The Long and Short of Aztec Dialects

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Length as a feature of Aztec has been recognized since the first grammars were written in the XVI century. The early clerics generally treated the feature along with other prosodies as a part of the accentual system. The Jesuit school of nahuatlatos was especially thorough in their treatment of "accents" 2, but the exact nature of these prosodies, with which the Spanish friars were obviously unfamiliar, to this day remains a subject of controversy (Barret, 1956 and Bright, 1960).

Length is reported as a feature of Modern Aztec dialects in Milpa Alta, MA, (Whorf, 1946), Tepoztlan, TP (Whorf, n.d.), Zacapoaxtla, ZAC, (Key & Key, 1953 and Robinson, 1969), Huachinango, HU, (Brockway, 1953), Mecayapan, MC, (Law, 1955 and Wolgemuth, 1969), The Tuxtlaaas, TX, (Hasler, 1960), Orizaba Nahuatl, ON, (Goller et al., 1974), Guerrero, GRO, (McQuown, 1941) and San Luis Potosí, SLP, (Croft, 1951). Pipil (Campbell, 1976), Michoacan Nahuatl (Robinson, 1969:31) and Nauzontla (McQuown, 1942) appear to have lost the length contrast. Length is also reported in various general surveys such as Key's vocabularies, Hasler's Tetradialectologia (1961), Lastra de Suarez' Apuntes (1974) as well as in more specific areal surveys in Puebla-Tlaxcala (Hertle, 1973), the Federal District (Lastra de Suarez, 1975 and Lastra de Suarez and Horcasitas, 1976), and Morelos (Dakin, 1974). Along with length there is often mentioned an accompanying variation in vowel quality and/or pitch; to a degree in Tetelcingo length is reanalyzed as quality (Pitman, 1961). In some dialects the variation manifests a tense-lax distinction, i.e. ZAC, whereas in others quality appears to be a free variation independent of length: MC and to a lesser extent MA. These features, having no contrastive significance, are often cursorially treated.

Accent in Aztec dialects is generally fixed on the penult with the notable exception of Pochutec, where it falls on the final syllable (see Longacre and Campbell, in press, for a diachronic treatment of this phenomenon). ZAC and ON dialects, as well as Nauzontla, show some variation in the general penult pattern, but these variations can be predicted from lexical or syntactic information. Accent in Aztec dialects is manifest in a number of different manners; stress and pitch, as well as tenseness and length, being the most common modifications due to accent. Stress and pitch play the most important role in accentual phenomena, as in ZAC, HU and Nauzontla, where accent is indicated by a rising pitch alone, as well as in MA, where secondary accent is indicated by a rising pitch. Accentual phenomena also modify vowel length and/or tenseness, as in SLP, ZAC and MA dialects. Length may even be neutralized in certain contexts by accentual phenomena (Robinson, 1970:162), or accent may be reanalyzed as length, as it is in the case of Spanish borrowings in Tetelcingo Nahuatl.
In light of this diversity of prosodic configurations found in Modern Aztec dialects, it is the purpose of this paper to present a set of rules which operate on the prosodic features of Modern Aztec dialects and to show the interaction of prosodic features due to lexical length and accentual phenomena. Distinct configurations of these rules in the dialects of the Sierra de Puebla and the Valley of Puebla function to reinforce social boundaries. Native speakers of Modern Aztec dialects class all prosodies together under the folk linguistic term tono. This concept lends support to formal descriptions of specific dialects where the interaction of length rules and accentual rules obscure the rule sequence. It will also be shown that secondary features such as pitch and tenseness, while not contrastive, are perceptually distinctive in some dialects. Examples will be presented from five dialects throughout the state of Puebla to show the myriad of possible prosodic configurations, and from three dialects of the Valley of Puebla which differ only in tono.

1.0 Prosodic Rules

For the purpose of simplicity we will assume that accent placement rules have already operated, assigning only primary and secondary accent. It must also be assumed that intonational contours do not affect accent rules at this stage. Vowels with lexically assigned length features form the syllable nucleus upon which other prosodic rules operate; again for the sake of simplicity additional syllabic constituents will generally be ignored, though nasals, continuants and glides in the syllabic structure do affect the realization of prosodics.

1.1 Accent Rules

In the simplest case, where the accent placement rules have assigned only the features + and - accent, the concomitant prosodic modifications are relatively straightforward. First the general stress, general pitch or general stress and pitch rule must apply as in R1, R2, R3:

\[
\begin{align*}
R1 & \quad \text{[+accent]} \quad \text{[+stress]} & \quad \text{[+high tone]} \\
R2 & \quad \text{[+accent]} & \quad \text{[+stress]} \\
R3 & \quad \text{[+accent]} & \quad \text{[+stress]} \\
\end{align*}
\]

R3 is by far the most common accent rule. R1 is generally accompanied by some rise in tone but not as pronounced as on vowels marked for high tone.

In addition to these rules, most dialects also have a general vowel tensing rule which accompanies accent:
No dialect has been found that does not have either pitch or tensing rules in addition to stress. Tone features, though not generally contrastive in the AztecoYan languages, are not uncommon and generally play a part in the accentual phenomena (Grimes, 1959 and Robinson, 1969).

In most of the dialects there is also a general rule to lengthen vowels with accent. This rule applies after both length and accentual pitch rules have applied, for in none of the dialects does accentually assigned length affect basic pitch contours assigned by previous rules. The accentual length rule also generally applies after all tensing rules have applied. The vowel lengthening rule has the general form:

\[ V \rightarrow V \]

\( \begin{align*}
R5 & \quad [\text{+accent}] & [x\text{long}]
\end{align*} \)

Where the quantity \( x \) is added to the vowel, be it marked + or - long. This rule provides the possibility of four vowel lengths which are perceptually highly opaque, especially when -xlong is approximately equal to +long.

For dialects having two degrees of accent the situation becomes more complex. Accent rules can assign stress or pitch or both to secondary accents. The degree of stress is always less than that of primary accent, and thus must be marked 2 stress, as in rules R6, R7, R8:

\[ V \rightarrow V \]

\( \begin{align*}
R6 & \quad [\text{+2accent}] & [\text{+2stress}]
\end{align*} \)

\( \begin{align*}
R7 & \quad [\text{+2accent}] & [\text{+high tone}]
\end{align*} \)

\( \begin{align*}
R8 & \quad [\text{+2accent}] & [\text{+2stress}]
\end{align*} \)

[\text{+high tone}]

The tensing rule may apply to secondary accent, but this is rare. The lengthening rule may also apply to secondary accent, but the degree of lengthening is generally less than that of primary accent. The rule thus must have another quantity value which is less than or equal to \( x \), as in R9:

\[ V \rightarrow V \]

\( \begin{align*}
R9 & \quad [\text{+2accent}] & [x\text{ylong}]
\end{align*} \)

where \( y \) is the quantity of length added by secondary accent. When
this rule applies in addition to R5, length constraints, though they may be present, become so perceptually opaque that they are indistinguishable on the basis of length alone.

Accentual rules apply to all vowels marked for accent, and the pitch features +high tone and +low tone indicate rising and falling pitches. The degree of tensing varies in value depending on the dialect and in some dialects applies only to certain vowels.

1.2 Length Rules

Along with lexically assigned length there are in most Modern Aztec dialects concomittant modifications to the prosodic system which interact with accentual modifications. Vowels marked +long generally have accompanying modifications to quality and/or pitch which follow the general rules R10, R11 or R12:

\[
\begin{align*}
R10 & : \quad V \quad [+\text{long}] \quad \rightarrow \quad V \quad [+\text{long}] \\
& \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \qu
There are other rules which can modify prosodics, but these are characteristic of specific dialects.

2.0 Rule Configurations

Five distinct configurations of prosodic rules are common in the state of Puebla. The dialects of Jonotla, Tzinacapan and Xicotepec differ in the configurations of accentual pitch and stress rules while Ixtacamastitlan and Tlaxpanoloya differ in lengthening and tensing rules. The dialects of the Valley of Puebla generally exhibit the same rule configurations with differing value assignments for certain prosodic features. Those dialects which differ by prosodic value are said to have similar *tono*, whereas those which differ by rule are said to be distinct. Even relatively minor differences in the vowel features are far more obvious to native speakers than rather apparent differences in the consonantal system, as pointed out by Dakin (1972) in Morelos. These perceived differences apparently have some degree of linguistic significance.

2.1 The Tzinacapan Dialect

The length rules apply a falling tone to all vowels marked as long, and there is little noticeable laxing that accompanies this falling tone. Accentual rules apply both high pitch and stress to primary as well as secondary accent, though the degree of stress applied to secondary accent is noticeably less than that applied to primary stress. Intonational rules, similar to those described by Robinson (1969) may alter pitch levels in segments larger than the phonological word and adequately explain most cases of non-penultimate accent. In addition to placing pitch and stress, accent rules also alter length. Both primary and secondary accent add length to vowels, vowels with primary accent being measurably longer than those with secondary accent. This phenomenon makes the length distinction perceptually highly ambiguous with six distinct degrees of vowel length. In ordinary speech the length contrast is completely neutralized, and only in deliberate speech does one find measurable length distinctions. Perceptually, long vowels are marked by either a rising falling pitch contour on accented long vowels that results from assignment of both high and low pitch features, or by falling pitch alone when unaccented. The glottal stop assigned after word final open syllables tenses and raises pitch slightly on final vowels. Lax long vowels are only found in pre-accentual position and post-accentual closed syllables.

2.2 The Jonotla Dialect

There is no noticeable pitch modification that accompanies length in this dialect; there is, however, a marked centralizing and lowering tendency, or laxing of long vowels. Accent consists of the assignment of high pitch with no noticeable increase in stress. Primary accent lengthens vowels slightly but not sufficiently to make any of the length contrasts ambiguous, whereas secondary accent raises pitch but does not noticeably lengthen
vowels. In nearby Nauzontla, vowel length which accompanies a similar tonal accent phenomenon appears sufficiently ambiguous that the length feature is no longer contrastive (McQuown, 1942). There is also a laxing and tone lowering of unaccented word final syllables which obscures the length feature in this position. Both length and laxness are perceptually distinctive features of the length contrast in this dialect.

2.3 The Xicotepec Dialect
Long vowels have a falling tone in this dialect which is the only modification due strictly to length. Accent assigns stress to all accented vowels and high pitch to short accented vowels. There is no appreciable lengthening due to accent, but in rapid speech the length feature is unmeasurable. Perceptually the length feature does not appear ambiguous but has such a low functional load that it is no longer distinctive in the grammar of some individuals and even loses contrastive significance in others. The reason for this appears to lie in the fact that in both pre- and post-accentual positions vowels are lax and lengthened except before the glottal stop, which also raises pitch slightly. Length and lengthening is apparently perceived as a lowering of pitch by the majority of speakers, which is the perceptually distinctive feature of length in this dialect.

2.4 The Tlaxpanoloya Dialect
Both short and all accented vowels are tneses in this dialect except in word final syllables, where all vowels are lax. Accented vowels are assigned a high pitch, and primary accent is assigned stress as well. Vowel length itself is distinctive in this dialect except in word final syllables, where no distinction could be found. Both length and tenseness are apparently essential features of the length contrast in this dialect, and pitch plays a role only in accentual phenomena.

2.5 The Ixtacamastitlan Dialect
Long vowels are assigned a falling tone in addition to the length feature. Accent rules assign both high pitch and stress to primary accent and high pitch alone to secondary accent. Accent lengthens all vowels slightly, apparently by almost the same degree. Back vowels are also lowered due to length and in final closed syllables. There is also a rule which raises vowels before a glottal stop. Unaccented final syllables have a falling tone. Long vowels are marked either by a falling or rising falling tone. The falling tone, however, in word final syllables is not distinctive. It is only in preaccentual position that it is almost always recognized as a feature of long vowels. In rapid speech and in normal speech of young people the length feature is imperceptible while pitch and vowel height are rather obvious.

2.6 The Dialects of the Valley of Puebla
The actual distinction of length in the Valley of Puebla is fairly obvious. Native speakers, however, recognize distinct differences on the basis of tono, which is the result of distinct interactional configurations of prosodics due to length and accent. The first two dialects are recognized as similar in tono yet
distinct on the basis of the tenseness feature; the third dialect is recognized as very distinct in tono.

In Santa Buenaventura Nealtica accent rules assign high pitch and stress with some slight tensing to all vowels with primary accent. There is some light lengthening with primary accent, but the length contrast remains perceptually unambiguous. Secondary accent assigns only high pitch with no concomitant lengthening. Unaccented long vowels have a falling pitch. Vowels in word final syllables are generally lowered, but this phenomenon is essentially a free variation.

Accent rules assign high pitch, stress and tenseness to primary accent in the dialect of San Francisco Coapa. Primary accent also lengthens vowels slightly. Secondary accent is assigned high pitch alone. Both pre- and post-accentual syllables have falling tones, and unaccented word final syllables have lax vowels. Both e: and o: in this dialect exhibit lowering as a free variation.

San Bernardino Chalchihuapan is recognized as the most distinct of the three dialect. Long vowels are assigned a falling pitch and may vary somewhat in quality. Accent assigns a high pitch and lengthens vowels where there is primary accent. Long vowels thus may have either falling or rising falling tones, since length rules apply before accent rules in this dialect. The long o: in this dialect shows much freer variation in quality than other vowels.

In the Valley of Puebla many dialects are recognized for their similarities, but no two dialects are said to have the same tono, and indeed this appears to be the case, for although rules and rule orderings may be the same, the values assigned to features such as pitch, tenseness and lengthening are distinct. Those dialects recognized as most similar are those which vary in value of features, as in Coapa and Nealtica, whereas those that differ by rule or rule order, as in Chalchihuapan, are distinct in tono.

3.0 Conclusions

Length is generally a lexically assigned feature of Modern Aztec dialects. Length may, however, be due to accent rules becoming perceptually ambiguous, in which case features of pitch and tenseness are perceptually distinctive. Accent in Modern Aztec dialects involves the assignment of pitch, stress, tenseness and length, and depending upon the exact configuration of accent rules for a particular dialect length may be either distinctive or contrastive or both. Accent is not necessarily either pitch or stress but generally a combination of at least these features (Liberman, 1965), and the realization of length in Modern Aztec dialects is the result of the interaction of both length and accent rules. Thus simple presence or absence of the length contrast in Modern dialects is insufficient to describe the complex phenomena associated with length and accent in Modern Aztec.

NOTES
1) This work has been supported by grants from the American Philosophical Society's Philips Fund and the National Endowment for the
Humanities, Youth Grants Program. Without the aid of the Zapotec traders this work would not be possible.

2) As will be shown, perhaps the Friars were not totally incorrect in treating length as a part of the accentual system, as in some dialects features of pitch and tenseness are perceptually diagnostic of length.

3) Stress is taken here as Bloomfield defined it: "intensity, loudness --- consists of greater amplitude of the sound waves." (Bloomfield, 1933:110).

4) No two villages in the Valley of Puebla have exactly the same tono. This serves to reinforce the separateness of each town and to emphasize the difference between us and them.

5) Apparently many dialects in the Sierra de Puebla have lost the feature of length due to the ambiguity caused by accent rules. Generally other features will mark it present in some dialects. The functional load in many dialects is so low that the contrast has more a sociological value than linguistic.

6) It should be noted that there is the possibility of a matrix solution to the interaction of prosodies in Modern Aztec dialects which is perhaps more correct, as most of these features appear interdependent. The solution is achieved by assigning positive and negative numerical values for features to a matrix by means of rules and solving the matrix for specific contexts. The formalism of this type of solution is, however, far beyond the scope of this paper.

7) In order to determine the perceptual significance of specific features a set of tests was used that included nonsense paradigm retention, nonsense word rhytning, triad differentiation and a series of short stories based on minimal pair puns. In addition to these tests it was found that native speakers' opinions not only of dialect differences but of necessary features within their own dialects were accurate and invaluable.

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<td>I planted</td>
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1) The examples are in semi-phonetic orthography, i.e. subtle variations in vowel quality and some consonants which are essentially free variations are not noted. High tone, low tone, rising falling tone, stress, tense are thus marked.
RECONSTRUCTION OF PRONOMINAL ELEMENTS IN TAKIC
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Takic is one of the eight subfamilies of Uto-Aztecan (UA) and is located in southern California. Four Takic languages survive and are reasonably well described—Serrano, Luiseno, Cahuilla, and Cupeno. Their relationship is sketched in (1), together with an indication of the evolution in Takic of the Proto Uto-Aztecan (P-UA) vowel *i (cf. Langacker 1970), which is prominent in the Takic pronominal systems. My purpose is to examine the evolution of selected pronominal paradigms in this subfamily, with an eye toward broader questions of pronominal reconstruction in UA as well as the dynamics of language change in pronominal paradigms generally.

(1)

Takic (*i)

Serrano (i)  Cupan (*ə)

Luiseno (o)  Cahuilla-Cupeno (*ə)

Cahuilla (e)  Cupeno (ə)

We begin by examining the independent subject pronouns, which are sketched in (2) and for which I suggest the Proto Takic (P-TAK) reconstructions in (3).

(2) Serrano

n+i  ?ičam/ʔačam/(ʔačam+iPP)
?i+m?  ?iːm/(ʔiːm OBJ)
DEM/(pʔ+iPP)  DEM/(pʔ+i+iPP)

Luiseno  Cahuilla  Cupeno

noo  ča(a)m  ne?  čem(em)  nə?  čəm(əm)
DEM/ʔo  DEM/pomom  DEM/ʔe?  DEM/ʔe?em  DEM/ʔə?  DEM/ʔəm(əm)

(3) Proto Takic

*n+i(?i)  *ʔi-ʔa-m?
*ʔi  *ʔi-ʔ+m?
*DEM/pʔ  *DEM/pʔ-ʔ+m?