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PITCH TONE AND THE "SALTILLO"  
IN MODERN AND ANCIENT NAHUATL

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**1. Introduction.**<sup>1</sup> The purpose of this article is to make available an apparently finished, but unpublished, paper by Benjamin L. Whorf on Nahuatl. The manuscript is in the Boas Collection at the American Philosophical Foundation Library in Philadelphia. The paper is of interest for several reasons.

First, since Whorf is an important figure in American linguistics, this article has historical significance. It documents Whorf's thinking and exemplifies linguistic practice at the time. It contributes greater understanding to the history of the study of Nahuatl, Uto-Aztecan, American Indian languages, phonology, and linguistic anthropology. In this paper, Whorf spans two traditions, the prephonemic and the phonemic. Thus, while he speaks of phonemes, most of his description (as will be seen below) is not phonemic but is presented in phonetic terms, sometimes broad, occasionally quite narrow.

Second, Whorf presents text material from two dialects, Milpa Alta and Tepoztlan (which he abbreviates M and T, respectively), to illustrate his points. Since these record a degree of phonetic detail concerning stress and intonation seldom seen in American Indian studies, they are quite valuable. They are also important primary documents, given that the language in Milpa Alta and Tepoztlan is fast approaching extinction.

Third, Whorf's hypotheses concerning the origin of "saltillo" (basically glottal stop) are an important stage in the development of Uto-Aztecan linguistics, and in the study of Nahuatl in particular. On the whole, Whorf's ideas about its origin were in the right direction, though

<sup>1</sup> We wish to acknowledge with gratitude the permission granted by the American Philosophical Society to photocopy Whorf's manuscript and to publish it here. We also thank William Bright for helpful comments and advice.

This paper was originally prepared for publication by Lyle Campbell, but Frances Karttunen's comments on an earlier version were so extensive and important that it seemed only appropriate that for her extensive input she should be recognized as jointly involved in the editing, commentary, and annotations.

understandably a more complete picture is now available (see Campbell and Langacker 1978, Canger 1980, and Dakin 1982:26–28, 65–66).

Finally, Whorf's 1946 paper has been extremely influential in Nahuatl studies, and it persists in being one of the most frequently cited references on Nahuatl in the linguistic literature. To cite just one example, it was the basis for Greenberg's (1963) information regarding word order in Nahuatl (cf. also Campbell, Bubenik, and Saxon 1988). The current paper brings perspective to the 1946 article. While the 1946 article is more fully phonemic and thus more easily grasped, its section on "accent" (1946:369) was always mysterious to readers. Whorf's ideas about "accent" are presented in much fuller form in this present paper, which clarifies greatly what Whorf (1946) was trying to say. There he summarizes his view as:

M[ilpa] A[lta] has a stress accent with associated pitch differences. Words over one syllable have primary accent on the penult. This accent consists of loud stress together with one of two varieties of tone-pattern. In "normal tone-pattern" these varieties are: 1) words ending in -C, including ?, have high tone on penult and low tone on ultima, e.g. í-nòn síwà-λ ['that woman']; 2) words ending in -V have on penult a tone falling from medium high (less high than the high of pattern one) to medium (higher than 'low') and remaining medium on ultima, e.g. kisâya ['was leaving'], kwepô-ni ['to burst/bloom']; except that the ultima may show a further slight fall before a pause. Words ending in -lli e.g. kalli ['house'] tend to show a compromise with pattern one by often having a nonfalling high tone on the penult, the fall seeming to occur on the long l. One-syllable words usually have stress and a moderately high tone, but a few, marked thus, kà, have low tone and optional stress. This tone-feature alone distinguishes kà "with, by" from ka (high tone) "is": kà no-tómìn "with my money", ká no-tómìn "it is my money".

Secondary accents and unaccented syllables have a medium tone and the former a louder stress than the latter, nearly approaching the stress of the primary accent. Secondary stress occurs on: 1) an ultima ending in -C; 2) the first syllable of a long word; 3) alternate syllables before the primary accent except that a short-V open-syllable is usually hurried and does not count, and two in succession count as one, e.g. o-'nonok\*ep'ia"ya, where no, no, k'e, and pi are thus hurried. (Whorf 1946:369–70.)

As will be evident below, this confusing summary is fully spelled out in the current paper, which in turn reflects Whorf's interpretation of colonial grammars. The lack of clarity in the intended phonemic status of Whorf's (1946) tone patterns was always puzzling, but the present paper makes this less mysterious.

Here, in this paper, Whorf seems to have both a descriptive and historical goal in treating Nahuatl pitch accent and "saltillo." While his phonetic

description and historical explanation of "saltillo" can both be read with profit to this day, his treatment of tone, pitch, length, and accent is quite misleading. On a strictly phonetic level, his description is probably quite useful. However, Nahuatl does not (nor did it ever) have contrastive tones or pitch accent (i.e., tone is not phonemic, organic, or underlying). It is not clear why Whorf thought tone/pitch to be so, but there are abundant grounds for speculation about why Whorf reached such conclusions.

First, Nahuatl vowel length is notoriously difficult to perceive correctly in many modern dialects (though it can also be relatively straightforward in others), as pointed out by Whorf himself (Whorf 1946:370). Moreover, length is only one of several vowel properties that enter the picture. Another is stress, which generally falls on the penultimate syllable. Other factors include whether the vowel is initial or not (some dialects automatically lengthen initial vowels), whether the vowel is followed either by two consonants or by a single consonant syllable-finally (such vowels are routinely shortened in some dialects), and whether "saltillo" is present. The interaction of length, stress, and syllable patterns (including presence or absence of glottal stop) can make the analysis of vowels difficult.

Second, Whorf seems to have been influenced by colonial grammarians, especially Rincón and Carochi, both in these matters and others. For example, for voiceless *L* and *W*, essentially word-final allophones of /l/ and /w/, Whorf writes an *h* in union with these sounds (*hl*, *hw*); see below. It is tempting to speculate that in this Whorf was influenced by colonial descriptions, where these sounds were written as (lh) and (uh). More to the point, since these grammarians of Classical Nahuatl wrote of "accents," and some presented a rather complex description (see below), one suspects Whorf's analysis with pitch accents may be influenced, at least in part, by a misinterpretation of these grammarians' descriptions (see below).

For example, Rincón (1595), Whorf's major inspiration in his interpretation of these matters in Classical Nahuatl (see below), had essentially four diacritics to distinguish two contrasts: presence vs. absence of vowel length, and presence vs. absence of glottal stop (see below). Carochi (1645) had the most complete and accurate analysis, though his diacritics were never generally adopted by Nahuatl scribes or grammarians. Nevertheless, Whorf does rely on material from Carochi (see below).<sup>2</sup> Carochi employed an acute accent for short vowels (*notēx* [no-teš] 'my flour') and a macron for long vowels (*notēx* [no-te-š] 'my brother-in-law'). Carochi described a

<sup>2</sup> For most Classical Nahuatl writers, vowel length was simply not indicated, although the *Cantares Mexicanos* (Bierhorst 1985) sometimes doubled the vowel to indicate length. Molina, Olmos, and others occasionally wrote *h* for "saltillo," while a circumflex is written for this sporadically in the *Florentine Codex* (Sahagún 1979). (Karttunen and Lockhart 1987:4, 67–74.)

difference in the pronunciation of "saltillo" depending on whether it occurred within an utterance or at the end, using a grave accent mark for phrase-internal saltillo and a circumflex for the phrase-final one (Bright 1960 and Karttunen and Lockhart 1987:69). Carochi (1945[1759:3]) described his system of notation in a section entitled "De Los Accentos," as follows:

De quatro accentos usaremos en este Arte, para distinguir quatro generos de tonos, con q[ue] se pronuncia la vocal de cada syllaba, y son estos, á, ā, à, â. El accento ( ` ) es nota, y señal de syllaba breve como *tétl* [te-tl], piedra: *tlétl* [tle-tl], fuego. La ( ^ ) es accento de syllaba larga, como *ātl* [a-tl], agua: *teōtl* [teo-tl], Dios. La ( ^ ) es señal de la pronunciacion, q[ue] suelen llamar saltillo; por que la vocal sobre que cae este accento se pronuncia como con salto, ò singulto, ò reparo, y suspension: ver.gr. *tàtli* [ta'-tli], padre: *pàtli* [pa'-tli], medicina: *mōtōtli* [mo-to'-tli], ardilla. Del accento ( ^ ) usaremos solamente en las ultimas vocales de todos los plurales de verbos, y nombres, q[ue] acabaren en vocal quando no se pronunciare inmediatamente otra diccion.<sup>3</sup>

Rincón (1595:63) distinguishes length from pitch/stress: "Hay syllaba larga, y syllaba breve, y syllaba igual, que ni es larga ni es breve. . . . Pues conforme a esta diversidad de la cantidad dela syllaba, se hallan cinco diferencias de accentos, porque en la syllaba larga hay acento agudo y grave. . . . Acento agudo es el que fuera de alargar la syllaba le añade un tono que levanta la pronunciacion con sonido agudo."<sup>4</sup>

For Rincón, the acute accent is employed for a long vowel with high pitch/stress. His grave accent is for a long vowel with low pitch/stress—with all his examples of grave accent falling on word-final syllables. Rincón's "accento moderado" falls on short vowels of penultimate syllables. As Bright (1960:67) points out, Rincón's grave and acute accents are in complementary distribution, with grave only on final syllables and

<sup>3</sup> [This section is] about four accents we will use in this grammar to distinguish four kinds of tones, with which the vowel of each syllable is pronounced, and they are these: á, ā, à, â. The accent ( ` ) is the notation and symbol of a short syllable, such as *tétl* 'stone', *tlétl* 'fire'. The ( ^ ) is the accent of a long syllable, such as *ātl* 'water', *teōtl* 'God'. The ( ^ ) is the sign of the pronunciation which they tend to call 'saltillo', because the vowel upon which this accent falls is pronounced with a jump or hiccough or stop, and suspension: e.g., *tàtli* 'father', *pàtli* 'medicine', *mōtōtli* 'squirrel'. We will use the accent ( ^ ) only on the final syllables of all the plurals of verbs and nouns that end in a vowel when no other utterance is pronounced immediately [thereafter]. [Our translation—LC/FK.]

<sup>4</sup> There are long syllables, short syllables, and equal syllables which are neither long nor short. . . . According to this diversity of the quantity of the syllable, five different accents are found, because in the long syllable there are acute accent and grave. . . . Acute accent is that which apart from lengthening the syllable adds to it a tone which raises the pronunciation with an acute sound. [Our translation—LC/FK.]

acute elsewhere, where both represent long vowels. Rincón's "breve" and "moderado" are both for short vowels, although "moderado" is less clear, due to lack of examples. Since it is said to be found in sequences with *-alli*, Rincón's perception may be colored by the long *l* (a pattern also discussed by Whorf; see below) (Bright 1960:67).

Therefore, while colonial grammarians spoke of "accents" and "tones," it is clear from their descriptions that vowel length and glottal stop were at issue, not tones or pitch accent, as has been clearly shown by Bright (1960). Whorf, however, is not the only one to have been misled by his reading of colonial grammars into thinking that Nahuatl has tones; see, for example, Barritt (1956); cf. also Schoembs (1949).

The date of Whorf's manuscript is not certain. As Whorf indicates in his opening line, the material was collected in 1930, when Whorf went to Mexico with the support of a Social Science Research Council research fellowship. Whorf worked on these Mexican materials for several years after his return (Carroll 1956:14), and his posthumous Milpa Alta sketch (Whorf 1946) is a result of this work. The date of this manuscript is, therefore, uncertain, though we suspect it may have been written soon after the trip, judging from its lack of a mature application of the phonemic principle.

We present Whorf's manuscript without change, but with some emendations and annotations. Since Whorf did not use brackets ( [ ] ) in his text (with one exception, so identified), we have enclosed all our emendations in brackets. For the most part, these are limited to an occasional word or punctuation for clearer reading, to added glosses, or to relevant forms for comparison or for clarification. More extended comments are presented in the footnotes. In the manuscript, Whorf often did not capitalize headings, employ single quotation marks to indicate glosses, or employ commas in some cases necessary to an understanding of his text. These have been added here without further indication. The manuscript had no bibliography; all the references are to sources we cite. (Citations of Proto-Nahua and Proto-Uto-Aztecan are from Campbell and Langacker 1978; Cora forms are from McMahon and McMahon 1959.)

The manuscript is essentially in two parts: pages 1 to 35 written in a very clear hand, and pages numbered 36 through 54 in typescript.<sup>5</sup>

Whorf presented his texts and many examples with both English and Spanish translations, though these are not always equivalent. The Spanish

<sup>5</sup> The only change we have introduced in Whorf's notation is to write ə for his symbol which is roughly like a 9, or a backward e, or an upside-down and backward schwa, which we suspect its intended value to have been.

We note that Whorf varies in his use of terms, with Aztec and Nahuatl being synonymous.

appears to be from Whorf's informants.<sup>6</sup> We have made no changes in the Spanish glosses; only occasionally we have inserted material in brackets to relate these glosses to more standard or more grammatical forms.<sup>7</sup>

## 2. Whorf's paper.

### Pitch tone and the "salttillo" in Modern and Ancient Nahuatl by Benjamin L. Whorf

The material for this paper was collected in Mexico in the winter of 1930 with the assistance of a grant furnished by the Social Science Research Council.

#### Phonology

Stops: p, t, k, q, (in qw, q<sup>w</sup>), (').<sup>8</sup> All un-aspirated. [The] t [is] dental; k before a, o, u [is] nearer q than is English k; it is the unvoiced correlate of Eng[lish] g in 'go'.

Affricates: ts, tc [= č] unaspirated

Spirants: s, c [= š], ř The last is a variant for c [= š] in certain localities. It is an untrilled unvoiced r with [the] end of [the] tongue raised and almost touching [the] hard palate just back of the c-position [= š], giving a hollow spirant quality.<sup>9</sup>

<sup>6</sup> One of Whorf's informants was Doña Luz Jiménez, who went on to an illustrious career as informant for others and Nahuatl teacher with Fernando Horcasitas and as the author of several publications, including *Life and Death in Milpa Alta*.

<sup>7</sup> For example, Nahuatl has the cross-referencing object pronoun prefix *k(i)-* on transitive verbs, followed by the full noun phrase object, e.g., *ni-k-čiwā tlašcalli* [I-it-make tortilla] 'I make tortillas'. The Spanish translations in Whorf's texts frequently translate both the pronoun prefix and the noun phrase object, though both are not necessary in Spanish and in fact their cooccurrence is ungrammatical in most instances, e.g., for this example: *lo hago tortilla*, where standard Spanish would require *hago tortilla(s)* or *la(s) hago*, or perhaps in strained emphatic form *la hago a la tortilla*, but even in this doubtful form, the pronominal object *la* must agree in gender with the object noun, *tortilla*, both feminine, which is not the case in many of the Spanish translations from Whorf's texts. These glosses were probably provided by Whorf's informants and as such are useful examples of the Spanish produced by Nahuatl speakers.

<sup>8</sup> In the handwritten section of the paper, Whorf's symbol for glottal stop seems to be about halfway between ['] and [ʔ], whereas in the typescript section he uniformly employs [']. Therefore, except in the introduction (1), we employ ['] throughout, both for Whorf's symbol and for cases where we cite Nahuatl forms which contain glottal stops.

<sup>9</sup> Whorf employs the phonetic symbols [c] "voiceless alveopalatal fricative" and [tc] "voiceless alveopalatal affricate" of the older system of representing American Indian languages, which in later usage were replaced by [š] and [č] respectively. We maintain his symbols throughout, though in forms we have inserted for comparison, we utilize the newer, more familiar symbols.

sř A variant of the last differing but very slightly in sound, tongue-tip in s-position, slightly more hissing and less hollow than ř, but with distinct r-quality.

x occasional only—ch in Ger[man] ach, without scrape.

ć Occasional only—between c [=š] and x—resembles ch [of] Ger[man] ich ['I].

i<sup>ć</sup> = faint ć heard after vowel.<sup>10</sup>

Nasals: voiced m, n, ŋ

unvoiced N, ŋ

nasal breath ħ

nasalizing of vowel ð

[All these nasals except m are variants of the phoneme n.] (This is the only case where Whorf used brackets.)<sup>11</sup>

Liquids: voiced l varies in tongue position from "light" to "dark" but generally "lighter" than Eng[lish] l with a back vowel.

With expiring voice l As in Eng[lish] 'melt', 'else'. Unvoiced L, ł [The] second [is] a variant of [the] first with l nearer ly and c-like [=š] spirantization. Sounds like cl (shl) [=šł], or still more like c & l simultaneously. (I find that ł does not occur in this paper.)

Occluded liquid: tl t [is] supra-dental, l [is] produced in [the] same position as the t, lips retracted. When tl is final of a word t is only faintly audible and l is fully unvoiced; elsewhere t is distinctly audible and l not wholly unvoiced (tinged with incoming voice).

Aspirate: h As in Eng[lish,] but mostly heard in the combinations LhW and 'h, the last being the "salttillo", to be described more fully herein.

Semi-vowels: Voiced y, w (& w̃) Like Eng[lish] except that in w the back contraction is stronger and more like that in the vowel o. Thus, awa

<sup>10</sup> Actually, s and š exhibit very little allophonic variation in most Nahuatl dialects. Whorf heard ř-like sounds for š presumably because there is a clearly audible retroflexion of /s/ in much of Morelos (where Tepoztlán is located) and parts of Puebla. Nahuatl has no x (velar fricative) in native words. There is considerable variation in "salttillo," however. This was apparently originally h, which changed to ' (glottal stop) in central dialects, precisely those upon which the colonial descriptions of Nahuatl are principally based, often called Classical Nahuatl (or Classical Aztec—Whorf uses both terms). (Going even further back in Nahuatl's prehistory, we find that some of these "salttillos" [h'] derive from certain syllable-final consonants, e.g., -w, -t; cf. Campbell and Langacker 1978). In some dialects ['] and [h] are in complementary distribution as variants of a single underlying segment. In dialects which have h, today one can sometimes hear phonetic [x] (velar fricative), probably due to influence from Spanish x ("jota"), since Mexican Spanish has no h.

<sup>11</sup> Modern dialects may typically vary between full final n and a nasalized vowel, but most do not exhibit voiceless nasals.

resembles *āa*. Where I have heard the *w* pronounced with this guttural quality especially strong I have recorded *w̄*.

Unvoiced *W* Fully unvoiced, not partially like *w* in English *hw* (*wh*).<sup>12</sup>

Faintly heard consonants are written superscript.

**Doubled Consonants** *ll* occurs in all dialects heard and *mm*, *nn*, *tt*, *yy*, [and] *ww* [occur] in Tepoztlan. These are not merely lengthened or prolonged consonants; the speech organs undergo a double wave of compression and relaxation in pronouncing them. *t* [and] *k* = doublings with one part faint.<sup>13</sup>

**Vowels:** *a* (father), *α* between *a* in father and *u* in cut, nearer [the] latter.

<i>e</i> (Sp[anish] pero)	<i>ε</i> (met)
<i>ι</i> (it) <sup>14</sup>	<i>i</i> (machine)
<i>o</i> (home)	<i>u</i> (pool) <sup>15</sup>

<sup>12</sup> Nahuatl has the rule that final nonnasal sonorant consonants (i.e., *l*, *w*, *y*, [and *r* in Spanish loans]) are devoiced. Historically, the final *y* went on to become *ʃ*. Thus, in traditional phonemic terms, Nahuatl has the phonemes /l/ and /w/ which each have a voiceless allophone ([L], [W]) in syllable-final position, and voiced allophones elsewhere. Whorf's *LhW* is thus apparently /lw/, i.e., syllable-final /l/ followed by syllable-initial /w/, where the syllable-final *l* is phonetically voiceless, i.e., [Lw].

<sup>13</sup> Basically the only doubled consonants typical of Nahuatl are *ll*. These are found only across a morpheme boundary and come about through the rule whereby the combination of a morpheme-final *l* followed by a morpheme-initial *-tl* changes to *ll* (*tl* → *l / l* \_\_\_\_ ) (cf. Whorf 1946; Campbell and Langacker 1978; and Dakin 1982).

Otherwise, the only other double consonants commonly found are in certain dialects, including variants of Classical Nahuatl, which have *itta* 'to see'. This is from PUA *\*\*tiwa*, which became *\*ih̄ta* in Proto-Nahua by regular rules, vowel loss (*twa*), epenthesis (*itwa*), metathesis (*iwtā*), and change of final *w* to *h* (*ih̄ta*); the vowel /i/ changed to /i/ (*ih̄ta*) in all Nahua varieties except Pochutec. This form remains in many dialects, though in some others it became *i'ta* and then *itta*, producing a somewhat anomalous geminate *tt* found only in this and a couple of other words (Campbell and Langacker 1978). The other double consonants Whorf records are probably features of emphasis and intonation, not underlying geminates (though one expects some geminates at morpheme boundaries, often due to assimilation, e.g., *m-p* > *p-p*, and Classical Nahuatl had many geminates at morpheme boundaries created by assimilation, e.g., *es-yo'* > *es-so'* 'blood'-Inalienable Possession Suffix and *ok-sep-pa* 'once more' < *ok-sem-pa*).

<sup>14</sup> This actually occurs very rarely in Whorf's manuscript. He writes it *ι* in manuscript, but wrote a note in the margin with an arrow pointing to this sound, saying:

Note In printing change to *ι* (Greek iota).

Therefore, we have written it *ι* in its few occurrences in the paper.

Between this "iota" and the (*e*) immediately above it in the line above, Whorf has a bar (-); it is difficult to tell whether this is intended as an underlining of the (*e*) or as a macron over the "iota," but in either case, it seems to play no significant role in his later usage in the paper.

<sup>15</sup> Whorf does not actually employ *u*, and it is not part of the Nahuatl phonological system, save in Spanish loanwords. There is, however, some phonetic variation in the realization of

Diphthongs & Combinations:

*ai*, *ei* occasional

*au*, *eu*, *εu* common

*ao* and *ae*, the first vowel modulating smoothly into the second.

Length:

*a·*, *o·* = long vowel<sup>16</sup>

*a*, *α* = short vowel

*t<sup>i</sup>*, *c<sup>i</sup>m<sup>o</sup>pa* = ultra-short vowel

*w<sup>E</sup>*, *w<sup>I</sup>* = ultra-short whispered vowel.

Accent: Stress accent is indicated by underlining the vowel: *ko-mitl* It is not strong.<sup>17</sup>

Pitch accent and the saltillo are treated as the subject of this paper.

## PITCH TONES AND THE SALTILLO

**Dialects Studied.** Except for scatterings of phrases and sentences heard in other places, this study is based on two dialects; that of Milpa Alta, Federal District, and that of Tepoztlan, Morelos. These dialects will be denoted *M* and *T*.

*M* is probably the best preserved remnant of the old Aztec of Tenochtitlan. It is the least corrupted phonetically of any dialect I found, but on the other hand it shows a large proportion of Hispanisms. It preserves faint *w* and *W* sounds which have disappeared in other dialects, and retains pure *c* [=ʃ].<sup>18</sup>

*T* is not descended from Tenochtitlan Aztec but from the speech of the Tlahuica tribe,<sup>19</sup> who came from the valley of Mexico into the valley of

*o* and *o·*; *o* before *l* is often *u* in Colonial texts, and the long vowel sometimes tends toward a higher quality. Similarly, Whorf scarcely uses *e* in the paper, except when repeating forms from Colonial sources. His handwritten *e* is quite clear, although in the typed part of the paper it is sometimes difficult to distinguish *ε* from *e*, since he apparently had typed *e*, and then added a bit by hand to the top to make it appear as *ε*; unfortunately, the added portion is not always easy to see clearly.

<sup>16</sup> Also *ε·* occurs very frequently in the paper, though Whorf did not list it here.

<sup>17</sup> Nahuatl stress is predictably on the penultimate syllable.

<sup>18</sup> The *w* is quite well preserved in most modern Nahuatl dialects; voiceless *w* ([W])—which occurs only syllable-finally—is also preserved in many, though it frequently changes in many other dialects as well, often to *h* (see Lastra de Suárez 1986).

<sup>19</sup> Tlahuica or Tlalhuica is the name applied to the Nahuatl-speaking group that settled Morelos and established centers at Cuernavaca and elsewhere. It should not be confused with the Tlahuica that is the name modern Ocuilteco speakers prefer for their language and ethnic identity. Ocuilteco is a moribund Otomanguan language spoken near Ocuilan de Arteaga, in San Juan Atzingo, Santa Lucía, and Colonia Gustavo Baz—to the west of Mexico City, between Toluca and Cuernavaca.

Cuernavaca in pre-Aztec times. Grammatically it is purer Nahuatl than M and shows less importation of Spanish words, but it shows greater phonetic leveling. It largely lacks W and in place of c [=ʃ] has ř.

### Pitch Tones

Medium: The voice [is] neither raised nor lowered. [It is] to be understood when no other tone is designated for a syllable.

Slightly Raised: The beginning of the syllable is slightly raised above medium tone and almost instantly drops back to medium tone, usually while on the same vowel. It could therefore be called a slightly raised falling tone, except that in certain cases as noted below the fall is deferred till [sic] the next syllable. [This] resembles [the] tone on [the] last syllable of "That is right."—said in a manner showing lack of interest. Designated â, ô, etc.

M. nōka tso-yô-ni  
 'mientras se freía'  
 'While it was frying'  
 (Don't drop the voice below medium on ni.)

When two short vowels come together, especially in the combinations ia, oa, and the first has slightly raised tone, they are so quickly pronounced that the resumption of medium tone does not occur till [sic] the second is reached. Designated îa, ôa.

M. niktəcolowîa 'I am mashing it.'

High: [There is a] high tone on a syllable like that on "know" in "Didn't you know it?" [There is] no falling or wavering of pitch on the syllable. Denoted á, ó.

M. ká 'is' citó-mà-tl 'tomato'  
 í-pàn 'in' tla'qwálli 'meal'  
 tómi-n 'money' nikhmáns tla-ckálli  
 'I shall pat out tortillas.'

Low: [There is a] low tone on a syllable, like that on "so" in "I should say so!" said with finality. [It] almost always comes after high tone on [the] preceding syllable. This frequent jump from high to low continually occurring in the midst of a little-varying level of medium tone is the outstanding trait of Nahuatl accentuation.

Denoted à, ò. See above examples.

Where I have heard the height or depth of the high and low tones markedly exaggerated I have recorded a double accent mark ǎ, ò̂.

M. tcǎwè! (for tiyáwè) "¡Vámonos!"

Salttillo: All early writers describe the "salttillo" as an accentual phenomenon, and some refer to the holding of the breath that accompanies it. It has nothing to do with tone however, and the true or strongly pronounced salttillo is more than a simple glottal stop as some have described it. This true or strong salttillo always occurs after a vowel and before a consonant. The vowel is pronounced with considerable force of breath. A sudden glottal closure cuts short the vowel before the chest has fully contracted and for a moment, about the duration of a single stop consonant, the breath is pent up behind the closure. Then the glottis opens and the chest completes its contraction, expelling the remaining breath as a sort of h, resembling a pant, which is cut off or broken into by the next consonant, and then comes the next expulsion of breath on the next vowel.<sup>20</sup>

This sound can be designated with fair accuracy as 'h.

M. tlâhtla 'it blazes.'  
 notáhtsiN 'my father'  
 o-ki'htó'ké 'dijeron' 'they said'  
 tēpo'hcó'hûN 'los botes' 'the tubs'  
 o-ki'ti'htlanilí'kè' tîròs 'dispararon unos tiros'  
 'they discharged some shots.'

The early grammarians say that the salttillo is placed on the final vowels of plural endings and of the preterite tense. What is heard in these positions to-day [sic] is either a simple glottal stop and usually a pretty faint one, or nothing. If however the next word after such a vowel-ending begins with a vowel, an ordinary h (as in Eng[lish]) is usually prefixed to it.

T. ok'wik'lihkè h-ítlàk 'le llevaron junto a él'  
 'they took him over to him'

The salttillo is sometimes inserted into a foreign word.

M. kitekiliîa ha'hsêite blânko 'le echa aceite blanco'  
 'one pours for her white oil'<sup>21</sup>

But I also heard from the same informant ha-sêite.

In addition to the salttillo, Nahuatl talk frequently inserts faint glottal catches or light hesitations after certain vowels of a word. The usage may vary with respect to the same word with the same individual. Unlike the salttillo, these do not pre-aspirate the next consonant. I record these slight

<sup>20</sup> This is a good description of the production of the salttillo and its variation in pronunciation. It is essentially a glottal stop in these dialects. However, final stops have aspirated allophones (a widespread phenomenon found in many Mesoamerican Indian languages), and this includes glottal stop: [tʰ], [kʰ], and [ʰ]. (Cf. Lastra de Suárez 1986.)

<sup>21</sup> From Spanish *aceite* 'oil'.

checks as simple glottal stops (see above instances) or when they sound more like faint anticipated closure upon the consonant I record i'ta, o'ka, etc. instead of i'ta, o'ka.

The uses of the tones and the saltillo in the Milpa Alta dialect may next be observed from the following text.

M. Pwes ona'hsíto ípam pweblíto  
Pues llegué en un pueblito  
Then I arrived at a village

i-tô-ka lálilus.  
llamado La Luz.  
called La Luz.

onikí'tàk séntetl t'opàNtlî  
vide una capilla<sup>22</sup>  
I saw a chapel

wan onte'hte-mo-lyâya  
y le buscaba  
and he asked about it<sup>23</sup>

fê-tca ðe ántès  
la fecha de los antiguos  
the ancient date

í'hqwak ok'tci'htcî.éke  
(this tone is anomalous)  
cuando lo hicieron  
when they made it

pêro âmo nikne-ctîlik.  
pero no le encontré.  
but I did not find it.

sànj-ma omp<sup>a</sup> o-walâya  
luego venía  
soon yonder there was coming

<sup>22</sup> In colloquial Spanish, archaic *vide* 'I saw' occurs in many rural dialects of Latin America in place of standard *vi*.

<sup>23</sup> A note in the margin indicates Whorf's intention to add a footnote: As footnote \* (i.e., I, the writer, asked the informant).

séntetl tlá-kàtl  
un hombre  
a man

wan o-t'itlâ'htlaní'hke'  
y le preguntamos  
and we asked him,

"âmo .títetcmâka ráson  
"¿No nos das razón  
"Can't you give us information

tlaon cíwìtl o-motci'htcî-wi  
en que año se fundó  
about what year was made

ínî t'opàNtlî?"  
esta capilla?"  
this chapel?"

wan okí'hto ínnon tlákàtl  
y nos dijo ese hombre  
and said that man

ðe ômpa ítca,  
de allá del pueblo,  
from that place his home,

"pos, âmo nimitsmâka ráson  
"¿Pues, no le doy razón  
"Why, I can't give you the information

pôrke âmo níkpilîa qwiðâðo  
porque no le he tenido cuidado  
because I have no interest in it

pero ní<sup>é</sup>máti ke kâ\_kalí'htik  
pero sé que está adentro  
but I know that it (the date) is inside

ka séntetl qwâdro, pero ckâ-wa!  
con un cuadro, pero deje!  
on a tablet, but wait!<sup>24</sup>

<sup>24</sup> A closer Spanish translation would be 'en un cuadro, pero deje'; English 'in a tablet, but stop!'. Since the Nahuatl verb seems to be transitive, it probably should be glossed 'leave it, drop it!'.

nī'tla'htlānīs i·ntlāqW<sup>E</sup> enkargādos  
preguntaré con los mayordomos  
I will inquire among the caretakers

δε ίνō t<sup>o</sup>·kālī  
de ese templo  
of that temple

wan nimits'íLhWīs  
y te lo he de decir  
and I will tell you

qwa·k o<sup>h</sup>se byāhe tiwá·lās."  
(viaje)  
cuando otra vez vengas."  
when you come again."

δε ίνō pweblīto  
De ese pueblito  
From that village

sānī·ma o·nitlā·ictémòk  
luego me bajé  
soon I went down

í·ctētēc sēntētēl wē·i tlā'htemāntli  
í·ctētēc  
en la superficie de un empedrado grande  
over a stony road (lit. over a big expanse of stones)

kāmpa ka tlē'hkò pwēblo tlā·kā.  
por donde suben los del pueblo.  
the way where the pueblo people go up.

sānī·ma o·nikítskik  
luego tomé  
Soon I took

ohsētētēl o·'hpitsā'htli,  
otra vererra [=vereda],  
another narrow road,

sanī·ma o·nitlē'htlē'hkòk  
en seguida me subí en una cerca  
and then I went around up

para onikítskik  
para tomar  
so that I took

ohsētētēl qwe'hqwēntla<sup>h</sup>·ō·'htli  
otra vererra [=vereda] de milpa  
another road through the fields

para onikisáto (or on'kisáto)  
para ir a salir  
in order to come out

i·pan ohsētētēl ô·'htli  
para otro camino  
upon another road

pero we'hkàpā  
pero estaba [=estuvo] muy alto  
but it was very high

kāmpa ka o·nitēmoskīa.  
por donde iba yo a bajar.  
for where I would be going down.

entōnses onitémòk  
entonces me bajé  
Then I went down

ka itēηko sēntētēl mēpāmītl;  
por la orilla de una inglera de magueyes;  
by the edge of a row of magueys;

sanī·ma onikisaskī·a  
luego iba yo a salir  
soon I should be coming out (on the main road)

pero no·i·hki o·tetsau<sup>h</sup>Wt'ōya  
pero también estaba cerrado  
but also closed was



inō kaLṭé·mìtl ka tètł.  
ese portillo con piedras.  
that gateway with stones.

sanì·ma onjka ò·htli  
luego agarré otro camino  
soon I reached [=took] the road

para pweblìto i·tô·ka san agustín  
para el pueblito llamado San Agustín  
to the village called San Agustín

kampa o·nikimí'tàk (or o·n'kimí'tàk)  
en donde los vide [=vi]  
where I saw

mí·yàk kaLṭó'htòn  
muchas casitas,  
many little houses,

wan ka i·kàmpa to<sup>h</sup>tjítikótè  
y atrás estaban sembrados  
and behind these were (lit. are) being sown

kalwà·sa mǐltù<sup>p</sup>;  
muchas milpas de chícharos;  
fields of peas;

sé·ki ye kipíā kalwā·sa  
unos que ya tenían el fruto  
some already have peas

wan sêki apenas co·tc'iqwepontjka.  
y otros apenas estaban en flor.  
and some are just bursting into bloom.

wan i·pan i·pâ·tyo inō teokalli\*  
y en el patio d'esa [=de esa] capilla  
And in the courtyard of the chapel there<sup>25</sup>

<sup>25</sup> Added later above the line (\* as footnote):

\*(This phrase was spoken rapidly and in rather a monotone, so that I did not distinctly hear pitch differences. Normally these words would take the tones ipan, inō, teokállh.)

okimpyâya mí·yàk qwáuhWtì·N  
tenía muchas [=muchos] árboles  
it was having (there were) many trees

ðe tlâtska.  
de cedro.  
of cedar. (Cupressus benthami).

itsintló<sup>h</sup>yò qwáuhWtì  
Abajo de esos árboles  
Under the trees

o·totlā'htlalj'hkè'  
nos sentamos  
we sat down

para o·ti'tlā'hqwiló'hkè'  
para escribir  
to write (lit. for that we wrote)

wan tosekātjtlā  
y en un lado de nosotros  
and on one side of us

o·motlā'htla·lj'hkè  
se sentaron  
sat down

nā·wi ko·kónè'.  
cuatro niños.  
four children.

o·k'wi·kâya o·mē me·tótòn  
Llevaban dos borregos [=borregos]  
They were leading two sheep

wan ot'kintlā'htla·nj'hkè  
y les preguntamos,  
and we asked them,

"ka·mpa n̄ a·nyáwè'?"  
["¿]adónde van[?]"  
"where are you going?"

(nan, written n̄ an, is for classical [Nahuatl] in an, one of the few survivals of the classical [Nahuatl] particle in)

wan ote·tcnankilf'hkè'  
y nos respondieron  
and they answered us

"t'yáwè' ti'qwa'hqwawíske."  
"Vamos a leñar."  
"We are going to gather wood."  
([The] tone of [the] last word [is] anomalous).

sani·ma ohsépà oníka o·'htli  
Luego tomé el camino  
Soon I reached [=took] the road again,

ka tlaçítlà.  
por abajo.  
going down.

oni·kqwe'tcáLhWík  
Lo pasé  
I went over<sup>26</sup>

séntètl pwente de qwáwìtl  
un puente de madera  
a wooden bridge

o·yo·yot'áya.  
que estaba atravesado.  
that intervened.

sani·ma ona·hsf'htò ípa·n bârrio  
Luego llegué en el barrio  
Soon I arrived in the parish [= district/ward of town]

i·to·ka lak°nseps'ótsìn.  
llamado La Concepción.  
called La Concepción.

<sup>26</sup> Added above the line (as footnote):

\*(An interesting survival of an old meaning of \*qwetca > vb. qwetcawa > applicative qwetcaLhWia; qwetca = "go over" > qwetcawa "flood" and "relentecer o humedecer algo"—Molina [.] )

sani·ma ona·hsf'htò  
Luego llegué  
And soon after I arrived

i·pánòn kaLté·mìtl  
en ese patio  
there in the yard

de í·nō t°okállì.  
de esa capilla.  
of the chapel there.

onikíttàk míyak tē·mè'  
Los vide muchas piedras [=ví muchas piedras]  
I saw many stones

mō'hmontōŋka para ka kiséŋkawàskè  
amontonadas para acabar de construir  
piled up in order to finish [building]

ínō teo·kúllì  
ese templo  
that temple

porke ko·sa tsj·ts'kítsì<sup>n</sup> ká.  
porque estaba muy reducido.  
because it is rather dilapidated. (lit. "reduced")

wan á·ca<sup>N</sup> bârrio tla·ka  
Y ahora los del barrio  
And now the parishioners

yo·kipensaró'hkè kiweyilíske'  
ya pensaron agrandarlo,  
have decided to enlarge it,

porke áyóhmò kimpá·tja  
porque ya no les parece  
because it no longer looks to them (lit. fits, corresponds or is worth to them) [= 'they don't like it']

ke ok'tci'htcî·hke  
como lo hicieron,  
they way they made it,

atc<sup>i</sup>tōN tla'ht'wanime'.  
 los antecesores.  
 the original authorities.

### Discussion of Tones in the M Dialect

The above text is a fair sample of most of the tone phenomena encountered in a much more extensive body of tonally recorded texts collected by me in the M dialect. The results of a study of this whole body of texts will next be summed up. This discussion of tones will be subdivided according to the following general types of tone which are found in these texts and also in conversational talk.

1. typical tone (where the tone depends on the phonetic type of the word, that is, goes with certain arrangements of vowels and consonants).
2. special tone (where typical tone seems to be varied according to some special condition, such as a desired emphasis or an effect of rhetoric).
3. morphological tone (where the tone indicates the grammatical nature of the word).
4. semantic tone (where the tone is essential to meaning).<sup>27</sup>

#### 1. typical tone.

a. The medium tone. This is the tone of the majority of the syllables in the stream of talk. The syllables tend to run in successions presenting a uniform level of the medium tone, interrupted by occurrences of the other tones chiefly on the last two syllables of important words. Generally all of a verbal complex up to the final two syllables is in medium tone. Monosyllables with rare exceptions are in medium tone. Many connective words though of more than one syllable have only medium tone as they would normally be pronounced in the midst of a sentence. Ex[ample:] ka-mpa o-n'kimĩ'tàk ['where I saw them']

b. The slightly raised tone. This occurs regularly on the next to the last syllable of words ending in a vowel, with certain exceptions to be studied.<sup>28</sup>

<sup>27</sup> As pointed out above, Nahuatl in actuality has/had no contrastive tone. Thus, Whorf's "typical type"—where the tone depends on the phonetic shape of the word—would seem to reduce to Nahuatl's penultimate stress pattern. His "special tone"—used for emphasis or rhetorical effect—would seem best treated as part of intonation. The third and fourth types turn out to correspond to various permutations of vowel length, stress, and glottal stop (see below).

<sup>28</sup> This is apparently Whorf's perception of penultimate stress in open syllables.

Ex[amples:]

ckâ-wa ['drop it, leave it!']  
 o-motci'htcî-wi [o-mo-č'č'i-wi (PAST-REFLEXIVE-  
 REDUPLICATION-make) 'was made']<sup>29</sup>  
 i-tô-ka ['his/her/its name']  
 nįmitsmâka ['I give it to you']  
 nįkpilîa ['I have it']  
 o-walâya. ['(he/she/it) was coming']

c. The high tone. This occurs regularly:

(1) on the penult of words ending in consonants.

sęntętl or sęntętl ['one']  
 tlâ-kâtl ['person']  
 tiwâ-lâs ['you will come']  
 o-n'kimĩ'tàk [o-ni-kim-ittak (PAST-I-THEM-see-PAST) 'I saw them']  
 mį-yâk ['many, much']  
 kaLtô'htōn [kal-to'-to-n (house-REDUPLICATION/PLURAL-  
 DEROGATORY) 'little houses']<sup>30</sup>

(2) M tends to pronounce final n very lightly, sometimes as barely audible <sup>n</sup> (voiced), sometimes as N (unvoiced), sometimes as nasal breath or nasalizing of [the] vowel, while sometimes it disappears entirely. Nevertheless these cases, even the last, are regularly toned as in (1).

<u>M Form</u>	<u>Classical [Nahuatl]</u>
inĩ	inin ['this']
inō	inon ['that']
onĩka "agarré"	onikan (o-ni-k-an) v[er]b ana ['I grabbed it']
mįltĩ <sup>n</sup>	miltin ['fields'; cf. mi-l- 'field']
tosękatřtlâ	tosekatitlan ['on one side of us']
ítca	ichan (i-chan) ['his/her/its home']
From another M text I have í-pàN ['on it'], í <sup>h</sup> wàN [i-wa--n ? with him/her/it'], etc.	

(3) on the penult of words ending in a glottal stop, or words whose final vowel takes the saltillo in classical Aztec, even when the glottal stop is absent in M.

<sup>29</sup> The initial o- of this example (and of the last in this list), which we have labeled "past," may occur with preterit, imperfect, and even future forms to indicate an event after some other event; some grammarians prefer to call it the "antecessive."

<sup>30</sup> Other varieties of Nahuatl do not have "saltillo" in such forms; this makes us wonder whether Whorf heard correctly here.

o-t'itla <sup>h</sup> htlaní <sup>h</sup> ke'	['we asked him/her']
to <sup>h</sup> títikóté	['were being sown' (?)]
o-motla <sup>h</sup> htla-lí <sup>h</sup> hkè	['they sat down']
ko-kónè'	['children']
itsintlá <sup>h</sup> yò	['under it']

From other texts I have plurals of this toning, corresponding to classical [Nahuatl] plurals in -me', -ke'

o<sup>h</sup>htlámè' "otates" 'bamboos'

But in this one tē-me' is out of line.

(4) on the penult of verbs having suffixed -to and -ka

ona<sup>h</sup>síto ['I arrived'; literally: 'I went to arrive there'; *o-n- a'si-to*  
'PAST-I-arrive-PURPOSIVE']

co-tc'iqwepontí<sup>h</sup>kà ['is bursting into bloom']

(5) on the penult of nouns in -lli

teo-kálli ['temple']

From other M texts I have numerous other instances, e.g.

to-nálli 'day'

ma-qwílli ò-ra 'five hours'

d. The low tone. This occurs regularly on the last syllable of a word whose penult has the high tone. See the above instances of the high tone. Rarely the drop to low tone is deferred till the next word (see above); when this occurs the intervening syllable remains high. Occasionally the drop from high is only to medium tone.

2. Special tone. Occasionally the normal toning as outlined above is altered, apparently often in the interest of emphasis or rhetorical expression.

a. Negatives. Emphatic negative words of which the first element is the negative particle a- usually take high tone on this a-. In the above text there is one case—

áyóhmò 'no longer'.

From other M texts I note, e.g.

ántlè-yì tòmì-n 'no hay dinero' 'there is no money'

áyèmo 'not yet!' (in reply to question).

áyò<sup>h</sup>mo 'ya no' 'no longer!'

áwèlli 'no pudieron' '(they) could not'

á-i<sup>h</sup>wèlli 'ya no pudieron' '(they) could no longer'.

b. Thanking. The expression "thank you!" is usually tlaso<sup>h</sup>hká-màti or tlaso<sup>h</sup>hká-màti<sup>1</sup> or tlaso<sup>h</sup>hká-màti

c. Impressiveness, etc. To give impressive emphasis the low tone is sometimes anomalously used, especially for ideas of depth or height.

wehkàpà	'muy alto'	'very high'
Also heard:	wèhkà!	'far off!'
welì <sup>h</sup> hkì!		'harder!'
te <sup>h</sup> wátsín nó-ì <sup>h</sup> hkì		'you too!'

d. Questions & Misc. In questions the first syllable or first few syllables of the sentence are in slightly raised tone and the last syllable [is] also usually slightly raised without [a] following drop. If the last syllable would normally be low it often is low and rises at the very last.

Failure of the normal drop to low to occur after a high penult seems to be often because the word is being uttered quickly and unemphatically. There are also of course occasional anomalies of tone for which I can give no explanation.

3. Morphological Tone. The above text does not happen to contain the proper verb forms for showing the use of tones as part of the grammatical apparatus, yet the functioning of tones as such is not uncommon, occurring in the following ways.

a. In the present and imperfect tenses of the verbs, classical Aztec distinguishes the plural from the singular by a saltillo on the final vowel. In M where even a faint glottal stop to represent the saltillo may have disappeared, the difference in tone pattern between a vowel-ending and a consonant-ending word may remain the only distinctions.

kì<sup>h</sup>qwilôa 'he/[she] writes it'

kì<sup>h</sup>qwilôa 'they write it' [cf. Classical Nahuatl *ki-kwiloa-* 'it-write-PL']

otikisâya 'you were leaving'

otikisâyà 'we were leaving' [cf. Classical Nahuatl *o-ti-ki-sa-ya-*

'PAST-we-leave-IMPERFECTIVE-PL']

(In Aztec "we" is the formal plural of "thou", not of "I").<sup>31</sup>

Tone alone would distinguish the continuative present in -ti-ka of verbs from adverbials in -ti-ka of certain nouns from the same stem.

kaLí<sup>h</sup>kà 'he is making a house'

kaLí<sup>h</sup>ka 'with (or by) houses'

toktí<sup>h</sup>kà 'he is sowing'

toktí<sup>h</sup>ka 'with (sown) maize'

nokentí<sup>h</sup>kà 'I am clothing myself'

nokentí<sup>h</sup>ka 'with my garment'

<sup>31</sup> Here Whorf is reacting to the formal similarity between the markers for 'you singular' (*ti-*) and 'we' (*ti-...-*), where the final glottal stop marks 'plural'.

4. Semantic Tone. The most common case is

ká '(he, she, it) is' (Spanish *estar*) [cf. Classical Nahuatl *ka-* stem, *ka* 'he/she/it is']

ka prep[osition] 'with, by', conj[unction] 'that' [cf. Classical Nahuatl *-ka* 'with, by (means of)', *ka* 'conjunction']

Of the first, we have in our text

ni<sup>é</sup>mátì ke ká kalí'htìk  
sé que está adentro  
I know that it is inside.

ko-sa tsj-ts'kítsi<sup>n</sup> ká.  
(muy) (reducido) (estaba)  
it is very dilapidated (is used for was)

A very common expression is  
qwálli ká! 'está bueno' 'it is good! (=all right!)

Sometimes ká is enclitic as regards stress accent; qwallíká. I was corrected when I said qwallíka.<sup>32</sup>

In the first and second persons n̄ka ['I am'], t̄ka ['you are'] are generally heard. The plural, kátè, has typical tone.

The other ka is also ka (˘), meaning that it is regularly followed by a tendency to depress the tone, so that the accented syllable of the next important word has a lower tone than the normal. Our text shows the following examples:

Expressions with ka (˘)	Typical tone would be
ka sɛntɛtl qwádro	sɛntɛtl ['one']
['with a tablet, picture']	
ka tlɛ'hkò pwɛblo tlà-ká	tlɛ'hko pwɛblo tlà-ka
['by (where) the townspeople ascend']	['townspeople ascend']
ka itɛŋko ['by the edge of']	itɛŋko ['the edge of']
ka tɛtl ['with stone(s)']	tɛtl ['stone']
ka i-kámpa	i-kámpa ['behind (it)']
['through behind it' (por atrás)']	

I have recorded one case where the tone drop does not occur:

ka tlacítlà tlacítlà(n) [in Classical Nahuatl this form meant 'room in palace where nobles and leaders heard people's petitions and resolved criminal cases']

<sup>32</sup> That is, Whorf should have stressed this as required by its two constituent words, *kwálli ká* [good is] 'it's OK'; his pronunciation as a single word with typical penultimate stress, *\*kwállika*, was not accepted.

The word san̄ma in my texts when toned anomalously san̄ma, sán̄ma or more rarely san̄ma, is always translated "luego"—'soon', or 'immediately'. When toned typically san̄ma, it is translated "en seguida"—'next'. The present text contains only one example of san̄ma, but other texts [exhibit] numerous ones. The other cases of semantic tone that I noted are:  
pátlà 'change, exchange'  
pátla 'knead, stir, mix up'

tcítci or tcítci 'dog'  
títci<sup>33</sup> 'nurse, suck (baby, subject)'

tókà 'follow'  
tôka 'sow (seed)'<sup>34</sup>

#### Discussion of the Saltillo in the M Dialect

The saltillo occurs

1. After the first of two reduplicated syllables in reduplicated verbs.

o-motlā'tla-lí'hkè <sup>35</sup>	verb tlalīa ['sit down']
red[uplicated] tlā'htlalīa	
ok'tci'htci <sup>é</sup> ke	verb tcīwa ['to do, make'] red. tci'htciwa
o-nitlɛ'htlɛ'hkòk	verb tlɛ'hko ['to ascend'] red. tlɛ'htlɛ'hko
ti'qwa'hqwawīske	verb qwawīa ['to chew'] red. qwa'hqwawīa

2. Similarly [saltillo occurs] with nouns reduplicated to express plurality or generality, but with numerous exceptions.

qwe'hqwɛntla 'fields, country' qwɛntlà 'field'  
but ko-kónè 'children' kónè-tl 'child'

Note: Where a reduplication is part of the stem there is usually no saltillo.

M. kokôa 'it hurts'

<sup>33</sup> Whorf mistakenly wrote (títci) where tcítci is expected.

<sup>34</sup> It is instructive to compare Whorf's forms with the Classical Nahuatl equivalents:

Whorf's forms	Classical Nahuatl
pátlà 'change, exchange'	[patla]
pátla 'knead, stir, mix up'	[pa-tla (?)]

tcítci or tcítci 'dog'	[čiči]
t[c]ítci 'nurse, suck'	[čiči]
tókà 'follow'	[toka]
tôka 'sow (seed)'	[to-ka]

<sup>35</sup> Whorf gives o-motlā'tla-lí'hkè here, where from the way he represents other forms we might expect o-motlā'htla-lí'hkè (i.e., not . . . 'C, but . . . 'hC).

3. [Saltillo appears] after prothetic *i-*, except when *i-* is followed by *l*, and the saltillo remains after *i-* has been eclipsed by the vowel of a prefix.<sup>36</sup>

okf̄hto [o-ki-'to 'he said it'] verb i'htôa < \*to [actually (i)'to-]

tlā'ht'wanîmē' tlā'ht'wâni = tlā'htoâni < i'htôa

nî'tla'htlânîs [ni-'tla'tlani-s 'I will inquire']<sup>37</sup>

verb tlā-'htlanîa < vb. i'htlanîa < \*tla

o-ti'tlā'hqwilô'hkē' [o-ti-tla-'kwilo'-kē-' PAST-we-

UNSPECIFIED OBJECT-write-PAST-PLURAL 'we wrote

(something)'] tla- + v[er]b i'hqwilôa < \*qwilo [actually \*(i)hkwVlo-]

**Note:** Pronominal *i-* (*i-tô-ka*, *itca*, *î-pàn*) does not take saltillo except possibly in *f̄hqwàk* [*i'kwa-k* 'when'], *f̄hwàn* [*i-wa-n* 'with him']; it is a question whether *i-* in these words is pronominal or prothetic.<sup>38</sup>

4. [Saltillo occurs] before *-kē* of past tense plural.

o-t'itlā'htlanî'hkē' ote-tcnankilî'hkē'

5. Let *y* = any final vowel of a verbal stem. Classical Aztec shows groups each of practically synonymous and interchangeable verbs from the same stem, of the forms *y-wa*, *y-qwa*, *y-ka*, *y-na*, and corresponding to these verbs may be one or more nouns of the forms *y-oh-tli*, *y-cu-tli* (*y-qw-tli*), *y-k-tli*, *y-n-tli*; with *y-oh-tli* and *y-k-tli* preferred, and not necessarily following the consonantal suffix of the verb. In M such nouns tend to be of one form, *y-'h-tli*.

pitsā'htli 'contracted, narrow'

Class[ical Aztec] pitsauhtli and pitsaktli

pitsāwa 'to contract, narrow, make thin' < \*pitsa

6. In the stem of words the saltillo occurs as in classical Aztec and generally must be learned.

ô'htli 'road' tlē'hko 'ascend'

<sup>36</sup> Actually, the saltillo is not added because of prothetic *i*, but rather is part of the root in such cases. Historically, certain  $C_1VC_2V$  roots lost the first  $V$  ( $C_1C_2V$ ) and then later prothetic *i* was added ( $iC_1C_2V$ ) (e.g., \*kasi > k̄si > ik̄si 'foot'); the prothetic vowel does not appear when the root is not word-initial (e.g., no-k̄si 'my-foot'). When the second consonant was one which eventually became *h* (and changed further to glottal stop in dialects such as the principal ones recorded as Classical Nahuatl), as syllable-final *w* did, the two consonants metathesized (e.g., PUA \*\*tiwV > two > (i)two > (i)wto > (i)hto- [ > (i)'to- 'to say, tell']; contrast *tla-htoaltla-'toa* 'he says something' [*tla-* 'unspecified object marker']). (For details, see Campbell and Langacker 1978.)

<sup>37</sup> Actually, there should be no glottal stop between the subject prefix *ni-* and the verb stem *tla'tlani-*. It seems to be an error on Whorf's part. However, if the verb is transitive *tla'tlania*, then Whorf's // would be the phonetic realization of the object prefix which otherwise is *k-*, and not a "saltillo" at all. In this case, the gloss should be 'I will interrogate him/her'.

<sup>38</sup> Whorf apparently confused matters here; the initial *i* of *i-wa-n* has no "saltillo."

**Final Saltillo.** The final saltillo required by classical [Nahuatl] grammar after all vowel-ending plurals, preterites, imperatives in *-ti* and *-ki*, and adjectival derivatives in *-wa* and *-yo*, is in M either lacking or represented by (̣), a faint glottal stop, sometimes with *h-* or *ḥ-* prefixed to an initial vowel following in the next word.

#### Text in the T Dialect

We may now compare the somewhat different occurrence of tones in the T Dialect from the following sample of texts secured at Tepoztlan.

sente tô-tctli o-nē-mî-ya

Un conejo andaba

A rabbit was going along

î-pan iřtlā-watl.

en el campo.

in the country.

îniN tô-tctli o-kinā-mik

Este conejo se encontró

This rabbit met

sente tlākātī tlā'mo-tlānī

[a] un hombre tirador

a man going shooting

îkā itēpòs.

con su escopeta.

with his gun. (lit. [with] his "iron")<sup>39</sup>

îniN tô-tctli î-wan on tlākātī

Este conejo y ese hombre

This rabbit and that man

o-pē-'hke mō-no-nô-tsa ômpa.

comenzaron a platicar allá.

began to converse there.

ye'h\_kima-i'htāLhWîa tla-yô-lli

Le ofrece maíz

The farmer offers him maize

<sup>39</sup> Spanish *escopeta* means 'shotgun'; Nahuatl *tepos* means 'iron, ax', and apparently by extension also 'gun' in this dialect—hence Whorf's literal gloss with 'iron'.

ðe tɬɛn ɔ·kitô·kak  
de lo que sembró  
from what he had sowed

î·miL tɔtctfi.  
en su milpa del conejo.  
in the rabbit's field.

îwan tlamô·tlàk  
Y el tirador  
And the hunter

o·kîLhWi tɔ·tctfi  
le dijo al conejo,  
said to the rabbit,

“kɛ·kítctò<sup>ɔ</sup> tikma·i·htô<sup>h</sup>wa  
“¿qué tanto ofreces  
“for how much are you offering

motláyò·L?” o·kî·'hto tɔ·tctli[,]  
de tu maíz?” Dijo el conejo[,]  
your maize?” Said the rabbit[,]

“ma·tlâktli kâ·rga  
“Diez cargas  
“Ten loads

yɛ·hyei pɛ·so kâ·rga.  
a tres pesos [la] carga.  
at three pesos a load.

ři·kctî·wa qwɛ·nta—  
Haz tu cuenta—  
Make your reckoning—

kɛ·kítct tɛ·tcmó·kàs?”  
¿cuánto me has de dar?”  
how much will you give me?”

inî·\_tlamô·tlàk okî·'hto  
Este tirador dijo,  
This hunter said,

“nîmi·tsmá·kàs  
“he de dar  
“I will give you

sɛmpwálli wân·ma·tlâktli pɛ·so.”  
treinta pesos.”  
thirty pesos.” (lit. twenty and ten)

îniN tɔ·tctli ɔ·kísé·li tómiN  
Este conejo recibió [el] dinero  
This rabbit received the money

î·wa·n okîLhwi tlamô·tlàk[,]  
y le dijo al tirador[,]  
and said to the hunter[,]

“tiksé·lis tla·yô·lli  
“has de recibir el maíz  
“you will receive the maize

î·maN ni·pír·kàs.”  
cuando he de cosechar.”  
went I harvest.”

ɔ·ŋkaN ɔ·m°na·wátî·'ke  
Así se avisaron,  
Thus they took council,

tlamô·tlàk îwan tɔ·tctli,  
el tirador y el conejo,  
the hunter and the rabbit,

ɔ·ŋkan ɔ·yâ·<sup>h</sup>kè î·paN iNtcá<sup>h</sup>tcàN.  
despues se fueron en sus casas.  
then they went to their homes.

îniN tɔ·tctli ɔ·k'pe·wá·Lî  
Este conejo le comenzó  
This rabbit began

î·mîL tlá·yò·Lkó·nè·tl kî·'hqwà;  
su milpa la planta chica a comer;  
to eat the young maize plants in his field;