Okla., 1965); Kitty Pride and Leslie Pride, "Juan Cenizas in Chatino," *Tlalocan* 5 (1968): 358-63; Leslie Pride and Kitty Pride, *Vocabulario chatino de Tataltepec* (Mexico City, 1970); Jorge A. Suárez, "La clasificación del papabuco y del solteco," *Anuario de Letras* 10 (1972): 219-32; Jessamine Upson, "Some Chatino Riddles Analyzed," *IJAL* 22 (1956): 113-16, "A Preliminary Structure of Chatino," *Anthropological Linguistics* 2, no. 6 (1960): 22-29, and "Chatino Length and Tone," *Anthropological Linguistics* 10, no. 2 (1968): 1-7; Franz Boas, "Notes on the Chatino Language of Mexico," *American Anthropologist* 15 (1913): 78-86.

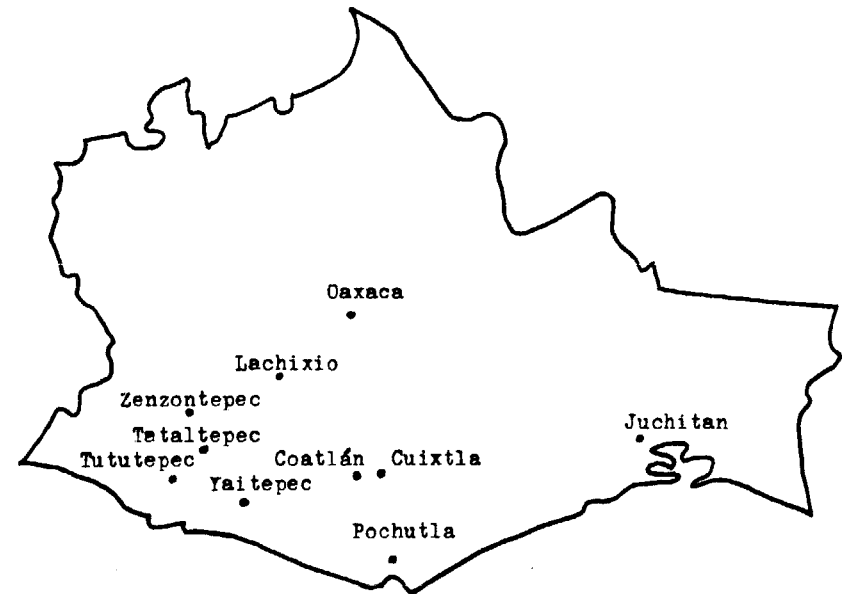


FIG. 1.—Map of Oaxaca

proposing two basic modifications in the reconstruction of sound which call for external motivation of the accent shift.<sup>2</sup>

1. Chatino, rather than a Zapotec language, is the most likely source of the external motivation for the shift of stress to the last syllable in Pochutec. It is true that when Franz Boas did his fieldwork on Pochutec in 1912, Pochutla was surrounded by Zapotec towns.<sup>3</sup> But Zapotec stresses the first syllable of the stem, in contrast to the stem-final stress in

<sup>2</sup> Lyle Campbell and Ronald W. Langacker, "Proto-Aztecan Vowels: Parts I, II, III," *IJAL* 44 (1978): 85-102, 197-210, 262-79. See also Ronald W. Langacker, "The Vowels of Proto-Uto-Aztecan," *IJAL* 36 (1970): 169-80.

<sup>3</sup> Franz Boas, "El dialecto mexicano de Pochutla, Oaxaca," *IJAL* 1 (1917): 9-44. See also Juan A. Hasler, "Los dialectos de la lengua nahua," *América Indígena* 35 (1975): 268-279, and "La situación dialectológica del pochuteco," *IJAL* 42 (1976): 268-73.

Chatino. Chatino is spoken along the coast to the north of Pochutla in the District of Juquila, Oaxaca (see fig. 1). Quite possibly, the Pochutecs in their migration from the north came into contact first with Chatino and then much later with Zapotec.

There is an oral tradition that says that the Chichimecas (Aztec speakers) arrived on the southern coast of Oaxaca in the fourth century A.D. from Tollan via Jalisco.<sup>4</sup> However, Brockington says that the archaeological findings around Pochutla do not show any significant similarities with the culture of Northern Mesoamerica before A.D. 1000.<sup>5</sup> But in

<sup>4</sup> Fernando de Alva Ixtlilxochitl, *Obras Históricas*, vol. 1 (México, 1952), esp. pp. 38 and 39.

<sup>5</sup> Donald L. Brockington, "A Reconnaissance from the Rio Tonameca to Salina Cruz," in *The Oaxaca Coast Project Reports: Part II*, Vanderbilt University Publications in Anthropology, no. 9 (Nashville, Tenn., 1974), esp. p. 6.

spite of the lack of archaeological confirmation of the date of the migration or the route taken, it is to be expected that the Pochutecs migrated from the north and that their route brought them into contact with Chatino at a relatively early date, probably before the flowering of the Aztec culture.

At the time of the conquest, Pochutla was under the control of the Mixtec town Tututepec (located on the border of Juquila and Jamiltepec). This fact implies the existence of communication routes between Tututepec and Pochutla and favors the possibility that the Pochutecs traveled through Chatino territory (see fig. 1).

Otomanguean languages have a long history in Oaxaca. Harvey calculates a period of cultural continuity 6,000 to 11,000 years long (the latter date based on archaeological remains found in Tehuacán, Puebla).<sup>6</sup> The presence of Chatinos in the Juquila area probably predates the separation of Zapotec proper into the many distinct languages spoken today, which must have taken place at least 2,000 years ago. There were probably a series of migrations toward the coast from the valley of Oaxaca. Pride suggests several possible routes, based on the linguistic differences within the Chatino dialects.<sup>7</sup> It is very likely that the Juquila area was in Chatino hands when the Pochutecs arrived.

Although the Chatinos today have no special prestige and although we have no archaeological remains attesting an advanced Chatino civilization, it can be supposed that the Chatinos enjoyed a

certain prestige from the very fact that they were already established in the territory and the likelihood that the recently arrived Aztec speakers antedated the development of the Aztec civilization.

The nature of the linguistic contact between Chatino and Pochutec is not known, but it apparently did not involve lexical borrowing. There are no loan words from one language to the other that I have been able to detect. But there is evidence of the influence of speech prosody, in particular, the placement of predictable stress.

The prosodic features of accent, intonation, rhythm, etc., lend themselves to imitation entirely apart from the lexical content of a language. Children learning to talk use the intonation, stress, and rhythm of the language in their babbling long before they can control the vocabulary and grammar. The diffusion of suprasegmental features independently of lexical content is also seen in some speech communities which have adopted the intonational characteristics of a neighboring language in contrast to the intonation that is characteristic of the mainstream communities of the language.<sup>8</sup>

With the proper motivation, Pochutec could have copied from Chatino the rule for word-final stress placement, abandoning the rule of penultimate stress. The accent shift, once adopted, was sufficient to motivate a series of sound changes in Pochutec.

Predictable stress placement is a deep-rooted habit in the pronunciation of a language, in spite of the possibility of the diffusion of this trait under the appropriate social conditions. But apart from such situations, a language will normally reinter-

<sup>8</sup> For example, the Albanians living in Italy have adopted Italian intonation, in marked contrast to the intonation of Albanians living in Albania.

<sup>6</sup> Herbert R. Harvey, "Cultural Continuity in Central Mexico: A Case for Otomangue," in *Actas y Memorias del XXXV Congreso de Americanistas* (México, 1964), pp. 525-32. See also his "Chatino and Papabuco in the Historical Sources," *IJAL* 38 (1968): 288-89.

<sup>7</sup> Leslie Pride, "Chatino: Zapotec or Zapotecan?" (manuscript, 1976).

TABLE 1

Pochutec	Chatino (Tataltepec)	Zapotec (Cuixtla)
kayú (caballo) <i>horse</i>	kwayú (caballo) <i>horse</i>	way? (caballo) <i>horse</i>
payó (pañó) <i>scarf</i>	mstrú (maestro) <i>teacher</i>	mes (mesa) <i>table</i>
milyú (medio) <i>half</i>	muská (música) <i>music</i>	musk (música) <i>music</i>
lusalyú (rosario) <i>rosary</i>	rsá riyú (rosario) <i>rosary</i>	fres (fresno) <i>peach</i>

pret words taken from another language according to its own rules for stress placement. Furthermore, other phonological processes which apply after stress placement will be applied to borrowed words.

The distinctive treatment of loan words in Zapotec and in Chatino demonstrates that Zapotec is basically a penultimate stress system, whereas Chatino is an ultimate system. Zapotec keeps the stress on the same syllable, as in Spanish, and the Cuixtla dialect drops the vowel from poststress syllables.<sup>9</sup> Chatino moves the stress to the last syllable of loans and frequently drops the vowel of the prestress syllable. Pochuteco also shows itself as an ultimate system by moving the stress to the last syllable (see table 1).

The difference in stress placement is one of the most important factors which separate Chatino from Zapotec. This fact is also substantiated by cognate sets for Proto-Chatino and Proto-Zapotec. The Chatino languages referred to in the

<sup>9</sup> Dialect intelligibility testing between Cuixtla in the district of Miahuatlán and Candalaria Loxicha in the district of Pochutla showed very high intelligibility: Loxicha understood Cuixtla at ninety-two percent and Cuixtla understood Loxicha at ninety-eight percent. Consequently, the Cuixtla data serve well to represent the Zapotec spoken around Pochutla. See Mark Weathers, "Investigaciones de inteligibilidad entre los idiomas zapotecas," in *XIII Mesa Redonda de la Sociedad Mexicana de Antropología* (Mexico City, 1975), pp. 243-50; Steven Eglan, *La inteligibilidad interdialeccional en México: Resultados de algunos sondeos* (Mexico City, 1978).

TABLE 2

PCh 21	*k <sup>w</sup> iti <sup>?</sup> n <sup>?</sup> á	<i>rat</i>	PZ *bizina <sup>?</sup>
Y	tynó <sup>?</sup>		Cu m <sup>d</sup> in
Z	k <sup>w</sup> i <sup>?</sup> hn <sup>?</sup> á <sup>?</sup>		Co m <sup>d</sup> in
T	tin <sup>?</sup> á <sup>?</sup>		L z <sup>i</sup> ña
PCh 57	*telá	<i>night</i>	PZ *gé <sup>?</sup> ela, *ré <sup>?</sup> ela
Y	tlá		Cu yal <sup>?</sup>
Z	telá		Co tæl <sup>?</sup>
T	talyá		L rulá <sup>?</sup>
PCh 91	*laká <sup>?</sup>	<i>leaf</i>	PZ *Lága <sup>?</sup>
Y	lká <sup>?</sup>		Cu laa
Z	laká <sup>?</sup>		Co laa <sup>?</sup>
T	laká <sup>?</sup>		L léka
PCh 201	*ki <sup>?</sup> k <sup>w</sup> i <sup>?</sup>	<i>talk</i>	PZ *ká <sup>?</sup> bi, *kábi
Y	čik <sup>w</sup> i <sup>?</sup>		Cu ka <sup>?</sup> f, kab
Z	kik <sup>w</sup> i <sup>?</sup>		Co ka <sup>?</sup> b
T	čk <sup>w</sup> i <sup>?</sup>		L —

cognate sets in table 2 and elsewhere are Yaitepec (Y), Zenzontepec (Z), and Tataltepec (T). The Zapotec languages referred to are Cuixtla (Cu), Santa María Coatlán (Co), both in the district of Miahuatlán, and Lachixio (L) in the district of Sola de Vega. The Proto-Chatino reconstructions are from Upson and Longacre;<sup>10</sup> the Proto-Zapotec reconstructions are from Fernández de Miranda.<sup>11</sup> Data from Lachixio Zapotec were supplied by David Persons.

A comparison of Pochutec with Classical Nahuatl and Proto-Aztec shows Pochutec to have developed word-final stress. The

<sup>10</sup> B. W. Upson and R. E. Longacre, "Proto-Chatino Phonology," *IJAL* 31 (1965): 312-22.

<sup>11</sup> María Teresa Fernández de Miranda, *Proto-Zapoteco* (México, in press). See also Jorge A. Suárez, "On Proto-Zapotec Phonology," *IJAL* 39 (1973): 236-49.

Proto-Aztec reconstructions are taken from Campbell and Langacker (n. 2).

PN 9 \*təpəʃ *back, shoulder*

Po no-dpóʃ *my back*

CA no-təpəʃ *my back*

PN 10 \*nəki *to want*

Po nko-nki *I want it*

CA nik-néki *I want it*

PN 166 \*pVça(awa)k *thin*

Po pčək

CA pičáawak

PN 187 \*ihkVti *to weave*

Po igtí

CA ikíti

The loss of the vowel from the pretonic syllable is a general phonetic tendency. In Pochutec, the process affects only the vowels which in Classical Aztec are *i* and *e* and which Campbell and Langacker reconstruct as \*ə and \*V (either \*i or \*i, without specifying which). In Chatino, the conditions for loss of pretonic vowels are more complex. The theory of Upson and Longacre (n. 10) that Proto-Chatino long vowels were retained and proto short vowels were dropped does not find confirmation in Zapotec cognates.<sup>12</sup>

The foregoing demonstration of stress-placement rules in these languages shows that Zapotec could not have been the pattern for the stress change in Pochutec,

<sup>12</sup> Maria Teresa Fernández de Miranda compared PCh cognates from Upson and Longacre with her PZ reconstructions, and in particular with her Zapotec data for Cuixtla and Sta. María Coatlán, two languages which have a contrast between geminate and single vowels. Only for the five monosyllabic words reconstructed with a long vowel in Chatino did Cuixtla have a geminate vowel in the cognate word. But of the seventy-two words reconstructed with a long vowel in Chatino did Cuixtla have a geminate vowel in the cognate word. But of the seventy-two words reconstructed with a long pretonic vowel in PCh, Cu had a geminate vowel in only fifteen; and of the eighty-three words with a reconstructed short vowel in PCh, Cu had a geminate vowel in twenty-one. (The manuscript notes on Proto-Chatino and Proto-Zapotec are in my possession since the death of the author in 1967.)

whereas Chatino could have supplied the model for the change.

2. The development of Pochutec from Proto-Aztec involved the shift of accent from the penult to the ultima, as well as a series of other sound changes which effected a clockwise shift in the short vowels. The sound changes could have been internally motivated entirely, or some of them may have been externally motivated. After presenting the system of sound changes as reconstructed by Campbell and Langacker (n. 2), which assumes internal motivation only (2.1), I present two basic modifications in the system which allow for external motivation of the stress shift and explain the motivation for the radical changes in the vowel system (2.2).

2.1. Campbell and Langacker (C/L) in their study of the vowels of Proto-Aztec (see n. 2) explain the change of accent in Pochutec as the result of the loss of central vowels in posttonic position. They operate on the assumption that sound changes follow the principles of natural phonology and that the changes take place in gradual steps, not in sudden leaps. In their article, C/L present eleven rules that trace the development of Proto-Aztec from Proto-Uto-Aztecan, giving special attention to the vowels. They then add one main rule for Classical Aztec and suggest some of the additional rules for deriving Pochutec.

The first six rules deal principally with the Uto-Aztecan sources and are not relevant here. The other rules are summarized below.

Rule 6 says the PUA vowels \*\*i and \*\*u were lost at the end of a noun or verb stem except when preceded by a consonant cluster.

In the examples which follow, the other changes from the PUA form are due to earlier rules. In the case of PN \*šooči-,

the č appears to function like a consonant cluster \*ty or \*yt.

PUA 201 \*\*nasi: PA \*nəš- *ashes*

PUA 257 \*\*siku: PA \*šiik- *navel*

PUA 250 \*\*kasi: PA \*ikši- *leg, foot*

PUA 231 \*\*siyotu PA \*šooči- *flower*

Rule 7 says the PUA \*\*t changed to PA \*tl before the vowel a. This rule affects the absolutive suffix -ta as well as ta in stems.

PUA \*\*məta-ta: PA mətla-tla *metate*

Rule 8 says that PA \*tl changed to l after an l. This rule also affects the absolutive suffix.

PA \*tiil-tla: tiil-la *soot*

Rule 9 says that \*a changed to \*ə in word-final position.

\*no-mətla: no-mətlə *my metate*

Rule 10 says that the central vowels \*ə and \*i were lost at the end of a word or before another root in a compound unless it was preceded by a consonant cluster. Note that by this stage the č in šooči- is behaving like a single consonant.

PA \*no-mətlə: no-mətl *my metate*

PA \*no-šooči: no-šooč *my flower*

Rule 11 says that \*ə is raised to \*i at the end of a word (where it was preserved due to the preceding consonant cluster).

PA \*šiik-tlə: šiik-tli *navel*

PA \*tiil-lə: tiil-li *soot*

Note that C/L reconstruct two central vowels \*ə and \*i (high central and mid central). There are two reasons for doing this. First, central vowels occur in other Uto-Aztecan languages and are needed for Proto-Uto-Aztecan, and therefore their reconstruction for Proto-Aztec is typologically reasonable. Second, the phonetic nature of the central vowels lends itself to a natural explanation of the loss of vowels in Pochutec (central vowels are weak and subject to loss more than the noncentral vowels) and their neutral position allows a modest move to the back vowel o in Pochutec and to the front

vowels *i* and *e* in Classical Aztec (and other Aztec in general), thus avoiding an unnaturally abrupt shift of \*i and \*e to Po o. C/L further avoid abrupt shifts by postulating the intermediate shifts of \*a to \*ə to \*i and finally to CA *i*.

There is one principal rule for Classical Aztec, that which changes \*ə to CA *e* and \*i to CA *i*.

PA \*šiiktli: CA šiiktli *navel*

PA \*tiilli: CA tiilli *soot*

PA \*mətlatl: CA mətlatl *metate*

The rules for Pochutec are more numerous. C/L mention them briefly without attempting to formalize them. Following their suggestions, I have formulated a set of twelve rules. These rules consider the loss of vowel in Po-1 and Po-2 to have left the stress on the final syllable in those words, thus providing the pattern of ultimate stress in some words which was later generalized throughout the language.<sup>13</sup>

Rule Po-1 says that \*i was lost before the absolutive suffix.

PA \*atəmitl: atəmtl *louse*

Rule Po-2 says the \*i was lost after the \*tl of the absolutive suffix.

PA \*šiiktli: šiikt *navel*

PA \*tiilli: tiill *soot*

Rule Po-3 says that the accent is placed on the last syllable of the word.

atəmtl: atəmtl *louse*

pətlatl: pətlatl *petate*

<sup>13</sup> "We have not investigated the accent shift of Pochutec in any detail, but almost certainly it involved (1) the loss of final (unstressed) vowels in certain instances, leaving stress on the final syllable, and (2) regularization of stress to make it consistently final" (Campbell and Langacker, p. 89, n. 12). "The basic changes that derive Pochuteco from PA are \*a > e, \*oo > u, \*i > \*ə (and on to o/θ), \*ə > o/e/θ (e if followed by saltillo or word initial, o if stressed, θ unstressed), and neutralization of vowel length. The changes \*a > e and \*oo > u must precede the loss of length distinctions. The \*i first became ə, merging with \*ə, and then becoming o, etc." (Campbell and Langacker, p. 99).

Rule Po-4 says that \*tl is simplified to t.  
atómtl: atómt *louse*  
patláil: patát *petate*

Rule Po-5 says that \*i and \*ə are lost in pretonic position.

ihkítí: igtí *to weave*  
nákí: nkí *to want*  
pátát: ptát *petate*

Rule Po-6 says that \*i is lowered to \*ə (and later to o).

šoóčít: šoočót *flower*

Rule Po-7 says that \*ə changes to o. The rule affects also the ə derived from \*i by rule Po-6.

šoóčát: šoočót *flower*  
atómt: atómt *louse*

Rule Po-8 says that \*oo is raised to u.

šoóčít: šučót *flower*  
ptát: ptét *petate*  
masáat: mesáat *deer*

Rule Po-9 says that \*a is raised to e.

ptát: ptét *petate*  
masáat: mesáat *deer*  
méečt: méčt *moon*  
šiikt: šikt *navel*

Rule Po-10 says that a geminate vowel, VV, is simplified to a single vowel. This rule affects \*aa, \*ee, and \*ii, since \*oo was raised to u by Po-8.

mesáat: mesát *deer*  
méečt: méčt *moon*  
šiikt: šikt *navel*

Rule Po-11 says that the affricates \*č and \*č are simplified to the fricative s and š before a consonant.

méečt: mést *moon*  
okóčt: okóšt *male*

Rule Po-12 says that t is lost after n and l is lost after l.

tént: tén *mouth*  
mill: míl *milpa*

2.2. There are two main modifications that I make in the system of sound changes proposed by C/L. The first recognizes an epenthesis rule for Classical Aztec which was preceded by a rule in Proto-Aztec which had deleted word-final \*a and \*i. This modification removes the internal motivation for stress shift in

Pochutec because the supposed vowel loss of Po-1 and Po-2 did not take place. The second modification deals with the phonetic and phonological nature of the postulated central vowels, insisting that they were short front vowels \*i and \*e. The radical changes in the Pochutec vowel system are then considered to be the natural consequence of the interruption to the equilibrium of the system by the externally motivated stress shift.

The epenthesis rule for Classical Aztec inserts the vowel i in word-final clusters between the voiced heterorganic consonants m, w, and y and the absolutive suffix tl. Note that there is no vowel in this spot in the Pochutec forms.

PA \*šaam-tl : CA šaamtl *adobe* (Po šámt *tortilla*)

PA \*šiw-tl : CA šiwtl *herb* (Po šút *leaf* (<šíwt))

PA \*kweey-tl : CA kweeytl *skirt* (Po kweyt *skirt*)

The rule also inserts the vowel i after the absolutive suffix when it is preceded by a homorganic voiced consonant or by a voiceless consonant. (Later rules in Pochutec change tl to t, and then delete t after a homorganic voiced consonant: n, l.)

PA \*teen-tl : CA teentl *mouth* (Po ten)

PA \*miil-tl : CA miill *field* (Po mil)

PA \*meeč-tl : CA meečtl *moon* (Po mest)

PA \*okič-tl : CA okičtl *male* (Po okóšt)

PA \*neš-tl : CA neštl *ashes* (Po nošt)

PA \*nakas-tl : CA nakastl *ear* (Po nekést)

PA \*šiik-tl : CA šiiktl *navel* (Po šikt)

PA \*ayoh-tl : CA ayohtl *squash* (Po eyút)

Stems that end in a vowel add the absolutive -tl without an epenthetic vowel.  
PA \*yaka-tl : CA yakatl *nose* (Po yekét)  
PA \*aayoo-tl : CA ayootl *turtle* (Po ayút)

PA \*šoóči-tl : CA šoočtl *flower* (Po šučót)

The epenthesis rule in Classical Aztec presupposes a deletion rule in Proto-Aztec

which says that the vowels \*a and \*i are lost at the end of the word. The rule applies to noun stems without the absolutive suffix (and without the possessive suffix). It applies to verbs except in the present tense. The following examples are taken from the grammar of Classical Aztec by Carochi.<sup>14</sup>

petlatl *petate*, no-petl *my petate*  
yakatl *nose*, no-yak *my nose*  
šoóčitl *flower*, i-šoóč *his flower*<sup>15</sup>

Stems which kept a final \*i because of the preceding consonant cluster (rule 6) show a word-final i in the possessed nouns. Although the i may have come through the effects of this deletion rule without change, it is possible that the deletion rule also wiped out the word-final i and that it was later restored by the General Aztec epenthesis rule. Consider the following examples:

ikšitl *foot*, no-kši *my foot*

istitl *ingernail*, no-sti *my ingernail* (Po m-ošt *your ingernail*)

The Pochutec form for *ingernail* supports the inclusion of \*i in the deletion rule, since otherwise the stress would have moved to the final vowel.

The loss of word-final \*a in Proto-Aztec, followed by the epenthesis of i in Classical

<sup>14</sup> Horacio Carochi, *Compendio del arte de la lengua mexicana* (México, 1759). The examples are taken from p. 71.

<sup>15</sup> The i at the end of the stem was conserved only when it was preceded by a consonant cluster (see PA rule 6). In the case of šoočitl, there is reason to think that the č represents a cluster: PUA \*\*siyotu *flower* was contracted to produce PA \*šoóči-, perhaps through the stage \*syoyti or \*syoty. Carochi also cites kilitl *herb*, no-kil *my herb*. Here, no comparative data are available to support the assumption that the final l was phonemically complex at the time PA rule 6 operated, but something accounts for the retention of the i. By the time that the CA epenthesis rule came into operation, the l cluster and the č cluster must have simplified to a single consonant.

Aztec, is the natural explanation of the following examples:

koskatl *necklace*, no-koski *my necklace*  
maštlatl *coals*, no-maštl *my coals*

The absolutive form of the nouns minus the suffix -tl gives the stems koska and maštla. The deletion of final \*a gives kosk and maštl with word-final clusters. Then the epenthesis rule inserts a word-final i in the possessed forms.

The sequence of the deletion and epenthesis rules is also evident in a set of nouns which do not have the absolutive suffix in the nonpossessed form, and which have the suffix -w in the possessed form: kalpiški *steward*, no-kalpiškaw *my steward*  
altepewah *citizen*, n-altepewahkaw *my citizen*

topileh *jailer*, no-topilehkaw *my jailer*  
sokiyoh *mudded thing*, no-sokiyohkaw *my mudded thing*

tlitlik *black thing*, no-tlitlikaw *my black thing*

The stem can be derived by subtracting the possessive suffix -w from the possessed form: kalpiška, altepewahka, sokiyohka, and tlitlika. The application of the a/i deletion rules gives: kalpišk, altepewahk, topilehk, sokiyahk, and tlitlik. Then, if we allow another rule in Classical Aztec which deletes a final k after the h (such as is needed in the past tense of verbs), we get the actual nonpossessed forms, except for the first word, kalpišk. The surface form of that word is obtained by the application of the epenthesis rule: kalpiški.

The modification presented above places the loss of final vowels in the Proto-Aztec period, making it common to both Classical Aztec and Pochutec. The epenthesis rule for Classical Aztec makes the rule for deletion of \*i in posttonic syllables unnecessary for Pochutec. This removes the internal motivation for the stress in Pochutec. The stress rule must be placed early in the development of Pochutec,

TABLE 3

Classical Aztec			Pochutec			
<i>present</i>	<i>past</i>	<i>future</i>	<i>present</i>	<i>past</i>	<i>future</i>	
koči	koč	kočis	kočí	košk	kočós	<i>sleep</i>
kisa	kis	kisas	kisá	kisk	kisés	<i>leave</i>
ittá	ittak	ittas	itá	iték	ités	<i>see</i>
ahsi	ahsik	ahsis	así	asók	(asós)	<i>find</i>

however, because so many rules must be applied after the stress shift. Lexico-statistic dating places the separation of Pochutec from General Aztec at about A.D. 500. (It places the separation of Pipil at about A.D. 800.) The stress shift probably took place soon after the separation, possibly under the influence of contact with the Chatino language of Oaxaca.

The second modification of the system of rules reconstructed by C/L rejects the central vowels \*i and \*ə, insisting on the reconstruction of the short front vowels \*i and \*e. The central vowels supposedly provided a better phonetic motivation for the postulated loss of posttonic vowels in Pochutec, but we have eliminated the need for a posttonic vowel-loss rule in Pochutec because of the epenthesis rule in General Aztec. The other reason for postulating central vowels was the distaste for postulating radical sound changes; the central vowels would have moved back only one degree to produce Pochutec o, and would have moved forward only one degree to produce Classical Aztec i and e. So far as I can tell, the argument is largely one of symbolization, because C/L do not reconstruct separate short \*i and \*e, and the phonetic realization of the short vowels may very well have been centralized. Thus, the apparent radical sound shift of front vowels to back vowels was probably much more natural on the phonetic plane.

The phonological status of \*i and \*e in relation to the long vowels \*ii and \*ee is supported by vowel alternations in Pochutec

verbs. The Proto-Aztec rule that deleted word-final \*i and \*a did not apply to the present tense of verbs. In Pochutec, not only are the final vowels preserved in the present tense, but they have unmodified vowel reflexes instead of the normal backing of \*i to o and the fronting of \*a to e. When the vowels are not word-final, that is, when they are followed by a suffix, the normal vowel shift has taken place. The data in table 3 are from Boas (n. 3). It is much simpler to postulate a blocking of the vowel-shift rule in Pochutec for the present tense of verbs than to assume that for some special reason the central vowels shifted to the front in the present tense. There was already something special about the present tense that exempted it from the vowel-deletion rule of Proto-Aztec, and this same feature exempted the vowels from the normal vowel shifts.

A disturbance of the equilibrium of a phonological system often sets in motion a whole series of sound changes which work to bring about a new state of equilibrium. In particular, a change in stress placement frequently entails subsequent sound changes. Thus, it is not at all surprising that Pochutec should have undergone extensive changes in its vowel system. C/L recognize the same series of vowel changes that I now present, although they did not attempt to formalize them.

The short front vowels \*i and \*e (phonetically centralized) were lost from pretonic syllables (Po-5). Elsewhere, the \*i and \*e merged with the short back

TABLE 4

## COMPARISON OF SYSTEMS OF RECONSTRUCTED SOUND CHANGES

Campbell and Langacker	Bartholomew
<b>Proto-Aztecan</b>	<b>Proto-Aztecan</b>
6. $i \rightarrow \emptyset / VC_{\text{stem}} +$	6. $i \rightarrow \emptyset / VC_{\text{stem}} +$
7. $t \rightarrow tl / \text{_____} a$	7. $t \rightarrow tl / \text{_____} a$
8. $tl \rightarrow l / \text{_____}$	
9. $a \rightarrow \emptyset / \text{_____} \#$	
10. $\emptyset \rightarrow \emptyset / VC \text{_____} \#$	10. $*a, i \rightarrow \emptyset / \text{_____} \#$ except present tense of verbs
11. $\emptyset \rightarrow i / \text{_____} \#$	
<b>Classical Aztec</b>	<b>Classical Aztec</b>
a, $i \rightarrow e, i$	PA 9, *11, *Po-1, *2* $\emptyset \rightarrow i / \left\{ \begin{matrix} m \\ y \\ w \end{matrix} \right\} \text{_____} tl, \left\{ \begin{matrix} n \\ l \\ C \end{matrix} \right\} tl \text{_____}$ (C is a voiceless consonant) PA 8.* $tl \rightarrow l / \text{_____}$
<b>Pochutec</b>	<b>Pochutec</b>
1. $i \rightarrow \emptyset / \text{_____} tl$	
2. $i \rightarrow \emptyset / tl \text{_____}$	
3. $CV(C) \rightarrow C\check{V}(C) / \text{_____} \#$	3. $CV(C) \rightarrow C\check{V}(C) / \text{_____} \#$
4. $tl \rightarrow t$	4. $tl \rightarrow t$
5. $i, \emptyset \rightarrow \emptyset / \text{_____} C\check{V}$	5. $*i, e \rightarrow \emptyset / \text{_____} C\check{V}$
6. $i \rightarrow \emptyset$	6. $*i \rightarrow \emptyset$
7. $\emptyset \rightarrow \emptyset$	7. $*e \rightarrow \emptyset$
8. $oo \rightarrow u$	8. $*oo, wo, ow \rightarrow u$
9. $a \rightarrow e$	9. $a \rightarrow e$
10. $VV \rightarrow V$	10. $VV \rightarrow V$
11. $\check{c}, \check{c} \rightarrow s, \check{s} / \text{_____} C$	11. $\check{c}, \check{c} \rightarrow s, \check{s} / \text{_____} C$
12. $t \rightarrow \emptyset / \left[ \begin{matrix} n \\ l \end{matrix} \right] \text{_____} \#$	12. $*t \rightarrow \emptyset / n, l \text{_____} \#$

vowel \*o (Po-6, Po-7). The backing also took place in the clusters \*iw, \*wi, \*ew, \*we, giving ow and wo, which together with the long back vowel \*oo were raised to \*u (possibly \*uu) (Po-8).<sup>16</sup> Then, the remaining short vowel \*a moved front to e (Po-9). Finally, the long vowels lost their length (Po-10).

Table 4 presents a comparison of the set of rules proposed by Campbell and Langacker and the modified set I proposed.

<sup>16</sup> Examples of the change of \*i and \*e to o in clusters with w are: PA \*čiwa to *make, do*: Po čuá (via čowa); PA \*šiw-tl *herb*: Po šút (via šowt); PA \*winti *drunk*: Po untí (via wonti); PA \*weli *good*: Po ulik (via wolik).

Modified rules use the same number as in C/L for ease of comparison but are marked with an asterisk.

3. In summary, this article proposes that the similarity in phonological typology between Pochutec and Chatino is due to linguistic diffusion, in particular to the influence from Chatino on Pochutec to move the predictable stress to the last syllable of the word. Evidence was presented that Chatino, rather than the related Zapotec, was the model for the stress shift. Arguments were also adduced for the proposition that a stylistic feature like mechanical stress placement can be

borrowed without the borrowing of lexical items, given the proper conditions. The geographical position of Chatino along the probable route of the Pochutec migration was cited as a further argument that Pochutec could have copied the stress rule from Chatino.

The internal linguistic development of Pochutec from Proto-Aztecan was examined in detail with reference to the system of historical sound changes reconstructed by Campbell and Langacker, who had assumed that only factors internal to the language had motivated the changes. The C/L system was modified to assume epenthesis of vowel in Classical Aztec rather than loss of vowel in Pochutec, and supporting evidence was given. This modification removes the internal motivation for the stress shift in Pochutec that C/L

had proposed and places the stress shift at the beginning of the Pochutec sound changes. Now the theory of linguistic diffusion is more plausible, suggesting that the contact with Chatino and the influence to change the stress came soon after the separation of Pochutec from General Aztec.

The extensive changes in the Pochutec vowel system are viewed as the series of adjustments which often follow a disturbance in the equilibrium of the phonological system. The C/L reconstruction of PA central vowels \*i and \*ə was rejected in favor of short front vowels \*i and \*e, in that the central reconstruction had been an attempt to diminish the appearance of such radical changes in Pochutec. Support for the front vowel reconstruction was cited from the morphophonemic alternation of vowels in Pochutec verbs.

## A PRELIMINARY METRICAL ACCOUNT OF WINNEBAGO ACCENT<sup>1</sup>

KENNETH HALE

AND

JOSIE WHITE EAGLE

MASSACHUSETTS INSTITUTE OF  
TECHNOLOGY

HARVARD UNIVERSITY

### 0. Introduction

1. Preliminary account of metrical structure and accent
2. Deletion
3. Dorsey's Law
4. Total restructuring
5. Some residual problems

0. Miner's interesting and informative discussion of Dorsey's Law in Winnebago-Chiwere and its relationship to Winnebago accent<sup>2</sup> has encouraged us to set forth a synchronic analysis of the Winnebago accentual system which, we believe, shows some promise of explaining certain apparent exceptions to the general rules which evidently operate in the assignment of primary and secondary accents.<sup>3</sup> Our

treatment of Winnebago accent is cast in the metrical framework currently being developed by a number of scholars working within generative phonology.<sup>4</sup> Our analysis must be taken as highly tentative, since there are residual problems—perhaps many more than we ourselves have recognized. Our purpose, however, is to demonstrate the relative ease with which the metrical treatment suggests explanations for certain types of exceptions in accent placement.

The most interesting problems in

in medial positions; but the special quality appears to us to be extra brevity, not secondary accent. Miner has observed to us that his account of the assignment of accent differs from ours in an essential way. His rightward iterative rule  $S \rightarrow \bar{S} / \check{V}C_0 (\check{V}C_0)$  — (p. 28) assigns accent to every third mora, while our account (1) assigns an accent to the third mora and, thereafter, to every second mora. Our account accords with the facts relevant to this paper, but it will not account for the forms which Miner cites in examples (18a) and (18b) in his paper. We have a factual disagreement here. First, Miner gives (18b) as [wiirágušgerá], with a final accent. We hear it with a penultimate [wiirágušgèra]. Second, in regard to (18a), we agree with the placement of accents (Miner cites [hiizúgokirúšge]), but we do not regard this form as relevant, since the second accent is a primary, not a secondary—that is, in Miner's terms, it is not downstepped (cf. Miner, p. 25, and our n. 6). We think that this form should be regarded as a sequence of two separately accented words, in which case our account assigns accent correctly; our version of the form is [wizhúk hokirúšge].

<sup>4</sup> As exemplified by Mark Liberman and Alan Prince, "On Stress and Linguistic Rhythm," *Linguistic Inquiry* 8 (1977): 249–336, and by unpublished papers by Morris Halle and Jean-Roger Vergnaud, Lisa Selkirk, Paul Kiparsky, and others.

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<sup>2</sup> Kenneth L. Miner, "Dorsey's Law in Winnebago-Chiwere and Winnebago Accent," *IJAL* 45 (1979): 25–33.

<sup>3</sup> By the term "secondary accent" we refer to those secondaries which follow the primary. We do not write secondaries before the primary, and we are not certain of the meaning of the grave accent diacritic which Miner assigns to unstressed vowels inserted by Dorsey's Law. To be sure, these vowels do have a special quality