Preliminary Analysis of Chalcatongo Mixtec Tone

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1. Introduction

This is a set of working papers on Mixtec tone, based on a field methods class conducted at Berkeley last year. This paper is a co-authored descriptive summary of the rules we have discovered about tone. Each of the subsequent individually-authored papers explores one subset of these rules in greater depth.

The Mixtec variety we are working with is that of Chalcatongo, next door to the village of San Miguel El Grande (which was studied by Pike). Chalcatongo and San Miguel Mixtec are mutually intelligible, but yet show certain important differences. Our language consultant is Luciano Cortes Nicolas, to whom we are very indebted for this work.

1.1. The skeleton

Figure 1 shows that the Mixtec word consists minimally of a single stressed two-mora root morpheme, often called "the couplet" in Mixtec literature. It always has the shape (C)VCV, (C)VV, (C)V?V, or (C)V?CV. The root optionally bears added affixed or cliticized morphemes that are monosyllabic (or even less than a syllable). Rules of the language are sensitive to syllable weight: the heavy syllables are CVV and CV?. Nevertheless, we find reason to analyze ? as the expression of a glottalization feature on vowels. We will also analyze CVV and CV?V as bimoraic monosyllables. Figure 1 summarizes the root types.

<table>
<thead>
<tr>
<th>syllables:</th>
<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>m.</td>
<td>CVV, CV?V</td>
<td>CVCV</td>
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<tr>
<td></td>
<td>CV?CV</td>
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Figure 1

In the rest of this paper, unless otherwise specified, "CVV" is to be understood as including CV?V roots.
Goldsmith (1990) treats ? as associated to a consonant position on the skeleton, as shown below in Figure 2a. However, since CVV and CV?V behave identically with respect to tone, and since in our analysis it is useful to see CV?V as being monosyllabic, we would like to define the skeleton for CV?V as CVV. Thus, in keeping with Bradley and Josserand (1982), we propose that glottalization associates with vowels rather than consonants, as shown in figure 2b. This representation is also useful because it suggests that ? is part of the same syllable as the vowel that precedes it. A representation as in figure 2a suggests that the ? belongs to a separate syllable following the first vowel. There are several arguments in favor of our claim that ? belongs to the same syllable as the vowel on its left:

1. There are CV?CV sequences, but no CVC?V sequences, which one might expect to find if ? attached to a C slot.
2. ? shortens the preceding vowel, whereas a C in the following syllable does not. CV? is about the same length as CV, suggesting that ? is associated with the V (See Meacham, this volume).
3. As mentioned previously, CVV and CV?V behave identically with respect to tone, which will be described in Hinton, this volume.

These three arguments lead us to postulate that ? associates with a V, not a C.

This leads further to the question of whether ? should really be represented on the tonal tier or whether it should simply be viewed as a vowel feature. The two possibilities are shown above in figures 2c and 2d. Arguments that ? should be represented on the tonal tier include:

Figure 2
(1) ? is laryngeal and so is tone; thus we could view this as the laryngeal tier. This is the argument given by Goldsmith (1990) and for Trique, Hollenbach (1984).

(2) ? interacts with tone to some extent. There is one case where it affects tone strongly. A final glottalized vowel with an underlying mid-tone is realized as a sharply rising tone with no glottalization feature surfacing. (See Hinton, this volume, for further discussion of this point.)

Arguments that ? should be represented as a vowel feature include these:

(1) It takes a little more tinkering to set up a model that allows the linkage of both tone and ? to a vowel; one might argue that glottalization as a vowel feature is a simpler model.

(2) In CVV forms there is a significant tendency for the vowels to be identical. Glottalization – but not tone – appears to be one of the features of identity across the two vowels. (Explanation of this point is in Hinton, this volume.)

While further thought should be devoted to these arguments, we find the last one to be especially persuasive, and thus we lean toward representing ? as a vowel feature rather than as an element on the tonal tier.

1.2. Preliminaries of tone

There are three distinctive tonal levels, which we call H, M, and L. The phonetics of these tones will be discussed in the paper following, by Meacham. As Buckley (this volume) will show, the mid tone is actually best analyzed as the absence of tone.

2. First rule: Low-spreading

Under certain conditions, a L tone will spread to the mid-tone vowel. This is a rule which distinguishes Chalcatongo from its closely-related neighbor, San Miguel, the latter lacking it altogether. This is thoroughly described in Buckley (this volume).

Examples:

čáá LL 'man' (< underlying čáa)\(^1\)

\(^1\)High tone is represented here by an acute accent ‘’; low tone by grave ‘’; Mid tone is unmarked.
nuü mesá ML LH 'tabletop' > nuü mêsá ML LH
ni-kutāʔa-ri L-MHM-H 'I fought' > ni-kútāʔa-ri L-LHM-H

3. Floating High Association

"Floating high Association" is what was termed "perturbation" by Pike. It involves the replacement of one tone of the doublet, or else the tone of a prefix, by a high tone. This occurs in several situations, the most common being the continuative aspect on verbs (see (a), below), which consists solely of this replacive high tone; (b) in the case where a word follows a "perturbing" morpheme, which triggers the tone modification; and (c) a "naming" or "vocative" form, that, like the continuative, consists of a replacive high tone; (d) CVCV loan words from Spanish. Mixtec has an active process of cliticization where cliticized roots are reduced, losing one or both vowels. In some cases we can see that the tone of the reduced form is not lost, but simply moves onto the next eligible vowel, as is illustrated with the causative (e,f). (A less fully reduced form of the causative that appears with statives is sá-, where the vowel that bears H is not lost (Hinton, 1982); this form does not perturb. Retention of a tone when a vowel is lost may in fact be an explanation for many of the high tones in Mixtec.)

(a) šíi ML 'wilt' + continuative aspect > šíi HL 'is wilting'
(b) čůū LH 'chicken'; hií čůū HH HH 'with the chicken'
(c) nuü yóó ML ML 'face of the moon'; nuü yóó ML HL 'Hey,' Moon-face!
(d) mesá MH 'table' (< Sp. mesa)
(e) sáʔa HM 'to do, make, cause; ndóó LL (<LM) 'stay'
s-ndóó HM 'leave behind'
(f) tanū ML 'become unravelled';
s-tanū MH 'unravel'

Perturbing morphemes may themselves have any tone sequence. But certain tone sequences, specifically those which already have a high tone (except for LH words), are not perturbed or changed by the floating high. The pattern of tone modification is shown in Figure 3.
The ML roots are the most interesting, because of the differing behavior of CVV roots from CVCV roots, and because in CVCV ML roots the modifying high tone appears on the second syllable rather than the first. It must be pointed out that ML is by far the most common root melody, accounting for fully a third of all roots; so this special behavior is not any minor exception to the rule of Floating High Association. One way of making a unifying statement about the behavior of the various ML skeletal types is to say that floating H will be linked to the first vowel of the first syllable only if it is heavy: otherwise the H falls on the second syllable. With CVV and
CV² being the heavy syllable types in Mixtec, this accounts nicely for the pattern of Floating High Association.

Another characteristic of the ML CVCV forms, is that if the modified forms are suffixed, the tone of the suffix changes to L. Example:

My pig MM-H kiti-ri
with my pig HH MM-L híi kiti-ri

This suffixal low tone also appears with unmodified forms that have a root-final high. Example:

čúú 'chicken'
čúú-ri 'my chicken'

4. H-dissimilation

H is delinked, producing an M, in certain conditions at the ends of words. If the word final H is preceded by two or more H’s, the final H will delink. This appears to be categorical in words and phrases that are at least 4 morae in length; but in three-morae words the rule is optional. Examples:

hičá²á-ri 'I am dancing'
hitú?ü-ri 'I am lying down'
ni-nđe?é-ri 'I looked'

but:
ndé?é-ri or nde?é-ri 'I am looking'
séte-ri or sête-ri 'I’m getting a haircut'

5. Demonstratives.

There is one set of words, the demonstratives yáʔá LH "this" and wáʔá LH "that" which show unusual tone behavior.
These are unusual, first, because they always get high added in postclitic form, and second because one expects LH to become HH when perturbed. A partial explanation for the behavior of the demonstratives will be given in Hinton, this volume.

6. **Gradient smoothing**

We coin the term "gradient smoothing" to describe a process by which the sequence LHH becomes LMH. Examples:

\[
\text{ndé?é LH 'Look!'  
ndé?e-ri LM-H 'I will look'}
\]

7. **Rule ordering**

These four rules -- Floating High Association, High Dissimilation, Gradient Smoothing, and Low Spreading are ordered with respect to each other. Floating High Association is first, and creates new conditions that feed (and sometimes bleed) the other rules. Gradient Smoothing is second, and bleeds High Dissimilation. The rules of High Dissimilation and Low Spreading do not interact, but both must follow the other two rules.

Examples of ordered applications:

(a) **Lexical rep.**: māa(H) kaká-ri LL(H) ML-H 'I won't ask'

**High Dissimilation**: māa kaká-ri LL MH-L

**Low Spreading**: māa kākā-ri LL LH-L

(b) **Lexical rep.**: sà?a hà(H) na-yu?u HM L(H) M-HH

"Frighten him!"

**Floating High Association**: sà?a hà nà-yú?u HM L H-HHH

**Gradient smoothing**: sà?a hà na-yú?u HM L M-HH

**Low spreading**: sà?a hà nà-yú?u HM L L-HH

**High Dissimilation**: NA (would have applied if..."
Gradient smoothing had not)

(c) **Lexical rep.**

(H)-kiu LM 'S/he is entering'

kìu HM

**Floating High Association:**

**Low spreading:**

NA (if there is no floating H, L-spreading creates kìù LL)

8. **Adjectival High**

Finally, there is a special rule for deriving adjectives from other parts of speech by replacing all tones of the stem with H.

Examples:

bikó ML 'cloud'

bikó HH 'cloudy'

taná ML 'medicine'

táná HH 'medicinal'

sò?ò LL (<LM) 'ear'

sò?ò HH 'deaf'

ti-kanu M-MM 'knot'

kànú HH 'knotty'

There are adjectives that do not have all H, but so far any adjective that we have been able to relate to a noun does have all high tones. A count of our own adjectives and from the dictionary for neighboring San Miguel shows that approximately two-thirds of the adjectives in the dictionary (Dyk and Stoudt, 1965) bear all high tones. It appears, then, that the Adjectival High is a productive rule for adjective derivation.

Having given you a brief summary of the behavior of tone in Chalcatongo Mixtec, we will now move on to the other papers, which will deal with some of these issues in greater depth.
References


Occasional Papers on Linguistics

Papers from the American Indian Languages Conferences, Held at the University of California, Santa Cruz, July and August 1991.

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Southern Illinois University at Carbondale
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American Indians did not hold its annual meeting in 1991, the papers were
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PREFACE

The 1991 Hokan-Penutian Languages Workshop was held at the University of California, Santa Cruz, July 1-2, 1991. Because the Linguistic Society of America Summer Institute and the LSA Summer Meeting were also held at UCSC in summer 1991, other Amerindianists also met at UCSC at that time. The Friends of Uto-Aztecan met June 28, 1991; The Society for the Study of the Indigenous Languages of the Americas met June 29-30, 1991; and the Athapascan Linguistics Conference met July 1-2, 1991.

Presenters from all these groups were invited to submit papers for inclusion along with the Hokan-Penutian papers. Some papers from all these groups are included. The papers appear here in the order that they occurred on the programs. All the papers except the last one were given at UCSC in summer 1991. The last paper was given at the 1989 Hokan-Penutian Languages Workshop, but the manuscript has not been available until now.

We are grateful to the University of California, Santa Cruz, Professor William Shipley and all the staff that assisted him, and the staff of the Linguistic Society of America Summer Institute for all the help and facilities offered the Amerindian languages groups at these meetings, which made for a most enjoyable week feasting on the wonders of American Indian languages.

James E. Redden, Editor
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