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A Grammar of Chalcatongo Mixtec

Monica Macaulay

University of California Press

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0 Key -

- ① Descriptive morphology: historical
- ② Syntax
- ③ Lexical semantics / morphology

Family have key talk at 41-47
 constructed my device is
 orthographic construction
 Analyze stress (predictable & recoverable)

① Phoneme inventory

② unsatisfyingly voiced stops w/ +nasalization a result of p-rules

③ Determine frequency of CV₁CV₂ when V₁ ≠ V₂

p. 17 few productive derivational affixes

p. 22 Yob. Arabic does not share feature of vowel nasalization in CVCV complex so CVCV̄ is possible, & not all CVCV with a nasalized final vowel are C̄VC̄V. (in fact, none are) To her surprise in p. 29 she does not identify any dialects w/ this type of nasalized feature, except Ayutla

→ Phonetics study: degree of nasalization on final vowel in CVCV̄ words

Phonology is a CVCV̄ not always with a prenasalized C₂

What is the association of prenasalization to V̄

→ Phonology: restrictions on vowel sequences → (C)V₁C₂V₂

Are there changes from underlying to surface forms for tone

(eg LL if two types are. Run

{LH} + one form {LH} of p. 33

p. 35 Q: does YM have floating vowels?
CHOOH!

p. 38 what are the sources of H tone in YM

p. 40 H check p-rules for Ym prenasalization provision of syllables (Mora) p. 41

A GRAMMAR OF CHALCATONGO MIXTEC

Chapt 7

Conj to and
Disjunct si or

© Check vso → svo (topicalization) in
 seems (approach) chalt
check counterfactual in YM

A Grammar of
Chalcatongo Mixtec

Monica Macaulay

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*For my parents,
and for Joe*

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Preface

I began the work that ultimately led to this grammar in 1981, when I was a graduate student in the Linguistics Department at the University of California, Berkeley. That year I took a field methods class taught by Leanne Hinton which used Chalcatongo Mixtec as the language of study. The language consultant for the class was Luciano Cortés Nicolás, and I continued to work with him until I left Berkeley in 1987.

I first went to visit Luciano's home in 1982. The trip involved a four-hour bus ride on paved roads from Oaxaca City to the town of Tlaxiaco, and then a three-and-a-half-hour ride over unpaved, winding mountain roads from Tlaxiaco to Chalcatongo. I arrived completely unannounced, without any real idea of what to expect. The residents of course had no idea what to expect from me either, but treated me with great kindness and generosity (and, of course, no small amount of curiosity). I have been to Chalcatongo twice since then, in 1985 and 1992. On my last trip, a number of things had changed: There is now a telephone in town, a few more streets have been paved, one store has a copier, and there is even a small arcade with video games. Despite these superficial changes, though, I think the remoteness of the village guarantees that many of the traditional ways of life—including, I hope, the language—will persist for some time.

The process of writing this grammar has been an extremely humbling experience. If I once thought I knew a lot about the language, I now have an inkling of how much I don't know. I have also learned how hard it is to organize a grammar—every topic seems to be connected in some way to every other topic, and any choice one makes means that some other way of looking at a problem is missed. Since one of my primary goals is to provide a reference grammar of use to as many readers as possible, I have tried to compensate for this by including much cross-referencing, as well as by providing a thorough index.

I would like to add here a note on the pronunciation of the name of the language. In Spanish it is called *Mixteco*, usually pronounced [misteko] or occasionally [mišteko], while in English most linguists say [mište] (or [mište]). The palatalization of the [s] is likely a hypercorrection, by analogy to Nahuatl and Mayan words which are spelled in Spanish with an "x"—e.g., *ixtle* [ište] 'fiber, rope', from Nahuatl *ixtli* (Santamaría 1978:622). Since the speakers of Chalcatongo Mixtec pronounce the Spanish name for their language as [misteko], I use a parallel pronunciation in English: [mistek]. (Perhaps the entire problem could be avoided by just using one of the versions of the native name for the language: *sáñ saù* or *sánu saù*.)

Turning now to acknowledgments, I would like to express my **extreme** indebtedness to the speakers with whom I have worked: Luciano Cortés Nicolás in Berkeley, and Margarita Cuevas Cortés, Otelia Jiménez García, and Crescenciano Ruiz Ramírez in Chalcatongo. Their patience with my questions about their language is greatly appreciated, as is their willingness to educate this naive *gringa* about their culture, their village, and their lives.

Bulmaro Lazo and Adela López de Lazo provided me with a place to live in Chalcatongo, as well as with friendship and information on the village that I could not have done my work without.

My research and fieldwork have been funded in part by the UC-Berkeley Center for Latin American Studies, by the Survey of California and Other Indian Languages, and by a Faculty Development Grant from Purdue University. This support was much-needed and greatly appreciated.

I would like to thank Claudia Brugman, Amy Dahlstrom, Leanne Hinton, Barbara Hollenbach, and two anonymous reviewers for their comments on the manuscript. Alejandro de Avila supplied me with very helpful comments on the lexicon, drawing on his expertise in the ethnobotany of the region, and also checked the manuscript for Spanish mistakes. (Any that remain are of course entirely my doing.) I am very grateful to him for all his help.

Several graduate students helped in preparation of various parts of the volume: Marnie Jo Petray worked on the lexicon, Colleen Brice worked on the database, and Sara Shelton did the maps. I am indebted to all of them for taking on these tasks.

I also thank Rose Anne White, the editor of this series, for her boundless patience with my constant e-mail questions while I was preparing the manuscript for publication.

Finally, I want to thank Joe Salmons for his comments on the manuscript, for his support and encouragement while it was being written, and for his accompanying me to Mexico on my most recent field trip—certainly above and beyond the call of spousal duty.

To all, *kútaʔù šáá=rí nuù=ro.*

Abbreviations, Symbols, and Conventions

Example sentences in this grammar are given in the standard three-line format: the first line is a transcription of the Mixtec, the second line is a morpheme-by-morpheme gloss, and the third line is the free translation into English. Spanish words which are either completely or at least fairly well integrated into Mixtec are transcribed phonetically in the first line of an example, given in Spanish in the second line (in italics), and then translated into English in the third line. Boundary symbols are listed below, after the abbreviations.

1	First person	DEM	Demonstrative
2	Second person	DET	Determiner
3	Third person	F	Feminine
ADD	Additive	FOC	Focus
ADJ	Adjective	H	High tone
ADV	Adverb	HAB	Habitual
ADVP	Adverb Phrase	HORT	Hortative
AN	Animate	INCHO	Inchoative
AP	Adjective Phrase	INT	Interrogative
AYUT	Tepango/Ayutla de los Libres	IMP	Imperative
CAUS	Causative	JICAL	Santa María Jicaltepec
CFACT	Counterfactual	L	Low tone
CHAL	Chalcatongo	M	Mid tone
CLA	Classifier	MN	Masculine
COAT	San Juan Coatzacoapan	MOOD	Deontic mood marker
COMP	Complementizer	N, <i>n</i>	Noun
COND	Conditional	NEG	Negative
CONJ	Conjunction	NEG.FOC	Negative focus marker
COP	Copula	NEG.MOOD	Negative mood marker
CP	Completive	NOM	Nominalizer
CUAH	Santa Ana Cuauhtémoc	NP	Noun Phrase
		NUM	Number

P	Potential	STAT	Statist
PL	Plural	SGN	Singular
POL	Polite	T	Topic
POL.DEC	Polite, deceased	TEMP	Temporal
POL.OLD	Polite, older	TLAL	TLalcala, Tlaxcala
POSS	Possessive	UNK	Unknown
PP	Prepositional Phrase	V	Verb
PRENAS	Prenasalized	Vb	Verb, bare head and form
PREP	Preposition	Vc	Verb, auxiliary verb
PRO	Pronoun	VP	Verb Phrase
PROG	Progressive	Vt	Transitive verb
QP	Quantifier Phrase	XP	Phrase of any category
QUANT	Quantifier		(Partic.) Separates parts
R	Realis		of multi-word flows
REP	Repetitive		(Typical) After boundary
RES	Restrictive		marker
S	Sentence		boundary
SG	Singular		(American) In lexicon
SILA	Silacayoapan		probable diachronic
SM	San Miguel el Grande		source. In examples,
SP	Spanish		ungrammaticality

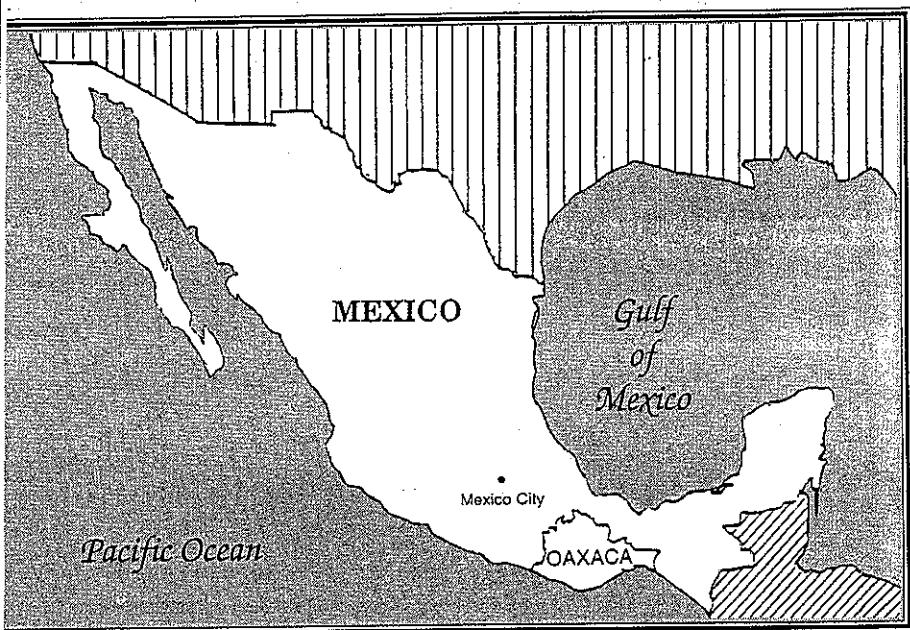
INTRODUCTION

Mixtec is an Otomanguean language spoken in south-central Mexico, primarily in the state of Oaxaca (although also in parts of Puebla and Guerrero). The number of speakers is not precisely known, but the most recent estimate (based on the 1980 census) sets the total at 323,137 (Garza Cuarón and Lastra 1991). The dialect described in this grammar is spoken in the town of Santa María Chalcatongo de Hidalgo ("Chalcatongo," hereafter), located in the mountains which lie to the west of Oaxaca City. The state of Oaxaca is divided into districts, and these are further divided into smaller regions called *municipios* (similar to counties in the United States). Chalcatongo is the head of a municipio of the same name which is located in the district of Tlaxiaco. Maps 1, 2, and 3 illustrate the locations of Oaxaca, Tlaxiaco, and Chalcatongo, respectively.

According to Ayre (1977:69), the town of Chalcatongo has approximately 1,000 residents, while the municipio of which it is the head has approximately 8,000. Ayre's work is based on the 1970 census, however, so the figures quoted are certainly lower than the actual current population. The inhabitants of the town are either bilingual in Spanish and Mixtec, or are monolingual in Spanish. Outside of the town, one finds all possibilities: Spanish-Mixtec bilinguals, Spanish monolinguals, and Mixtec monolinguals. Ayre lists 3,645 bilinguals in the municipio as a whole, and 504 Mixtec monolinguals (1977:9). Although most of those who speak Mixtec in the town itself no longer teach their children to speak the language, apparently Chalcatongo Mixtec is not yet endangered, since its use is still very much alive in the countryside.¹

In the remainder of this chapter, I present introductory material: A brief classification of the Otomanguean language family is given in §1.1, and the nonstandard use of the term "dialect" by linguists who study Mixtec is explained in §1.2. A description of my consultants and some differences in their speech appears in §1.3, a typological overview of Chalcatongo Mixtec is provided in §1.4, previous work on Mixtec is described in §1.5, and a few comments on theoretical approach appear in §1.6. Finally, an overview of the structure of the grammar is the content of §1.7.

¹For a sobering look at the constant and drastic reduction in the size of the native population of Mexico, however, see Garza Cuarón and Lastra (1991), especially pp. 103-107.

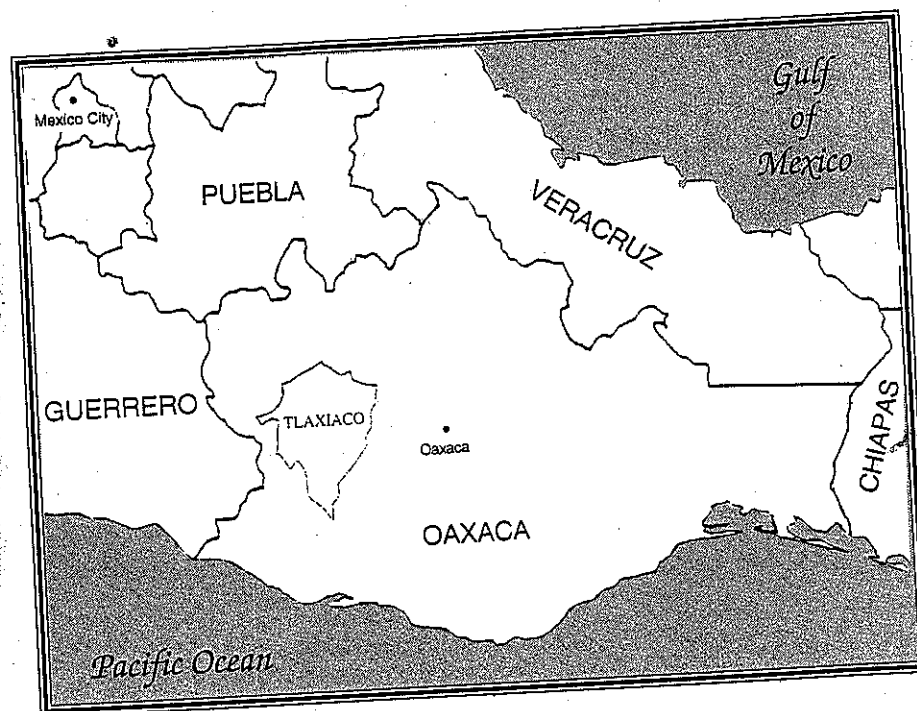


Map 1: Republic of Mexico

1.1. Genetic Classification of Mixtec

As mentioned above, Mixtec is a member of the Otomanguean language family, a large set of languages spoken throughout Mesoamerica. Attempts at classification of the languages involved have been ongoing for well over a century. Rensch (1976:1) cites Orozco y Berra (1864) as the first to link Mixtec, Chocho, Amuzgo, Zapotec, and Cuicatec as members of the "Mixteca-Zapoteca" family. There have been a number of different proposals and hypotheses over the years, arguing for different relationships among and within the branches, as well as for the inclusion and exclusion of various languages and groups of languages. Rensch (1976:1-8) provides a nice summary of the many proposals which had been made prior to publication of his book.

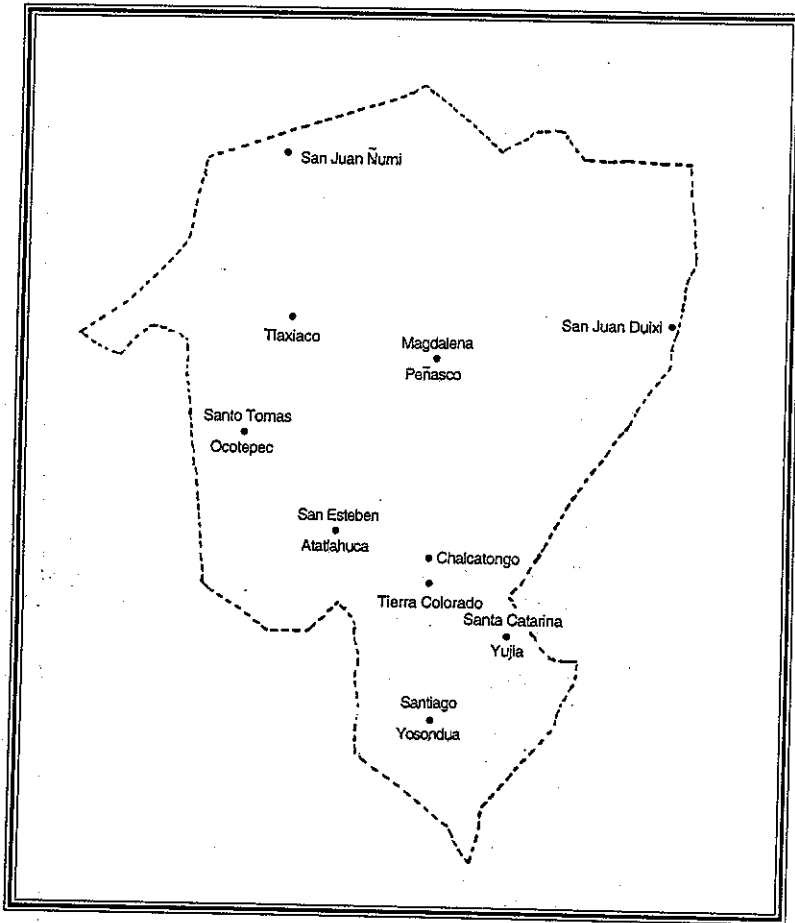
The classification of Otomanguean languages which appears in Figure 1 is primarily drawn from Campbell (1979:915-916), and augmented by Josserand (1983:95-101) and Kaufman (1988:5-12 and class notes, 1987). There are, however, a few areas of disagreement among those who have done these more recent comparisons and reconstructions.



Map 2: State of Oaxaca

Huave, for example, has been proposed as a ninth branch (by Swadesh 1960, among others), and Kaufman (1988:5) suggests that Otomanguean itself can be further divided into Eastern Otomanguean (consisting of Mixtecan, Popolocan, Zapotecan, and Amuzgo) and Western Otomanguean (consisting of Chiapanec-Mangue, Otopamean, Chinantecan, and Tlapanec-Subtiaba). There are also disagreements about the appropriate subgroupings within the branches themselves—for example, Garza Cuarón and Lastra (1991:112-115) show the same eight branches, but with some differences of internal organization.

Within Mixtecan itself there are also differences of opinion about appropriate subgroupings. Some linguists (e.g., Swadesh 1960; Arana 1960) have made arguments for the inclusion of Amuzgo as a fourth branch, but this is not generally accepted at this point (see, e.g., Longacre 1966). Swadesh also differs from other classifications in excluding Trique from Mixtecan, but most current analyses have disagreed with this and have left it in.



Map 3: District of Tlaxiaco

(Adapted from Alexander 1980:113; used with permission)

Assuming, then, that Mixtecan consists of Mixtec, Cuicatec, and Trique, there are further differences in analyses of the relationships among the three. Under the classification adopted here, Mixtecan is subdivided such that Mixtec and Cuicatec are grouped together (and somewhat confusingly also called "Mixtecan"), and set off from Trique. Josserand (1983:99-101) summarizes the arguments which had been made up to the early 1980s for

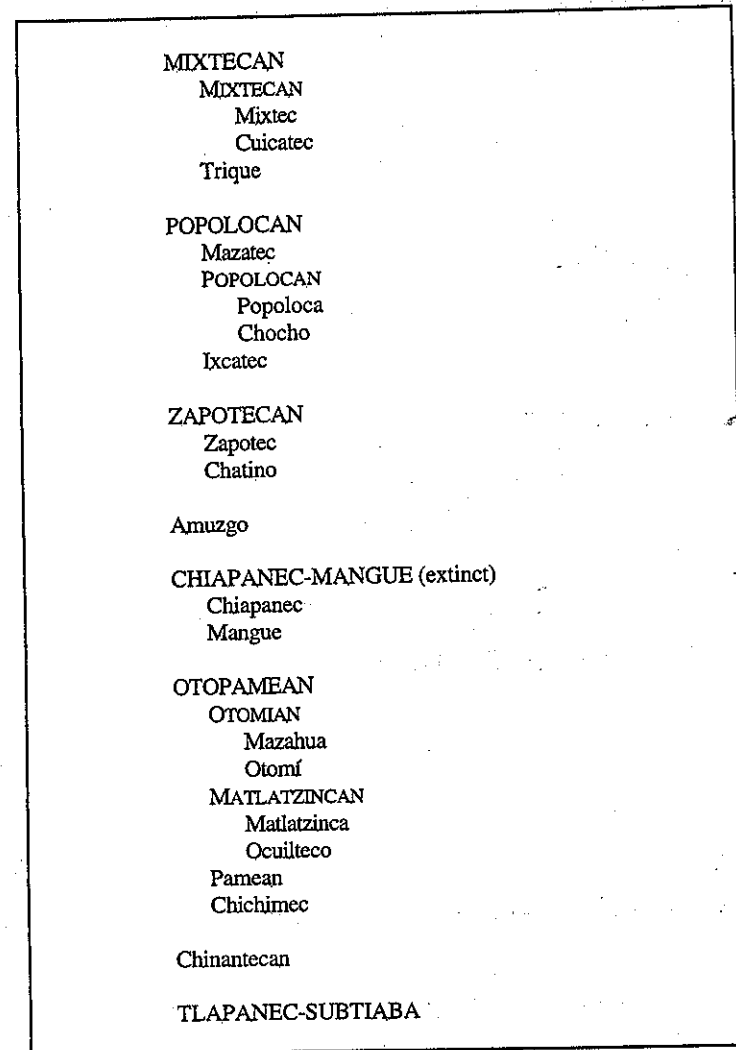


Figure 1: Otomanguean Languages and Language Families

and against various internal classifications in Mixtecan (including the one presented here) and points out that most of them have been based on glottochronological analysis, a technique which is of course largely discredited now. She argues that we simply do not know enough yet about the history of these languages to make any subgroupings with certainty: "To date, no one has presented an ordered set of innovations which would properly account for the sequential diversification of Mixtecan, and thus reveal the internal classification of these languages" (1983:101). She therefore concurs with Longacre (1957) and Rensch (1976) that the three languages should be listed at the same level. (1) presents a comparison of the latter approach with that given here:

(1) INTERNAL CLASSIFICATION OF MIXTECAN: TWO HYPOTHESES

<u>JOSSE RAND, LONGACRE</u>	<u>CAMPBELL, KAUFMAN</u>
MIXTECAN	MIXTECAN
Mixtec	MIXTECAN
Cuicatec	Mixtec
Trique	Cuicatec
	Trique

Because Kaufman (1983) and (1988) are works which provide the kinds of analyses that Josserand calls for, I have adopted essentially his classification of Mixtecan here. Josserand's cautionary note, however, should be kept in mind, and the internal subgrouping of Mixtecan should still be regarded as an open question.

We turn now to the Mixtecan language Mixtec and its "dialects."

1.2. Mixtec Dialect Differentiation

The two earliest descriptions of Mixtec are de los Reyes' ([1593] 1890/1976) grammar and de Alvarado's ([1593] 1962) dictionary. De los Reyes—writing in the sixteenth century—commented on the great amount of variation found across Mixtec dialects and provided some description of the differences between the dialect which he used for his grammar (Teposcolula) and a number of others.

This variation still exists, to such an extreme that "Mixtec" really should be considered a group of related but distinct languages. Mixtecanists traditionally use the term "dialect" to describe its varieties, however, because of the dialect continuum which characterizes the region. In this area (known as the *Mixteca*), there are often no sharp boundaries over which intelligibility is lost, yet there is mutual unintelligibility between noncontiguous groups of speech communities. This results in great difficulty in determining where one dialect stops and the next begins. Ravicz (1965:40) proposes one interesting way to measure dialect boundaries in the area, *días de distancia* ('days of distance'):

En términos generales, un perímetro de sesenta kilómetros puede abarcar un área dialectal. La persona que se halle a dos días de camino de su pueblo, puede comunicarse fácilmente; en cambio, una distancia de tres días de camino impedirá en cierta medida hacerse entender. Si se encuentra a cuatro

o cinco días de su propio pueblo, el individuo apenas contará con elementos suficientes para establecer comunicación y el español le servirá mejor. [In general terms, a perimeter of sixty kilometers can comprise a dialect area. A person who is two days' walk from their town can communicate easily; however, a distance of three days will hinder understanding to a certain extent. If this person is four or five days from their town, they can hardly depend on sufficient common elements to establish communication, and Spanish will serve them better.]

As an example of the kinds of phonological differences found between geographically close dialects, Table 1 provides a comparison of forms from Chalcatongo Mixtec with their cognates in San Miguel el Grande Mixtec, a village about eight kilometers away.²

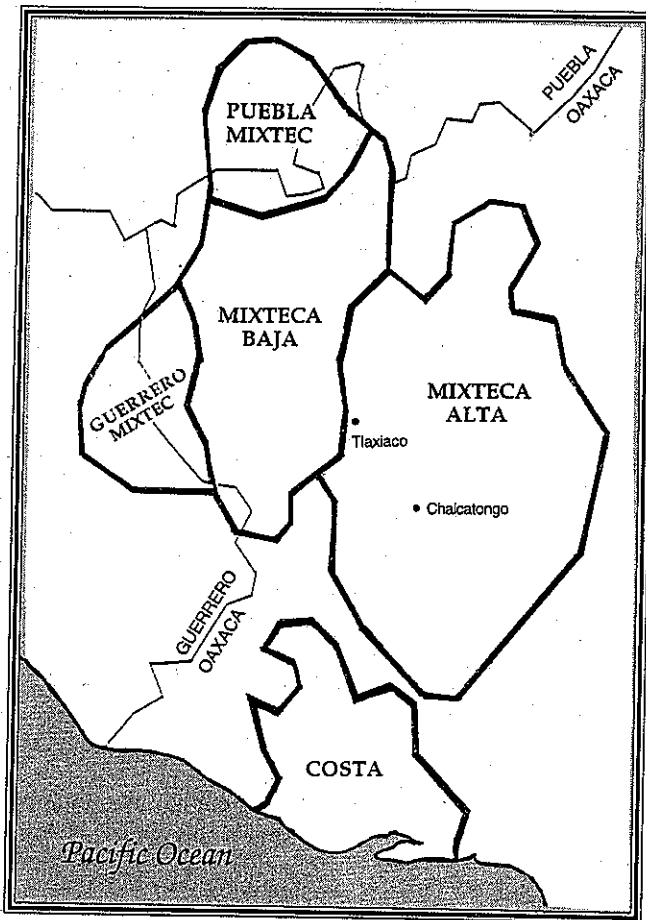
Table 1: Comparison of Forms in Two Closely-Related Dialects of Mixtec

	CHALCATONGO	SAN MIGUEL
'sky'	andíú	andíví
'blanket'	tikài, tikèi, tékei	tikàčí
'there'	wáã	yúã
'corn cob'	níñí	níñi
'comal'	šìò, šòò	xiò
'slippery'	líʔu	líʔví
'work' (vi)	sátíũ	sátíũ

The two dialects are mutually intelligible, but as these examples show there are numerous significant differences between them.

Paradoxically, however, great geographical distance between dialect locations is not a guarantee of mutual unintelligibility either. Geographically distant dialects may show surprising similarity due to the "leapfrogging" nature of Mixtec territorial expansion. These new settlements may even be founded outside of the Mixteca proper, as a community searches for better agricultural opportunities. Josserand (1983:103–105) describes a number of such cases; for example, there are two relatively new Mixtec towns on the Isthmus of Tehuantepec called 'Nueva Raza' and 'Esperanza', which were settled by groups from the Eastern part of the Mixteca Alta (specifically, from Santa Catarina Estetla and Santa María Peñoles). Josserand indicates that this kind of expansion is a long-standing process, which explains at least in part how linguistic diversification took place (and continues to take place) in Mixtec. At the same time, such expansion may also lead to a certain amount of dialect leveling as well, due to contact between the newly founded communities and other groups speaking different dialects of Mixtec.

²This set of examples is taken from Salmons (1992), which provides an analysis of some aspects of phonological differentiation between the two dialects. As the table shows, there is a great deal of variation in the form for 'blanket' in the Chalcatongo dialect, but there does not appear to be similar variation in the San Miguel Mixtec form.



Map 4: Five Mixtec Dialect Areas
(Adapted from Josserand 1983:107; used with permission)

Thus, the Mixteca is the site of a classic case of dialect continuum (see, e.g., Chambers and Trudgill 1980:6-8), complicated by the form of territorial expansion described above. A complex relationship between language varieties like this points up the weaknesses in our definitions of the terms "dialect" and "language." Since the present situation does not especially lend itself to either term, the traditional word "dialect" is used in this grammar, but the circumstances of its use should be borne in mind.

Given these caveats, then, the Mixteca is usually divided into five large dialect areas: Alta (Highlands), Baja (Lowlands), Costa (Coast), Puebla, and Guerrero Mixtec, as shown in Map 4. Josserand (1983), in her survey of Mixtec dialect history, makes further subdivisions of the Mixtec-speaking region, as shown in Map 5. The Chalcatongo dialect described here falls into the Mixteca Alta group, specifically, Josserand's "Western Alta."

In Table 1 we saw examples of phonological differences which are found between two geographically close dialects. So that the reader may get a better sense of the kinds of differences that are found across large dialect areas, Tables 2 and 3 present a number of phonological and morphosyntactic traits in five very divergent Mixtec dialects.³

*the 600
mixtec
dialects
90 to
Coast*

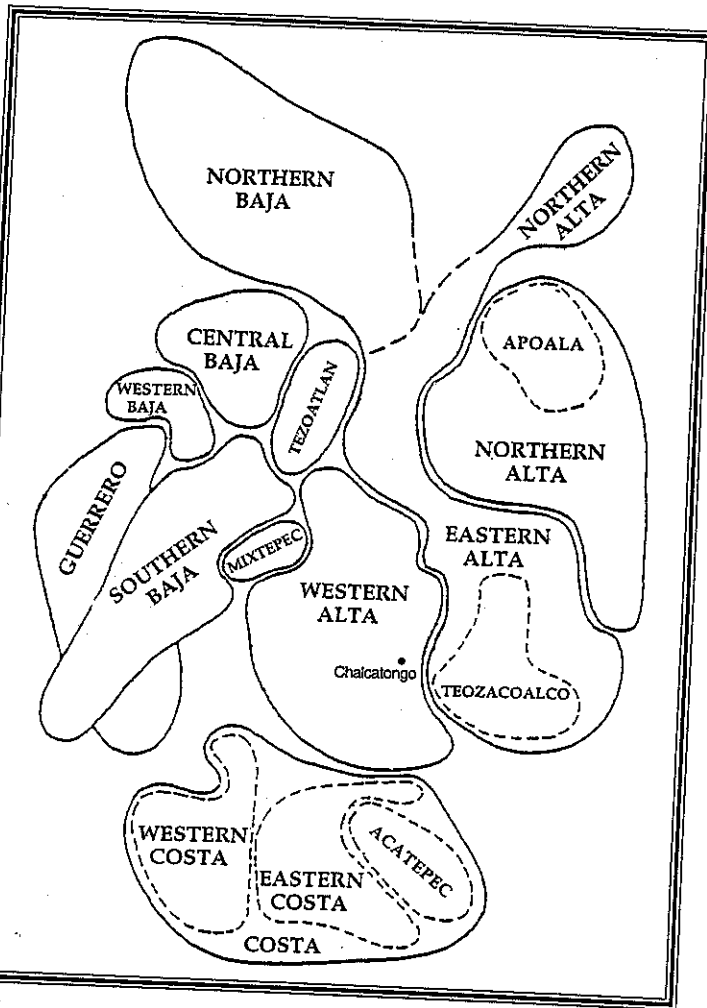
Table 2: Phonological Differences across Five Dialects of Mixtec

	CHAL	CUAH	TLAL	AYUT	JICAL
'man'	čàà	tii	tee	tʷaa	rai
'comal'	šìò, šòò	žìžò	šʷoo	šiyòʔ	čiyò
'pus'	lakʷa	ndakʷa	ndakʷa	ndakʷaʔ	ndakʷa
'rain'	saù	dawi	dabi	sawìʔ	sabi
'guts'	xítì	žítì	čì lipa	šìʔti	čiti
'comb'	kúkà	kuka	na kʷika	vìʰka	kuka
'smoke'	nũʔmã	žũʔmẽ	nũʔmã	nũʔmã	yũʔmã

KEY: CHAL = Chalcatongo (Western Alta)
 CUAH = Santa Ana Cuauhtémoc (Northeastern Alta)
 TLAL = Santa Catarina Tlaltempan (Northern Baja)
 AYUT = Tepango/Ayutla de los Libres (Southern Baja)
 JICAL = Santa María Jicaltepec (Coast)

Table 3 illustrates two morphosyntactic features: the marking of negation and the formation of yes/no questions. Since these data were drawn from the available grammars and sketches, only three of the five dialects in Table 2 appear in Table 3: Chalcatongo Mixtec, Ayutla Mixtec (Hills 1990), and Jicaltepec Mixtec (Bradley 1970). San Juan Coatzacoapan Mixtec (Small 1990) replaces Cuauhtémoc for the Northeastern Alta dialect in Table 3, and Silacayoapan Mixtec (Shields 1988), a Western Baja dialect, replaces Tlaltempan, a Southern Baja dialect.

³The key below the table indicates which area each dialect is spoken in. The data are taken from Josserand's (1983:489-678) cognate sets, except for the Chalcatongo data, which come from my fieldwork. I use Josserand's original transcription of her data here, except that nasalization is marked with a tilde over a vowel instead of a cedilla under a vowel. Note also that tone is not marked in the majority of her forms.



Map 5: Jossierand's Mixtec Dialect Areas
(Adapted from Jossierand 1983:470; used with permission)

Table 3: Two Morphosyntactic Features in Five Dialects of Mixtec

	CHAL	COAT	SILA	AYUT	JICAL
negative marker	tu=	ñá	ko	tone change	ñà
yes/no questions	unmarked	ndu (second position)	á (initial)	ñāā, āān, or H tone (initial)	tá, na (final)

KEY: CHAL = Chalcatongo (Western Alta)
 COAT = San Juan Coatzospan (Northeastern Alta)
 SILA = Silacayoapan (Western Baja)
 AYUT = Tepango/Ayutla de los Libres (Southern Baja)
 JICAL = Santa María Jicaltepec (Coast)

The data in Tables 2 and 3 have been presented to give the reader an idea of the diversity found across the Mixtec dialects. As described above, despite the traditional terminology (which is maintained in this grammar for ease of exposition), it is quite clear that what we know as Mixtec is actually composed of a number of languages. One estimate of that number is made by Suarez (1983:13-20), who describes a method of testing mutual intelligibility which yields a total of twenty-nine distinct language groups within Mixtec, but he cautions that the method has its shortcomings. In fact, the question of the actual number of languages represented within Mixtec can probably never be decided with any precision, due to the kinds of dialect relationships found in the area, in conjunction with the problems inherent in our definitions of "language" and "dialect."

*Suarez
29 (24)
1983*

1.3. The Chalcatongo Dialect

As mentioned in the Preface, I began working on Mixtec in a field methods class with a speaker from Chalcatongo named Luciano Cortés Nicolás. He is a relatively young speaker (born around 1960), who speaks Mixtec and Spanish natively, and English near-natively. He moved to the United States in 1979 and has lived in California since then. I continued to work with him until I left Berkeley in 1987.

I have worked with several speakers in Chalcatongo, but my primary consultants there have been Otelia Jiménez García (born around 1920), Crescenciano Ruiz Ramírez (born in 1929), and Margarita Cuevas Cortés (born in 1952). All are bilingual natives of Chalcatongo. The last two use more Spanish than Mixtec in their daily lives, but Señora Jiménez García clearly uses Mixtec more. She is also the only one of the three who has a "Mixtec accent" when she speaks Spanish, most noticeable in the replacement of [o] with [u], particularly in word-final position.

There are a few differences in the speech of these four consultants, as illustrated in Table 4. As the table shows, there is metathesis in the word for 'bread' in the speech of the two younger speakers. This is the only word I have ever found such metathesis in,

Table 4: Dialect Differences within Chalcatongo Mixtec

	OJG	CRR	MCC	LCN
'bread'	statilá	statilá	tastilá	tastilá
'cut'	káʔnʒa	káʔʒa	káʔʒa	káʔña
'hug'	kanunuʒaa	kunuʒa	kununʒaa	—
'have'	ñúbaʔa	ʒábaʔa	ñábaʔa	ʒúbaʔa
'taste'	kótónʒaa	kótóʒa	kótónʒa	—
'live'	nʒáá	ʒáá	nʒáá	ʒáá

KEY: OJG = Otelia Jiménez García
 CRR = Crescenciano Ruiz Ramírez
 MCC = Margarita Cuevas Cortés
 LCN = Luciano Cortés Nicolás

There are six oral and six nasalized vowels: /i, ĩ, u, e, o, a, ɪ, ɪ̃, ũ, õ, õ̃, ǣ/. The two mid nasalized vowels, however, are quite rare.

Syllable structure is (C)CV, but the only consonant clusters are those composed of /s/ plus another consonant. There are two sources for these clusters: either they are derived historically from a sequence of sVC, or they are derived synchronically by addition of the causative prefix s- (itself a reduced form of sa-) to a consonant-initial stem.

The language has three level tones: high (H, marked with acute accent), mid (M, unmarked), and low (L, marked with grave accent). An extraordinarily high number of words and affixes show a floating H tone like the one described for San Miguel el Grande Mixtec by Pike (1944, 1948). This tone is part of the lexical entry for the morphemes which have it, but it is realized on the following morpheme, not on the lexical item to which it belongs. In most cases it simply replaces the tone of the first syllable of the following word, but under certain circumstances, the floating H surfaces on the *second* syllable of that word. (See Chapter 2 for details.)

Phrasal affix

1.4.2. Morphology

The basic morphological unit is what Mixtecanists call the "couplet." This is a root, consisting in all cases of two syllables. There are two categories of element which may be added to the couplet: ordinary affixes (inflectional and derivational) and phrasal affixes. Both types are always either nonsyllabic (composed of a single consonant) or monosyllabic. There are four inflectional affixes (all verbal prefixes), and no case marking or other nominal inflection. The productive derivational affixes are relatively few in number, although the lexicon shows evidence of many other fossilized derivational processes (including aspect marking on verbs and classifiers on nouns).

affixes
couplet

Some discussion is necessary here of the other type of element which may be added to the couplet, the phrasal affix.⁵ A phrasal affix is an element which is bound, but which attaches to phrases, rather than to words. The term "phrasal affix" comes out of the body of work on clitics and cliticization which has appeared in the last fifteen years or so, initiated by Zwicky (1977).⁶ In this paper, Zwicky called attention to the fact that there are several different kinds of elements which have been described by the term "clitic." Zwicky (and others) have made the point that we can define continua of morphological types based on various criteria, the most relevant here being degree of dependence on neighboring

phrasal affix

⁵This research is especially important to any study of Mixtec because the language is rich in cliticization processes. However, in the early descriptions of Mixtec cliticization (the most notable being Pike 1944) little attention was paid to the different kinds of elements involved or to the distinction between diachronic and synchronic processes. I have presented arguments for my views on this matter elsewhere (Macaulay 1987a, 1987b); for the most part in the present work I simply note my analyses. In general, I avoid the term "clitic" in order to ensure a distinction between phrasal affixes and the contracted forms which are created by rules of fast speech, but when I do use it, I always intend it to refer to a phrasal affix (e.g., in discussion of the pronominal clitics).

⁶I have adopted the term from Klavans (1982); see also Nevis (1985). To distinguish phrasal affixes from ordinary affixes, an equals sign (=) is used to show dependence on a neighboring word or phrase, rather than a hyphen (which marks ordinary affixes).

clitic

however.⁴ Also, note the variation between [ĩ], [ʒ], and [nʒ] across the four speakers; this is characteristic of the area and is discussed in detail in Chapter 2. Aside from these two factors, however, the speech of these four consultants (and of Chalcatongo speakers in general) is quite homogeneous.

1.4. Typological Overview of Chalcatongo Mixtec

This section provides a brief overview of some significant features of the phonology, morphology, syntax, and semantics of Chalcatongo Mixtec grammar. All of the topics mentioned here are dealt with more extensively in the appropriate chapters.

1.4.1. Phonology

The consonant system of Chalcatongo Mixtec is extremely asymmetrical, containing one voiced stop /b/, one voiced prenasalized stop /nd/, and three voiceless stops /t/, /k/, /kʷ/; nasals /m/, /n/, /ñ/; lateral /l/; flap /r/; voiced fricative /ʒ/, voiceless fricatives /s/, /ʃ/, /x/; affricate /tʃ/; and glide /w/. Some speakers also have a voiced prenasalized fricative /nʒ/. There is a phonetic glottal stop (which may correlate with laryngealization of surrounding vowels), which is analyzed here as a feature of roots, not as a segment. There are also a number of marginal phonemes, described in Chapter 2.

⁴Barbara Hollenbach (personal communication) has suggested an alternative explanation for the differences in the form for 'bread'. The word is historically derived from the word for 'tortilla' (staà in Chalcatongo Mixtec) plus that for 'Spanish' (root stilá *Castellano* and other variants in Chalcatongo Mixtec); that is, 'Spanish tortilla'. Hollenbach's hypothesis is that the two [st] clusters in successive syllables were simplified differently by different speakers: some dropped the [s] from the first syllable, and some from the second.

elements. The endpoints of this continuum are, on the one hand, words (completely independent, i.e., free), and, on the other hand, affixes (completely dependent, i.e., bound). The categories between are a matter of varying opinion; the only one required for description of Mixtec is the category mentioned above: the phrasal affix. Phrasal affixes are morphological entities (affixlike) in terms of dependence, but syntactic entities (wordlike) in terms of placement. I have chosen to describe them in the chapters on syntax (Chapters 6 and 7), in order to incorporate them into a discussion of sentence structure in Chalcatongo Mixtec, but they could be described just as legitimately in the chapters on morphology.

1.4.3. Syntax

Word order in Mixtec is VSO, but either one or two constituents may appear preverbally, in topic and/or focus position. When postverbal, the subject argument may be realized as a full NP or a pronominal enclitic (phrasal affix). The subject NP may also be fronted to focus position, in which case no pronominal clitic appears. Alternatively, a NP may appear in topic position, in which case it does not function as an argument of the clause. If this NP refers to the entity which is the subject of the sentence, a coreferential pronominal clitic (functioning as the subject argument) also appears.

Plural marking of all kinds is always optional in Chalcatongo Mixtec. The only explicitly plural pronominal enclitic is the first person inclusive, while all of the others may be used for singular or plural, letting context disambiguate the intended number. There are a few optional mechanisms for explicitly marking plurality, should the speaker so desire, including a verbal prefix marking plural subjects, and a plural word. The latter is a free morpheme which follows the head noun, or which may be discontinuous with the NP it modifies, in which case it appears in sentence-final position.

Nouns may serve as predicates with the addition of either the copula or the existential; adjectives may appear as predicates alone or with the copula or existential. There are very few prepositions; locative (and other) relationships are expressed instead through the use of a set of body part terms. Negation is marked by a proclitic phrasal affix. Subordination is most often marked by a phrasal affix complementizer, which also serves as a relative pronoun, and the word order in subordinate clauses is identical to that in main clauses.

1.4.4. Semantics

Chapter 8 touches on a few of the most salient topics in Chalcatongo Mixtec lexical semantics. One such topic is the use (mentioned above) of body part terms to express locative relationships. The descriptive function of each body part term is derived from the canonical orientation of the human and the (quadruped) animal body, and then extended to more complex spatial relationships. In addition, some of the terms are also extended to other relationships, especially in temporal expressions.

Another complex domain in the lexical semantics of Chalcatongo Mixtec is motion. There is a large number of verbs of motion, which are marked for more aspectual

distinctions than nonmotion verbs have. The verbs of motion are also "round-trip," the progress of the agent both to and from the goal; consequently, use of the complement with these verbs is only appropriate when the agent has gone to the goal and returned. Furthermore, at least some of the verbs of motion distinguish two types of goal: "designated goal, usually the agent's home" and "nonbase."

1.5. Previous Work on Mixtec

A fair amount of research has been done on the Mixtec dialects, primarily by members of the Summer Institute of Linguistics. This work was begun by Pike, who did a field study of San Miguel el Grande Mixtec, spoken in a village which is (as mentioned above) about eight kilometers from Chalcatongo (see Pike 1944, 1947, 1948).

There are a few grammars of various dialects of Mixtec in existence. Most were either written for the native speaker (e.g., Alexander 1980; North and Shiel 1977) and thus are not very technical in nature, or were written in an older framework which has the potential for obscuring the description of the language for the modern-day reader (Daly 1973a, written in a highly formalized version of standard theory).

A great deal of work has gone into phonological analysis (especially of tone) (Daly 1950, 1953, 1958), Overholt (1961), Pankratz and Pike (1967), Hunter and Pike (1973b, 1977, 1978), Pike and Wistrand (1974), North and Shields (1977), Ibach (1978), Zylstra (1980), and many others. These articles are primarily descriptive studies, but a number of works have also appeared more recently which deal with current theoretical phonological frameworks to Mixtec data, for example Yip (1986), Brown (1988), Hillman and Watters (1988), Gittlen and Marle (1990), Goldsmith (1990), Marlett (1992), Piggott (1992), Aranovich (1994), and MacSalmons (1995).

Turning now specifically to Chalcatongo Mixtec, a number of projects have been undertaken, both by the present author and by others. Papers which came out of the field methods class mentioned in the preface and in §1.3 include Hinton (1982; on the interaction of tone sandhi), Macri (1983; a study of noun classes), and Brugman and Macaulay (1982; on the verbs of motion and arrival); Brugman (1983; a study of the interaction of the body part system and the verbs of location). My dissertation (Macaulay 1987b) was on the morphology of Chalcatongo Mixtec, with a focus on the interaction of tone sandhi and the verbs of location. More recently, in the academic year 1990-1991, Leanne Hinton taught a field methods class on Chalcatongo Mixtec (working with the same speaker with whom I had worked before), in which the students concentrated on tone. Papers from this class include Buckley (1990; on tone in the verb), Buckley (1991; on a rule of low tone), Hinton (1991; an accentual analysis of tone), Hinton et al. (1991; on the phonetics of tone), and Meacham (1991; on the phonetics of tone). There also exists a brief grammar of Chalcatongo Mixtec, written by a native speaker, Pérez Jiménez (1988). I draw on these sources in the present grammar and gratefully acknowledge my debt to them.

Finally, a series on the syntax of the Mixtecan languages has recently appeared, edited by C. Henry Bradley and Barbara Hollenbach (1988, 1990, 1991, 1992).

descriptions of Mixtec syntax in this series have proved invaluable to me, both in terms of helping me to identify constructions to investigate and in providing me with comparative evidence to aid in the analysis of my own data.

1.6. Theoretical Approach

This volume is intended as a reference grammar of Chalcatongo Mixtec, for an audience of linguists. The focus is on description, rather than on use of the data to prove particular theoretical points. Obviously, however, no description is ever theory-neutral, and I have instead attempted to cast this as theoretically-informed description.

The theoretical approach here is generative: I draw from both linear and autosegmental phonology in the chapters on phonology and morphology, and in the chapters on syntax I make use of ideas about constituent structure taken from government-binding theory. Constituent structure is a topic which is often overlooked in descriptive grammars, presumably on the grounds that exploring it requires one to invoke concepts which are deemed too theoretical to mesh with the descriptive goals of the author. I have instead attempted to find a balance between the theoretical constructs which are necessary to illustrate significant facts about the language and my desire for clarity and simplicity of description.

These theories, then, are employed primarily as a means to enhance and clarify description and are not the focus of the book. My goal is for the resulting description to be clear enough that it will be of use both to linguists with other theoretical viewpoints and to future generations of linguists, once the above-mentioned theories have been—inevitably—replaced by others.

1.7. Outline of the Grammar

This grammar follows the traditional organization: phonology—morphology—syntax—texts—lexicon, with a chapter on lexical semantics added after those on syntax. Specifically, the structure is as follows: Chapter 2 presents the phonological system of Chalcatongo Mixtec. Chapter 3 presents the derivational morphology, and Chapter 4, the inflectional morphology. Lexical categories are the topic of Chapter 5. Chapters 6 and 7 survey the syntax: Chapter 6 is on simple syntax, and Chapter 7 on complex sentences. Chapter 8 presents analyses of various topics in lexical semantics. Three texts are presented in Chapter 9, and then there is a Mixtec-English and English-Mixtec lexicon. Finally, there are references, an index of bound morphemes, and a subject index.

PHONOLOGY

This chapter presents the phonology of Chalcatongo Mixtec. The phonemic inventory, including very general comments about distribution, is described in §2.1, and consonant clusters are the topic of §2.2. §2.3 describes syllable and root structure, and also presents arguments for a root-based analysis of glottalization. §2.4 discusses the tendency toward total harmony in the two vowels of the root, a very salient property of Mixtec. Tone and tone sandhi are covered in §2.5, and, finally, rapid speech contraction is the topic of §2.6.

2.1. Phonemic Inventory

This section includes discussion of the vowels of Chalcatongo Mixtec (§2.1.1), the consonants (§2.1.2), and certain aspects of the distribution of these segments (§2.1.3).

2.1.1. Vowels

Table 5 presents the vowel phonemes of Chalcatongo Mixtec. In this table and in Table 6, marginal phonemes are enclosed in parentheses; these are included in the discussion which follows each table.

Table 5: Vowels

	ORAL			NASAL		
HIGH	i	ĩ	u	ĩ	ĩ̃	ũ
MID	e		o	(ẽ)		(õ)
LOW		a				ã

As Table 5 shows, Chalcatongo Mixtec has six oral and six nasalized vowels. The mid vowels /e/, /ē/, /o/, and /ō/ occur much less frequently than the other vowels. The nasalized mid vowels, in fact, occur in only two or three words each: for example, *kéi* 'put', *žōkō* 'brush' (*n*), and *sōā* 'thus, like that'. (For one speaker with whom I worked, the last of these three words was *sūā*, with nasalized [ū], a much more regular form.) The mid vowels have lax counterparts which occur in free variation with the tense forms; that is, /e/ has the variant [e̠], and /o/ has the variant [o̠]. In addition, /i/ is occasionally realized as [ɪ].

(1), below, presents examples of the vowels of Chalcatongo Mixtec. In the remainder of this chapter, contrasting examples are in general as close to minimal pairs (or sets) as possible. In many cases, however, only near minimal pairs can be found. These are usually segmentally identical but differ in tone and/or glottalization.

(1) EXAMPLES OF VOWELS

/i/	kii	'come and return'
/i̠/	kiki	'harden'
/u/	kuù	'die'
/e/	kee	'eat'
/o/	kòò	'snake'
/a/	kaa	'iron, bell'
/i/	kíʔi	'go and return'
/i̠/	kíʔi̠	'have recently given birth'
/ū/	kūū	'four'
/ā/	kāā	'become accustomed to'

As mentioned above, all of the Mixtec dialects show a strong tendency toward identity of the two vowels in the root, as well as restrictions on possible combinations of vowels when they are not identical. This topic is discussed in §2.4.

2.1.2. Consonants

The consonant inventory of Chalcatongo Mixtec (shown in Table 6) contains a number of asymmetries. One has to do with frequency: there are a number of phonemes with extremely limited distribution. Another has to do with the pattern (or lack thereof) in voicing and prenasalization of segments. Two points are relevant to the latter issue: First, this kind of asymmetry is characteristic of the consonant inventories of Mixtec dialects in general.¹ Second, when allophonic variants of several of the segments in this dialect are considered (as described below), many of the gaps are filled in.

The consonants are presented individually below, organized by manner of articulation.

¹For example, San Miguel Mixtec and Atlatláhuca Mixtec each have voiceless /p, t, k, k^w, ʔ/ and voiced prenasalized /nd, ŋg/, plus affricates /tʃ/ and /nʃ/ (Dyk and Stoudt 1965; Alexander 1980). Peñoles Mixtec has /t, k, k^w, ʔ, /mb, nd, ŋg, ŋg^w/, and /tʃ, nʃ/ (Hinojosa 1977). San Juan Colorado Mixtec has /p, t, tʃ, k, k^w, ʔ, /mb, nd, ntʃ/, and affricate /c/ (Stark Campbell et al. 1986).

Table 6: Consonants

STOPS	[-VOICE]	t	k	k ^w
	[+PRENAS]	nd	(ŋg)	
	[+VOICE]	b		
FRICATIVES	[-VOICE]	s	ʃ	x
	[+PRENAS]		(nʒ)	
	[+VOICE]	(ð)	ʒ	
AFFRICATES	[-VOICE]		č	
	[+PRENAS]		(nč)	
NASALS		m	n	ɱ
LATERAL			l	
FLAP			r	
GLIDE				w

2.1.2.1. Stops

Chalcatongo Mixtec has voiced prenasalized stops /nd/ and /ŋg/, voiced stop /b/, and voiceless stops /t/, /k/, and /k^w/. In all of the other dialects of Mixtec with which I am familiar, voicing entails prenasalization. For distributional reasons, however, I have chosen to phonemicize the Chalcatongo Mixtec stop system with a plain bilabial stop, but with prenasalized alveolar and velar stops.² I prefer this analysis, despite the fact that it creates an asymmetry in the stop system, because the surface behavior of /b/, /nd/, and /ŋg/ (both initially and intervocally) is not at all parallel: first, /b/ is only occasionally realized as [mb] word-initially and becomes [β] or sometimes [w] intervocally;³ /nd/, however, is always prenasalized and has no fricative allophone. Finally, /ŋg/ has a highly

²For a different analysis of the Chalcatongo system, see Iverson and Salmons (forthcoming). Under their analysis, prenasalization is a phonetic hypervoicing phenomenon, and all three segments are underlyingly plain voiced. I have not followed their analysis here (although I find it convincing) for two reasons: First, I prefer a slightly more surface description for the purposes of this grammar. Second, their analysis introduces complications into the description of the fricatives, because at least some speakers have both a voiced and a prenasalized palatal fricative.

³In one word, /b/ appears as [β^w] intervocally. This is in the word [ʒuβ^wεʔε] 'door', which is historically derived from the NP + NP construction *ʒuʔu beʔe* 'mouth house' and is the only example I have of /b/ following a morpheme boundary of this sort. The allophone [β] is found when /b/ occurs between vowels in a single morpheme, or when it follows a fast speech clitic or other word boundary. Thus, it is possible that these two allophones are conditioned by the type of boundary that precedes them, but unfortunately the evidence consists of only this one example. Also note that some authors use /β/ in place of /b/ (usually orthographic "v"), but that in the Chalcatongo dialect this would simply move the asymmetry to a different row. (In addition, two dialects, Peñoles Mixtec [Hinojosa 1977] and San Juan Colorado Mixtec [Stark Campbell et al. 1986], have both /β/ and /mb/.)

circumscribed distribution in this dialect: it occurs only medially, only between nasal vowels, and only in a very few words: číngfí 'curly',⁴ kwángō 'twist', íngfí 'cramp up', and tíngfí 'skinny'.⁵ Elsewhere (Macaulay 1987b), I have treated [ŋg] as an allophone of /k/ which occurs between nasal vowels, but I have since found a small number of (near) minimal pairs, for example, číngfí 'curly' and číkfí 'seed'.

/t/ is dental and unaspirated, and /k/ is optionally aspirated. /k^w/ is a voiceless labialized velar stop. /k^w/, /nd/, and /ŋg/ are considered unit phonemes, primarily on the distributional grounds that the only clusters which are allowed are /s/-initial (see §2.2). If /k^w/, /nd/, and /ŋg/ were treated as clusters, this simple statement would have to be revised, and the resultant set would form a very unnatural class. Furthermore, the /s/-initial clusters only occur root-initially, never medially, yet /nd/ and /k^w/ do appear medially.

(2) EXAMPLES OF STOPS

	INITIAL	MEDIAL	AFTER [ʔ]
/t/	táʔa 'suffer'	káta 'sing'	—
/k/	káʔa 'hip'	kaka 'walk'	—
/k ^w /	k ^w aʔá 'red'	tík ^w aʔa 'orange (fruit)'	—
/b/	báʔa 'good'	kaba 'hard'	ndaʔba 'go out'
	[báʔa, mbáʔa]	[kaβa]	[ndaʔβa]
/nd/	ndaʔa 'hand'	kenda 'go out, exit'	saʔnda 'calf (of the leg)'
/ŋg/	—	číngfí 'curly'	—

2.1.2.2. Fricatives

Chalcatongo Mixtec has the voiceless fricatives /s, š, x/ and the voiced fricatives /ð, ž/. In addition, some speakers have a voiced prenasalized fricative /nž/ in a small number of words. Of the fricatives, only /x/ has an uncomplicated distribution: for some speakers it becomes a palatal fricative [ç] before high front vowels, and otherwise it varies freely between [x] and [h].

The phoneme /ð/ appears only in the third person masculine clitic =ðe. In previous work I have treated it as an allophone of /r/. This was for the sake of simplicity: to avoid positing a phoneme which appeared in only one morpheme. There are arguments in favor of (and against) both treatments; here I have chosen to follow the diachronic evidence, which indicates that it is unlikely that [ð] is related to the [r] of the first and second person pronouns rúʔú 'first person' (clitic form =rí) and roʔo 'second person (familiar)' (clitic form =ro). Terrence Kaufman (personal communication) says that these pronouns are innovations and cannot be traced to Proto-Otomanguean, and so the source of the [r] is unknown. Furthermore, note that most third person pronominal clitics in Mixtec are transparently related to a corresponding noun (just as the first and second person clitics are

⁴Leanne Hinton has pointed out to me that this word bears at least superficial resemblance to *chino*, the Spanish word for 'curly', so it may be a loan.

⁵One other word which has phonetic [ŋg] is íngga 'other'. However, this is transparently derived from íí=ka 'one=ADD', and so is not treated as underlyingly containing the phoneme /ŋg/.

related to the corresponding full pronouns), for example, =ña 'she' and ñáʔá 'woman'. =ðe, however, is synchronically related only by suppletion to the noun čáá 'man'. Kaufman reconstructs Proto-Otomanguean *tææ for 'man' and says that [ð] and [č] represent different developments from the first segment of this form.

A small piece of evidence for the opposite position—that is, for analyzing [ð] as an allophone of /r/—can be found in synchronic variation. Some speakers appear to be merging the [r] and the [ð] of the clitic pronouns: at least one of my consultants occasionally has [=ðí] for /=rí/. Nonetheless, the weight of the evidence seems to be with the diachronic argument, and so I treat [ð] as a phoneme for the purposes of this description. The reader should bear its extreme marginality in mind, however.

Turning next to /s/ and /š/, we find a somewhat complicated distribution. Josserand (1983:265–266) shows that Chalcatongo is located within the geographical area in which Proto-Mixtec *s > š preceding *i (and possibly preceding other front vowels). The existence of some instances of /s/ before /i/ and /š/ before other vowels in the present-day lexicon of Chalcatongo Mixtec reflects the fact that this rule is no longer productive. On the one hand, /s/ is found before /i/ in words borrowed from Spanish (e.g., síza ~ sía 'chair', from Spanish *silla*), and in derived words in which causative s- precedes a verb with first syllable xi: xínu 'finish (vi)', sínu 'finish (vt)'.⁶ On the other hand, /š/ is found preceding vowels other than /i/ in a small number of examples, such as šáʔbá 'ravine', šáʔá 'grease', and šúʔú 'money'. Note that there are also a few minimal pairs, such as šáʔba 'ravine' and sáʔba 'frog'. Examples of /s/ before /i/ and /š/ before other vowels are still relatively rare, however.⁷

/nž/, as mentioned above, only exists in the dialect of some Chalcatongo speakers, not all. It is also fairly rare for the speakers who have it, occurring in only a small number of roots (less than ten), and only before /a/. The words in which it is found tend to be low-frequency vocabulary, such as nžáá, a color term glossed variously by speakers as 'white', 'light blue', or 'purple', and kununžá 'hug'. Hinton (1987) argues that /nž/ derives from Proto-Mixtec *nd, following Josserand (1983:262), who shows that *nd develops a number of palatalized and/or fricativized reflexes before *i and *e.⁸ Hinton

⁶In addition, Hinton (1982:360) claims that causative s- plus a stem with initial [žu] in this dialect also results in [si]: žúʔú 'afraid, frightened', síʔú 'scare or frighten' (vt). However, as will be discussed in Chapter 3, causative s- plus a stative in ž- more plausibly results in a form in č. Since the žúʔú/síʔú case is unique, I prefer to think of it as suppletion.

⁷The sources of these somewhat exceptional cases are apparently quite diverse. (One which can be ruled out is *x, which is a source for /š/ in other parts of the Mixtec-speaking area, but which was retained in the Western Alta dialects, of which Chalcatongo is one [Josserand 1983:267].) The palatalization of *s to /š/ appears to have been quite uniform before *i in this dialect, but less so before other front vowels. Only one of the words in Chalcatongo Mixtec in my corpus with /š/ before a vowel other than /i/ is listed in Josserand's cognate sets, and it does indeed derive from *s. This is the word for 'grease' or 'lard': *seʔé > šáʔá. Unfortunately, I do not have the data to determine the Proto-Mixtec form for the others. Finally, some words in this dialect with /s/ before /a/ (instead of the expected /š/) derive from *l (e.g., saá from *tí laa), although others do have *s as their source.

⁸Josserand (1983:263), however, does not include Chalcatongo in her map V-8, which shows the distribution of these developments across the Mixtec dialects. It may be that the results in the Chalcatongo dialect are so limited that her survey just missed them.

claims that the first step in the process for Chalcatongo Mixtec was *nd > nʃ / ___ *e.⁹ In a later change, *e > a. /nʃ/ then moved to /nʒ/ and, for the majority of speakers, eventually merged with /ʒ/ (and for some speakers in some cases, /ñ/, as discussed below). Thus, in Hinton's view, the speakers with /nʒ/ retain an older form which most Chalcatongo speakers have lost. Note also that /nʒ/ must be treated as phonemic for the speakers who have it, since it contrasts with /ʒ/, for example, in *nʒáá* 'live, reside' and *ʒaa* 'tongue'.

Finally, the voiced fricative /ʒ/ is also problematic. In Chalcatongo Mixtec this segment varies synchronically in initial and medial positions between [ʒ] and [y], although the former predominates. There are two environments, however, in which [y] is more common; these are following [ʔ] and in the pronominal enclitics =ʒo ([=yo], 1PL), =ʒi ([=yi], 3POL.DEC), and =ʒa ([=ya], 3SUP).¹⁰ I have chosen to phonemize this segment as /ʒ/ on the grounds that [ʒ] is much more common phonetically than [y]. Josserrand (1983: 252-253) posits a change from Proto-Mixtec *y > ʒ in posttonic syllables before oral vowels in a broad area which includes Chalcatongo, but it appears that the Chalcatongo dialect has now generalized the change to include virtually all instances of the segment, with the exceptions noted above.

The distribution of /ʒ/ is complicated, however, by its interactions with /ñ/. In a few lexical items, speakers split on whether the word contains /ʒ/ or /ñ/: *ʒábaʔa/ñábaʔa* 'have', *káʔʒa/káʔña* 'cut'. Historically, [ñ] derives from *y before nasalized vowels (Josserrand 1983:453), and so the alternation should not surprise us. In fact, in some Mixtec dialects (e.g., Nımı Mixtec, see Gittlen and Marlett 1989), such a rule is apparently still productive. We can see traces of it in present-day Chalcatongo Mixtec by observing that there are virtually no words containing /ʒ/ which have nasalized vowels. (There are only two exceptions to this statement of which I am aware; the first is the word meaning 'people'. There is a fair amount of variation in its pronunciation, and some speakers do have both [ʒ] and nasalized vowels: *ñáʒñá*. The other is a word meaning 'baby': *ʒíkf.*) While, on the other hand, most words with [ñ] do have nasalized vowels, there are a number which do not, indicating that the rule is no longer productive in this dialect. In fact, minimal pairs with [ñ] and [ʒ] can be found (*ñáʔa* 'early' and *ʒáʔa* 'here'; *ñíʔi* 'steam bath' and *ʒíʔi* 'spread, smeared'), indicating that [ñ] is no longer an allophone of /ʒ/, and that it must be granted phonemic status in this dialect.

(3) EXAMPLES OF FRICATIVES

	INITIAL	MEDIAL	AFTER [ʔ]
/ð/	=ðe 'he'	—	—
/s/	séʔe 'child'	bása 'later'	—
/ʃ/	šéʔé 'ring'	nduši 'warm, heat'	—
/x/	xaʔà 'time'	bixi 'pineapple'	—
/ʒ/	ʒaa 'tongue'	kóʒo 'empty, pour'	bíʔʒa 'nopal'
	[ʒaa, yaa]	[kóʒo, kóyo]	[bíʔya, bíʔʒa]
/nʒ/	nʒáá 'live, reside'	kénʒaʔa 'move near'	bíʔnʒa 'nopal'

⁹The vowel that Josserrand (1983) reconstructs as *e is reconstructed by Kaufman as *æ (Hinton [1987] class notes for this).

¹⁰Thanks to Joe Salmons for pointing out these distributional facts to me.

2.1.2.3. Affricates

There are two affricates, a prenasalized voiceless affricate /nč/ which occurs in a very small number of words (less than five), and a simple voiceless affricate /č/ which has a normal rate of occurrence.¹¹

(4) EXAMPLES OF AFFRICATES

	INITIAL	MEDIAL	AFTER [ʔ]
/nč/	—	túnči 'tunnel, hole'	—
/č/	čaʔa 'gourd'	nduči 'eye'	čúʔči 'Jesus'

2.1.2.4. Nasals

There are three nasal consonants, /m/, /n/, and /ñ/. Of the three, /m/ is somewhat less frequent, appearing in perhaps twenty-five roots in all. The phonemic status of /ñ/ is a somewhat complicated issue, but as explained above it has to be treated as distinct from /ʒ/ in this dialect because of the existence of a small number of minimal pairs involving the two.

(5) EXAMPLES OF NASALS

	INITIAL	MEDIAL	AFTER [ʔ]
/m/	máá 'self'	sámá 'food'	saʔma 'clothing'
/n/	náa 'mother'	káná 'call'	táʔnu 'break'
/ñ/	ñáá 'dark'	ñáñá 'chayote'	māʔñú 'between'

2.1.2.5. Lateral

/l/ appears word-initially in a small number of words (approximately ten), and intervocalically in many others.¹²

¹¹Hinton (1987:5) argues that the words containing /nč/ are "highly disguised old Spanish loans." In some cases such loan status is quite clear (e.g., *sančáo* < *Santiago*), while in others it is less so (e.g., *ñlančé papalome* [type of maguey], which Hinton claims derives from *golosina* 'snack' plus affixes).

¹²There is one word with /l/ which does not fit this description: *číʔlʒa* 'lizard', from Proto-Mixtec **wilu*, Longacre (1957), set 273. (The initial [č] is the regular result of fusion of the animal classifier *tí-* with a root in *w). If we were to analyze this word as containing the sequence l-ʒ, we could syllabify in two ways: *číʔl.ʒa* or *číʔ.lʒa*. The former would be problematic in that the first syllable would violate the syllable canon of all Mixtec dialects, which does not allow closed syllables (see §2.3). The latter would be somewhat more plausible, although /lʒ/ would be a unique cluster (see §2.2). Since /ʒ/ is so often realized as [y], another possibility is that the word contains the cluster [ly]. This cluster does apparently occur in other dialects: Mak (1953:86, n. 2), for example, mentions rare instances of [y] as "second member of a consonant cluster" in San Miguel Mixtec. Finally, we could also analyze the medial as a palatalized /l/, although it would be the only instance of such a segment in this dialect. This last analysis is probably the most preferable, however, for two reasons. One is that palatalization in the environment of /l/ is quite

(6) EXAMPLE OF LATERAL

	INITIAL	MEDIAL	AFTER [ʔ]
/l/	lúli 'small'	lúli 'small'	tíʔlu 'small'

2.1.2.6. Flap

/r/ is a highly limited phoneme in Chalcatongo Mixtec. It appears initially only in the first and second person pronouns, where it is realized as a flap: *rùʔù* [rùʔù] 'I' (clitic form =rɪ) and *roʔo* [roʔo] 'you' (clitic form =ro).

/r/ also appears in four or five nouns, but most of these nouns are loans, for example, *rî* 'sheep' (plausibly from Spanish *borrego*), and *tikoro záʔnda* 'rainbow' (the first part presumably deriving from the 'round objects' classifying prefix *tî-* [see §3.3.3.2] plus Spanish *arco [iris]* 'rainbow'). Another noun containing /r/ is *rîki* 'sound of a woodpecker', but this is clearly onomatopoeic. In these examples /r/ is pronounced as a flap intervocally, but as a trill initially, contrary to its pronunciation in the two pronouns. (Josserand [1983:219] says that the trilled [r̄] is a "certain loan.")

(7) EXAMPLES OF FLAP

	INITIAL	MEDIAL	AFTER [ʔ]
/r/	rùʔù 'I' [rùʔù]	tirírí '(type of) maguay'	—
	rî 'sheep' [r̄î]	[tirírí]	

2.1.2.7. Glide

/w/ is extremely rare, occurring only in two native words, which are identical except for tone. These are the demonstrative *wáá* 'that, that one' and the adverb *wáá* 'there'. The meaning of the latter has apparently been extended to time ('then') and also functions as a determiner ('the'). There is also one noun which contains [w]: *snawa* 'skirt', but this is probably a loan from a Spanish word for a long, full skirt, *enaguas*.

(8) EXAMPLE OF GLIDE

	INITIAL	MEDIAL	AFTER [ʔ]
/w/	wáá 'there'	—	—

plausible, and the second is that other dialects of Mixtec do have palatalized consonants, including /l/. This is an interesting word, and more comparative data are needed.

2.1.2.8. Loan Phonemes

A few loan phonemes occur which are not listed in Table 6. /p/ is found in the words *páa* 'godfather' (which is derived from Spanish *compadre*), *pero* 'but' (Spanish *pero*), *primá/primú* 'cousin' (Spanish *prima/primo*), and *páñú* 'shawl', which presumably has as its source Spanish *pañó* 'cloth, drapery', or perhaps *pañuelo* 'shawl, handkerchief'. In addition to /p/, there is at least one borrowing with /ɸ^w/: *ɸ^wersá* 'strength, force', from Spanish *fuera*. Finally, /ɸ/ occurs medially in a few loanwords, for example, *triyú* 'wheat', from Spanish *trigo* (although some speakers delete the medial consonant entirely, yielding *trfu*).

Note that final [o] in most Spanish borrowings is raised to [u] in Mixtec. There is some variation in this, but [u] definitely predominates. *Pero* 'but' (Spanish *pero*) is an exception to this rule. It is always realized with final [o].

2.1.3. Some Notes on Distribution

Josserand (1983) mentions several distributional restrictions which are characteristic of most Mixtec dialects, and some of these are found in Chalcatongo Mixtec. For example, she finds a widespread restriction on labial consonants preceding round (or labialized) vowels (1983:234), and this is true in Chalcatongo Mixtec, where /b, k^w, m/ do not appear before /u, ü, o, ó/. The strictly labial consonants /b/ and /m/ also do not occur before /i/ or /ī/, although the labialized /k^w/ does. Silverman (1993) pursues this issue, concluding that the feature [labial] is restricted in the Mixtecan languages to one instance per couplet, and discusses the significance of this for feature geometry.

As mentioned in §2.1.1, the vowels /e/ and /o/ are much less frequent than the other oral vowels, and their nasalized counterparts are almost nonexistent. Among the commonly occurring nasalized vowels, /ǖ/ and /ī/ are fairly rare (/ī/ more so than /ǖ/), while /ā/ and /ī/ are more common.

In §2.1.2 it was mentioned that some Mixtec dialects have a restriction to the effect that roots containing [ñ] also contain only nasalized vowels; however, as we have seen, this is not true of Chalcatongo Mixtec. Some dialects have a more extreme version of this dependency: in Molinos Mixtec (Hunter and Pike 1969), for example, only nasalized vowels may occur in roots with medial nasal consonants, as well as in roots with initial nasal consonants and particular CV structures. However, Chalcatongo Mixtec roots do not impose requirements of this sort on the distribution of nasalized vowels; that is, there is no dependency (besides the limited dependency described above in the section on fricatives) between nasal consonants and nasal vowels.

Finally, there are stringent restrictions on combinations of vowels which may appear in a single root. These are covered in §2.4, after the canonical root structure of Mixtec is discussed.

2.2. Consonant Clusters

Consonant clusters are generally disallowed in all varieties of Mixtec. By far the most common clusters which do occur across the dialects are those which are root-initial and consist of /s/ plus another segment. Josserand (1983:231–232) points out that consonant clusters with initial /s/ in monomorphemic words are invariably analyzable as derived from an earlier form with a vowel following the /s/. Only /st/ and /snd/ are found in monomorphemic words in Chalcatongo Mixtec, with various other combinations being produced by prefixation of the causative *s-* to a consonant-initial verb. (For some speakers this /s/ is realized as [ʃ].) Typical examples are *staà* 'tortilla', *sndikì* 'bull', *s-kee* 'make-eat' ('feed'), *s-ndáxi* 'make-wet' ('wet', *vt*), and *s-čóʔo* 'make-cook' ('cook', *vt*).

Consonant clusters in borrowings from Spanish are generally retained, even when the particular combination is not found in native words, for example, /tr/ in *triyú*, 'wheat' (Spanish *trigo*) and /ðr/ in *peñrú* *Pedro*.

2.3. Syllable Structure, the Couplet, and the Analysis of Glottal Stop

Syllable structure in Chalcatongo Mixtec is restricted to V, CV, and stem-initial CCV (in the few cases where clusters are allowed [see above]). A problem in the analysis of Mixtec syllable structure is the occurrence and distribution of [ʔ], which appears in Chalcatongo Mixtec intervocally, as well as word-medially preceding most voiced consonants: *bàʔà* 'good', *káʔndí* 'explode', *káʔbá* 'dirty', *saʔma* 'clothes', *táʔnu* 'break', *máʔnú* 'between', *kóʔlo* 'turkey', *bíʔza* 'nopal', and, for some speakers, *bíʔnza* 'nopal'. (An echo vowel often intervenes between the glottal stop and the consonant, identical to the preceding vowel.) The voiced consonants which have not been found following [ʔ], /ŋg, r, w/, are all extremely rare, and so their nonoccurrence in this context is not surprising.¹³

Various analyses have been proposed for [ʔ] in Mixtec: it has been treated as a consonant in most descriptions, as a feature of vowels in others, and as a feature of roots in Macaulay and Salmons (1995). The latter approach best captures its distributional restrictions and can be extended to all but a very few of the other dialects. I briefly review some of the arguments for the root-based analysis here.

It is the stem type CVʔCV (exemplified above) which poses the most immediate problem for analysis, in that it appears to violate the syllable canon as stated above. Treatment of [ʔ] as a consonant (as in most descriptions of Mixtec dialects) would compel us to include closed syllables in the Mixtec syllable canon, but with [ʔ] as the only permissible final consonant. (Of course, it could be treated as part of the onset of the second syllable, but that is an even less desirable solution.) Furthermore, such closed syllables could only appear as the first syllable in a root, as there are no word-final glottal stops in Chalcatongo Mixtec. (According to Josserand [1983], there are at least two Mixtec dialects—Ayutla and Zacatepec—which do allow word-final glottal stop, and a syllable-based analysis rather

¹³In one example, the glottal stop precedes a voiceless consonant: *cúʔci* 'God, Jesus'. This word is a loan from Spanish, however: *chucho* 'diminutive of *Jesus*' (see Santamaría 1959:423). The insertion of the glottal stop, especially before a voiceless consonant, is unexplained.

than a root-based analysis is preferable for them. See Macaulay and Salmons [1995] for details.)

An alternative to the consonantal analysis is suggested by Josserand (1983:176–179, following Bradley)¹⁴ and adopted by Hills (1990) and Hinton et al. (1991), in which [ʔ] is treated as a prosodic feature of vowels, resulting in a distinction between open and "checked" syllables. This approach results in four parallel series of vowels when nasalization is taken into account: plain oral, plain nasal, checked oral, and checked nasal. Such a solution allows us to retain the simpler statement of the Mixtec syllable canon: (C)CV.

Another argument for the prosodic (vocalic) approach, one based on empirical evidence, is made by Hinton et al. (1991). They first show that in certain environments the rules of tone sandhi in Chalcatongo Mixtec treat CVV roots and CVCV roots differently (see §2.5 for details). Crucially, CVʔV roots behave like CVV roots in the relevant case. Hinton et al. point out that if glottal stop is analyzed as a feature of the vowel, such a result follows automatically, whereas if it is analyzed as a consonant, its behavior must be stipulated as an exception.

Furthermore, Meacham (1991:164) finds that the first vowel in a CVʔV couplet is considerably shorter than the first vowel in a CVCV couplet, while the second vowel of a CVʔV couplet is longer than that of a CVCV couplet. However, the timing of CVʔ and the timing of the initial CV of a CVCV root are comparable, as are the overall duration of the two types of root. Hinton et al. (1991) point out that this is also consistent with an analysis in which the glottal stop is analyzed as a feature of the vowel rather than as a consonant.

Before we can evaluate this approach, and review the refinement of it which is proposed in Macaulay and Salmons (1995), we must first consider the structure of Mixtec roots. In all Mixtec dialects there is a requirement that words be minimally disyllabic; this structure is known by Mixtecans as the "couplet" (or "tonemic couplet," Pike 1948:79–81). Couplets without glottalization in Chalcatongo Mixtec are restricted to the following types (ignoring consonant clusters here for ease of presentation):

- (9) VV: uù 'two', uà 'bitter'
 CVV: čàà 'man', saù 'rain'
 CVCV: kiti 'animal', káta 'sing'
 VCV: inì 'inside', úna 'eight'

u (C)V V two syl
 a (C)V C V types =
 V

The couplet is subject to further affixation and/or cliticization, leading to words of more than two syllables. However, virtually all longer forms can be analyzed as polymorphemic—if not synchronically, then diachronically (see, for example, the discussion of animal names in Chapter 3).

The vowels in the examples in (9) are all plain (that is, nonchecked) and conform to the simple syllable canon described above. Inclusion of the glottal feature in the first syllable results in the addition of the couplet types shown in (10). (One logical possibility, VʔCV, does not occur in this dialect, but does in others.)

¹⁴The reference Josserand (1983) gives is Bradley (1977). She also mentions Bradley (1970) as a precursor.

- (10) V?V: ú?u 'hurt', í?a 'saint, god'
 CV?V: bà?à 'good', bá?ù 'coyote'
 CV?CV: kó?lo 'turkey', bí?za 'nopai'

It is, as discussed above, the third type in (10) which causes problems for the consonantal analysis of [ʔ]. However, if [ʔ] is analyzed instead as a feature of the vowel, this type reduces to CVCV, allowing us to retain the simpler statement of the syllable canon.

We have seen, then, that there are good arguments for rejecting a consonantal analysis of [ʔ] in Mixtec. However, the checked vowel analysis of Bradley, Josserand, and others also suffers from certain shortcomings, a number of which are discussed in Macaulay and Salmons (1995). I review just one here.

Recall that in virtually all of the Mixtec dialects, glottalization is restricted to initial syllables. This is an entirely arbitrary restriction under both the consonantal and the vocalic analyses. Some proponents of the latter approach have attempted to solve this by tying the occurrence of glottalization to stress.¹⁵ In many of the dialects, stress is penultimate, and since this coincides with the first syllable of the couplet, the restriction can be accounted for by stipulating that glottalization only occurs on stressed syllables. However, as Macaulay and Salmons show, there are two situations in which this solution fails. First, some dialects (e.g., Alacatlazala, see Zylstra 1980) have final stress in certain contexts, but do not allow final glottalization. Second, the reverse also occurs: some dialects (e.g., Ayutla, see Pankratz and Pike 1967) have final glottalization of words with penultimate stress. Thus, the distribution of glottalization in these dialects remains unexplained under the vocalic approach.

This problem is solved, however, under the root-based analysis of Macaulay and Salmons (1995). There, we argue that glottalization in Chalcatongo Mixtec should be treated as a feature of roots (that is, of the couplet). Specifically, lexical entries containing glottalization are marked with a floating glottal feature, as illustrated in (11) for the word *bà?à* 'good'. This feature attaches to the leftmost vowel by the rule stated in (12), producing an output which can be schematized as in (13).¹⁶

- (11) LEXICAL ENTRY FOR 'GOOD' (surface form: *bà?à*)
 /baa/
 [+constricted glottis]

- (12) GLOTTAL ASSOCIATION
 Associate the feature [+constricted glottis] to the timing slot corresponding to the leftmost vowel of the couplet.

¹⁵Gittlen and Marlett (1989) make this proposal, for example, but in their analysis glottalization is a feature of syllables, not vowels.

¹⁶See Macaulay and Salmons (1995) for a more formal representation of the output of this rule, and for more precise explanation of how rule (12) works.

- (13) OUTPUT OF RULE (12)
 /baa/
 |
 [+constricted glottis]

Rule (12) accounts for the unique placement of glottalization within the couplet, and since it is not dependent on stress, can apply in those dialects which do not have consistent penultimate stress as well as in those which do. Typological evidence indicates that it is not unusual for glottalization to be restricted to a specific position in a root, and, furthermore, that the initial syllable is a very common locus (see Macaulay and Salmons for a survey of typological evidence on this point). Motivation for this phenomenon is that word- or root-initial position is inherently prosodically prominent, and so prosodic features like glottalization are highly likely to appear in such a position.

In addition, our analysis correctly predicts that [ʔ] does not appear in affixes or clitics. This is because only roots may be marked for glottalization. Furthermore, the insight that surface (C)V?V roots are underlyingly (C)VV—and thus behave the same as (C)VV roots under tone sandhi—is retained.

In what follows, I assume the analysis of [ʔ] in which glottalization is treated as a feature of the couplet. However, I continue to transcribe it as a segment, for ease of representation.

2.4. Distribution of Vowels in the Couplet

The two vowels which occur in the Mixtec couplet are restricted to a subset of the possible combinations. Tables 7 and 8 present data on vowel co-occurrence in a sample of 693 Chalcatongo Mixtec roots. (Both tables omit the extremely limited vowels /ɛ/ and /ɔ/.) The number in each cell of Table 7 indicates the number of examples which were found of that particular combination in the entire sample.¹⁷ Table 8 is a more detailed tabulation of the same data, showing vowel sequences sorted by root type: CVV, CV?V, CVCV, and CV?CV.

Note first that the two vowels must share features for nasalization; that is, either both are oral or both are nasal.¹⁸ Such nasal harmony (and patterns of nasalization in general) is something which seems to differ fairly widely across the Mixtec dialects. In some dialects, for example, either one or both of the vowels of the couplet may be nasalized (e.g., Ayutla Mixtec, see Pankratz and Pike 1967). Other dialects go to the other extreme: in Numí Mixtec (Gittlen and Marlett 1989; see also Marlett 1992), nasality is a feature which

¹⁷Only monomorphemic disyllables were included in this tally. Realis and potential stems were only counted once per verb, unless they had different vowel combinations. When a form had more than one variant (involving different vowels), all were counted.

¹⁸It should be noted that I have found some tokens in which nasalization is only readily perceptible on the final vowel; however, there seems to be a great deal of variation (inter- and intraspeaker) in this feature. It may be that an analysis in which nasalization is a feature of roots (like glottalization) will be appropriate for this dialect, as it is for others. Nasalization is an aspect of Chalcatongo Mixtec phonology which deserves more detailed study than I have been able to accomplish to this point.

characterizes whole roots and affects consonants as well as vowels.¹⁹ However, as we have seen above, although there is evidence that at one time in the history of Chalcatongo Mixtec the nasality of vowels correlated with the nasality of at least one consonant ([ñ]), such is no longer the case.

Table 7: Vowel Sequences in the Couplet

	a	e	i	ɨ	u	o	ã	ĩ	ɨ̃	ũ
a	118	0	31	4	45	2				
e	3	21	1	0	13	0				
i	34	2	47	2	35	23				
ɨ	0	0	1	16	10	0				
u	33	1	26	0	46	2				
o	1	1	1	0	0	55				
ã							26	3	0	7
ĩ							4	22	2	7
ɨ̃							0	1	14	0
ũ							3	0	0	30

Also note how many more couplets have oral vowels than nasal vowels: 574 (83%) have oral vowels, while only 119 (17%) have nasal vowels. In addition, there is a strong tendency toward vowel identity in the root: 395 (57%) of the sample show total harmony. This tendency is more pronounced with the nasal vowels than with the oral vowels: 303 (53%) of oral roots show harmony, while 92 (77%) of the nasal roots show harmony. Such tendencies toward harmony (both of vowel quality and nasality) are manifestations of what Salmons (1992) analyzes as a marked preference for having a single specification for any given feature in each Mixtec couplet.

Restrictions on vowel sequences in the closely related dialect of San Miguel el Grande Mixtec are discussed by Pike (1947:167-169). He divides the oral vowels into an inner and outer triangle: the inner triangle is /ə, e, o/, and the outer triangle consists of the cardinal vowels /i, a, u/. He finds that the outer triangle vowels may occur in any combination, while nonidentical sequences of inner vowels are quite rare. Substituting /i/ for /ə/, we find the same pattern in Chalcatongo Mixtec. The outer vowels may occur in any combination, while the only exception to the second statement is the sequence o-e, which occurs in one word, *onde* 'until'. This is exactly the same exception which Pike cites for San Miguel Mixtec, and it may in fact be a loanword, from the archaic Spanish *de onde* 'from where'.²⁰ Finally, the combination of inner and outer vowels is less patterned. The only ones which occur with any frequency, however, all consist of a front or central vowel

¹⁹See Piggott (1992) for a formal analysis of nasal spreading in two dialects of Mixtec.
²⁰Thanks to an anonymous reader of the manuscript for pointing this out to me.

Table 8: Vowel Sequences in the Couplet by Stem Type

	a	e	i	ɨ	u	o	ã	ĩ	ɨ̃	ũ
a	a. 30 b. 30 c. 42 d. 16		b. 2 c. 26 d. 3		a. 4 b. 11 c. 28 d. 2					
e		a. 7 b. 9 c. 3 d. 1	a. 1		c. 11 d. 2					
i	a. 6 b. 4 c. 20 d. 4		a. 9 b. 12 c. 25 d. 1		a. 2 b. 4 c. 28 d. 1	a. 3 c. 19				
ɨ			c. 1	a. 6 b. 8 c. 31 d. 1	a. 5 b. 5					
u	a. 4 b. 9 c. 18 d. 2	c. 1	c. 25 d. 1		a. 20 b. 8 c. 18 d. 2					
o			c. 1			a. 20 b. 18 c. 16 d. 1				
ã							a. 12 b. 11 c. 3 d. 1	c. 2 d. 5	c. 2 d. 5	
ĩ							a. 1 b. 2 c. 1	a. 6 b. 5 c. 11	a. 3 c. 2 c. 4	
ɨ̃								a. 4 b. 2 c. 1	b. 2 c. 8	
ũ							a. 1 d. 2		a. 9 b. 9 c. 11 d. 1	

KEY: a = CVV
 b = CV?V
 c = CVCV
 d = CV?CV

followed by a back vowel: **i-o** (23 examples), **e-u** (13 examples), and **i-u** (10 examples).²¹ Otherwise, Pike's (1947: 169) statement that "no simple general rule for the occurrence of inner with outer vowels can be given" seems to hold true for Chalcatongo Mixtec as well as for San Miguel Mixtec.

2.5. Tone and Tone Sandhi

Chalcatongo Mixtec has three tones, high (´), mid (unmarked), and low (`), as illustrated in the minimal triplet in (14):²²

- (14) kóó 'low wall, border'
 koo 'there will be'
 kòò 'snake'

Phonetically long vowels are transcribed as VV sequences, as in (9) and (14) above. Such forms are treated as disyllabic, following Pike (1948:79, n. 3). As Pike points out, it might be preferable to treat Mixtec as a mora-timed language, but the distinction is not important for our present purposes. Each vowel of a VV sequence carries a single level tone, and tonal contours over such phonetically long vowels are analyzed as sequences of distinct level tones.

Table 9 shows the frequency of tone co-occurrences in a sample of 773 monomorphemic couplets. Several points are worth noting about this table.²³ First, the two most extreme combinations, HL and LH, are quite rare, comprising (together) only 14, or 1.8 percent, of the total sample. In fact, all forms with an initial L tone are rare; there are only 43 (5.6%) which begin with L. The existence of a high number of ML forms, however, makes any claim about the overall rarity of L tone impossible; MLs make up 14.6 percent of the total.

²¹Pike (1947:169) makes essentially the same observation: "(Except for repeat sequences) no combinations of palatal with palatal vowel or of labial with labial vowel occur."

²²As mentioned in §1.5, tone in Chalcatongo Mixtec has been extensively studied by a group working at the University of California at Berkeley: Eugene Buckley, Leanne Hinton, Marv Kramer, and Michael Meacham. Much of what follows (including the discussion of the morphological aspects of tone in Chapter 3) makes use of their work. I have tried to explicitly acknowledge each author's contribution in all cases.

²³Some caveats about the contents of this table are also necessary: First, deciding when something is monomorphemic in this language can be somewhat difficult. In general, I have tried to be as conservative as possible. However, not only is there a constant and ongoing process of grammaticization and cliticization which obscures the source of bimorphemic forms, there are also legitimate questions about the status of alternations like those found in the verbal paradigms. (The latter issue is taken up in the next chapter.) In making up this table, I ruled out any form which was at all transparently bimorphemic in origin. In the case of verb stems, I counted all distinct tone combinations whenever there was more than one form. The second troublesome issue involves variant forms of a single lexical item. In this case, I decided to count all variants that had differing tone melodies. Finally, no cases were included which were clearly loanwords.

Table 9: Tone in Couplets

	CVV	CV?V	CVCV	CV?CV	TOTAL
HH	47	26	112	5	190
HM	37	58	81	27	203
HL	0	2	8	0	10
MH	10	14	49	5	78
MM	19	25	84	8	136
ML	34	18	57	4	113
LH	1	1	2	0	4
LM	0	5	10	0	15
LL	14	4	6	0	24
TOTAL	162	153	409	49	773

Hinton (1991) presents similar data, reproduced (in somewhat reorganized form) as Table 10. There are some rather striking differences between her results and those presented in Table 9, the most noticeable of which is the complete absence in Hinton's data of couplets with surface LM or MH tone.²⁴

Table 10: Tone in Couplets (Hinton)

(Source: Adapted from Hinton 1991; used with permission.)

	CVV	CV?V	CVCV	CV?CV	TOTAL
HH	11	15	19	4	49
HM	2	2	4	1	9
HL	6	5	0	3	14
MH	0	0	0	0	0
MM	22	21	40	3	86
ML	31	25	49	7	112
LH	2	8	4	1	15
LM	0	0	0	0	0
LL	12	11	18	1	42
TOTAL	86	87	134	20	327

The lack of LM couplets is explained by Hinton (following Buckley 1991) as the result of a rule of Low-Tone Spreading which creates surface LL forms from underlying LM forms. (Buckley argues for such a rule based on the differing behavior of underlying and derived LL forms under tone sandhi; see §2.5.5.) However, note in Table 9 that the larger

²⁴I have removed one MH CVCV form from her table. This is the word for 'mouse', which (as Hinton herself points out in the text) is transparently derived from the animal classifier plus an unidentified root.

sample shows 15 forms with (surface) LM tone. It is unclear why Hinton's and Buckley's data show no LM forms while mine show several. There are two factors possibly at work here: one is the difference in sample size, and the other is that the lack of surface LM tone (and the rule of Low-Tone Spreading accounting for it) may be idiolectal for the speaker with whom they worked. This is discussed further in §2.5.5.

The lack of MH forms Hinton takes as part of a larger pattern, involving an explanation for the source of H tones overall. This is discussed in §2.5.2.

2.5.1. Floating High Tone

A large number of morphemes in Chalcatongo Mixtec carry a final floating high tone. This tone is not associated to the morpheme that carries it; it is an extra tone which is not realized when the form is spoken in isolation or utterance-finally. However, when something does occur after such a morpheme, the floating high tone is associated to whatever immediately follows it—either to the first or the second syllable, depending on the underlying tone and CV structure of the host. Morphemes in Mixtec can thus be divided into two types: those which carry such a floating tone and those which do not.

Pike (1944, 1948) provides the classic description of floating tones in Mixtec. He uses the term "perturbation" to describe the tonal effect of one of these morphemes on a following morpheme and describes the perturbation patterns in San Miguel Mixtec as shown in the second column of (15). Essentially the same pattern of perturbation is found in Chalcatongo Mixtec, although there are some differences. The Chalcatongo patterns are listed in the third column of (15).

(15) TONAL PERTURBATION

	San Miguel	Chalcatongo
BASIC	PERTURBED	PERTURBED
HH	HH	HH
HM	HM	HM
HL	HL	HL
MH	MH	HH/MH
MM	HM/HH	HM
ML: (C)VV	HL	HM
(C)V?V	HL	HL
(C)V?CV	HL	HL
(C)V?CV	MH	MH
LH	HH	HH
LM	HM	HM
LL	(n/a) ²⁵	HH/HM

²⁵There are no LL couplets in San Miguel Mixtec. This is one of the areas in which the two dialects differ.

With few exceptions, a Chalcatongo Mixtec word with the underlying tones shown in the first column changes its tones to the sequence given in the third column when it follows a morpheme with a floating high tone. For example, a word with basic LM tone is perturbed to HM when it follows such a morpheme. As (15) shows, the most complex case is that of words with ML tone; here, the CV structure and glottalization status of the root determine the perturbed form when these words follow a morpheme with a floating high. This is discussed further below.

(16)–(24) give examples of perturbation in Chalcatongo Mixtec. In each case, the first word or affix is one which has a floating high tone as part of its underlying representation. (After the examples, a set of rules is given which accounts for the sandhi patterns.)

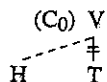
- (16) HH → HH
kũũ bíkó → kũũ bíkó 'four parties'
- (17) HM → HM
kũũ bílu → kũũ bílu 'four cats'
- (18) HL → HL
kũũ báʔù → kũũ báʔù 'four coyotes'
- (19a) MH → HH
kũũ čoʔó → kũũ čóʔó 'four fleas'
- (19b) MH → MH
staà luʔú → staà luʔú 'toasted tortilla'
- (20) MM → HM
kũũ soʔo → kũũ sóʔo 'four ears'
- (21a) ML → HL
ma-naʔmà → ma-náʔmà 'don't confess (IMP)'
- (21b) ML → HM
xí staà → xí stáa 'with tortillas'
- (21c) ML → MH
kũũ inà → kũũ iná 'four dogs'
- (22) LH → HH
kũũ tíó → kũũ tíó 'four baskets'
- (23) LM → HM
kũũ bíči → kũũ bíči 'four fans'

(24a) LL → HH
 kũũ čũũ → kũũ čũũ 'four chickens'

(24b) LL → HM
 kũũ kũũ → kũũ kũũ 'four (pieces of) meat'

In the majority of cases, that is, those exemplified by (16)–(18), (19a), (20), (21a), and (22)–(23), the rule is generalizable to a simple rightward association rule, in which the floating high tone replaces the first tone of the host. This rule is shown in (25). (Of course, if the initial tone of the perturbed word is already H, the rule applies vacuously.)

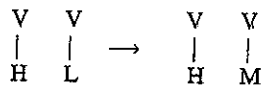
(25) FLOATING HIGH ASSOCIATION²⁶



This leaves us with a number of examples unaccounted for, which may be reduced to the following three: (a) cases in which an expected HL surfaces as HM, (b) a small number of exceptional LL forms, and (c) cases in which the H tone associates to the second syllable of the host form. Each of these is discussed in turn.

First, the two cases found in (21b) (ML → HM) and (24b) (LL → HM) are examples in which we would expect the output to be HL, but instead find HM. This is accomplished by a rule raising the final L to M following a H tone, as in (26):

(26) PARTIAL ASSIMILATION



This rule is a synchronic phonological rule, but its diachronic results are apparent in the lexicon. As mentioned above, Chalcatongo Mixtec has a very low number of roots with HL and LH tone melodies. When we compare lexical entries for San Miguel Mixtec (which is a closely related but more conservative dialect) with those for Chalcatongo Mixtec (a more innovative dialect), we see that the latter displays a strong tendency toward leveling out historically HL and LH melodies, to HM and MH, respectively. Although it is true that there are still a few roots with HL and LH melodies in Chalcatongo Mixtec, there are far fewer in this dialect than there are in San Miguel Mixtec. (See Salmons [1992] for further discussion.)

²⁶Hinton et al. (1991) describe this rule in prose, but it should be noted that they found the same pattern of perturbations for their speaker as Pike did for the San Miguel speakers (that is, those shown in column two of [15] rather than those in column three), and so their description of the rule differs somewhat from what is presented here.

In the couplets with ML tone, this leveling from the expected HL to HM seems only to occur with (CV)V roots. All glottalized roots, whether (C)V?V or (C)V?CV, retain the final L tone. In the case of perturbed LL couplets, the leveling is virtually exceptionless. The LL couplets which perturb to HH instead of HM (24a) are restricted to three words in my data: tũũ 'black', tũũ 'feather', and čũũ 'chicken'.²⁷ These are best handled as lexical exceptions with an idiosyncratic perturbation pattern. (The fact that all have [ũũ] as their vowel is intriguing, but unexplained.)

Finally, we come to the cases exemplified by (19b) (MH → MH) and (21c) (ML → MH). Both of these (or their equivalents in San Miguel Mixtec) are analyzed by Goldsmith (1990) as the result of a rule of Tone Metathesis.²⁸ Following Goldsmith, we can preliminarily formulate the rule as in (27):

(27) TONE METATHESIS



The fact that glottal stop is not analyzed here as a consonant prevents (27) from applying to words of the form (C)V?V.²⁹ But what happens to roots of the (phonetic) form (C)V?CV? Under our analysis, their CV structure is (C)VCV, with a floating glottalization feature—(27) should therefore apply. However, as we have seen in (21a), such forms do *not* undergo Tone Metathesis but instead are perturbed to HL. This indicates that we should further restrict Tone Metathesis to apply only to unglottalized couplets, as in (28):³⁰

(28) TONE METATHESIS (revised)



Condition: Couplet must not be glottalized.

²⁷Phonetically, it sounds to me as if there is a rise in these three words when spoken in isolation, and in fact I have often transcribed them as LM. However, the consultants uniformly insist that there is no rise; that they are LL, and so I treat them as such.

²⁸Another formal analysis of the San Miguel data is presented in Brown (1988).

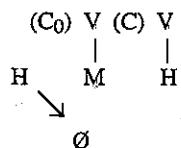
²⁹Goldsmith (1990) formulates the Tone Metathesis rule slightly differently, and he also makes slightly different assumptions about the correct analysis of glottal stop in Mixtec; however, his formulation also prevents the rule from applying to CV?V roots.

³⁰This could be used as an argument against the analysis of glottal stop as a feature of the root. However, a consonantal analysis of glottal stop would have to have its own condition on the rule: that it does not apply to couplets of the form CV?V.

Thus, the analysis of ML roots is dependent on CV structure and glottalization: (C)V₁V₂, (C)V₁V₂V₃, and (C)V₁V₂CV roots undergo Floating H Association (with CVV roots additionally undergoing Partial Assimilation), while CVCV roots undergo Tone Metathesis.

Returning now to the MH examples, we can first observe that MH roots may optionally undergo Floating H Association, yielding the forms in (19a). (19b), however, shows that an alternative is available for such roots: they may undergo no change whatsoever. Goldsmith (1990:26) handles the parallel San Miguel data by modifying the Tone Metathesis rule so that it applies to MH couplets as well as to ML couplets. However, since in the Chalcatongo data the rule applies to roots of all CV structures, not just to CVCV roots, it seems preferable to take the path which Goldsmith rejects; that is, to write a specific rule deleting the floating H before MH roots:

(29) FLOATING HIGH DELETION (optional)



Thus, rule (29) optionally deletes the floating H before any MH root. If (29) does not apply, rule (25), Floating H Association, applies as usual.

(30) summarizes the processes which form the standard perturbation patterns for Chalcatongo Mixtec:

(30a) UNDERGO ONLY RULE (25), FLOATING HIGH ASSOCIATION

HH → HH
 HM → HM
 HL → HL
 MH → HH (optional)
 MM → HM
 ML → HL (glottalized couplets only)
 LH → HH
 LM → HM

(30b) UNDERGO RULE (25) AND RULE (26), PARTIAL ASSIMILATION

ML → HM (CVV couplets only)
 LL → HM

(30c) LL LEXICAL EXCEPTIONS

LL → HH

(30d) UNDERGO RULE (28), TONE METATHESIS

ML → MH (CVCV couplets only)

(30e) UNDERGO RULE (29), FLOATING HIGH DELETION
 MH → MH (optional)

2.5.2. The Source of High Tone

Hinton (1991) argues that any H tone which appears to be part of a lexical item is either placed there by some morphological rule or must be represented as a floating tone which is not underlyingly associated to any particular tone-bearing unit in the lexical item in question.³¹ In the latter case, such H tones are associated to the lexical item by the same rules which associate floating H tones originating as a part of a separate, preceding morpheme (as described in the section above). This claim, then, predicts that the only melodies involving H tone which will be found are those produced by the rules which associate floating H tones to the following morpheme (for my data, the rules in [25]–[29], above). That is, we should expect to find HH, HM, HL, and MH melodies (because these are possible outputs of those rules), and we should never find LH combinations (because there is no source for such a melody).

What, then, of the LH forms in Hinton's data? She argues that such forms should actually be reanalyzed as LM (a surface pattern which is missing in her corpus; recall Table 10). She bases her argument on Meacham's (1991) finding that the H of LH forms is phonetically lower than other H tones: "Meacham showed that [such high tones are] in fact about as high as mid tones in most environments" (Hinton 1991:176).³²

My data (shown in Table 9) show a considerably smaller number of LH forms than do Hinton's data. This could be interpreted as providing additional support for the claim that high tones are always underlyingly floating to the left, whether they are morphologically added or underlyingly present. On the other hand, as previously mentioned, this is part of a larger pattern of reduction of extreme tone contrasts within the couplet (both LH and HL), which could mean that the coincidence of attested tone combinations involving H and the output of the rules which associate floating H tones to following morphemes is just that: a coincidence. This is a question which I here leave open.

Hinton also provides hypotheses about the origin of H tones in Mixtec. She lists the following as contexts for floating H tones: (a) continuative aspect (here called "realis"), (b) vocative case, (c) CVCV Spanish loans, (d) adjectivalization, and (e) following a "perturbing" morpheme (one of the set which carry a floating H tone). She implies that in some cases the addition of such H tones is productive (and thus that their addition is a synchronic morphological process), and that in other cases we can appeal to a diachronic explanation for the presence of a H tone (and thus must conclude that the H is synchronically underlyingly present). These hypotheses about the source of the H tone in modern-day Mixtec are

³¹The arguments and observations described in this section are spread throughout Hinton (1991) and Hinton et al. (1991). For simplicity, I refer in this section primarily to the former.

³²These forms were originally treated as LH for two reasons: first, because they are realized that way in San Miguel Mixtec, and, second, because that was the auditory impression the transcribers had of such couplets (Leanne Hinton, personal communication).

consistent with Dürr's (1987) two-tone reconstruction for Proto-Mixtec and may provide a key to the development of the third (H) tone.

In the chapters which follow, various instances of morphologically induced H tones are discussed (e.g., the issue of the tone in realis stems of verbs is addressed in §3.1.1, adjectivalization is addressed in §3.3.1, etc.).³³

2.5.3. "Gradient Smoothing"

Hinton et al. (1991) describe a rule which they call "Gradient Smoothing," whereby a LHH tone sequence becomes LMH. They give the following example:

(31) ndèʔé + =rí → ndèʔe=rí 'I will look'

My consultants, however, appear not to have this rule, instead producing the unmodified ndèʔé=rí 'I will look'. Whether rule (31) is idiolectal for the speaker with whom Hinton et al. worked, or whether it represents a subdialect of Chalcatongo Mixtec, it would have to be a very minor rule since there are so few couplets with LH tone in the first place. Also note, however, that a rule of this form (LHH → LMH) would conform to the tendency to level out extreme sequences of tones.

2.5.4. High Dissimilation

Hinton et al. (1991) also posit a rule called "H Dissimilation," which lowers a word-final H after two or more preceding high tones. This rule applies across a phrasal affix boundary, when a pronominal clitic has high tone. Hinton et al. add that the rule is obligatory in words of four syllables or more, but optional in forms of only three syllables. Their examples are as follow:

(32) xičáʔá + =rí → xičáʔá=rí 'I am dancing'

(33) xítúʔú + =rí → xítúʔú=rí 'I am lying down'

(34) ndéʔé + =rí → ndéʔé=rí OR ndéʔé=ri 'I am looking'

(35) sété + =rí → sété=rí OR sété=ri 'I am getting a haircut'

My data seem to show that the rule is even less constrained than they say: it appears to apply word-finally following even one H tone:

(36) xakú + =rí → xakú=ri 'I laugh'

³³I have no data on vocatives, so I do not consider this case. CVCV Spanish loans are also not considered here.

(37) xinf + =rí → xinf=ri 'I know'

As mentioned, the final H must fall on a pronominal clitic for the rule to apply. We can state the rule as in (38):

(38) HIGH DISSIMILATION

$$\begin{array}{ccc} V = V & \rightarrow & V = V \\ | & & | \\ H & & M \end{array}$$

The tonal variations of the pronominal enclitics, however, are much more complicated than this simple rule would indicate, and deserve a much more extensive investigation than has been possible to this point.

2.5.5. Low-Tone Spreading

Buckley (1991) argues that underlying LM sequences in Chalcatongo Mixtec become LL by a rule which he calls "Low-Tone Spreading." This rule is predicated on the assumption that there are no surface LM forms in the language. However (as discussed above), speakers with whom I have worked have a fair number of LM couplets, for example, ndíkʔ 'onion', bʔix 'cold', and bʔiči 'fan'. It appears that the speaker with whom Buckley worked has eliminated LM melodies. In addition, this speaker has L tone on the completive prefix nʔ-, which is almost always M tone for the other speakers with whom I have worked. The L of this speaker's prefix spreads (by the same rule) to verb roots under certain conditions. This topic is discussed further in §4.2. Once again, it is not clear whether Low-Tone Spreading is idiolectal for the speaker with whom Buckley worked (quite possible given the length of time he has been away from the community, and since he has used the language regularly), or whether it represents a subdialect of Chalcatongo Mixtec.

2.6. Contraction

As mentioned above, roots in Mixtec are formed of at least two syllables but are sometimes formed of three, and occasionally of four. (Roots of three or four syllables are always analyzable as deriving historically from more than one morpheme, however.) This strict requirement on root canon—that they must be of at least two syllables—is obscured, however, by a strong tendency to abbreviate forms with identical vowels in rapid speech, often resulting in monosyllabic surface forms. This process has often been called "cliticization," but I use the term "contraction" in order to maintain a distinction between the products of this process and the elements which I call "phrasal affixes" or "clitics" (e.g., the pronominal clitics). Contraction occurs, then, according to the rules in (39)–(41). When a syllable is deleted (by rule [40] or [41]), the one which remains retains its original tone. However, as some of the examples below illustrate, this is not always the case.

(39) GLOTTAL FEATURE DELETION

(C) V_i V_i
 †
 [+constricted glottis]

(40) VOWEL DELETION

(C) V_i V_i → (C) V_i

(41) INITIAL SYLLABLE DELETION

C_j V_i C_k V_i → C_k V_i

Rule (41), while still productive, is far less often employed than rules (39) and (40), which are extremely common. Examples of the operation of rules (39) through (41) with single lexical items are shown in (42). Note in (42a) and (42c) that a word of the form (C)V?V has two possible rapid speech forms: (C)VV by (39), and (C)V by (39) and (40).

(42a) BY (39): bǎʔǎ → bǎǎ ('good')
 úʔu → úu ('hurt')

(42b) BY (40): uù → ù ('two')
 čǎǎ → čǎ ('man')

(42c) BY (39) AND (40): bǎʔǎ → bǎǎ → bǎ ('good')
 úʔu → úu → u ('hurt')

(42d) BY (41): kiti → ti ('animal')
 ndiʒi → ʒi ('corpse')

Examples (43) and (44) illustrate the operation of some of these rules in connected speech. Note that the full forms underlying abbreviated roots can always be elicited from the speaker in slow speech, as is indicated by the second line in each example.³⁴

(43) tú=ní-ta-nda=rí xǎ=ta-nda ba=rí
 tú=ni-ta-ndaʔǎ=rí xǎ=ta-ndaʔǎ bǎʔǎ=rí
 NEG=CP-?-hand=1 COMP=?-hand well=1
 'I didn't marry (then) that I might marry well (later)'

³⁴In example (43), the meaning of the element ta- in the verb meaning 'marry' is uncertain. Barbara Hollenbach (personal communication) has told me that the verb ta-ndaʔǎ derives from 'place hand', but in this dialect there is no synchronic source for the first syllable that has the meaning 'place'.

(44) s-ndiʔi bikó=ʒo xa=kú nū=ʒò ʒǎ
 s-ndiʔi bikó=ʒo xa=kúu nūù=ʒo ʒǎʔǎ
 CAUS-finish fiesta=1PL COMP=COP town=1PL this
 'We finish our fiesta, (the one) that is of this, our town'

There is also an idiosyncratic contraction which appears only with the copula kúu. Kúu often appears simply as ú, as in (45)–(47). Note in (47) that the nasalization of the preceding morpheme spreads onto the contracted copula.

(45) ñasíʔi=ná ú
 ñasíʔi=ná kúu
 woman=1POL COP
 'You are my wife'

(46) má ú ʒii=rí
 máǎ kúu ʒii=rí
 EMPH COP husband=1
 'That's my husband'

(47) wǎ ú xa-ndǎǎ
 wǎǎ kúu xa-ndǎǎ
 that COP NOM-true
 'That's the truth'

Rapid speech contraction, while a pervasive characteristic of Mixtec phonology, is not synchronically responsible for all monosyllabic morphemes in Mixtec (as has been claimed by Pike 1944 and elsewhere). As I have argued in Macaulay 1987a and 1987b, we must carefully distinguish between the monosyllabic results of contraction and the two other types of monosyllabic element in Mixtec, affixes and clitics. It is clear that contraction is the historical mechanism by which many full words have been reduced to affixes and clitics, but a synchronic description must make note of the fact that affixes and clitics cannot be replaced in a given utterance by their corresponding full forms (in the cases in which such forms still exist in the language), whereas contracted forms may always be replaced by the corresponding full forms. Thus, the synchronic distribution of affixes and clitics cannot be accounted for by postulating a disyllabic underlying form and invoking the rules of rapid speech contraction.

MORPHOLOGY: DERIVATION

This chapter presents the derivational morphology of Chalcatongo Mixtec, which primarily—although not entirely—involves derivation of verbs. §3.1 discusses morphological distinctions in the verb stem which are characteristic of all Mixtec dialects (with, of course, significant differences across dialects). The most common of these distinctions is between realis and potential aspect. A few verbs also have a stative stem, and the verbs of motion have additional aspectual forms (these are covered in Chapter 8, where the semantics of the verbs of motion and arrival is discussed). There are also sets of related verbs which include various aspectual forms, as well as contrasting intransitive and/or transitive stems. Virtually all of these stem forms can be analyzed as historically deriving from a prefix plus a root, but the prefixes are no longer productive. §3.2 next presents three prefixes, the causative, the inchoative, and the repetitive. These are all highly productive, and attach to verbs and in some cases to adjectives. Finally, §3.3 discusses derivation which is restricted to other lexical categories: adjectivalization, nominalization, and the archaic classifier system which is still discernible in a large number of nouns.

3.1. Distinctions in the Verb Stem

This section presents the numerous distinctions in the Chalcatongo Mixtec verb stem. Most of these are aspectual distinctions, but there are also others, having to do with, for example, transitivity. §3.1.1 looks at the most widespread distinction, that between potential and realis stems. §§3.1.2–3.1.3 consider two other minor categories: statives in nd- and alternations involving a prefix ĆV-. Finally, in §3.1.4, the synchronic status of the derivational morphology discussed in this section is considered.

3.1.1. Potential and Realis Aspect

As mentioned above, almost all Mixtec verbs have two aspectual stems, the realis and the potential.¹ These stems may be differentiated in various ways, as shown in (1a): they may differ segmentally, or by tone, or segmentally *and* by tone. Often, however, the two stems are phonologically identical, as in (1b), and in a very small number of verbs we find suppletion, as in (1c).

(1)	Realis	Potential	Gloss
(a)	SEGMENTAL AND TONAL DIFFERENCES		
	kaku	kákú	'be born'
	xasú	kásu	'close'
	xítú	kútú	'work in the fields'
	xíčaʔa	kačáʔa	'dance'
	xíkó	k ^w íkó	'spin'
	xátù	kuxátù	'be spicy'
	žesámá	kesámá	'eat'
(b)	NO DIFFERENCE		
	čaa	čaa	'write'
(c)	SUPPLETION		
	xíʔi	kuù	'die'

The derivation of these stems is discussed below; first, however, we consider the semantics and functions of each one.²

Potential aspect is used to present events as possible, probable, or potential. More specifically, the potential stem is used to express future time, imperative, counterfactual, conditional, and various modal senses. Examples (2) through (6) illustrate:

¹As Comrie (1976:11) points out, "In discussions of aspect . . . there is no generally accepted terminology." Indeed, there is a fair amount of variation in the names which are used for these two verbal categories in the various descriptions of Mixtec dialects: "potential" and "continuative" (Bradley and Hollenbach 1988, 1990, 1991, 1992; Pike 1948; Hinton et al. 1991), "incompletive" and "continuative" (Bradley 1970), "irrealis" and "realis" (Bickford and Marlett 1989), and *futuro* ('future') and *presente* ('present') (Stark Campbell et al. 1986; Pensinger 1974; Dyk and Stoudt 1965; Alexander 1980). Sources which use tense terms for these aspects are all written for the native speaker and thus represent a simplification for that particular purpose. I have chosen to use the term "potential" in keeping with the majority of the works on Mixtec. However, I use "realis" for the other major aspectual category because it more accurately captures the essence of this category than do other terms such as "continuative."

²For a different approach to the semantic categorization of Mixtec verb stems, see Bickford and Marlett (1989). They argue for a primary distinction in terms of mood (realis/irrealis) and relegate aspect to a secondary distinction wholly within the realis category.

→ k/x VCV
k^w/x VCV

ie. realis

Potential
Realis
-habitual
-prospective

- 2) FUTURE
 rù?ù kee=rí ndučì
 I eat.P=1 beans
 'I will eat the beans'
- 3) IMPERATIVE
 kútú
 work.P
 'Work!'
- 4) COUNTERFACTUAL
 rù?ù kútú=rí=nu ba?à ...
 I work.P=1=CFACT but
 'I was supposed to work, but ...'
- 5) CONDITIONAL
 rù?ù kanaxíí=rí nú=íí ñak^wi?ná xíndee be?e=žó
 I scream.P=1 COND=one robber be.in.R house=1PL
 'I would scream if a robber was in our house'
- 6) MODAL
 čú?čì ní-xa?a vídá=žó xa=kúčakù=žó
chucho CP-give *vida*=1PL COMP=live.P=1PL
 'God gave us our life that we could/might live'

Realis aspect is used to describe actions which are underway at the time of the speech event, are habitual, or have already been finished at the time of speaking (in which case the completive prefix is added; see §4.2). The uses of an inflected realis verb stem include progressive, habitual, and stative. (7) through (9) illustrate typical instances of realis aspect:

- (7) PROGRESSIVE/PRESENT
 rù?ù žee=rí ndučì=rí
 I eat.R=1 bean=1
 'I am eating/I eat my beans'
- (8) HABITUAL
 rù?ù žee=rí ndučì ndì-kíu
 I eat.R=1 bean all-day
 'I eat beans every day'
- (9) STATIVE
 néné wáá kišì
nene the sleep.R
 'The baby is asleep/sleeping'

We turn now to the question of the derivation and relationship of the two stems. (1), above, provides a list of typical stem contrasts. (10) provides another, more complete list, identified this time by type of alternation:

(10) Realis	Potential	Gloss
TONE ALTERNATION ONLY		
kažu	kážu	'cough'
ndukú	ndúkú	'look for'
X-/K- ALTERNATION		
xatu	katu	'spill, boil over'
xá?ni	ká?ni	'kill'
X-/K- AND TONE ALTERNATION		
xáča	kača	'spread'
xoko	kokó	'light'
X-/K- AND VOWEL ALTERNATION		
xíta	káta	'sing'
xísndée	kúsndée	'be on (top of)'
X-/K-, TONE, AND VOWEL ALTERNATION		
xándífa	kundífa	'believe'
xító	koto	'take care of'
X-/K ^w - ALTERNATION		
xanú	k ^w anú	'loan'
xatá?á	k ^w atá?á	'fight'
X-/K ^w - AND TONE ALTERNATION		
xáá	k ^w áá	'buy'
xakú	k ^w áku	'laugh'
Ø-/KU- ALTERNATION		
kú?u	kukú?u	'be sick'
ná?á	kuná?á	'remember'
Ø-/KU- AND TONE ALTERNATION		
ndíso	kundiso	'carry'
nžáá	kunžáá	'reside'
Ž-/K- ALTERNATION		
žeží?í	keží?í	'bite'
žáši	káši	'nurse'

*Potential
 best way to
 express contrast stems when
 there is vowel alternation*

*k/w/x VCV
 k/x VCV
 k/ø CVCV
 i k/ø is
 "prefix"*

k/ž

Ž-/K- AND TONE ALTERNATION

žóó	koo	'exist'
žee	kee	'eat'

Ñ-/K- ALTERNATION (only one example attested)

ñú?ũ	kú?ũ	'contain, wear'
------	------	-----------------

SUPPLETIVE

xí?i	kó?ó	'drink'
ki?í	kúsu	'sleep'
xí?i	kuù	'die'

NO CHANGE

káá	káá	'climb, rise'
nakača	nakača	'wash'
taká	taká	'assemble, congregate'
tá?mu	tá?mu	'bend, break'
na?mà	na?mà	'confess'

The largest category by far is the "no change" category. Out of a sample of 188 verbs,³ 104 (or 55.3%) show no difference between the realis and the potential stems. "Tone alternation only" is the next largest category, with 21 examples (11.2%). The rest of the categories (the other twelve listed above) include 10 or fewer examples each.

Initial consonant alternation, with or without vowel change, and with or without tone alternation, is limited to the following pairs: x-/k-, x-/k^w-, ñ-/k-, ž-/k-, and Ø-/ku-. Vowel alternations include i/a, i/e, i/u, i/o, and a/u (with or without nasalization) and occur only with x-/k- initial consonants.

Kaufman (1988) shows for Proto-Mixtec (and for Proto-Otomanguean in general) that such consonantal and vocalic alternations can be analyzed as a set of tense-aspect-mood prefixes.⁴ He reconstructs a number of these prefixes for Proto-Mixtec, including three which are relevant here: *xi- (which he calls "durative"), *ka- ("potential"), and *ku- (also "potential") (1988:83). The reflexes of these prefixes, xi-, ka-, and ku-, are the ones which are involved in the x-/k- and x-/k^w- alternations described above. These prefixes (and the others discussed below) are frozen in combination with the verb roots to which they attach and are completely nonproductive (that is, no new forms can be created with these prefixes). In §3.1.4, below, I further address the issue of the synchronic status of these prefixes, showing that they do have some synchronic legitimacy (primarily because of their transparency), but that they are clearly close to the fossilized end of the scale.

In addition to the prefixes mentioned above (xi-, ka-, and ku-), three others are introduced in the sections which follow: ndi- (stative), žV- (also stative), and ČV- (causativizing and locative; see §3.1.3 for discussion of the semantics of this prefix). Because most of them (ČV- excepted) mark aspect, and because aspect is most commonly an inflectional

³The sample includes only disyllables, in order to simplify the discussion of tone (see below in text).

⁴Kaufman cites Swadesh (1960) and Suarez (1986) as earlier research on the same topic.

category,⁵ it is worth reviewing here the reasons for treating them as derivational. The first and most obvious reason is that they appear "inside" of other derivational morphology (e.g., causative s- and repetitive na-, discussed in the following section). Although exceptions have been found, relative ordering is still one of the most reliable of the various criteria normally invoked to distinguish between inflection and derivation. The second reason for treating these prefixes as derivational is that, while they do mark aspectual distinctions on a very large number of verb stems, they do not appear on *all* verb stems. This can be contrasted with the legitimately inflectional completive aspect-marking prefix ni- (discussed in the next chapter), which does, in fact, occur with all verb stems. The formation or non-formation of paradigms is another criterion for inflection versus derivation which points to the prefixes under discussion here as derivational.

Turning now to the derivation of Chalcatongo Mixtec verb stems, we find that when the prefixes combine with verb roots, they may undergo one of two morphophonemic rules, Labialization or Vowel Deletion (although it is also possible that neither rule applies). Both rules function to reduce the prefix + verb combination to structures which conform to the syllable and stem canon, and can be formulated as follows:

(11) LABIALIZATION

C	V	+	V	C	V
k	u				

(12) VOWEL DELETION

C	V	+	V	C	V
c	v		v	c	v

Derivations of four typical pairs of verb stems are illustrated in (13) through (16):⁶

(13) RULE (11) (applies to potential stem only)

xi- + anú → xanú 'loan (R)'

ku- + anú → k^wanú 'loan (P)'

⁵See Dressler (1989:6), for example, where verbal aspect is included in a list of nonprototypical derivational categories.

⁶I am assuming that the roots which combine with these prefixes can be of varying shape, for example, VCV, CVCV, or even CV (as in [16]). Note that the latter form is smaller than the minimally acceptable word, which has to have at least two syllables. The disyllabic requirement on stems, however, is something which can be seen as holding at a fairly shallow level and is fulfilled by affixation of the monosyllabic aspect-marking prefixes to these monosyllabic roots. Just as this affixation is required for the verb to meet the disyllabic requirement, the rules in (11) and (12) are required in the derivation of other verbs in order for them to meet the requirements of the syllable canon.

(14) RULE (12)

xi- + atu → xatu 'boil over, spill (R)'
 ka- + atu → katu 'boil over, spill (P)'

(15) NEITHER RULE

xi- + čáʔa → xičáʔa 'dance (R)'
 ka- + čáʔa → kačáʔa 'dance (P)'

*stem would be
ka/xi čáʔa*

(16) NEITHER RULE

xi- + ta → xíta 'sing (R)'
 ka- + ta → káta 'sing (P)'

This analysis works for a surprisingly large number of the verbs showing these alternations, although there are of course some irregular cases, as well as some completely suppletive cases. For example, the verb *xíto* (R) *koto* (P) 'appear, seem' shows vowel harmony in the potential stem (between the /u/ of the prefix *ku-* and the /o/ of the root), but, with the exception of a homophonous verb meaning 'take care of', this harmony is not attested elsewhere. Another verb, *xándífa* (R) *kundífa* (P) 'believe', does not show the expected vowel correspondences (if the root is *ándífa*, the expected potential form would be **kandífa* or **kwandífa*).⁷ Finally, two of the three completely suppletive stems in my corpus also show *x-/k-* alternations (*xíʔi* [R] *kuù* [P] 'die' and *xíʔi* [R] *kóʔé* [P] 'drink'), but again, these are best handled simply as lexical exceptions.

The minor alternations *n-/k-* and *ʒ-/k-* presumably represent a single prefix—or at least the reflex of a single prefix—in the realis aspect (recall the discussion of the relationship between [n̄] and [ʒ] in Chapter 2). Kaufman (1988) reconstructs a prefix **i- ~ *y-* "durative," which is plausibly the source of the initials in these verbs. This is not explored further here since there are so few examples (six total).⁸ The other alternation, *Ø-/ku-*, is transparently the prefix *ku-* on the potential stem, and the lack of a prefix on the realis stem.

We turn next to a related issue: tonal variations in the verb stem. Like many of the other dialects which have been described, Chalcatongo Mixtec shows evidence of a floating high tone in a number of the realis stems of verbs (see §2.5.1 for discussion of the floating H). Hinton et al. (1991:150) claim that the "continuative" (here, "realis") aspect "consists solely of this replacive high tone." This holds for many of the verbs in which the two stems are distinguished purely by tone, but for verbs like those described above, which include an aspect-marking prefix, it must be amended to the effect that the floating high tone is only part of the marking of realis aspect, operating in conjunction with the prefix (usually *xi-*).⁹

⁷However, also note that other speakers have a form *kandífa* for both the potential and the realis of 'believe', which is one of the predicted potential forms for the realis *xándífa*.

⁸Four of the six involve eating or other oral activity: 'eat' (there are two verbs in this set with this meaning), 'eat breakfast', and 'nurse'.

⁹The approach taken here is different from the one taken in Macaulay (1987b), in which I claim that the tone patterns are too unpredictable to be considered at all productive. I am convinced now that there is

Of the above-mentioned sample of 188 disyllabic verbs, 138 (73.4%) show the potential-realis tone correspondences which would be expected if the tone of the realis were derived from the tone of the potential by addition of a floating high. The remaining 50 (26.6%) do not conform to the expected changes: they either change in unexpected ways or do not change when the rules for association of the floating high should apply to change them.

However, one point should be made about these figures. Of the 138 examples which do show the expected potential-realis tone correspondences, 113 of these are of the categories which show no change when the floating H is associated (HH → HH, HM → HM, HL → HL, MH → MH). These 113 (60.1% of the total of 188) are actually neutral, then, as far as evidence for the presence of a floating high tone. The remaining 25 (13.3% of the total) show the expected correspondences and do show some change (e.g., MH → HH, MM → HM, LH → HH). It is this smaller set which actually provides positive evidence of the floating high tone.

With respect to forms which do show tone change, the example which would be most convincing for the presence of the floating high tone would be one which shows tone metathesis (ML → MH). Unfortunately, all of the (small number of) ML CVCV verbs I have found behave erratically and show idiosyncratic tone changes (or no tone changes at all).

(17) and (18) illustrate the range of data.

(17) SHOW EVIDENCE OF FLOATING HIGH TONE

(a) NO CHANGE IN TONE

- (i) HH → HH: *čísó* (P) → *čísó* (R) 'add'
- (ii) HM → HM: *ndóna* (P) → *ndóna* (R) 'come off, peel off'
- (iii) MH → MH: *taká* (P) → *taká* (R) 'assemble, congregate'

(b) CHANGE IN TONE

- (i) MH → HH: *suʔú* (P) → *súʔú* (R) 'steal'
- (ii) MM → HM: *kee* (P) → *žée* (R) 'eat'
- (iii) LH → HH: *ndèʔé* (P) → *ndéʔé* (R) 'look, see'
- (iv) LL → HM: *ndòò* (P) → *ndóo* (R) 'stay'

regularity in the tonal variation manifested in these pairs of stems. See §3.1.4 for discussion of the synchronic status of these regularities, however.

(18) NO EVIDENCE OF FLOATING HIGH TONE (UNPREDICTED TONE ALTERNATIONS)

- (a) HH → HM: tútú (P) → tútu (R) 'whistle'
 (b) HM → MH: kásu (P) → xasú (R) 'close, cover'
 (c) MM → HH: kuña (P) → xúñá (R) 'open'
 (d) MM → LM: kača (P) → xàča (R) 'spread, throw'
 (e) ML (CVCV) → HL: xatù (P) → xátù (R) 'be spicy'

In evaluating these data, we could take one of two approaches. We could remain skeptical about the floating H analysis, pointing to the small amount of positive evidence for its presence (a mere 13.3% of the data in the sample). Alternatively, we could point to the fact that almost 75 percent of the verbs in the sample show the expected correspondences (including the change and no-change subcategories) and conclude that for the majority of Chalcatongo Mixtec verbs, there is a floating high tone involved in formation of the realis stem.

Historical and comparative considerations indicate that at least diachronically, the latter is the correct approach, since so many of the Mixtec dialects are described as making highly productive use of the floating H in verbal derivation. This, then, is the approach taken here: we assume that there is a floating H tone which plays a part in formation of realis stems. This floating H is associated to the stem (consisting of a single morpheme or of a prefix plus root) according to the rules laid out in Chapter 2: Floating High Association, Partial Assimilation, Tone Metathesis, and Floating High Deletion (see §2.5.1). (For ease of representation, however, realis stems in examples are treated as monomorphemic.) The verbs which do not conform to these rules are treated as suppletive, at least with respect to tone.

3.1.2. Statives in nd-

It has been mentioned in previous sections that a small number of verbs in Mixtec have a stative alternant in addition to the usual realis and potential stems. These stative forms generally show initial nd- or ž-. Forms in ž- are discussed in §3.1.3; forms with initial nasals are illustrated in (19) through (21):

- (19) xasú (R), kásu (P) 'close, cover' (vt) *kix kásu*
 ndasú 'closed' (stat)
 (20) néñú (P,R) 'swell, become fat' (vi)
 ndéñú 'swollen' (stat)

First step is to define all roots
 as CVCV leaving final C
 unspecified. *TVI Apr 19*
 14 CVCV

- (21) káá (P,R) 'rise, go up' (vi)
 ndáá 'risen, overflowed' (stat)

Kaufman (1988:83) reconstructs a Proto-Mixtec prefix *ndi-, meaning "stative," and this appears to be present in the stative forms in (19)–(21). In (19), for example, the root is -asu, and the three forms bear the prefixes xi-, ka-, and ndi-. Note that when a stative in nd- is related to a transitive verb (as in [19]), it also has a detransitivizing function. Of course, these statives may also correspond to verbs which are already intransitive (as in [20]–[21]).

There are other, presumably related cases in which a semantically stative form in nd- functions grammatically as a realis stem for some distinct potential. In some cases (e.g., [22]), such verbs are related to one (or more) other nonstative verbal paradigms:

- (22) ndátu (R), kundátu (P) 'wait' (vi)
 (cf. xítú [R], kátú [P] 'lie down' [vi], ndéndatu [P,R] 'rest' [vi])
 (23) ndíto (R), kundíto (P) 'be awake' (vi)

*ku c to
 x c to*

Finally, there is one example in which a verb has a corresponding stative in n-, rather than the expected nd-, illustrated in (24):

- (24) xúñá (R), kuñá (P) 'open' (vt)
 núña 'opened' (stat)

*present
 past
 state
 ↑
 n-*

3.1.3. Alternations Involving the Prefix žV-

Sets of verb stems which include a transitive member beginning with the syllable žV- (where "V" may be u, i, or e) contain a wide range of other types of stems, including stems beginning with ž-, k-, and x-. These stem sets are reviewed in this section with consideration of the semantics of the prefixes they appear to contain.

Virtually all of the verbs discussed here have a form with žu- or ži- as first syllable, but there is no evident phonological conditioning (such as vowel harmony) which determines the vowel of the prefix. Nor does lexical category of the root determine prefix vowel (these prefixes attach to verbs, adjectives, and nouns, i.e., any major category). There is also no readily discernible semantic distinction between žu- and ži-. Furthermore, a very small number of verbs in ž- (just two in my corpus) have že- as first syllable. In some cases, there is even intra- and interspeaker variation in the prefix vowel in a single verb, for example, we find žítážá, žutážá 'join, unite' (vt) and žusúku, žisúku, žesúku 'wrap, roll up' (vt). As far as semantic content can be determined (and this is discussed further below), the three prefixes seem to contribute a consistent meaning to the verbs in which they are found (approximately 'put' or 'place'), and I accordingly treat them as variants of a

*Pi
 P/A*

single prefix. Examples (25) through (28) illustrate some of the verbs of this set and in addition give the root for each case.¹⁰

- (25) čúsama 'turn upside down' (vt) *čú*
sámá 'exchange, trade' (vt) *camu*
- (26) čútútu 'register' (vt)
tutù 'paper' (n)
- (27) čindúčá 'wet' (vt)
nduča 'water' (n)
- (28) čižúžú 'carry in the mouth' (vt)
žužu 'mouth' (n)

As can be seen from even this small set, it is quite difficult to assign a consistent meaning to čV-. It has a verbalizing function (creating transitive verbs) when prefixed to nouns, but that certainly does not exhaust its contribution. Its function when forming verbs from other verbs is likewise unclear. As discussed below, it causativizes statives, but it often also adds lexical content which is hard to characterize precisely.

In §3.1.2, it was mentioned that statives generally show initial nd- or ž-. Here, we find that a number of verbs with transitive stems in č- have corresponding stative stems in ž-. Again, roots for these forms may be of any category (and in some cases are unidentified). (29) through (32) illustrate:

- (29) čúndaxi 'soak, wet' (vt)
žúndaxi 'soaked, wet' (stat)
ndáxi 'wet' (adj)
- (30) číkʷaʔa 'weigh, measure' (vt)
žíkʷaʔa 'weighed, measured' (stat)
(root unknown)¹¹
- (31) čítaʔnu 'fold' (vt)
žítaʔnu 'folded' (stat)
táʔnu 'break, bend' (vt)
- (32) číʔi 'plant, sow' (vt)
žíʔi 'planted, sown' (stat)
(root unknown)

¹⁰There are some verbs in this set (not presented) for which the root is unidentifiable. In this section, for the most part, I have tried to present examples in which the root is clearly identifiable.

¹¹Barbara Hollenbach tells me that other dialects have a noun kʷaʔa or kuʔva, meaning 'a measure'.

In addition to verbs like those in (29)–(32), there is also a very small set of verbs which have three stems: a stative in ž-, a transitive in č-, and a stem in k- which may be intransitive or inherently reflexive (middle voice). (For the latter two stem types, there is no distinction between potential and realis forms.) (33) through (35) illustrate:

- (33) kesaʔí, késáʔu 'disappear' (vi)
čísaʔí, čísaʔu 'hide' (vt)
žesaʔí, žésaʔu 'hidden' (stat)
sáʔú 'cover' (vt)
- (34) kindíʔu 'lock oneself in' (vi)
čindíʔu 'lock in' (vt)
žindíʔu 'locked in' (stat)
ndíʔu 'closed, locked' (adj)
- (35) ketáʔā 'meet' (vi)
čutáʔā, čitáʔā 'join, unite' (vt)
žutáʔā, žitáʔā 'joined, united' (stat)
táʔā 'companion, friend, relative' (n)

Finally, there is just one example in my data in which we find the familiar prefixes xi- and ku- in a set with či-:

- (36) xíndáʔá (R), kundáʔá (P) 'carry' (vt)
čindáʔá 'push' (vt)
ndaʔa 'hand' (n)

At this point, we turn to the meaning of the čV- prefix. While it is true, as stated above, that it is quite difficult to assign a single, unitary meaning to this prefix, there are a few tendencies worth noting. First, as already mentioned, čV- has a fairly clear causativizing relationship with statives in žV-. Second, when čV- attaches to nouns, it often creates a transitive verb with the general sense of 'put' or 'place', with the noun in a locative role. Consider, for example, (26) through (28), above, as well as (37):

- (37) čižókó, čužókó 'steam' (vt)
žokò 'steam' (n)

(26) can be (roughly and in some cases incompletely) paraphrased as 'put (something) on paper', (27) as 'place (something) in water', (28) as 'place (something) in the mouth', and (37) as 'place (something) in steam'. Of course, this only describes the semantics of such examples in the most general of terms—it is quite clear that they often develop some degree of semantic specialization with lexicalization (especially in the case of [26]).

In the next section, the issue of the synchronic status of the verbal prefixes discussed above is considered further.

*Again segment
first CV as
then CVCV w/
first C unspecified
second syllable specify C.*

3.1.4. Synchronic Status of the Aspectual Prefixes

Finally, we come to the question of the status of these prefixes in synchronic description. In the discussion which follows I omit the prefix $\check{z}V$ - from consideration because (as pointed out above) it does not fit into the present set, which can otherwise be characterized as aspectual in nature. This prefix clearly has a different semantic (and perhaps morphological) status from that of the others.

The issue of the synchronic status of the aspectual prefixes arises because descriptions of other Mixtec dialects do not acknowledge their presence in the verb stem. Most grammars do mention segmental changes in the stem forms of verbs but do not present an explicit analysis of these segmental alternations as consisting of prefix + root. Furthermore, all of the descriptions with which I am familiar take one stem as basic (usually the potential) and treat the alternations as derived from that basic form.¹² The only sources which analyze verbal aspect in terms of prefix + root structure are historical in nature: Kaufman (1988) and the precursors he cites in that work (Swadesh 1960; Suarez 1986).¹³

It is my position that these prefixes do have a place in synchronic description, but that their participation in the derivational morphology is fundamentally different in nature from that of all other derivational affixes. The fact that we find the regularities noted in §3.1.1 (especially the operation of rules [11] and [12]) demonstrates their continuing role in the synchronic morphology of Chalcatongo Mixtec. However, their status with respect to productivity differs sharply from that of other derivational affixes (and from that of the inflectional affixes as well).¹⁴

Note first that there is a clear distinction in productivity even among the prefixes under discussion here: the stative prefixes ndi - and $\check{z}V$ - occur much less often than do the prefixes which mark potential and realis stems (xi -, ka -, and ku -).¹⁵ Furthermore, the semantics of the former two is less predictable: consider cases in which a stative is derived from a stative adjective, as in $\check{z}ndi\check{z}u$ 'locked in', presumably from $\check{z}V$ - plus $ndi\check{z}u$ 'closed, locked'. Here the prefix clearly adds more than just stative aspect to the root.

This set of prefixes as a whole, however, is notably less productive than other derivational affixation. These aspect markers are simply not available for the formation of new words. That is, as far as I can tell, no new verbs can be formed by prefixation of any of these aspect-marking elements either to existing roots or to novel roots. Speakers have a very clear sense of what counts as a word, and what does not. Attempts at creating neologisms by this method are uniformly rejected, without regard to the semantic, pragmatic, or

¹²The descriptions in Bradley and Hollenbach (1988, 1990, 1991, 1992) all take this approach but are distinguished from other descriptions by including discussion of such segmental changes in the section on verbal inflection.

¹³After this grammar was written a synchronic description very similar to that presented here came to my attention: Bickford and Marlett (1989). The rules they posit are somewhat different, but that is primarily due to the fact that their data come from three other Mixtec dialects.

¹⁴Aronoff (1980:81) addresses the relationship between productivity and synchronic description, concluding that "productivity must be represented in synchronic descriptions of linguistic competence, . . . the productivity of a rule is not a purely historical artifact."

¹⁵See Aronoff (1980), though, for discussion of whether this is a valid measure of productivity.

phonological plausibility of the construct. New forms in s - (causative) or na - (repetitive), however, are easily formed and almost always judged acceptable.

Another point of difference has to do with the fusion of these prefixes to the root, which occurs through application of rules (11) (Labialization) and (12) (Vowel Deletion). With only one exception, none of the other derivational or inflectional prefixes (those discussed in the sections and chapter which follow) fuses with the root, forming part of the disyllabic couplet. The sole exception is the causative s -, which fuses with both vowel- and consonant-initial roots to maintain the disyllabic structure of the couplet, as in (38). Of course, the fact that this is a prefix which (in present-day Chalcatongo Mixtec) consists only of a single consonant facilitates this fusion.

- (38) (a) $s-i\check{c}i$
CAUS-dry
'dry' (vt)
- (b) $s-\check{c}i\acute{u}$
CAUS-be.full
'fill' (vt)

Other prefixes, however, do not fuse with the root, even when the root is vowel-initial, as in (39):

- (39) (a) $ndu-\acute{u}\check{z}u=ka=\emptyset$ ([$ndu-\acute{u}\check{z}u=ka$])
INCHO-hurt=ADD=3
'It will begin to hurt more'
- (b) $ni-i\check{c}i=\emptyset$ ([$ni-\check{c}i$])
CP-dry=3
'It dried'

Rules (11) and (12), if applied to (39), would produce the nonoccurring forms $*ndu\acute{u}\check{z}u$ and $*ni\check{c}i$, but, as we see, a glottal stop is inserted instead to preserve the morpheme boundary, creating a trisyllabic form. Thus, only the aspectual prefixes xi -, ka -, ku -, ndi -, and $\check{z}V$ - undergo rules (11) and (12).

In addition to the fusion of the aspectual prefixes with roots, we can note that this prefixation is obligatory, whereas all other prefixation is optional. That is, roots which are marked by these aspectual prefixes do not surface without the prefixes. No root, however, is barred from occurring without any of the other derivational or inflectional affixes (e.g., $\acute{u}\check{z}u$ 'hurt' does not require the inchoative prefix ndu -, and $i\check{c}i$ 'be dry' likewise does not require the completive prefix ni -).

In conclusion, then, while these aspectual prefixes are both transparent and productive enough to merit attention in a synchronic description, they are not as transparent or productive as other derivational morphology. Perhaps the best way to conceive of this situation is to say that Chalcatongo Mixtec has two layers of verbal derivational morphology: a fairly fossilized inner layer and a more productive outer layer. This can be seen as a

Division "prefixes"
- historical
- derivational/synchronic
entry x ← s- causative (other (v))

historical prefixes
xi ku ndi zV
ku

manifestation of the continuous nature of morphological types (see, e.g., Bybee 1985) and is also very much in keeping with the continual cycle of grammaticization found in Mixtec, the results of which can be seen vividly throughout the grammar. In fact, an example of even more fused morphological material, the highly fossilized system of noun classifiers, is discussed in §3.3.3.

3.2. Verbal and Adjectival Derivation

Chalcatongo Mixtec has four productive derivational prefixes which apply to verbs and adjectives: a causative (with two forms, *s-* and *sa-*), two inchoatives (*ku-* and *ndu-*), and a repetitive (*na-*). These are described in the following three sections, and their relative ordering is presented in §3.2.4.

3.2.1. Causative

Hinton (1982) observes that causatives can be formed in Chalcatongo Mixtec either syntactically (as in [40] and [41]) or morphologically (as in [42] and [43]).¹⁶ The morphological causative is formed by prefixation of *s-* to the potential stem of verbs (as in [42]), and by prefixation of *sa-* to adjectives (as in [43]). The derived lexical category of an adjective prefixed by *sa-* is verb; the evidence lies in the fact that the full range of inflectional prefixes (see Chapter 4) may occur with such forms, as well as that certain derivational morphemes (such as the repetitive prefix; see [44], below) may also occur with such forms.¹⁷

- (40) *sáʔa xà=ná-káčaʔa=∅*
make COMP=MOOD-dance=3
'Make him dance! (Get him up and have him go out there and dance!)
- (41) *ni-sáʔa=ðe xà=ní-ndu-kʷáʔa=ri*
CP-make=3MN COMP=CP-INCHO-red=1
'He made me blush'
- (42) *s-káčaʔa*
CAUS-dance.P
'Dance (him)!'
(e.g., if riding a horse, making it dance by manipulating the reins)

¹⁶Examples (40)–(43) are taken from Hinton (1982:356–357).

¹⁷In §5.3, the issue of identification of adjectives is taken up—specifically, the problem of what grammatical behavior can be taken as criterial for adjective status in this language. A few cases are discussed there which are exceptions with respect to the form of the causative they take.

- (43) *ni-sa-kʷáʔa=ðe*
CP-CAUS-red=3MN
'He made (me) red' (e.g., he painted me red)

Hinton points out that it is clear that the two forms of the bound causative morpheme (*s-* and *sa-*) are historically related to the verb meaning 'make' or 'do' (*sáʔa*), which appears in (40) and (41). However, the two morphological causatives are not precisely synonymous with the periphrastic causative. Instead, the construction found in (40) and (41) is interpreted as two-agent, or directive causation, while the constructions of (42) and (43) are each interpreted as a single event with only one agent, or as manipulative causation.¹⁸ There is no inherent semantic difference between the two bound forms of the causative, however, as there is between use of the full form and the bound forms. Rather, as stated above, this distinction is dependent on the lexical category of the stem to which the prefix is attached.

(44)–(49) provide additional examples of the two forms of the morphological causative:

- (44) *ná-sá-leku=∅*
REP-CAUS-scrawny(adj)=3
'He is getting scrawny again'
- (45) *ká-na-sá-baʔa=∅ carrú*
PL-REP-CAUS-good(adj)=3 carro
'They're fixing my truck'
- (46) *a-ni-sá-kʷáčí=rí ndíkí*
TEMP-CP-CAUS-small(adj)=1 onion
'I've sliced the onions'
- (47) *ni-s-kúčí=rí roʔo*
CP-CAUS-bathe(vi)=1 you
'I bathed you'
- (48) *s-ičí=rí*
CAUS-be.dry(vi)=1
'I am drying it'
- (49) *s-ndáʔba=ro*
CAUS-go.out(vi)=2
'Put it out/Extinguish it!'

not sá
not leku

The near minimal pair in (50) and (51), below, shows that there is no phonological motivation for the alternation between *sa-* and *s-*. It should be noted, however, that there is some difference of opinion among speakers as to the correct causative form of the adjective

¹⁸Hinton (1982) discusses this in the context of iconicity. See especially pp. 358–359.

ndoo 'clean'; at least one speaker used *s-* with this form. This is not so much a case of phonological conditioning of the morpheme, however, as it is one of nonprototypical adjectival behavior. See §5.3 for further discussion of this issue.

(50) *s-ndóo*
CAUS-stay(*vi*)
'leave (something) behind' (*vt*)

(51) *sá-ndoo*
CAUS-clean(*adj*)
'Clean it!'

Finally, as stated above, it is quite clear that both *sá-* and *s-* derive historically from the verb *sáʔa* 'do, make'. Note that the form that occurs with adjectives, *sá-*, still bears the high tone that the first syllable of the full verb bears. As Hinton et al. (1991) point out, the reduction to *s-* has not been accompanied by loss of the high tone. Instead, because there is no vowel for this tone to associate with, it becomes a floating high tone and, as such, is subject to the same rules of floating high-tone placement as were described in Chapter 2. We can see this in (47)–(49), above, in which the underlying form of the verbs to which causative *s-* attaches are, respectively, *kučf* 'bathe' (MH → HH), *lɛʔ* 'be dry' (ML → MH), and *ndaʔba* 'go out' (MM → HM).

3.2.2. Inchoative

There are two inchoative prefixes in Chalcatongo Mixtec, *ku-* and *ndu-*. The former is historically a reduced form of the copula *kuʔ*, and the latter is a reduced form of a verb meaning 'become'. The full form of *ndu-* apparently no longer exists in Chalcatongo Mixtec (although it does in other dialects, e.g., Yosondúa Mixtec; see Farris 1992:17). *Ku-* derives inchoative verbs from adjectives and potential verb stems, while *ndu-* derives inchoative verbs from adjectives only. In both cases the derived verb has the usual realis and potential stems, which may differ in tone. This is discussed further below.

Ku- plus verb is actually relatively rare; presumably, this reflects a semantic rather than morphological restriction in that inchoatives tend to co-occur with stative predicates, and more adjectives than verbs denote states in Mixtec. When they do co-occur, the resultant form is often translated as a future (as in [56] and [57]). (52) through (57) illustrate the two inchoative prefixes:

(52) *ni-ku-kʷaʔá nuʔ=na*
CP-INCHO-red face=1POL
'My face became red (I blushed)'

(53) *ku-čáʔá=ro*
INCHO-dirty=2
'You're going to get dirty'

(54) *ndú-lokó=ʔi*
INCHO-loco=1
'I'm going to go crazy'

(55) *maría ni-ndu-káʔmū=∅*
María CP-INCHO-big=3
'As for María, she has gotten very fat'

(56) *ku-kʷáʔnū=ðe*
INCHO-grow=3MN
'He will grow'

(57) *kú-kíʔi ndendú=ro*
INCHO-go.and.return both=2
'Both of you are going to go'

The semantic distinction between *ku-* and *ndu-* is unclear; most adjectives can occur with both. Forms with *ndu-* are more likely than forms with *ku-* to be lexicalized (e.g., *ndu-kʷftf* 'shrink' < *kʷftf* 'short', *ndu-káni* 'stand' < *káni* 'long'). Consequently, there are a few forms in *ndu-* in which the root is unidentifiable, that is, there is no extant free form corresponding to the apparent root. In many of these cases, though, the root can be identified by inspection of data from related dialects of Mixtec. Consider the following:

(58) *ndú-kòð*
INCHO-(?)
'Sit down' (*vi*)

(59) *ndu-kʷi*
INCHO-(?)
'Stand up' (*vi*)

(60) *ndú-bà*
INCHO-(?)
'Get excited, noisy, riotous'

Dyk and Stoudt (1965) report the following forms for the closely related San Miguel dialect: *koo* 'sit down', *kʷifi* 'stand up, be standing', and *baà* 'tumultuous, noisy'. These forms, which no doubt represent the roots for the forms in (58) through (60), have apparently fallen into disuse as free forms in the Chalcatongo dialect.¹⁹

One other problem case with *ndu-* involves a form in which the inchoative is attached to what appears to be the noun *ndaʔa* 'hand'. This is problematic because *ndu-* normally only attaches to adjectives.

¹⁹Of course, Dyk and Stoudt compiled their San Miguel dictionary over thirty years ago. I do not know whether these forms are still current in that dialect, or whether it too has lost them at this point.

- (61) s-ndu-ndá?á
CAUS-INCHO-hand(?)
'Let it drop!/Drop it!'

(61) actually belongs to a fairly large set of verbs containing the root *nda?a*. There is, for example, a verb *kundá?á* (P), *xíndá?á* (R) 'carry'; a verb *nánda?a* 'wash one's hands'; and another verb *tánda?a* 'marry'. It may be the case that these words are reduced forms of archaic compound verbs (consisting of verb + noun). Alternatively, in these examples *nda?a* could have been zero-derived into a verb (or adjective) and then have undergone further derivation to form the present-day set of verbs.

One final fact to note about these two prefixes is that although the tone of *ku-* is generally mid, the tone of *ndu-* may vary according to aspect. In those cases in which there is variation, in potential aspect it is usually mid, whereas in realis aspect it is usually high, due to the presence of the floating H tone in realis stems. (The variation is probably simply due to lexicalization.) (62)–(64) illustrate:

- (62) ndu-kú?ũ inì 'remember (the past)' (P)
ndú-kú?ũ inì (R)
- (63) ndu-k^wá?á 'blush' (lit. 'get red') (P)
ndú-k^wa?a (R)
- (64) ndu-k^wĩ 'stand up' (*vi*) (P)
ndú-k^wĩ (R)

However, (65) is a counterexample:

- (65) ndú-kani 'stand up' (P)
ndu-káni (R)

3.2.3. Repetitive

Repetitive *na-* attaches to potential verb stems, signaling repetition or iteration of action. (66)–(69) illustrate:

- (66) káta 'sing' (P)
na-kata 'sing again' (P)
- (67) kaka 'walk' (P)
na-kaka 'walk again' (P)
- (68) k^wíkó 'turn' (*vi*) (P)
na-k^wíkó 'revolve' (P)

- (69) kī?ĩ 'take' (P)
na-kī?ĩ 'gather' (P)

There are also many verbs in *na-* for which the meaning is not completely transparent or predictable. (70) through (73) are typical examples:

- (70) kání inì 'think' (P)
ná-kani iní 'worry' (P)
- (71) tíĩ 'catch something which is thrown' (P)
na-tíĩ 'catch something which is falling' (P)
- (72) ča?u 'pay' (P)
na-ča?u 'repay' (e.g., a loan) (P)
- (73) xaà 'arrive' (away from speaker) (P)
na-xaà 'arrive at home' (away from speaker) (P)

While it is clear that repetitive *na-* does not produce the standard tone sandhi effects that ordinary perturbing morphemes in this dialect do, it does in some cases appear to have an effect on the tone of the root it precedes. However, these effects are not regular (as can be observed in the small sample above). This prefix is like *ndu-* (inchoative) in showing a pattern of mid tone on the prefix itself in potential aspect and high tone on the prefix for realis, although in fact it is more widespread in this case than it is for *ndu-*. As noted, the forms in (66) through (73), above, are all in potential aspect. (74) through (80), below, give the corresponding realis stems (in the cases for which data are available):

- (74) ná-kata 'sing again' (R)
- (75) ná-kaka 'walk again' (R)
- (76) ná-kī?ĩ 'gather' (R)
- (77) ná-kani iní 'worry' (R)
- (78) ná-tíĩ 'catch something which is falling' (R)
- (79) ná-ča?u 'repay' (R)
- (80) ni-na-xáa 'arrive at home' (away from speaker) (R; completive)²⁰

²⁰The completive form is given here because verbs of arrival lack a realis stem (see §8.1).

Note that the pair (70) and (77) form an exception to this rule. (80) appears to do so too, but it is not clear what effect the completive prefix has on the tone of the repetitive prefix (see also the discussion in §2.5.5).

3.2.4. Relative Ordering of Derivational Prefixes

These prefixes do not all co-occur, but we can deduce their relative ordering from pairs of examples such as (81) and (82):

- (81) ni-ká-na-s-káa=Ø
CP-PL-REP-CAUS-rise=3
'They untangled (it)'
(cf. káá 'rise', s-káa 'unfold')

- (82) s-ndu-k^wíʔa nãʔá
CAUS-INCHO-sad woman
'Make the woman become sad'

From examples such as these, we can tell that the relative order of the verbal derivational prefixes is repetitive > causative > inchoative.²¹

3.3. Other Derivation

This section covers three other derivational processes: adjectivalization (§3.3.1), nominalization (§3.3.2), and the archaic system of noun classification (§3.3.3).

3.3.1. Adjectivalization

Hinton et al. (1991) posit a rule called "Adjectival High," which derives adjectives from nouns by replacing the tones of the root with H. (83)–(86) illustrate:

- (83) káʔba 'filth' → káʔbá 'dirty'
(84) cãʔá 'filth' → cãʔá 'dirty'
(85) žù 'rock' → žúú 'solid, hard'
(86) xaʔà 'foot' → xáʔá 'standing, on foot'

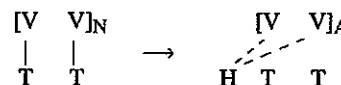
²¹The causative does not co-occur with the inchoative ku-, but does with ndu-.

That these are in fact adjectives, and not stative verbs, is attested by the fact that they can be used attributively, as in (87):

- (87) nũʔũ=Ø saʔma čáʔá
wear=3 clothes dirty
'He is wearing dirty clothes.'

This process appears to be somewhat productive, relating a number of nouns and adjectives in the lexicon. However, there are also a number of adjectives which do *not* have HH tone, so this rule cannot be invoked to account for the derivation of all adjectives.²² The rule, which I call "Adjectivalization," is formalized in (88). Note that although it involves addition of a single H tone to a noun (which then spreads across both vowels of the couplet), it does not have the same results as the rules which associate a floating H to a following root (described in Chapter 2).

(88) ADJECTIVALIZATION



3.3.2. Nominalization

The prefix xa- derives nouns from adjectives, specifying an individual with the relevant characteristic—that is, of the form 'the X one' (e.g., 'the tall one'). It is clear that the prefix xa- is related to the phrasal affix xa= which marks subordinate clauses of various types; as discussed in Chapter 7, nominalized adjectives could conceivably be analyzed as headless relative clauses. However, nominalized adjectives exhibit the syntactic behavior of single words, rather than that of clauses, and it thus appears that the two uses of xa-/xa= are synchronically distinct.²³

Nominalizing xa- generally does not affect the tone of the adjective to which it is attached. (There are, however, exceptions, which are noted below.) (89) and (90) are typical examples:

²²Bradley (1970:55–56) notes a tone-changing rule in Jicaltepec Mixtec, by which what he calls stative verbs are derived from nouns. However, he does not make any general statement about the rule, merely saying that the "marker" of the process is a "tone pattern." His examples show one case of HH → LM, one case of HH → LL, and one case of MM → HH. It is unclear whether this represents one rule or several, one rule and two idiosyncratic cases, or simply does not represent a productive pattern in Jicaltepec Mixtec at all.

²³Hollenbach (1990) discusses the related forms in a large number of Mixtec dialects. Her treatment differs from the one given here in that she treats nominalization and subordination as different functions of the same morpheme. See §7.2.1 for further discussion.

- (89) *keè xá-ndáa*
 speak NOM-true
 'Speak the truth' (cf. *ndáa* 'true')
- (90) *saŋma=rí kú xa-k^waʔá*
 clothes=1 COP NOM-red
 'My clothes are the red ones' (cf. *k^waʔá* 'red')²⁴

In addition to such productive uses, there are several words in *xa-* which have conventionalized (although fairly transparent) meanings, as (91) through (95) illustrate. (Many others may be found in the lexicon at the end of this grammar.)

- (91) *xa-bíší* 'fruit'
 NOM-sweet (cf. *bíší* 'sweet')
- (92) *xa-k^wáá* 'night/blind person'
 NOM-dark
- (93) *xa-lúí* 'child, boy'
 NOM-small
- (94) *xa-síʔí* 'girl, woman'
 NOM-feminine (cf. *síʔí* 'feminine')
- (95) *xa-žíí* 'man, husband'
 NOM-masculine (cf. *žíí* 'masculine')

As mentioned above, *xa-* generally does not perturb, as we see clearly in (96), below. However, there are a small number of cases in which it does appear to have a perturbing effect on the tones of the root, for example, (91) and (95), above. Note that (91) shows the most marked kind of perturbation, Tone Metathesis. (95) is also an interesting form because it shows some cross-speaker variation. At least one of my consultants has *xa-žíí* for the nominalized form, and *žíí* for the adjective (of course, it is impossible to tell if perturbation has taken place when the root bears HH tone). (97), below, presents another case which appears to manifest the floating H, but in this example it should be noted that most Chalcatongo Mixtec speakers do not have the adjectival form. Only one, older speaker was able to give me the adjective.

- (96) *xa-tūū* 'black thing'
 NOM-black (cf. *tūū* 'black')

²⁴The Chalcatongo Mixtec copula takes two forms, as discussed in §6.6.2. The relevant point here is to note that in (90) the copula takes the pronominal form *ku*, rather than the preadjectival form *ka*—evidence that the form has been nominalized.

- (97) *xa-súčí* 'young man'
 NOM-young (cf. *sučí* 'young')

3.3.3. Classifiers

De León (1988) presents an overview of the grammar and uses of noun classifiers in Coatzacoquitengo Mixtec (a dialect which is spoken in the state of Guerrero). Chalcatongo Mixtec shows remnants of a similar classifier system, but in this dialect the classifiers are completely fossilized, and no longer productive in any sense.

It is fairly common in Mixtec to find lexicalized NP + NP constructions with specialized meanings: *nduʔà ndeʔzu* 'Abasolo', town name (lit. 'plain mud'), *íʔa síʔí* 'Virgin Mary' (lit. 'god female'), and so on.²⁵ Frequently, however, the first noun is reduced to a single syllable, at first by the rapid-speech contraction rules which are discussed in Chapter 2. In later stages, the form may become fossilized and undergo unpredictable phonological and semantic shifts, as is typical in the grammaticization cycle. According to De León, Mixtec noun classifiers developed in this way from full nouns, which underwent semantic specialization as they reduced to one syllable.²⁶ In Coatzacoquitengo Mixtec such noun classifiers may be used with proper nouns and loanwords, evidence of their continued productivity. However, in Chalcatongo Mixtec this is not the case. The process of erosion of one of the syllables of the classifying noun has been carried to a state of complete fossilization or even loss in this dialect, and the result is a set of trisyllabic (or in some cases, disyllabic), synchronically monomorphemic lexical items.

As shown in Chapter 5, many of the pronominal clitics developed from the same nouns as the classifiers did. However, the pronominal forms differ in that they are enclitics (phrase-final phrasal affixes), while what remains of the classifiers in Chalcatongo Mixtec can no longer even be called prefixes.

This section briefly reviews some of the semantic domains in which the remnants of the classifier system are found.

3.3.3.1. Animal Names

In the domain of animal names, we find a large number of trisyllabic words beginning with the syllable *tí*, which is the reduced form of *kítí* 'animal'. (98) illustrates:

- (98) *tíndákú* '(type of) worm'
tíkàkà 'raven'
tíndóo 'spider'
tíñúú 'owl'
tíkíčí 'bat'
tíkàà 'grasshopper'

²⁵The topic of the syntax and semantics of NP + NP constructions is taken up in §6.2.

²⁶For another hypothesis on the genesis of the classifiers, see Macaulay (1987b).

In most cases, the two final syllables of an animal name beginning with **tí** are not recognizable as an independent morpheme. Occasionally they are, however, as in (99), in which the morpheme describes a characteristic feature of the animal in question. Note here also that there appears to be spreading of the H tone in the root (HM → HH). This is not, however, the regular result of a floating H tone on HM roots, which normally do not change contour (see Chapter 2). This effect is seen with a number of the classifiers (as illustrated in various examples below).

(99) *tisúŕmá* 'scorpion' (cf. *súŕma* 'tail')

There are also a number of animal names in *č*, which can be shown to have derived from **tí** plus a root with initial *y or *w.²⁷ Four examples from the Chalcatongo dialect are presented in (100), and parallel data from two other dialects are listed in (101) and (102).

(100) *čókó* 'ant'
čúkú 'fly'
čuku 'louse'
čáká 'fish'

(101) San Miguel el Grande Mixtec (Dyk and Stoudt 1965):

čókó, *tiyókó* 'ant'
čúkú, *tiyúkú* 'fly'
čuku, *tiyuku* 'louse'
čáká, *tiyáká* 'fish'

(102) Chayuco Mixtec (Pensinger 1974):

tyìyòkò 'ant'
tyiyuku 'fly'
tyìyúkú 'louse'
tyiyaka 'fish'

Chayuco Mixtec is an example of a dialect in which there has been no fusion of **tí** (or its cognate) with /y/, while San Miguel Mixtec provides a nice example of a transitional dialect, in which fusion is optional.

The apparent prefix **tí** is obviously a reduced form of the noun **kití** 'animal', and in fact for several other dialects, the prefix has been treated as synchronically deriving from the full form (e.g., in Pike 1944, 1949; Alexander 1980; Stark Campbell et al. 1986). In Chalcatongo Mixtec, however, **tí** must be treated as a fossilized prefix which bears only a diachronic relationship to the full noun **kití**. There are several sources of evidence for this claim: First, note that the prefix may never be replaced by the full noun in animal names such as those in (98). NP + NP constructions with **kití** as the first member do exist (as

²⁷Virtually all of the examples of animal names in *č* derive from root-initial *y. One of the few which had root-initial *w (*čfíŕza* 'lizard') has already been discussed in Chapter 2, n. 12.

illustrated in [103] and [104]), but the meanings of these are much more general in nature than those of the true animal names.

(103) *kiti táta* 'breeding animal'
(táta 'father')

(104) *kiti žúkú* 'wild animal'
(žúkú 'mountain')

Further evidence for the claim that the forms in (98) are lexicalized trisyllables can be drawn from examination of animal names for which there is change and/or variation in the vowel of the initial syllable (as in [105]). In some cases, **tí** varies with **te**, in others it varies with **ti**, in some cases **tí** is replaced by **ti**, and in one case it is **ti** which varies with **te**:

(105) *tindákú*, *tendákú* '(type of) worm'
tíñúú, *teñu* 'owl'
tíñíí, *tiñí* 'rat'
tixi 'buzzard'
timí 'bee'
tikokó, *tekokó* '(type of) worm'

It would be difficult, if not impossible, to state a synchronic rule which could predict the vowel (or vowel variants) resulting from reduction of **kití** in each of these cases.²⁸ In addition, such an analysis would be unable to explain the loss of the third syllable in forms like *tixi* 'buzzard' and *timí* 'bee'. Under the analysis of these words as fossilized trisyllables or disyllables, however, such variation is not at all unexpected. It is precisely the fact that the forms have been lexicalized, and that they are no longer transparent to the speakers of the language, which permits phonological change such as the variation in the initial vowel and the loss of the final syllable in some of the words in this domain. (For more extensive arguments against synchronic derivation in the Chalcatongo dialect, see Macaulay 1987a.)

It should be noted, finally, that there are also many animal names in Chalcatongo Mixtec which do not include an initial **tí** (or any other recognizable first syllable), as in (106). A few of these words do have an optional **tí** in the closely related San Miguel el Grande dialect; two of these are noted in brackets in (106):

²⁸Pike (1944:128) notes similar data in San Miguel Mixtec and claims that it is (essentially) rule-governed: "Before front high vowels or palatal consonants, the [ə] usually changes to [i]." This rule (modified for the Chalcatongo dialect by replacing [ə] with [i]) works for *tixi* 'buzzard' and *timí* 'bee', but not for any of the other examples given in (105). It does appear to predict the variation in *tíñíí/tiñí*, but note the apparent vowel harmony. Furthermore, the rule does not work (in this dialect, at least) for the many other trisyllabic nouns which also begin with **tí** but which are from the semantic domain of round objects. It would be interesting to discover whether the rule still holds in San Miguel Mixtec, or whether the grammars of those speakers, like the ones in Chalcatongo, have proceeded to a further state of fossilization since Pike did his work there.

- (106) saà 'bird' [SM: tisaà]
 bīlu 'cat'
 inà 'dog' [SM: tiʔinà]
 báʔù 'coyote'
 sáʔba 'frog'
 sndikì 'bull'
 kòò 'snake'
 kóʔlo 'turkey'

3.3.3.2. Terms for Round Objects

In addition to the various words for animals beginning with *tí*, there are a number of words denoting round or cylindrical objects which also begin with *tí*.²⁹ There is no clear corresponding full word in this case, however.

- (107) tíčǐ 'avocado'
 tikačá 'dust, whirlwind'
 tikánu 'knot'
 tikòʔʔí 'dimple'
 tikʷaʔa 'orange (fruit)'
 tikʷití 'potato'
 tinana 'tomato'
 tindúú 'tree trunk'

There are also a few nouns denoting round objects which begin with *č* (e.g., *čaʔa* 'gourd'), that could conceivably have undergone the same process of fusion by which the animal names in *č* were derived. I lack the comparative data, however, which would be necessary to determine whether this was in fact the origin of these instances of initial *č*.

3.3.3.3. Tree Names

Words for trees are often trisyllabic and begin with the syllable *nù*, as in (108). These data show sporadic tone changes in the root, again not conforming to the expected behavior of a floating H tone. For example, the root for 'fruit' is ML in isolation, but MH in the word for 'fruit tree'. This is the result expected for a CVCV root, but not for a CVʔV root.

- (108) nùndeʔé 'fruit tree' (cf. ndeʔè 'fruit') nuɫní 'juniper'
 nùžúšá 'torchpine' (cf. žúša 'pine needles') nužòdo 'bamboo'
 nùkaxí, nukàxí 'evergreen oak'

²⁹Longacre (1957) says that this prefix is distinct from the one found on animal names, and that it derives from a root meaning 'thing' or 'oval-shaped thing'. De León (1986:350), however, claims that the use of *tí* to refer to spherical objects results from semantic extension of the classifier for animals.

The initial syllable *nù* is a reduction of *žúnú* 'tree' (following the rule of Initial Syllable Deletion described in Chapter 2), but, again, the full word may not be substituted for the initial syllable in these tree names. Also note the loss of nasalization in the first syllable of the trisyllabic forms.

3.3.3.4. Building Names

There are two words in my corpus which denote types of buildings, and which begin with the syllable *be*, as follows:

- (109) bekàà 'jail' (cf. kaa 'iron')
 (110) beñúʔú 'church' (cf. ñúʔú 'earth, land', ñúʔú 'fire, light')³⁰

Note that it is possible to form similar constructions with the full word *beʔe* 'building' as the first element, as shown in (111) through (115). However, the last two, containing *kaa* 'iron' and *ñúʔú* 'earth' (or the other possible source, *ñúʔú* 'light'), do not mean (respectively) 'jail' and 'church', as illustrated in (114) and (115).

- (111) beʔe ání 'city hall' (Spanish *palacio municipal*)³¹
 house *presidencia*
 (112) beʔe čúú 'chicken coop'
 house chicken
 (113) beʔe kítf 'corral'
 house horse
 (114) beʔe kaa 'building made of iron'³²
 house iron
 (115) beʔe ñúʔú 'building made of earth/light'
 house earth

The fact that (114) and (115) are interpreted compositionally, and do not have the specialized readings of (109) and (110), indicates that the latter are lexicalized in trisyllabic form and therefore cannot be synchronically derived from syntactic constructions with the full noun *beʔe* as first member.

³⁰It is not clear which of these is the source of the original root.

³¹The word *ání* in (111) is a noun approximately meaning 'office of the mayor' (Spanish *presidencia*), that is, the office held by the elected official who is in charge of the town and surrounding area (Spanish *Presidente*).

³²My oldest consultant, Otelia Jimenez García, did once translate (114) as 'jail', but all other consultants rejected that meaning for it, indicating that its fossilization may be relatively recent.

3.3.3.5. Terms for Younger Kin

Finally, there are several kin terms with a first syllable *se*, all of which denote a younger relative (the related noun *seʔe* means 'child'). Note again the irregular tone changes between root and derived form.

(116) *sendúča* 'godchild' (cf. *nduča* 'water')

(117) *sesíʔi* 'daughter' (cf. *síʔi* 'feminine')

(118) *sežíí* 'son' (cf. *žíi* 'masculine')

(119) *sexanú* 'daughter-in-law' (cf. *xánu* 'sister-in-law')

(120) *sekásá* 'son-in-law' (cf. *kása* 'brother-in-law')

3.3.3.6. Conclusion

To conclude this section, then, we have seen that there are a number of semantic domains in Chalcatongo Mixtec in which many of the words have a common first syllable which is suggestive of a classifier. However, while productive classifier systems have been documented for other Mixtec dialects, in Chalcatongo Mixtec we must conclude that the system is no longer productive. Arguments against synchronic derivation of the initial syllable from the full noun to which it is related include the following: (a) in most cases the corresponding full noun (when there is one) may not be substituted for the initial syllable; (b) in cases in which a NP + NP construction with the corresponding full noun *can* be created, this construction has a different meaning than the trisyllabic form does; and (c) the trisyllabic forms are susceptible to phonological and semantic change which would not be expected if the prefix represented a productive classifying element. Finally, we must also note that the prefixes in Chalcatongo Mixtec do not fulfill any of the typical functions of classifiers. That is, it is misleading to speak of the prefix co-occurring with some noun for which it has a quantifying or classifying (or other) function, since in the majority of cases the two final syllables do not constitute an independent morpheme.³³ I conclude that Chalcatongo Mixtec in its current state does not have an extant system of noun classification. The suggestive initial syllables which we observe in certain semantic domains are instead the fossilized remnants of an archaic classifier system.

³³Direct evidence that speakers are not conscious of the classifying function of these prefixes was provided by one of my consultants, who produced *zínú núzúša* for 'torchpine' on one occasion (cf. example [108]).

MORPHOLOGY: INFLECTION

Inflection in Mixtec, like derivation, is exclusively prefixing. It is also quite limited in that only verbs (and some adjectives) can be inflected. Furthermore, there are only five inflectional prefixes: plural, completive, mood (positive and negative), and temporal. Each of these is described in turn below.

4.1. Plural

Plural marking of all kinds is optional in Mixtec. The use of quantifiers, the "plural word," and a postverbal plural marker are discussed in Chapters 5 and 6. This section describes the use of the inflectional prefix *ká-*, which marks plural subject agreement on the realis stem of verbs, and on some adjectives. There is no apparent semantic basis for the restriction to realis stems. In fact, I do have two or three spontaneous examples of *ká-* attached to potential stems in my data. However, all examples of *ká-* plus potential which I constructed to test this were rejected by my consultants as ungrammatical. (1)–(4) illustrate the use of this prefix:

- (1) *ká-ʔaà=to*
PL-reside=3POL.OLD
'They live (there)'
- (2) *ká-káʔã=ʔo*
PL-talk=1PL
'We are talking'
- (3) *ká-bèè sãã=Ø*
PL-weigh much=3
'They weigh a lot'

- (4) ndik^wítí ñáʒiū ká-ku ndáʔu xináʔa¹
all people PL-COP poor plural
'All the people are poor'

As can be seen from the above examples, *ká-* has high tone and is not a perturber. However, there are some cases in my data in which *ká-* appears with mid tone instead of high, as in (5) and (6):

- (5) táa=rí xínaʔa ni-ka-xaà íkú
parent=1 plural CP-PL-arrive yesterday
'My parents arrived yesterday'
- (6) a-ni-ka-xáʔña=Ø
TEMP-CP-PL-cut=3
'They already cut (it)'

The majority of the examples in which *ká-* occurs with mid tone have the completive prefix *ni-* preceding it. As is discussed in the next section, the completive prefix often seems to have a lowering effect on the tone of the following syllable. The other cases of mid tone *ká-* are unexplained.

4.2. Completive

The completive prefix *ni-* attaches to the realis stem of verbs and marks an event as having been completed.² *ni-* can describe either a completed past event or a completed future event. The former use is shown in (7)–(9), while the latter is shown in (10)–(12):

- (7) ni-čaa=rí beʔe=ró
CP-arrive=1 house=2
'I arrived at your house'
- (8) ni-ku-lfi=ná
CP-INCHO-naked=IPOL
'I took off my clothes' (lit. 'became naked')

¹ndik^wítí is a complex form composed of the initial syllable of ndíʔí 'all' and the word k^wítí 'just'.

²Pike (1944:125–126) makes the same point for San Miguel Mixtec, showing there that the prefix *ni-* does not indicate past tense, as one might think upon first inspection of the data. He gives examples like those in the present text to show that its function is instead to mark completion of the event described, regardless of the time reference of the utterance. Bickford and Marlett (1989) also make this point for the three Mixtec dialects that they describe, Santiago Nuyóo, Santo Domingo Nuxáa, and Tezoatlán.

- (9) ni-číʔi=ró itù=ro
CP-plant=2 cornfield=2
'You planted your cornfields'
- (10) ni-s-ndiʔa=rí orá wáá sáʔa=rí tūu=rí
CP-CAUS-finish=1 hora that do=1 work=1
'I will have finished doing my work by then'
- (11) kana=ró ruʔù nu=ní-na-ketáʔá=ro xí peðrú
call=2 me COND-CP-REP-find=2 with Pedro
'Call me when you find/if you have found Pedro'
- (12) bina xa=kínoʔo=rí nú=a-ni-kutúʔa=rí káʔa=rí misteku
now COMP=leave=1 COND=TEMP-CP-learn=1 speak=1 Mixteco
'When (lit. 'Now that') I leave (Chalcatongo), I want to have learned to speak Mixtec'

As examples like (7) and (8) show, *ni-* is not a perturbing morpheme. However, it does seem to have other tonal effects. Recall the discussion in §2.5.5 of Buckley's (1991) rule of Low-Tone Spreading. In Buckley's data, *ni-* had low tone, which spread rightward in certain cases to an adjacent syllable (or syllables).³ However, in a sample of 302 forms in *ni-*, I found that 214 (71%) had mid tone on the prefix, 45 (15%) had low tone, and 43 (14%) had high tone (the result of following a morpheme with a floating H). In the cases in which *ni-* has mid tone, of course the low spreading rule cannot apply. In my data, *ni-* appears instead to have another effect on the tone of the following syllable, which is analogous to but not exactly the same as Buckley's rule: in slightly less than half the cases I examined, the tone of the following syllable or syllables is lowered by one step, that is, from H to M and from M to L. (13)–(15) are representative examples:

- (13) ni-xéi=rí bílu nù xító (stem: xéi)
CP-put=1 cat face bed
'I put the cat on the bed'
- (14) rùʔù ni-žoo seʔe=rí (stem: žóó)
I CP-exist child=1
'I had my children'
- (15) ni-čaa=na (stem: čaa)
CP-come=IPOL
'I came'

There is no phonological (or other) conditioning that I can find that accounts for this lowering in only some examples. I assume, then, that it is an optional rule. Furthermore,

³I am simplifying somewhat. See Buckley (1991:169) for details.

it happens following both mid tone *ni-* and low tone *nì-*. Thus, Buckley's rule of Low-Tone Spreading (which does not exist in monomorphemic LM couplets for the speakers with whom I worked in Chalcatongo, as it does for Buckley's speaker) has to be changed in this case to a more specific rule which states that the syllable(s) following the completive prefix may optionally be lowered one step. I leave formalization of this rule aside here, since the topic of the tonal effects of the completive marker is still incompletely understood.

4.3. Mood

There are two mood-marking prefixes in Chalcatongo Mixtec: one which occurs in positive contexts, *na-*, and one which occurs in negative contexts, *ma-*. The grammars of other dialects which have this distinction (e.g., Alexander 1980; Pensinger 1974; Dyk and Stoudt 1973) describe *ma-* simply as a negative marker used with potential aspect and pair it with the clitic *tu=* (which is used primarily with realis aspect). However, I have shown elsewhere (Macaulay 1990) that in the Chalcatongo dialect this pairing fails, and that, in fact, *ma-* is in alternation with *na-*. This section begins with description of the positive form, *na-*, and then turns to the negative, *ma-*.

Examples (16)–(18) illustrate main clause uses of *na-* in Chalcatongo Mixtec. It is always prefixed to the potential verb stem and has a perturbing effect on the tone of the word which follows it.

- (16) *na-čindúčá=rí saʔma=rí* (stem: čindúčá)
MOOD-rinse=1 clothes=1
'I must rinse my clothes'
- (17) *na-čáa* (stem: čaà)
MOOD-come
'You must/should come' or 'Come!'
- (18) *na-kíí=Ø bina núʔni* (stem: kii)
MOOD-come=3 right.now
'He must/should come right now'

These examples illustrate the deontic mood function of *na-* in main clauses. Following Chung and Timberlake (1985:246), I take deontic mood to "characterize an event as non-actual by virtue of the fact that it is imposed on a given situation." (16), (17), and (18) illustrate three of the related senses that deontic mood may convey, depending on person of subject: (a) voluntative or desiderative ("the speaker expresses intention or deliberation to realize the event" [1985:247]), (b) imperative,⁴ and (c) optative ("the speaker desires some event of some participant" [1985:247]). What these three senses have in common is that they are all expressions of the will of the speaker.

⁴Consultants indicate that imperatives with *na-* are more "polite" than imperatives formed with the potential stem alone. (See §6.6.4.)

When *na-* occurs in subordinate clauses in Chalcatongo Mixtec, it has similar functions. It may appear in complements to verbs of causation (as in [19]), to verbs expressing the desire or directions of the subject (as in [20]), to verbs of permission (as in [21]), and in complements to imperatives, both when the two clauses have the same subject (as in [22]) and when they have different subjects (as in [23]).

- (19) *sáʔa xa=na-kíí=Ø* (stem: kii)
make COMP=MOOD-come=3
'Make him come'
- (20) *keè=Ø xà=na-čindé=ri róʔo* (stem: čindé)
say=3 COMP=MOOD-help=1 you
'She says that I should help you'
- (21) *s-ndóo na-kííʔi=Ø xí=ri* (stem: kííʔi)
allow MOOD-go=3 with=1
'Let him go with me'⁵
- (22) *kʷáʔá na-číʔu žuʔu=ró* (stem: číʔù)
go MOOD-rinse.out mouth=2
'Go rinse out your mouth'
- (23) *kéí seʔe=ró na-kúsu=Ø* (stem: kúsu)
put child=2 MOOD-sleep=3
'Put your child down to sleep'

na- also appears in conditional clauses, as in the following:

- (24) *nú=wāá na-sáʔa=Ø ku-sí šáá iní=ri* (stem: sáʔa)
COND=that MOOD-do=3 COP-happy much insides=1
'If he did that, I would be very happy'
- (25) *bàʔà=kà=Ø nu=na-kííʔi=ro šíá* (stem: kííʔi)
good=ADD=3 COND=MOOD-go=2 tomorrow
'It would be better if you went tomorrow'

These uses of *na-* in subordinate clauses all have in common that the occurrence of some event, while not certain, is desired. They differ from the main clause uses of *na-* in that the will which is expressed is not necessarily that of the speaker but is instead usually that of the subject of the main clause. It is true that this subject is, in fact, almost always the speaker—but it does not have to be, as shown in example (20). Chung and Timberlake (1985:249) call this the use of deontic mood in "secondary events." Note that (25) might be interpretable as an exception to the claim that the subject of the main clause is the one

⁵*s-ndóo* has the form of a causative, but it is unclear what the root is.

whose will is expressed; in this case, however, the sentence presumably reflects the will or desire of the speaker, whose identity is not expressed overtly in the sentence.⁶

We turn now to the negative mood marker, *ma-*, which is illustrated in (26)–(29). Note that *ma-*, like *na-*, carries a floating H tone.⁷

(26) *ma-kíʔi=rí* (stem: *kíʔi*)
NEG.MOOD-go=1
'I will not go'

(27) *ma-kúú=ro* (stem: *kuú*)
NEG.MOOD-die=2
'Don't die!'

(28) *sáʔa xa=ma-kíi=∅* (stem: *kii*)
make COMP=NEG.MOOD-come=3
'Make him not come/Don't let him come'

(29) *kaka kʷéé=ní xa=má-kʷítá=ní* (stem: *kʷítá*)
walk slow=2POL COMP=NEG.MOOD-tire=2POL
'Walk slowly so that you don't get tired'

The meaning of *ma-* is precisely the opposite of that of *na-*, that is, by using *ma-* the speaker indicates his or her expectation or desire that some event should not occur. An example like (26), then, is a negative volutative, that is, it expresses the speaker's intention *not* to realize the event in question. It is still deontic mood because it still characterizes the event as nonactual. In fact, it could be argued that such an utterance is more strongly nonactual than a positive volutative: not only is it nonactual in the present, but the speaker indicates a desire that it remain nonactual in the future.

4.4. Temporal

The fifth inflectional prefix is temporal *a-*, which attaches to realis verb stems. The meaning of this prefix appears to be quite similar to that of the Spanish *ya*, which can be translated as 'already', or 'now'.⁸ (30) through (33) illustrate:

⁶Hills (1990:73–74) says that the "hortatory" *nà-* in Ayutla Mixtec "always implies personal interest on the part of the speaker, and frequently a strong wish." However, Ayutla Mixtec differs from Chalcatongo Mixtec in that it has two prefixes, the hortatory *nà-* and the "obligation marker" *na-*, which is used in stating requirements. Thus, the uses may not be parallel. Furthermore, Hills does not discuss the use of either prefix in subordinate clauses.

⁷This is, in fact, another parallelism between *ma-* and *na-* which is not shared by the negative clitic *tu=*.

⁸Terrence Kaufman (personal communication) tells me that despite the phonological similarity, Mixtec *a-* is not borrowed from Spanish. This is supported by the fact that the Yosondúa dialect has two forms, *xa-* and *sa-*, fulfilling this function (Farris 1992:55–56).

(30) *a-xíʔi toʔð náʔnū wáá*
TEMP-die man old the
'The old man is dying now'

(31) *a-ni-kušíni=žó*
TEMP-CP-eat=1PL
'We already ate'

(32) *tú=a-ni-kuní=ðe*
NEG=TEMP-CP-want=3MN
'He now didn't want to/He didn't want to anymore'

(33) *saʔma wáá a-ni-ičí*
clothes the TEMP-CP-be.dry
'The clothes are dry now/have already dried'

4.5. Relative Ordering of Inflectional Prefixes

The mood prefixes do not co-occur with the plural, completive, or temporal prefixes because the former attach to potential verb stems, while the latter attach to realis verb stems. The plural, completive, and temporal do co-occur, however, as the following examples show:

(34) *a-ni-ka-žesámá=rí*
TEMP-CP-PL-eat=1
'We already ate'

(35) *a-ni-ka-káʔã=ró xí maestro*
TEMP-CP-PL-talk=2 with *maestro*
'You (PL) already talked with the teacher'

The relative ordering of these three prefixes, as these examples illustrate, is temporal > completive > plural.