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JOSSERAND, JUDY KATHRYN

MIXTEC DIALECT HISTORY. (PROTO-MIXTEC AND MODERN MIXTEC TEXT)

Tulane University

PH.D. 1983

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MIXTEC DIALECT HISTORY

A DISSERTATION

SUBMITTED ON THE SIXTH DAY OF MAY, 1982

TO THE DEPARTMENT OF ANTHROPOLOGY

OF THE GRADUATE SCHOOL OF

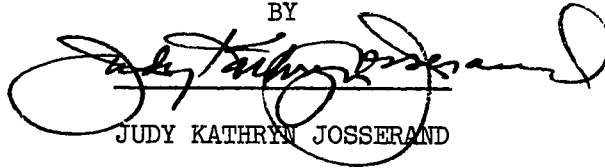
TULANE UNIVERSITY

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

BY

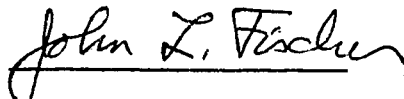


JUDY KATHRYN JOSSERAND


APPROVED:



Munro S. Edmonson



John L. Fischer



William M. Norman

To Robert C. West

En la lengua dezian les naturales no aver innouado cosa alguna ni la mudaron de como se hablaua antes, sino que se acomodaron al frasis y modos que tenian de hablar los naturales, avnque despues por discurso de tiempo con casamientos y victorias en guerras vuo grandes mezclas en la lengua y esto solo tiene mas apariencias de verdad, y que las grandes diferencias y modos distintos de hablar esta lengua aya uenido de mezclarse los pueblos por guerras o casamientos, por que cy dia se vee, que no solamente entre pueblos diuersos se vsen diferentes modos de hablar, pero en vn mesmo pueblo se hallia en un barrio de vna manera y en otro, la otra: siendo la lengua Mixteca toda vna.

Antonio de los Reyes, 1593: ii-iii.

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PREFACE

My first visit to the Mixteca was in the company of Robert C. West, geographer and teacher, whose knowledge of Mesoamerica has always been an inspiration to me, and whose influence is readily apparent in my work. We went down the road beyond Tlaxiaco, in the Mixteca Alta, looking at house types, terracing techniques, and other features of the landscape. I remember it as green and isolated.

More than ten years later, a happenstance led me to begin a linguistic survey project in the Mixteca in 1977, and to begin simultaneously an association with C. Henry Bradley, which has been greatly to my benefit. Hank suggested that I select Mixtec as the language to work on in a dialectology project I had proposed as a vehicle for training Mexican students in linguistic techniques and analysis. He helped me design a syntax questionnaire specific to the grammatical structures of Mixtec languages, and he suggested areas and towns to visit for collecting the data. During 1977 and 1978 we had many sessions of discussing my survey data and his 500-word lists, during which I learned a tremendous amount about the structure of Mixtec. Hank shared with me his list of reconstructions, based on his survey data, and we collaborated in proposing a developmental model for Mixtec derivation and a new reconstruction of Proto-Mixtec (Bradley and Josserand 1978, 1982). The reconstructions of Proto-Mixtec lexicon which appear in Appendix II are largely those of Bradley, with certain modifications of my own which are discussed in Chapters V and VI; the data base is also largely derived from Bradley's own collection of word lists from more than 85 towns, amplified through my dialect survey and other sources to include data from 120 towns. It

has been my great pleasure to work with an abundant corpus of material on Mixtec languages over the past seven years, and what is presented here is merely the tip of the iceberg, a first step in the documentation of Mixtec language history.

It is obvious that in an undertaking of this magnitude many persons have made important contributions, and I would like to take this opportunity to thank them all, collectively and individually. First of all, my thanks to Hank Bradley and to the other linguists of the Summer Institute of Linguistics who have shared their data and helped me make personal contacts in the villages where they worked, especially John and Margaret Daly, Barbara Bradley, Ruth Mary Alexander, Audrey Johnson, Albertha Kuiper, Joy Oram, Jäna Shields, Joanne North, Priscilla Small, Robert Hills, Ed and Kathy Farris, Kent Wistrand, and Carol Zylstra. Another very important contribution was made by the students working in my Mixtec projects at the Centro de Investigaciones Superiores in Mexico from 1977 to 1982, who participated in the field work and transcription phases. I owe thanks to my senior research assistant, Raúl Alavez Chávez, a native Mixtec of Peñoles, and also to Alejandra Cruz Ortiz, a native of Pinotepa Nacional, and to Lourdes de León Pasquel and Víctor Manuel Franco Pelletier, as well as to the dozen or more others who participated in the various field sessions, including a very helpful volunteer colleague, Yuta Auksi, a Canadian student, and several students from the Universidad Autónoma Metropolitana of Mexico City. More recently a Danish student, Karen Adrian, has sent me her bibliography of works on Mixtec, and a German student, Michael Dürr, has sent his Master's thesis reconstructing Proto-Mixtec tone; I sincerely appreciate their sharing this material with me.

In Oaxaca and in the Mixteca more specifically, several institutions and individuals gave freely of their time and services. Most important is the Centro Regional de Oaxaca (a regional branch of the Instituto Nacional de Antropología e Historia), whose director between 1976 and 1980 was Manuel Esparza. Manuel and his wife Angeles Romero have been constant supporters of my Mixtec investigations, and as Director of the Centro Regional Manuel supplied me with extremely useful letters of introduction to the civil and military officials of the region. Several other investigators from the Centro Regional de Oaxaca also made important contributions to the present study. In particular I am grateful to Angeles Romero, ethnohistorian, and to Marcus Winter, archeologist, for their collaboration in other related investigations, and especially to Marcus for our discussion of the archaeology of the Mixteca. Also in Oaxaca were the local offices of COPIDER, a government agency which supplied the district/municipal maps of Oaxaca which were so important in the field. And though I do not name them individually, I would like to thank all the state and municipal and other authorities who have participated directly and indirectly in the survey project, and who made possible the collection of this large body of material on Mixtec languages. The Instituto Nacional Indigenista has regional centers in various parts of the Mixteca, and three were especially helpful to me, the centers in Tlaxiaco, Nochixtlán and Jamiltepec. Also helpful were the secondary schools known as ETAs (Escuela Tecnológica Agropecuaria) in Nochixtlán, Cacahuatpec and Jamiltepec, who allowed us to work with students from distant Mixtec communities who were studying there.

Certain other people have been very important to me in more indirect ways, through their knowledge of the Mixteca and/or of linguistics, and to all of them I owe a debt of gratitude: Maarten Jansen and

Aurora Pérez, Ronald Spores, Barbro Dahlgren, Betsy Smith, Emily Rabin, Nancy Troike, Ross Parmenter, Cecil Welte, and linguists Doris Bartholomew, Jorge Suárez, Yolanda Lastra, Karen Dakin and Barbara Hollenbach.

One of the people most concerned with my professional career has been Marshall Durbin, director of my first thesis committee, and although he has not been an official member of my committee, he has been a constant inspiration, and I would like to thank him very much for what he taught me about linguistics and for all his many years of support and encouragement. To the late Angel Palerm I offer a personal tribute; Angel brought me to Mexico in 1973, along with my husband, Nicholas A. Hopkins, to build a linguistics program in his newly founded research center, the Centro de Investigaciones Superiores. Whatever his intentions, the result for me was nearly ten years of residence in Mexico, and the consequent opportunity for extended fieldwork which made possible a study of this scope. Later renamed the Centro de Investigaciones y Estudios Superiores en Antropología Social, and with subsequent directors Guillermo Bonfil Batalla and Henrique González Casanova, this research center provided the base from which my investigations were conducted, and very generously supported my research throughout the period of my employment there. More recently my support has been of a more personal nature; during this last year of write-up and manuscript preparation my father-in-law, Sewell Hepburn Hopkins, has made substantial contributions to our support which have enabled me to dedicate full time to completing this massive project.

But most of all, my greatest debt is to my husband, without whose patience, encouragement, and technical skills all might have come to naught. Nick always believed I could finish this, and he has read every word (mostly several times), and has typed almost all of the

final manuscript, including the parts which required four changes of IBM spheres. To Linda Schele, my thanks for the loan of her special IBM elements, and to Cuauhtémoc Fernández, for the preliminary drafting of several maps, and to Janice and Jay Smith and Dorie Reents, for continuing personal support.

I would like to thank the members of my dissertation committee, my chairman Munro S. Edmonson, and John L. Fischer and William M. Norman, for their perseverance and helpful comments and criticisms. Each of them contributed to making this manuscript better, though remaining faults need not be laid at their doorsteps.

Finally, I would like to thank the Mixtecs themselves, for their patience in working with me, and for their cooperation and interest in this project. My experiences in the Mixteca have been without exception pleasant; I have found the people very helpful and informative in interviews about local speech characteristics and regional dialects, and very open and friendly in every other way. Today my memories of the Mixteca are rich and promising, and I look forward to continuing my association with these peoples for many years to come.

INTRODUCTION

Reconstructing Dialect History

The immediate goal of the research presented in this volume is to provide organized data and data analyses on variants of the Mixtec languages, which can be used together with ethnohistorical, archaeological and comparative ethnographic materials to illuminate Mixtec prehistory. The approach that is taken here is to apply the comparative method of historical linguistics and the standard techniques of dialectology to the analysis of a large sample of linguistic data representing the entire area of modern Mixtec speech. Since several languages are involved and all are called Mixtec, the reference to Mixtec "dialects" can be taken both in the sense in which the term is used in "the Indo-European dialects," i.e., the languages and branches of a family of languages, or in the sense of "the dialects of American English," local variants and related groups of variants of a single language.

Dialect history, as treated here, is mainly the history of the language varieties themselves, rather than the history of the social and cultural contexts which have shaped them. Before proceeding to the latter, it is necessary to determine what the nature of extant variation is, how it has developed from previous stages in the evolution and development of the languages, and how the varieties may best be classified in order to facilitate historical interpretation.

The ultimate goal of this line of research is to develop a model of Mixtec society and culture as it changes through time, from the earliest detectable period to modern times, but with emphasis on the historic

and prehistoric periods for which historical linguistics, archaeology, ethnohistory and comparative ethnography provide the relevant information. This model can only be achieved by an integrative, multidisciplinary approach, and the framework within which this study is most appropriate is that of culture history. I am in agreement with the position that the study of native American society merits the same high standards of scholarship as that of Classic Greek or Roman society--one should expect to have to learn about art and architecture, language and literature, philosophy and religion, politics and economics (Boas 1911).

The extent to which this goal can be achieved at present is minimal; data have not been systematized (or even recorded) for many topics. But primary data sources exist: the Mixteca is rich in archaeological sites, the language and oral literature are in daily use throughout the region, there are sixteenth century reports on the people, their cultures and their history, and native versions of indigenous affairs over several centuries are recorded in various pre-Hispanic and post-Conquest codices. There is thus hope that the contributions of each of these lines of evidence can ultimately be brought together in an integrated Mixtec history.

Genealogical classification has long been a topic of interest and scholarly debate within Mesoamerican linguistics, because of the special characteristics accompanying language diversification within this culturally defined area. Most Mesoamerican language families have participated in varying degrees in a pan-Mesoamerican cultural and linguistic diffusion sphere, and thus diffused linguistic features often obscure the patterns of genuinely shared innovations within a language family, i.e., among a set of related languages and dialects. But more impor-

tantly, the pattern of diversification common to most Mesoamerican language families does not involve complete separation and geographical removal of the daughter languages, but rather these constituent varieties develop in situ, in situations of continuing or renewed contact between daughter languages, enabling the diffusion of certain new features across previously established linguistic boundaries. Thus the traditional Stammbaum or genealogical tree model of linguistic diversification, and classification schemes based solely on such a model of development, do not fit the pattern of development common to many Mesoamerican (and other) language families. Such models posit a scheme of development whereby daughter languages separate and lose contact with one another throughout their subsequent developmental histories, and this can be shown to be an inadequate explanatory model with regard to many Mesoamerican language families.

Mixtec is a prime example of this linguistic situation; the Mixtec languages show considerable internal diversification, even though the single name, Mixtec, is commonly applied to all varieties. The level of dialect differentiation between adjacent towns varies markedly; sometimes geographical proximity is reflected in close linguistic relationships, but not infrequently nearby towns will differ at the level of language rather than simply being dialect variants of the same variety. This situation reflects the very complex linguistic and sociocultural history of the Mixtec peoples, which has included considerable expansion and population movement--and mixing--within their area. Jiménez Moreno (1962) first spoke of "dialect complexes" of Mixtec, to deal with the obviously closely related but also finely differentiated varieties of Mixtec which have been described by writers from the sixteenth century to the present day.

It is, in fact, rare that two towns profess to speak the same; if nothing else, they mention the differences in canto ('sing-song') between themselves and their neighbors, which refers to the systems of tones and tone perturbation found throughout the Mixteca. On the other hand, there is a great feeling of unity among the Mixtec peoples, and a recognition of themselves as a single ethnic group despite their linguistic differences.

Previous stages in my research have included a long period of data-collection (1977-1981) during which more than 130 Mixtec-speaking villages were visited and data on local dialects were recorded through the use of phonological, lexical, and syntactic questionnaires. As the transcription of field data advanced, attention was devoted to the organization and presentation of the data: maps of distributions of important phonological, lexical and syntactic variants; charts of correspondences, cognate sets, etc. The different Mixtec variants observed were analyzed in terms of their hypothesized historical development from a common Mixtec spoken several centuries ago, to the languages and dialect complexes which make up modern Mixtec. This analysis has followed the guidelines of standard historical-comparative linguistics: identification of regular correspondences between phonological units of the dialects, and reconstruction of the most probable antecedent, in terms of an overall phonological structure (Proto-Mixtec). At the same time, the techniques of dialectology have been applied to the very large corpus of data available, and preliminary studies of dialect area definition and the distribution of various linguistic features which help to define dialect areas have been made.

While these two methodologies may seem difficult to reconcile in terms of the theoretical models upon which they are based--dialectology

and historical-comparative linguistics--it is my belief that they are impossible to separate, and that the variability found in modern languages is a necessary concomitant to earlier stages as well. While proto-languages should be carefully reconstructed as homeostatic systems, such models should not ignore the internal variation which is an ever-present feature of natural languages.

Mixtec now offers a uniquely well-documented test case for evaluating the adequacy of alternative theoretical models for linguistic diversification. The data base from which the sample was drawn is very large, including data from 130 varieties, with a 500-word lexical survey for phonological reconstruction and the establishment of cognate sets, as well as for lexical variability, and a 150-phrase and sentence syntax questionnaire, which has had preliminary analysis. A reconstructed proto-language and over 200 maps of phonological and lexical distributions, identifying innovation spheres, many of which have been presented in this study, will make possible the tracing of the development of particular derivative dialects in terms of shared innovations.

Structure of the Presentation

Chapter II presents the theoretical and methodological framework within which the Mixtec data are analyzed. Nineteenth and twentieth century historical-comparative and dialectological linguistics are reviewed in order to establish a general view of the relations between language variation and its social context, and the ways in which variation can be subjected to historical analysis. The methodology of the comparative method is presented, with definitions and explanations of the relevant terms and concepts. Also covered are the techniques for inferring phonological history, including a discussion of types of innovations and

other linguistic changes, the evaluation of innovations in structural terms, and the ordering of phonological developments. This leads to a discussion of linguistic classification, and a consideration of the problems of the traditional models of diversification when applied to language families with complex internal relationships. The response to these problems is a consideration of the importance of dialect information in reconstruction models, beginning with the fundamentals of dialect geography, and the importance of structure in dialectology studies. The historical and social dimensions involved in defining dialect areas are then related to the historical reconstruction of linguistic families; the combination of these approaches permits a more integrated diversification model. The chapter closes with a discussion of precedent studies in historical dialectology, both within and outside of Mesoamerica.

Chapter III presents general information on the Mixtec region: the present (and to some extent the past) distribution of Mixtec speakers, the geography of the Mixtec region, sixteenth century commentaries on and studies of the Mixtec language and dialects, and some earlier proposals concerning the subgrouping of language variants. The resources for the study of Mixtec are then reviewed, including unpublished data collected for comparative research, and the history of the present research is briefly sketched. The chapter ends with a discussion of the data base supporting the reconstructions and analyses presented in subsequent chapters.

Chapter IV provides a typological overview of modern Mixtec phonological systems, since it is phonology which will receive detailed treatment in this study. Published analyses (or minimal descriptions) of Mixtec phonemic systems provide a structural framework for the interpretation of the dialectology data. General characteristics of Mixtec

vowels and consonants, tones, and larger phonological units are discussed. Sixteen modern varieties of Mixtec are then presented in detail, and the similarities and differences between them are noted. Comparison of these systems permits the delineation of a series of generalizations about the phonological structure of modern Mixtec varieties, and consequently strengthens the base for reconstruction of the Proto-Mixtec phonological system.

Chapter V, on the phonological structure of Proto-Mixtec, begins by reviewing previous reconstructions of Proto-Mixtec and proposing revisions in the reconstructed language. The phonological characteristics of Proto-Mixtec are described in a new structural framework. The consonants of Proto-Mixtec are treated here in some detail, in order to clarify the contexts relevant to vowel development, presented in the following chapter. Chapter V closes with an overview of the Proto-Mixtec vowel system.

In Chapter VI, the reconstructed Proto-Mixtec vowels are examined in detail. The presentation considers the six Proto-Mixtec vowels by pairs, grouping each "outer triangle" or strong vowel with its "inner triangle" or weak companion vowel. Each vowel reconstruction is supported by a number of correspondence sets, which specify the major environments (or phonological contexts) associated with the patterns of regular correspondence among reflexes from modern varieties of Mixtec. The coverage includes a description of current variation and of the historical origin of the variation, in terms of antecedent vowels, structural changes leading to modern forms, and areas of innovation and diffusion of new forms. The level of detail at which the data are treated is a response to the complicated nature of the phenomena studied, which are products on the one hand of interaction within a linguistic structure

which changes through time, and on the other hand of an association with a constantly changing social and cultural context.

Chapter VII abstracts from the preceding chapters the most important results in terms of identifying major processes of language change and major areas revealed by the patterns of distribution of innovations and retentions. These factors, along with the logical relations of ordering between the rules of phonological development, are sufficient to derive a sequence of proposed stages in the evolution of the Mixtec languages. This diversification scheme is amplified by a consideration of lexical material and other linguistic and sociolinguistic phenomena. While no subgrouping or classification scheme is yet offered, a new map of dialect areas is presented, based on a combination of genealogical and other information.

Two appendices are included following Chapter VII. Appendix I contains the tables of symbols and conventions used throughout this volume, and the alphabetical lists or indices to the primary linguistic data and data sources (towns and town abbreviations, Proto-Mixtec reconstructed lexicon and English and Spanish equivalents). Appendix II presents the corpus of lexical cognate sets which is the primary source of data for this study, along with proposed reconstructions of the antecedent Proto-Mixtec forms.

Language History and Culture History

The history of a language family should be more than a bare skeleton of sound changes. It should tell of the great centers of the languages, and their interrelations among themselves and with other languages. Linguistic prehistory must be compatible with, and should be related to, a fuller cultural history, if only because it is the historic

associations of language group and cultural group which account for the linguistic data.

This study of Mixtec has provided the traditional reconstructed units for Proto-Mixtec, and has indicated the major developmental rules and phonological processes important in the diversification of the Mixtec languages, in order to be able to relate these to other and broader facets of the linguistic prehistory of Mixtec. An essential task is to identify the innovating centers for the phonological and lexical changes, especially those centers with relatively great and/or long-term importance within the Mixteca. Some of these coincide with the great señoríos or native kingdoms, known during Colonial times, such as Teozacoalco, Tilantongo, Yanhuitlán, Acatlán and Tonalá. Each of these dominated diffusion spheres which are revealed in the various distributions of linguistic developments. But the areas of influence varied throughout the period of Mixtec diversification, and some towns changed their orientations more than once during their history.

It should be noted that while the correlation of linguistic and non-linguistic information is not systematically utilized in the present study, it remains a goal for future research. The present study, however, presents the detailed dialectology and comparative work necessary to the other kinds of research, without which correlative and synthetic studies cannot be attempted.

LANGUAGE CHANGE AND DIALECT HISTORY

Language Change and Linguistic Variation

The assumption that language has an abstract structure, a system of units and relations between units, which underlies the actual use of language (which is commonly referred to as "speech") is a basic principle of every modern school of linguistics. This leads to the assertion that generalizations can be made from observations of individual speech acts, and that these generalizations will reveal a relatively uniform system, a "model" for speech production shared by the speakers of a given language. This entity, the "system" of a language, may be conceived as simply an average or normalized representation of speech, or as an abstract system which in effect produces or generates the speech acts. In either case the important point is that the object of linguistic study properly pertains to the conception of language as a system, rather than merely a collection of individual idiosyncratic manifestations of linguistic interaction. Although no two persons, and perhaps no one person at any two times, will be observed to speak in exactly the same manner (Bloomfield 1933:45), the study of language is made possible by an abstraction from these differences to some uniform model which captures generalizations about sets of individual varieties. But exactly what set of individual varieties should form the basis for such an abstraction is essentially left to the linguist's judgment.

Language as a Homogeneous or a Heterogeneous System

The nineteenth century comparativists were certainly aware of the necessity of positing an essentially uniform language as the domain of

language change. For the neogrammarians, this concept of language as a unitary entity derives from August Schleicher's (1861-2) Stammbaumtheorie: a language was a branch of the Stammbaum. But the classic antecedent of language as an abstract system appears to derive from Hermann Paul (1880; 5th edition, 1920); striking parallels to his conception of the language "entity" can be found in the writings of many later linguists, including Saussure and Bloomfield. Though Paul considered the language of the individual (the idiolect) to be the only legitimate object of empirical linguistic investigation, he also spoke of a Sprachusus which was an abstraction from the observed idiolects-- what could be seen as "normal" across a community of speakers (Paul 1920:38; Weinreich, Labov and Herzog 1968:106).

The major development of this idea, however, and its postulation as a requisite for the study of language, begins with Ferdinand de Saussure's distinction between la langue and la parole (1916; 2nd edition, 1922). La langue is a deposit of signs, a system shared by speakers of a language: "l'ensemble des habitudes linguistiques qui permettent à un sujet de comprendre et de se faire comprendre" (1922: 112). La parole consists of particular speech acts by individuals, the manifestations of la langue, and though Saussure defined the two concepts as comprising a unified whole, le langage, it is clear that he regarded the study of la langue as primary. Though la langue is described as the repository of arbitrary and abstract linguistic signs, it is not merely a lexicon, but is essentially a system of patterns and relations between the signs.

Saussure's main objective in his later life (as demonstrated in his Cours de Linguistique Générale, published by his students) was to develop a scientific theory for the synchronic description of language,

in opposition to the neogrammarians' view that only diachronic studies were possible. His definition of the essential nature of language as an abstract system is basic to his distinction between synchronic and diachronic studies of language. But by clearly distinguishing between the two axes of linguistic description Saussure contributed as well to historical linguistics. Rulon Wells (1947:16) pointed out that Saussure

seems to have adopted the physicists' conception that change may be described as a succession of states...; diachronic linguistics, taking as its data synchronic descriptions of different states of cognate languages, infers the changes that led from the earlier states to the later ones.

Roger Lass (1969:4) has also commented on the implications of Saussure's distinction between la langue and la parole with regard to historical reconstruction:

It has become clear, in fact, that systems and the oppositions and relationships within them are really the only linguistic elements that are historically recoverable with any degree of certainty; how a dead language sounded (any aspect of its parole) is forever lost to us--though we can on the basis of various kinds of knowledge make some sharp guesses. We can, however, reconstruct, often with considerable rigor, the relations of systemic elements one to another.

And Roman Jakobson (1962:1-2) further emphasized the importance of the systematic nature of language for historical studies:

This antinomy between synchronic and diachronic studies should be overcome by a transformation of historical phonetics into the history of the phonemic system. In other words, phonetic changes must be analyzed in relation to the phonemic system which undergoes these mutations. For instance, if the order within a linguistic system is disturbed, there follows a cycle of sound changes aimed at its renewed stabilization (like in a game of chess).

The idea of language as an abstract system has a parallel development in American linguistics as well; as early as 1921 Edward Sapir (1921:158) asserted that:

there is something like an ideal linguistic entity dominating the speech habits of the members of each group, that the sense of almost unlimited freedom which each individual feels in the use of his language is held in leash by a tacitly directing norm.

And for American structural linguists this "norm" is most clearly expressed in the concept of the phoneme and other "emic" units of language structure, the abstract units which exemplify the systematic nature of languages (Bloomfield 1933: Chapters 5, 8, 12-14; Hockett 1958: Chapters 14-16).

Generative linguistics also posits the primacy of language as a system, and Noam Chomsky's notions of competence and performance (1966:3) are clearly related to Saussure's langue and parole:

A distinction must be made between what the speaker of a language knows implicitly (what we may call his competence) and what he does (his performance). A grammar, in the traditional view, is an account of competence.

The conception of languages as abstracted, homogeneous, and unitary entities has been opposed by various linguists, from Hermann Paul (1880) and the French dialect geographers (Dauzat 1922; Gilliéron and Roques 1912) to present-day schools such as sociolinguistics (Weinreich, Labov and Herzog 1968; Labov 1963, 1966a, 1966b). The basic argument is that the unitary concept of language does not account for the observed variation in the speech of individuals (idiolects) or subgroups of the linguistic community (social or geographical dialects).

Given that variation in linguistic performance can be observed both at the level of the individual and of larger groups (the dialect), even if the unitary model is accepted as an abstraction or "average" incorporating such variation, the existence of linguistic variation must be accounted for in some manner. What is the source of idiolectal or dialectal variation; how does it come about?

Linguistic variation is the synchronic equivalent of the process of change in languages, a diachronic aspect of language. The observed "fact" of linguistic change has been a topic of interest since the

earliest stages of linguistic investigation, as shown above. Yet despite the attention it has received, including the well-known methodology for describing language change (or the results of language change), there still exists much confusion (or disagreement) concerning the essential nature of the process of language change. In part this confusion is due to the difficulty of distinguishing between the various aspects or closely interrelated topics which must be considered in any discussion of language change.

Simplistically, there are at least three distinct questions regarding language change: (1) what changes, (2) how does change occur, and (3) why does change occur? The answers to each of these questions depend largely on the underlying theory of language held by the linguists who attempt to explain them.

Language Change: Mechanisms and Content

For the neogrammarian Hermann Paul, linguistic change (i.e., linguistic variation) was due to (1) spontaneous change on the part of the individual and (2) adaptation by individuals to the idiolects of other speakers (Paul 1880:34). This simplistic explanation was echoed by Bloomfield: "the difference between speakers is partly a matter of bodily make-up and perhaps of purely personal habit" (1933:45).

The "mechanism" of linguistic variation is best explained by Charles Hockett (1958:439-445), although his model has obvious roots in Paul's description of a speaker's phonetic performance (Paul 1880:54). Hockett's description of linguistic variation is grounded in the structuralist model of language, particularly in the definition of the phoneme and its phonetic realizations, or allophones. "When a person speaks, he aims his articulatory motions more or less accurately at one after

another of a set of bull's eyes, the allophones of the language" (Hockett 1958:440). As children learn language, they acquire acoustic and articulatory reference points, the allophones of the idiolect. These reference points are derived from the speech of the community; they are the frequency maxima within accepted ranges of variation for given phonemes. These frequency distributions are at the same time expectation distributions; a hearer expects sounds to fall within the accepted range of variation, and will interpret them as being equivalent to the frequency maxima even if their physical characteristics differ from the expected values. "In other words, the frequency maxima are the points of reference; both of these are the bull's eyes towards which articulation aims; all three of these are the allophones of the language" (Hockett 1958:443). Redundancy built into the phonological system allows the speaker some inaccuracy of sound production without interfering with intelligibility, and the phonetic values which are actually produced as the speaker aims successively at different allophones vary within broad limits. Hockett supposes that an empirical investigation of such variation would reveal the distribution of variants of each allophone on each relevant dimension to be a normal distribution curve, with a frequency maximum at some value of the allophone on each dimension and a lesser number of occurrences dropping off from the maxima in either direction.

Sound change, i.e., changes in the frequency maxima (Hockett 1958: 439-445), comes about when over a period of years the frequency maximum of heard variants of an allophone drifts off the former bull's eye, brings about a changed set of expectations, and hence reinforces the establishment of a new frequency maximum or bull's eye. This is possible because the ideal values of the allophones are not independent of, but are established by, the frequency maxima; if a speaker consistently hears more

examples of formerly non-maximal variants, he will change his expectations, and hence his performance, accordingly. "In general, individuals who are in constant communication with each other will experience essentially parallel changes in their expectation distributions, and, thus, also in their articulatory habits" (Hockett 1958:443). By an extension of this process, the entire community may change its speech habits, and this is language change.

Similarly, for the neogrammarians, language change occurred when sufficient idiolects moved in the same direction, necessitating changes in the linguist's generalized abstraction (the Sprachusus) from the patterns of those idiolects.

For the structural linguist, changes occur in the various systems of language: the sound system, the grammatical system, or the semantic system. For the generativists, linguistic change is "rule change"; changes in the number, order, or kind of rules which comprise the grammar, whether in regard to phonological, grammatical, or semantic components. In either case, the observed changes can be described and classified (usually according to their effect on the structure of the language), and the resulting generalizations also shed light on the process of change (how and why language change occurs). Nevertheless, the structural view of language change exemplified by Hockett (1958) differs necessarily from the approach taken by transformational linguists. For the latter, the grammar of a language consists of a syntactic component (which in turn consists of a base component--base rules and a lexicon--and a transformational component), a semantic component, and a phonological component (Chomsky 1966:15-18; Chomsky and Halle 1968:6-7; King 1969:16-27).

The base rules, the transformational component, and the phonological component consist of sets of ordered rules which govern the abstract composition of utterances, the interpretation of those abstract structures in more concrete terms, and the phonological shape of the utterances, respectively. Language change consists of changes in these rules (or also in the lexicon or the semantic component). Specifically, rule change can be viewed as rule addition, rule deletion, rule simplification, and rule reordering (King 1969:39-63).

The Sources of Language Change

The description and classification of sound change or other kinds of language change do not address the question of the sources of language change, why languages change. Essentially there are two sources: external and internal. The first, external motivation, is much easier to account for, since it relates to "borrowing" between languages. Internal motivations for linguistic change, however, are another matter, and it is to the motivations of internal linguistic change that most theories of language change are directed.

Borrowing usually introduces new patterns into a language indirectly through borrowing of extensive vocabulary items which exemplify these new patterns. All borrowing by one language from another implies some bilingualism, and large-scale borrowing implies large numbers of bilinguals (Haugen 1950; this position was held as early as the 1880s, again by Hermann Paul). Borrowing is the "attempted reproduction in one language of patterns previously found in another" (Haugen 1969:60). Borrowing represents an innovation in the language to which the new patterns are introduced, and spread or acceptance of the innovations follows the same patterns as those of native innovations. If enough speakers adopt

the new patterns, the new patterns become "native". The most common form of borrowing is the borrowing of vocabulary items, but such items contain phonological and morphological patterns, and the introduction of enough vocabulary which illustrates the same patterns may result in the introduction of the patterns themselves.

As to internal sources of linguistic change, it is readily admitted by most historical linguists that the causes or motivations of sound change (or change in other systems of language) are not entirely understood. As Robert King has succinctly stated (1969:189):

There is a long history of attempts at arriving at the cause or set of causes of phonological change, at a solution of the "actuation riddle" of phonological change (Weinreich et al. 1968). We know nothing more about this than did Hermann Paul... As Leonard Bloomfield bluntly put it: "The causes of sound change are unknown" (1933:385).

Nevertheless, there have been many theories put forth in an attempt to arrive at an acceptable explanation of why languages change. These theories reduce generally to two or three basic types of explanation: that change is random (this is certainly the most naive view, and hardly rates consideration as a "theory" of language change); that change is due to structural pressures inherent in the language itself (this can be broadly construed to include theories which postulate simplification as the motivation for language change); or that language change is due to social factors (generally prestige).

Edward Sapir and "Drift"

Casual discussions of language change have occasionally referred to "drift" in the sense that it is a natural process of "unmotivated" change in languages. This is certainly not the sense in which Sapir intended the term; furthermore it is unlikely that "unmotivated" or

"chance" or "random" change occurs in languages at all. The term "drift" derives from Edward Sapir's classic text, Language (1921), where he states: "Language moves down time in a current of its own making. It has a drift" (1921:160).

Although Sapir declined to specify the causes of "drift", his comments on the nature of this drift conform in general to a "structural" explanation for language change. Specifically, he asserts that drift is not purposeless or random, but has a discernable (though not always predictable) direction, and that a major component of this drift is a homeostatic tendency to maintain the basic pattern (system) of the language.

Sapir clearly recognized that linguistic variation was a synchronic phenomenon and could be seen in the differing idiolects and dialects of a language, but that the drift or change of a language through time was not merely a reflection of these synchronic variations, but was a purposeful selection out of these relatively random phenomena (Sapir 1921:165-166):

The drift of a language is constituted by the unconscious selection on the part of its speakers of those individual variations that are cumulative in some special direction. The direction may be inferred, in the main, from the past history of the language.

Sapir's views on the "structural" nature of drift derive from his statements regarding the readjusting and preservative tendencies of language change with regard to linguistic structures, and his criticisms of other theories of motivation of sound change (1921:186 and 194-195):

A drift that begins as a slight phonetic readjustment or unsettlement may in the course of millenia bring about the most profound structural changes.

A single sound change, even if there is no phonetic leveling, generally threatens to upset the old phonetic pattern because it brings about a disharmony in the grouping of sounds. To reestablish the old pattern without going back on the drift the only possible method is to have the other sounds of the series shift in analogous fashion... And this sort of shifting about without loss of pattern, or with a minimum loss of it, is probably the most important tendency in the history of speech sounds... The desire to hold onto a pattern, the tendency to "correct" a disturbance by an elaborate chain of supplemen-

tary changes, often spread over centuries or even millenia--these psychic undercurrents of language are exceedingly difficult to understand in terms of individual psychology, though there can be no denial of their historical reality.

Sapir insisted that though the determinants of drift were only partly discernable, their explanation did not lie in "quasi-physiological" phenomena, such as the "tendency to increased ease of articulation" or the "cumulative result of faulty perception" on the part of children learning to speak (1921:196). Both of these objections, however, must be seen in historical perspective: what Sapir was arguing against was the view held by some nineteenth century comparativists and earlier commentators that language change represented a degeneration of language from an earlier, more perfect, state. Similarly, he recognized that "simplification"--then viewed only in its superficial manifestations, as movements towards simpler modes of phonological articulations--was not a justifiable theory in view of observable conflicting evidence. Perhaps if he were writing now, he would find the "simplification" models proposed by generative theories of phonological change and language acquisition more amenable to his belief that language change was a "psychological phenomenon", for in his summary of his discussion of drift he stated, "It is likely that we shall not advance seriously [in our understanding of the causes of language change] until we study the intuitional bases of speech" (Sapir 1921:196).

Structuralist Models of Change

The theories of Leonard Bloomfield (1933) and Charles F. Hockett (1958) on language change rest on their structural view of language and their explanation of linguistic variation in those terms (see above). Their discussions of linguistic variation and the mechanisms of sound change are clearly structural: change in the frequency maxima of the

allophones produces change in the phonemic system. But both Bloomfield and Hockett propose "social" motivations as the actual source of change.

In large part, the structuralist model for language change rests upon Bloomfield's conception of the "speech community" (see below), a linguistic community which manifests differing frequencies of communication between its constituent members (individuals or groups). In this context, the patterns of speech of each individual (and hence ultimately the patterns abstracted by the linguist from the speech of a number of individuals) result largely from the frequency of variants to which he is exposed, modified to some degree by factors of prestige. If there exist lines of weakness in the net of oral communication (lessened interaction between some individuals or groups of individuals), each speaker is thus exposed to a slightly different set of other speakers, and to each in different degree. Thus a speaker is more likely to adopt a new standard of speech (a new model or bull's eye for the production of speech sounds or patters) if it comes to him from certain individuals or groups, either because of the frequency of his interaction with them or because of other social factors such as prestige.

Bloomfield apparently did not consider the possibility that the systematic nature or structure of a language could itself influence the direction of change, but rather, as Weinreich et al. observe: "Like Paul he therefore puts the whole burden of explaining change on the mechanism of imitating the speech habits of one's fellows. The direction of imitation, Bloomfield believes, is determined entirely by the 'prestige' of the model" (Weinreich, Labov and Herzog 1968:123-124). This "prestige" model is clearly expressed in Bloomfield's own words:

The borrowing of speech-habits within a community is largely one-sided; the speaker adopts new forms and favoritisms from some people more than from others. In any group, some persons receive more imitation than others; they are the leaders in power and prestige...

when a speaker comes in contact with persons who enjoy much greater prestige, he eagerly imitates not only their general conduct, but also their speech. (Bloomfield 1933:476)

Charles F. Hockett seems to have recognized at least the superficial effects of language structure on linguistic change, for he speaks of the likelihood of certain changes rather than others occurring in the phonological system of a language ("...certain outcomes are more frequent, and hence more probable, than others," Hockett 1958:456), and he recognized the possible effects of sound change on the other systems of a language (grammatical system, lexicon, semantic system). And in his discussion of changes in grammatical and lexical systems, he distinguishes two sources of change other than those resulting from sound changes: analogy and borrowing (Hockett 1958:389-436). Borrowing is, of course, an external source of change.

Analogy is a general term which encompasses virtually any kind of change which is perceived as being due to the influence of one pattern or shape on another. In general, analogic change involves the extension of a common or key pattern to items which previously followed distinct patterns, usually bringing about greater regularity in the forms of a language. (A detailed discussion of the "laws" of analogy is found in Kuryłowicz 1945-49, reprinted 1966.) Although Hockett does not clearly state the implications of analogic change, it would seem that such change is motivated by a "simplification" principle, subsumed under the structural theories of language change.

The influence of phonological structure on sound change has been discussed at length by André Martinet (1952, 1955) in terms of the notions of function, structure, and economy. "Functional" and "structural" sound changes occur, involving the filling of holes in phonological patterns, "push chains" and "drag chains" (whereby primary changes "push"

or "pull" phonological units to readjust the system), shifts of phonemic norms in the direction of maximum differentiation, and the tendency of phonological systems towards symmetry. All of these are structural motivations for sound change, though they are phrased in terms of responses to primary changes, whose sources are not specified.

A different kind of structural pressure is discussed by George Zipf (1929, 1965), based on quantitative rather than qualitative factors. Zipf's "Principle of Relative Frequency" maintains that sounds change when their frequency of occurrence passes either a lower threshold or an upper threshold, causing speakers to tend to pronounce them more or less conspicuously. An inability to quantify the thresholds, however, leaves Zipf's ideas of maximum or minimum functional load suggestive but impossible to operationalize.

Transformationalist Models: Language Acquisition

The theory or model of language change proposed by the transformational school is again one of structural motivation for change, specifically simplification of the grammar (in whatever component) by changes in the rules of the grammar, and the process of change occurs primarily in the transmission of language from generation to generation. For King, "Simplification is a fact of language development, and its roots lie in the child's acquisition of language" (1969:202).

As originally stated by Morris Halle (1962) and adapted by Robert King (1969), the generative model assumes the child has "the ability to construct optimal (simplest) grammars on the basis of a restricted corpus of examples" (Halle 1962:64). From the data presented to him by adults in his environment, the child,

creating a grammar from the finite and fairly small corpus of examples he has to go on, can come up with a competence--an internalized

grammar--that is simpler than an adult grammar yet underlies a speech output either identical with adult speech for all practical purposes or different in relatively minor ways. (King 1969:74-75)

In this model, language change occurs over a series of generations as children construct optimum grammars which generate speech performances acceptable and intelligible to the community--if nonetheless based on slightly different rules and differing somewhat in minor characteristics. Thus although the speech of the child may differ only slightly from that of the surrounding adults, he may be operating from a quite different set of rules. As the child reaches adult status he loses the ability to restructure his grammar radically, thus

changes in later life are restricted to the addition of a few rules in the grammar and the elimination of rules and hence a wholesale restructuring of his grammar is beyond the capabilities of the average adult. (Halle 1962:64)

A modification of Halle's model of language acquisition, wherein children learn their language within the family from the previous generation, has been proposed by Uriel Weinreich, William Labov and Marvin Herzog (1968). They insist that "current studies of preadolescent peer groups show that the child normally acquires his particular dialect pattern, including recent changes, from children only slightly older than himself" (1968:145). This does not seem incompatible with Halle's model; in fact, it seems to enhance the model, for the grammars of peers only slightly older than the language learner would present fewer differences than those of adults, and thus the construction of a new grammar would be a less formidable task for the child.

Although the generative model does not explicitly state why new grammars are necessary between generations, implicitly they derive from the need to reintegrate changes acquired by the speech community during its "synchronic states," that is, changes which result from synchronic linguistic variation, due to social factors (imitation of prestigious

forms or assimilation of new patterns introduced by borrowing), or due to continuations of incomplete restructurings of the language patterns (i.e., structural readjustments whose completion may require several generations, such as the consonant shifts in the Indo-European languages).

Sociolinguistic Models: Variation and Change

The theories of Halle, Bloomfield, and for that matter, the entire community of historical linguists, have been criticized by Weinreich, Labov and Herzog (1968) as being overly simplistic. A major point of their criticism of existing theories of language change is that reliance on an abstracted, homogeneous, unitary dialect of language as the basis for a theory of language change is inadvisable and unrealistic.

Weinreich, Labov and Herzog (1968:100) argue that

[it] seems to us quite pointless to construct a theory of change which accepts as its input unnecessarily idealized and counterfactual descriptions of language states. Long before predictive theories of language change can be attempted, it will be necessary to learn to see language--whether from a diachronic or synchronic vantage--as an object possessing orderly heterogeneity.

Weinreich, Labov and Herzog argue that there coexist in any speech community competing models of language, and that any speaker has multi-varietal competence. Within the speech community there is at the same time both a reservoir of conservative forms yet untouched by changes which are in progress and a developing body of innovating forms which may or may not gradually replace the older forms in the speech of the entire community. A single speaker may regularly use both types of forms at different times, as the difference between the forms may have attached social significance (see also Labov 1963, 1966a, 1966b and elsewhere).

A facile reply to Weinreich, Labov and Herzog would be Chomsky's pronouncement on the relation of "performance" (which encompasses the linguistic variation which Weinreich et al. argue must be accounted for) to "competence" (the abstract unitary model of language underlying performance). Chomsky insists that

performance provides evidence for the investigation of competence. At the same time, a primary interest in competence entails no disregard for the facts of performance and the problem of explaining these facts. On the contrary, it is difficult to see how performance can be seriously studied except on the basis of an explicit theory of the competence that underlies it, and, in fact, contributions to the understanding of performance have largely been by-products of the study of grammars that represent competence.
(Chomsky 1966:3)

A more meaningful response to criticisms of existing "theories" of language change (such as those of Weinreich, Labov and Herzog) requires a broader perspective and a clear distinction between linguistic variation, a synchronic reality, and linguistic change, a diachronic process. Nearly all of the above proposals regarding the nature of language change have validity when viewed as parts of a larger, more integrated whole.

Simplification and Markedness

In the introduction to the discussion of language change above, three questions were posed as a means of clarifying the distinct but obviously intimately related aspects of language change: what changes, how does change occur, and why does change occur.

The answer to the first of these questions, "What changes?," depends on the underlying theory of language. The effects of language change are observable in the surface structures of language (for example, changes in the frequency maxima of allophonic distributions, as discussed by Hockett 1958), but many linguists would prefer to account for such

surface phenomena by postulating changes in the deep structure or underlying forms and rules of the language (King 1969; Halle 1962).

The various explanations of the mechanisms which account for how language change occurs similarly depend on structuralist versus generativist theoretical bases. For Bloomfield and Hockett, and also for Weinreich et al., change is accomplished by the imitation of new or different forms introduced by speakers of high prestige. This "social" motivation which they propose for language change is quite adequate as an explanation of linguistic variation in a synchronic state. Diachronic change is explained simply as imitation by children of the patterns presented by older speakers, thus the children incorporate the changes introduced in previous synchronic states of the language. This is not in conflict with the generativist position that diachronic change is accomplished by the construction of new grammars by children.

But these social motivations do not address themselves to the observed fact that language has a "drift," a specific direction, and this problem is to be answered only by a theory of the motivation for language change (not linguistic variation), the "why" question proposed above.

Social factors account for linguistic variation in synchronic states (borrowing might be added as the "random" element contributing to linguistic variation). If there were no particular direction to language change, then the comparison of different stages in the history of a language would reveal different "language states," but with no discernible pattern, and there would be no reason to expect parallel or analogous changes to occur within the language structure (such as the consonant shifts of Indo-European languages). But if language change takes a direction, as it appears to, then there must be systematic changes with systematic causes, and a systematic theory to explain them.

Observed directions of change through time are accounted for by structural pressures on the synchronic states of languages. These structural pressures may be created by constant dialectal variation (shifting) due to social situations and external sources (borrowing) which affect synchronic systems. The solution to the problems created by these structural pressures appears to be a homeostatic tendency to preserve the systematic nature of language structures (as Sapir suggested), in effect a process of "regularization" of the language, to incorporate irregular or aberrant forms. This is the process which generativists term "simplification" of the grammar. Simplification implies the notion of the symmetry of systems which is a basic principle for structuralists (see Troubetzkoy 1931:96-116, 1939; Jakobson 1939).

One example of simplification (which will perhaps ultimately be seen as the essential nature of simplification) is the notion of "markedness" (Chomsky and Halle 1968:400-435; King 1969:192-200). Markedness is a binary feature of language systems and is considered to be a linguistic universal by Joseph Greenberg (1966). The "marked" member of a binary pair contains some feature which is absent from the "unmarked" member, and thus the marked member is relatively more complex.

In the process of simplification, the absolute direction of change is towards the elimination of marked categories in favor of unmarked ones (Greenberg 1966:14). Perhaps a better formulation of the direction of change is that it moves towards less markedness, not necessarily towards less marked forms. Kuryłowicz (1945-49) argued that in the analogic leveling of paradigms, the new forms are based on the old marked forms rather than the unmarked ones. However, the end result of the analogic change is a system with less markedness, since some dimension of difference will have been eliminated by the analogic changes.

The most common argument against simplification as the ultimate motivation for language change is that from all appearances, languages do not seem to be achieving a stable, regularized, simple form, which is what might be expected if they are indeed constantly moving towards simplification. This is a fairly naive criticism, but quite understandable. The answer should be equally understandable: so long as there exists more than one language (and by implication, more than one culture and more than one social group), there will always be sources of synchronic variation which create new "problems" to be solved by the language, i.e., internal and external factors which impede or prevent the "expected" ultimate realization of a "perfect" language system.

Language Change and Linguistic Diversification

The Speech Community as the Locus of Change

The social and cultural environment within which linguistic change takes place is that of the community of speakers of the language (or the variety of the language), the speech community. The classic exposition of the concept of speech community is found in Leonard Bloomfield's Language, Chapter 3 (1933), though his definition of the speech community as consisting of "...a group of people who interact by means of speech" (1933:42) is not very precise. It does not imply that persons who never speak to each other may not be part of the same speech community, since Bloomfield speaks, for instance, of "the speech community which consists of all English-speaking peoples" (1933:42). Rather the term is generally used in the sense of a set of persons each of whom interacts by means of speech with at least some other members of the set--persons who are linked by lines of interaction in a "net of oral communication"

(Bloomfield 1933:47).

Bloomfield's conception of the speech community, with its vagueness, appears to derive from the neogrammarian landmark work of H. Paul (1880). Though Paul considered the language of the individual (the idiolect) to be the only legitimate object of empirical investigation, he also spoke of a Sprachusus which was an abstraction from the observed idiolects. The basis for Paul's abstraction was what could be seen as "normal" across a community of speakers, but the definition or delimitation of this community was not clearly specified. On the contrary, for Paul a Sprachusus "has no determinable bounds; every grouping of speakers into dialect groups is arbitrary, without theoretical motivation" (Weinreich, Labov and Herzog 1968:106, summarizing Paul 1920:38).

Bloomfield's delimitation of the boundaries of the speech community is likewise undefined, and he (Bloomfield 1933:45) argued that the "difficulty or impossibility of determining in each case exactly what people belong to the same speech community is not accidental, but arises from the very nature of speech communities."

In a major reformulation of Bloomfield's concept, John Gumperz proposed that the speech community is a social group, which can be either monolingual or bilingual, but which is unified by the frequency of structured social interaction, and separated from surrounding groups in terms of communication (Gumperz 1962:31). Thus the speech community is not defined on the basis of who speaks what language, but on the basis of who speaks to whom (on the assumption that structured social interaction involves speaking), regardless of what language or languages are used in the interaction.

While the notion of speech community and its definition at any point in time remains vague, it is clear from the use of the concept by linguists that, seen from a diachronic point of view, the speech commu-

nity consists of some set of individuals (whose membership changes through time) who exercise influence on each other's patterns of speech, i.e., who constitute a network of interaction through which language changes may be transmitted. The concept of speech community is in general quite similar to that of a biological population; a specific parallel can be seen in the definition of the biological population as the group which evolves together (Mayr 1966; Hull 1973). In this sense, the speech community--Gumperz' relatively unified and isolated social group--is the unit of language evolution, i.e., the locus of language change.

However difficult or impossible the speech community may be to define, accepted models of language change assume the existence of such a network of linguistic influences. In fact, it may be the case that while contemporary speech communities are impossible to define operationally, the limits of past speech communities may be inferred from the patterns of distribution of linguistic innovations, which spread only to speakers who are somehow incorporated in the network of influence.

In order to define basic terminology having to do with the speech community, Bloomfield (1933:46-47) visualized the speech community as being represented by a huge chart with a dot for every speaker. If an arrow were drawn from each speaker's dot to that of each other person with whom he spoke, and this were repeated every time interaction took place, then after a long time it would be observed that some sets of speakers were connected by large numbers of arrows, while others were connected by few or none. On the basis of such observations, a density of communication could be calculated for each pair, or each group, of speakers. Subgroups within the community would be separated by lines of weakness in the net of oral communication. Innovations which began in one subgroup of a speech community would tend not to spread past these

lines of weakness. If the lines of weakness within a community are stable, isoglosses drawn between areas of different variant frequencies will tend to co-occur at the lines of weakness, and thus will define variant forms of the language used by the speech community, which are commonly called dialects.

As Bloomfield notes, factors other than just frequency of interactions affect the spread of innovations: prestige of speaker and speech patterns is a major factor. Thus the arrows which represent interaction should be labeled somehow, to indicate that some transmit new forms easier than others. Applying this model to Gumperz' speech community, one can imagine a number of different types of arrows--to represent the different languages in use, membership in different social subgroups with different relationships between distinct pairs, role relationships, conversational or interactional themes, etc. The heuristic value of the model appears to apply to a multidimensional speech network as well; the spread of innovations through the net of oral communication--or their non-spread--determines linguistic variation within the speech community, and whether these be geographical or social dialects, they will be discoverable from an examination of the isoglosses.

The Process of Diversification

A simple observation remains to be made: language change and linguistic variation are both distinct from linguistic diversification. Linguistic variation is the synchronic reality which gives rise to language change over time. But language change does not of itself imply diversification of one language over the course of time into more than one descendant language. Diversification requires the separation, whether social or geographical, of one community of speakers (one lan-

guage community, one speech community) into two or more relatively independent groups. Although linguistic diversification is an almost constant companion of linguistic change, it is not a necessary result, and there are sufficient examples of the independent process of language change without diversification to justify this distinction. The process of language change would of course produce a different synchronic state over the course of time, so that the descendant language might be considered a distinct language from its progenitor. But without either (1) written records of the earlier stage, or (2) diversification of the proto-language into more than one descendant so that comparison of the daughter languages could reveal the processes of change which took place, there would be no manner of inferring the linguistic history of the language.

Sapir clearly recognized the import of this distinction, and although he speaks of "dialects," it is in the sense of developing or incipient languages, as when he says (1921:160-161):

If there were no breaking up of a language into dialects, if each language continued as a firm, self-contained unity, it would still be constantly moving away from any assignable norm, developing new features unceasingly and gradually transforming itself into a language so different from its starting point as to be in effect a new language. Now dialects arise not because of the mere fact of individual variation but because two or more groups of individuals have become sufficiently disconnected to drift apart, or independently, instead of together. So long as they keep strictly together, no amount of individual variation would lead to the formation of dialects.

It is with regard to the process of linguistic diversification that the model of the speech community and the interaction of speakers within that community is of great utility for historical linguistics. The speech community provides an explicit device for explaining the mechanism of linguistic diversification. Synchronic dialectal variation within the speech community is reflected in the subgroups of the community which share a high density of communication (high frequency of interaction),

and these subgroups are separated by lines of weakness, or low frequencies of interaction between the groups.

If the lines of weakness are not stable, do not coincide generation after generation but constantly shift to disconnect and connect different subgroups, then eventually most variants will be communicated to most subgroups. In this case there is no internal diversification. But if the lines of weakness within the community are stable, differences will tend to pile up in the same places: over a period of time the subgroups will become increasingly different, and isoglosses drawn between areas of different variant frequencies will tend to co-occur at the lines of weakness. The end result of this process in extreme cases of stability of the lines of weakness (as in the geographical and social separation of subgroups) is the creation of different dialects or languages as independent changes accumulate in the various subgroups.

Although social separation is a prime factor in creating linguistic variation, it is not the strongest motivation for linguistic diversification. So long as social dialects remain in relatively close contact, they will continue to influence each other to some degree. It is therefore geographical separation which is the more common cause of genuine diversification. This does not necessarily require movement of the groups away from each other (migration), although this is frequently the case. A language which spreads itself over a wide area will almost certainly develop geographically based dialects, even though they are not in all cases geographically separated. Such a situation is referred to as a dialect chain.

Boundaries and Isoglosses

An isogloss reflects a boundary between the geographical or social areas which use different linguistic variants (or use the same variants, but in significantly different ways). If the language varieties spoken on either side of an isogloss stem from the same common ancestor, then the majority of the differences between them will involve innovations, cases in which one or the other variety has adopted a non-original variant (or, considering Weinreich, Labov and Herzog's arguments, has made prominent a formerly infrequent variant). Insofar as the spread of innovations is concerned, an isogloss marks the limits of a diffusion sphere. Even when no innovation is involved (or when it cannot be decided if there is, or which variant is, an innovation), isoglosses still mark the boundaries of speech communities. As various authors have commented, however, the limits of a speech community are not usually sharply defined. It is rare to find two isoglosses, marking the limits of different feature distributions, which coincide exactly for much of their extent.

The study of linguistic isoglosses--phonological, grammatical, lexical or semantic--is the traditional domain of linguistic geography or dialect geography, whose practitioners maintain that "Each linguistic fact has its proper boundaries" (Meillet 1967:84). The proper boundaries of different facts do not necessarily coincide, however, so dialectal boundaries are usually not clear-cut lines demarking well-defined areas. Rather, dialects are usually defined on the basis of bundles of isoglosses which are sometimes parallel, sometimes cross cut each other, and occasionally coincide. Since each isogloss reflects in some manner a boundary that existed or still exists, the networks of isoglosses for

a given area provide synchronic evidence of the history of linguistic change, and of linguistic diffusion, in the area.

Weinreich, Labov and Herzog (1968:153-155) offer an interesting typology of linguistic isoglosses which attempts to account for the location of isoglosses with respect to the languages or dialects involved. Their four categories are essentially distinctions between the motivations for the spread or impediment of the spread of particular linguistic features:

(1) The most common explanation for the presence of an isogloss or bundle of isoglosses is that it coincides with a historical (social or political) boundary or a geographic boundary; that is, it represents the past or present limits of a speech community, within which linguistic innovations spread freely. Beyond the speech community the lack of interaction (both linguistic and sociocultural) prevents further spread of the feature.

(2) A linguistic motivation is possible for the failure of features to spread beyond a given point. This is most characteristic of an isogloss or isogloss bundle which marks the boundaries between languages or dialects whose formal systems are quite distinct in at least some features. This they term linguistic incompatibility (Weinreich, Labov and Herzog 1968:154): "where the advancing change represents a feature that cannot be simply added or subtracted from the system of the neighboring dialect encountered across the isogloss bundle..."; that is, where the introduction of the feature would require extensive restructuring of the neighboring linguistic system. Again, the location of isoglosses of this nature represents the boundaries of speech communities.

(3) If the location of an isogloss cannot be accounted for by either of the above explanations (historical or geographical boundaries,

or linguistic incompatibility), then it is likely that the isogloss represents a linguistic change still in progress, and its future location, i.e., the direction and extent of its spread, can be predicted on the basis of the above two factors.

(4) There remain some isoglosses whose location is not accountable by any of the above explanations. In particular this is characteristic of individual lexical isoglosses which often represent borrowings of specific vocabulary items. In this case the isoglosses do not represent boundaries of speech communities, but they may indicate the extent of cultural interaction between distinct speech communities. Weinreich et al. speculate that these cases can best be explained as "items carried by mobile individual speakers along lines of trade and transit, rather than a steady diffusion of the linguistic feature from one neighboring speech community to another by more frequent and predictable patterns of communication" (Weinreich, Labov and Herzog 1968:155).

Linguistic isoglosses, or the boundaries marking the presence or absence of specific linguistic features, thus provide various kinds of information essential to the reconstruction of the linguistic history of a language family or a family of dialects. Although the failure of isoglosses to coincide neatly and thus form precise boundaries between speech communities (dialects or languages) is often viewed as a serious problem in reconstructing language history, incompatible with the results of the comparative method, their reality is undeniable. The information they provide must be incorporated in any model of linguistic development if it is intended as a genuine picture of the past.

Towards a General Theory of Language
Change and Linguistic Diversification

A general theory of language change and linguistic diversification would include the following points:

(1) Variations in speech patterns either arise spontaneously in the individual (H. Paul), arise through natural processes in the interaction between individuals (Hockett), or are motivated by social factors within the community (Bloomfield; Weinreich, Labov and Herzog).

(2) A learner of the language is exposed to this variation in greater or lesser degree and is influenced by it variously depending on both social factors (prestige, peer groups, etc.) and linguistic factors (structural pressures, simplification of the grammar). The learner constructs his model of grammatical competence from the models presented to him, and his competence (and hence his performance) may embody changes from the competence of the models to which he was exposed. That is, language change takes place.

(3) Such changes move through a speech community along lines of interaction and influence. Segments of the speech community which are isolated from one another may maintain or develop differing repertoires of variants and different models for speech production. A study of the distribution of such variants within a community reveals social subgroups within the community; these subgroups may eventually become separate and distinct speech communities, particularly if they become geographically separated or widely dispersed. And the study of the distribution of linguistic traits beyond the language community reveals the patterns of interaction with other linguistic and cultural groups.

The Comparative Method

Theoretical Bases, History and Application

The theoretical bases upon which the comparative method and historical linguistics rest involve assumptions concerning several aspects of general linguistic theory. Although all linguistic inquiry relates ultimately to a general, unified theory of language, and thus comparative linguistics must be similarly based in such a general theory, the specific aspects relevant to comparative linguistics might be considered as sub-topics of the general theory. Since the comparative method is specifically concerned with the analysis of linguistic change, a discussion of the theory of language change and linguistic variation (see preceding section) is obviously of relevance.

The general goal of historical linguistics is the investigation of diachronic relations between genetically related languages. This implies the notions of (1) linguistic diversification, i.e., the process by which one language evolves through time into two or more distinct languages, and of (2) the speech community or linguistic entity. By implication, both linguistic change and linguistic diversification require assumptions of a more general nature: the arbitrariness of sound and meaning associations in linguistic structures, and conversely, the import of linguistic universals, and, secondly, the systematic nature of language, or the notion of language as an abstract structure versus the importance of idiolectal and dialectal manifestations in the study of linguistic variation (essentially Saussure's langue and parole distinction).

The comparative method of linguistic analysis is the result of some two hundred years of scholarly investigation of languages and lan-

guage change. Its theory and techniques developed primarily through the study of well-documented languages of the Indo-European family; thus the history of Indo-European studies is as well the history of the evolution of the comparative method.

Similarities between Sanskrit, the literary language of India, and the languages of Western Europe had been noted as early as the sixteenth century. Speculations as to the causes of such resemblances led to the hypothesis of genetic relationship between languages which show strong and numerous similarities. The first systematic comparison of Sanskrit and European languages was presented in 1786 (and published in 1788), by Sir William Jones, in a speech to the Asiatic Society of Calcutta. Jones formally demonstrated the regular correspondences between Latin, Greek, and Sanskrit, and insisted that they could not be derived one from another but rather must all be descendants of an even older common progenitor. He thus implicitly postulated two distinct notions basic to historical linguistics: (1) that languages could be shown to be genetically related by systematic analysis of their observed similarities, and (2) that non-extant proto-typical languages of an earlier time period could be hypothesized to account for the genetic nature of the relationships (see also Leroy 1967:11-12, and Pedersen 1931:17-18).

During the nineteenth century, in the milieu of the other developing sciences, the foundation for a scientific study of linguistic families was laid with the beginning of systematic investigations into the interrelationships of the Indo-European languages (Pedersen 1931:240-310; Robins 1967:164-197; Leroy 1967:11-47; Dinneen 1967:176-191). In 1808 Friedrich Schlegel proposed a comparative grammar which would shed light on language history "just as comparative anatomy has shed light on natural history" (quoted in Leroy 1967:12). The works of Franz Bopp (1816) and Rasmus

Rask (1818) securely demonstrated the common origins of Sanskrit and the European languages. Rask formulated the principles of systematic comparison in the discovery of linguistic relationships and etymologies:

If there is found between two languages agreement in the forms of indispensable words to such an extent that rules of letter changes can be discovered for passing from one to the other, then there is a basic relationship between these languages. (Rask 1818:49-51, quoted in translation in Robins 1967:171)

(Note that at this point in time the written letter was commonly accepted as an adequate representation of the sound being compared.)

Jacob Grimm, following the work done by Rask, stated the regularities with which sound change had occurred in the phonetic history of Germanic (from pre-Germanic, represented by Greek, to Gothic, and then to Old High German; Grimm 1819-37). August Pott (1833-36) further codified the principles of sound etymology in precise rules. August Schleicher, botanist as well as linguist and thus influenced by both Darwinian evolution and Linnean classification, developed a method of classification of languages that "may well have been partly inspired by the comparative method of reconstructing the genealogy of manuscripts expounded by F. Ritschl, one of his teachers" (Robins 1967:178). Schleicher's Stamm-baumtheorie likened language diversification to the evolution of the species, and proposed that the process of development could be represented as a genealogical tree. Indo-European, for instance, was seen as having developed in a series of binary splits (Schleicher 1861-62). Reconstruction of the proto-language was thus to be accomplished by a series of pairwise comparisons up this binary tree through a series of intermediate proto-languages.

Beginning in the 1870s, on the basis of increasingly precise data on the individual Indo-European languages, there was a move to codify and increase the precision of the techniques of comparative linguistics

and its theory of the development of Indo-European. The doctrinaire position set forth by the German school of historical linguistics, the Junggrammatiker or "neogrammarians," maintained that sound changes take place in accordance with laws of sound change which have no exceptions; the same sound always develops in the same way in a given environment. This view had previously been expressed (Scherer 1865), but its formalization as the basic premise for all comparative linguistic investigation appeared in the 1878 classic work of Hermann Osthoff and Karl Brugmann, the "Introduction" to Morphologische Untersuchungen I. Each such sound change was supposed to have been universal within a single branch of the genetic tree representing the development of a linguistic family. (See Leroy 1967:30-32; Robins 1967:183-188; Pedersen 1931:277-310; Dinneen 1967:176-191 for further discussion of the neogrammarians.)

The "exceptionless" nature of sound changes demanded by the neogrammarian doctrine required considerable justification in light of many apparent irregularities in the sound laws previously proposed. During this period of increasingly detailed studies, Hermann Grassmann (1963) explained certain exceptions to "Grimm's Law" of sound changes within Germanic by considering the consonantal environments of the sounds in the various languages. Karl Verner (1877) accounted for a further set of exceptions by demonstrating that stress was a critical environment in the conditioning of sound change. In 1879 Ferdinand de Saussure achieved a more efficient explanation of the Indo-European vowel correspondences by postulating the existence in the Proto-Indo-European vowel system of a vowel (schwa) not directly attested in the earliest Indo-European records (Saussure's "laryngeal theory"), again using conditioning factors to justify this reconstruction.

These classic works are of great importance to comparative linguistics for their recognition of the influence of phonetic environments in the description of sound change. In addition, Saussure's innovative postulation of a unit in the proto-language which was not found in any of the extant or recorded daughter languages ultimately demonstrated the predictive value of the developing theory, for nearly fifty years later Saussure's theory was essentially confirmed by Jerzy Kuryłowicz's identification of a sound transcribed as /h/ in recently deciphered Hittite inscriptions as being the equivalent of Saussure's hypothesized Proto-Indo-European vowel (Kuryłowicz 1927).

The nineteenth century thus encompassed the first major period of the development of linguistics as a science: it opened with an era of speculation about the causes of observed similarities between languages and closed on an era of well-developed theory concerning the evolution of language families, universal processes of language change, and the reconstruction of proto-languages and their diversification. Subsumed under vergleichende Grammatik, "comparative grammar" (Schlegel 1808) or the "comparative method" (Antoine Meillet, 1925, appears to be the first to use this term) was a tried and proven method for investigating the history of languages which received wide acclaim. In his 1929 article, "The Status of Linguistics as a Science," Sapir commented, "In the course of their detailed researches Indo-European linguists have gradually developed a technique which is more nearly perfect than that of any other science dealing with man's institutions" (1929:207). From this beginning linguistics has continued to lead other social sciences in the development of rigorously scientific theory and method.

Although the mainstream of interest in linguistic research has turned to synchronic rather than diachronic theories and description, it

was largely on the basis of the foundations for the scientific study of languages laid by historical linguistics during the nineteenth century that modern synchronic linguistics developed. And interest in historical linguistics has by no means disappeared: Indo-Europeanists have continued their investigations, expanding in detail and in scope. Recent efforts to reconstruct not only the linguistic but also the cultural history of the Indo-European family have resulted in the publication of papers presented at two conferences on Indo-European, Ancient Indo-European Dialects (Birnbaum and Puhvel 1966) and Indo-European and the Indo-Europeans (Cardona, Hoenigswald and Senn 1970), and the comprehensive and inspiring work of Paul Friedrich, Proto-Indo-European Trees (1970).

Friedrich's "conjunctive approach" correlates linguistic and other lines of evidence to reconstruct proto-culture and cultural history. He distinguishes between the linguistic system, the semantic system, and the external system. Historical studies of phonology and morphology--the linguistic system--provide information on the existence of proto-lexicon, relations of homonymy and synonymy, and other standard processes for linguistic reconstruction. The denotation of a proto-form is illuminated by a combination of etymology, linguistic ethnography and structural semantics; together, these lines of evidence constitute the semantic system. Other lines of evidence, including archaeological site reports, paleobotanical studies, geological and geographical studies, theoretical models within and without the social sciences, mythological analyses, etc., constitute the external system. The conjunctive approach brings these lines of evidence together with the goal of developing "an adequate theory of (proto-) culture; that is, of the system of perceptual and conceptual values shared and transmitted by the members of (a prehistoric) society" (Friedrich 1970:3).

The Indo-European family was a fortuitous ground for the development of the comparative method, since extensive documentary evidence of early varieties of Indo-European languages was available--some attesting varieties from the second millennium B.C. and earlier--against which hypotheses generated by the theory might be tested. The existence of one or more documented earlier stages in addition to the present observed states of languages is of course a great help in reconstructing the proto-language and intermediate stages and the processes of change which took place in the evolution of a family. The documented earlier stages also give an indication of relative chronology, both of the time depths for the various stages and the age and/or relative order of particular linguistic changes.

It should be remembered, however, that written forms of languages often do not necessarily accurately reflect the spoken forms, and although most of the work done by the nineteenth century comparativists was based largely on written forms, even Meillet recognized that "the examination of texts is only a substitute for direct observation which has become impossible" (1967:19, from the English translation of Meillet 1925). Nonetheless, the reliance on written records created an atmosphere in which some scholars (including Meillet, despite his warnings about the limitations of written forms) came to believe that written records of earlier stages were absolutely necessary for historical and comparative work (this view was expressed by Meillet and Cohen 1924, and more recently by W.P. Lehmann 1962).

It is interesting that it was this very dogmatism of the neogrammarians which contributed to the development of descriptive linguistics as a rigorous scientific methodology in the twentieth century. The neogrammarians' insistence that only diachronic studies of language

could be scientific led directly to Saussure's attempts to formulate a synchronic theory of language (represented by the posthumous publication of his views by his students as the Cours de linguistique générale in 1916; second edition, 1922). Similarly, the neogrammarians' belief that the comparative method could be applied only to languages with written traditions "aroused the ire of Leonard Bloomfield..." and he thus "set out quite deliberately to disprove this thesis" (Haas 1966:116).

Bloomfield proposed to demonstrate the genetic relationship of the North American Algonquian languages by using the same methods developed by the neogrammarians. In the absence of written records, the attempted reconstruction would have to be based entirely on descriptions of the present-day languages, but existing materials on these languages were not sufficiently accurate or reliable for Bloomfield's purposes. Thus, although he is generally known for his major work Language (1933), the foundation for American descriptive or structural synchronic linguistics, it is Haas' opinion that Bloomfield "developed his theories of descriptive linguistics in large part in order to tackle his problems of historical linguistics" (Haas 1966:118).

Bloomfield's successful reconstruction of the sound system of Proto-Central Algonquian (1925) set an excellent example for the application of the comparative method to American Indian languages both methodologically and theoretically. In his article, Bloomfield argued specifically against

the notion that the usual processes of linguistic change are suspended on the American continent (Meillet and Cohen, Les langues du monde, Paris, 1924, p. 9). If there exists anywhere a language in which these processes do not occur...then they will not explain the history of Indo-European or any other language. A principle such as the regularity of phonetic change is not part of the specific tradition handed on to each new speaker of a given language, but it is either a universal trait of human speech or nothing at all, an error. (Bloomfield 1933:130)

This position, that once the theory had been developed in a set of languages for which ample documentation was available it could equally well be applied to unwritten languages on the basis of only one documented time-point (the present), is also eloquently defended by Mary Haas, a noted specialist in American Indian languages, who argues that:

Every protolanguage...was once a real language, whether or not we are fortunate enough to have written records of it. Furthermore, even when we do have written records, we find that what we are able to reconstruct of a given protolanguage always falls short of giving us the full picture of the real language it stands for. But written records fall short, too, as we have seen in the case of local pronunciation variations, lexical items, and turns of expression, and reconstruction methods can and do, in fact, give us information about parent languages not found in written records. We are of course twice blessed when we have both, as in the case of Proto-Romance [reconstructed] and Latin [attested through written records]. When we have only the reconstructed protolanguage, however, we still have a glorious artifact, one which is far more precious than anything an archaeologist can hope to unearth. (Haas 1966:124)

Methodology: Cognates, Correspondence

Sets and Reconstruction

The methods which developed in the nineteenth century for the comparative historical study of language were compiled as a neogrammarian handbook by Karl Brugmann, in his Grundriss der vergleichenden Grammatik der indogermanischen Sprachen (1886-90). The most extensive modern treatment of this methodology is found in Henry Hoenigswald's Language Change and Linguistic Reconstruction (1960); shorter descriptions of the method are presented in Meillet's Introduction à l'étude comparative des langues indo-européennes (1903, with many later reprintings), and in Bloomfield (1933:297-320), Hoenigswald (1950), Pike (1957), Hockett (1958), and Thieme (1964).

The application of the comparative method begins with the collection of an extensive number of vocabulary items in the languages to be

compared. Vocabulary items from these languages which have the same or closely similar meanings are arranged in sets, and the phonological shapes of the items in each set are subjected to a rigorous examination. In this examination, the investigator seeks to discover regular correspondences between the phonological units which comprise the lexical items (see Chart II-1).

CHART II-1

MAYAN VOCABULARY SETS

Gloss	Yucatec	Tzotzil	Chuj	Quiché
1. 'ear of corn'	nal	[č'išil išim]	ñal	xal
2. 'house'	nah	nah	ñah	xah
3. 'ashes'	ta'an	tan	ta'añ	čax
4. 'four'	kan	čan	čañ	kax
5. 'honey'	kab	čab (= 'wax')	čap'	kab

Regular correspondences may be of two general types. Correspondences of identity are those in which all the languages compared display the "same" phonological unit in corresponding positions within a set of lexical items (the terminology should not be taken to mean that phonological units embedded in the different phonological systems can be the "same" and thus "identical"). For example, in the vocabulary sets collected from four Mayan languages (Chart II-1), the correspondence of vowel a in items 1, 2, 4, and 5 is a correspondence of identity, Yucatec a: Tzotzil a: Chuj a: Quiché a. Correspondences of non-identity are regular correspondences between non-identical phonological units in the languages compared, e.g., the regular but non-identical correspondence set, Yucatec

n: Tzotzil n: Chuj ñ: Quiché x, seen in items 1 through 4 of the Mayan example.

Sets of vocabulary items which show regular correspondences throughout, and may thus be assumed to be mutually inherited from a common ancestor, comprise cognate sets. A particular cognate set may not always be complete; the set may lack data from one of the languages under comparison; here, this would be marked by a dash in the column. Or, the form with the corresponding meaning may not be cognate. This is the case of the Tzotzil word for 'ear of corn' in item 1 above; the Tzotzil form is enclosed by square brackets to show that it is not a member of the cognate set per se; it is included for purposes of contrast, to show that the form for 'ear of corn' is, indeed, different in Tzotzil, and not merely lacking in data.

All of the words in the cognate set must have the same meaning, or at least be quite similar in meaning. The semantic shift shown in item 5 by the Tzotzil form čab 'beeswax' (rather than 'honey') is acceptable for purposes of comparison. The Tzotzil word for 'honey', aha pom, is not shown in the chart, although it might well be included, as a non-cognate form like the Tzotzil form in item 1. In the case of item 1, 'ear of corn', no modern derivation of nal can be found, indicating that this form has been completely lost from Tzotzil, rather than simply having changed its meaning.

The discovery of a large number of cognate sets which show part-for-part, regular correspondences is generally taken as sufficient evidence to rule out chance as an explanation of the resemblances between two or more languages. Diffusion may be ruled out on some well-motivated grounds, generally the demonstration that forms in each language could not logically be derived from forms in any other of the languages.

Correspondences of non-identity are especially critical in this respect, since they are less easily explained as borrowings. Common origin is then the most likely hypothesis in the explanation of extensive structural similarities.

Once the fact of genetic relationship, i.e., common origin, has been established by a systematic demonstration of regular correspondences the groundwork has been laid for the construction of a historical model which explains the development of the languages from their common ancestor. The historical model consists of theories concerning (1) the phonology, morphology, syntax and lexicon of the proto-language, and (2) the linguistic changes which created the attested languages from the proto-language.

Inferring Phonological History

Reconstruction of the proto-language proceeds from inferences about past linguistic change, drawn from a study of the correspondences and differences between the languages compared (Meillet 1903; Hoenigswald 1950, 1960; Pike 1957). These inferences are made on the basis of a general theory of language change which has developed from the study of ample bodies of empirical data. The theory is comprised of statements concerning the nature of linguistic change, the classification of types of changes, the likelihood of particular kinds of change, and the influence of language structure on change (see the preceding sections, as well as Bloomfield 1933:346-509; Pike 1957; Hockett 1958:365-458; King 1969).

Each phonological unit in a language is a reflex or development of some phonological unit in an earlier stage of the language, and corresponding reflexes in cognate sets are assumed to be reflexes of the same

earlier phonological unit. The set of reflexes which all derive from a single unit in the preceding stage is called a correspondence set, and the ancestral unit from which they derive is called a proto-unit; these proto-units are marked with asterisks (*) to distinguish them from the modern reflexes, which here are underlined (_).

The reconstruction of a proto-unit represents a hypothesis about the most likely ancestral form of the phonological units attested in a correspondence set. Each such hypothesis is based on a consideration of the phonological nature of the reflexes and of the systems within which they are found, the theory of language change, and the hypothetical structure of the proto-language as it is reconstructed. The reconstruction of a proto-phonology thus constitutes a set of integrated hypotheses about the phonological system of the proto-language and the linguistic changes which created the attested reflexes.

As Mary Haas (1966:130) points out, the reconstructed proto-language is only an approximation to a real language which once existed, and always falls short of reality; the reconstruction represents the best efforts of scholars to approximate the reality of the proto-language, but the most authoritative and carefully researched proto-language may need to be altered if new evidence--e.g., a new daughter language--is discovered. A reconstruction remains a hypothesis, the best explanation of the available data, but subject to revision if more or different evidence becomes available.

The initial framework of a reconstruction is based on the parts of the languages which are most similar, i.e., where all the daughter languages point to the same proto-units which they have preserved with little or no change; these are mostly correspondences of identity in the daughter languages. The remaining correspondences are fit around

this framework, and structural explanations are sought for correspondences of non-identity and for non-correspondences (these latter must be exceedingly rare in genuinely cognate languages, unless the genetic depth is quite extreme):

Once [the initial framework] is established, the principle of analogy can be drawn upon, and by its use instances in which there are aberrations, statistically speaking, can often be plausibly accounted for. Deductive as well as inductive hypotheses must be constructed and checked. Then when all the comparisons that can reasonably be made have been made, the result is a prototypical model of the daughter languages, or, what we normally call a proto-language. (Haas 1966:124)

Most existing work in historical linguistics has assumed, implicitly or explicitly, a structuralist model of language. And within this framework, phonological change (sound change, either phonemic or morphophonemic) is by far the best studied type of change. The major structural changes which occur in the phonological system of a language are coalescence (also called merger) and split.

Coalescence or merger occurs when two or more phonological units cease to contrast with one another. Split occurs when what was once a single phonological entity develops into two or more contrasting entities (Hockett 1958:446-450). Coalescence in the phonological system may involve either the merger of two or more allophones of the same phoneme (in which case there is no change in the basic structure of the phonological system) or the merger of allophones of distinct phonemes (which creates phonemic or structural change, and may precipitate further structural changes).

Split in the phonological system involves two or more allophones of the same phoneme (i.e., two variants which occur in different phonological environments) which, usually because of some previous change which alters their environments, cease to be conditioned variants of [the same phoneme and come to contrast in the same environments. That is,]

they become distinct phonemes, since by definition, two phonological units which contrast in the same environments cannot be allophones of the same phoneme.

Sound change has consequences for other parts of language structure as well. It may bring about changes in morphophonemic alternations and the shapes of morphs and morphemes, for instance, which may in turn create changes in the grammatical system as contrasting shapes lose their contrast or conditioned variants come into opposition. Semantic change may likewise be a result of sound change as homophones are created or variants of roots come into contrast. Sound change may thus be the immediate cause or motivation for other kinds of changes.

In the Mayan example cited above (Chart II-1), an examination of the phonological structures of Yucatec, Tzotzil, Chuj and Quiché (as well as of other Mayan languages), and of the phonological nature of the reflexes forming the correspondence set $\underline{n}:\underline{n}:\underline{\ddot{n}}:\underline{x}$, and of the rest of the phonological structure of proto-Mayan as reconstructed, leads to a reconstruction of $*\ddot{n}$ (a velar nasal) as the proto-unit ancestral to the modern reflexes found in this correspondence set (see Kaufman 1964a). This reconstruction in turn implies certain phonological changes in the development of the daughter languages: in the development of Tzotzil, $*\ddot{n}$ has become \underline{n} , in the development of Quiché it has become \underline{x} (a velar fricative), while in Chuj $*\ddot{n}$ has developed (or remained, or been retained) as $\underline{\ddot{n}}$.

In the notation system employed here, the direction of the change is indicated by an arrow (\rightarrow), with the earlier form to the left and the derived or newly created form to the right of the arrow. Any conditioning environment, or limitation on its action, would be indicated by a diagonal slash (/) immediately following the rule, and then

a specification of the special condition. Thus, for example, the Mayan changes mentioned above would be represented as follows: in Tzotzil, *ñ → n; in Quiché, *ñ → x, etc. If such a change were conditioned by the presence of a following front vowel i or e, the change would be indicated by a rule such as *ñ → n/i,e (where the underline indicates the position of the proto-unit affected, with respect to the conditioning environment).

The relative chronological order of some changes may be evident in the comparative data. Suppose, for instance, that in the history of a given language, the changes (1) *q → x and (2) *k → q have occurred. If (2) occurs first and then (1), *k merges with *q and reflexes of both then become x. If (1) occurs first and then (2), reflexes of *k and *q will not merge, but will survive as q and x, respectively. The reflexes of proto-language units thus give evidence of the order of changes as well as of the nature of changes. Or, suppose that in a given language some change is found only in words (or other contexts) which had certain characteristics in the proto-language, but those characteristics have since been lost in the daughter languages; for example, vowels have become long in words which formerly ended in nasals, although all final consonants have now been lost. The two changes, (1) *V → V·/before final nasals, and (2) C → Ø/# (final consonants are deleted), may be relatively dated, since the environment which was deleted by (2) was necessary for the operation of (1); final consonants must thus have still been present when (1) operated. The existence of sister languages which still conserve the final nasals required for the action of rule (1) is a very satisfactory confirmation of the hypothesized changes deriving the language in question from the proto-language.

The process of reconstructing the phonological system of a proto-language does not consist in taking each correspondence set in isola-

tion and attempting to explain it. Rather, it consists in comparing whole phonological systems to reconstruct a proto-phonological system so that each correspondence set may be explained in terms of an integrated hypothesis of the proto-language.

Reconstruction of the morphological and syntactic systems of a proto-language follows the same general lines as the reconstruction of the phonological system. Points of structural similarity are sought as the basis of reconstruction, and account is taken of apparent systemic restructuring by analogy in the daughter languages. (For examples of such reconstruction of morphology and syntax, see Hass 1966 and elsewhere, and I. Gelb 1969).

The ordering of the phonological (and other) changes which have occurred during the time intervening between the period of the proto-language and the period of the daughter languages provides an account of the process of diversification itself. The diversification process represents the diachronic development of the family, beginning with the proto-language stage, and perhaps passing through a series of definable intermediate stages, until the linguistic structures of the modern languages are reached. The intermediate stages represent (hypothesized) speech communities from which more than one daughter language has derived, and they thus appear in a classification system as subgroups of the family, higher level groupings in a hierarchical scheme.

A comprehensive hypothesis of the development of a language family must then posit: (1) a proto-language of reconstructed units that does not violate known or suspected universals; that is, the proto-language must resemble "real" (empirically-known) languages in its structure, and (2) a series of linguistic changes operating on the proto-language to bring about the daughter languages which appears reasonable in the face

of what is known about language change. Insofar as is possible, these changes should be ordered with respect to each other, thus providing a relative chronology for hypotheses about the process of diversification. Alternative hypotheses about the proto-language and its subsequent history are possible in any case, and the preferred hypothesis out of competing alternatives is that which explains the most data in the simplest, most theoretically satisfying manner.

Classification

Tracing the phonological changes which have led to the development of each daughter language and positing the intermediate stages in the diversification process results in a genealogical classification of the family. For purposes of constructing the simplest model of diversification, two or more languages which have undergone the same changes are assumed to have undergone these innovations together. That is, shared innovations are assumed to have occurred either (1) at a time when a speech community which later diversified was still unitary, (2) at a time when two recently diverged speech communities were changing independently in the same way--either because they faced the same structural pressures or because the change was already underway in the unitary stage, or (3) at a time when two already divergent speech communities were in close contact, with bilingual populations (see Haugen 1950; Weinreich 1953).

On the basis of inferred innovations in the development of the language family from the proto-language, a genealogical classification of the family may be made. The sine qua non of genealogical classification is the shared innovation (Hoenigswald 1966). Languages which share a larger number of innovations since the proto-language are said to be

more closely related, i.e., they share more culture history. Shared retentions are weak evidence for shared culture history, since the same elements or patterns may be retained independently by two totally separated groups.

For innovations to be shared implies either (a) that at the time the innovation was developed and spread, the groups in question were in contact, as parts of the same speech community, or (b) that the groups have undergone independent identical developments. The latter is considered probable only when the languages of the two groups are just diverging from a common ancestor, still have closely similar structures, and hence respond in the same ways to the same structural pressures.

Correspondences that represent neither shared innovations nor shared retentions (i.e., correspondences of non-identity) are weak evidence for lack of contact, since they imply only that the groups have been separated to the extent that an innovation in one has not spread to the other. This is something which happens even inside a unified, monolingual society, as is the case of the social and geographical dialects of any language.

The pattern of distribution of shared innovations is the key to genealogical classification. In general, non-overlapping distributions are indicative of innovations which have taken place in completely separated daughter languages; that is, posterior to their period of unity. Overlapping distributions of innovations indicate quite a different situation, that of continuing or renewed contact between daughter languages which have previously separated, at least to some degree. These are more properly diffused innovations, or borrowings, rather than shared innovations, although they may represent parallel responses to inherited structural pressures, more susceptible to the change than

would be true of other features. This is a difficult problem in historical linguistics, particularly with regard to establishing unique genealogical classifications of the daughter languages. Two examples, from Indo-European and Mayan, may help illustrate this point.

Tracing the development of the three series of Proto-Indo-European (PIE) stops into three of the daughter languages shows a sequence of phonological splits and mergers which account for the breakup or diversification of the family into the constituent daughter languages (data are taken from Watkins 1969). In Sanskrit, PIE voiceless, voiced and aspirated stops developed as follows:

*PIE	*p	t	k	k ^w	became Sanskrit	p	t	ś	k/c
	b	d	g	g ^w		b	d	j	g/j
	bh	dh	gh	g ^w h		bh	dh	h	gh/h

Labial and alveolar stops were retained unchanged from Proto-Indo-European to Sanskrit, but velar and labialized velar stops were not. The velar stops became fricatives and also changed in their point of articulation. The labialized velar stops split, giving c, j, and h before PIE long, unstressed mid-front vowel *e:, but developing as k, g, and gh elsewhere; this meant that some allophones of the labialized velars merged with the developments of the velars.

In the evolution of Old Persian, the Proto-Indo-European stops showed a different development:

*PIE	*p	t	k	k ^w	became Old Persian	p	t	θ	k
	b	d	g	g ^w		b	d	g/d	g/j
	bh	dh	gh	g ^w h		b	d	g/d	g/j

Here there are three major phonological changes: (1) the PIE voiceless velar stop *k became a fricative θ, (2) there was a merger of the voiced aspirated and the voiced unaspirated series, so both *b and *bh became

Old Persian b, etc., and (3) voiced velars *g and *gh and all labialized velars (*k^w, *g^w and *g^wh) split, effecting at the same time a merger of one of the new developments of the labialized velars with one of the new developments of the velars (e.g., Old Persian g derives from both PIE *g and *g^w).

In the case of Avestan, the phonological innovations subsequent to the period of Proto-Indo-European followed still another pattern:

*PIE	*p	t	k	k ^w	became	Avestan	p	t	s	k/c
	b	d	g	g ^w			b	d	g/z	g/j
	bh	dh	gh	g ^w h			b	d	g/z	g/j

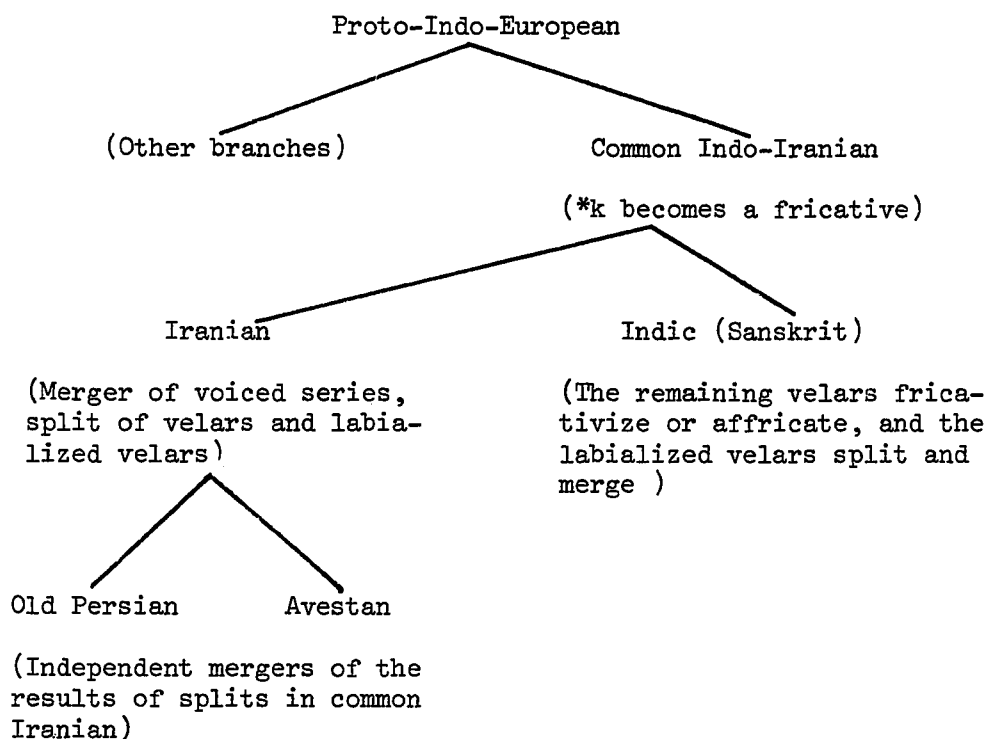
Here the PIE voiceless velar stop *k fricativized to s; there was merger between the developments of the voiced aspirated and the voiced unaspirated series (as was true with Old Persian), and thirdly, both the voiced velars *g and *gh and all labialized velars (*k^w, *g^w and *g^wh) split, with some consequent mergers between the old velar and labiovelar stops.

The reconstruction of the simplest historical hypothesis of the development of these languages involves the assumption that common structural changes took place during a period of shared history, i.e., when the languages which share changes formed a single speech community. Thus the development of PIE voiceless stop *k to voiceless fricative (Sanskrit ś: Old Persian θ: Avestan s) could be assumed to have taken place at a stage common to all three languages. But the merger of the voiced series (*b and *bh both become b, etc.) in Old Persian and Avestan would have taken place at a common Old Persian-Avestan stage which followed the common period of all three languages. Likewise, the splits in the velars and labialized velars (PIE *g becomes g/d in Old Persian and g/z in Avestan, etc.) are most efficiently explained as occurring during a common stage, after the voiced and voiced aspirate

series had merged, but the differential mergers of the results of the split (d comes from *d, *dh, *g, *gh in Old Persian; but only from *d and *dh in Avestan) indicate independent development. These shared (and non-shared) innovations generate a genetic tree diagram (Chart II-2).

CHART II-2

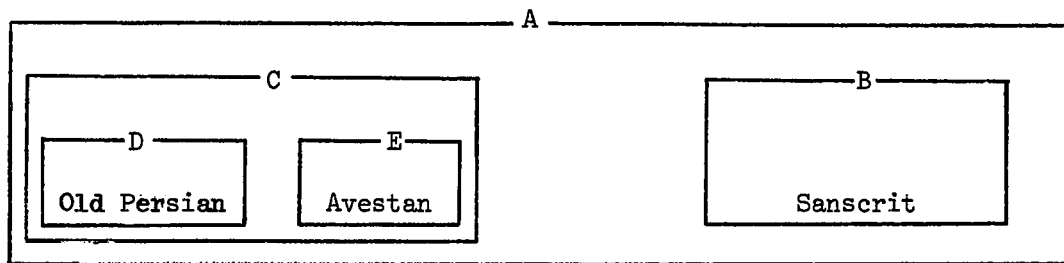
SUBGROUPING OF INDO-EUROPEAN LANGUAGES



This kind of subgrouping--first called a Stammbaum or "genealogical tree" by Schleicher (1861-62) is possible because the shared innovations are non-overlapping. This permits the postulation of entirely separate subgroups and daughter languages. That is, neither Old Persian nor Avestan independently shares innovations with Sanskrit. The domains of each of the changes can be diagrammed in a series of nested boxes, where each box encloses the languages affected by one of the innovations (as in

Chart II-3). In Chart II-3, Box A represents the domain of the fricativization of PIE *k, an innovation shared by all these daughter languages, and which can be taken, for present purposes, as defining the Indo-

CHART II-3
DISTRIBUTION OF INNOVATIONS IN INDO-EUROPEAN



Iranian branch. Box B represents whatever independent innovations have occurred within Sanscrit to separate it from the remainder of the earlier group, while Box C represents the domain of the merger of the voiced and voiceless aspirate series, as well as the split of the velars and labialized velars; these shared innovations document the existence of a period of shared history between Old Persian and Avestan (which did not include Sanscrit). Boxes D and E represent the independent innovations which have occurred within Old Persian or within Avestan, respectively, reflecting the ultimate separation of these two groups.

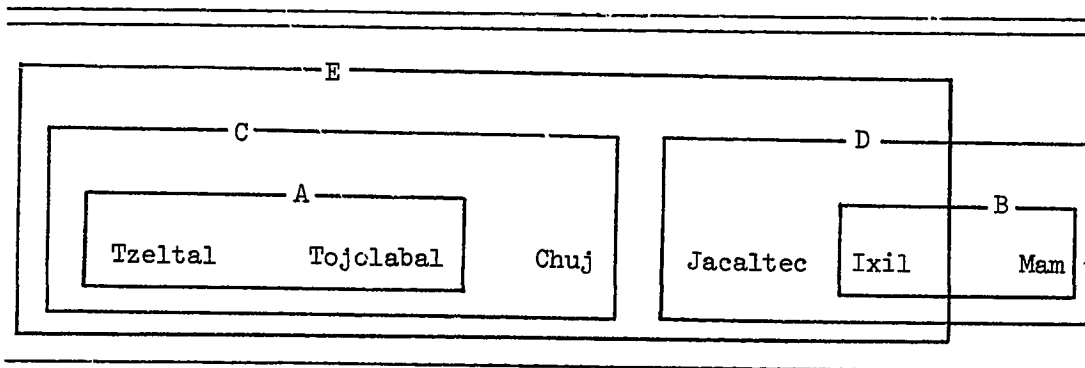
This pattern of distribution of innovations--non-overlapping or uniquely hierarchical--is a product of a process of diversification in which there are an ever-increasing number of independent groups (speech communities) through time, in this case associated with the migrations and consequent loss of contact of expanding Indo-European populations. Other patterns of distributions associated with shared innovations are not compatible with the genetic tree model. Where the distributions of

shared innovations overlap one another, no single genetic tree may be drawn which reasonably expresses the process of diversification. An example from the Mayan area illustrates this point (Chart II-4). The innovations, corresponding to the labelled boxes, are as follows:

- (A) *ñ became n (and thus merged with *n) in Tzeltal and Tojolabal;
- (B) *ñ became x (and thus merged with *x) in Ixil and Mam;
- (C) *k split, remaining k in some environments, but becoming č in others, and this reflex represents a merger between *k and *č in Tzeltal, Tojolabal and Chuj;
- (D) *č became retroflexed č̣ in Jacaltec, Ixil and Mam;
- (E) Proto-Mayan long vowels became shortened, and thus merged with Proto-Mayan short vowels. This innovation was shared by Tzeltal, Tojolabal, Chuj, Jacaltec and Ixil.

CHART II-4

DISTRIBUTION OF INNOVATIONS IN MAYAN



While innovations A through D suggest an independent development of the distinct subgroups or daughter languages of Proto-Mayan, innovation E shows that the developing subgroups were not completely independent. No genetic tree model can express this diversification properly, since the genetic tree model requires non-overlapping innovations. Here there are indications that while there are clear subgroups, the communities re-

mained in contact during the process of diversification, so that Jacalteco and Ixil, for example, shared innovations with different sets of neighbors. In such cases, the genealogical classification of the languages in terms of a genetic tree represents some form of abstraction from the complex reality of development, and must be based on some arbitrary choice of "diagnostic" features (e.g., counting shared innovations, or considering some innovations to be more significant than others).

A further problem in subgrouping and classification is the possibility of another kind of overlapping: phonological, morphological, and lexical innovations do not always coincide. Thus each kind of linguistic evidence may generate a different classification. This problem is usually resolved by relying on phonological innovations alone as the criteria for genealogical classification. But phonology is potentially the weakest evidence for linguistic relationships. The greater number of "structure points" (McQuown 1955:502) in the systems compared, the more convincing are the structural similarities, and phonological structure is less complex than morphological and syntactical structures. Nevertheless, phonological systems are easier to compare, and the theory of phonological change is developed to the point at which linguists confide in and depend on classifications based almost entirely on phonology.

In theory, phonological, morphological, syntactic and lexical information should all be taken into account in a linguistic classification. In practice, the use of various lines of evidence may yield classifications which are unaesthetic because of their inability to place each language clearly in one subgroup or another without employing arbitrary criteria. This should not be taken to mean that such classifications are without value. If a language cannot be tidily placed on the basis of shared innovations with some discrete group of other languages,

this simply reflects the fact that the language has not been "tidy" in its relationships, but has sometimes and in some ways come under the influence of various different speech communities. A classification of languages is not, after all, the end of historical linguistics, but one of the means by which the history of languages can be investigated--a way of putting some of the data in order. The linguistic prehistorian must see past the abstract classifications to the details of linguistic development, since each such detail may in some way contribute to the understanding of the reality of the situation.

Dialect Geography

Early Dialect Studies

Modern dialect studies--involving the systematic collection of data with the intention of establishing the nature and extent of linguistic variation in a given region--have their beginnings in the latter part of the nineteenth century. Linguistics in the earlier part of that century was almost totally concerned with establishing the kinship of the Indo-European languages, discovering and describing the sound changes that had taken place in Indo-European, and developing the general principles of a historical theory of language.

While contributing to the development of the comparative method and the understanding of the development of Indo-European and other language families, dialect studies have followed a tradition of their own, separate from that of historical linguistics. Nineteenth century nationalism and the cult of folk culture had as much to do with the beginnings of research into local, non-standard varieties of European languages as did scientific interests. But the dialect geographers found certain tenets of historical linguistics--particularly the uniform and

exception-free nature of language change--to be inadequate to explain the facts of observed aberrant forms. These exceptions and irregularities could not be accounted for by absolute phonetic laws which operated exclusively and universally within a single branch of a linguistic family.

The strict genetic tree model of diversification was questioned by one of August Schleicher's students, Johannes Schmidt (1872), who proposed that sound changes could be likened to waves spreading on disturbed water, the distribution of each change not necessarily being limited to a single branch of a genetic tree. This wave theory was more amenable than a tree theory to the increasingly detailed information on European language dialects and their distributions being collected by Georg Wenker in Germany (1895) and Jules Gilliéron and others in France (for example, Gilliéron and Roques 1912; Gilliéron and Edmont 1902-10).

The dialect geographers showed that boundaries between the areas of different linguistic changes did not generally coincide, but overlapped in complex patterns. They maintained that phonetic changes and linguistic innovations spread from various (competing) centers of influence to create a complex of dialects, a position not unlike that taken by contemporary cultural diffusionists.

There were not only theoretical differences between the dialect geographers and the neogrammarians, but methodological ones as well. While the comparative linguist worked mainly on the basis of written materials in the languages he studied, dialect geographers of necessity organized the collection of new data (previously unrecorded data) in the field. Wenker carried out the early German surveys by sending out questionnaires to local schoolteachers. Gilliéron and Edmont, in France, attempted to visit each village personally.

From the beginning, dialect geography studies have been mainly inductive, designing questionnaires and interview structure on the basis of observed variation rather than on the basis of a priori theorization about what variation should occur. Data are classified in the most general way--as phonetic, morphological, lexical--and analysis has been essentially ad hoc, explaining particular cases as they appear. Presentation of data is commonly made by means of series of maps, each displaying the geographical distribution of a given feature (e.g., the result of a sound change; a particular lexical item and its alternatives).

This tradition has been codified to a certain extent by Karl Jaberg (1908, 1928), Albert Dauzat (1922) and Sever Pop (1926, 1950), and is the dialectological tradition of all the major European dialect surveys (e.g., Jaberg 1928, 1943, and Jaberg and Jüdd 1928-40 on Switzerland and Italy; McIntosh 1952 on Scottish dialects; Wenker 1895, Wrede 1927-56, and Mitzka 1952 on German). It was brought to the New World by Hans Kurath, who organized the study of American English and its varieties (see Kurath et al. 1939-43, 1949; Kurath, Hansen, Bloch and Bloch 1939; Kurath and McDavid 1961; Atwood 1953; McDavid 1948, 1958, and many others).

Detailed research into European dialects also produced Wörter und Sachen ("word and thing") studies, the nineteenth century precursor to language-and-culture studies. The distribution of lexical variants in folk dialects was seen to be related to the distribution of the items of material culture to which these words related. Thus dialect differences could not be completely understood without a consideration of corresponding material culture differences, and a detailed examination of the distribution of types of agricultural implements, plants, house types, etc., became a part of dialect research (see Gilliéron 1912,

1918; McIntosh 1952; and the German journal Wörter und Sachen). There is a direct continuation of the concerns of this type of study in the modern German school of word-geography.

Structural Concerns in Dialectology

With the development of structural linguistics, dialect differences began to be characterized in terms of structural concerns. The linguist N.S. Troubetzkoy (1939: Appendix 3) constructed a typology of differences in sounds between any two varieties, distinguishing between phonological, phonetic, and etymological differences. Phonological differences are those that have to do with the phonological system, and may be differences in inventory (a dialect may have a phoneme that another dialect does not have) or differences in function (distribution, contextual relations; i.e., a common phoneme may have different contextual relations in the different dialects). Phonetic differences have to do with the realizations of phonemes, and are either absolute (affect all allophones) or limited (affect only some allophones or contexts). Etymological differences have to do with the distribution of phonemes in words. An etymological difference is compensatory if it is due to differences in phoneme distributions, free if it is not. Troubetzkoy applied this classification to dialect data to demonstrate that while phonetic differences may be difficult to plot on maps because they have zones of transition, phonological differences will have clear boundaries. Put another way, phonetic differences occur on a continuum with no natural breaks (e.g., degrees of nasalization). But in a given dialect, a certain phoneme either exists or it does not, giving a clear two-way classification. In Troubetzkoy's view, the difficulty of drawing exact boundaries on dialect geographical maps was a result of

attempting to plot phonetic or etymological differences rather than phonological ones. Thus he rejected the idea that the extension of a sound change could not be exactly or clearly traced; if a sound change affected the phonological system, the structural differences could be clearly seen.

Other structuralist objections to traditional dialect geography have been that only non-standard, changed, or irregular forms are generally recorded, and that features tend to be treated out of context. Collecting only aberrant forms, or concentrating on them alone, does not result in the characterization of a dialect, since the most common, regular, forms may not be recorded. Treating features out of context eliminates the possibility of seeing structural relations at work as conditioning factors; neither can the effects of changes on the structure be easily determined.

Partly in response to these criticism, Angus McIntosh (1952) insisted that not only those forms which differ in some way from the standard language, but all forms in normal use, be recorded and reported. He also called for detailed descriptions of selected dialects as an integral part of a dialect survey, so that phonetic material can be understood in its structural context. McIntosh treated morphological differences of inflection and derivation, as well as differences in syntax. Lexicography--the study of differences in vocabulary--was a major concern of the Scottish dialect survey, and McIntosh distinguished three types of situations that may be encountered in word geography: (a) a single word may be used everywhere (for a certain sense or item on a questionnaire), i.e., there is no lexical difference between the dialects; (b) two or more words may be in use in some or all dialects, in which case each will probably have to be treated separately, not having

the same geographical distribution; (c) no word may be used for the given sense, in which case it is pertinent to determine if this is because the object (sense) is unknown, or if it is known but unnamed.

The typology of phonological differences used by McIntosh is only partially similar to that of Troubetzkoy. The types recognized by McIntosh are: (a) one dialect uses sounds not found in others (Troubetzkoy's "differences in inventory"), (b) one dialect uses a sound known by the other, but not in the same words ("differences in distribution/function"), (c) a phonetic change has taken place without affecting the phonological system ("phonetic differences"), and (d) phonetic change has taken place which has affected the phonological system (which could result in either "phonological differences" or "etymological differences" of any sort).

A clear difference between McIntosh's and Troubetzkoy's typologies is that the latter is strictly confined to synchronic differences and their structural description, while the former includes consideration of the historical processes which brought about the differences. A further difference is that McIntosh specifically addresses the question of irregular correspondences; some words in a group, he says, "go off at tangents" because of extra-structural factors (e.g., orthography, contact with other languages) or obscure internal ones. As a result, the dialect geographer should not expect to find complete regularity in phonological comparisons.

Traditional dialect geography was criticized for treating variants outside of their structure; the structuralists insist on treating variants structurally. But if it is easy enough to plot phonetic variants on a map, it is quite another thing to plot structures. Working in a single dimension, either language structure or geographical distribution,

is relatively easy. Defining analytical units adequate for the description of both dimensions is more difficult.

One attempt to define a cross-dialect analytical unit was that of Daniel Jones (1950:195), whose diaphone was "a family of sounds consisting of the sound used by one speaker in a particular set of words...together with corresponding though different sounds used in them by other speakers of the same language." This diaphone, however, is a definition based on distribution (across words, and across regions). It does not necessarily represent the structure of any one dialect, or that of the dialects in general; the "corresponding sounds" may be different phonemes, or the same phoneme. All they have in common is that they occur in the same words, in the same positions, in a series of regional variants. This diaphone amounts to a correspondence set, a series of regularly corresponding phones (or phonemes) which occur in a set of dialects. But there are usually many correspondence sets in even a small amount of dialect data, and this number can only be reduced by structural analysis to determine which are covariants of which others. Jones' diaphone has a certain distributional utility, but at the expense of structural fidelity.

A more structural definition of a cross-dialect unit is that of Hans Kurath and Raven I. McDavid (1961:v), whose diaphone is defined as a unit which "...comprises all the regional and social variants of a phoneme or its allophones." Foreseeing the effects of alternative phonemic and allophonic analyses, they add: "Needless to say, whether a regional difference in pronunciation is regarded as diaphonic, as involving different phonemes, or as exhibiting a divergence in the incidence of the phonemes depends on one's conception of the phonemic system" (1961:v). Now it is clear that it is place in the structure that is the

organizing principle, and it is openly admitted that difficulties will arise in the application of this structural definition to the data on regionally and socially determined variation.

Uriel Weinreich (1954:389-391) repeated the criticism that "dialectology as usually practiced...compares elements belonging to different systems without sufficiently stressing their intimate membership in those systems." He proposed to achieve comparison of elements without losing sight of their structural relations by constructing diasystems. A diasystem "can be constructed by the linguistic analyst out of any two systems which have partial similarities (it is these similarities which make it something different from the mere sum of two systems)" (Weinreich 1954:389).

Like Troubetzkoy, Weinreich set up a typology of differences between varieties that involves differences of inventory, on the one hand, and differences of distribution, on the other. He established a system of notation for diasystems and their constituent varieties which is adequate for systems which have differences in inventory. Differences in distribution of the units, however, introduce too many complications to be handled by the notation. Nonetheless, Weinreich argued that

if dialectologists would consider the function of the elements which they use in their comparisons, their conception of a "diasystem" would come close to that proposed here for structural linguistics and might lead to the unified theory which is so badly needed.
(Weinreich 1954:393)

To illustrate the advantages of structural analysis of dialect variants, Weinreich used a hypothetical case of a four-informant survey, in which two informants say man and two ma:n. If structure is not taken into account, there are two variants, a and a:, and correspondingly two dialect areas. But if structure is taken into account, it is possible that one informant's dialect has a phonemic contrast between a

and a·, the second does not; for the third a and a· are positional variants of the same phoneme, and for the fourth they are allophones of different phonemes, but not /a/ and /ā/, rather /a/ and /o/. Structural considerations introduce a number of structural features which could be mapped, in addition to the phonetic features: presence or absence of contrasting vowel length, phonemic membership of the recorded phone, or a combination of both. Some of these may be more pertinent than others. Structural units are not just "metaphysical"; Weinreich argues that

if dialectological maps are considered diachronically as snapshots of change, and if it can be shown that the difference between phonemes and allophones can be material in determining sound change, it may be possible to convince the dialectologist that the structural map is after all the more true to the reality of functioning language. (1954:392-393)

Methodology of investigation obviously depends on theoretical orientation; what data are collected and how depends on what is to be done with it. In general, research projects begin with a preliminary survey of the region to be studied in order to establish what linguistic variants there are in the region, on the one hand, and roughly what distributional areas there are with respect to these variants, on the other. On the basis of the preliminary survey, a selection is made of features to be studied, and a questionnaire or other elicitation instrument is designed. The contents of the questionnaire depend on the type of data desired--phonetic, phonological, morphological, lexical, grammatical, syntactic, or a combination; social, historical, structural, or intelligibility. The preliminary survey also makes possible the selection of communities to be visited in order to achieve a collection of sample data from each significantly different zone, and the selection of varieties which merit detailed study. Sampling procedures vary according to the needs of the project, and may be random (whatever informant presents himself) or structured, loosely or tightly, in order to achieve represen-]

tation of different social groups, age grades, sexes, occupational groups, socioeconomic classes, etc.

Historical and Social Dimensions

Analytic units based on distribution (Jones) and on structural considerations (Kurath and McDavid, Weinreich) have been proposed as a standard part of dialectological research. But both have been difficult to operationalize, and a third option is perhaps the most widely practiced: a historical reconstruction of an earlier common stage from which all varieties have developed. The argument for this position is that since all the varieties have developed from a common ancestor by (more or less) regular processes of change, the most convenient analytical units to use in dialectology are those which are defined in terms of the history of the dialects. This third dimension, history, may be the integrating factor needed to explain and account for both geographical distribution and diversification within a common structure.

A fourth dimension is added by Uriel Weinreich, William Labov and Marvin Herzog (1968): the social factors involved in linguistic variation. In a critical review of historical linguistics since its inception, they argue that variation is an essential ingredient in all languages at all stages of their development (barring evidence to the contrary), i.e., that heterogeneity must be taken into account in any historical theory of language. What language change is, more than actual introductions of new forms, is increases or decreases in the relative frequency of variants that already exist within the speech community (much as genetic change in a population is more changes in frequencies of genes than introduction of new genes). Social factors become associated with linguistic elements, whose frequencies change as a consequence.

This change in frequencies may, for structural reasons, trigger a structural change, an innovation, and it may do so in only one part of the speech community. Thus, the four dimensions of linguistic variation--geographical or demographic distribution, structural position, history and sociolinguistic setting--should all be integrated in a single, unified, theory of language change.

Defining Dialect Areas

The choice of one of these dimensions as focal in a dialectological study has clear implications for definitions of dialects and dialect areas. Weinreich (1954:397), for instance, discusses several kinds of criteria which have been employed in the segmentation of the continuum of speech differences that normally occurs across a region of "folk language" (as opposed to "standard language"). A single important isogloss may be considered adequate to define dialect areas; but usually a bundle of isoglosses (coincident or nearly coincident) is used as a defining criterion for dialect boundaries. A third alternative is the use of extra-structural criteria, i.e., non-linguistic data.

In defining the border between the Riparian and Moselle-Franconian dialects of the German Rhineland (the "Eifel Barrier"), Weinreich noted that there are isoglosses between helpe:helpe, Lucht:Luft, Haus:Hus, and other items. The isoglosses correspond more or less to the line that divides sociocultural differences: short-bladed versus long-bladed scythes, gray bread in oval loaves versus black bread in rectangular loaves, etc. The Eifel Barrier defined in terms of both linguistic and the extra-structural criteria is "meaningful as a reflex of a medieval boundary which can in turn be accounted for by more permanent climatic, orological, hydrographic, and other geographic factors" (1954:397).

Rather than defining a dialect area, then, Weinreich argued for the identification of a "language area (Sprachlandschaft)," essentially a sociocultural, geopolitical, domain which underlies the distribution of linguistic variants. The suggestion that areas be defined on other than strict linguistic grounds obviously reflects the weight that Weinreich gives to social factors in the study of language variation. It should be mentioned that this is also characteristic of the German tradition of dialect geography (see Bynon 1977:191-192).

Most dialects and dialect areas, however, have been defined on the basis of isoglosses--major isoglosses and/or bundles of isoglosses. A single major isogloss defines the border between Low and High German: the k:x distribution. American English dialects are defined in terms of bundles of isoglosses: "If several isoglosses approximately coincide for a great part of their length, we have a bundle of isoglosses, which may be said to constitute a dialect boundary between two dialect areas" (McDavid 1958:498). Taking into account the probable roles of historical change and sociocultural influence, isoglosses may be said to define a focal area on the basis of isoglosses grouped around an important cultural center, relic areas left outside such networks, and graded or transition areas where isoglosses defining different focal areas overlap (McDavid 1958:484-485).

One of the most common factors in dialects studies, insofar as the distribution of isoglosses is concerned, is the geography or the geographical subregions of the area being studied. Despite its almost universal presence as a correlate to isogloss distributions, geography as such is rarely mentioned as a cause of dialect boundaries, rather as a feature useful in describing dialect boundaries. Perhaps this reluctance to identify geographical features as intimately related to linguistic areas

dates to a concern with avoidance of geographical determinism as a mode of explanation. Or perhaps the traditional name dialect geography already indicates an understanding of the role of the physical setting. At any rate it is curious that a factor so clearly correlated with linguistic distributions should be so little emphasized.

On the other hand, constant reference is made to social, cultural and historical factors that are directly attributable to the geographical context. McDavid, for instance, in discussing the "forces underlying dialect distribution in America," states:

In seeking an explanation of the dialect areas we have found, we must then search for the economic, social, or cultural forces of which these patterns are the result. The most important of these forces, as providing the raw material upon which all the other forces operate, is the history of population, especially the history of the original settlements. (1958:500)

What is neglected here is that there is yet another force which provides the raw material upon which populations are founded and through which they move: the geographical setting, its exploitable resources, its barriers to communication, its waterways and other natural means of travel.

There are at least two clear indications of the central place of geography in dialect and feature distributions. It is surely not accidental that one of the earliest techniques of displaying dialect data, which continues to be part and parcel of any dialectological study, is the plotting of the data (analyzed or not) on physical geographical maps which display the major topographical and hydrological features--major rivers, valleys, mountain chains, etc. Had this physical universe no relation to dialect distributions, it would seem unlikely that such presentations would continue to be a standard part of dialectology.

Secondly, dialect areas, or the dialects themselves, commonly receive names based on those of the geographical regions occupied by the dia-

lects: e.g., the New England dialects such as Hudson Valley, Long Island Sound, Virginia Piedmont (Kurath et al. 1949). If such geographical regions had no relation to the isoglosses defining the dialect areas, it would seem that some other nomenclature would be more appropriate.

A treatment of the role of geography in the determination of culture areas, with clear implications for dialect and language areas, is that of Robert W. Ehrich (1970). Since his discussion was intended to contribute to the understanding of the role of geography in the development of the Indo-European languages, and since the concept of culture area is basically the same as that of Sprachlandschaft, his remarks are relevant here. Ehrich reports on a study which attempted to test the hypothesis that "the geographical patterning of an area tends to be stable or recurrent through time as one examines a series of cultural maps of different time periods" (1970:232), that is,

that culture area and culture boundaries have a tendency to persist through time if there is a long-standing cultural tradition; and, if such a long tradition is absent, that they keep reappearing despite the influx of new peoples with different cultures. (1970:217)

Tracing cultural boundaries through time in a specific area--the archaeology of large parts of Yugoslavia, Hungary, Rumania, Bulgaria and Greece--Ehrich finds the hypothesis confirmed:

It seems clear that topographic, physiographic, and ecologic factors have served continuously as isolating mechanisms in the regionalization of culture, and that, although they may have been temporarily obliterated during periods of instability and population movement, they have tended to reassert themselves repeatedly during the course of time. (1970:232-233, emphasis added)

Since the development of dialects is essentially parallel to the regionalization of culture (i.e., the Sprachlandschaft) it could thus be supposed that the same factors of topography, physiography and ecology would be constants (or recurrents) in the dialect histories of given regions.

Weinreich, in fact (1954:389), prefers not to speak of "dialects" except in the sense of "language area" or Sprachlandschaft. The term "dialect" is endowed with attributes that do not pertain to a linguistic system as such. Dialects can be prestigious or lowly, adjacent or distant, contemporary or non-contemporary. For Weinreich, linguistic systems can be only identical or different. Two different linguistic systems should thus be called "varieties" to avoid use of the loaded term.

A major point of variation among dialectologists is what kinds of features are to be mapped for the identification of isoglosses. Here again features of the various dimensions may be mapped. Early dialect geographers mapped phonetic features onto geographical maps, i.e., distribution was the focus of the presentation. Structuralists insist that it is structures and structural units, not phonetic features, that should be mapped. Historical linguists are more inclined to map areas which share innovations; the isoglosses then represent the extent of influence of a phonetic law, for instance. Sociolinguists will include non-linguistic elements. It might seem that if one does not expect isoglosses of the same kind to correspond in their distributions, even less can it be expected that structural, historical and socioeconomic isoclines will coincide. Nevertheless, it appears to be the case that, since they are interrelated factors, they do in fact tend to coincide-- or not to coincide precisely, but to vary in understandable patterns-- in many cases.

Still another difference between dialectologists is the use of quantification and quantitative methods. Here again, what is being quantified varies, as well as how to quantify it. In a review of quantitative methods intended to give measures of mutual intelligibility, C.F. Voegelin and Zellig S. Harris (1951) in effect survey all the pos-

sibilities presented in dialectological work. They divide the methods into four groups: "ask the informant" methods, "count the samenesses" methods, "structural status" methods, and "test the informant" methods. With the exception of the last category, all these types of methods are used in qualitative as well as quantitative studies. The first, "ask the informant" how to classify languages and dialects, is not considered particularly scientific, but does provide information on intuitive native feelings towards differences, which would be of special importance if social factors were to be taken into account in the analysis.

"Count the samenesses" approaches may quantify on the basis of phonetic inventory, phonemic distinctions, morpheme classes, cognates, or any other elements thought to be appropriate. These are essentially in the traditional line of quantitative comparative studies in general ethnology, e.g., Kroeber and Chrétian (1937, 1939), Driver and Kroeber (1932), Chrétian (1943). "Structural status" methods involve weighting similarities and differences according to their structural significance; as McDavid put it,

obviously a difference in the phonemic system, such as the absence of a contrast...is of more significance than a difference in the incidence in a particular word of the syllable nuclei...which every native speaker...has in his inventory. (1958:498-499)

The "test the informant" methods exist almost entirely in the area of intelligibility testing. Rather than define dialects and dialect areas on the basis of distributions, histories, structural status or social value of features, mutual intelligibility tests define dialects on the basis of how well their speakers can understand each other. The method proposed by Voegelin and Harris (1951) has been applied by Joe Pierce (1952, 1954) and H. Hickerson, Glen Turner and Nancy Hickerson (1952) in early studies, and more recently by the Summer Institute of Linguistics in surveys of Mexican Indian languages (Bradley 1968;

Egland 1978; see also Casad 1974 for a fuller discussion of the method and its application). Tapes of the speech of an individual who speaks one variety are played to a speaker of another variety, and vice versa, and the informants are then tested as to their understanding of the content of the spoken material. Adjustments may be made for the kind of content (familiar stories, popular themes or cultural expectations may increase or decrease scores independently of how much information is being transmitted verbally), or for test-taking ability (an informant may be tested on his own text to establish a reference point). Quantitative methods are invariably used in the analysis of the quantities of data that are produced by intelligibility testing over any sizeable area, but the statistical significance of many instances of such quantification can be seriously questioned. In most cases there is little control for sampling, for small sample size, etc. Nonetheless, mutual intelligibility studies effectively add a fifth dimension, communicative function, to dialect studies.

Historical Reconstruction and Dialect History

Diversification Models: Diffusion and Migration

Historical dialectology brings together the comparative method, dialect geography, and extralinguistic information derived from diverse sources (archaeology, ethnohistory, history, comparative ethnology, human geography, etc.) in the attempt to formulate a unified theory of the development of a dialect complex. Thus, a first step is to define the nature and distribution of linguistic variants vis-à-vis the population units in the region to be studied.

The variants determined by dialect geography must be understood in the framework of a historical reconstruction of the preceding unified

stage of the language, accomplished by the application of the comparative method. The linguistic development of each dialect can then be traced from the common ancestor through a series of innovations which derive the attested state of the dialect.

Dialects, like related languages, can be legitimately subgrouped for genealogical purposes only on the basis of shared innovations, but dialect subgrouping is rarely as neat as that of languages at a family level, since dialects represent a level of differentiation which does not impede borrowing, and the varieties are often in intimate contact. In studies of dialect diversification, it is the overlapping areas of innovation spheres, the non-discrete subgroups formed by successive innovations, that provide the most interesting material for historical dialectology.

Taking inspiration from the empirical studies of European and North American dialectology, it is assumed that the distribution of a linguistic variant, particularly an innovation, reflects an existing or a once-extant sphere of influence, within which the innovation diffused. Innovations which are universally present in a contiguous area, but only occasionally present in a surrounding area (i.e., occur in some of the possible forms but not in all), are assumed to be innovations which are still spreading and have therefore not become entirely uniform along the frontier of the innovating area. Some distributions are taken to represent relic areas, unaffected by innovations which have been adopted by adjacent areas.

When the traits, or variants, show a delimitable distribution, an isogloss is drawn to enclose the area of occurrence of the trait. The coincidence of several isoglosses, producing a bundle of isoglosses whose distribution limits coincide in at least one frontier, allows de-

limitation of linguistic interaction spheres. The dialect areas established by isogloss bundles generally differ markedly from one another in their overall linguistic characterizations, and in these cases we may speak with confidence of discrete dialect areas. Such clearly delimited dialects imply a low level of linguistic interaction between the defined area and the areas outside its sphere of influence, because the limits to interaction are generally the same as those of the isoglosses which delimit the trait distribution.

Within an area which is bounded by an isogloss bundle, we can further infer that there is a much higher level of interaction, without internal barriers and with well-marked frontiers between it and other areas. The contact between the speakers promotes and maintains the common use of certain linguistic variants. This situation is inevitably correlated with geographic and/or socio-political spheres of influence and interaction, and can be investigated by means of historical and economic data. But when the isoglosses do not coincide, and bundles of isoglosses are hard to find, we can infer that there is more interaction between the areas, which themselves lack well-marked frontiers. It is also likely that the unique patterns of isoglosses which do occur are due to frequently shifting patterns of inter-group association and communication.

When two or more areas show the presence of the same linguistic (or other cultural) variant, the inference which can be made is that the areas had a special mutual relationship. This relation is principally confirmed by the sharing of new traits, or innovations, rather than simply the mutual retention of an older form. When innovations are shared, we know that they reflect a period of shared history, in the form of a common influence, whether this be foreign or from within their

own linguistic group. But the identification of innovations rests completely on a thorough knowledge of the linguistic history of the group, i.e., previous comparative work and the reconstruction of the proto-language.

One of the major mechanisms in the creation of dialect areas is the diffused innovation, a new linguistic form which comes into use in a prestigious dialect and spreads throughout the sphere of influence of that dialect's speakers (see Robertson 1977 for comments on diffused innovations in the Mayan family). Each receiving dialect must accommodate the new feature to its linguistic and sociolinguistic system, and a period of irregularity and incomplete adaptation is followed by one of regularity and stability. Unraveling the sources and diffusion spheres of these variants provides information about which centers have had cultural and linguistic dominance over adjacent areas. A historical model is constructed on the basis of the linguistic information, but taking into account what is known about the prehistory and history of the region.

A second major source of new dialects, or of difference between adjacent old dialects, is the movement of populations, rather than the movement of linguistic features per se. It is extremely common in Meso-america--evidence indicates that this is not just a modern phenomenon but is common throughout prehistory--for an entire village, or a significant portion of the population of a village, to remove itself from its prior location and establish itself in a new location. These population movements, loosely referred to as migrations, as well as shorter term and cyclical migrations (which are also common), may bring into contact sharply divergent varieties of the language. Thus adjacent varieties may be entirely different in terms of their historical develop-

ment. Or they may have been independent up to a certain stage and then begin to show similar, common influences. These cases must be interpreted in terms of a model which attempts to place them with respect to their former neighbors and date, at least approximately or relatively, the period in which the movement took place and new linguistic relationships were formed.

The real problem with historical dialectology is that most of the time a given situation reflects a complex combination of the two major factors mentioned--diffused innovations and population movements. If the linguistic information is analyzed in isolation, there is a considerable danger that the model proposed will be purely speculative, given the large number of alternatives which will exist for the explanation of a particular distribution. Thus it is desirable that linguistic information be correlated with extralinguistic information, in order to control the number of possible explanations and to offer a greater level of reliability for the proposals. Where archaeological or ethno-historical information indicates that a certain village held sway over a large adjacent area, as was the common case of Mixtec cacicazgos and señoríos, it is reasonable to interpret innovations which have a corresponding distribution as reflections of that regional influence. Where local oral history recalls a migration to settle the present site, it is reasonable to look elsewhere for the nearest linguistic congeners, and to explain the lack of correspondence of the dialect to its neighbors in terms of a site unit intrusion.

Precedent Studies in Non-Mesoamerican Dialectology

Correlations of the patterns of distribution of linguistic variants with the social, political and economic spheres of influence of

major centers, as well as with other aspects of known historical fact, have been a part of dialectology since its beginnings in the nineteenth century. The nineteenth and early twentieth century dialectologists used historical explanations to account for the distribution of dialect varieties, and these were taken for granted and rarely explicitly modeled. Thus, in the early German dialectology of Wenker and his associates, the explanation for the "Rhenish fan" phenomenon is found in the history of political boundaries along the lower Rhine (see Bloomfield 1933 for a discussion of the case).

The use of historical explanation among American dialectologists trained by Hans Kurath is well exemplified by Raven I. McDavid's classic article on "post-vocalic r" in South Carolina (McDavid 1948). The geographical and social distributions of variants in the pronunciation of this consonant are related to different origins of regional populations (southern British coastal settlers versus Scotch-Irish montane settlers) and their later mixing and social stratification--within a model which takes into account factors such as the invention of the cotton gin and the freeing of black slaves. More recently, William Labov (1963), in a study of the vowels of the English of the natives of Martha's Vineyard, accounts for the differential age distribution of certain vowel variants in terms of a model of social history which involves symbolic resistance to outside influences based on extending the use of the vowels of a local fishermen's dialect.

These and innumerable other studies which explain dialect distributions by reference to historical fact have established firmly the notion that the geographical and social distributions of dialect variants in a population regularly reflect the boundaries of social networks within the population and their changes through time. As with the comparative

method, nineteenth century European scholars were able to develop their explanatory models in the context of known history, without having to recur to speculations about potentially important events of the past. And in dialectology, as with the comparative method, once the general principle of correlation and cause-and-effect relationships between linguistic distributions and social history was established, the principle can be applied to cases in which the history is not known, in order to generate hypotheses about that history--hypotheses which may be susceptible to testing by other means (e.g., to testing through historical or archaeological research).

The major difference in the European and North American antecedents and historical dialectological work in Mesoamerica may lie in the kinds of sources available for historical information potentially related to linguistic distributions. Whereas in the former situations one can rely on extensive written histories compiled from a variety of sources by historians, in the latter cases linguistic information must be correlated with information drawn from archaeology, comparative ethnography, and ethnohistory. But the essential nature of these sources is the same; what changes is simply methodology.

Mesoamerican Historical Dialectology

There were few dialect studies of any kind in Mesoamerica until the past decade, although recently dialectology has become one of the more common types of investigation on Mesoamerican languages. Mayers' (1969) review of indigenous dialectology in the Americas reveals the paucity of studies up until the 1960s; he was simply unable to find more than a half-dozen studies that could even remotely be considered as dialectological, apart from numerous mentions of dialects and allu-

sions to dialect variants. The lack of dialect research was understandable given the overall state of Mesoamerican linguistics through the middle of this century. A prior task was the documentation of at least one variety of each language, and this goal had still not been met by mid-century (see Bright 1967). Even as basic documentation became available, attention turned first to historical comparison rather than to the study of the internal variation of each language.

Comprehensive studies of the major language families did not begin to be published until mid-century (see the following reviews: Fernández de Miranda's inventory of Mesoamerican classificatory materials, 1967; Longacre on the Otomanguean family, 1967, 1968; McQuown on Mayan, 1956; Voegelin, Voegelin and Hale on Utoaztecan, 1962). Some families have received only preliminary treatment, and have yet to be studied intensively (e.g., Totonacan, for which see Arana, 1953; and Mixe-Zoquean, for which see Kaufman, 1964b).

Once the ground had been broken with the first broad studies of the internal classification of the major language families, later work was undertaken in a variety of directions. Some work was dedicated to refining the historical comparative sketches with more ample data bases. Examples are Calvin Rensch's work on Otomanguean (1966, 1973, 1976, 1977a, 1978), Terrence Kaufman on Mayan (1964a, 1969a, 1970, 1972), and Lyle Campbell and Ronald Langacker on Utoaztecan (1978), all representing research begun in the 1960s at the earliest.

A second direction that began to be explored more securely, on the basis of the preliminary work in language family classifications, was the question of possible interrelationships between the postulated language families. This line is exemplified by Ronald Olsen's work comparing Mayan and Uru-Chipayan (1964, 1965), Louisa Stark's comparison of

Mayan and Araucanian (1970), David Oltrogge on Jicaque and Tlapanec (1977), Lyle Campbell and David Oltrogge on Jicaque and Hokan (1980), and Stanley Witkowsky and Cecil Brown's proposal of a "Mesoamerican" language phylum (1978), but see also Lyle Campbell on Lenca-Xinca comparisons and the pitfalls of establishing distant genetic relationships (Campbell 1976).

Still another direction taken after basic classificatory work was established was that of dialectology. The language families had been defined and some of their internal divisions identified, albeit with lacunae and unresolved questions, and at least preliminary comparative reconstruction had been undertaken. Motivation for dialect work came as much from a desire to better the quality of comparative reconstructions (e.g., Kaufman on Tzeltal-Tzotzil, 1970, 1972) and to discover new language-level variants of the families (as in the cases of Teco, Sipacapa and Sacapultec, Mayan languages identified in the course of dialect surveys; Kaufman 1969b, 1976b), as from a direct interest in dialectology. Thus the earlier studies tend to place more emphasis on the linguistic nature of dialect variation and less on the social aspects of the dialects.

Nonetheless, the earliest of the major dialectological works is also the most comprehensive in its integration of data drawn from various sources. Sarah Gudschinsky's (1958) article on Mazatec dialects is a first-class model for multidisciplinary historical dialectology. On the linguistic side, she had the advantage of many years' field experience in the Mazatec area from which to draw in order to choose her sample of village dialects for inclusion in her study. The villages chosen represent the more significant dialect variants, preselected on the basis of long experience with the individual varieties. These dialect

variants are related to a reconstructed proto-Mazatec based on data from these same and other varieties (Gudschinsky 1955, 1958). This proto-Mazatec is in turn reconstructed within a wider framework, which unifies Mazatec with Popoloca, Chocho and Ixcatec (Gudschinsky 1959). The subgrouping of the dialects is based on tracing the innovations in the development of the local dialects which lead to the attested linguistic situation.

On the linguistic side, then, Gudschinsky's Mazatec study is firmly grounded in a historical-comparative framework and based on better-than-survey data. It is an exemplary study carried out by a talented linguist with great depth of understanding of the individual languages and dialects, the historical development of the language and related languages, and scholarly control of the theory and practice of historical comparison and reconstruction. But what marks the article as exceptional is that it is not entirely linguistic. Gudschinsky presents ethnohistorical information supported by archaeological data on the cultural development of the region whose dialects she has studied, and she relates the development of the dialects to the formation and reformation of political entities which dominated the affairs of the region in different periods. Thus the first subgrouping of Mazatec dialects, developing from a common Mazatec, relates to the formation of a "Lowland Mazatec Nation" within whose territory innovations are shared which do not affect the highland varieties of Mazatec. (It is interesting to note that the linguistic data amplify the list of villages which formed part of this social sphere, since some towns' dialects show the innovations but were not named in the ethnohistorical sources as belonging to the lowland empire.)

Later phases in the development of Mazatec dialects reflect the effects of foreign conquest of the territory, which fractured dialect areas by disrupting the existing integration of the villages in a regional sphere (these include an earlier conquest by an unidentified group, and a later Aztec conquest). Also noted are the effects of an intrusive village of Mixtec speakers (San Juan Coatzacoapan), which interrupts a local dialect chain, as well as the linguistic reflections of later Mazatec kingdoms in the highlands. As in classic European dialectology, then, Mazatec dialects can be shown to relate to social history, and to relate quite directly to the sequence of changes in social networks reflected in historical (in this case, ethnohistorical and archaeological) information. It should also be mentioned that Gudschinsky introduced a chronological dimension in her dialect study by using glottochronology intelligently, not just as cookbook formulae, but taking into account what is known about relevant factors (see especially her 1955 article, "Lexicostatistical Skewing as a Result of Dialect Borrowing," and her 1956 article, "The ABCs of Glottochronology").

Following Gudschinsky's work on Mazatec, there was little dialectology undertaken in the Otomanguean family until very recently. Teresa Fernández de Miranda's work on Zapotec remains unpublished, although it is known that before her death she had completed a manuscript treating Zapotecan variants. Much of Jorge Suárez' more recent work in Zapotec also remains unpublished (1977b; but see also Suárez 1973, 1980a). A survey of Otomí and Mazahua was begun in 1974 (reported by Padilla et al. 1979) but was never brought to conclusion. And some work on the comparison of two or more varieties of the same language has been carried out (Hollenbach 1977 on Trique; Mak 1948, 1953, 1958, 1961, on Mixtec, etc.) but few if any can be legitimately considered as dialect surveys apart

from the Summer Institute of Linguistics' intelligibility survey (Egland 1978, Casad 1974), which is discussed below, and this survey did not report dialect features but rather levels of mutual intelligibility.

In the Mayan family, dialect work was begun on a large scale by McQuown in the early 1960s, during the University of Chicago's Chiapas Study Projects (McQuown and Pitt-Rivers 1970), which attempted to survey all Tzeltal and Tzotzil-speaking villages and to establish base studies of major variants through longer-term research. Kaufman (1970, 1971, 1972), using mainly Tzeltal data, compared local varieties and from them reconstructed proto-Tzeltalan, and then retraced the development of local dialects from the ancestral form. Hopkins (1970, 1977), utilizing Kaufman's framework, added Tzotzil varieties, reported various aspects of the dialect distributions and interrelations, and speculated on the relation between the development of the dialects and Tzotzil and Tzeltal history. Elsewhere in Mayan (and also under the direction of McQuown) Mayers (1960) did dialectological research in Pocomch' which featured greater attention to social variants--correlations with age, sex, status, etc.--than did other Mayan surveys. Some comparative work is essentially dialectological in nature (e.g., Grimes on Cakchiquel and Tzutujil, 1967) and some comparative historical work has integrated linguistic with other data (e.g., Kaufman 1976a on Mayan and general Mesoamerica; Josserand 1975 on Mayan; Campbell 1977 on Quichean prehistory). The Proyecto Lingüístico Francisco Marroquín, initially under the technical direction of Kaufman, has carried out dialect surveys of all Guatemalan Mayan languages (still unpublished). Preliminary work has also been undertaken recently on Chontal (Schumann 1978) and on Chol (Hopkins 1981), and Kaufman has collected material on the Huastec variants (still unpublished). Thus the major variety of Mayan that has yet to be subjected to dialectologi-

cal survey, at least as far as is obvious from published literature, is Yucatec Maya.

The Utoaztecan family has been the locus of surprisingly little dialectological work. The major language of concern to Mesoamericanists, Nahuatl, was known since the sixteenth century to be a single language with numerous regional variants. But until the past decade, no extensive survey of Nahuatl had been made. Knowledge was limited to reports of local varieties (Boas on Pochutec, 1917; Pittman on Tetelcingo, 1954; Whorf on Milpa Alta, 1946; etc.) and an occasional attempt to characterize the Nahuatl of particular regions, for example Key on the Gulf Coast dialects (1952, 1953), Hassler on the Sierra de Puebla and other areas (1954, 1958, 1961, 1976).

The first attempt to survey the entire Nahuatl-speaking area with a historically-based questionnaire designed to detect variation in phonology, morphology and lexicon is that of Yolanda Lastra and the late Fernando Horcasitas, begun in the early 1960s (Lastra 1974, 1975, 1980, In press; Lastra and Horcasitas 1976, 1977, 1979). While data are still being analyzed, scholars working with a knowledge of Lastra and Horcasitas' materials as well as their own data from diverse areas have begun to formulate an overall view of Nahuatl variation and major dialect areas (Canger 1980) and to relate Nahuatl variation to proto-Nahuatl and other Utoaztecan languages (Campbell and Langacker 1978, Dakin 1979, 1982). Ethnohistorical sources have been exploited in an attempt to clarify the dialect situation of the sixteenth century (Sullivan and Dakin, In press). Some regional studies have focussed on sociolinguistic aspects of Nahuatl (Dakin 1972; Lastra and Horcasitas 1976, 1979, also comment on the sociolinguistic profiles of the regions they describe). Tim Knab (1979) has speculated on language maintenance pat-

terns (but using single informants to represent entire communities). Further south, Pipil sociolinguistics and dialect variation have been treated by Judith Maxwell (1982) and by Lyle Campbell (1975).

The remaining, minor, linguistic families of Mesoamerica have received differential treatment. Tarascan, a single language with regional variation, has been studied by Paul Friedrich (1971, 1975), who has described the linguistic variation encountered and commented on major geographical variants. Friedrich made reference to sixteenth century materials (Gilberti 1559) and suggested the structure of a reconstruction of proto-Tarascan, but has not yet published on the dialect history. Totonacan, on the other hand, has received only superficial dialect treatment, although it includes at least two languages and a number of quite variant regional dialects. Evangelina Arana (1953) has sketched the outlines of Totonacan reconstruction, but using few variants. Lewis Jacks (n.d.) was unable to complete a more ample survey of Totonac which he undertook in 1974, but his data were later given preliminary treatment by Blanca García Rojas (1978). Totonacan, because of its possible relationship to Teotihuacán (Torquemada 1969, vol. 1, p. 278; see also Kaufman 1976a), remains the historically most important language complex in Mesoamerica that has not yet been subjected to extensive dialectological work.

While the approach is not historical, the Summer Institute of Linguistics' series of mutual intelligibility surveys merits consideration in any discussion of Mesoamerican dialectology. These surveys were conducted according to a careful methodology, described by Casad (1974), in the tradition of Voegelin and Harris (1951). Almost all of the languages of Mesoamerica were included in the surveys, so that for the first time all Mesoamerican languages have been treated together in a single survey

project, and subdivisions within each language should be roughly comparable. The analysis of the survey data (published in Eglund 1978) defines dialect areas for all languages covered, based on levels of mutual intelligibility as measured by responses to questions covering taped material from different village dialects. No attempt is made to account for the differential levels of intelligibility encountered, but the survey proposes several levels of dialect subgrouping for each language and furnishes important material for the design of any future dialect survey project in Mesoamerica.

The current state of Mesoamerican dialectology, then, is still preliminary to definitive historical dialect research for most languages. Initial dialect surveys have been completed, or are underway, for most languages. But in many cases these are exploratory attempts to discover the range and distribution of gross variation in order to plan more definitive dialect surveys. Most published work has a distinct emphasis on the linguistic aspects of the dialects rather than on social or historical correlates--an understandable situation since it is impossible to analyze the historical implications of dialect variation without knowing the details of the variants and their distribution. Sarah Gudschinsky's early work on Mazatec remains the best example of what can be attempted in the integration of linguistic evidence with other lines of evidence.

MIXTEC, MIXTECAN, AND OTOMANGUEAN

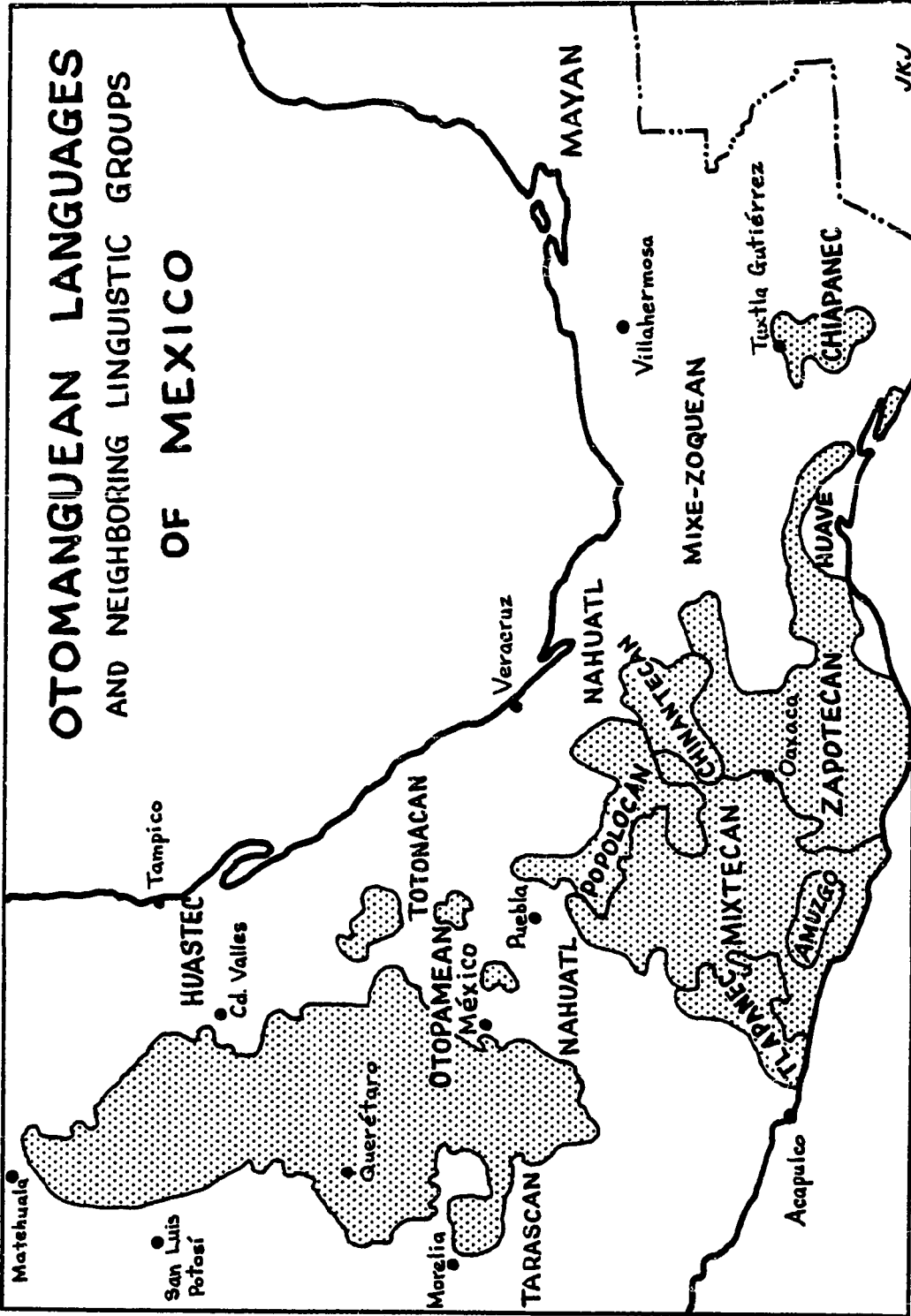
Otomanguean

Mixtecan is one of the eight coordinate branches of the Otomanguean family of languages, along with Otopamean, Popolocan, Amuzgo, Chiapanec-Mangue, Chinantecan, Zapotecan, and Tlapanec. Huave has also been suggested as a possible ninth branch. Together, these languages account for over 35% of all Indian language speakers in Mexico. Otomanguean is perhaps the most important linguistic stock in Mesoamerica, and certainly is the most important in highland Mesoamerica. The distribution of the Otomanguean family very nearly coincides with the northern and southern boundaries of Mesoamerica (as defined by Kirchhoff 1943), and covers most of the highland areas in between, principally the Mesa Central and the Mesa del Sur of Mexico (Map III-1).

The Otopamean languages, on the northern frontier of Mesoamerica, are all located north of the Transverse Volcanic Axis (West 1964), which is the southern boundary of the central lacustrine valleys of the Mexican plateau called the Mesa Central. Although intrusive populations of Nahuatl now cover much of the same area, Otomí and Mazahua groups still occupy most of the Toluca, Querétaro and Mezquital Valleys, and remnant populations of Ocuiltec, Matlatzinca, Pame and Chichimeca-Jonaz attest to previous extensions of other Otopamean languages.

The Popolocan and Chinantecan branches occupy the central corridors and mountains associated with the Tehuacán and Cañada regions of Puebla and Oaxaca. Two more branches, Amuzgo and Tlapanec, are isolated in the interior reaches of the broken Guerrero-Oaxaca highlands. Amuzgo's two population concentrations are found on either side of the

Map III-1. The Distribution of Otomanguean Languages in Mexico



Guerrero-Oaxaca state border, in the first low ranges inland from the Pacific Coast. Tlapanec is spoken in several municipios of eastern Guerrero, and a now-extinct sister dialect, Subtiaba, was once spoken in Nicaragua.

Mixtecan and Zapotecan are, after Otopamean, the largest and most internally diversified of all the Otomanguean branches. They occupy, between them, the major part of the state of Oaxaca, from the lowlands called the Mixteca Baja in the west of Oaxaca, on east through the Mixteca Alta, the Valley of Oaxaca, the southern Oaxaca highlands, and on to the Isthmus of Tehuantepec. Mixtecan languages are found from the Valley of Oaxaca west; Zapotecan languages are distributed from the Valley of Oaxaca east. On the southern end of this Otomanguean distribution are Huave (if it is Otomanguean; encapsulated by Zapotec on the Pacific side of the Isthmus) and Chiapanec-Mangue, which was probably a single language (with many local names in Central America) but which is now extinct. The various representatives of Chiapanec-Mangue were scattered from Chiapas to the Gulf of Nicoya by the time of Spanish contact. The Mexican censuses supply more specific information on municipios where these languages are spoken (see, for example, Dirección General de Estadística 1972).

Several of the Otomanguean groups have known or proposed associations with prehistoric cultures, which support the assertion of their importance in Mesoamerican prehistory (Harvey 1964; Kaufman 1976a; Hopkins 1978 and In press). The Zapotecan and Mixtecan cultures of Oaxaca, particularly their Postclassic expressions, have attested ties to the linguistic groups whose names they bear. It has also been proposed that the Otomí (Kaufman 1973:462) or other Otomanguean groups (Jiménez Moreno 1942, 1966:43; Paddock 1966b:195-200) formed a major

component of the Teotihuacán culture, and it is also likely that Chia-panec-Mangue was the language spoken in the Puebla valley, at Cholula, before their documented migration south at the end of the Classic period (Lehmann 1920, vol. 1, Part 2:825-836; Hopkins 1978, In press). And Proto-Otomangue has been associated with the beginnings of agriculture in Mesoamerica, at Tehuacán (Harvey 1964; Amador and Casasa 1979; Josserand, Winter and Hopkins, In press).

Otomanguean diversification has been documented, on the basis of the comparative reconstruction of Proto-Otomangue (POM) by Calvin Rensch (1976). Rensch's careful phonological reconstruction of the stressed syllables in Otomanguean roots demonstrates the difficulties inherent in comparative work in these languages. The regular correspondences are frequently obscured by the patterns of paradigmatic alternation (e.g., verb stem alternants associated with tense-aspect changes; singular versus plural in nouns and adjectives) common to most modern Otomanguean languages, and reconstructed by Rensch for Proto-Otomangue (1976:30-34). Proto-Otomangue was characterized by a stressed final syllable which carried tone and maximum phonological contrast, with morphophonemic processes of nasalization, palatalization and laryngealization (1976:11, 18, 25). It also had a contrast between oral and nasal vowels, and three levels of tone (1976:34-43, 51-57). Jorge Suárez, in his review of Rensch's reconstruction, evaluates Rensch's proposals and other possible alternants for reconstructing POM, particularly with regard to Zapotecan (Suárez 1980a).

Rensch's classification of Otomanguean as consisting of nine coordinate branches including both Tlapanec and Huave is presented in most of his major publications on Otomanguean, e.g., "Otomanguean Isoglosses" (1973), "Classification of the Otomanguean Languages and the

Position of Tlapanec" (1977a), and "Situación actual de los estudios lingüísticos sobre las lenguas de Oaxaca" (1977b and 1979:50-51), although this view is not explicitly defended in his Comparative Otomanguean Phonology (1976). Suárez has further documented the inclusion of Tlapanec within Otomanguean (1977a, 1978, 1980b). Huave's position, however, is less secure (see Rensch 1973, 1978, versus Hollenbach 1978b, and Suárez 1975). Rensch (1976, 1977a) has also presented a very comprehensive review of previous classifications of Otomanguean languages.

Rensch does not address the problems of internal diversification of the nine branches, although he does trace the phonological developments leading to each daughter branch. Mixtecan is shown to have no special relationships with any other Otomanguean branch (Rensch 1973, 1977a:55; see also Hopkins 1978 and In press), despite proposals to the contrary, such as Gudschinsky's earlier comparison of Mixtecan and Popolcan (1959) and the assertion of a special relation between Amuzgo and Mixtecan. This latter proposal was made independently by Robert Longacre (1957, 1961, 1962:231; Longacre and Millon 1961; Mak and Longacre 1960) and by Evangelina Arana (1957) and Morris Swadesh (1960, 1962). This position was later rescinded by Longacre (1965) and Amuzgo was shown to be a coordinate branch of Otomanguean.

Mixtecan

The internal diversification of Mixtecan includes three major groups: Cuicatec, Trique, and Mixtec proper. Although Longacre argued against any internal subgrouping of Mixtecan in his 1957 reconstruction, Swadesh (1960, 1967:94) used glottochronological relationships to exclude Trique from Mixtecan, whereas Amuzgo was included, again on the basis of glottochronology. This exclusion of Trique was contested by

Longacre (1961, 1966, 1967:118). Arana (1957, 1960) reconstructed Proto-Mixtecan on the basis of Amuzgo, Cuicatec, Trique, and data from twenty-three Mixtec towns, but did not present a classification based on subgrouping by shared innovations. Rather, she used lexicostatistics to arrive at a subgrouping of Mixtec with Cuicatec, but without a clear picture of the relation of these two to either Trique or Amuzgo. According to her calculations, Mixtec and Cuicatec are separated by 25-31 minimum centuries (m.c.), and Cuicatec is equally related to Trique and to Amuzgo (39 m.c. in each case). But Mixtec is closer to Amuzgo (29-35 m.c.) than to Trique (35-39 m.c.). On the other hand, Trique is closer to Mixtec (35-39 m.c.) than to Amuzgo (45 m.c.). Kaufman (1978: 958) grouped Amuzgo and Trique with "Greater Mixtecan," whose components are Cuicatec and three varieties of Mixtec; Kaufman does not specify the grounds for this higher-level classification.

Longacre, in his 1961 article and again in 1968, presented the comparative evidence for subgrouping Cuicatec and Mixtec as opposed to Trique, but did not himself propose an internal subgrouping. On the basis of his 1957 reconstruction of Proto-Mixtecan, Longacre states that Mixtec proper shows four unique phonological innovations from Proto-Mixtecan, Cuicatec has seven unique innovations, and Trique nine. But Mixtec shares two innovations with Trique, and five with Cuicatec, while Cuicatec and Trique share five innovations as well (Longacre 1961: 12-13). Taken together, the various lines of evidence imply a subgrouping of Mixtec and Cuicatec against Trique. But Longacre argued that the three languages reconstruct to about the same time period, and he accounted for the differential relationships of glottochronology versus innovation isoglosses as reflections of past history. He posited unbroken contact between Mixtec and Cuicatec since the common Proto-Mixte-

can period, while Cuicatec and Trique are not known to have been in contact in historical times, and Mixtec and Trique--now in contact--can be argued to have been out of contact "for a significant period of time" (Longacre 1961:12). However, he characterized the Cuicatec-Trique shared innovations as showing "comparative wealth and strength," in contrast to the "paucity and weakness" of the Mixtec-Trique innovations. This situation, according to Longacre (1961:12),

seems to indicate that Cuicatec-Trique, although now not in contact, were actually in longer early contact than were Mixtec-Trique. Apparently Trique moved off from Mixtec during the period of early dialect differentiation (but retained contact for some time with Cuicatec) only to be engulfed on all sides by Mixtec during the later period of Mixtec expansion.

Shared innovations are the only acceptable basis of linguistic subgrouping; lexicostatistics should be used for dating separations and for indicating special relationships, not for subgrouping in the genealogical sense. 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. A new reconstruction of Proto-Mixtec was presented in Bradley and Josserand (1978, 1982), which will have an effect on the reconstruction of Proto-Mixtecan, and subsequently on the perception of shared innovations among the three branches of Mixtecan. Further careful comparative work among Cuicatec, Trique, and Proto-Mixtec will clarify this situation. The present study of Mixtec diversification will also contribute to understanding relations between the branches.

The Mixtec Languages

Geographical Distributions and Demography

The 1970 census (Dirección General de Estadística 1972) shows a Mixtec-speaking population of 233,245 in the republic of Mexico, and this is almost certainly a very conservative figure. The states of Guerrero, Oaxaca and Puebla account for over 90% of this population, and Oaxaca has by far the majority of the Mixtecs, with a total of 168,725 (72%), of whom 50,578 are monolinguals in Mixtec. Guerrero accounts for a further 20% of the Mixtecs, with a total Mixtec-speaking population of 40,330, with 27,247 monolinguals, while Puebla has only 8,124 Mixtec speakers, a mere 3.5% of the country's total, and with only 906 monolinguals. These three states encompass the "natural" distribution of Mixtec, but there are sizeable modern concentrations of Mixtec speakers in the Federal District (7,513) and in the states of Veracruz (3,641) and México (2,592), and minor groupings in Morelos (596), Chiapas (399), Sinaloa (348) and Tabasco (104). These latter figures represent (and again probably underrepresent) the out-migration of Mixtecs, frequently temporary, which is a response to the inadequate economic situation of the majority of the Mixtec area (Barbosa Ramírez 1976). In almost all cases these populations are associated with urban, industrialized work forces (Veracruz, Villahermosa, Mexico City) or large-holding agricultural industries, where they are part of a seasonal agricultural work force (Morelos, Sinaloa). While figures are not easy to find, there has also been considerable temporary migration to the United States on the part of Mixtec speakers, either among the older generations as legal braceros, or among the younger generations as undocumented workers (Stuart and Kearney 1981; Roberts 1980).

A useful compilation of the 1970 census figures on Mixtecs in the state of Oaxaca has been prepared by Ayre (1977). All municipios reporting Mixtec speakers are listed, with figures (total population, bilinguals, monolinguals) on Mixtecs and speakers of other Indian languages. Figures are also presented arranged by locality within the municipio so that detailed distributional and demographic studies can be based on this source. Demographers Sherburne F. Cook and Woodrow Borah consider the modern census figures for Mexico to be "on the whole, reasonably reliable," but they conclude that in Oaxaca official censuses probably err in undercounting the population because of difficulty of access (Cook and Borah 1968:60). To this general undercount should be added an even greater undercount in the figures for Indian language speakers, since many factors (language attitudes, official policies) affect these figures in the direction of undercounting, whereas few factors favor over-reporting the number of Indian language speakers.

The population of the Mixteca Alta from 1520 to 1960 has been carefully studied and reconstructed by Cook and Borah (1968). Their population estimates indicate a literal decimation of the population in the period 1520-1590, with steady recovery beginning about 1670 and continuing into the present. However, the modern population is still only about one third the estimated population just before 1520. Such drastic changes in population have obvious implications for dialect history, but they have not been specifically taken into account in this study.

Migration to urban centers, temporary or not, is a significant fact in much of the Mixteca (see Orellana 1973; Butterworth 1970). In many villages it is said (perhaps with slight exaggeration) that more villagers live outside than inside the village. Much of this migration is not permanent, rather it is part of the life cycle: young men and women go off

to the city for education and employment, providing a necessary cash flow into the villages. But they continue to return for visits and fiestas, and if circumstances permit, they return to renew residence in the village, if only when they retire.

This migratory cycle is duplicated on another level in a developmental process typical of the Mixtecs: expansion through agricultural colonization. This is the movement of a segment of population from one town to new areas, usually to exploit an additional ecological niche, such as "hot country" (especially humid tropical lowlands). These new settlements may at first be composed of men and may even be occupied only seasonally, but the clear pattern is for them to develop through time into more and more autonomous communities, even though they maintain relations with the old town for a long time, through ceremonial and informal visiting, intermarriage, and various forms of mutual aid. Ultimately they may realign themselves with their new neighbors, or reach the status of municipio libre, an independent township.

These colonies are frequently located well outside the "natural" bounds of Mixtec distribution; this appears to be a very old tradition, and is how Mixtec territory has regularly been expanded. This developmental model helps explain the apparent paradox of close linguistic ties between distant towns, as well as supporting a historical model of linguistic diversification based on concentric rings of expansion. Traces of past stages can be found in the pockets of somewhat older varieties located on what were once the fringes of the Mixteca but which have since been overtaken and surrounded by more recent expansions.

The modern distribution of Mixtec speakers yields several clear examples of these "outposts," far away from the main distribution of Mixtec towns. In the far northeast is San Juan Coatzospan, on the north

side of the Río Papaloapan and completely surrounded by Mazatec towns, except for a small nucleus of Mixtec municipios just to the south of the river. In the far northwest, in Puebla, are Santa Catarina Tlaltempan and Santa María Chigmecatitlán, surrounded by Nahuas and Popolocas, and far to the north of the other Puebla Mixtec towns. In Guerrero, near Acapulco and far to the southwest of all other Mixtec towns, is Tepango, in the municipio of Ayutla de los Libres, and in the midst of Nahua towns. And on the southeastern frontier, quite distinct from their coastal Mixtec neighbors, are the two Mixtec towns of San Pedro Tututepec and Santa María Acatepec.

The Mixtec population which appears in modern censuses on the Isthmus of Tehuantepec is only the newest, most recent example of this expansion cycle. At least two new Mixtec settlements on the Isthmus, near Matias Romero, were settled on new ejidos formed since the land reforms following the Revolution; these are Nueva Raza and Esperanza, settled by families from Santa Catarina Estetla and Santa María Peñoles, respectively, two adjacent towns in the eastern Mixteca Alta (David Peterson, personal communication; Raúl Alavez, personal communication).

Mixtec's geographical extent during the sixteenth century was recorded by the early Spaniards, who gave us the names for three distinct regions of Oaxaca: the Mixteca Alta, the Mixteca Baja, and the Mixteca de la Costa, referred to collectively as las tres mixtecas. Mary Elizabeth Smith presents a map of these Oaxacan Mixtec areas in her book on Mixtec picture writing (1975:5). To these three Mixtecas should be added the broken uplands of southern Puebla, which are a northern extension of the Mixteca Baja, and the mountain strongholds of eastern Guerrero, a very large and quite undocumented area of Mixtec with a high

percentage of monolinguals. These five regions give a combined contiguous Mixtec territory of some 25,000 square kilometers, with only a few lacunae occupied by Spanish speakers (principally along the Pan-American highway which cuts the area diagonally from northwest to southeast, and in the tropical river valleys between the coastal area and the Mixteca Alta, southeast of Putla), or by enclaves of Amuzgo and Trique, two small indigenous groups in the southern region, and Cuicatec, Ixcatec and Chocho, three similar groups in the northern area (see Map III-2).

Geographically, and frequently linguistically, the Mixtec region can be well characterized by reference to the branches of the dendritic drainage systems which penetrate to the central Mixtec area, the Nochixtlán Valley, which is at the continental divide between Atlantic (Gulf) and Pacific drainages. The major systems draining the Mixteca are the upper Río Balsas and the Río Verde, both Pacific outlets, and the Río Papaloapan, which flows ultimately into the Gulf of Mexico. The Balsas drains by far the largest area of the Mixteca, including most of the Guerrero regions and all of the Mixteca Baja (Map III-3).

Especially in the Mixteca Alta the environment has been severely affected by human intervention. The "shocking destruction" of the landscape that so impressed Cook and Borah (1968:1; see also Cook 1949), a product of intensive human use for several thousand years, is not atypical of the Mixtec area as a whole, though there are notable exceptions. The Mixteca Alta, judging from vegetational remains, was once covered with a mixed oak-pine forest, rising to cloud forest above 10,000 feet (West 1964:373). The same is true of the lower valleys in the Mixteca Baja, down through the Balsas Depression, which was once covered by a tropical deciduous forest but is now characterized by thorny shrubs and cacti (West 1964:381). Much of the present-day Mixteca Alta is extreme-

ly eroded, "land from which the topsoil has long since washed away" (Cook and Borah 1968:1). Low fan palm is the dominant vegetation in many areas. Hillsides may be covered by xerophytic plants, including many cacti. Nevertheless, there is clear evidence of extensive pre-hispanic terracing and irrigation systems in the Mixtec valleys, and the valley floors are quite productive where these systems have been maintained or replaced.

The Mixteca Alta

The Mixteca Alta is a high and very rugged area, mostly over 6000 feet above sea level, which forms the western edge of the Mesa del Sur or Southern Plateau of Mexico. The eastern boundary of the Mixteca Alta is the Valley of Oaxaca. On the west it drops abruptly into the Mixteca Baja, and on the south it is bounded by the Río de la Culebra and eastern affluents of the Río Grande, which join south of Yosondúa and Itundujia to form the Río Verde of the Costa Chica. The northeastern limit of the Mixteca Alta is the Cañada, a long north-south trench which connects the Tehuacán-Papaloapan-Gulf corridor directly to the Etna Valley, one of the main arms of the central Valley of Oaxaca complex. On the northwest, the Mixteca Alta disintegrates into very dry, broken headlands along the continental divide, which gradually give way to the white hills of the northern Mixteca Baja or Puebla region. This northwestern section of the Mixteca Alta, including the Coixtlahuaca Valley, is no longer occupied by Mixtec speakers, but their replacement by Chocho and Popoloca populations is recent enough to be documented in ethnohistorical sources (see, for example, de los Reyes 1593).

The northeastern Mixteca Alta includes the towns of Chicahua, Nduayaco, Apoala (the legendary origin of the Mixtec kings; see Jansen 1980), Apasco and Ixtaltepec on the south side of the Cañada, and several more towns on the north side northeast of Cuicatlán, including Jocotipac, Cuauhtemoc, Cuyamecalco, and the northern outpost, Coatzospan, on the north side of the Papaloapan and set among Mazatec villages (see Ravicz 1965 for data on Jocotipac, Cuyamecalco and Coatzospan; Sarah Gudschinsky, 1958, comments on the intrusion of Coatzospan and its effect on Mazatec dialect history). This area is the linguistic frontier of Mixtec not only with Chocho and Mazatec, but with Cuicatec and with Ixcatec as well. This northern subregion of the Mixteca drains northward to the Gulf, via the Río Papaloapan.

The central Mixteca Alta consists of a series of valleys and structural depressions of considerable size, including the Teposcolula-Tamazulapan system, on the edge of the Mixteca Baja, drained by upper tributaries of the Río Mixteco-Balsas. To the southeast is the north-south trending valley of Achiutla, and to the east is the huge Nochixtlán Valley; these drain to the Pacific via the Río Verde. Farther east are the plains of Sosola, a high plateau dropping away to the north, via the Cañada, and to the east, into the Valley of Oaxaca, along the same route as the modern-day highway and railroad.

These valleys, and particularly the largest, the Nochixtlán Valley, are clearly key areas for understanding the dynamics of the prehistoric Mixtecs. They form an axis for interaction between most of the other regions of the Mixteca, especially between the heartland of the Mixteca Alta to the south, the various realms of the Mixteca Baja to the west, and the Mixtec outposts to the east in the Valley of Oaxaca (such as Cuilapan de Guerrero). Groups controlling these valleys must certainly

have been important in the rest of the Mixteca as well. But there are few towns with Mixtec speakers remaining in most of these large valleys (except for the Achiutla Valley), and the largest and most important towns are now wholly Spanish-speaking (Nochixtlán, Yanhuitlán, Teposcolula, etc.).

To the south of the belt of large basins, and penetrated by the north-south Achiutla system, lies the Mixteca Alta proper. It includes all of the broken highlands west of the Valley of Oaxaca--what might be called the eastern Mixteca Alta, from Nuxiño and Tilantongo (for which, see Butterworth 1975) south through Yutanduchi, Peñoles, and Sindihui to the Tezacoalco basin on the southern limit of the eastern Mixtec distribution, around Huitepec and Yolotepec. This region is drained by the Río Sordo and other eastern tributaries of the Río Grande-Río Verde system. The highlands to the south begin the Chatino area.

The western Mixteca Alta lies to the south and west of the Nochixtlán Valley, and comes to a point in the south in a high mountain massif (Yucuyácuca, "Crooked Mountain," which rises to around 11,300 feet above sea level), around Chalcatongo and San Miguel el Grande. This is in general a very broken, high (over 7000 feet) mountainous area. It is characterized by many small, long valleys, separated by knife-edged ridges, mostly draining to the Pacific. The largest of these is the previously mentioned Achiutla system. The ridges separating the branches of the drainage systems are the geographic barriers to communication, and the linguistic dialect boundaries often coincide with these ridges, and group into larger units parallel to the hydraulic systems.

The widespread presence of terracing in the mountainsides, and the stone dams in the gullies to slow the rushing steep-grade torrents, demonstrate the necessity for water control. There are many fossil terra-

ces, some more modern metepantli (stone and agave) terracing, and some raised, flooded fields, but most prominent are the small dams of stones in arroyos. Many parts of the Mixteca Alta present "moonscapes" of red, eroded soils, such as the area around Magdalena Peñasco, south of Achiutla. Cook and Borah (1968:8) note that the climate in the Mixteca Alta follows an overall north to south gradient: further north, the central valleys are higher, cooler and drier; valleys to the south are milder and wetter, particularly near the southern edge of the Mixteca Alta, where the Pacific-facing slopes capture warm and moist tropical air. But because of the extremely broken terrain, very sharply dissected by its hydrography and past tectonic history, the Mixteca Alta is a patchwork of tiny pockets, of microenvironments, which have played an important role in the ecological adjustments of the Mixtecs to this, their homeland.

Cook and Borah (1968:1) estimate that agriculture has been carried on in the Mixteca Alta "for perhaps three to five thousand years" (see also Cook 1949). This estimate is supported by the linguistic evidence, as this is the most complex dialect region in all of the Mixtec territory. And it is complex in such a way as to indicate an area of long occupation rather than an area into which mixed populations have immigrated. Patterns of linguistic variation, archaeological sites (e.g., Monte Negro near Tilantongo and Yucuita near Nochixtlán), prominence in ethnohistorical sources (the Mixteca Alta towns mentioned in the saga of Eight Deer "Tiger Claw," see Jansen 1980, Caso 1977-79), and other data combine to indicate that the Alta has long been an important exporter of population and influence to the remaining Mixtec areas, if not beyond. For the area covered by Cook and Borah (1968)--the upper Río Verde valleys--preconquest population is estimated at between 600,000 and 800,000, while the population in 1960 was only 261,177. Thus, in judging the prehistoric

role of the Mixteca Alta, it should be borne in mind that in Late Post-classic times population was some three times greater than it is now.

The Mixteca Baja and Southern Puebla

The Mixteca Baja region of Oaxaca and its northern extension in the broken uplands of southern Puebla are all drained by the extensive system of the Río Mixteco, another primarily north-south trending tributary of the upper Balsas. The Río Atoyac-Huehuetlán marks the northern and western boundary of Mixtec distribution, with a kilometer-deep chasm upwardly eroding the high plateau and dividing the two Mixtec towns of Chigmeocatitlán and Tlaltempan from their Nahuatl-speaking neighbors across the canyon to the west. Southeast of this northern outpost of Mixtecs, the first real concentration of Mixtec towns occurs on the Ríos Petlalcingo and Acatlán, the two upper tributaries of the Río Mixteco proper. These towns include Totoltepec, Xayacatlán, and various others.

Further east, on the very dry divide between the Pacific and Gulf drainages, on the low passes into the Tehuacán Valley, is a region known to the Spaniards and prehistoric Mixtecs as the ñu niñe ("por ser tierra cálida," de los Reyes 1593:iii). This should probably be ñu ni'ni 'land-hot'; perhaps de los Reyes was confused by the medial glottal, which he did not record in similar forms. Paddock has identified the remains of a unique early Classic cultural tradition in this area which he calls "Ñuñe," and which includes an early glyphic system, stone carving, and thin orange pottery (Paddock 1966b:176-200). The highway from Huajuapán de León to Tehuacán runs through the middle of this arid land, with Chazumba as the northern limit of Mixtec population. The eastern boundary of Mixtec with Popoloca and Chocho has not been well defined, but it appears to coincide with the divide between the Mixteca Baja and

the Tehuacán-Cañada depression (but see Byland, In press, for an attempt at defining this ethnic frontier through archaeological remains).

South of the Acatlán-Petlalcingo region is an area I will refer to here as the central Mixteca Baja. This extends from the towns of Zapotitlán Palmas and Amatitlán on the north, to Nuchita and Atenango on the south, west to the Guerrero border, and east to the edge of the Mixteca Alta, near San Juan Ñumí. From Silacayoapan south is the area here referred to as the southern Mixteca Baja, including Mixtepec, Juxtlahuaca, and the towns in western Oaxaca on the border with Guerrero, Coicoyán and Peras. The southern limit of the Mixteca Baja is the transverse section of the Sierra Madre del Sur which connects the mountains around Metlatonoc with the Mixteca Alta, part of the Mesa del Sur. This high cloud-forest area is the homeland of the Trique Indians (Copala, Itunyoso and Chicahuaxtla); south of the dividing range is the mestizo town of Putla, and then the beginning of the Mixteca de la Costa.

Both the central and the southern sections of the Mixteca Baja are drained by the various confluent of the southern branch of the Río Mixteco, including the Río Juxtlahuaca, the Río Mixtepec (which drains the western flank of the Mixteca Alta), and an east-west trending branch (also called the Río Mixteco) which divides upriver from Tonalá to drain the Huajuapán and the Tamazulapán basins. In general, this area is one of the most propitious of all the Mixtec region. Although a lengthy dry season and the intermittent flow of the minor tributaries contribute to a serious water shortage during half the year (January to June), there are several alluvial basins which have long formed the nucleus of population concentrations (these are mostly mestizo areas today, though their associated ranchos are still Mixtec), and irrigated valleys are common to the area. Tonalá is perhaps the most important of the centers.

The Baja is not particularly low, except in relation to the altitudes of the Alta. Most Mixtec settlements in the Baja are between 4000 and 6000 feet above sea level; even the river plains are not sharply cut into the surrounding countryside, but are broad, meandering flood plains edged by low hills. The Baja is not flat, but rather well-rounded hills drop off gradually from the 10,000 foot heights of the Sierra Madre del Sur northwards towards the deep Balsas Depression.

Most of the Mixteca Baja has until recently been relatively inaccessible; all-weather roads are still few and far between. A major exception is the good dirt and gravel road from Huajuapán de León south to Juxtlahuaca (and on to connect near Copala with the Tlaxiaco-Pinotepa Nacional highway, still under construction). Partly as a consequence of this isolation, the Baja is largely Mixtec-speaking, with Spanish intrusions in the more nucleated population centers (e.g., Juxtlahuaca; see Romney and Romney 1966, Ravicz 1965), in the irrigated valleys (e.g., Tonalá, Arteaga), and especially along the Pan-American highway, which cuts the northern Baja along a line running through Acatlán (Puebla), Huajuapán de León, and Nochixtlán. One significant effect of the intrusion since the early Colonial period of Spanish along this line is that the major areas of Mixtec population prior to the conquest--the Huajuapán and Tamazulapán basins--are no longer Mixtec-speaking (a situation paralleled by that of the Nochixtlán Valley in the Mixteca Alta).

The Mixteca de la Costa

South of the Sierra Madre del Sur and the Mixteca Alta, stretching from near the Guerrero border east to just beyond the Río Verde, is the coastal plain and associated foothills of the Sierra, an area known as the Mixteca de la Costa, or the Costa Chica of Oaxaca. The northernmost

of the coastal Mixtec communities is Zacatepec; south of Zacatepec are the Oaxacan Amuzgo towns of Ipalapa and San Pedro Amuzgos, then the real concentration of Mixtec towns begins, with Sayultepec, Tepetlapa, Atoyac, and numerous other Mixtec towns to the south and east. These northern coastal communities are on the upper reaches of tributaries of the Río Ometepec, which flows into the Pacific south of Ometepec, Guerrero. The central coastal area, around Jamiltepec (see Ravicz 1965, Drucker 1963), is drained by the Río Verde, the major system which drains most of the Mixteca Alta. A few Mixtec communities, but historically and prehistorically very important ones, lie to the east of the Río Verde, on the tributaries of a river which runs into the Laguna de Chacahua. The low coastal ranges, between the Mixteca Alta and the Pacific Coast, are ancient sand dunes. Vegetation on these sandy soils resembles that of higher elevations (except in its relative lushness) and includes palms as well as deciduous forest. River bottom fields produce a maize crop before the summer rains (when lower land floods) and higher land is planted for a fall crop.

Between the coastal populations and the Mixteca Alta is a very large interior basin, rimmed on the south by the coastal ranges and on the north and east by the huge massif of the southern Mixteca Alta. Through this valley runs the Río de la Culebra (also called Río Putla and Río de la Cuchara). Although now devoid of Mixtec population, it is likely that this valley was the route of emigration from the Mixteca Baja to the coast. Its importance as a cane producing area in early modern times is responsible for the replacement of the indigenous population by mestizos, although the area is very sparsely populated today. The nearest Mixtec center is Ixtayutla, a remote and conscientiously conservative town near where the Río de la Culebra and the Río Grande

join to form the Río Verde, the virtual eastern boundary of the coastal Mixtec population.

Only Tututepec, Acatlán, Amoltepec and a few other towns upriver are located east of the Río Verde, although there are "Mixtepec" place names (San Gabriel, San Pedro, etc.) still further east, around the Oaxaca-Puerto Escondido highway. East of Tututepec and Acatlán today are the Chatino populations (beginning with the towns of Panixtlahuaca and Zenzontepec). It is interesting to note that most of the coastal Mixtec towns are located very near the 1000 foot isocline, and mostly near waterways. A few settlements are found south of Pinotepa Nacional; some of these exploit the lagoons for marine resources. Furthermore, men from Pinotepa de Don Luis (30 miles inland) regularly go to the coast to dye skeins of cotton thread with the purple dye obtained from the shellfish Purpura patula (for an account of the dyeing process see Gerhard 1964:184-185).

Roads connecting the Mixteca de la Costa to the Mixteca Alta are still under construction and are not yet reliable in the rainy season, although one of them is now mostly paved (via Amuzgos, Zacatepec, Putla and Tlaxiaco, then on north to where it meets the Pan-American highway near Tamazulapan). A similar situation holds to the east, where a seasonal highway connects the coastal area near Puerto Escondido to the Valley of Oaxaca (via Sola de Vega). However, the new federal highway which connects the coastal towns from Acapulco to Puerto Angel (and eventually to Salina Cruz and the Isthmus) is now fully paved and is facilitating travel into and out of the coastal area. This highway passes through Pinotepa Nacional and Jamiltepec, and passes within a few kilometers of Tututepec.

Along the westernmost part of the Costa Chica, mainly south of the Acapulco-Isthmus highway and as far east as the municipio of Pinotepa Nacional, there are communities of blacks, part of the population studied by Aguirre Beltrán (1958) in Guerrero. These communities appear to be isolated socially and to have little interaction with Mixtec and mestizo populations. Likewise, there seems to be little modern interaction of Mixtecs with Chatino populations to the east. The cultural and commercial relations of the coast have traditionally been oriented towards the Mixteca Alta; until very recently products regularly moved overland by burro and porter to and from the highland towns of Chalcatongo and San Miguel el Grande, along the old route of the Camino Real. Woven belts from the Alta village of San Agustín Tlacotepec are worn as part of the traditional women's costume on the coast (Cuéllar 1976).

The Guerrero Mixteca

The Guerrero Mixtec region, in the Sierra Madre del Sur of eastern Guerrero, is drained principally by the headwaters of the Río Tlapaneco (a tributary of the Río Mezcala or Middle Balsas) which runs from south to north. This region is mostly a very high (over 8000 feet) plateau, between two huge peaks (10,500 and 10,800 feet above sea level). It is comparable to the Mixteca Alta in its broken and mountainous character. Metlatonoc, the Mixtec center near the highest of the peaks, has over 10,000 Mixtec speakers, including 9,500 monolinguals, within its municipio. To the south, the Quetzalán, Marquelia and Nexapa Rivers drain the coastal populations of Guerrero Mixtec (including Yoloxochitl and Tepango in the municipios of San Luís Acatlán and Ayutla de los Libres, respectively).

No roads cross, enter, or even come very near the central parts of this region; it is north of the coastal highway and south of the seasonal road through Tlapa. Because of its inaccessibility, its geography is essentially unreported. Muñoz (1963), citing the standard sources on Mexican geography, notes that "todos están de acuerdo en que es una región compleja, no observada, habiéndose denominado Sierra Madre del Sur y Depresión del Balsas" (1963:21).

This westernmost extent of Mixtec speech is the frontier with two other linguistic groups, the Tlapanec and the Nahuatl, and encompasses a third group, Amuzgo. A compilation of data on the area is found in Muñoz (1963); Schultze-Jena (1938) is a principal source for basic information, both on the area and on its languages.

Internal Diversification of Mixtec

Early Views on Mixtec Dialect Groupings

It has been known since the sixteenth century that Mixtec was not a homogeneous linguistic entity, despite the internal and external recognition in Mesoamerica of a cultural, political and linguistic unit referred to as la mixteca. The earliest--and to date most complete--materials available on Mixtec are Fray Antonio de los Reyes' Arte en Lengva Mixteca and Fray Francisco de Alvarado's Vocabulario en Lengva Misteca, both published in 1593. The culmination of a long program of study of the Mixtec language by many Dominican friars who labored in this region, these two works were aimed at facilitating the preaching of the Gospel, but they are nonetheless superior to any modern Mixtec dictionaries and to most grammatical studies which have since been attempted. The major limitation of Alvarado's vocabulary is that it is Spanish to Mixtec only (but

an abbreviated Mixtec to Spanish inversion was prepared by Arana and Swadesh, 1965; see below).

Although they must be read with care, these early Dominican linguists have much of interest to say concerning the language and social groupings of the Mixteca. The Prologue to de los Reyes' Arte is full of tidbits about various Mixtec dialects, principally those of Teposcolula and Yanhuitlán, but also commenting on the speech of Tlaxiaco, Achiutla, Coixtlahuaca, Cuilapa, Tejupa, Tilantongo, Tamazulapa, Jaltepec, Nochixtlán, and the "Mixteca baxa." De los Reyes presents very clearly many of the diagnostic phonological correspondences which differentiate and distinguish the major varieties of Mixtec known during the sixteenth century in his discussion of variant pronunciations and other features of dialect difference, even though hindered by a lack of a linguistic science, especially in the description of sounds. An understanding of sixteenth century Spanish and its orthographic conventions is absolutely necessary to interpret de los Reyes' statements, but he gives some very accurate phonetic descriptions, and he uses very clever combinations of two-graph sequences to accommodate the sounds not found in Spanish. Here is a good example, often misunderstood by modern readers: "En la pronunciación de la dz herimos blandamente en la d, y mas rezió en la z" (In the pronunciation of the dz we strike softly on the d, and more strongly on the z)(1593:2). This is an attempt to describe the phonetic nature of a fricative ð, essentially a voiced theta, by making reference to the Spanish z, which was pronounced θ (voiceless interdental fricative). (The fricative ð is the same sound as that found initially in the English words then, this, that, the, etc.)

De los Reyes mentions, though he does not register faithfully, the nasalization of vowels and the tones which characterize all varieties of

Mixtec. He did record the glottal stop, but only in certain contexts: between vowels, or medially before /w/. In both cases the glottal is represented by h, a Spanish convention for the rearticulation of vowels which adequately approximates the glottalization of Mixtec vowels.

Medial glottal before /w/ was transcribed as hu plus vowel (hua and hui are the only sequences which occur in Teposcolula Mixtec), contrasting with orthographic vu plus vowel (again only vua and vui in Teposcolula), to differentiate forms which lacked the medial glottal. Thus dzahua represents /da'wa/ 'frog', while dzavua represents /dawa/ 'half'. Other occurrences of medial glottal stop (before /y/, /n/ and /nd/) were not marked, but fortunately these can be readily verified in modern sources.

A more complete discussion of the linguistic interpretation of these sixteenth century sources is found in Josserand, Jansen and Romero (1978 and In press), in connection with the analysis of early Colonial texts and varied other material from Mexican archives. Essentially the same system of transcription has been used for Mixtec ever since its codification in de los Reyes and Alvarado at the end of the sixteenth century (except for some of the modern linguistic studies).

The Dominican friars chose the dialect of Teposcolula as the object of their greatest effort because it was "la más universal y clara, y que mejor se entiende en toda la Mixteca" (de los Reyes 1593:iii); it was apparently a lingua franca, a second, standard variety used over large parts of the Mixteca. De los Reyes characterizes it as being more complete in pronunciation (less elision and reduction of forms), and with less mixture from other languages than any other variety, and he considered the other varieties, which he calls "lenguas", to be derived from the Teposcolula language. De los Reyes' position with respect to the level of diversification of Mixtec is not absolutely clear, for on

the one hand he states that (de los Reyes 1593:ii-iii)

no solamente entre pueblos diuersos se vsen diferentes modos de hablar, pero en vn mesmo pueblo se hallia en un barrio de vna manera y en otro, la otra: siendo la lengua Mixteca toda vna

but he also lists and discusses several other Mixtec "lenguas". Most of the varieties mentioned by de los Reyes are from the northern Mixteca Alta, in the region of the large valley systems of Nochixtlán, Teposcolula, Achiutla and Tlaxiaco. He says that the language of Teposcolula is essentially the same as that of Tamazulapan (which is the source for Alvarado's Vocabulario), as are "innumerable other towns," although they vary somewhat in pronunciation and the use of pronouns and other vocabulary. The major towns affiliated with Teposcolula in their speech were Tamazulapan, Tejupan, Tilantongo and Mitlatongo; today we find considerable difference between the speech of Tilantongo and that recorded for Teposcolula. Another closely related "language" was that of Yanhuitlán, which was also used as a lingua franca, although less effectively; its affiliates were the Mixtec spoken in the bilingual town of Coixtlahuaca (where Chocho was also spoken), and that of Jaltepec, and Nochixtlán in the Valley of Nochixtlán, and Cuilapan and Huitzo in the Etna branch of the Oaxaca Valley. These two--Teposcolula and Yanhuitlán--de los Reyes considered to be the principal languages from which all others were derived, but he nonetheless mentions at least three others: the language of Tlaxiaco and Achiutla, that of the Mixteca Baja, and that of the Costa, although he gives almost no information on the latter two.

These two sixteenth century sources, de los Reyes' Arte and Alvarado's Vocabulario, have been the subject of considerable reanalysis by modern ethnohistorians (Dahlgren 1954; second edition, 1966; Jiménez Moreno 1962; Arana and Swadesh 1965; Spores 1967), as they are the primary sources for any discussion of Mixtec dispersion. Dahlgren (1966:

36-39) also cites two early seventeenth century authors, Herrera (1601; second edition, 1726) and Torquemada (1615; second edition, 1723, reprinted 1969), as both stating that Mixtec had 12 dialects, and an eighteenth century scholar, Villavicencio (1755), as concurring with de los Reyes in his recognition of three varieties in the Mixteca Alta (Teposcolula, Yanhuitlán, and Tlaxiaco). Herrera asserts that the two principal dialects were that of the Mixteca Alta and that of the Mixteca Baja, both characterized by patterns of elision (syncopy) (Herrera 1726, vol. 3:97).

Barbro Dahlgren de Jordan accepts de los Reyes' divisions of Mixtec, with the inclusion of the Coast and the Baja dialects, and these are presented in her Map I (1966:37), which is the first cartographic presentation of the linguistic groupings of Mixtec. The complementary Map II (Dahlgren 1966: facing 38) gives at least approximate locations for all Mixtec towns mentioned in the ethnohistorical sources. She also reviews the sources with regard to intrusive and encapsulated linguistic groups (like Amuzgo and Trique), and to bilingual towns within the Mixteca, such as the northeastern frontier with Nahuatl speakers, and the Coixtlahuaca area, where Chochos displaced Mixtecs shortly before the arrival of the Spaniards. In a further comment on bilingualism, Dahlgren says (1966:39):

Hay que notar que la clase gobernante hablaba además del mixteco el mexicano. Esto puede deberse a su mezcla con grupos inmigrantes nahuatizados o de origen nahua, y en parte también a casi 200 años de supremacía mexicana.

Evangelina Arana and Mauricio (Morris) Swadesh's Los elementos del mixteco antiguo (1965) is a partial reworking of Alvarado and de los Reyes to provide a "compact dictionary" of Mixtec for working with ethnohistorical documents, consisting of some 1500 Mixtec roots and stems, with a Spanish to Mixtec index. They also make reference to a specialized

dialect, "la lengua de los señores de Tepozcolula," alluded to by both de los Reyes and Alvarado (Arana and Swadesh 1965:14; see also Arana 1961, who calls this language "iya," although the form should properly have an internal glottal, as in i'ya 'noble'). Preceding the dictionary and index is an introductory essay which treats Mixtec grammar, sounds and orthographic conventions, semantics, and gives recommendations for working with documents in Mixtec using this dictionary. They repeat the dialect differences mentioned by de los Reyes, and present a table of sound correspondences (1965:15) found between the three varieties best treated by de los Reyes (Tepozcolula-Tilantongo, Yanhuitlán-Cuilapan, and Tlaxiaco, supplemented with modern data from Cuilapan and Tlaxiaco) and with four other modern varieties (San Miguel el Grande, Jamiltepec, Pinotepa Nacional and Huitepec). However, they make few observations on their chart of correspondences, and do not try to relate dialects to one another or to subgroup.

The major commentary on sixteenth century Mixtec is Wigberto Jiménez Moreno's "Estudios mixtecos" (1962), published together with a facsimile reproduction of Alvarado's Spanish to Mixtec Vocabulario. The volume includes four short studies by Jiménez Moreno ("Los dominicos en la Mixteca y el Vocabulario de Alvarado," "Diversidad interna del mixteco y su afiliación al Macro-Otomangue," "Etimología de toponímicos mixtecos" and "Bibliografía selecta sobre el idioma mixteco") plus a Mixtec to Spanish vocabulary compiled by Alfonso Caso from de los Reyes' Arte, as well as the facsimile of the 400 page Spanish to Mixtec vocabulary compiled by Fray Francisco de Alvarado in the early 1590s from material collected by his Dominican predecessors (Jiménez Moreno 1962:38).

Jiménez Moreno's article on the internal diversity of Mixtec (1962: 40-85) contains an excellent review of de los Reyes' dialect groupings

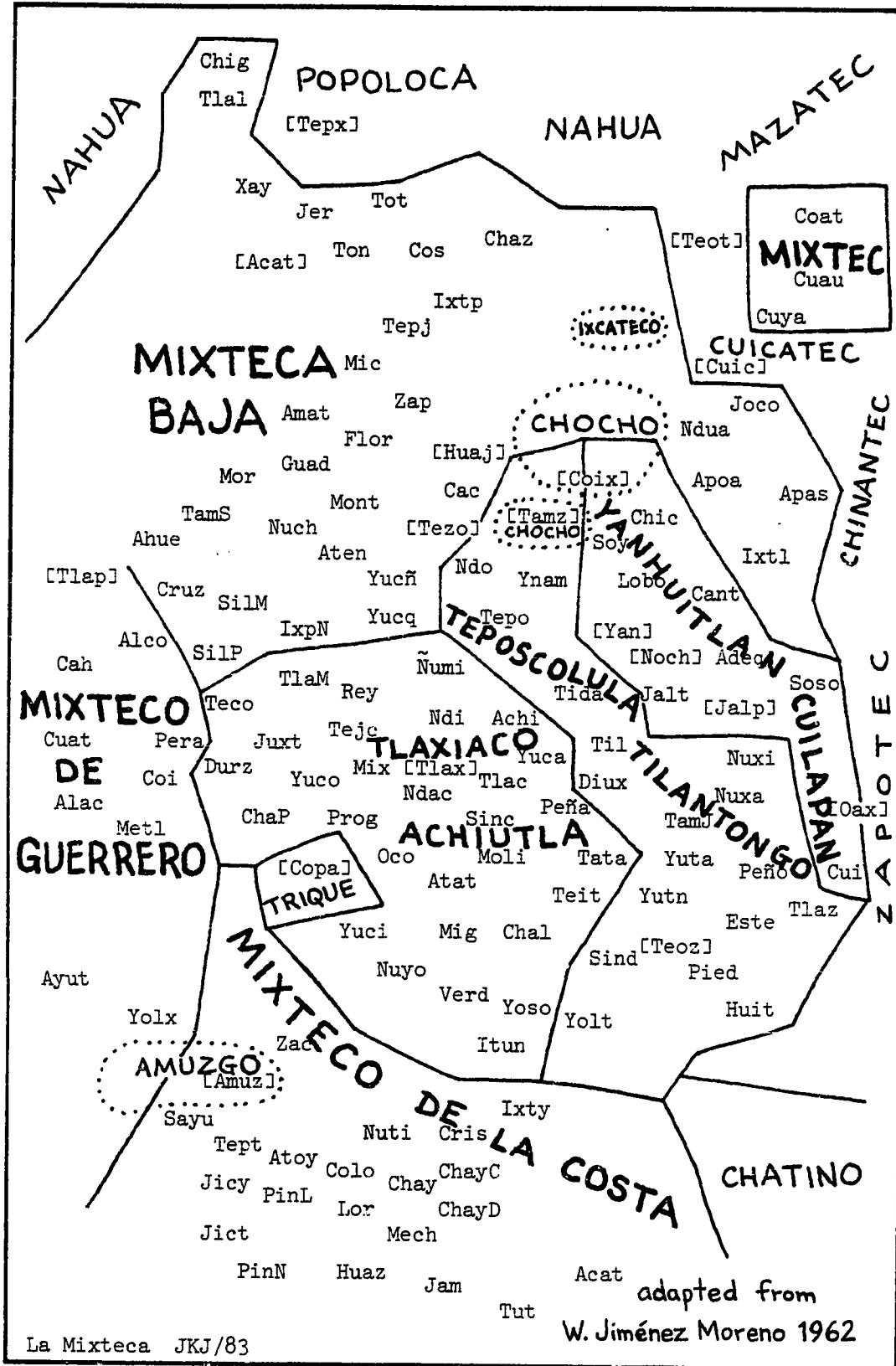
(although he does not present the linguistic characteristics of the groups noted by de los Reyes), which he then correlates with the results of modern linguistic investigations. His sources include Arana's 1960 glottochronology study (see below), material from Peñafiel (which contained vocabularies collected from 32 towns between 1880 and 1894), and as much manuscript and published material as possible from the Summer Institute of Linguistics in Mexico. His intention was to accommodate all reported varieties of Mixtec in his map of Mixtec "dialect complexes" (1962:51-52); an adaptation of Jiménez Moreno's groupings superimposed on my own base map appears here as Map III-4.

Jiménez Moreno's map provided the most explicit and complete classification of Mixtec varieties available until very recently, and it is an admirable synthesis of the varied studies by sixteenth century and modern scholars of Mixtec. Using de los Reyes (1593) and Arana (1960; discussed below) as the basic framework, he incorporated all other towns described in the available literature, principally on the basis of their geographical location with respect to previously established groups, unless he had some linguistic data to the contrary. This produced a hierarchical classification into seven "dialect complexes," each composed in turn of dialects and subdialects (single towns), although he gives few examples of the two lower-level categories. Jiménez Moreno's seven dialect complexes are as follows (1962:49-50):

1) La Mixteca Baja, described by de los Reyes as "la lengua de la Mixteca Baxa" and corresponding to Arana's (1960) Group 1, and including all the Puebla and northern Baja towns;

2) Cuauhxoehpan-Cuyamecalco, two northern towns on the Cuicatec border, not mentioned by de los Reyes, but included by Arana in her Group 2 (Cuauhxoehpan = Coatzospan);

Map III-4. Jiménez Moreno's Mixtec Dialect Groupings



- 3) Yanhuitlán-Cuilapan, de los Reyes' "lengua de Yanhuitlán," equivalent to Arana's Group 3b;
- 4) Tepozcolula-Tilantongo, de los Reyes' "lengua de Tepozcolula," corresponding to Arana's Group 3a;
- 5) Tlaxiaco-Achiutla, de los Reyes' "lengua de Tlaxiaco y Achiutla," and including most of Arana's Group 4a;
- 6) La Mixteca de la Costa, referred to by the same name in de los Reyes, and equivalent to Arana's Group 4b, and
- 7) La Mixteca de Guerrero, not mentioned by de los Reyes, and formed by separating the Guerrero varieties from Arana's Group 4a.

The results of this classification, presented in Jiménez Moreno's map (1962:51, redrawn here as Map III-4), were apparently intended to approximate sixteenth century dialect groupings, even though they are partly based on modern materials. Obviously the nearly 500 years since the Spanish Conquest have been very important for Mixtec diversification, and fortunately there are various kinds of information on Mixtec during this intervening period which will facilitate the reconstruction of intermediate stages in the development of Mixtec dialects. While Jiménez Moreno does not utilize any seventeenth, eighteenth, or nineteenth century materials, he does mention several of them (1962:50). To these should be added the documents in Mixtec found by Maarten Jansen and Angeles Romero in their search for Colonial materials, both in the Archivo General de la Nación in Mexico City, and through visits to provincial archives within the Mixteca, primarily the Juzgado de Teposcolula. A preliminary analysis of these documents (Josserand, Jansen and Romero 1978, In press) indicates that they reflect the regional variation in Mixtec which would be expected in local speech during these periods (that is, they are not examples of a standardized Mixtec resul-

ting from the conventions of centrally-trained scribes using, say, Tepescolula Mixtec conventions and imposing them on local speech).

These intermediate period materials come from both secular and religious sources; the latter are often translations of church doctrine, such as sermons and catechisms, while the former represent a large range of public documents, including letters, deeds, lawsuits, bills of sale and accounts. More detailed attention to the linguistic features contained in this material will certainly have the effect of reaffirming and/or questioning the validity of proposals made in the present study regarding the historical development of Mixtec. Their importance for establishing details of intermediate stages of Mixtec cannot be underestimated, as for example in the dating of certain phonological innovations according to their appearance in documentary sources, or in the relative chronology of various phonological rules (rule ordering).

Ronald Spores (1967:18-22) also gives a brief but comprehensive review of Mixtec linguistic studies in his excellent work, The Mixtec Kings and Their People, but he does not propose any new linguistic groupings. He accepts Jiménez Moreno's classification as adequate "until further evidence becomes available" (1967:22), and includes a redrawn version of Jiménez Moreno's 1962 map. Spores did, however, discuss with me in 1976 a number of towns which might fall into distinct dialect areas, mostly within the Mixteca Alta and central Mixteca Baja, which I present here as an indication of the level of specificity possible with a more precise knowledge of Mixtec communities and social organization. These groupings reflect Spores' integration of archaeological, ethnohistorical and modern information in his delimitation of interaction spheres within the Mixteca. Comparison of these groups with those defined by linguistic criteria shows a marked coincidence between

Spores' groupings and my own:

- 1) Apoala, Apasco, Sosola and the eastern frontier with Chinantec, Cuicatec and Zapotec;
- 2) Coixtlahuaca, Huautla and Tequixixtepec;
- 3) Tonalá, Chila, Petlalcingo, Mariscala, Acatlán and the towns on the northern frontier with Nahuatl and Tlapanec;
- 4) Huajuapán;
- 5) Silacayoapan and its ranchos on the Guerrero border;
- 6) Tecomaxtlahuaca and Juxtlahuaca;
- 7) Tlaxiaco and its ranchos, Cuquila, Ñumí, and Mixtepec;
- 8) Teposcolula, its ranchos, and another ten communities which use the Teposcolula market, including Tayata and Achiutla;
- 9) Tilantongo and its ranchos, and Mitlatongo;
- 10) Chalcatongo and San Miguel el Grande;
- 11) Yucuañe and nine or ten surrounding communities;
- 12) Teozacoalco and Peñoles;
- 13) Putla;
- 14) Zacatepec;
- 15) Tututepec and Jamiltepec;
- 16) Yolotepec;
- 17) Yanhuitlán, Chicahua, Soyaltepec, Cántaros, Coyotepec, Nochixtlán and Tonaltepec;
- 18) Tamazulapan, Tejutla, Teotongo, and Chilapa de Díaz.

Spores was instrumental in arranging the facsimile reproduction of de los Reyes' Arte (1593), published by Vanderbilt University in 1976; this remains the principal source for early views on Mixtec dialect variation, and its renewed accessibility is a great help for Mixtec studies.

Modern Dialect Studies and Comparative Work in Mixtec

Modern linguistic studies have not resolved the questions of Mixtec internal classification and subgrouping, although various attempts have been made. Published comments on Mixtec diversity are frequently impressionistic; more objective studies include two glottochronological studies (Holland 1959; Arana 1960), a mutual intelligibility survey (Bradley 1967, and Eglund 1978), two articles on dialect area characteristics and definitions (Bradley 1977; Josserand, Jansen and Romero 1978 and In press), and two reconstructions of Proto-Mixtec (Mak and Longacre 1960; Bradley and Josserand 1982). Arana (1960) does not reconstruct an intermediate stage of Proto-Mixtec in her reconstruction of Proto-Mixtecan, which includes Trique, Cuicatec and Amuzgo, nor does Longacre in his 1957 reconstruction of Proto-Mixtecan, which treats Mixtec as a unit language (though his data come from several towns) compared to Trique and Cuicatec to obtain the reconstructed proto-system.

Some of the first comparative work in Mixtec in this century is the product of Cornelia Mak of the Summer Institute of Linguistics. In 1948 she compiled, from co-workers' data, a short word list (100 items) comparing San Miguel el Grande (Mixteca Alta), Metlatonoc (Guerrero), Xayacatlán (Puebla) and Jicaltepec (Coast). In this five-page manuscript, Mak briefly summarized some of the more salient phonological correspondences between the four towns, and concluded that Metlatonoc "parece ser, en general, ligeramente distinto de los otros tres" (1948:1).

In 1953, Mak's first article on the comparison of Mixtec tonemic systems appeared, treating the southern Mixteca Alta towns of San Miguel el Grande and San Esteban Atatlahuca. These two towns, only two hours apart by foot, have very similar phoneme inventories, but their systems of tone perturbation are significantly different. The entire article is

devoted to the specification of these tone differences, though Mak offered a short list of other types of differences between the dialects, indicating that forms may differ (1) by vowel substitution, (2) by consonant substitution, (3) by toneme substitution, (4) by the abbreviation of forms in either dialect, (5) by apparent substitution of morphemes, or (6) by shifts in meaning (1953:86). A Spanish version of this analysis appeared in 1961, treating essentially the same material but in a slightly less technical manner, and giving the dialect associations with local dress and salutation patterns. These two tone systems were compared to a yet a third system, that of Santo Tomás Ocotepec, some five hours distant from Atlatlahuca, in Mak's 1958 article. Here she listed the phonemes of Ocotepec and compared them with San Miguel and Atlatlahuca, and then devoted most of the article to contrasting the Ocotepec dialect with the other two, mostly on the basis of the tonal perturbation patterns.

Mak characterized Mixtec as having "numerous divergent dialects," which she attributed to geographical barriers and village autonomy:

While on first inspection there seems to be a good deal of intercommunication in that the Indians travel extensively, carrying their scanty products for sale in neighboring markets, closer analysis reveals that communication is largely superficial, consisting only of contact on a trade basis, and not extending into intimate life situations. (1958:61)

Mak's later collaboration with Longacre (1960) does include a subgrouping of Mixtec dialects (see below), but these early works only hint at the nature of phonological variation encountered within Mixtec. Indeed, Longacre's reconstruction of Proto-Mixtecan (1957), which includes material from five Mixtec dialects (San Miguel el Grande, Atlatlahuca, Jicaltepec, Xayacatlán, Metlatonoc), treats Mixtec as a single language unit in the reconstruction, even though earlier studies gave clear evidence of its internal diversification.

In the 1960s and 1970s, the various descriptive articles on Mixtec made informal references to its internal diversity, mostly by indicating the very limited extension of intelligibility in the dialects they had studied (frequently only 5000 to 7000 speakers share a mutually intelligible dialect). Merrifield and Stoudt (1967) related Molinos Mixtec (from a village with 700 speakers) to the dialect of San Miguel el Grande and eleven other villages in the area, and they further stated that Mixtec "includes perhaps as many as twelve mutually unintelligible dialects" (1967:58). On the other hand, in an article published in the same year, Pankratz and Pike spoke of Ayutla (Guerrero) Mixtec as being "unique among the thirty or so Mixtec dialects and subdialects yet studied" (1967:287).

By 1970, Bradley referred to Mixtec as having perhaps two dozen mutually unintelligible dialects (1970:1). He was the first of the modern writers to list even informal groupings; these dialect areas he referred to by region (Northern, Eastern, etc.), and by naming one or two Mixtec towns within the region. Although he did not specify on what basis they were adduced, it is likely that his groupings relied on the results of the Summer Institute of Linguistics' mutual intelligibility surveys (see discussion of Bradley 1967 and Eglan 1978, below). Bradley's groupings are as follows:

- 1) Northern: Xayacatlán, Huajuapan, Chigmecatitlán;
- 2) Northeastern: Apoala, Coatzospan, Cuyamecalco;
- 3) Eastern: Peñoles, Tilantongo, Huitepec;
- 4) East-Central: Amoltepec;
- 5) Central: Yosondúa, San Miguel, Molinos, San Esteban (Atatlahuca), Santo Tomás (Ocotepec), Mixtepec;
- 6) South-Central: Nuyoo-Yucuite, Itundujia;

- 7) West-Central: Silacayoapan-Juxtlahuaca;
- 8) Western: Metlatonoc, Coicoyán;
- 9) Southwestern: Ayutla;
- 10) Southern: Jicaltepec, Chayuco, Zacatepec;
- 11) Southeastern: Tututepec.

But it is not until Daly (1973) that linguists working with Mixtec began to speak of "numerous mutually unintelligible languages" (Daly 1973:4; emphasis added). And again, in 1975, Pensinger and Lyman spoke of "perhaps as many as fifteen Mixtec languages" (1975:158, note 1). Nonetheless, few of the modern linguistic studies directly address the question of Mixtec internal diversification, and those which do, represent several different approaches to the problem. Some purport to define dialect or language areas, while others are strictly comparisons for historical reconstruction; only a few attempt to combine these goals to produce a classification of Mixtec varieties based on genealogical principles.

The first serious attempts at comparative work on Mixtec began to appear in the late 1950s, with a spurt of four nearly simultaneous studies, including Robert E. Longacre's Proto-Mixtecan (presented as a Ph.D. thesis in 1955 and published in 1957), Evangelina Arana's Relaciones internas del mixteco-trique (presented as an M.A. thesis in 1957 and published in 1960), William R. Holland's "Dialect variations of the Mixtec and Cuicatec areas of Oaxaca, Mexico" (1959), and Cornelia Mak and Robert Longacre's "Proto-Mixtec Phonology" (1960). Although Longacre's earlier study (1957) did not specifically treat internal Mixtec variation, it did pave the way for the most serious and important of these works, his later collaboration with Mak, wherein local varieties

of Mixtec were subjected to systematic comparison in order to reconstruct a proto-Mixtec phonological system.

Holland's 1959 glottochronological study of 22 Mixtec (and 4 Cuicatec) towns should be considered a very preliminary attempt at gauging the internal diversity of Mixtec. It would appear that cognate identification was done by inspection, since no mention is made of phonological correspondences. Using Swadesh's criterion of 86% shared cognates as the break-point for distinguishing different languages, Holland grouped the Mixtec towns into eleven language "zones," thus grouping all "dialects" (towns) with five centuries of divergence or less, as follows (1959:26-28):

Zone I: Ixtayutla, Mechoacán, Jamiltepec, Huazolotitlán, Pinotepa Nacional;

Zone II: Ixtayutla, Mechoacán, Jamiltepec, Pinotepa de Don Luis, Pinotepa Nacional, Atoyac, Tlacamama (Note that Zones I and II are not mutually exclusive, but rather represent two nuclei of an extended dialect chain along the coast);

Zone III: Santo Tomás Ocotepec, Santa Lucía Monte Verde, San Miguel el Grande, San Esteban Atatlahuca;

Zone IV: San Rafael Guerrero;

Zone V: Juxtlahuaca;

Zone VI: Santa María Peñoles, Huitepec;

Zone VII: Peñoles;

Zone VIII: Jocoticpac [sic; = Jocotipac];

Zone IX: Cuyamecalco;

Zone X: San Juanico Coatzospan;

Zone XI: Chigmecatiditlán, Santa Catarina Tlaltempan.

Although Holland's study includes an adequate number of varieties, its usefulness is marred by the informal identification of cognates (which almost certainly skews the calculations), as well as by an absence of crucial data, such as the lack of figures for divergences between the groups which he defines as languages (he gives only the maximum divergence of 19 m.c., and the pairwise divergences within language zones). It is also essential to note that he demonstrates a faulty conception of the geographical layout of the Mixteca. He apparently conceived of the Mixteca Baja as running east-west along the northern part of Mixtec distribution, with the Alta in the middle area, and the Costa to the south. Thus he speaks of four Baja zones and five Alta zones in his groupings, while more correctly his groups represent only three Baja zones but six Alta zones, as indicated in Chart III-1. By inference from commentary

CHART III-1

HOLLAND'S AREAL GROUPINGS OF MIXTEC DIALECTS

Area	Zone	Dialects (= Towns)	Actual Locations (corrections marked by *)
Baja	XI	Tlaltempan, Chigmecatitlán	Baja (Puebla)
	X	Coatzospan	*Alta (Northeast Alta)
	IX	Cuyamecalco	*Alta (Northeast Alta)
	VIII	Jocotipac	*Alta (Northeast Alta)
Alta	III	San Miguel, etc.	Alta
	IV	San Rafael	*Baja (Guerrero)
	V	Juxtlahuaca	*Baja
	VI	Huitepec, etc.	Alta
	VII	Peñoles	Alta
Costa	I	Ixtayutla...Huazolotitlán	Costa
	II	Ixtayutla...Pinotepa de Don Luis	Costa

in his text and on the accompanying map, it is clear that Holland thought that the northeastern Alta towns of Jocotipac, Cuyamecalco, and Coatzospan were in the Baja, along with Chigmecatitlán and Tlaltempan (which are, indeed, in the Baja, although on its extreme northern edge, in the state of Puebla). On the other hand, the Baja town par excellence of Juxtlahuaca and the Guerrero town of San Rafael appear to be considered by Holland as falling within the Mixteca Alta. Thus the statement that "the greatest divergences are between the isolated villages of the Mixteca Baja in the north and those of the Coastal Mixtec" (1959:31) should be reinterpreted. It refers to the divergences between the coastal towns far to the south, and the two northern extremes of Mixtec distribution: the northeastern Alta towns of Coatzospan, Cuyamecalco and Jocotipac on the one hand, and the far northwestern Baja towns of Chigmecatitlán and Tlaltempan on the other. And without seeing any of the between-zone figures, it is impossible to tell whether the supposed closer relations between Costa and "Alta" towns is in fact justified, or if they are perhaps between Costa and Baja towns such as Juxtlahuaca (as my own data would suggest). These misconceptions of geography may not affect the glottochronological calculations, but they certainly affect their interpretation, on the basis of which Holland purports to "reconstruct the history of the Mixtec," stating that (1959:31):

it is probable that these people began to immigrate from an area in the south of the State of Puebla or in the north of Oaxaca toward the Mixteca Alta about nineteen centuries ago. The dialects of the coastal Mixtec were very similar to those of the Mixteca Alta until about nine hundred years ago when people from the latter area moved south over a period of about four hundred years.

A more careful glottochronological study of Mixtec varieties is that of Evangelina Arana (1957, 1960), which also touched on the question of higher-level classifications between Mixtec, Cuicatec, Amuzgo

and Trique. Here Arana followed the classification proposed by Fernández de Miranda, Swadesh and Weitlaner (1959), where Mixtecan is conceived as including Mixtec, Cuicatec and Amuzgo, but as excluding Trique. This classification differs from that of Longacre (1955, 1957), where Mixtecan is taken to include Trique as well as the other three. But in a later, more definitive work, Longacre (1965) rescinded his earlier inclusion of Amuzgo, and defined Mixtecan as consisting only of Mixtec, Cuicatec and Trique.

Arana's stated aim in her glottochronological and comparative study is to calculate "las divergencias lingüísticas existentes entre los idiomas del grupo lingüístico mixteco-trique [here Mixtec includes Cuicatec and Amuzgo] y obtener de ellas algunas ideas sobre la prehistoria de los pueblos que los hablan" (1960:255). To achieve this end she attempted a reconstruction of Proto-Mixtecan (like Longacre), but without reconstructing an intermediate level for Proto-Mixtec (again like Longacre). Her sample of 23 Mixtec towns (or "dialects") were first grouped on the basis of geographical proximity and preliminary impressions of linguistic similarity (1960:257). For the "Mixtec family" (Mixtec proper) this produced six groups, which were later reduced to four groups, two with two subsections each, as follows (Arana 1960:257):

Group 1: Chigmecatitlán, Tlaltempan;

Group 2: Cuyamecalco, San Juanico [= Coatzacoahuacan];

Group 3a: Huitepec, Peñoles, Santa María Peñoles, San Juan Tamazola;

Group 3b: Cuilapan, and probably also Xoxocotla and other towns

[where Mixtec is no longer spoken];

Group 4a: San Miguel el Grande, San Esteban Atatlahuca, Santo Tomás

Ocoatepec, Jocoticpac [sic], Juxtlahuaca, and San Rafael,

Guerrero;

Group 4b: Mechoacán, Jamiltepec, Pinotepa de Don Luis, Ixtayutla, Huazolotitlán, Tlacamama, Pinotepa Nacional and Atoyac.

From these groups five towns were selected as representative of the groups for purposes of presenting the phonological correspondences within Mixtec: Tlaltempan from Group 1, Cuyamecalco from Group 2, Huitepec from Group 3a, San Miguel el Grande from Group 4a, and Mechoacán from Group 4b (although supplementary data from other towns are also used in the cognate sets). The Mixtec correspondences were compared without intermediate stage reconstruction to Cuicatec (from Tepeuxila, Oaxaca), Amuzgo (from Ometepec, Guerrero), and Trique (from San Andrés Chicahuaxtla, Oaxaca), to produce Arana's reconstruction of Proto-Mixtecan. The reconstruction, avowedly preliminary, was done to provide a firm basis for the identification of cognates, thus enabling more precise lexicostatistic calculations. The calculations derive from pairwise comparisons of all the towns within each group, using a 100-word Swadesh list, and giving percentages of shared cognates and separation times in minimum centuries (using a lexical retention rate value of $r = .86$ in the formula $t = \log C / .2 \log r$).

This procedure permitted the establishment of a range of dialect variation within each group, with the identification of those towns which represented the extremes of each group's variation. These extremes were then compared to the extremes from the other Mixtec groups, to provide both maximum and minimum between-group divergences. Dialect Groups 1 and 2, each with only two representatives in the sample, show divergences of 3.5 m.c. (minimum centuries) and 7 m.c., respectively. Group 3b, with only one town, naturally shows no internal divergence. But Group 3a has a 5.5. century range of internal divergence, with a minimum of 2.5 m.c. separating Huitepec and Santa María Peñoles, and a maximum

of 8 m.c. separating San Juan Tamazola and Huitepec. Between Groups 3a and 3b (Cuilapan) the range is from a minimum of 5 m.c. (Cuilapan with Santa María Peñoles) to a maximum of 10.5 m.c. (Cuilapan with Peñoles). In Group 4a the minimum divergence (3 m.c.) is between Santo Tomás Oco-tepec and San Miguel el Grande, while the maximum (6 m.c.) is between San Rafael, Guerrero, and Juxtlahuaca. In Group 4b a minimum divergence of 2.5 m.c. was found between Mechoacán and Jamiltepec, and between Mechoacán and Pinotepa de Don Luis, while the maximum divergence, of 6.5 m.c., was found between Huazolotitlán and Atoyac.

The lowest between-group divergences were found between Groups 4a and 4b (4 m.c.), between Groups 3a and 3b (5 m.c.), between Groups 3a and 4a (5 m.c.), and between Groups 3a and 4b (5.5 m.c.). In more general terms, this shows the closest relations to be between the western group (4a) and the coastal towns (4b), or between the eastern Mixteca Alta towns (3a) and three other areas: the adjacent Valley of Oaxaca town of Cuilapan (3b), the coastal Mixtec towns (4b), and the western Mixteca Alta/Mixteca Baja towns (4a).

A maximum divergence of 15 m.c. was found between Groups 1 and 2 (the Puebla towns versus the northeastern Mixteca Alta towns), and between Groups 2 and 3b (the northeastern Alta towns and the Valley of Oaxaca town). This maximum divergence figure would suggest that the period corresponding to proto-Mixtec was at least prior to A.D. 500. The most unusual grouping in Arana's study is that of Jocotipac, in the far northeast, with the Baja and western Alta towns of Group 4a, but this as well as other distributional and relational curiosities are interpreted as being due to recent population movements, specifically colonization from the Mixteca Alta (Arana 1960:262).

Arana's lexicostatistic study produced fewer but similar groupings to those proposed by Holland (1959), but still no clear picture of higher-level relations between Mixtec groups. Arana's figures are difficult to interpret, partly due to the disparities in separation figures given in the text versus those presented in the accompanying charts, but at least many more of the significant figures are given in Arana's study than are published in Holland's (1959) comparison of similar areas. The chart which appears in Arana (1960: Fig. 2) is not a tree diagram but rather a net or mesh-principle view of internal relations, and without a specification of genealogical relations it is difficult to interpret the glottochronological figures correctly.

Arana herself recognizes the importance of innovations in subgrouping: "Lo único que puede servir de criterio para agrupar las divisiones, sería una innovación que afectara a dos o tres de las mismas, es decir, que no se presente ni en todas ni en sólo una división" (1960: 263). Nonetheless, of the two features she was able to identify whose distributions fit these requirements, Arana is unable to show which alternant is original and which is the innovation in either case: accent (on the first syllable of the stem in Cuicatec and Mixtec, on the final syllable in Trique and Amuzgo), and the development of *r (as d or t in Amuzgo, Cuicatec and Trique, and as y in Mixtec). More to the point for purposes of Mixtec subgrouping, these two features do not serve to differentiate branches within Mixtec, but only contrast Mixtec as a whole to the other three languages involved in Arana's reconstruction, Cuicatec, Amuzgo and Trique.

Despite these limitations, Arana does offer historical interpretations of Mixtec diversification on the basis of her glottochronological calculations. Beginning from a homeland somewhat to the north of the

Mixteca Alta, she proposes the following series of population expansions:

Hasta el siglo VII d.C., el mixteco debe haber sido una comunidad bien relacionada y con muy ligeras diferencias dialectales. Por ese entonces se inició una expansión que continuó, a veces lenta y a veces rápida, hasta el momento de la conquista. La primera movilización mixteca debe haber sido la que colocó los dialectos del grupo 2 en su actual situación. Más tarde, quizá en el siglo X, hubo una ocupación de pueblos que pertenecían al Estado de Puebla, que constituyeron el grupo 1. Las colonizaciones más extensas habrán tenido lugar a partir del siglo XI, incluyendo las conquistas realizadas por el rey guerrero "8 Venado", llegando hasta el Valle de Oaxaca. El reino de Tututepec que los españoles encontraron a su llegada, pudo haberse formado posteriormente a la expansión territorial, debido al predominio de Tututepec, sobre los demás pueblos ya establecidos en la región. (Arana 1960:265)

In 1960 Cornelia Mak and Robert Longacre published the first reconstruction of Proto-Mixtec, i.e., of Mixtec proper as opposed to the earlier reconstructions of Proto-Mixtecan, which treated Mixtec as a single unit in comparison with other related languages such as Cuicatec and Trique. Although their purported intent was reconstruction and not sub-grouping, Mak and Longacre did discuss the phonological changes which derive the modern dialects; that is, they specifically identified the innovations which make genealogical subgrouping possible. Furthermore, they included some considerations of relative chronology, indicating that certain changes must have occurred early in Mixtec diversification. They did not, however, present a clearly ordered series of innovations which can be directly applied to dialect subgrouping, and the groupings which I attribute to them are not stressed in their presentation; their genealogical status is implicit rather than explicit. Thus from a sample of 28 Mixtec "dialects" (again, each is a single town), nine areal groupings can be inferred from the text presentation (Mak and Longacre 1960:24); the numbering of the individual dialects is given by Mak and Longacre, while the numbering of the groups which appear below and their geographical "names" are my own.

One problem in the interpretation of these materials is the difficulty of correctly identifying and locating Mixtec (and other indigenous) communities when incomplete or even incorrect names are given--a problem which is further complicated by the scarcity of adequate maps of the region. For example, in the case of the two Peñoles (Peñoles and Santa María Peñoles) which appear both in Arana (1960) and in Holland (1959), it is unclear what settlements are specifically referred to, since only Santa María Peñoles appears on most maps of the region. Holland's incorrect attributions of towns to the subareas of the Mixteca has already been discussed. In the case of Mak and Longacre's list of towns, two appear to be incorrectly named in the list and incorrectly located in the text, although their positions on the accompanying map would appear to support the identifications which I suggest below. In the following list of groups inferred from Mak and Longacre's presentation, all towns are in the state of Oaxaca unless otherwise indicated:

Group 1. Central Mixteca Alta: (1) San Miguel el Grande, (2) San Esteban Atatlahuca;

Group 2. Southern Mixteca Alta: (3) Santiago Yosondua, (4) Santa Cruz Itundujia, (6) San Mateo Santigui [I believe this is San Mateo Sindihui, although this would put it in the District of Nochixtlán rather than in Tlaxiaco as Mak and Longacre indicated], (7) San Pedro [el] Alto, (8) San Fernando Yucucundo [I believe this is San Francisco Yucucundo, which is near Huitepec, in the District of Zaachila, rather than in Tlaxiaco as indicated by Mak and Longacre];

Group 3. Western Mixteca Alta: (9) Santo Tomás Ocotepec;

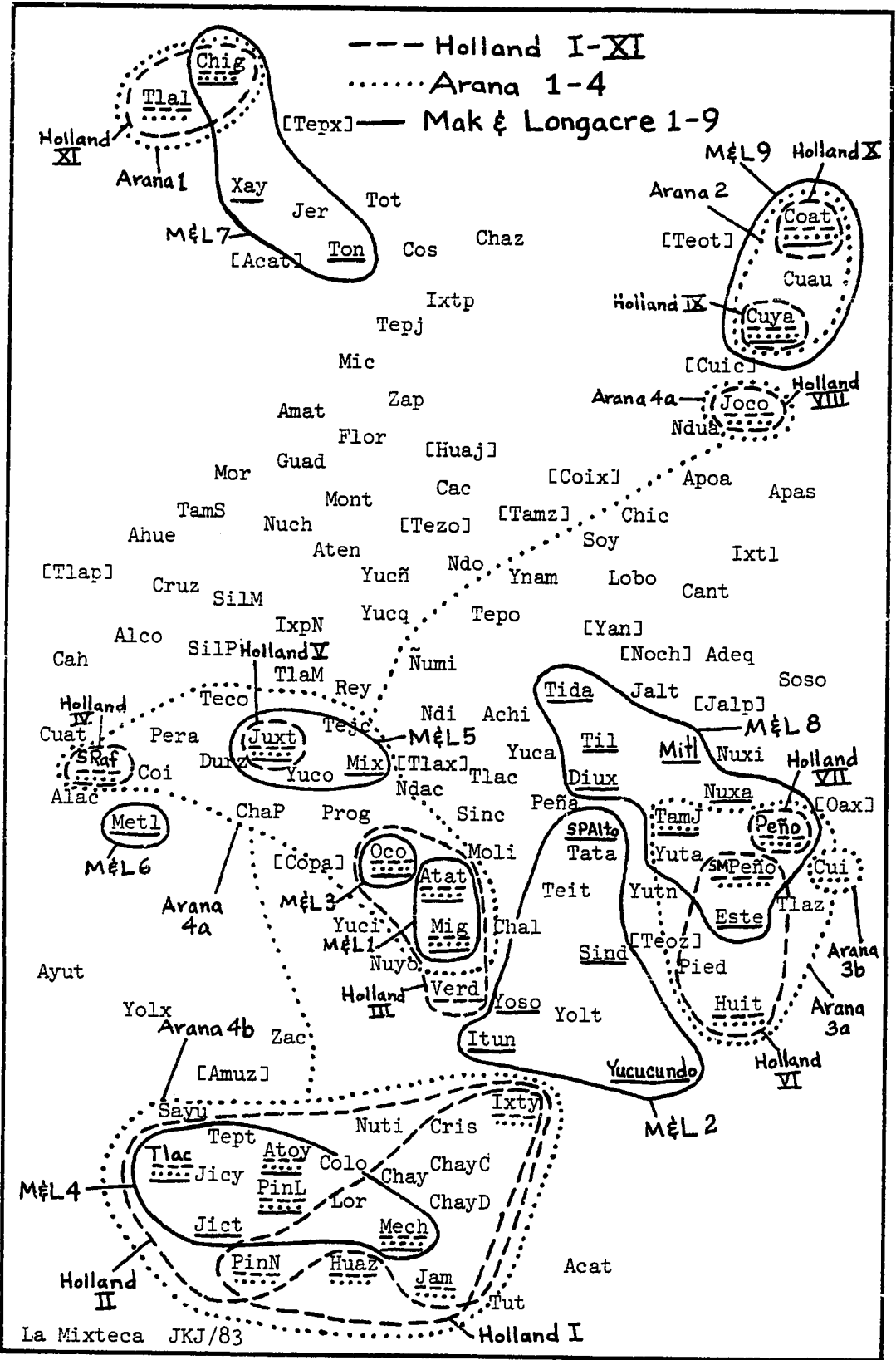
Group 4. Lowland or Mixteca de la Costa: (10) Jicaltepec, (11) Pinotepa de Don Luis, (12) Mechoacán, (13) Tlacamama,

- (14) Atoyac;
- Group 5. Mixteca Baja: (15) San Juan Mixtepec, (16) Juxtlahuaca;
- Group 6. Guerrero: (17) Metlatonoc, Guerrero;
- Group 7. Puebla: (18) Tonahuixtla, Puebla, (19) Xayacatlán, Puebla,
(20) Chigmecatitlán, Puebla;
- Group 8. Eastern Mixteca Alta: (21) Estetla, (22) Tilantongo,
(23) Tidaa, (24) San Juan Diuxi, (25) Santiago Mitlatongo,
(26) Nuxaa, (5) San Juan Tamazola;
- Group 9. Northeastern Mixteca Alta: (27) San Juan Coatzospan,
(28) Cuyamecalco.

A comparison of these three studies, all published within a year of each other (Holland 1959; Arana 1960; Mak and Longacre 1960), shows them to be quite similar in the range of dialects covered. All have roughly the same size sample (Holland, 22 towns; Arana, 23 towns; Mak and Longacre, 28 towns), although Mak and Longacre's sample is somewhat larger and more balanced, with more towns in the northwest or Puebla area, more in the very densely populated and linguistically diverse central Mixteca Alta, and fewer towns in the relatively more homogeneous coastal region. But all three studies are deficient in their coverage with respect to the Mixteca Baja and Guerrero regions, and in the potentially most important central area around the Nochixtlán Valley.

Map III-5 charts the groupings proposed by these three studies, to provide a more graphic comparison of the differences and similarities between them. The groupings are superimposed on a base map showing my own sample of 120 towns, with the addition of those towns cited by one or another of these studies but not included in my data. Towns which appear in Holland's study are underlined with a dashed line and his groups are similarly encircled by a dashed line. Towns which appear in

Map III-5. Three Studies of Mixtec Variability



Arana's study are underlined with a dotted line, and her groups are encircled with a dotted line. Towns used by Mak and Longacre in their reconstruction are underlined with a solid line and their groups are encircled by solid lines. The inclusion of other towns within any of these limits does not necessarily indicate their pertinence to the group, but only reflects their geographically intermediate positions.

In terms of groupings, Holland would appear to be a "splitter," with eleven subgroups for Mixtec, while Arana is clearly a "lumper," with only four to six varieties of Mixtec. Mak and Longacre's nine subgroups would appear to be intermediate to these two extremes.

All three of these studies are in general agreement insofar as their samples coincide: All three show a single group in Puebla. Arana and Holland both have two groups in the northeastern Alta, but Mak and Longacre, who show only one group in this area, do not have data from the town of Jocotipac, which forms the basis for distinguishing between two groups in this area (although Arana actually groups Jocotipac with the Baja and western Alta towns in her sample).

In the coastal region, Arana and Mak and Longacre show only one group each, while Holland proposes a dialect chain with two poles. In the Mixteca Alta, all three studies show at least a division between eastern and western Mixteca Alta dialects; Arana groups the western Alta towns with Baja, Guerrero, and coastal towns, as well as with Jocotipac from the far northeast. On the other hand, Mak and Longacre split both eastern and western Alta dialects into two groups each; the eastern subdivisions are undoubtedly attributable to their greatly increased sample in this region, while their separation of Ocoatepec from San Miguel el Grande and Atlatluca, in the western Alta, may reflect Mak's previous work contrasting the tone systems and phonologies of these towns (Mak

1953, 1958). Few groups are postulated for the Baja by any of the three studies, but this is mostly due to their limited samples in the western or Baja-Guerrero area.

Still another major study of Mixtec subgrouping is that done by the Summer Institute of Linguistics in their large-scale study of intelligibility among varieties of Mesoamerican Indian languages. The Mixtec intelligibility study was carried out by C.H. Bradley with the help of various other linguists working in the Mixtec area during the 1960s, and preliminary results were reported by Bradley in 1968, when the survey was about 80% complete. In this article, "A Method for Determining Dialectal Boundaries and Relationships," Bradley describes the technique employed in the SIL intelligibility survey, which begins with the identification of sociolinguistically important towns within the area of the language under study. These towns serve as foci for testing smaller, subsidiary towns, since if any great number of towns is involved, no exhaustive pairwise comparison test would be feasible. Thus the area under study is divided into subsections, each with one or more preselected towns as the principal reference points (Bradley 1968:754):

Then, towns within a subsection are tested against the more important towns of that subsection. In turn, the more important towns of each subsection are tested against each other and against those of adjacent subsections. This shows the relation of one subsection to its adjacent one.

Admittedly, this system will not detect mutual intelligibility between geographically distant dialects, which is unfortunate, since there is considerable evidence that there are many cases of relatively close genealogical relationship between distant Mixtec towns.

Bradley reports that Mixtec is spoken in more than 200 towns spread over an area of some ten thousand square kilometers, and that this area contains roughly 20 important centers. But not all these centers

can be compared directly, because the test length inhibits more than six such direct comparisons. He further states that "there are approximately twenty separate, mutually unintelligible dialects of the Mixtec language," although he does not specify them. Instead, 26 towns appear in a chart (Bradley 1968:756, Fig. 3) as the principal reference points in the Mixtec study, and these are divided into seven subsections or regional groupings:

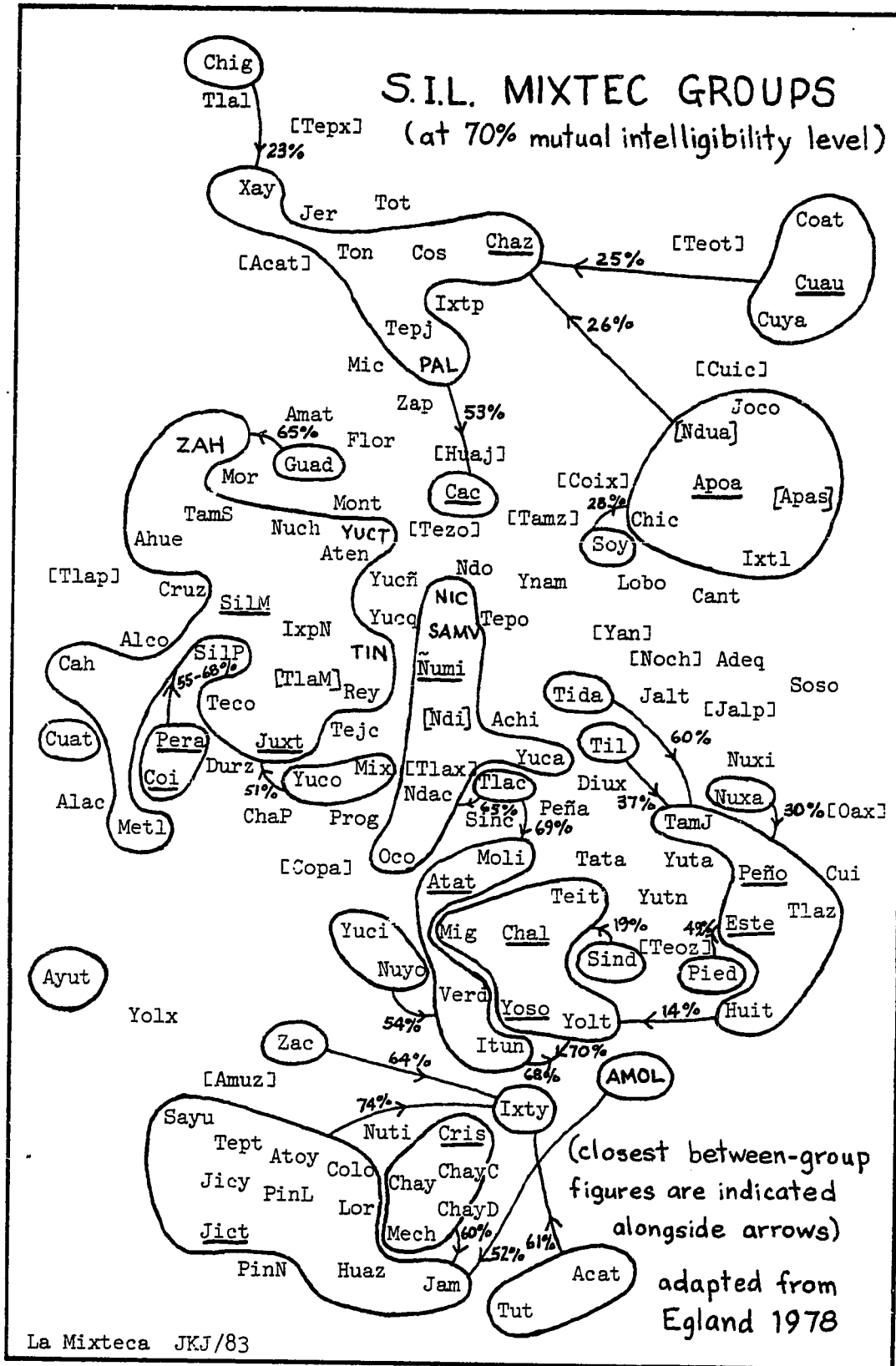
- 1) Northeast: Apoala, Cuyamecalco;
- 2) Northwest: Chigmecatitlán, Xayacatlán-Chazumba, Cacaloxtepec;
- 3) Mixteca Baja: Mixtepec, Juxtlahuaca-Silacayoapan, Coicoyán;
- 4) Guerrero: Coatzingo, Malinaltepec, Yolosochoitl, Ayutla;
- 5) Mixteca de la Costa: Zacatepec, Pinotepa, Ixtayutla, Jamiltepec, Tututepec;
- 6) Western Mixteca Alta: Ñumí, Chalcatongo, Yosondúa, Itundujia, Atatlahuca;
- 7) Eastern Mixteca Alta: Peñoles, Tilantongo.

This list is not quite the same as that given in Bradley's 1970 list of "mutually unintelligible dialects," which mentioned 11 regional subgroups, and a slightly different sample of individual towns.

In the most recent presentation of the SIL intelligibility survey, which was compiled by Steven Eglan, the testing procedure is described in considerably more detail in the introductory section entitled "Método" (Eglan 1978:3-4). This explains, for example, the control measures used to compensate for or to avoid various kinds of possible interference which might affect test scores.

Map III-6 shows the 29 groupings established by this study from a sample of 84 Mixtec-speaking towns, using samples of 10 speakers from each town and setting the language break at a minimum of 70% intelligi-

Map III-6. S.I.L. Mixtec Dialect Intelligibility Groupings



bility between towns. Because Mixtec mutual intelligibility scores were uniformly low throughout the Mixtec area, the 70% cut-off level was adopted, rather than the 80% cut-off level used elsewhere in the SIL survey of Mexican languages. As with the previous map, on Map III-6 the SIL intelligibility data are superimposed on my own base map, with the addition of seven towns which appeared in the intelligibility survey but which are not in my own sample. The towns which served as reference points in the test are underlined. The arrows and figures between groups which appear on Map III-6 indicate closest relations beyond language-level groupings, but no really higher-level groupings were proposed, although the internal relations between varieties within the Mixteca Alta do show up, as well as the separateness of the coastal region and of the central Mixteca Baja. On the other hand, the linkage between Northeastern and Northwestern areas, even though weak, is a new and intriguing feature to be dealt with in future attempts at sub-grouping. With respect to Guerrero, it appears that each new town tested forms a new and separate dialect area; i.e., no groupings are indicated in this region yet, although Egland reported that SIL was continuing to test in Guerrero and in some other areas. It would seem that Guerrero is more diverse than expected, considering the "relative" homogeneity of the Baja area; Silacayoapan in the Baja is the single largest grouping, with 14 towns understanding the same variety. Next largest in terms of members is the West Coast language area, centered on the town of Jicaltepec. Most of the 29 groups consist of a single town as the defining member, however. At the end of the section on Mixtec is a set of maps (Egland 1978:29-33) which give isoclines at 5% intervals from 100% intelligibility down to 60% intelligibility, which are useful for evaluating finer subgroupings within the groups.

Overviews of the phonological characteristics which typify Mixtec languages and distinguish them from their congeners are presented by Longacre (1957) and by Bradley and Josserand (1982), in connection with their reconstructions of Proto-Mixtecan and Proto-Mixtec, respectively. A much fuller treatment of these defining features was presented by Bradley in a 1977 paper entitled "Toward a Definition of the Mixtec Languages." In this unpublished paper, Bradley says that its title refers to the "assumption that these are separate, although closely related, languages and not merely dialectal variants" (Bradley 1977:1). His intention is to offer data supporting this assertion, rather than directly addressing the question of language versus dialect definitions. He first presents a set of characteristics which are shared by all Mixtec languages, and which presumably distinguish them from their relations (although they are not contrasted directly with Trique or Cuicatec), and then he presents a set of characteristics which separate the Mixtec languages from one another. These characteristics cover aspects of phonology, morphology, syntax and semantics, and are based on data collected from over 70 Mixtec-speaking localities (collected during the period of intelligibility survey which Bradley was also involved in).

For each of the characteristics, Bradley gives the range of variants and their distribution, in general terms. He includes some 20 phonological correspondences which he uses "to segment the Mixtec area" (1977:10). But this material is not oriented towards establishing the subgroups, per se. There may be some inherent groupings in the selection of characteristics he presents, or groupings might be derived from a reorganization of the data made available in this paper, but there are no groups defined or discussed; only the bases for distinguishing groups

(i.e., Mixtec languages) are offered. Bradley concludes that the data presented support the results of the intelligibility survey, which indicated "the distinctiveness of these languages in terms of mutual intelligibility and the lack of it" (Bradley 1977:23).

In our collaborative effort at reconstructing Proto-Mixtec and later Mixtec linguistic diversification, Bradley and I briefly characterize Proto-Mixtec, and then give a series of 16 ordered phonological rules, divided into four broadly-construed temporal stages, to account for the phonological development of 20 varieties of Mixtec. The 20 towns were selected to maximize contrasts in terms of the distinctive features already identified. A set of distributional maps accompanies the rules, so that actual distributions can be seen at a glance, as well as a chart showing 8 sequential schematic diagrams of Mixtec diversification (Bradley and Josserand 1982: Cuadro 6). Some attempt was made to identify actual centers of innovation, although it was recognized that many of the important early centers have disappeared from the scene (either literally, or because they no longer speak Mixtec). A chart of the development of stops, fricatives and affricates in the 20 varieties shows the evolution of five distinct systems involving only 5 proto-units (*t, *k, *k^w, *s, *x). But no definitive groupings are proposed, despite the underlying assumption of dialect areas; and no attempts at genealogical subclassification are discussed. But in Josserand, Jansen and Romero (1978, In press), two maps are presented, based on the above linguistic analysis; one shows isoglosses for five of the major phonological innovations affecting Mixtec, and another delimits five dialect areas, "all internally diversified, which can be established by a restricted but diagnostic number of features" (Josserand, Jansen and Romero 1978:11,

and Maps 1 and 2). The areas defined are: (1) Central and Eastern Mixteca Alta; (2) Western Mixteca Alta; (3) Northern Mixteca Alta, (4) Southern Mixteca Alta, and (5) Mixteca de la Costa. These are rather large areas, compared to the increasingly finer subdivisions which previous studies showed, but the sample involved in the discussion and definition of these areas was reduced (from 20 towns in the Bradley and Josserand sample to 11 towns in the present article). More importantly, the aim of the paper was to relate these dialect areas to sixteenth century documentary sources on Mixtec, from a very limited set of towns, and the focus was on larger groupings, "as evidence of diffusion spheres and related dialect areas" (Josserand, Jansen and Romero 1978:10).

Resources for the Study of Mixtec Languages

Mixtec, like other branches of Otomanguean, remains an under-documented family of languages in comparison to other Mesoamerican groups such as Utoaztecan and Mayan. Despite its historical importance, and the efforts of Summer Institute of Linguistics linguists (virtually the only linguists to study Mixtec recently) over the past 20 years, and the fact that Kenneth Pike, a major figure in SIL linguistics, began his linguistic work in Mexico with the study of Mixtec, there are still few complete or even extensive studies of any variety of Mixtec. The sixteenth century sources--Alvarado's Vocabulario and de los Reyes' Arte--remain the principal sources for the study of Mixtec.

Early Materials

De los Reyes' Arte (1593) has been commented on earlier as an important source of information on sixteenth century varieties of Mixtec. Even more important is its value as a repository of primary linguistic

data on Mixtec. The Arte, or grammatical sketch, fills nearly 100 pages and is divided into 28 short chapters, with a brief introduction on orthography and pronunciation. The first chapter is a bow to Latin grammar, the order of the day for sixteenth century grammatical descriptions, and it asserts that Mixtec has all 8 parts of speech found in Latin and in "all other perfect languages." The subsequent chapters deal forthrightly with Mixtec, beginning with a chapter on nouns and adjectives, another on pronouns (a very important part of the Mixtec languages), and one on particles and relativizers. Chapters V-XX treat different aspects of verbal constructions: active versus passive and neutral verbs, simple and compound verbs, verbal derivation, verb-incorporated prepositions and adverbs, verbal semantics, verbal conjugations, and irregular verbs. The following chapters cover the remaining parts of speech: prepositions, adverbs, interjections, and conjunctions. The last four chapters are dedicated to special topics; one discusses the reverential forms used with lords, one lists all body parts, another gives consanguineal and affinal kin terms, and the last is a list of Mixtec place names. A veritable treasure trove of information, the utility of this grammar is augmented by concurrent use of Alfonso Caso's "Vocabulario sacado del 'Arte en Lengua Mixteca' de Fr. Antonio de los Reyes" (1962, printed as part of the volume containing Jiménez Moreno's "Estudios mixtecos" and a facsimile edition of Alvarado's Vocabulario).

The companion volume to de los Reyes' Arte is Francisco de Alvarado's Vocabulario en Lengua Mixteca, also published in 1593. This is a mammoth work in comparison with any other Mixtec vocabulary, consisting of over 400 pages, with an average of 30 entries per page, or some 12,000 Spanish to Mixtec entries. The actual number of Mixtec forms may be much higher, since each Spanish entry is usually followed not by a

single Mixtec equivalent, but by several phrases with slightly variant meanings (unfortunately these nuances are not always accessible since they often lack translation); for example (Alvarado 1593:56v):

Crecer la luna. Yocuvuiquahayoo, yonduvuiquahayoo, yonayodzoyoo,
yonatuvuiyoo, yonaquevuiyoo

The limitation of this magnificent work is that it lacks a Mixtec to Spanish inversion; searching for a word in Mixtec to document a Mixtec form is time-consuming and often requires imagination to discover the corresponding Spanish entry. This problem is considerably alleviated by Arana and Swadesh's Los elementos del mixteco antiguo (1965), a reworking of both sixteenth century sources into a compact dictionary, but with only some 1500 Mixtec to Spanish entries.

Besides the two major sixteenth century sources--de los Reyes and Alvarado--there are quite a few early doctrinas, catecismos, and other religious texts translated from Spanish into Mixtec; these are reviewed by Jiménez Moreno (1962:99-105), and several were used by Delos Lincoln Canfield in his study, Spanish Literature in Mexican Languages as a Source for the Study of Spanish Pronunciation (1934). The only other important linguistic study of Mixtec is an eighteenth century work on Guerrero Mixtec by Fray Miguel de Villavicencio (1755). This consists of an Arte, or grammatical sketch, a Vocabulario, and a religious Manual for administering Catholic sacraments. Unfortunately this unpublished manuscript is inaccessible to most scholars; it is my understanding that the original is in the Palafauxiana archives in Puebla, Mexico, and that there is a microfilm copy at the Instituto Nacional de Antropología e Historia in Mexico City (see also Smith 1973:23, footnote 21).

There is a prominent nineteenth century source for Mixtec data, Francisco de Pimentel's Cuadro descriptivo y comparativo de las lenguas

indígenas de México, first published in a two-volume edition in 1862-65, with an amplified, three-volume second edition in 1874-75. In the first edition, the chapter on Mixtec is in volume I, pages 35-78; in the second edition the corresponding chapter is in volume II, pages 367-406. Unfortunately this material is very mixed as to origin, being taken rather indiscriminately from de los Reyes, Alvarado, Villavicencio, and nine other, mostly eighteenth century, sources. At best it provides a very general overview of Mixtec, but it is very difficult to use without considerable prior knowledge of Mixtec.

Modern Linguistic Studies of Mixtec

There are only two modern works on Mixtec with any claim to complete coverage: Leonhard Schultze-Jena's study of Cahuatachi, Guerrero, Mixtec (1938), and C.H. Bradley's (1970) study of Jicaltepec Mixtec from the Oaxaca coast. These two works include phonological treatments, morphological and grammatical descriptions, and texts; Schultze-Jena also includes a sizeable vocabulary taken from the 15 short texts. Though Bradley does not include a vocabulary per se, considerable lexical material appears in the heavily exemplified linguistic sketch.

There are published phonological analyses for more than a dozen varieties of Mixtec, most of them mutually unintelligible. The widest range of materials on phonology treats the variety of San Miguel el Grande, in the southern Mixteca Alta. There are, however, gaps in the coverage; no full description of the phonology of San Miguel el Grande has been published. The articles describing San Miguel Mixtec are mainly "highlight" articles, presenting data on specific points of analysis.

In 1935, Kenneth Pike began his ten years of field work on Mixtec; one of his earliest publications is a Mixtec text with a description of Mixtec phonetics (1937). All through the 1940s, Pike published Mixtec material and analyses (see Bright 1967 and Wares 1974 for bibliography), based principally on the San Miguel el Grande dialect. It is apparent from these publications that Mixtec had an important place in the development of Pike's theoretical model, tagmemics, and his methodological articles and textbooks on phonetics, phonemics, and especially on tone analysis (K. Pike 1943, 1947, 1948, 1953). Pike established virtually all the foundations for the modern study of Mixtec, including basic analytic concepts such as the "couplet" and the nature of Mixtec tonal perturbations (1947, 1948, 1949, 1953), although modifications of these concepts have occasionally been necessary. Pike's 1947 article, "Grammatical prerequisites to phonemic analysis" is particularly useful for its presentation of Mixtec canonical forms (root shapes), and how these are related to vowel sequences within roots and to systematic distributional restriction of consonants.

Some ten years after Pike's beginnings in Mixtec, other Summer Institute of Linguistics linguists also began publishing on San Miguel el Grande and nearby varieties of Mixtec (Stark 1947, San Miguel; Mak 1948, 1950, 1953, 1958, on San Miguel, Ocotepec, Atlatlahuca and elsewhere; Dyk 1951, 1959, on San Miguel). In addition to these phonemic and tonemic analyses, texts and vocabularies, a considerable amount of practical and educational materials were published by SIL linguists for these and other varieties of Mixtec (see Wares 1974 for bibliography). By the 1950s, new and mutually unintelligible varieties of Mixtec were under analysis (H. Klassen and B. Klassen 1954, 1955, on Jicaltepec; Overholt 1961 on Metlatonoc). The published analyses of Mixtec which have

appeared in the 1960s and 1970s have shown continued expansion of coverage, both areally (Jamiltepec and Chayuco on the Coast; Acatlán, Mixtepec, Silacayoapan and Huajuapán in the Mixteca Baja; Ayutla and Alacatlazala in Guerrero; Peñoles, Coatzacoapan, Diuxi, Yosondúa in the Mixteca Alta) and with regard to the variety of linguistic structures and levels analyzed (phonemics, tone analyses, grammars, discourse studies, etc.).

One of the main aims of SIL linguists is to facilitate the translation of the Bible, especially the New Testament, and this type of product is a major part of their output. There is a complete New Testament published in Mixtec of San Miguel el Grande (K. Pike and Stark 1951), and others have recently been or are soon to be completed (see Wares 1970 for bibliography). Although difficult to use analytically, they are nonetheless among the largest bodies of textual material extant in Mixtec, and they can be utilized for more linguistically oriented ends by use of their accompanying Spanish translations and existing Bible concordances.

Phonological studies of Mixtec invariably treat tone phenomena as well as segmental phonology, due to the extensive systems of tone perturbation found in most varieties of Mixtec. Some articles treat tone phenomena exclusively, but until very recently all have been straightforward descriptive presentations accounting for surface forms rather than underlying structures. The earliest modern phonological studies centered around the southern Mixteca Alta, including Kenneth Pike's already mentioned works (especially 1947 and 1953), a short article by Donald Stark (1947), and Cornelia Mak's several articles on tone (Mak 1950, 1953, 1958, 1961). C. Henry Bradley's grammatical sketch of Jicaltepec (west Coast) Mixtec includes two ample chapters on phonology and

morphophonemics, including tone and tone perturbation (1965, 1970), and an earlier unpublished paper of Bradley's, titled "The Syllable in Jicaltepec Mixtec" (1957), is an even more comprehensive treatment of linguistic features at this level of analysis. Another excellent description is Edward Overholt's study of Metlatonoc, Guerrero, tone (1961).

Many articles on Mixtec phonology and tone appeared in the late 1960s and 1970s, frequently co-authored by Kenneth Pike's sister Eunice Pike, and another linguist working directly with some variety of Mixtec. These include Eunice Pike and John Cowan, "Huajuapán Mixtec Phonology and Morphophonemics" (1967); Leo Pankratz and Eunice Pike, "Phonology and Morphotonemics of Ayutla Mixtec" (1967); Georgia Hunter and Eunice Pike, "The Phonology and Tone Sandhi of Molinos Mixtec" (1969); Eunice Pike and Priscilla Small, "Downstepping Terrace Tone in Coatzacoapan Mixtec" (1974); Eunice Pike and Kent Wistrand, "Step-up Tone in Acatlán Mixtec, Mexico" (1974); Eunice Pike and Joy Oram, "Stress and Tone in the Phonology of Diuxi Tone" (1976), and Eunice Pike and Thomas Ibach, "The Phonology of the Mixtepec Dialect of Mixtec" (1978). Only two other descriptive articles on phonology and tone from this period lack Eunice Pike's participation: Joanne North and Jäna Shields, "Silacayoapan Mixtec Phonology" (1977), and Carol Zylstra, "Phonology and Morphophonemics of the Mixtec of Alacatlazala, Guerrero" (1980).

Despite the apparently ample coverage, tone remains an almost insurmountable problem in attempts at comparative work, probably because of the widely varying systems of tone perturbation found in almost all varieties of Mixtec. The surface-level variation with respect to tone is so great that Mixtecs themselves notice it as being one of the first features to differentiate their speech from that of neighboring villa-

ges. It has seemed likely for some time that another conception of tone analysis, involving underlying structures of some kind, would be more propitious for comparing tone and tone perturbation systems between varieties of Mixtec. This type of analysis has recently been presented by John Daly in two articles, one on Peñoles tone (1977), and another re-analyzing Diuxi tone in the same framework (1978).

Even more recently, a reconstruction of proto-Mixtec tone was attempted by Michael Dürr, in a German master's thesis entitled Töne und Tonveränderung im Mixtekischen: Vergleich der Tonsysteme Mixtekischer Dialekte (1982). This very promising work uses the proposed couplet-final glottal stop (now lost from all but two varieties of Mixtec) as a mechanism for generating tone perturbations. A similar system was suggested but not detailed for proto-Mixtec in Bradley and Josserand (1982: 283-284).

Modern vocabularies for Mixtec exist for only two varieties, east Coast and southern Mixteca Alta. Anne Dyk's (1951) Vocabulario de la lengua mixteca de San Miguel el Grande, Oaxaca, was an early version of a somewhat more ample Mixtec-Spanish dictionary of the San Miguel compiled by Dyk and Betty Stoudt (1965; see Kaufman 1967 for a review of this vocabulary). The other modern vocabulary, Diccionario mixteco; mixteco del este del Jamiltepec, pueblo de Chayuco, prepared by Brenda Pensinger (1974), pertains to the rather unusual east coast dialect of San Agustín Chayuco. Both of these are relatively small volumes; the Chayuco dictionary contains somewhat more grammatical information as well as sample sentences indicating usage in each lexical entry.

Considerable lexical material can also be gleaned from some of the other published articles; Overholt's study of Metlatonoc tone (1961) and Zylstra's (1980) article on Alacatlazala phonology are particularly rich

in vocabulary, and Daly and Daly include a short vocabulary in their sketch of Peñoles grammar (1977), as does Schultze-Jena in his study of Cahuatachi Mixtec (1938). Although Guerrero is generally the least well documented area, in terms of vocabulary sources Guerrero dialects are quite well represented, beginning with Villavicencio's vocabulary (1755) and continuing with Schultze-Jena (1938) on Cahuatachi, Overholt (1961) on Metlatonoc, and Zylstra (1980) on Alacatlazala.

Various publications of Mixtec texts exist, usually as individual stories or very brief collections (see Wares 1974:142-146). Most notable is Anne Dyk's collection of San Miguel el Grande texts (1959); other sources include Schultze-Jena's 15 short texts from Cahuatachi (1938), and three texts from Coatzacoapan published in association with an analysis of Mixtec narrative discourse (Small 1979a).

Modern morphological and/or grammatical treatments include the already mentioned grammatical sketch of Cahuatachi, Guerrero (Schultze-Jena 1938), and the sketch of Jicaltepec coastal Mixtec (Bradley 1965, 1970), both excellent sources for Mixtec. Somewhat less comprehensive coverage is also available for Peñoles (eastern Mixteca Alta): John Daly's A Generative Syntax of Peñoles Mixtec (1973) is useful for the insights it gives into some syntactic processes, but because of its theoretical framework it is difficult to take advantage of it in other types of study, and certainly does not lend itself to any use by the non-linguist. Another presentation of Peñoles Mixtec is found in John Daly and Margaret Daly, Mixteco de Santa María Peñoles, Oaxaca (1977), in the series of uniform sketches of Mexican Indian languages known as the "Archivo de Lenguas Indígenas de México."

Another new grammar of great utility is Ruth Mary Alexander's (1980) "practical" (i.e., pedagogic) grammar of the western Mixteca Alta

dialect of San Esteban Atatlahuca. A special feature of this Gramática mixteca is its bilingual nature: half the grammar is written exclusively in Mixtec, explaining the grammatical points directly to the speakers by means of their own language; the other half presents essentially the same material on Mixtec to a Spanish-speaking audience. A much smaller but reasonably adequate practical grammar of Silacayoapan (central Mixteca Baja) Mixtec is Jäna Shields' Gramática popular (1976), which also includes three short texts. And a grammatical sketch of Diuxi Mixtec (in the central Mixteca Alta near Tilantongo) is presented in Joy Oram's master's thesis (1970).

There are also several journal articles treating various aspects of Mixtec morphology and syntax, beginning with Kenneth Pike, particularly his 1944 analysis of a Mixtec text, and in his 1949 article, "A problem in morphology-syntax division." Two studies treat the extensive systems of pronoun referencing found in Mixtec: Priscilla Small on Coatzacoapan pronouns (1974), and Albertha Kuiper and Velma Pickett on Diuxi pronouns (1974). An interesting study by Lourdes de León, La clasificación semántica en mixteco (1980), treats the fuller expression of these pronominal and nominal gender systems which involve concord marking on pronoun enclitics in the verb phrase in accord with the gender class of the nominal subjects and objects; these same elements are also involved in noun derivation.

Another study which relates semantics to morphology and syntax is Robert Hills and William Merrifield's "Ayutla Mixtec, Just in Case" (1974), where the semantic relationships normally associated with case systems are shown to be realized in predicate constructions. Merrifield and Albertha Kuiper also treat the semantics of predicate constructions in "Diuxi Mixtec Verbs of Motion and Arrival" (Kuiper and Merrifield

1975). Two other articles describe clause structure, for the coastal variety of Mixtec spoken in San Agustín Chayuco (Brenda Pensinger and Larry Lyman 1975), and for the Mixtec of San Pedro Molinos in the central Mixteca Alta (Merrifield and Betty Stoudt 1967). There is one article on discourse in Mixtec, Patricia Small's "Prominence and dominance in Coatzospan Mixtec narrative" (1979b), which is accompanied by three texts from this northeastern Alta town (1979a).

Unpublished Data Sources for Mixtec

In addition to the published materials on Mixtec languages, the Summer Institute of Linguistics has been promoting the preparation of parallel sketches for the varieties of Mixtec studied by their linguists. These include four Mixteca Alta towns--Santo Tomás Ocotepec in the western Alta (Ruth Mary Alexander), Santiago Yosondua in the southern Alta (Ed Farris), San Juan Diuxi in the central Alta (Albertha Kuiper and Joy Oram), and San Juan Coatzospan in the far northeastern Alta (Priscilla Small)--as well as three other distant communities, Santiago Jamiltepec on the east Coast (Audrey Johnson); San Juan Progreso, Silacayoapan, in the central Baja (Jäna Shields); and Tepango, Ayutla de los Libres, in coastal Guerrero (Robert Hills). (There is also a parallel Trique sketch prepared by Barbara Hollenbach.) These linguists and their language helpers attended a lengthy workshop supervised by C.H. Bradley and Barbara Hollenbach during the spring of 1978, in Mitla, Oaxaca, specifically oriented towards the production of comparable material from all varieties of Mixtec then under study. The manuscripts resulting from this workshop are presently undergoing editorial revisions preliminary to publication.

The grammatical sketches follow a uniform organization, beginning with brief introductory material on location of the variety under study, number of speakers, and other basic demographic and sociocultural data, and phonological notes. The first chapter covers basic sentence structure (impersonal, intransitive and transitive sentences, sentences with adjuncts, equative sentences, statives, peripheral elements, focus permutations, sentential complements, questions, commands, and vocatives. Chapter two covers the verb phrase, including the verbal nuclei, pre-verb elements (directionals, aspect, proximity, negation, hortatory, and possible combinations of these), post-verb elements (manner incorporation, object incorporation, repetitive, limiter-additives, contrary to fact, stative and equative verb phrases, verb repetition, etc.).

Chapter three treats noun phrases (quantifiers, deictics, relative clauses, limiters, combinations, measurement noun phrases, possessive noun phrases, interrogative, negative and adverbial noun phrases, appositional and additive noun phrases, attraction and distributive noun phrases). Chapter four surveys other types of phrases, quantifier, adverb and prepositional. Chapter five covers parts of speech (verbs, nouns, pronouns, adverbs, quantifiers, prepositions, conjunctions, markers and interjections). This chapter includes information on derivational morphology as well as on inflection. Chapter six covers intersentential relations, including both coordinate and subordinate relations between sentences. The last chapter is a text with morphemic analysis and translation. These individual studies, utilizing a common framework developed especially for describing Mixtec syntax and grammar, will provide an invaluable framework for ongoing comparative work in Mixtec.

Comparative materials per se (i.e., primary data) on Mixtec are [not lacking, but have not generally been published; even Mak and Long-

acre (1960) present few complete cognate sets. Aside from the published descriptive material already mentioned, from which one can extract considerable comparative data, there exist two major sources of comparative Mixtec materials:

1) A 500-word list, constructed by C. Henry Bradley and collected by Bradley and other SIL members (Kent Wistrand, Ruth Mary Alexander, John Daly, Georgia Hunter and Betty Stoudt) in about 85 towns throughout the Mixteca. This material was later augmented to about 140 towns by lists subsequently collected by myself and personnel of CIS-INAH/CIESAS (Centro de Investigaciones Superiores del Instituto Nacional de Antropología e Historia, later Centro de Investigaciones y Estudios Superiores en Antropología Social).

2) The materials collected by the Mixtec survey project of CIS-INAH/CIESAS. These are principally materials from a syntax survey, which used a questionnaire of 150 items, constructed by Bradley and myself, and collected in about 125 towns to date. During this same survey field work, the additional 500-word lists mentioned above were collected to complement the material from Bradley's earlier survey. Between these two questionnaires--the 500-word list and the syntax questionnaire--it has been possible to collect data on specific points of interest in terms of Mixtec dialect variation and historical linguistics. Bradley's 500-word list is aimed at eliciting all the phonological contrasts thought to occur in Mixtec, and the 150-item syntax questionnaire looks for similar contrasts on the levels of morphology and syntax. Both lists provide an ample base for lexical comparisons. Additionally, 100-word Swadesh lists were elicited as often as possible to provide materials for a future complementary glottochronological study.

Data Used in this Study

After considerable preliminary work with Mixtec--specifically a couple of years of dialectology field work and an article on the reconstruction of Proto-Mixtec coauthored with C.H. Bradley--I came to the conclusion that it was not possible to achieve an adequate understanding of Mixtec diversification using a small sample, especially given the diversity manifest in the existing studies of Mixtec internal variation. My original intent was to reconstruct the history of this language family in considerable detail; the resulting product has more detail than I ever anticipated, and still represents only a beginning in uncovering the historical processes at work in this linguistic family. The present study, then, is an attempt to combine the fine detail of a dialectology survey with the reconstructive methodology of historical and comparative linguistics, to produce a reconstructed phonological system for Proto-Mixtec. The dialectology data base was strengthened by a large body of background material, including the published phonological and grammatical studies of Mixtec which were mentioned in this chapter and which are used as a basis for comparing modern systems in the following chapter. Other material used here includes complementary morphological, syntactic and lexical data from the Mixtec dialect survey which I directed from 1977 to 1982.

The present study is focused on the reconstruction of the six Proto-Mixtec vowels, and the supporting data base is comprised of 29 correspondence sets drawn from 188 cognate sets (with reconstructed lexical forms). The cognate sets include data from 120 towns, with two additional data sources for one town (San Pedro Chayuco, on the Coast). This sample includes virtually all of the towns for which 500 word lists were available, as well as many towns whose data were extracted from

syntax questionnaires and various published sources, including the sixteenth century sources for Teposcolula.

Various criteria have determined the number and selection of the data sources which make up this sample. The analysis of a 20 town sample with a corpus of 45 cognate sets was presented in an earlier article (Bradley and Josserand 1978, 1982). This study suggested that virtually every town in the sample represented a different major variety of Mixtec; seldom were two towns alike in more than a few shared innovations. The patterns of distributions of the innovations also suggested at least some of the area to be covered in a more detailed study, and the CISINAH/CIESAS Mixtec dialect survey project which I developed and directed between 1977 and 1982 was in part designed to fill in gaps in the grid of previous coverage. Thus a more-or-less geographical distribution across the known area of Mixtec speech was one of the primary criteria in the selection of data sources to be used in the present study.

A new sample began to take shape based on considerations of geographical location and quantity and quality of information available for a given town. The number of towns included in the sample was increased until at least some varieties were mostly similar in the details of their phonological development, thus enabling the establishment of "areas". At the same time, increasing the number of towns in the sample inevitably increased the complexity of phonological detail to be dealt with in the reconstruction process, and this in turn resulted in the decision to limit the reconstructions to vowels only. The consonant reconstructions have also been made, however, and appear in the reconstructed lexicon in Appendix II; essentially the same cognate sets support the consonant reconstructions as are used to support the vowel reconstructions, even though these former are not presented in detail. An overview of recon-

structured consonantal units and of the general phonological system of Proto-Mixtec is given in Chapter V (The Structure of Proto-Mixtec).

The vowel reconstructions presented with their supporting correspondence sets in Chapter VI involved many more sets of regular correspondences than had previously been described, and consequently the number of cognate sets, or related etyma, had to be increased in order to support the finely-distinguished environments of each set of regular correspondences. The resulting sample of reconstructed lexicon is considerably larger than previously published comparative materials for Mixtec languages, both in terms of number of lexical items included and in terms of number of towns or linguistic varieties represented. These cognate sets are not presented in any special order in Appendix II; rather the collection of cognates evolved as reconstruction proceeded. The first 45 cognate sets are in the same order as the corresponding sets presented in Bradley and Josserand (1978, 1982). The number of towns included in each set is greatly increased, however. The remaining cognate sets were added individually, as need for data on a particular phonological environment was discovered. The corpus of reconstructed lexicon, and the Spanish and English equivalents of the Proto-Mixtec forms, are indexed in three alphabetical lists which appear in Appendix I.

The geopolitical subdivisions of the state of Oaxaca called (ex-) distritos served as a convenient initial basis for subgrouping the large number of towns in the sample. In fact, during the period of my fieldwork, the best maps available for the Oaxaca Mixtec region were the individual distrito maps used by a Oaxaca dependency of the Mexican Secretaría de la Presidencia, the Comité Promotor del Desarrollo Socio-económico del Estado de Oaxaca. These useful maps show the municipal divisions within the district, superimposed on a hydrographic base map (although

few river names are given). The cabecera, or municipal center of each municipio are indicated, along with the full names of virtually all other recognizable settlements within each municipio. The cabecera del distrito, from which the district usually received its name, is also indicated. In addition, the maps carried quite accurate road information, distinguishing three levels of transitable (or seasonally transitable) roadway, along with the railroad line which passes through the northern Mixtec districts.

These maps have played an integral part in various stages of the present research. In contrast, it has not been possible to obtain reliable maps of settlements, roads or rivers for the Mixtec regions of the states of Puebla and Guerrero. These states also once had district divisions, but these political subdivisions are nowhere used as in Oaxaca, and my information on Guerrero districts remains incomplete (Muñoz 1963 mentions three Guerrero districts). Perhaps the historical importance of the district divisions in both civil and religious administrative hierarchies of the massive territory of Oaxaca accounts for their perseverance and continued use.

The Oaxaca distritos can also be subgrouped in accordance with the regional limits of the Mixteca Alta, Baja and Costa, with only a minor overlap: Putla, basically a coastal district, includes at least two towns, Yucuhite and Nuyoo, which are geographically and traditionally in the Alta. The Mixtec regions of Guerrero and Puebla are subsumed in the Baja division. Map III-7 superimposes on my schematic base map an approximation of the relevant geopolitical subdivisions within the Mixtec region; these include adjacent parts of the states of Guerrero, Puebla and Oaxaca, and within Oaxaca, the distrito boundaries are sketched in. Chart III-2 gives the full names of all towns used in this

CHART III-2

SOURCES OF DATA USED

REGION

DISTRITO

Map Reference Number

Abbreviations

Cognate Set
Reference

Municipio (cabecera)

Community (if not cabecera)

MIXTECA ALTA

DISTRITO DEL CENTRO

1	Santiago Cuilapan de Guerrero	Cui	NE Alta 11
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DISTRITO DE CUICATLAN

2	Asunción Cuyamecalco de Zaragoza	Cuya	NE Alta 25
3	San Pedro Jocotipac	Joco	NE Alta 24
4	Santa Ana Cuauhtémoc	Cuau	NE Alta 26

DISTRITO DE ETLA

	San Jerónimo Sosola		
5	{ San José Sosola } { San Mateo Sosola }	Soso	NE Alta 12
6	Santa María Peñoles	Peño	NE Alta 9
7	Santa Catarina Estetla	Este	NE Alta 10
8	Santiago Tlazoyaltepec	Tlaz	C Alta 27

DISTRITO DE NOCHIXTLAN

	Asunción Nochixtlán		
9	Santa Catarina Adéquez	Adeq	NE Alta 14
10	Santiago Ixtaltepec	Ixtl	NE Alta 20
11	San Andrés Nuxiño	Nuxi	NE Alta 5
12	San Francisco Jaltepetongo	Jalt	NE Alta 13
13	San Juan Diuxi	Diux	NE Alta 4
14	San Juan Tamazola	TamJ	NE Alta 7
15	San Juan Yuta	Yuta	NE Alta 8
16	San Mateo Sindihui	Sind	C Alta 24
17	San Miguel Chicahua	Chic	NE Alta 19
18	San Miguel Piedras	Pied	C Alta 25
19	San Pedro Coxcaltepec Cántaros	Cant	NE Alta 15
20	San Pedro Tidea	Tida	NE Alta 2
21	Santa María Arasco	Apas	NE Alta 21
	Santa María Chachoapan		
22	San Agustín Montelobos	Lobo	NE Alta 16
23	Santa María Yutanduchi de Guerrero	Yutn	C Alta 23
24	Santiago Apoala	Apoa	NE Alta 22
25	San Antonio Nduayaco	Ndua	NE Alta 23
26	Santiago Tilantongo	Til	NE Alta 3
27	Santo Domingo Nuxaá	Nuxa	NE Alta 6

DISTRITO DE PUTLA

28	Santa Cruz Itundujia	Itun	C Alta 21
29	Santa Lucía Monteverde	Verd	C Alta 19
30	Santa María Concepción Zacatepec	Zac	Costa 1

DISTRITO DE TEOTITLAN

31	San Juan Coatzospan	Coat	NE Alta 27
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DISTRITO DE TEPOSCOLULA

32	San Bartolo Soyaltepec	Soy	NE Alta 18
33	San Pedro y San Pablo Teposcolula	Tepo	NE Alta 1
34	San Pedro Yucunama	Ynam	NE Alta 17
35	Santa María Chilapa de Díaz Santo Domingo Nundó	Ndo	N Baja 11

DISTRITO DE TLAXIACO

36	San Agustín Tlacotepec San Antonio Sinicahua	Tlac	C Alta 9
37	San José Sinicahua	Sinc	C Alta 8
38	San Bartolomé Yucuañe	Yuca	C Alta 3
39	San Esteban Atatlahuca	Atat	C Alta 16
40	San Juan Ñumí	Ñumi	C Alta 1
41	San Juan Teita	Teit	C Alta 6
42	San Mateo Peñasco	Peña	C Alta 4
43	San Miguel Achiutla	Achi	C Alta 2
44	San Miguel el Grande	Mig	C Alta 17
45	San Pedro Molinos	Moli	C Alta 7
46	Santa Cruz Nundaco Santa María Asunción Tlaxiaco	Ndac	C Alta 11
47	San Miguel Progreso	Prog	C Alta 13
48	Santa María Chalcatongo de Hidalgo	Chal	C Alta 18
49	Santa María Tataltepec	Tata	C Alta 5
50	Santa María Yolotepec	Yolt	C Alta 22
51	Santa María Yucuhiti	Yuci	C Alta 14
52	Santiago Nundichi	Ndi	C Alta 10
53	Santiago Nuyoo	Nuyo	C Alta 15
54	Santiago Yosondua	Yoso	C Alta 20
55	Santo Tomás Ocotepec	Oco	C Alta 12

DISTRITO DE ZAACHILA

56	San Antonio Huitepec	Huit	C Alta 26
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MIXTECA DE LA COSTA

DISTRITO DE JAMILTEPEC

57	San Agustín Chayuco (Bradley)	Chay	Costa 17
58	San Agustín Chayuco (Josserand)	ChayC	Costa 18
59	San Agustín Chayuco (Pensinger)	ChayD	Costa 19
60	San Cristóbal	Cris	Costa 12
61	San Antonio Tepetlapa San Juan Cacahuatpec	Tept	Costa 3
62	San Francisco de Asís Sayultepec	Sayu	Costa 2
63	San Juan Colorado	Colo	Costa 9
64	Santa María Nutic	Nuti	Costa 10

65	San Lorenzo	Lor	Costa 13
66	San Pedro Atoyac	Atoy	Costa 4
67	San Pedro Jicayán	Jicy	Costa 5
68	Santa Catarina Mechoacán	Mech	Costa 14
69	Santa María Asunción Pinotepa de Don Luis	PinL	Costa 8
70	Santa María Huazolotitlán	Huaz	Costa 15
71	Santiago Ixtayutla	Ixty	Costa 11
72	Santiago Jamiltepec	Jam	Costa 16
73	Santiago Pinotepa Nacional	PinN	Costa 7
74	Santa María Asunción Jicaltepec	Jict	Costa 6

DISTRITO DE JUQUILA

75	San Pedro Tututepec	Tut	Costa 20
76	Santa María Acatepec	Acat	Costa 21

MIXTECA BAJA

DISTRITO DE HUAJUAPAN

	Huajuapan de León		
77	Santa María Yucuñuti de Benito Juárez	Yucñ	N Baja 5
78	San Miguel Amatitlán	Amat	N Baja 8
79	Guadalupe Portezuelo/Villahermosa		
		Guad	N Baja 6
80	San Jorge Nuchita	Nuch	N Baja 2
	San Juan Bautista Tezoatlán de Segura y Luna		
81	Santa María Yucuquimi de Ocampo	Yucq	N Baja 4
	San Pedro y San Pablo Tequixtepec		
82	San Miguel Ixtapan	Ixtp	N Baja 12
83	San Sebastián Zapotitlán Palmas	Zap	N Baja 9
84	Santa Gertrudis Cosoltepec	Cos	N Baja 15
85	Santiago Cacaloxtepec	Cac	N Baja 10
86	Santiago Chazumba	Chaz	N Baja 16
	Santo Domingo Tonalá		
87	San Sebastián del Monte	Mont	N Baja 1
	Santos Reyes Yucuná		
88	San Francisco de las Flores	Flor	N Baja 7

DISTRITO DE JUXTLAHUACA

89	San Juan Mixtepec	Mix	S Baja 16
90	Los Tejocotes	Tejc	S Baja 17
91	Santa María Yucunicoco	Yuco	S Baja 15
92	San Martín Peras	Pera	S Baja 6
93	San Miguel Tlacotepec	TlaM	S Baja 19
94	San Sebastián Tecomaxtlahuaca	Teco	S Baja 12
95	San Martín Duraznos	Durz	S Baja 11
96	Santiago Coicoyán de las Flores	Coi	S Baja 5
97	Santiago Juxtlahuaca	Juxt	S Baja 13
98	San Pedro Chayuco	ChaP	S Baja 14
99	Santos Reyes Tepejillo	Rey	S Baja 18

DISTRITO DE SILACAYOAPAN

100	San Agustín Atenango	Aten	N Baja 3
101	San Juan Ixpantepec Nieves/Nieves	IxpN	S Baja 21
102	San Miguel Ahuehuetitlán	Ahue	S Baja 24
	San Pedro Silacayoapan		
103	San Jerónimo Progreso	SilP	S Baja 20
104	San Martín del Estado	SilM	S Baja 22
105	Santa Cruz de Bravo	Cruz	S Baja 10
106	Santiago Tamazola	TamS	S Baja 23
107	San Luís Morelia	Mor	S Baja 25

ESTADO DE GUERRERODISTRITO DE MORELOS

108	Alcozauca de Guerrero	Alco	S Baja 9
	Malinaltepec		
109	Alacatlazala	Alac	S Baja 3
110	Cuatzoquitengo	Cuat	S Baja 7
111	Metlatónoc	Metl	S Baja 4
	Kalpatláhuac		
112	Cahuatachi/Cahuatache	Cah	S Baja 8

OTHER DISTRITOS

	Ayutla de los Libres		
113	Tepango	Ayut	S Baja 1
	San Luís Acatlán		
114	Yoloxochitl	Yolx	S Baja 2

ESTADO DE PUEBLADISTRITO DE ACATLAN

	Petlalcingo		
115	Rosario Micaltepec	Mic	N Baja 13
116	Tepejillo	Tepj	N Baja 14
117	San Jerónimo Xayacatlán	Jer	N Baja 19
118	San Jerónimo Tonahuixtla	Ton	N Baja 18
119	Santa María Totoltepec de Guerrero	Tot	N Baja 17
120	Xayacatlán de Bravo	Xay	N Baja 20

DISTRITO DE TEPEJI

121	Santa Catarina Tlaltempan	Tlal	N Baja 21
122	Santa María Chigmeocatitlán	Chig	N Baja 22

sample, as well as their municipal, district, and state affiliations. Alphabetized indices of the full names as well as of the shortened or common names, and of the abbreviations for the towns used in this study appear in Appendix I; most form part of the sample, a few are included as reference points or because of their previous sociolinguistic importance.

Most of the towns in the sample are cabeceras municipales, but in a few cases the cabecera is no longer Mixtec-speaking, though its outlying settlements still are, so a dependency was sampled instead of the cabecera (this was frequently the case for the most important towns in the region). In a few instances the sample happens to be from an outlying settlement rather than from a Mixtec-speaking cabecera purely by chance. Occasionally more than one variety of Mixtec was known or expected to be spoken within a single municipio, so more communities were sampled.

The presentation of data from these towns follows (as closely as space allows) the regional breakdown given in Map III-7, but unfortunately an exact match between district affiliation and position in the correspondence charts and position in the cognate sets was not always possible. Therefore the last column of reference numbers in Chart III-2 gives the positional reference for each town in the cognate sets. In Appendix II, five pages are required to accommodate the full set of 122 data sources; each of these five pages represents a sub-region of the Mixteca, using the following rubrics: Northeast Alta, Central Alta, Northern Baja, Southern Baja, Costa. Each town is numbered according to its location on the page. Thus, for example, Santiago Cuilapan de Guerrero (numbered 1 in Chart III-2) has cognate set reference number NE Alta 11. This means that forms from Cuilapan appear in Appendix II

on pages marked NE Alta (Northeast Alta), and they are on the eleventh line of those pages. (Appendix II has an introductory map which also permits quick page location for towns appearing in the cognate sets.)

The correspondence sets found in Chapter VI use still another subdivision of the sample, creating five slightly different geographic regions: Northeast (Alta), Alta (proper), Northwest (Baja), Baja (proper) and Costa. In general, these two groupings agree in their constituent towns, except for a few adjustments on borders, where motives of spacing required the transfer of an Alta town to the adjacent Baja subgrouping, for example. In any case, these sets are not intended to be definitive linguistic groupings, but merely initial geographic groupings to facilitate data manipulation. Most of the linguistic subdivisions of Mixtec have clear affinities to historic and earlier geopolitical entities, but these must be carefully formulated in terms of a model of linguistic development of the language varieties in question. A first approximation of this diversification process is presented in Chapter VII.

MIXTEC PHONOLOGICAL SYSTEMS

Phonological Characteristics of Modern Varieties of Mixtec

Mixtec phonological systems, including Proto-Mixtec and all modern and historically documented systems, conform to a well-defined overall structure. They all share a common core of structural phonological units, arranged in standard series, and the maximum variation encountered, in terms of additional phonological units, is also clearly delimitable. The same kind of minimum and maximum generalizations can be made with respect to morphophonemic (including morphotonic) processes in Mixtec.

A respectable number of modern Mixtec phonological systems have now been published, most by linguists from the Summer Institute of Linguistics, all in structural-phonemic statements, with varying amounts of supporting data. Additional unpublished material (mainly from the manuscript files of the SIL) does not substantially augment the number of systems analyzed, but does contribute to the back-up material used for interpreting the published systems. Inspection of these sources reveals the range of phonological units encountered in Mixtec.

Consonants and Vowels

C.H. Bradley, in his overview of the Mixtec languages (1977), presents the core consonant and vowel inventory for Mixtec, with the caution that no contemporary systems are limited to these core structures.

The common consonants listed by Bradley (1977:4-5) are the alveolars /t sⁿ d n l/, velars /k/ and labialized /k^w/, palatal semivowel /y/

and labial semivowel /w/. Bradley's presentation of four sets of vowels reflects his reanalysis of the glottal stop, previously considered as consonantal, as part of the vocalic nucleus, creating a contrast between plain and checked vowels. (The implications of this analysis are discussed below in connection with the syllable; see also Bradley 1970.) These two categories of vowels, plain and checked, are further differentiated by the contrastive feature of nasalization, thus producing four parallel, or mostly parallel, vowel paradigms as representative of the vowels common to all modern varieties of Mixtec: (1) plain oral /i e a o u/, (2) plain nasal /ĩ ẽ ã ũ/, (3) checked oral /iʔ aʔ uʔ/, and (4) checked nasal /ĩʔ ãʔ ũʔ/. As Bradley's presentation implies, there are fewer checked than plain vowels in most modern varieties of Mixtec, although such is not the case for Proto-Mixtec. In addition, some systems are deficient in nasal vowels, especially with respect to /õ/. Contrastive tone is a universal feature of Mixtec phonologies, and complex systems of tone sandhi associated with morpheme classes are also typical of most varieties of Mixtec.

All modern and historically documented varieties of Mixtec manifest considerably augmented phonological systems, usually with around two dozen consonants, and often with fully augmented systems in the four sets (1-4 above) and/or six basic vowel contrasts instead of five. But even the increased number of units is within prescribed limits. In the series of voiceless stops, many varieties have added /p/, and most varieties have developed one or more palatalized units (/tʲ t̃ c̃ kʲ/). The prenasalized occlusives most frequently include /^mb/ and /ⁿg/, often /ⁿdʲ/ or /ⁿj̃/, and occasionally /ⁿgʷ/. The fricative series, both voiced and voiceless, show the greatest variability. Voiceless fricatives may include, beside /s/, up to three or four of the following:

/θ š ʃ h x x^w/ and introduced /f/ or /p/. Voiced fricatives may include /b ə ž/. Almost all modern systems have been analyzed with three nasals /m n ñ/, and most also show /r/. No other units had been reported at the time Bradley presented his overview of Mixtec (1977), but the data used in the present study have now added slightly to this inventory.

Vowel systems are either the basic core of five vowels /i e a o u/ (though in parts of the Mixteca Baja /u/ is fronted to [ü]), or they are six-vowel systems, with the addition of /ɨ/. No system lacks nasalized and glottalized (checked) series. All systems appear to have contrastive tone associated with vocalic nuclei. On the other hand, asymmetry-- in the distribution of the vowels in the four basic sets, the distribution of vowels with respect to consonants, or in the distribution of vowels or types of vowels in different syllables of the couplet (see below)-- is present to some degree in most modern systems.

Syllable Structure

Common to all Mixtec languages are the structural (phonemic) syllable types CV and V, and these are the most prominent types in any variety of Mixtec. This generalization is based on the reinterpretation of data on reported systems according to an analysis of the glottal stop as a prosodic feature of vowel nuclei, and word-initial glottal stop as a feature of junctural phenomena, as well as reanalysis of other segmental sequences such as palatalization and prenasalization into single units. Even with minimal reanalysis the overwhelmingly most common syllable structure in any variety of Mixtec is (C)V.

One of the most important resegmentation processes, in terms of Mixtec phonemic (and morphological) analysis, is the reinterpretation of phonetically long vowels as sequences of two geminate vowels on the

phonemic level. This means that long vowels have two mora, in structural terms. This analysis is supported by parallel considerations of tone phenomena; all Mixtec vowels carry a single underlying tone, except for these cases of long vowels, which sometimes carry two tone levels. Upon reanalysis, however, each of the two structural vowels then carries a single tone.

Resegmentation of glottal, palatal, and nasal segmental features, i.e., reanalysis of complex segmental sequences as unitary phonemes, also results in some differences between phonetic syllable types and the resegmented phonemic syllable types described here. Other phonetic features which disappear with phonemic analysis of phonetic data from Mixtec varieties include syllable-final phenomena (lengthening of vowel, preaspiration of following consonant, rearticulation of vowel after glottal stop when in a stressed position) and syllable-initial features (e.g., the independent nature of the nasal component in prenasalized units, which may form a separate phonetic syllable, and word-initial glottal stop). Most of these features are treated as subphonemic phenomena in the published descriptions of Mixtec varieties.

Even after the reanalysis, many varieties of Mixtec today have CCV syllables. These invariably have restricted constituents and occurrences, and they are susceptible to historical explanation as morphophonemic reductions of multimorphemic compounds (Bradley 1977:4). Some varieties, principally in the Tilantongo-Peñoles area (Bradley 1977:4), and also including some in the central Mixteca Baja, have closed CVC syllables, again with limitations on occurrence and constituency. Taking into account the peculiarities of CCV and CVC syllables in the individual varieties of Mixtec, as well as comparative data between varieties, Bradley and Josserand (1982:284) reconstruct only syllables

of (C)V shape for Proto-Mixtec.

The vocalic nuclei of Mixtec syllables carry a set of prosodic features which include nasalization, glottalization, tone and stress. Most of these, as well as consonant distribution, can best be described in terms of a larger phonological unit, the couplet.

The Couplet

In all varieties of Mixtec the basic unit of any utterance is the couplet, a microsegment composed of two syllables and carrying stress on the first of these two. The first syllable is often marked by additional phonetic features, such as vowel length, a preaspiration of certain following consonants (e.g., /t/ and /k/), or glottalization (see the Coatzospan variety). It is also most likely to engage in tone perturbations and is the locus of paradigmatic consonant alternations. The first or tonic syllable also relates to CV morphemes in pre-Proto-Mixtec, and is historically more stable phonologically, in terms of morphophonemic processes (where it is not unchanging, but is carefully circumscribed) and in terms of historical developments. The first syllable of the couplet is the syllable of the grammatical stem which shows consonantal variation associated with meaning alterations (derivational processes, aspect changes in the verb, singular and plural marking).

The second syllable of the couplet may contain inherently nasalized vowels, perhaps the vestige of a couplet-final nasal consonant in pre-Proto-Mixtec times (see Mak and Longacre 1960:26-27). And although most modern varieties of Mixtec have glottalized vowels only in tonic (couplet initial) syllables and not in the second syllable of the couplet, couplet-final glottalization is postulated for Proto-Mixtec on the basis of its occurrence in at least two varieties (Ayutla, Guerrero,

and Zacatepec, Oaxaca). Post-tonic (e.g., second syllable, final syllable) glottalization is probably responsible for certain patterns of tone perturbation in modern Mixtec.

The two-syllable couplet is a nucleus to which other syllables are added, without disturbing stress placement; it is the basis for all word and/or phrase building. Because of this relation to the word, an essentially grammatical unit, the couplet has aspects which make it appear to be a morphological unit as well. This apparent relation is difficult to specify, and indeed, in Otomanguan languages morphology is always a great help to understanding phonology. But the couplet as a grammatical unit is too slippery to maintain. The couplet is best considered a primary phonological concept for Mixtec, in terms of which morphological structures are manifest in their surface realizations. There is not always a one-to-one relation between morpheme (root or stem) and couplet.

Kenneth Pike (1948) first used the term "tonemic couplet", and correlated this unit of morphotonemic analysis with the bisyllabic base form of Mixtec free morphemes. According to Pike, relatively few morphemes in Mixtec cannot be related to two-syllable base forms, and all monosyllabic morphemes are atonic, or phonologically dependent, whereas the bisyllabic morpheme is based on the interpretation of phonetically long vowels as two mora, each carrying tone.

Robert E. Longacre, in his 1957 monograph, Proto-Mixtecan, identifies the couplet as the primary distributional matrix (1957:11) for Mixtec, but does not equate it with basic morpheme structure. He places more emphasis on the phonological nature of the couplet--the first syllable is optionally stressed, the medial consonant may be preaspirated (if /t/ or /k/) or lengthened, and the couplet is never interrupted by pause. But in allowing "some morphemic complexity within the unit"

(1957:12), Longacre opens the door to conflicting statements and irregularities with regard to vowel distributions within the couplet (the last syllable, especially), which he may not have noted in the limited amount of data he had available. But, for example, in Santo Tomás Ocotepec (in the Mixteca Alta) there are different distributions if there are two morphs in the couplet; Huajuapán and possibly other dialects have a contrast between /o/ and /ɔ/ after a nasal, but only across morpheme boundaries. Nevertheless, Longacre says he believes Pike's statements of vowel distributions "would apply equally well" to his definition of the couplet (Longacre 1957:23). Longacre also associates the couplet with a set of canonical forms, subsumed under the formula (C)CV(?)(C)V(n), marking optional elements with parentheses (1957:11-12).

Phonologically, certain couplets may reduce (in normal speech) to underlying monosyllabic alternants, and become phonologically dependent on a preceding or following couplet which has retained its bisyllabic form and acts as the nucleus of a new phonological word marked by pause at both extremes. But the two or more syllables of a single morpheme never fall into distinct phonological words.

Single morphemes frequently coincide with a single phonological couplet, as is the case of unpossessed nouns, stative verbs, and certain adjectives. Other major word classes, like verb stems, are always multimorphemic when they are in couplet form, because aspect is always present in the couplet, marked by tone contrasts in the tonic or stressed syllable. Any monomorphemic verb representation is thus necessarily abstract. Further, multimorphemic constructions are frequently reduced to a single couplet form, by reduction and incorporation of the person postclitic, or causative or possessive markers before the couplet.

Some verbal constructions even occur as couplets with four morpheme con-

stituents (including, for example, successive morphemes expressing causative, aspect, verb root, and subject).

It is more satisfying to understand the couplet as a phonological or surface frame for underlying morphological material to fit into, or accommodate itself to, for its spoken realizations. Nonetheless, the couplet is essential for the description of the morphological canons, i.e., the base forms and morpheme structure rules which precede the morphotactic processes so common in all Otomanguean languages. The curious limitations and deficient distributions seen in surface phonology are explainable in morphological and/or historical terms, but generalizations about underlying phonological structures are obscured unless morphemes are discussed in their minimal couplet forms. Distributional statements make most sense when they refer to morphemically simple couplets, that is, to phonological units coterminous with simple grammatical words.

Distributional Restrictions

Statements about consonant and vowel distributions for modern varieties of Mixtec may appear widely divergent in their descriptions of phonotactics. Proto-Mixtec had very marked constraints on phoneme occurrence within the bisyllabic morpheme canons, as demonstrated in detail in the chapter on vowel reconstructions, and for consonants in the chapter on the structure of Proto-Mixtec. Some modern systems are only superficially different from the phonotactic generalizations which are hypothesized for Proto-Mixtec. But the historical accidents of phonological change have not only obscured, but genuinely changed, the patterns of phonological symmetry in some modern systems. Thus, although voice and nasality were important for Proto-Mixtec consonant distributions,

and nasality and glottalization for vowel distributions, these may not be the key factors contributing to phonological structure (i.e., pattern congruity) in the languages now spoken. Certainly many historical changes have involved change in marking for voice (*s > s̄; *y > ȳ, and *y > z̄ > s̄) and nasalization (*w > m̄; *y > ñ̄, and *t > tn̄ > n̄).

Almost all modern treatments of Mixtec phonological systems, including tone analyses, make use of the couplet structure in describing allophonic variants and for distributional statements. Good summaries of its functions and characteristics in this respect appear in E. Pike and Cowan (1967), Pankratz and E. Pike (1967), and Zylstra (1980). E. Pike and Small (1974) show a slightly different adaptation of the couplet as the nucleus of the phonological word; they are also the first to describe contrastive glottal versus non-glottal nuclei at the level of phonological word-phrase.

Morphophonemic Processes and Tone

There are several more topics which might properly be treated here in terms of the phonological characteristics of the Mixtec languages; the most important of these are the major morphophonemic processes and the systems of tone and tone perturbation found in most varieties of Mixtec. But given the scope of both of these topics, especially tone phenomena, it was decided not to attempt full coverage of these themes. Instead only introductory comments will appear here; morphophonemic processes will be mentioned in more detail in succeeding chapters, and tone will be mentioned in passing whenever relevant.

The lack of complete data from all varieties of Mixtec on morphophonemic processes inhibits attempts at comparison and generalization, but at least two processes are clearly widespread: the assimilation of

nasality in both consonants and vowels, and the fricativization and voicing of consonants in certain contexts, usually post-stress or post-couplet. The palatalization of certain classes of consonants, usually before front vowels, is another feature of many Mixtec morphophonemic systems, and is often combined with the fricativization process just mentioned.

The domain of these morphophonemic processes ranges from the allophonic level through the levels of phonological couplet, grammatical word and phrase. Morphotonemic alternations might also be considered as part of the overall morphophonemic system, since tone perturbation is also related to phonological features such as the presence of morpheme-final glottalized vowels in Proto-Mixtec, as well as to morphological word classes (certain classes of words regularly perturb following tone manifestations). The interaction of the three prosodic systems of nasalization, glottalization and tone is important to the understanding of the functioning of any of the individual systems, as well as of the overall processes of morphophonemic alternation which affect Mixtec languages.

Phrase level morphophonemic processes characteristically include intonation contours and tone terracing phenomena (described for Ayutla, Acatlán and Coatzospan); phrase level processes of nasalization and de-glottalization are highly developed in Coatzospan (E. Pike and Small 1974). Couplet-level morphophonemic processes include consonant allophonics, tonic vowel lengthening or devoicing in certain contexts, and rhythmic characteristics related to the timing of couplets versus longer phonological segments.

A related process which also will not be covered in any detail is that of the reduction of phonological macrosegments to microsegments, a characteristic of rapid (normal) speech in almost all varieties of Mixtec. This ranges from the reduction of phonological phrases to single

word or even couplet form, to the reduction of bisyllabic morphemes (couplets) to single syllable roots, and of atonic, single syllable clitics to even more reduced forms, usually single vowels which are then incorporated into a couplet stem.

The subphonemic details which reveal the actions of morphophonemic processes are not always presented in the descriptions of individual systems which form the basis for comparison in this chapter; because of this, comparisons of modern morphophonemic systems will not be attempted in this chapter. Rather, the information mentioned in these articles has been taken into account along with other data available, principally from the dialectology study (the collection of 500-word lists and other material upon which the cognate sets are based), and the generalizations which can be made about morphophonemic processes appear in the succeeding chapters on the structure of Proto-Mixtec and on the vowel reconstructions.

Comparisons of tone and tone perturbation systems have been excluded from the present study, since they represent such a complex problem in themselves, especially given their various analytic treatments. The Proto-Mixtec tone system is itself only sketchily reconstructed in the chapter on the structure of Proto-Mixtec, and tone for individual lexical items has not been reconstructed in the cognate sets in Appendix II. This is primarily because tone was not regularly marked in most of the raw dialect data used in this present study. What markings do appear in individual dialects are not consistent, either within a single town (not all items have been marked for tone, even when some items are so marked for a given town), or between towns (the systems for marking varied from one investigator to another, so that the symbols are not comparable across towns without careful internal analysis of the marking system

used in each individual town). Considerably more data are necessary to enable a complete analysis and reconstruction of Mixtec tone systems and their evolution from Proto-Mixtec; specifically, certain key lexical items must be collected from a number of diagnostic towns, and each town's own tonemic system must be described in a common framework, in order to achieve the desired result. But for a first approximation, Michael Dürr's recent attempt at reconstructing Proto-Mixtec tone, based only on published descriptions of tonal systems, is very illuminating (Dürr 1982).

A Sample of Contemporary Mixtec Phonological Systems

Almost all linguistic information published on Mixtec is within a traditional structural framework, and most analyses include descriptions of conditioned variants, unit frequencies, and distributional matrices, the latter especially important as a source of data for historical analyses. A sample of the phonological descriptions available for different varieties of Mixtec provides sufficient material for comparison and generalization. The sixteen systems presented in Chart IV-1 all show at least superficial differences from one another, and represent the diverse regions of the Mixteca (see Map III-7). From the greatly diversified Mixteca Alta I have included six towns; from east to west, they are Santa María Peñoles (Daly and Daly 1977), San Juan Diuxi (E. Pike and Oram 1976), San Pedro Molinos (Merrifield and Stoudt 1967), San Miguel el Grande (D. Stark 1947, K. Pike 1944, 1947), San Sebastián Atlatluuca (C. Mak 1953), and Santo Tomás Ocotepec (C. Mak 1958). From the north-eastern extreme of Mixtec distributions, I have included San Juan Coatzospan (E. Pike and Small 1974). From the Mixteca Baja, this sample includes two systems from the northern zone, Acatlán, Puebla (E. Pike

CHART IV-1. SIXTEEN MODERN MIXTEC PHONEMIC SYSTEMS

<p>1. Acatlán</p> <p>p t č k k^w ? m_b n_d n_z n_j n_g s š (h) v ə n ñ i u (w) l (r,ř) y e a o</p>	<p>2. Huajuapán</p> <p>[p] t č k k^w ? [m_b] n_d (n_g) [p] s š [h] b ə z z [ə] (w) l [r,ř] i ü e a o</p>	<p>3. Molinos</p> <p>p t č k k^w ? n_d s š z h v n ñ ŋ i u m l, r e a o</p>	<p>4. Coatzacoapan</p> <p>(p) t ɸ č k k^w (m_b) n_d n_z n_j n_g k k^w v s š ə əy n_g e m n ñ i ð u l, r e a o</p>
<p>5. Silacayoapan</p> <p>p t č k k^w ? m_b n_d n_j n_g h s š z z n ñ i u l, r y e a o</p>	<p>6. Ocoatepec</p> <p>(p) t č k k^w (?) s š z z h i u b ə z z l y e a o</p>	<p>7. Atatlahuca</p> <p>p t č k k^w ? m_b n_d n_j n_g h b s š z z n ñ i ð u m n; N ñ e a o l, r</p>	<p>8. Diuxi</p> <p>t č k k^w ? n_d s š z z h b ə n ñ i ð u l, r e a o</p>
<p>9. Alacatlazala</p> <p>[p] t č k k^w ? [m_b] n_d [n_g] v s š n ñ i u m l, r y e a o</p>	<p>10. Mixtepec</p> <p>p t t^v č k k^y k^w ? (m_b) n_d n_y n_j n_g n_w s š z z n ñ i u m l, r e a o</p>	<p>11. San Miguel</p> <p>p t č k k^w ? m_b n_d n_j n_g x b s(š) z z n ñ i ð u m l, r e a o</p>	<p>12. Peñoles</p> <p>[p] t č k k^w ? m_b n_d n_j n_g k^w [f] s š z z [h] n_w b ə n ñ i ð u m l, r(f) e a o</p>
<p>13. Ayutla</p> <p>(p) t t^v č k k^w ? (m_b) n_d n_y (n_g) (n_w) b s š (h) (hw) i u m l, r y e a o</p>	<p>14. Jicaltepec</p> <p>p t t^v č k k^w m_b n_d n_y n_g [ɸ] s [sy] š [h] i u m n ñ e a o w l, r y</p>	<p>15. Chayuco</p> <p>p t t^y k k^y k^w ? m_b n_d n_y n_g v θ s š n ñ i ð u m l, r y e a o</p>	<p>16. Jamiltepec</p> <p>p t t^y č k k^w ? b s š n ñ i ð u m l, r y e a o</p>

and Wistrand 1974), and Huajuapán de León (E. Pike and Cowan 1967); two systems from the southern Baja, Silacayoapan (J. North and Shields 1977) and San Juan Mixtepec (E. Pike and T. Ibach 1978); and two systems from Guerrero, Alcatlazala (Zylstra 1980) and Ayutla de los Libres (Pankratz and E. Pike 1967). Three towns represent the coastal Mixtec region: Santa María Jicaltepec (C.H. Bradley 1970), Santiago Jamiltepec (A. Johnson 1978), and San Agustín Chayuco (B. Pensinger 1974, Pensinger and Lyman 1975).

Some of the analyses consulted give bare-bones lists of phonemes, or minimal allophonic statements; others devote more or less attention to distributional statements (which, along with phonetic detail, are very important for historical reconstruction), and some mention more pervasive or higher-level phonological processes and limitation. The phoneme inventory charts for these towns, with orthographic substitutions as mentioned below, appear in Chart IV-1, which also tries to maintain a geographic relation in the schematic presentation (left to right relates approximately to west to east; top to bottom reflects north to south). Discussion of each of the systems follows.

1. Acatlán, Puebla. The phonological data are given as subsidiary material at the end of a study of terracing phenomena in the tone morphophonemics by Eunice Pike and Kent Wistrand (1974). Consonant contrasts are given for stops /p t k k^w ʔ/, affricate /č/, prenasalized stops /^mbⁿ dⁿ g/, prenasalized affricates /ⁿzⁿ j/, nasals /m n ñ/, voiceless fricatives /s š/, voiced fricatives /v ð/, laterals and vibrants /l r ř/, semiconsonants /w y h/. Both /w/ and /h/ are rare; /r/ and /ř/ are rare and found mostly in loan words. Vowels /i e a o u/ and /ị ẹ ạ ọ ụ/ are listed (1974:99-100).

Consonant allophonics include alternation of voiceless /t k s/

with their voiced fricative counterparts [ð ɡ z] in post-couplet position; reduction of /š̃i/ sequences to phonetic long [š̃·] in prestress position; reduction of word final /k̃i/ sequences to phonetic [kn], and nasalization of /t/ to phonetic [tn] before nasalized vowels. Vowels are long when stressed and when followed in sequence by other vowels. Likewise, all consonants except /r/ are lengthened when immediately following a stressed syllable.

Distributional statements indicate some weak contrasts before high front vowels: /^{ñ}j/ occurs only before /i/ except for one example before /e/; /^{ñ}z/ occurs only before /i/, and /č̃/ only before /i/. The weak contrast between /^{ñ}j/ and /^{ñ}d^y/ is allowed by analogy with a stronger contrast pair, /č̃/ versus /t^y/. These palatalized contrasts are sequences or clusters of C plus /y/, including /t^y n^d^y n^z^y s^y m^y/. Prenasalized sequences are considered to be unit phonemes. Another cluster is produced by the elision of /i/ in pretonic /š̃i/ (described above), giving /št̃/ clusters in initial or tonic syllables. The other two-consonant cluster occurs only in post-tonic syllables, and consists of /ʔ/ followed by any voiced consonant except /ð/. The unique three consonant cluster /ʔ^{ñ}d^y/ is similarly explained, as /ʔ/ followed by voiced consonant /^{ñ}d/, followed by palatal /y/.

A remark by Pike and Wistrand asserts that nasalized vowels do not follow voiced consonants except /ð/; that is, nasalized vowels follow only voiceless consonants (and /ð/). This statement is a curious result of an analytic preference. Pike and Wistrand state that there is no contrast between nasal and oral vowels after nasal consonants /m n ŋ/, and then arbitrarily decide to consider vowels in this context as oral vowels, perhaps on orthographic grounds, though this practical consideration is never mentioned. Phonetically stronger arguments can be made

for considering vowels in this environment to be structurally nasal; in that case the stricture on nasal vowels after voiced consonants applies only to /v/ and /y/.

2. Huajuapan de León, Oaxaca. Eunice Pike and John Cowan's 1967 article is devoted entirely to a description of Huajuapan Mixtec phonology and morphophonemics. They begin with a series of generalizations about Mixtec shared by Huajuapan, which include recognition of the couplet as a necessary matrix for describing phoneme distributions and allophonic variation. They also mention that tone sandhi classes are arbitrary, and that morphemes with tone sequences of high-high, high-mid, and high-low as their basic forms are more stable. The most obscure generalization states that "in most dialects some, but not all, alveopalatal consonants may occur preceding /i/" (1967:1). They also note several peculiarities of this dialect, including the fronting of back vowel /u/ to phonetic [ü], and the unusual contrast between oral and nasal vowel following a nasal consonant.

The consonant phonemes occurring in native words are voiceless stops /t k k^w ?/, voiceless affricate /č/, prenasalized voiced stops /ⁿd ⁿg/ (the latter rare), nasals /m n ñ/, voiceless fricatives /s š/, voiced fricatives /b ā ž/, lateral /l/, and semiconsonant /w/ (rare). Additional phonemes /p ^mb p h g r ř/, which occur in Spanish loans, are shown in brackets in Chart IV-1 (as are loan phonemes in the other systems). Notice that there is no /y/, nor are any palatal clusters described. Consonant allophonics include fronting of /k/ to phonetic [k^y] before high/front vowels /i e ü/, and fricativization of /k/ as phonetic [g] in noncouplet positions (pre-couplet and post-couplet), as well as defricativization of /ž/ to phonetic [y] in post-couplet position.

Before /o q/, /ⁿd/ becomes retroflexed phonetic [ⁿḍ]. Nasals /m n/ have

very lenis stop closures before the oral vowel /o/, that is, before morpheme juncture within the couplet. The glottal /ʔ/, before nasal or prenasalized consonants (i.e., couplet medial), fluctuates between a lenis glottal closure and a glottal stop followed by a rearticulation of the preceding vowel (1967:2-3).

Vowel phonemes include five oral, /i e a o ü/, and four nasal, /ĩ ẽ ą ɔ/. Precouplet vowels have optional length and decrescendo. The vowel /e/ has a slight glide before /ʔi/. Regressive assimilation of nasalization occurs in vowels before nasal consonants, but this does not prevent the contrast between couplet final oral vowel and couplet final nasal vowel (which will be phonetically more nasalized) before enclitics beginning with nasals /n ñ/ (1967:3).

Distributional statements seem unsystematic, though most of the restrictions are explainable in historical terms. In this regard, it is important to distinguish between phonological processes which are typical of monomorphemic couplets and those which affect situations created by the existence of morpheme junctures within the couplet. Clearly, the latter is the case of the contrast between oral and nasal vowels following a nasal consonant; the contrast is based solely on the morpheme /-o/ 'we, inclusive' occurring as the final vowel in a multimorphemic couplet.

Pike and Cowan remark on the limited distribution of /s/ (only before oral /o a/, nasal /ɔ/, or clusters with /ɔ/), and of the alveopalatals /š č ž ñ/. Of these, /š/ and /č/ only occur before /i/ when medial in monomorphemic words. In bimorphemic words they can precede other vowels. Nasal /ñ/ does not precede /i/ and is rare in medial position in monomorphemic couplets, but frequent in two-morpheme couplets. Fricative /ž/ does not occur medially, and in monomorphemic couplets /ž/

does not precede nasal vowels. Vowel clusters of diverse vowels are rare within a monomorphemic couplet, but frequent elsewhere (though all end in only /i j a ə o ɔ/). After /ʔ/ only like vowels can occur in monomorphemic couplets, except for the sequences /eʔi/, /uʔa/, and /iʔə/.

The only consonant clusters which occur medially are medial /ʔ/ plus /m n/ or /ⁿd/, or couplet-initial /st/.

3. San Pedro Molinos. The phoneme chart (Chart IV-1) is taken from a footnoted list of phonemes which appears in William Merrifield and Betty Stoudt's article on Molinos Mixtec clause structure (1967). They use orthographic <q> for phoneme /k^w/. Their phoneme list can be interpreted as containing voiceless stops /p t k k^w ʔ/, affricate /č/, prenasalized /ⁿd/, fricatives /s š ž h/, nasals /m n ñ ŋ/, laterals /l r/, and vowels /i e a o u/ and /ị ɛ̣ ə̣ ɔ̣ ʉ̣/ (1967:59).

Inspection of the data used in the article permits the following additional observations. I do not think /ž/ precedes nasal vowels and consequently would not contrast with /ñ/. There is no /y/ and consequently no clusters with C plus /y/; all palatalized consonants are also fricativized (or nasal /ñ/). The only consonant clusters seem to be couplet medial /ʔ/ plus voiced consonants like /n v ž/. Couplet initial clusters include /st/, probably derived from metathesis and elision of tonic vowel /i/, and clusters of /n/ plus various consonants (/t k s h ž/) probably from a reduced sequence of precouplet /ni/. At least one example of first syllable nasal and second syllable oral vowels is given: /nəsa/ 'how'. I did not observe any instances of contiguous dissimilar vowels; that is, after medial /ʔ/ only like vowels, identical to that of the tonic syllable, occur.

4. San Juan Coatzospan. As in the Pike and Wistrand article on Acatlán tone terracing (1974), the article on Coatzospan tone terracing by Eunice Pike and Priscilla Small (1974), which appears in the same volume, includes as its last section a description of what might be called microsegment phonology. Following a long section on tone sandhi, much of the article describes the phonological changes (assimilation of nasalization and dissimilation of glottalization, as well as other processes) consequent to the contrastive nuclei of phonological macrosegments called "word-phrases". Glottalization is presented as a characteristic of the couplet, which is the nucleus of a minimal word-phrase (E. Pike and Small 1974:123); it does not appear in the list of consonant phonemes. Prenasalized stops and affricates are considered to be unit phonemes; palatalized stops are shown to be allophonic variants.

Consonant phonemes for native Mixtec words are voiceless stops and affricates /p t t̥ č k k^w/ (/p/ is rare), and a parallel set of prenasalized stops and affricates which appear in Chart IV-1 as /^mb ⁿd ⁿz ⁿj ⁿg ⁿg^w/. Also there are voiced and voiceless fricatives /s š v ə ə^y/, nasals /m n ñ/, lateral /l/ and flap /r/. Nasals /m n ñ/ are followed only by nasal vowels (the opposite solution as that proposed for Acatlán) and /v ə ə^y l ⁿd ⁿj/ occur with following nasal vowel in only a few morphemes (1974:126-127). Prenasalized /ⁿd/ becomes phonetic [ⁿd^y] before /ị ụ ỵ/, and /t/ has a similar allophone [t^y] before /ị ụ ɛ̣/, but before /y/ it remains [t]. Stop /k/ has an occasional fricative alternant [g] in post-couplet position before a nasal vowel; in a similar environment /s/ varies to [h]. The alveopalatal /š/ has a retroflexed allophone [ṣ̌] mostly before /i u/, and a voiced allophone [ž] intervocalically (but not after /ʔ/). Nasal /ñ/ varies to a palatal nasalized nonsyllabic vowel [ỵ] medially in a couplet or a word-phrase (1974:127-128).

The nasalization of a vowel is heavier when it is contiguous to another nasalized vowel. High vowels, especially /y/, are more heavily nasalized than low vowels; /a/ shows least nasalization. There is no phonetic difference in nasal quality between vowels with inherent nasalization and those with assimilated nasalization, but they are structurally distinguished because of differential behavior and distributional restrictions (assimilated nasalization is lost outside of nasal word-phrases).

The couplet, which is the nucleus of the phonological word-phrase, is also used as the context for distributional statements about consonants and vowels in native words. Any consonant may occur in the tonic syllable of the couplet, and most can occur in the second syllable; only /s a^y r/ do not, and the alveopalatals /č ǰ/ are found in second syllables only in women's speech. Stops /p^m bⁿ z/ are rare. Consonant clusters with /t s š n r/ as their first member occur couplet initially and are probably remnants of reduced proclitics. Medial clusters are entirely due to fused post-couplet morphemes.

Pike and Small state that (1974:105):

there are contrastive nuclei of the phonological word-phrase: those marked by glottal stop, and those marked by a lengthened vowel. The distribution of both consonants and vowels varies in accordance with these contrastive nuclei.

In non-glottalized couplets, the first vowel is usually lengthened, and only voiced consonants and /š/ can occur in the post-tonic syllable. In glottalized couplets, the first vowel is "interrupted" by a glottal stop; medial consonants may be voiced or voiceless, but /a/ does not occur in this position.

Vowel distribution (1974:131) is confined by considerations of labiality (/o u i/ do not occur after /p^m bⁿ v m k^w mⁿ g^w/), height and frontness (/y/ never precedes /i e/; /ǰ/ in men's speech never precedes

/i e/, /a^y/ never precedes /i/, /r/ never precedes /e/), and nasality (nasal vowels do not occur after most prenasalized stops, only after /ⁿd/ and /ⁿʃ/, and only nasal vowels follow nasal consonants). The vowel /o/ is very restricted in occurrence, both with respect to consonants and to vowel sequences. Vowel clusters are mostly identical, and possible sequences are regularly describable within monomorphemic couplets, but vowel loss or change across morphemic boundaries results in other sequences.

Nasal vowel distribution within a monomorphemic couplet is regularly circumscribed with regard to glottalization and voice of the medial consonant. E. Pike and Small state (1974:131):

In monomorphemic couplets of canonical pattern CVV, CV^ʔV, and CVCV, if nasal vowels occur, they occur in both syllables... In a glottalized couplet with a medial consonant, the second vowel may be nasal if the consonant is voiceless... Nasal vowels occur only in those glottalized couplets which have either no medial consonant or whose medial consonant is either voiceless or nasal /m n ñ/...

This long list of restrictions governing the occurrences of consonants and vowels in Coatzospan Mixtec may at first cause despair, but many of them are systematic in terms of historical developments, and these data are important in the foundation of hypotheses about Mixtec phonological history.

Pike and Small also include a short section (1974:132-133) on the phonological characteristics of women's speech, which differs from men's speech by having more alveopalatals. Different speech forms for men and women have been noted in only a few towns of this same northeastern region: Apoala, Nduayaco and Jocotipac.

5. Silacayoapan. Joanne North and Jäna Shield's (1977) article on Silacayoapan phonology is a very straightforward presentation of the consonant and vowel phonemes (see Chart IV-1) and the tone contrasts,

followed by a section of a few morphophonemic processes affecting vowels, stress placement and rules for the incorporation of enclitics within the couplet proper. They point out that nasal assimilation does not cross morpheme boundaries. Consonant phonemes are given as voiceless stops /p t č k k^w ʔ/, prenasalized stops /^mb ⁿd ⁿj ⁿg/, fricatives /v s š ž h/, nasals /m n ñ/, liquids /l r/ and semiconsonant /y/. Vowels include five oral /i e a o u/ and four nasal /ĩ ẽ ɔ̃ ʉ̃/ phonemes.

Consonant clusters occur initially with combinations of /k^w t kⁿ d v h m/ plus /y/ only, producing canons of C^vVCV and C^vVʔCV; other couplet canons are CVV, CVCV, CVʔV and VʔCV. Initial clusters of /š/ or /s/ plus C can be considered as rapid-speech alternants of precouplet syllables /ši/ or /sa/. The palatalized consonant clusters do not precede front vowels /i ĩ e ẽ/; palatal clusters occur only with /a/ in monomorphemic couplets, but appear before other vowels across morpheme boundaries. Some contrasts are found only in very limited environments; for instance, /s/ contrasts with /š/ only before /a/. On the other hand, the vowel /a/ occurs very frequently, has a wide distribution and a high functional load, and thus contrast within this limited context (before /a/) is not insignificant.

6. Santo Tomás Ocotepec. The phonological system of Ocotepec is presented in a footnote to one of Cornelia Mak's studies of Mixtec tonal systems (Mak 1958:62). Consonant phonemes are given as voiceless unaspirated stops /p t č k k^w ʔ/, fricatives /b̥ ɸ h/, sibilants /s z š ž/, nasals /m n ñ/ and liquid /l/. The fricatives /b̥/ and /h/ as well as glottal stop /ʔ/ are noted as being very lightly articulated. It is clearly stated that prenasalized units are treated as two-unit sequences of nasal plus a voiced allophone of a homorganic stop; /n/ is said to have allophone [ŋ] in clusters with velars /k k^w h/. Other clusters in-

clude /y/, which occurs only as the second member of couplet-initial clusters, and couplet-initial clusters with the causative morpheme /s/ as first member. Vowels are /i e a o u/ and their nasal counterparts.

Medial clusters should include /ʔ/ plus certain other consonants, but no distributional information is given. The unusual phoneme /z/ is explained as a phonemic development of the voiced allophone of /s/, left in contrast with /s/ after a preceding /n/ was dropped.

7. San Esteban Atlatlahuca. This is another dialect whose phonological system is presented in a footnote; in this case, with that of nearby San Miguel el Grande in Cornelia Mak's first published comparison of two Mixtec tonemic systems (1953). The presentation divides the phonemes into voiceless unaspirated stops and affricates /p t č k k^w ʔ/, prenasalized voiced stops and affricates /^mb ⁿd ^{n̄}j ^{n̄}g/, fricatives /b̄ ə ž h/, sibilants /s š/, nasals /m n ñ/ and voiceless alveolar nasal /N/, liquids /l r/, and semivowel /y/. There are six oral and six nasal vowels, /i e a o u ə/: the sixth vowel /ə/ appears in Chart IV-1 and in further discussion as /ɨ/. Allophonic statements indicate that /b̄/ sometimes defricativizes to [w] after /ʔ/ or between /ɨ/ vowels; /ž/ defricativizes to [y] especially in post-couplet position, and /h/ varies freely with a frictionless velar. The liquid /r/ occurs only in post-couplet position, and /y/ occurs only as the second member of consonant clusters (probably occurring only in tonic syllables).

8. San Juan Diuxi. This town is located very near to Santiago Tiantongo, in the Mixteca Alta, and its speech is considered representative of that important Mixtec center. The phonological array for Diuxi which appears in Chart IV-1 is taken from an article by E. Pike and Joy Oram (1976) on stress and tone phenomena. They list 18 consonants, with

stops and affricate /tⁿ d č k k^w ?/, fricatives /b̃ d̃ s̃ š̃ ž̃ h̃ h^w/, nasals /m n ñ/, lateral /l/ and flap /r/ (1976:322).

The descriptions of allophonic variants indicate overlaps or neutralizations between certain phonemes. There is general voicing of voiceless consonants following /n/ (in multimorphemic couplets); devoicing occurs in similar sequences of /t/ plus /ž̃ d̃/; fricatives /b̃/ and /ž̃/ become [w] and [y] respectively in post-couplet position. A very unusual feature is that the consonants /n/ and /r/, in word final position, become syllabic and carry tone (doubtless the features of a now long-lost final vowel).

The vowel system includes six oral vowels /i e a o u ĩ/ and the corresponding nasal vowels. No statements are made regarding consonant and vowel distributions or clusters other than those mentioned above.

9. Alacatlazala, Guerrero. This newly-described system (Zylstra 1980) contains many pertinent observations on phonological phenomena. Carol Zylstra's article begins with a description of the phonemes and tonemes "with reference to the couplet and the phonological word" (1980: 15) and continues with an analysis of tone sandhi, which in this dialect occurs only within the boundaries of the phonological word, and not between words, as is common for other dialects of Mixtec. Syllable shapes include CV, V, CV? and ?V; the contrastive placement of /?/ in these patterns is not explained, though syllables ending in /?/ are considered the only closed syllables, and /?/ does not appear word finally.

Consonant phonemes are listed as voiceless stops /p t k k^w ?/, prenasalized voiced stops /^mbⁿ dⁿ g/, nasals /m n ñ/, fricative /v/, lateral /l/, semiconsonant /y/, grooved fricatives /s̃ š̃/, affricate /č̃/, alveolar flap /ř̃/, and spirant /h/. Phonemes /^mb/ and /ř̃/ are not necessary for

the description of native words: /r̃/ occurs only in post-couplet enclitics, /^mb/ only in Spanish loans, and /ⁿg/ in one morpheme only. Vowel phonemes are /i e a o u/; all five occur as nasal vowels also. Zylstra recognizes the "complementary or non-contrastive" distribution of oral vowels and nasal vowels with certain consonants, which would permit an analysis of /v/, /l/, and /y/ as having nasal allophones [m], [n], [ñ], respectively, and even of /ⁿd/ with an allophone [tn], before nasal vowels. But Zylstra rejects such groupings as being "psychologically unreal" (1980:21). The sequence [tn] is fairly clearly an alternate of /t/ before nasalized vowels, the [tn] pronunciations being more common in older speakers.

Consonant distribution restrictions (Zylstra 1980:17-20) frequently involve the vowels /e/ and /o/: /m/ never appears before /ɛ ɔ y/ in native words; /n/ never before /y ɛ/, /ñ/ never before /ɛ/, /s̃/ never before /o ɔ/, /č k v/ never before /e/ in post-tonic position in the couplet, and /k^w w/ do not appear before rounded vowels /o u/.

Vowel sequences are mostly geminate; most compounds are with final /i/ or /y/ (both derived from pronominal enclitics). The vowel /e/ is in fact infrequent, occurring only in geminate sequences VV or V?V or as the tonic vowel of couplets of CVCV form. The vowels /o/ and /u/ are neutralized after /k/ and before /n ñ/. Nasalized vowels /ɛ/ and /y/ are marginal; the first appears only in loans, the second only in one pronominal postclitic; in monomorphemic couplets the only nasalized vowels to occur are /ĩ ɔ̃/.

Nasalization of vowels extends throughout couplets of CVV and CV?V forms with identical vowels; in the case of non-identical vowel sequences in couplets of these forms, the first vowel may be oral and the second nasal. In couplets with a medial consonant, either syllable may

have a nasal vowel while the other is oral (Zylstra 1980:21). This condition is quite unusual for Mixtec languages, and is certain to be derived from cross-morpheme junctures.

Clusters are non-existent in the couplet canons (VCV, CVCV, CVV, CV[?]V, CV[?]CV) except for the medial sequences of /[?]C/, where the post-tonic or second consonant must be voiced. Subphonemic clusters include palatalized or desyllabified segments resulting from morphophonemic processes, which produce the unusual word final sequences of Cwi, Cwu, CVy and CVw.

10. San Juan Mixtepec. This town in the Mixteca Baja is of considerable interest because of its close association in terms of phonological history with the entire region of coastal Mixtec dialects. The phonological array in Chart IV-1 is from Eunice Pike and Thomas Ibach's description (1978). They, also, use the couplet as the primary matrix for phonological description. Syllable formulas are differentiated as to first in couplet or second in couplet. These first, or tonic, syllables may have several shapes as permitted by the formula (C)(C)V(?), where optional elements are in parentheses. The second or post-tonic syllable of the couplet may be one of those described by the formula (C)V(V); each of the two vowels in a second syllable sequence is of short duration, and the sequence may be only /ia/ or /ui/.

Consonant phonemes (1978:277) include voiceless unaspirated stops and affricate /p t t̃ c̃ k k^w/ (/p/ is rare), glottal stop /ʔ/, voiced prenasalized stops and affricate /^mbⁿ dⁿ jⁿ gⁿ g^w/ (/^mb/ and /ⁿg^w/ are rare), sibilants /s š/ (/š/ is retroflexed), semiconsonants /v y/, nasals /m n ñ/, lateral /l/ and flap /r/. There are five vowels /i e a o u/, both oral and nasal, though /o/ occurs only in one morpheme (1978:278). There are few allophonic variants; /k/ and /y/ vary with

their fricative counterparts [ɣ] and [ʒ] in post-couplet positions; labiodental /v/ varies with bilabial [w], which is more frequent contiguous to /a/; the vowel /e/ is more open [ɛ] before /ʔ/. Vowels have lengthened allophones in stressed syllables not terminated by /ʔ/.

A strong contrast is maintained between nasalized and oral vowels; assimilated nasality in vowels is not as heavy as the nasalization in vowels that are inherently or structurally nasalized. Assimilation of nasality also is weaker in domain in Mixtepec; progressive assimilation occurs following nasal consonants, even across /ʔ/, but little regressive assimilation occurs preceding nasal consonants. Vowels differ in their nasal quality, /y/ being the most heavily nasalized. Nasal vowels are also more restricted in their occurrence than oral vowels.

There are few distributional restrictions noted for either consonants or vowels, and all those stated pertain to monomorphemic couplets; other sequences and distributions result from morphemic reductions when couplets are multimorphemic. The last part of E. Pike and Ibach's article describes the morphophonemic rules for incorporation of clitics into the couplet. These processes include tone and vowel replacements involving the loss of the couplet final vowel (or tone) and subsequent incorporation into the couplet of specific single-vowel allomorphs of pronominal enclitics (1978:280-284).

Monomorphemic couplets show regular constraints on the occurrence of nasal vowels and on vowel sequences, with fewer limitations with regard to consonants (E. Pike and Ibach 1978:279-280). Primarily, post-tonic syllables in monomorphemic couplets do not begin with prenasalized units, and rarely with voiced consonants; that is, mostly voiceless or nasal consonants occur in the second syllable.

Nasal vowels occur only in couplets with contiguous vowels or with

vowels separated by /ʔ/; only in compounds may a nasalized vowel precede consonants other than /ʔ/. The statement that nasal vowels do not follow voiced consonants (E. Pike and Ibach 1978:280) implies that nasal vowels do not occur after nasal (voiced) consonants, i.e., that there is no contrast between oral and nasal vowels after nasal consonants. Nasal vowel /ɛ̃/ occurs only in geminate sequences in monomorphemic sequences, but even oral /e/ occurs mostly in geminate sequences.

Most monomorphemic couplets with medial /ʔ/ have sequences of identical vowels, although there are some combinations of low-central with high-front or high-back: /uʔa/, /aʔi/, /iʔa/, /aʔu/. Most monomorphemic non-glottalized couplets have identical vowels in the two syllables of the couplet; noted sequences of non-identical vowels are /io/, /ia/, /ua/, /ai/.

Consonant clusters are very limited in monomorphemic couplets. The internal cluster is of /ʔ/ plus a voiced consonant (here including the nasals). A few morphemes show initial clusters beginning with /s/, probably deriving from a loss of the tonic vowel /i/ between /s/ and voiceless stops. Bimorphemic clusters include sequences of /s/ with /t ɕ k k^w n/, where /s/ is derived from the causative morpheme, and also of /s̃/ with /n/. Another bimorphemic couplet pattern is not analyzed as having an initial consonant cluster, because the sequence of verbal marker /n/ plus verbal couplets beginning with /t/ becomes /ⁿd/, but they are clearly different segments morphophonemically.

Overall, the Mixtepec system gives an impression of great relative simplicity. And it is notable for another feature that is less complex than in other dialects: its tone system. The very prevalent Mixtec traits of complex systems of tone sandhi, with perturbing morphemes and tone terracing processes, hardly exist in Mixtepec Mixtec. There are

some morphophonemic tone changes, but virtually no interaction of tones between words (E. Pike and Ibach 1978:284).

11. San Miguel el Grande. In the development of his theoretical models for language analysis, especially in relation to tone analysis, Kenneth Pike (1944, 1947, 1948, 1953) repeatedly used the phonological system of San Miguel as a source of exemplary material. Partly as a result of this, certain parts of the phonological system of San Miguel el Grande became patterns for interpreting other Mixtec systems. During this same period, other linguist-associates of Pike's were also publishing articles on San Miguel phonology and tone morphophonemics. These early articles constitute the available sources for San Miguel Mixtec phonology, but they are very brief resumé's of phonemic structure given as background to tonemic analysis (Mak 1950, 1953), or to unit phoneme analysis of clusters (D. Stark 1947), and the phoneme inventories vary slightly from article to article.

Donald Stark (1947:10-11) lists 21 consonantal phonemes; Cornelia Mak lists 21 consonants in her 1950 article, but not all the same as Stark; while in her 1953 article, Mak lists 22 consonants. In common they cite the voiceless unaspirated stops and affricates /p t t̥ č k k^w ʔ/, the prenasalized voiced stops /^mb ⁿd ^{ṇ}ʝ ^{ṇ}g/, the voiced fricatives /ḅ ž/ and voiceless sibilants /s š/, the nasals /m n ñ/ and liquids /l r/. The six oral vowels are given by Stark as /i e ʌ a u o/; Mak writes /ə/ for the sixth vowel (this vowel appears in Chart IV-1 and henceforth here as /ɛ/). There are only five vowels in the nasal series, /ĩ ɛ̃ ɶ̃ ɷ̃ ɸ̃/. Differences between Stark and Mak are mostly in the fricative/sibilant series. Stark includes /x/, Mak writes /h/ and notes that it varies freely with a frictionless velar, indicating that

the difference is purely orthographic. But Stark also lists another voiceless fricative /s̥/, which Mak does not include, though she remarks that /s̥/ in San Miguel is "retroflexed" or "considerably backed" in certain morphemes and with some speakers. On the other hand, Mak lists still another fricative, voiced dental /ð/, without further comment. An inspection of the data accompanying the tone analysis suggests that /ð/ occurs in only one morpheme, a pronominal clitic always in post-couplet position. Similarly, it appears that /r/ occurs only in two enclitics (Mak 1950:83). Mak mentions still another phoneme in a footnote to her article comparing the tonemic systems of San Miguel and Atatlahuca: "Semivowel /y/ (rare, as second member of a consonant cluster)" (1953: 85). This would indicate a sporadic occurrence in San Miguel of the palatalized consonants seen in other varieties, whether these are analyzed as units or as clusters.

Only a few subphonemic details are mentioned by Mak (1950:82, 1953: 85): slightly voiced fricative /b̥/ is phonetically lightly occlusive [w] after /ʔ/ or between /ī/ vowels; /z̥/ is always realized as [y] after /l/ or /s̥/ and elsewhere [z̥] alternates with [y]; /ʔ/ is usually very lenis; /s̥/ has a retroflexed alternant. For vowels, /e/ becomes more open [ɛ] in morphemes with medial /ʔ/, with medial prenasalized voiced stop, or with medial /t/ or /r/, and high back unrounded /ī/ often becomes more fronted, especially following alveolar consonants. This last is perhaps a reflection of the merger of *ī with *i, a process with mixed or incomplete results in San Miguel, as the correspondence sets presented later will show.

Although no mention is made of distributional restrictions in consonant or vowel occurrences, Terrence Kaufman, in his review of the San Miguel el Grande dictionary (Dyk and Stoudt 1965), observed the lack of

contrast between oral and nasal vowels following nasal consonants, and the fact that nasalized vowels occur only in the final syllable of a word. He suggested that /l/ and /n/, /y/ and /ñ/, /w/ and /m/ might be oral and nasal alternants of three phonemes, the nasal allophones occurring before nasalized vowels, but he also recognized the problems involved in such an analysis, i.e., the necessity of positing at least some non-final nasal vowels to account for the word-initial nasals which are documented in the dictionary (Kaufman 1967:257).

These early articles on San Miguel Mixtec do not refer to the couplet as a phonological matrix, although they make clear references to the two-syllable characteristics of Mixtec morphemes. Stark (1947:15) states that the full morphemes of Mixtec conform to four patterns, CVCV, CVV, CV[?]CV, CV[?]V; Mak (1950:82) refers to all Mixtec morphemes as having two syllables in their full forms. The term "couplet" was then used in reference to tone analysis; Mak uses Pike's (1947) concept of "tone couplet" as "the basis of all tonemic analysis in Mixteco... the dissyllabic morpheme with two units of level tone" (Mak 1950:82). Stark does, however, use the two-syllable morpheme for description of clusters and for making distributional statements. The four morpheme structure canons given by Stark indicate the lack of clusters in what I would call monomorphemic couplets, and he further states that "no consonant clusters except those which begin with glottal stop are permitted within any morpheme" (1947:14). In this couplet-medial or post-tonic position /ʔ/ must be followed by a voiced continuant (e.g., by /b l ñ ^{ñ}j ^{z̃}n d m n/, though /b/ becomes [w] in this context). And when the nasalized stops /^mb ^{ñ}d ^{ñ}j ^{ñ}g/ occur in this post-stress couplet position, the stop segment is usually unvoiced [mp nt ñ nk] (Stark 1947:15).

Mak's mention of rare clusters with /y/ would suggest a new syllable canon CyV, but there are no indications (nor examples) of its possible occurrences within the couplet. It is of course possible to avoid these clusters by a unit analysis of the segments, but they are probably only marginally contrastive and perhaps distributionally restricted as well. It is important to consider the implications of the distributional restrictions with respect to the couplet of /r/ and Mak's /ã/, two units which are phonemically marginal.

It was in the earlier articles by Kenneth Pike (1944, 1947) that the generalizations about phonological structure and processes were first made, however. Pike posited a morpheme-final nasal consonant, which he proposed as the source for the nasalization of morpheme-final vowels. This process of regressive assimilation of nasalization continued to nasalize contiguous vowels, and maintained its effect across /ʔ/ and /h/ intervening between a final-syllable nasalized vowel and the vowel of the first syllable (1944:115). Pike also made the first correlation of vowel distribution with the syllabic pattern of the morpheme. In a classic article on the relation between morphology and phonology, Pike asserted that "Mixteco phonemes show highly organized phonological structure," optionally marked by stress on the first syllable and lengthening of the medial consonant, and with regular phonemic frames "marked by a complicated series of permitted vowel sequences involving restricted and unrestricted vowels" (1947:170). The six vowels of San Miguel Mixtec were grouped into two vowel triangles, on the basis of "the freedom with which they occur in sequences within stems" (1947:168). The "inner triangle" vowels /ɛ e o/ are very restricted in their distributions within monomorphemic couplets; the "outer triangle" vowels /i a u/ are relatively unrestricted. All vowels appear to be

able to follow themselves in consecutive sequences but only outer triangle vowels can follow one another to produce dissimilar sequences. Additionally, Pike reports that there are no vowel combinations of palatal with palatal (/e/ with /i/) or labial with labial (/u/ with /o/) (1947:169).

The canonical shapes for Mixtec morphemes apparently differ with respect to the possible occurrences of vowel sequences within them; the canon CVCV is stated to be less restrictive with regard to vowels, and the canon CV[?]Vn much more restrictive. Contiguous vowel sequences, as in CVV canons, are more restricted than CVCV sequences, and canons with final nasalization are always more limited than their counterparts among the non-nasalized morpheme shapes (K. Pike 1947:167).

12. Santa María Peñoles. This town is located in a corner of the eastern Mixteca Alta, just over the mountains that line the western edge of the Valley of Oaxaca; it is one of the few towns in this sample which has no road into it. The phonological data are from a volume of the Archivo de Lenguas Indígenas de México, prepared by John Daly and Margaret H. Daly (1977). The volume includes a list of segmental and tone phonemes, allophonic observations and rules for nasalization, and canonical forms for one and two syllable morphemes. Three syllable morphemes are said to exist, both native and of Spanish origin, but no canons are given for these (1977:19-29).

There is no mention of the couplet as such, but its presence is felt in the statements about accent, which is morphologically predictable, occurring as the penultimate syllable of morphemes of two or more syllables (1977:19). Also, vowels in stressed syllables are optionally lengthened, and/or the consonant immediately following the stressed

vowel may be lengthened. The canons for two-syllable morphemes are VV, CVV, CV?V, CVCV, CV?CV, and for once, the C is stated to be any consonant other than /ʔ/ (1977:20). The canons thus admit of no consonant clusters other than couplet medial /?C/ in single-morpheme couplets. One syllable morphemes are characterized as being phonologically dependent on another two syllable morpheme; these dependent forms are referred to as enclitics and proclitics, and they may be of CV or V shape.

Consonant phonemes (which appear in Chart IV-1, with brackets around those found only in loans) are listed as voiceless unaspirated stops / [p] t č k k^w ʔ/, prenasalized voiced stops /^mb ⁿd ^{nɣ}j ⁿg ⁿw/ (/ⁿg/ does not appear in the list of phonemes given in Daly and Daly 1977), voiceless fricatives / [f] s š [h]/, voiced fricatives / b d ž/, nasals / m n ñ/, and liquids / l ř [ʀ]/. There are six vowels / i e ĩ a u o/ and phonemic nasalization of all six, but only in the last syllable of a morpheme (1977:23). Nasalization occurring in the tonic syllable of a couplet is thus always assimilated, either from a following nasalized vowel, if no consonant (other than /ʔ/) intervenes, or by a nasal consonant preceding them, i.e., in the same syllable. Nasalization is thus progressive after nasal consonants and regressive in the case of (final) nasalized vowels.

Allophonic variants of consonants include the addition of a nasal segment to /t/, giving [tn] before nasalized vowels; the fricativization of /k/ and /k^w/ to [g] and [g^w] in the post-couplet position; and a realization of /ĩ/ as syllabic nasal [ŋ] (probably a syllabic because it carries tone) in post-couplet position. This would produce couplets with final syllables closed by a consonant, were it not for the analysis of this segment as a morphophonemic derivation of an enclitic with base form /ĩ/, which is always the source of a nasal in this position.

13. Ayutla de los Libres, Guerrero. This municipio represents the most southwesterly extension of Mixtec; it is also among the most important dialects for historical and comparative work because it was considered, until recently, to be the only variety preserving morpheme final glottal stops, a feature very pertinent to understanding the mechanics of the tone perturbation systems commonly found in Mixtec. I now believe that Santa María Zacatepec, in the inland coastal region of Oaxaca Mixtec, also retains final glottalized contrasts, although there are a few differences in its occurrence between these two dialects. In both dialects this word-final glottal stop disappears in phrase medial position, however, and is only apparent when the word is spoken in isolation or when it occurs phrase finally.

Leo Pankratz and Eunice Pike (1967) in their thorough description of Ayutla phonology and morphotonemics, begin with a statement on the analytic importance of the couplet as the nucleus of the phonological word. The couplet is marked by both consonantal allophones and rhythm, and word stress is predictable if the couplet is word initial (1967: 287). The unit phonemes presented are voiceless stops and affricates /p t t^y č k k^w ʔ/ (/p/ is rare), prenasalized stops /^mb n^d n^dy n^g n^gw/ (/^mb n^g n^gw/ are rare), spirants /s š h h^w/ (/h h^w/ are rare), nasals /m n ñ/, lateral, vibrant and semiconsonants /l r v y/.

Post-tonic allophonic variation includes the preaspiration of /t t^y k k^w č/ and the lengthening of voiced consonants when they occur as medial consonants in the couplet. In post-couplet position /k č v/ vary to [g ʃ w], respectively, and in native words [r] can be considered a post-couplet allophone of /l/, but these two contrast in Spanish loan words. There are five oral vowels /i e a o u/ but only four nasal vowels /ĩ ẽ ã ũ/, and /ẽ/ is rare. Vowels are shortened in non-couplet

and non-stressed positions, and there are "portmanteau phones" (1967: 289) which are the result of morphophonemic reductions between couplet and postclitic, or of internal vowel changes within the couplet. There is assimilation of nasalization in vowels and vowel sequences, preceding or following nasals /m n ñ/, but the contrast between nasal and oral vowels is still maintained preceding nasal consonants (probably only if there is an intervening morpheme juncture). Once again, since there is no contrast between oral and nasal vowels following a nasal consonant, these vowels have been considered structurally oral. This obviously affects the distributional statement which asserts that nasal vowels do not occur following voiced consonants (Pankratz and E. Pike 1967:289).

Rounded vowels /o u y/ do not follow labial consonants, and high vowels /i ī/ do not follow palatalized consonants, nor do they follow /b/ or /h/. Native consonant clusters include couplet medial sequences of /ʔ/ plus any voiced consonant (except /r g^w/, but see below), and couplet initial clusters of /sk/, /šk/ and /št/.

Pankratz and Pike contrast what they call "two types of phonological words" (1967:292 and following pages); the first type has a nucleus composed of two syllables ("a couplet which coincides with the grammatical stem"), while the second type has a single syllable nucleus (generally these are derived from normal couplets which have been reduced by the loss of a vowel, resulting in single syllable couplets with initial consonant clusters).

Canonical forms for syllable shapes are cited as V, Vʔ, CV, CVʔ, CCV and CCVʔ, each occurring with all vowels and all tones. Restrictions governing the occurrence of syllables within the phonological word (couplet and post-couplet positions) indicate that CCV and CCVʔ syllables occur only couplet-initially. Unfortunately, they also men-

tion couplet-medial consonant clusters, giving as examples the glottal-initial clusters $ʔCV$ and $ʔCVʔ$, but these obscure the analysis, since in terms of syllable canons they treat the glottal stop as a syllable-final phenomenon (Pankratz and Pike 1967:292); it does not have any regular consonant characteristics. Pankratz and Pike were the first to note the importance of morpheme-final $/ʔ/$ with respect to tone perturbation (1967:295).

14. Santa María Jicaltepec. The western dialect of coastal Mixtec is represented by the town of Jicaltepec; this variety is perhaps the most adequately described of all modern Mixtec speech communities, principally by C. Henry Bradley (1957, 1970). Bradley's very complete study of Jicaltepec Mixtec formed a solid foundation for his further dialect and comparative work (Bradley 1967, 1977; Bradley and Josserand 1977, 1978, 1982).

The phonological data as given by Bradley (1970:4) used the following orthographic conventions: for $/k^w/$ the symbol used in Bradley is $\langle q \rangle$, the palatalized segments $/t^y n_d^y s^y/$ appear in Bradley as $\langle \ddot{t} \ddot{d} \ddot{s} \rangle$, and prenasalized voiced stops are written without their nasal components, appearing in Bradley as $\langle b d \ddot{d} g \rangle$. The Jicaltepec phonemes, as they appear in Chart IV-1, include voiceless stops and affricate $/p t t^y \check{c} k k^w/$, prenasalized voiced stops $/m^b n_d n_d^y n_g/$, spirants $/[p] s s^y \check{s} [h]/$, nasals $/m n \tilde{n}/$ and non-nasal sonorants $/w y l r/$. The vowels are five oral $/i e a o u/$ and corresponding nasal $/i \text{e} \text{a} \text{o} \text{u}/$, as well as a category of checked vowels $/i^? e^? a^? o^? u^?/$ and their nasalized counterparts. This interpretation of the glottal stop as a satellite to the vocalic nucleus explains its absence from the list of consonant phonemes, and has obvious consequences in the structural analysis of higher-level phonological units. Bradley gives the syllable canons as

CV and V, and distinguishes three syllable classes in terms of stress: pretonic, tonic, and post-tonic. The vowels of tonic syllables may carry nasalization and/or be checked by glottal stop; nontonic syllables may have nasalization but may not be checked (1970:14). These syllable classes are related to phonological "microsegments", which Bradley equates with the couplet of K. Pike and others who worked on Mixtec in the 1950s and 1960s. A microsegment is then a stress unit, composed of a tonic syllable, which is its center, followed by one post-center syllable (1970:17). These two-syllable microsegments can then function as either centers or noncenters in phonological macrosegments (like words and phrases).

Consonant allophonics (1970:5-9) pertain to tonic versus non-tonic positions. Voiceless obstruents /k k^w č/ have fricativized voiced alternants [g g^w j] which occasionally occur in non-tonic syllables. Sonorants /w/ and /y/ also have alternants for tonic and non-tonic position, based on the additional feature of fricativization for the tonic-syllable alternants. Thus /w/ is regularly bilabial flat spirant [b] in tonic syllables, and this alternates with nonsyllabic vocoid [w] elsewhere; /y/ is less advanced in what appears to be a process of fricativization in ever-widening environments for semivowels /w/ and /y/. This latter unit in Jicaltepec occurs mostly in its non-fricativized form, but occasionally carries light friction when occurring in tonic syllables. Likewise, /ⁿd^y/ also shows a fricativized variant [ⁿj], but this appears in post-tonic syllables within two-syllable microsegments (couplets). The postdental flap /r/ seems to occur only in non-couplet (or enclitic) position; the clitics in which /r/ occurs are etymologically related and phonetically similar to /t/; the only other occurrences of /r/ seem to be in Spanish loans.

Vowels are perceptibly longer in tonic syllables. Oral vowels can acquire nasality in the form of a nasalized onglide or offglide when they follow a nasal consonant or precede a nasal consonant or prenasalized stop (1970:11). There is no mention of the assimilation due to inherently nasalized vowels, nor any limitation of their occurrence to final syllables.

Bradley's distributional information is very extensive (1970:9-13, 15-22). Systematic limitations in consonant and vowel combinations prevent labial consonants /p w k^w/ from occurring before rounded vowels /o u/; also palatal consonants /t^y d^y s^y y/ do not precede /i/. There are also nonsystematic limitations in consonant and vowel distributions which Bradley shows in accompanying tables. These include: no /p/ or /č/ before /o/, nor /ⁿg/ before /o/ or /e/; no /ⁿd^y/ before /a/ or /e/ (or /i/, as indicated above); no /s^y/ before /a/ (or /i/, as above), and no /^mb/, /p/ or /h/ before /i/.

Further distributional restrictions obtain in relation to the microsegment positions of tonic versus post-tonic syllable. In Jicaltepec Mixtec, if the tonic syllable is checked, that is, terminates with glottal stop, then the consonant of the post-tonic syllable can only be /m n ñ w y l ⁿd/ (1970:19).

There is a curious ambivalence toward glottal stop in Bradley's 1970 article, which is resolved in later publications. This unit is seen as a satellite to tonic syllable vowels when it is followed by a post-tonic syllable with a consonant onset, but when the post-tonic syllable begins with a vowel, the glottal stop is interpreted as the consonantal onset of the post-tonic syllable, producing the syllable shape CV. This is certainly due to the phonetic nature of sequences of two vowels interrupted by glottal stop, where the stop closes the first

syllable and is not released until the beginning of the next syllable: [Vʔ.ʔV]. This double life for poor glottal stop was later done away with, and the glottal stop appears only as a feature of vowels in Bradley (1977) and Bradley and Josserand (1978 and 1982).

The patterns of vocalic sequence limitations described by K. Pike (1947) for San Miguel el Grande Mixtec are reflected in the eight distributional classes of vowels and seven classes of consonants which Bradley sets up (1970:10, 12, 17-22) to describe their occurrences in tonic, pretonic and post-tonic syllables. Microsegments with contiguous vowels (including those separated by glottal stop) are mostly sequences of identical vowels. If the tonic vowel is nasal, then the post-tonic vowel will also be nasal (this would indicate a process of progressive nasalization in vowels within the microsegment). But any stressed oral vowel may be followed by /i/ or by /ə/ or /y/. These last two sequences of oral tonic vowel followed by post-tonic nasal vowel seem to derive from the incorporation of an enclitic with nasal vowel into a microsegment whose monomorphemic couplet form would have included two oral vowels.

Morphophonemic processes related to the reduction of multimorphemic segments to two syllable microsegments include change or replacement of final vowels, and loss of nasalization in final vowels. The chapter on morphophonemics includes a chart of two-syllable morpheme canons, which comprise the following possibilities: VV, VCV (including VʔV and VʔCV, respectively), CVV and CVCV (including CVʔV and CVʔCV, respectively). Also discussed in the chapter on morphophonemics are the existence of shortened allomorphs for some two-syllable morphemes; the paradigmatic alternation of stem-initial consonants in active verbs, and certain changes in demonstrative pronouns (Bradley 1970:23-26). The remainder of Bradley's 1970 monograph is devoted to a description of the higher-

level morphological and grammatical characteristics of the Jicaltepec variety of Mixtec.

15. San Agustín Chayuco. There are a few towns in the coastal Mixtec region with phonological systems considerably different from their neighbors. Among these, San Agustín Chayuco is certainly the best documented variety. The phonological data presented in Chart IV-1 derive from a footnote in Brenda Pensinger and Larry Lyman's article on phrase structure (1975:158), and are complemented by data from a vocabulary for the Chayuco dialect prepared by Pensinger (1974). There are a few orthographic differences in these sources. Pensinger and Lyman (1975) use <q> for /k^w/, and plain voiced stops to represent the prenasalized series. Pensinger's vocabulary (1974) uses a practical orthography, with a traditional representation of glottal /ʔ/ as orthographic <h>; the /k/ symbols are <c> before back vowels and <qu> before front and high vowels, following Spanish conventions, and in the fricative series alveopalatal /š/ is written <x> and dental /θ/ is written <z>. The consonant phonemes include voiceless stops /p t t^y k k^w (k^y) ʔ/ (the palatalized /k^y/ is not explained but seems to be marginal and rare), prenasalized stops /^mb ⁿd ⁿd^y n^g/, fricatives /v θ s š/, nasals /m n ñ/, liquids /l r/ and semivowel /y/. There are six vowel qualities /i e ï a u o/, and nasalized vowels are accounted for by a separately abstracted (prosodic) feature of nasalization, parallel to that of tone. Palatals are treated as unit phonemes, as are prenasalized stops.

There are no allophonic data given, nor is there any information on morphophonemic processes such as nasalization, nor any distributional statements; some pertinent observations are still possible, using dictionary forms (from Pensinger 1974). The only clusters appear to be of

/ʔ/ followed by nasals /m n ñⁿ dⁿ d^y/ or /v l y/. Words are written with division (space) after the immediately post-stress syllable, thus word stress is predictable on the penultimate syllable, and the couplet occurs as the last two syllables of the word (excepting a very few unexplainable, perhaps borrowed, forms). There are some one syllable forms, which are considered dependent, and pronoun clitics occur in both independent (two syllable) and dependent (one syllable) forms. Some phonemes may be related to couplet structure; /r/ seems to occur only in one pronominal clitic (pre- and post-couplet) and in one other morpheme; /v/ does not precede round vowels /o u/, nor does /y/ precede high vowels /i e/. The palatalized units are well distributed with respect to vowels, and it is interesting to note that, uniquely among modern varieties of Mixtec, there is no /č/. Another curious feature is the voiceless dental fricative /θ/, apparently corresponding to voiced /ð/ in other dialects.

16. Santiago Jamiltepec. This traditional center of eastern coastal Mixtec is representative of the third coastal variety. The phonological data were extracted from a manuscript morphology-syntax sketch by Audrey Johnson (1978). The stop-affricates include /p t t^y č k k^w ʔ/, the fricatives are /b s š x/, and there are nasal sonorants /m n ñ/ and non-nasal sonorants /l r y/. It is likely that /p/ and /x/ occur only in Spanish loans, and /r/ seems to derive exclusively from a pronominal clitic (non-couplet form). There are six vowels /i e ã a o u/ and all six occur nasalized as well as oral.

Prenasalized stops are treated as clusters, and other clusters of C plus /y/ almost certainly exist, since only /t^y/ is reported as a unit phoneme, but /ⁿd^y/ and other palatal clusters appear in lexical data.

Analysis and Comparison of the Sixteen Modern Systems

The sixteen phonological systems here reviewed vary somewhat in points of analysis, and considerably in coverage of the details of the phonological systems. They are nonetheless amenable to comparative evaluation. A review of features which appear in various systems allows hypotheses to be drawn (or confirmed) about the characteristics of the earlier system from which all these theoretically derive. The data must be considered with an eye both to overall communalities and patterns of differences, and to historical interpretations, viewing phonological processes in different states of development. What is evident is that some of the modern systems are clearly new orientations of new and old units into distinct phonological oppositions and balances. But these different systems must, when taken together, reflect some original features which allow postulation of the proto-system.

To achieve this comparative-historical end, the phonological material must be given a unified reinterpretation. It is certain that historical processes have both phonemic and sub-phonemic stages, and the phonemic status of a feature in a modern system may not be as significant as its mere presence, especially if its distribution can be clearly stated.

There are certain areas of interest which appear with some frequency in the descriptions of the modern phonological systems. Some of these have to do with segmental phonology: the extent of the palatalized series and of the fricative series, the number of vowels, the appearance of certain units, like /ä/, /θ/, /ž/, and the frequency of occurrence or the relative functional load of individual units. Other significant features concern higher levels of phonological organization: syllable

shape, stress and word and couplet canons, consonant clusters and the evaluation of glottal stop, and the distributional characteristics or phonotactics associated with these higher level units. Still other important areas of interest are the phonological processes involved in allophonic variation, in assimilation of nasalization, of stress-related phenomena, and the other morphophonemic processes commonly found in the Mixtec languages.

Differences in Analysis

Minor differences in the analyses involve transcription, both the orthographic equivalences already noted, and the additional apparent equivalences of at least some /x/ and /h/, of bilabial fricatives /v/ and /b/, and possibly some /y/ for /ǰ/ (or at least a special relation exists between [y] and [ǰ] in some areas).

It is also useful to eliminate loan phonemes from consideration, at least in this context. It would appear that for most dialects, the loan phonemes may include bilabial fricatives /f/ and /p/, stops /p/ and perhaps /^hb/. Another certain loan is the trilled /r/. Some of the velar fricatives /x h g/ are reported as loan phonemes in some systems (Peñoles, Huajuapán, Jicaltepec); possibly other appearances of these units can be similarly discounted. Some systems may have /ⁿg/ restricted to loans, as reported by Alacatlazala. Possibly some occurrences of the palatalized consonants can be attributed to loans, as in Jicaltepec /s^y/.

Another difference in analysis relates to phonemicization, particularly the decision to treat sequences either as complex units or as segmental clusters. This accounts for the lack, in Chart IV-1, of the

prenasalized sequences for Ocotepec and Jamiltepec, as well as for instances of palatalized stops in several additional systems. Donald Stark (1947) presented the classic motivations for unit analysis of most of these complex units in an early article on San Miguel el Grande phonology. It is consequently surprising to encounter more recent descriptions which treat the prenasalized stops, in particular, as clusters of two consonants. The case for the palatals is more tenuous, because of their more restricted occurrences. Perhaps some of the analyses which favor clusters were influenced, however subtly, by considerations of orthography and Spanish phonological structure.

Whatever their phonemic status, at least some units in the prenasalized series are present in all varieties of Mixtec; that is, it is important to consider Ocotepec and Jamiltepec as having prenasalized stops, regardless of whether these are analyzed as unit phonemes or as consonant clusters. Jamiltepec probably has a full prenasalized series /^mb ⁿd ⁿɟ ⁿg ⁿg^w/ like the other two systems from the coast, Jicaltepec and Chayuco. Ocotepec reports /ⁿg/ and /ⁿg^w/ as clusters, and certainly must have /ⁿd/ as well.

The unit versus cluster treatment of palatalized segments, especially alveolar stops /t^ɟ/ and /ⁿd^ɟ/, is another instance of differential phonemic analysis, but more difficult to resolve. For comparative purposes, Acatlán and Silacayoapan, and probably also Ocotepec and Atlatlahuca (and possibly Coatzacoapan), may be considered as having at least /t^ɟ/ and probably /ⁿd^ɟ/ in their stop series, whether or not these always have full phonemic status. It is of course important to note restricted environments (not before front vowels, etc.) and limited distributions (initial only, in Ocotepec and Atlatlahuca), and these considerations hold for all the systems, not just those where the palatals

have been interpreted as clusters. It is also necessary to distinguish between different environments, that is, what may be essentially different origins of units, which may appear the same, but are perhaps not. In this respect, the Cy clusters reported in Alacatlazala (Zylstra 1980) are not to be treated together with the others described here; they are limited to the second syllable consonant rather than the tonic, where the others usually occur. They are also derived through morphophonemic processes which are distinct from those which might be called upon to account for the word initial Cy clusters.

Another problem in phonemicization is the treatment of weak or marginal contrasts, as in Acatlán, where /čⁿ zⁿ jⁿ/ all occur only before /i/. Other marginal units would include /r/ and sometimes /y/, /ä/ or the palatalized stops mentioned above, and some nasal vowel contrasts. There is also some doubt about the phonemic status of /m/ and /n/ with respect to /w/ and /y/, and possibly also between /n/ and /l/ (see Kaufman 1967, Zylstra 1980, Bradley and Josserand 1982), but it is nonetheless important to distinguish between these units for historical reasons, and failure to mark the nasal consonants would necessitate increased marking of nasalized vowels.

Subphonemic variants are also of great value in historical work, again with proper consideration of their contextual limitations; they represent what might be called a complementary case to the unit versus cluster problem. In this respect it is appropriate to note the existence of fricativized alternants for certain units, an allophonic pattern which shows up repeatedly in the Mixtec systems. Thus in Jicaltepec and Mixtepec, the subphonemic occurrence of [ž̃] is an important feature for comparative purposes, not to be overlooked merely because of its incorporation in the structural unit /y/. Also, although no

system reports /tn/ as a unit phoneme, it is occasionally mentioned as a subphonemic variant of /t/ before nasalized vowels (Acatlán, Alacatlazala, Peñoles), and the existence of this phonological unit, even at subphonemic level, may be (and in fact is) of considerable historical interest.

Typological Comparisons

The modern phonological systems clearly have a certain core structure in common, as indicated by Bradley (1977), but few have identical phonological inventories. The oppositions and balances operating in the structural patterns of these various systems may be quite distinct. A typological comparison of these phonological inventories may indicate some groupings of dialects, though it is certainly true that such typological comparisons are of a clearly preliminary nature, since they are based on reported units and series without fully considering the position of these units in an overall structure. But systemic or true structural comparisons must wait until the correspondence sets provide the proof in the form of actual reflexes pertaining to comparable structural units, rather than superficially equivalent phonological elements.

Allowing the reanalysis suggested above, the voiceless stop-affricate series fall into four sets: two major series with several members each, and two minor series, each corresponding to a single town. These are all based on the presence or absence of two features: palatalization and affrication.

1. /t č k k^w/; Huajuapán, Molinos, Diuxi, San Miguel el Grande, Peñoles, Alacatlazala. This set has one affricate /č/ which is also palatalized. The towns with this set are mostly in the Mixteca Alta, plus one in the northern Baja and one in Guerrero.

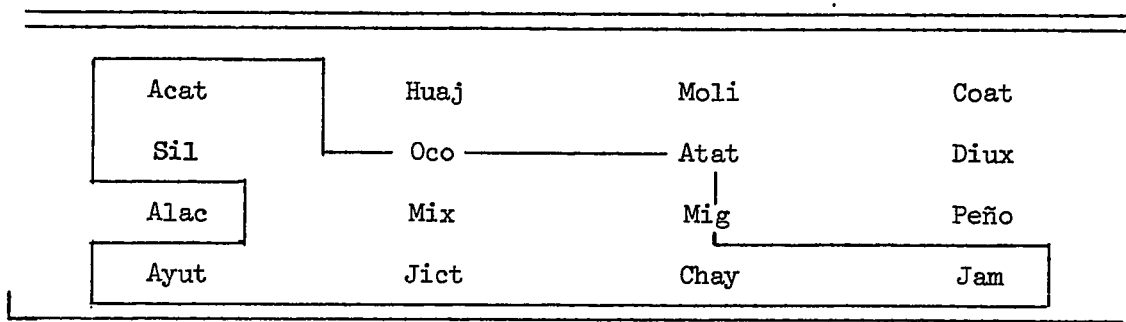
2. /t t^y č k k^w/; Ayutla, Mixtepec, Jicaltepec, and Jamiltepec studies interpret /t^y/ as a unit phoneme; those of Acatlán, Silacayoapan, Ocotepec and Atlatlahuca as a cluster. This set has both the alveopalatal affricate /č/ as well as another palatalized element, the voiceless stop /t^y/. The towns with this series are located in the Mixteca Baja (and in part of the adjacent western Mixteca Alta), and in the coastal region.

3. /t t^y k k^w/; Chayuco. This is a very unusual series, with only the palatalized stop /t^y/; no affricated units occur, palatalized or otherwise.

4. /t č č k k^w/; Coatzospan. This minor series is perhaps a subset of the larger first group, with the non-palatalized affricate /č/ in addition to the alveopalatal /č/. Palatal stop [t^y] occurs allophonically for /t/ before /i/ and /u/.

The two major sets, as indicated, both have the alveopalatal affricate /č/; they differ in the presence of an additional unit, the palatalized stop /t^y/, found in the second major set and in Chayuco. If the separate distributions of /č/ and /t^y/ are plotted over the schematic map-diagram of the sixteen towns analyzed here, the distributions appear quite systematic. (Chart IV-2).

CHART IV-2

SCHEMATIC DISTRIBUTION OF /t^y/

The palatalized stop /tʲ/ has a western and southern distribution, which seems to include all the coast and most of the Baja (except for Huajuapán and Alacatlazala), and with a weaker presentation, to penetrate the adjacent western Mixteca Alta, marginally affecting Ocoatepec and Atlatlahuca, and perhaps San Miguel el Grande.

CHART IV-3
SCHEMATIC DISTRIBUTION OF /č/

Acat	Huaj	Moli	Coat
Sil	Oco	Atat	Diux
Alac	Mix	Mig	Peño
Ayut	Jict	Chay	Jam

The palatalized affricate /č/ (Chart IV-3) seems to have a much more pervasive presence, and would be universal except for Chayuco. But here is a linguistic iceberg. The aberration which Chayuco presents is but a clue to a hidden problem, which will only appear upon inspection of the correspondence sets. The affricate /č/ is in fact not comparable across all the systems, for modern reflexes with /č/ pertain to two very distinct correspondence sets, and are not derivable from a single proto-unit. One set of reflexes includes all of the Mixteca Alta and most of the Baja; the other set includes Mixtepec and all of the coast, as indicated by the dotted lines. Thus Chayuco is unique, but not in precisely the manner first suspected. It lacks the /č/ reflex found in the Alta, but so do the other coastal towns; furthermore, it lacks the /č/ reflex found on the coast, as do also all the non-coastal dialects of Mixtec.

Other typological comparisons which might be of interest include the fricative series and the vowel systems. Within the fricatives, a great variety of systems is found, with quite a few different units participating differentially (voiceless /θ s š ʃ h x/; voiced /b d ʒ g/), and typological comparisons and groupings are difficult. The situation would perhaps be clearer if rare and loaned units were consistently indicated in the sources. Another problem is whether to include certain fricative units if they are present only allophonically. Once again, these comparisons are more apt when backed up by the structural data derived from the following historical-comparative analysis.

At least one contiguous grouping is possible in the basis of the distribution of a single unit, that of the voiced fricative /d/ (perhaps also including voiceless /θ/), which appears in most of the Mixteca Alta and northern Baja inventories, and in Chayuco on the coast. A somewhat different grouping would result from the mapping of other voiced fricatives, such as /ʒ/, but the pattern is still basically Alta and central Baja versus the other regions.

As far as vowel systems are concerned, the most striking contrast is between six vowel systems (with high central /i:/) and five vowel systems (Chart IV-4). This comparison produces a north-south isocline which

CHART IV-4

SCHEMATIC DISTRIBUTION OF /d/

Acat	Huaj	Moli	Coat
Sil	Oco	Atat	Diux
Alac	Mix	Mig	Peño
Ayut	Jic	Chay	Jam

divides both the Mixteca Alta and the Coast into two clear regions. The six vowel system /i ī e a o u/ is found in Coatzospan, Atatlahuca, Diuxi, San Miguel, Peñoles, Chayuco and Jamiltepec. The five vowel system /i e a o u/ is found everywhere else, except that Huajuapán and Silacayoapan have fronted (but still rounded) /ü/ instead of back round /u/. It should also be remembered that some dialects report very limited occurrences of /e/, and others indicate a weak contrast between /o/ and /u/.

Syllable, Couplet, and Canon Comparisons

The reanalysis of certain sequences as units rather than clusters would of course have an effect on the patterns of syllable canons, and in turn, on the canons for the other, higher-level phonological units, in which they occur. But even allowing such reanalysis, the consonant clusters in the modern systems may not be entirely eliminated, though the participants in such clusters as remained would be reduced. For historical purposes, it may also be possible to explain (and thereby eliminate from Proto-Mixtec reconstructions) certain other clusters by means of morphophonemic reductions describable in terms of historical developments. This is the case of the frequent word initial consonant clusters of /s/ or /š/ plus /t/ or plus various second member consonants. The /s/ or /š/ plus /t/ occurs in some dialects when the tonic vowel /i/ is lost between these two consonants; sometimes there is compensatory lengthening of the second syllable vowel to two mora following the /t/ to produce a new phonological couplet (e.g., sita versus staa 'tortilla'). The second case, /s/ or /š/ plus various other consonants, is usually a derivative from a causative morpheme preceding a monomorphemic couplet.

Here again, the problem of restricting (or of not restricting)

the phonological canons in morphemic terms results in some incomparability between the different descriptions. Perhaps what is both more interesting and most retrievable is a consideration of why it is that some systems have no consonant clusters. This might aid in the understanding of how clusters evolved, and might account for the few clusters reported for Mixtec.

Another prominent feature of Mixtec syllable and couplet canons is the glottal stop /ʔ/, also the object of varying analytical treatments. Most analyses consider /ʔ/ a voiceless stop consonant, but it is clearly different from other consonants. Although a few systems report syllable or word initial /ʔV/ sequences, the glottal element seems to be an automatic feature of word initial vowels, and probably is a feature of all varieties of Mixtec, whether it is reported or described or not. The descriptions which consider consonantal glottal stop to occur initially thus lack the vowel initial canons which appear in other dialects. Initial /ʔ/ is not a contrastive feature in general, although certain dialects seem to retain the morpheme final /ʔ/ in compounds while others do not, as in two common etyma for 'dog': tiʔina versus tina. In the first case the /ʔ/ could be interpreted as a retention from the vowel initial morpheme for 'dog', ina, or alternatively, as a retention of the final glottal on the morpheme for 'animals', tiʔ; in any case, the counter form tina has no glottal stop and has reduced the two identical vowels to one, thus reproducing a two syllable (couplet) word. Although more generalized canons can be derived if glottal stop is considered to occur morpheme initially, like other consonants, this would be an obfuscation, which hinders more useful generalizations about the nature of the glottal stop /ʔ/.

More important than its word or morpheme initial occurrence is the

fact that /ʔ/ occurs in syllable final position, and is the only consonant to do so (excepting for the moment a few final consonants derived from enclitic incorporation). Furthermore /ʔ/ occurs in couplet medial position followed by certain other consonants; again, no other consonant so occurs. E. Pike and Small (1974) considered the glottal stop a feature of the vocalic nucleus of the phonological word, and Bradley (1970) attributed at least certain cases of the glottal stop to the vocalic nuclei of tonic syllables. But it does not much matter what it is called, so long as the behavior of this important feature is accurately described.

The glottal element figures in both syllable and couplet canons of all varieties of Mixtec, but with the exception of Ayutla and Zacatepec, only in tonic syllables, that is, couplet medially. The discovery of word final /ʔ/ in Ayutla (and more recently in Zacatepec) permitted the postulation for Proto-Mixtec of a much more uniform syllable pattern with respect to the couplet. At the same time it must be remembered that the presence of syllable final /ʔ/ implies very circumscribed behavior, in terms of associated consonant and vowel distributions, and, for final /ʔ/, in terms of special morphophonemic tone perturbations.

The couplet canons given by various linguists for varieties of Mixtec are quite uniform. All modern description coincide in treating major morphemes with phonetic shape CV· or V· as being composed of two mora (CVV or VV, respectively), to conform to the structural pattern of the two syllable couplet. Leaving aside for the moment the problem of the morphological versus phonological nature of the canons, and discounting, also temporarily, canons with initial consonant clusters and rare word final consonants, it is apparent that a very few canons account for most forms in most dialects. These canons furthermore conform

to certain more generalized patterns, but in ways that are not immediately clear. For example, Jicaltepec has syllable canons of CV and V, and morpheme canons which may be interpreted as accounting for the following eight structures:

<u>Plain</u>	<u>Checked</u>
VV	V?V
VCV	V?CV
CVV	CV?V
CVCV	CV?CV

These may be described in a single formula, where parentheses indicate optional elements, as follows: (C)V(?)(C)V, and all sequences generated by the formula correspond to morpheme canons indicated by Bradley (1970: 23).

This represents the largest number of couplet or morpheme canons reported by any dialect, with the possible exceptions of Acatlán and Mixtepec, whose descriptions also give formulas but do not specify if all generated forms are valid. The Jicaltepec canons also constitute the most symmetrical system of canons. Studies of other dialects report fewer canons, but these appear to be subsets of the ones given for Jicaltepec. San Miguel el Grande has only canons with consonant initial forms, perhaps due to the interpretation of initial /?/ as a consonant, as indicated above. Peñoles shows the four consonant initial canons (CVV, CV?V, CVCV, CV?CV), plus one vowel initial canon (VV); Alacatlazala has the same four consonant initial canons, but a different vowel initial canon, VCV. For Silacayoapan, North and Shields (1977/21) cite an even more irregular set of canons, including vowel initial V?CV, and consonant initial CVV, CVCV, and CV?CV. The consonant initial canon of the form CV?CV occurs only with a consonant "cluster" in first position,

$C^yV^?CV$ (another palatalized canon, C^yVCV , also occurs, but is here considered the same as $CVCV$).

None of these canons specify the nasality or non-nasality of their vowel components, although Kenneth Pike (1947) does cite canons with final nasal, such as $CV^?Vn$, in connection with the distributional restrictions of vowel sequences. Perhaps if the contrast between glottalized and non-glottalized nuclei is recognized at canon level, the vowel or syllable nucleus feature of nasalization should be included also, since such nasal vowels are associated with distributional phenomena in much the same manner as are glottalized nuclei.

Consonant Clusters

This generalized view of Mixtec canons does not admit any canons with consonant clusters, leaving aside medial $/^?C/$ as a special case subsumed by the canons given above. The only medial consonant clusters would perhaps be some palatalized sequences, and the sequence $[tn]$, which is excluded as being in reality a single unit, a phonologically complex allophone or conditioned variant of $/t/$ before nasal vowels. The possible existence of medial consonant plus $/y/$ sequences is less clearly documented. Perhaps if they do occur in medial position they have been treated as units rather than clusters; at least no canonical forms are reported with medial $/Cy/$ clusters, as they are for initial $/Cy/$ clusters in Silacayoapan.

The medial consonant plus palatal clusters which are reported for Alacatlazala are analyzed as subphonemic surface manifestations of morphophonemic reductions of two morphemes to couplet form, involving a couplet with second consonant C and final vowel $/i/$, which is desyllabified when followed by an enclitic of single vowel (V) form. Similar

sequences of medial /Cw/ are likewise derived from couplet final syllables of the form: consonant plus vowel /u/, followed by enclitic V (Zylstra 1980:30).

Many, but--significantly--not all, modern varieties of Mixtec permit consonant clusters, at least in couplet initial position. Initial clusters are more varied than medial clusters, but it is possible to eliminate them (i.e., to explain them in terms of morphophonemic or historical processes) in most cases. Initial consonant plus palatal segments may be reanalyzed as unit palatalized phonemes, even if these are limited to tonic syllables. This may still leave some /Cy/ sequences which are not best accounted for by unit analysis, but these should be explainable either as the result of specifiable morphophonemic processes, or as deriving from introduced, non-Mixtec lexicon.

The remaining reported consonant clusters involve either /n/, /s/ or /š/ as first member. The clusters with /n/ seem to derive exclusively from two-morpheme sequences, where the /n/ is part of a preverb morpheme (usually na 'repetitive') which has lost its vowel, and the second consonant of the cluster is the initial consonant of the verb couplet. Similar processes may also account for some occurrences of the pre-nasalized stops, when these are, in base form, attributable to two segmental components rather than being single prenasalized units (i.e., when they derive from bimorphemic compounds).

The initial sequences with /s/ or /š/ are generally attributable to one of two origins. Either they are a result of a vowel /i/ being lost within the couplet, between initial /s/ or /š/ and voiceless stop /t/ (and perhaps /k/), or they are the outcome of morphophonemic reductions of precouplet morphemes, parallel to the clusters beginning with /n/. Here the /s/ and /š/ usually derive from a causative morpheme,

like sa, or from a relational or possessive element, š*i*, in combination with a standard couplet which has a single consonant in initial position.

It is apparently the first consonant of the couplet which is most likely to be affected by morphophonemic reductions; similarly the final or post-tonic vowel may be affected by morphophonemic processes between couplet and enclitic, but these are somewhat easier to control for. Thus the most stable units are the tonic vowel and the post-stress (i.e., second syllable) consonant, or more generally, the unstressed or ultimate syllable of the couplets. This relative stability of the post-tonic syllable makes it more amenable to historical reconstruction than the first or tonic syllable; this fact is reflected in actual historical work, for both Longacre (1957) and Longacre and Mak (1960) treat only ultimate syllables of Proto-Mixtec couplets for purposes of reconstruction.

Vowel Clusters

The most important generalization which can be made about vowel clusters is that there are very few morphemes with sequences of dissimilar vowels without an intervening consonant in modern varieties of Mixtec (and none are here reconstructed for Proto-Mixtec). Most of the examples cited in modern dialects derive from multimorphemic constructions, especially from the incorporation of pronominal enclitics into noun or verb couplets, where CVV stem plus V enclitic combine to form a new CVV couplet, which may contain dissimilar vowels. A very few sequences of adjacent dissimilar vowels have been created by the action of regionally specific phonological developments.

Clusters of like vowels, that is, geminate sequences, are a result of the reanalysis of phonetically long vowels as having two mora in structural terms, thus phonetic CV· becomes phonemic /CVV/. This allows

more uniform specification of morpheme canons, and also facilitates the description of tonal phenomena.

Phonotactic and Distributional Considerations

A fairly common feature of the modern phonological descriptions for Mixtec is a section of statements about the limitations on possible occurrences of various phonemes. Many of these describe regular patterns which participate in the overall phonological structure of the dialect; other distributional statements are not systematic. Some limitations may be accidental results of the sample used in analysis, but even these must reflect an exceptionally low frequency and functional load for the phonemes in question. Still other distributional restrictions may be remnants of an earlier phonological balance, features which are irrelevant to the modern structure but not (or not yet) affected by it, and so they remain as clues for the historical linguist.

Distributional restrictions are pertinent at various levels of phonological organization. For defining basic structural units, the concept of distributional restrictions relates to the allophone as a positional variant; that is, certain phones are limited to certain environments. For the phonological word, the restrictions refer to certain phonemes being limited to tonic, couplet, or non-couplet positions. Distributional statements may also be of a general nature, affecting adjacent segments with regard to some major feature, such as the prohibition against labial consonants preceding round vowels. Or such statements can be specifically limited to morpheme (or couplet) structure rules, as in the statement that phoneme /r/ occurs only in enclitics, or the limitation on the occurrence of glottalized vowels to only tonic syllables (Jicaltepec) or of nasal vowels to only ultimas (Peñoles).

General statements can often account for deficiencies, or holes, in a certain phoneme's overall distribution with respect to other phonemes. Such general statements are also frequently related to more all-encompassing processes, and so should be examined with relation to common morphophonemic processes in the modern language.

In Mixtec, the most common general restrictions are those prohibiting certain labial sequences between consonants and vowels, and the neutralization of the oral versus nasalized distinction in vowels after nasal consonants. The stricture about no labial consonant /k^w w b^m b/ preceding a round (or labialized) vowel /o u/ is not mentioned in all the descriptions, but since those who do describe it are from the extremes of the Mixtec area (Coatzospan, Alacatlazala, Ayutla, Jicaltepec and Chayuco), it can be assumed to be a common feature and a likely characteristic of Proto-Mixtec.

The neutralization of contrast in nasality for vowels following nasalized consonants has been handled differently in the several analyses which treat it: the vowels are declared structurally either all oral (Acatlán, Ayutla) or all nasal (Coatzospan). Those who opt for the vowels being structurally oral probably do so on grounds of orthography, though arguments of unmarkedness or of redundancy would also serve. The decision to class them as structurally nasal has more phonetic justification, since they do carry at least some degree of nasalization, and it also allows more comprehensible statements about the relation of consonants in general to nasalized vowels.

Several descriptions pronounce that nasalized vowels do not occur after voiced consonants (Acatlán, Ayutla). This statement is possible only if the nasal consonants, which are all voiced, have already been removed from consideration by deciding that the vowels which follow them

are structurally oral. But there is something being missed here. A few descriptions mention that voiced continuant /z̃/ does not occur before nasalized vowels, which is only a special case of the prohibition against voiced consonants. But if it is true that the vowels which follow nasal consonants are themselves nasal vowels, then perhaps the relation between nasals and their homorganic voiced continuants, like /m/ with /w b v/, /ñ/ with /y z̃/, and /n/ with /l/, should be more carefully considered. The important neutralization is not between oral and nasal vowels after nasal consonants, but between voiced continuants and nasal consonants.

Only Zylstra (1980) reports the lack of contrast between nasal consonants and voiced continuants before nasal vowels; nasal consonants precede only nasal vowels, and the voiced continuants precede only oral vowels. But data from other dialects do not refute this assumption as holding for all Mixtec. It seems likely that these voiced continuants (like /ʔ/ and occasionally /x/) permitted the passage of regressive nasalization when they themselves took on nasality, thus explaining the complementary distribution. This is another case of a general restriction being related to more pervasive processes in the language, i.e., the origin and nature of nasality in Mixtec, and the processes of assimilation of nasality which accompany it.

The more specific cooccurrence restrictions have to do with the systematic limitations on consonant and vowel combinations within higher level units of phonological organization. These statements are about certain consonants only occurring in a certain syllable position, or about sequences of vowels or of consonants in consecutive syllables. They generally concern characteristics of the basic two syllable morpheme canon, or of the couplet as minimum phonological unit. In fact,

the two syllable nature of these couplet and morpheme canons, and their close relation to word stress (on the first syllable), is reflected nowhere more clearly than in such distributional statements about the phonemes.

Kenneth Pike's discussion of permitted sequences of vowels across the two syllables of monomorphemic couplets is the most detailed description available for this distributional restriction. In San Miguel el Grande Mixtec, all vowels can follow themselves in consecutive sequences, but only the "outer triangle" vowels /i a u/ can follow one another to produce dissimilar sequences (K. Pike 1947:168-170). Such statements on vowel behavior are quite rare in other descriptions, and even Bradley (1970) does not give comparable information. Although Bradley discusses the limitations of vowels and consonants with respect to microsegments, these units are not the same as monomorphemic couplets, and Bradley does not give as detailed coverage of the phonological structure of morphemes.

Some inferences about distributional restrictions in bisyllabic morphemes can be abstracted from the data presented by Bradley (1970: 18). For Jicaltepec Bradley gives no examples of bisyllabic morphemes with contiguous dissimilar vowels; that is, if no consonant intervenes (or if only glottal stop intervenes), the two vowels will always be identical. There are bisyllabic forms with non-identical contiguous vowels in Jicaltepec, but these are in all cases multimorphemic couplets, attributable to the incorporation of a single vowel enclitic into the original couplet, as a replacement for the couplet's final vowel. Most significantly, they are all derived from just three enclitics: two pronominals (first person -í and second person -y) and a demonstrative or deictic -g. The single vowel forms of these three clitics are allomorphs (or morphophonemically reduced forms) each corresponding to a

consonant initial form which is used when the clitic is not incorporated into the couplet. The pronominal clitics also vary in their single vowel forms, according to whether they are incorporated into couplets with adjacent vowels (CVV, CV?V), where the first person form is -í and second person is -y, or into couplets with an intervening consonant (CVCV, CV?CV), where the incorporated form for first person is -é and for second person is -o.

Perhaps the most significant piece of information about Jicaltepec vowel distributions is the observation that these alternating vowels correspond to Pike's inner and outer vowel triangles; only the "strong" alternants, from the inner triangle, -í and -y, can combine directly with dissimilar tonic vowels to create new couplets of the form CVV or CV?V. The "weak" vowel alternates, from the outer triangle, -é and -o, can be incorporated into the couplet only if a true consonant separates them from the tonic vowel of the original couplet. Perhaps this is a reflection of some process of assimilation, which is creating new couplet canons in Jicaltepec Mixtec, with quite regular distributional patterns, but which still reflect the favored vowel distributions of Proto-Mixtec.

In all modern varieties of Mixtec there are only certain consonants which can follow couplet-medial glottal (that is, when the tonic vowel is glottalized, only certain classes of consonants occur as the onset of the couplet-final syllable). In general, any nasal consonant (including /m n ñ/ and /ⁿd/) can occupy this post-glottal position, and usually any voiced continuant as well (including /w v b/, /y ž/ and /l/, but usually excluding /ǽ/). Coatzospan allows a much wider range of consonants in this position, but these are apparently surface-level manifestations generated by the action of an unusually complex morphophonemic system, and do not always reflect the underlying features of the consonants.

THE STRUCTURE OF PROTO-MIXTEC

Previous Reconstructions of Proto-Mixtec

Three major reconstructions have been posited for Proto-Mixtec. The first is that of Longacre (1955, 1957). The second, which slightly modifies the first, is that of Mak and Longacre (1960). A significantly different reconstruction was proposed by Bradley and Josserand (1978, 1982); the reconstruction used here builds on and modifies Bradley and Josserand's model of Proto-Mixtec. In the first of these reconstructions Longacre (1957) reconstructs Proto-Mixtecan, using data from five Mixtec towns (San Miguel, Atlatlahuca, Jicaltepec, Xayacatlán and Metlatónoc) plus Cuicatec, Trique and Amuzgo. Longacre gives a single inventory of phonological units for Mixtec, but with the peculiar features of certain towns indicated. He then makes a four-way comparison between this unreconstructed but generalized Mixtec, and Cuicatec, Trique and Amuzgo. The Proto-Mixtecan couplet is discussed as a structural unit and its canons are described. Proposals are made with respect to clusters and the origins of vowel nasalization (which is derived from a couplet-final -n). A severe limitation to this reconstruction is that Longacre's reconstructed units are limited to the final syllables (or ultimas) of Proto-Mixtecan couplets. It should also be noted that since Amuzgo was later shown not to be a close relative of Mixtecan (see Longacre 1965) this reconstruction does not actually represent Proto-Mixtecan, but is a Proto-Otomanguean heavily biased towards Mixtecan; perhaps it can best be taken as a pre-Proto-Mixtecan reconstruction.

Mak and Longacre (1960) present a reconstruction of Proto-Mixtec based on a revised Proto-Mixtecan reconstruction. They use the inter-

glottal stop is included within the vowel nucleus. This gives a very regular set of couplet canons, described by the formula (C)V(?)(C)V(?), where parentheses indicate optional constituents. Stress and consonantal distributional restrictions are discussed with respect to the

CHART V-2

PHONOLOGICAL UNITS OF PROTO-MIXTEC (BRADLEY AND JOSSERAND 1982)

Consonants:			Vowels:			
k ^w	t	k	i	ɨ	u	
	n ^d		e	a	o	
	s	x				
	n		V	ɥ	V?	ɥ?
w	l	y				

couplet structure. Morphophonemic processes posited for Proto-Mixtec include nasalization, regressive from nasalized vowels, which only occur in final syllables, and both progressive and regressive from nasal consonant *n. Couplet reduction to CV roots is described as a morphophonemic process of Proto-Mixtec. Changes between this reconstruction and that of Mak and Longacre (1960) are listed and discussed.

The reconstruction of Proto-Mixtec presented here agrees in almost all essentials with the phonological system presented by Bradley and Josserand (1978, 1982). The inventory of structural units is the same, including the basic couplet canons and morphophonemic processes. However, the present reconstruction differs from that of Bradley and Josserand in some details, and especially in the presentation of many more details of dialect variation in modern Mixtec and its relation to Proto-Mixtec. Although only vowel reconstructions are treated compre-

hensively here, essentially the same cognate sets support the reconstructed consonants discussed in the overview of reconstructed units given below, and obviously the consonantal reconstructions have formed an important context for the detailed analysis of vowel correspondences and reconstructions which are presented in the following chapter.

Specific differences between this reconstruction and that of Bradley and Josserand include new (i.e., different) reconstructions of certain words, especially in their vocalic components (see, for example, the section introducing *e and *a), as well as the establishment of a few new canonical forms, mostly involving medial *y, and the consequent restatement of certain distributional restrictions. For instance, Bradley and Josserand asserted that *y did not precede front vowels *i and *e; this restriction is shown not to be valid for Proto-Mixtec, in the light of additional data and consequent new reconstructions.

Phonological Characteristics of Proto-Mixtec

Proto-Mixtec's phonological inventory is here reconstructed with 16 segmental phonemes, including eight consonants /*t *k *k^w *s *x *l *ⁿd *n/, two semivowels /*w *y/, and six vowels /*i *ī *u *e *a *o/. Simultaneous prosodic features of glottalization, nasalization and tone are also reconstructed for vowel nuclei.

Canonical Forms

Morpheme canons in Proto-Mixtec included two basic patterns: one-syllable (*V or *CV) dependent or atonic morphemes (clitics and affixes) and two-syllable phonologically independent morphemes (verbs, nouns and some other form classes), in couplet form. These couplets were composed of a first or tonic syllable which carried word stress (accent) and a

second, post-tonic (final or ultimate) syllable whose possible constituents were somewhat limited by the phonological characteristics of the tonic syllable which preceded it. However, only final syllables of monomorphemic couplets contained inherently nasalized vowels.

The couplet as a phonological unit was characterized by features of timing related to utterance length, so that simple bisyllabic couplets (minimum phonological words) as well as multisyllabic constructions with a single couplet nucleus (words and short phrases) tended to be comparable in duration. Couplet-internal rhythmic characteristics included lengthening of the tonic vowel in unglottalized nuclei, rearticulation of the tonic vowel in glottalized nuclei, and in some cases lengthening of the post-tonic consonant, or preaspiration of post-tonic voiceless stops.

Monomorphemic couplet canons were *CVCV, *VCV, *CVV and *VV; these last two were phonetically single long syllables [CV·] and [V·], respectively, but were structurally interpreted as having two mora, each capable of carrying independent tone contrasts.

Prosodic Features of Proto-Mixtec Vocalic Nuclei

The three prosodic features associated with vocalic nuclei of Proto-Mixtec are nasalization, glottalization, and tone. Although the prosodic feature of inherent nasalization of vowels was found only in final syllables of monomorphemic couplets, tonic syllable vowels assimilated nasalization from immediately following segments *n and final nasalized vowels (i.e., when no consonant intervened) and perhaps also when separated from a final nasal vowel by an intervening semivowel, *w or *y.

A second prosodic feature, glottalization of the vocalic nucleus, which effectively produced a contrast between open and closed syllables,

was optional for any vocalic nucleus, and could occur in either or in both syllables of a monomorphemic couplet. The glottal closure in final syllables has been almost universally lost in modern varieties of Mixtec, in contrast to tonic syllable glottalization, which is preserved everywhere except for a few central Baja or Puebla towns, where it is lost under certain conditions.

The third prosodic feature associated with Proto-Mixtec vowels was tone. Tone was an obligatory feature of every vocalic nucleus, and although tone reconstructions are not here treated, since they demand even more systematic structural analysis and comparisons, certain postulations about Proto-Mixtec tone seem justifiable on the basis of the existing knowledge of modern Mixtec tone systems. Proto-Mixtec probably had three level tones, perhaps arranged in specific tone sequences associated with monomorphemic couplet structures. In modern varieties of Mixtec these underlying tones are modified into different surface patterns by processes of tone sandhi (tone perturbation or morphotonemic alternations) in which certain classes of morphemes carry a feature of perturbation in one syllable (tonic or ultimate) making them inherently capable of changing the tone values of adjacent (usually following) morphemes. Thus each word or single-morpheme couplet can be distributed among various morphotonemic classes, according to their perturbation characteristics. Only a few central Mixteca Baja dialects, such as San Juan Mixtepec, and a Guerrero dialect, Alacatlazala, lack these elaborate systems of tone sandhi, but on the other hand the systems vary considerably among the modern dialects. Indeed, tone is among the first features to vary between towns speaking similar varieties of Mixtec. There seems to be a relation between the loss of couplet final *? and the development of these tone sandhi systems in modern dialects (although the two dialects

which retain final *?, Ayutla and Zacatepec, do have tone perturbation systems); this idea has been suggested independently by Michael Dürr in his recent reconstruction of Proto-Mixtec tone (1982).

Tone is marked in the appended cognate sets (Appendix II) when it was available (i.e., when it had been recorded by the linguist taking down the materials). These markings are not always complete, and the marking systems differ from town to town, so internal observation of the tone marking system is necessary before any comparison can be attempted. Reliable analyses of tone systems are available for several modern dialects (Ayutla, Silacayoapan, Diuxi, Peñoles, Acatlán, Huajuapán, Coatzacoapan, Jicaltepec), and an attempt has been made recently, using these published materials, to reconstruct tone for Proto-Mixtec (Dürr 1982). Here, tone is not marked for reconstructed Proto-Mixtec lexical items.

A specification of possible Proto-Mixtec major morpheme (i.e., couplet) canons, excluding markings for tone but including all possible combinations of nasalization and glottalization, is shown in Chart V-3.

CHART V-3

CANONICAL FORMS FOR PROTO-MIXTEC MAJOR MORPHEMES

1)	VV	VV?	V?V	V?V?
2)	VȲ	VȲ?	V?Ȳ	V?Ȳ?
3)	CVV	CVV?	CV?V	CV?V?
4)	CVȲ	CVȲ?	CV?Ȳ	CV?Ȳ?
5)	VCV	VCV?	V?CV	V?CV?
6)	VCT	VCT?	V?CT	V?CT?
7)	CVCV	CVCV?	CV?CV	CV?CV?
8)	CVCȲ	CVCȲ?	CV?CȲ	CV?CȲ?

Because of the patterns of assimilation of nasalization present in Proto-Mixtec, the canons listed in sets 2 and 4 of Chart V-3 would show phonetic nasalization in both syllables, as would the tonic syllable vowels of canons in sets 5 and 7 when the medial consonant was nasal *n, or in sets 6 and 8 when the medial consonant was *n, *w or *y.

Systematic Distributional Limitations

Consonant and vowel sequences were limited in terms of monomorphemic couplet structure. Most phonological contrasts occurred in stressed syllables; some consonants and some consonant-vowel sequences did not occur in final syllables; only a few did not occur in tonic syllables. Allophonic variation was greatest in unstressed syllables, and was perhaps most pronounced in post-couplet syllables.

The vowel sequence restrictions will be discussed in detail below; in brief, they involve limited occurrences of weak (or "inner triangle") vowels *ɨ, *e and *o with respect to strong (or "outer triangle") vowels *i, *a and *u, in both tonic and ultimate syllable positions. Only certain sequences of dissimilar vowels could occur within a monomorphemic couplet, and there was a prohibition against sequences of adjacent dissimilar vowels where no intervening consonant separated them. This means that all *VV and *CVV canons contained two geminate vowels, in structural terms (or a single long vowel on the phonetic level).

The consonants in tonic syllables of couplets sometimes alternated with certain other consonants in regular patterns associated with paradigmatic sets such as number (on some nouns and adjectives) and tense-aspect (on verbs). These are not monomorphemic couplets, but the fused particles have not been identified in most cases. This type of paradigmatic alternation is also a feature of most other Otomanguan languages

and of Proto-Otomanguean, and has been an obstacle in the reconstruction of Proto-Otomanguean. Some of these consonantal alternants have become fossilized in certain lexical items and no longer vary within the same dialect; different dialects, however, may have fossilized the item with different alternants. Thus, there are some sets of consonant correspondences in Mixtec which include apparently sporadic equivalences between l and s, ⁿd, or n; or between k and n, *x (s, š or č) or ⁿd. Examples are 'pájaro' laa, saa; 'rana' la[?]wa, sa[?]wa; 'chachalaca' la^ča, da^ča; 'jitomate' ti lana, ti ⁿana, ti nana (all fossilized sets from different towns), and 'grande/grandes' ka[?]nu, na[?]nu; 'se fue/va a ir' sa[?]a, k^wa[?]a; 'carga/va a cargar' ⁿdiso, k^wiso; 'se revienta/lo rompemos' ka[?]di, saⁿd^va (all paradigmatic variants in the same towns).

Some Proto-Mixtec distributional limitations between consonants and vowels were due to automatic phonological constraints. Rounded consonants *w and *k^w did not precede rounded vowels *u and *o; *x did not precede low and back vowels *a, *u, *o. Other distributional limitations are clearly related to morpheme (monomorphemic couplet) structure. Thus glottalized vowels could occur freely in Proto-Mixtec, but when they occurred in tonic syllables; only voiced consonants /*n, *ⁿd, *l, *w, *y/ could follow them as onsets to the ultimate syllables of such couplets. In monomorphemic couplets beginning with *n, the consonant onset of the second (ultimate) syllable was always voiced (*n, *y or *w; no examples with *ⁿd or *l as the second consonant have been identified), and the vowel was always nasalized.

Inherently nasalized vowels, which occurred only in final syllables, could be preceded only by certain consonants. Ultimate syllables with nasalized vowels have been documented with consonantal onsets of *w, *y, *s, *x, *t and *k, but none with onsets of *l, *ⁿd or *k^w. In the case

of ultimate syllables with onset *n, no contrast is found between final oral and final nasal vowels; since such vowels were almost certainly phonetically nasalized, it seems more reasonable to restate this limitation as a phonological constraint whereby oral vowels did not follow nasal consonant *n.

The absence of etyma with *k^w followed by final nasalized vowel may be more a characteristic of *k^w (a low frequency/low structural load unit in Proto-Mixtec) rather than a systematic limitation of nasalized vowels. But the absence of contrast between oral and nasal vowels after *ⁿd and *l, where the vowels are always phonetically oral, is a more important feature of Proto-Mixtec phonotactics as related to morpheme structure. Other limitations of occurrence are also associated with *ⁿd: if *ⁿd occurred as the onset of the tonic syllable, the final syllable of the couplet could not be nasal (i.e., *ⁿV or *^wỹ or *^yỹ) and if *ⁿd occurred as the onset of the ultimate syllable, *n (and possibly also *ⁿd) did not occur as the onset of the tonic syllable.

The unusual patterns of limited occurrence of *y before front vowels *i and *e also seem to be related to couplet structure, since a systematic search for etyma with *y before these particular vowels revealed instances of *yi only in ultimate syllables, while *ye sequences occur mostly in tonic syllables or in repeat sequences (*Ceye canons).

In general, if the first syllable of a Proto-Mixtec monomorphemic couplet was not glottalized nor the last syllable nasalized, that is, if the morphological canon was CVCV (oral), then either voiced or voiceless consonants could occur in either syllable (the oral precondition excludes *n). Voice seems to have been more a consequence of the other two factors (nasalization and glottalization) than a conditioning agent in itself. Most contrasts occur in couplets without glottalization or nasa-

lization, or in couplets where the tonic syllable was glottalized but not affected by nasalization; conversely, contrasts are weakest in nasalized and in post-tonic positions.

Morphophonemic Processes and Phonological Developments

In terms of modern Mixtec phonological developments, couplet structure is frequently important for limiting the domain of phonological innovations, such as the fricativization, palatalization and voicing of consonants, or the fronting of vowels. Thus some changes occur only in tonic syllables, while others are limited to ultimate syllables of couplets. It is likely that many of these developments derive from regular patterns of allophonic variation related to couplet structure in Proto-Mixtec. Furthermore, similar patterns of synchronic allophonic variation and of diachronic phonological development can be described for clitics, i.e., specifically non-couplet environments.

The most important morphophonemic process common to Proto-Mixtec was the assimilation of nasality in vowels and perhaps in semivowels in certain contexts. Other morphophonemic processes present at the level of allophonic variation in Proto-Mixtec units may have included the fricativization of certain obstruents and of semivowels, and the palatalization of alveolar consonants, probably in unstressed syllables (post-tonic or post-couplet positions).

Structural Oppositions in Proto-Mixtec

The phonological system reconstructed here for Proto-Mixtec consists of sixteen structural units, arrayed in very symmetrical oppositions, but utilizing features not usually associated with these segmental units in other language families. The most basic opposition in

Proto-Mixtec is between "continuants" and "obstruents," and these traditionally consonantal features apply to Proto-Mixtec vowels as well. Thus the Proto-Mixtec series of glottalized (or checked, or stopped) vowels (*V?, *y?) can be interpreted structurally as obstruents, while the plain or unstopped vowels are structurally continuants. Even though all vowels are continuants in one sense, the contrastive feature for Proto-Mixtec, between *V and *V? (or *y and *y?) is essentially the same as the feature which distinguishes two major consonantal classes in Proto-Mixtec, obstruents /*t *k *k^w *n^d/ versus continuants /*s *x *l *w *y *n/. Another important contrastive feature in Proto-Mixtec phonology, for both consonants and vowels, was nasality; this feature opposed nasal vowels /*y *y?/ to oral vowels /*V *V?/, and nasal consonants /*n *n^d/ to oral consonants /*t *k *k^w *s *x *l *w *y/. Voicing is the remaining major feature in terms of manner of articulation, but since all Proto-Mixtec vowels were voiced, this feature applies only to consonants. (It might be possible to explain the modern allophonic preaspiration of voiceless stops in post-tonic couplet syllables as a process of devoicing of the tonic vowel, in conditioned alternation with the lengthened vowels which occur in tonic syllables before voiced consonants.) Another contrast in manner of articulation is the feature of rounding (or labiality), again common to both consonants and vowels. Rounded vowels /*u *o/ contrast with unrounded vowels /*i *i *e *a/, and among consonants, the labial continuant /*w/ shares the feature of rounding with the labialized velar obstruent /*k^w/ in contrast to all other consonants.

On the basis of the two major contrasts, continuant/obstruent and nasal/oral, the Proto-Mixtec vowels divide paradigmatically into four sets: oral continuants *V, oral obstruents *V?, nasal continuants *y, and nasal obstruents *y?. Further subdivision of both vowels and consonants

is achieved by the features of voicing and rounding, and by positional features.

The most fundamental division in point of articulation for both consonants and vowels is between "central" and "peripheral" units. For vowels this distinguishes central, or inner triangle, vowels /*i *e *o/ from peripheral, or outer triangle, vowels /*i *a *u/. Note that these terms do not have any connotations with respect to frequency or functional load, since it is, in fact, the "peripheral" vowels which are the strong vowels in Proto-Mixtec, while the "central" vowels are structurally weaker in many respects. The only other features important for discussing Proto-Mixtec vowels are those of frontness and height: /*i/ and /*e/ are front, and /*i *i *u/ are high.

With regard to consonantal units, "central" is equivalent to alveolar in Proto-Mixtec (that is, /*t *ⁿd *s *l *n/ are central, while "peripheral" includes all non-alveolars, /*k *k^w *x *w *y/). All the alveolars are distinguished by the three major features already discussed: continuant/obstruent, nasal/oral, and voiced/voiceless. Among peripheral consonants, the previously mentioned feature of roundness distinguishes *w from *y and *k^w from *k. The consonantal chart thus appears as presented in Chart V-4.

Although not necessary in terms of minimum structural oppositions, it seems likely that another feature, palatality, should be added, to further characterize *y. While there is not a palatal series in Proto-Mixtec, the development of palatal offglides and alveopalatals from alveolars (in the context of following front vowels) is common to most modern varieties of Mixtec, and *y is an important unit in relation to vowel developments. Also, Proto-Otomanguean and other descendent Otomanguean languages are often described as having a prosodic palatal

CHART V-4
 PROTO-MIXTEC CONSONANTS

	Central	Peripheral	
		Non-round	Round
<u>Obstruents</u>			
Voiceless	t	k	k ^w
Voiced nasal	n _d		
<u>Continuants</u>			
Voiceless	s	x	
Voiced oral	l	y	w
Voiced nasal	n		

feature **Y which is very important for understanding the alveopalatal developments in Otomanguean languages (see Rensch 1976 on Otomanguean and Bartholomew 1965 on Otopamean).

Supporting this feature analysis of Proto-Mixtec--indeed, its motivation--is the fact that the groups of consonants and vowels defined by the intersection of these features are those groups of consonants and vowels which undergo common changes, and which appear as conditioning factors for phonological developments.

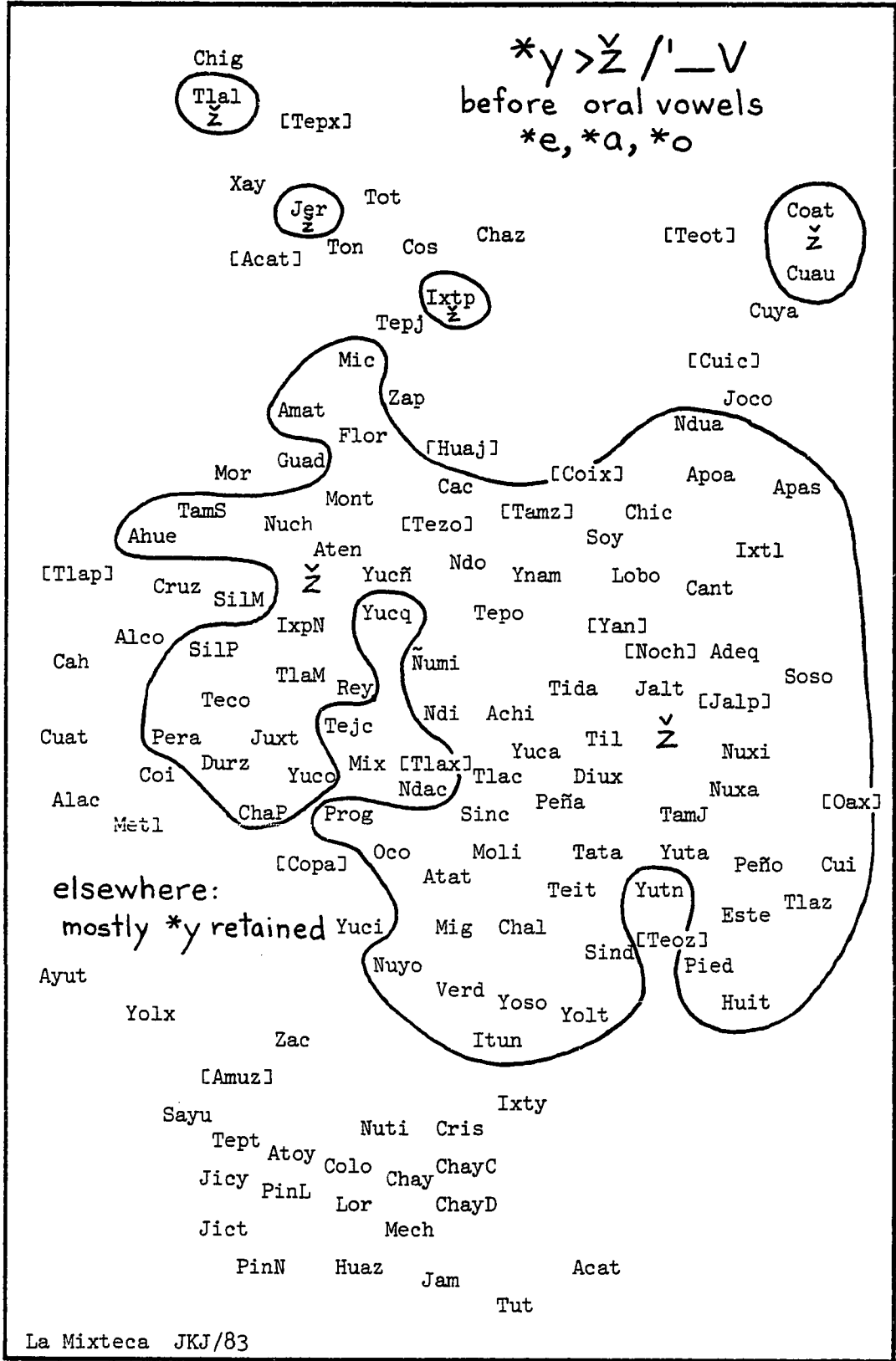
Overview of Proto-Mixtec Consonants

Since the consonant reconstructions are not presented here in any detail, a brief overview follows, which sketches the modern developmental reflexes of the reconstructed consonants and the environments pertinent to the reflexes, and comments on the distribution of these reflexes, especially noting the areas of innovation when possible.

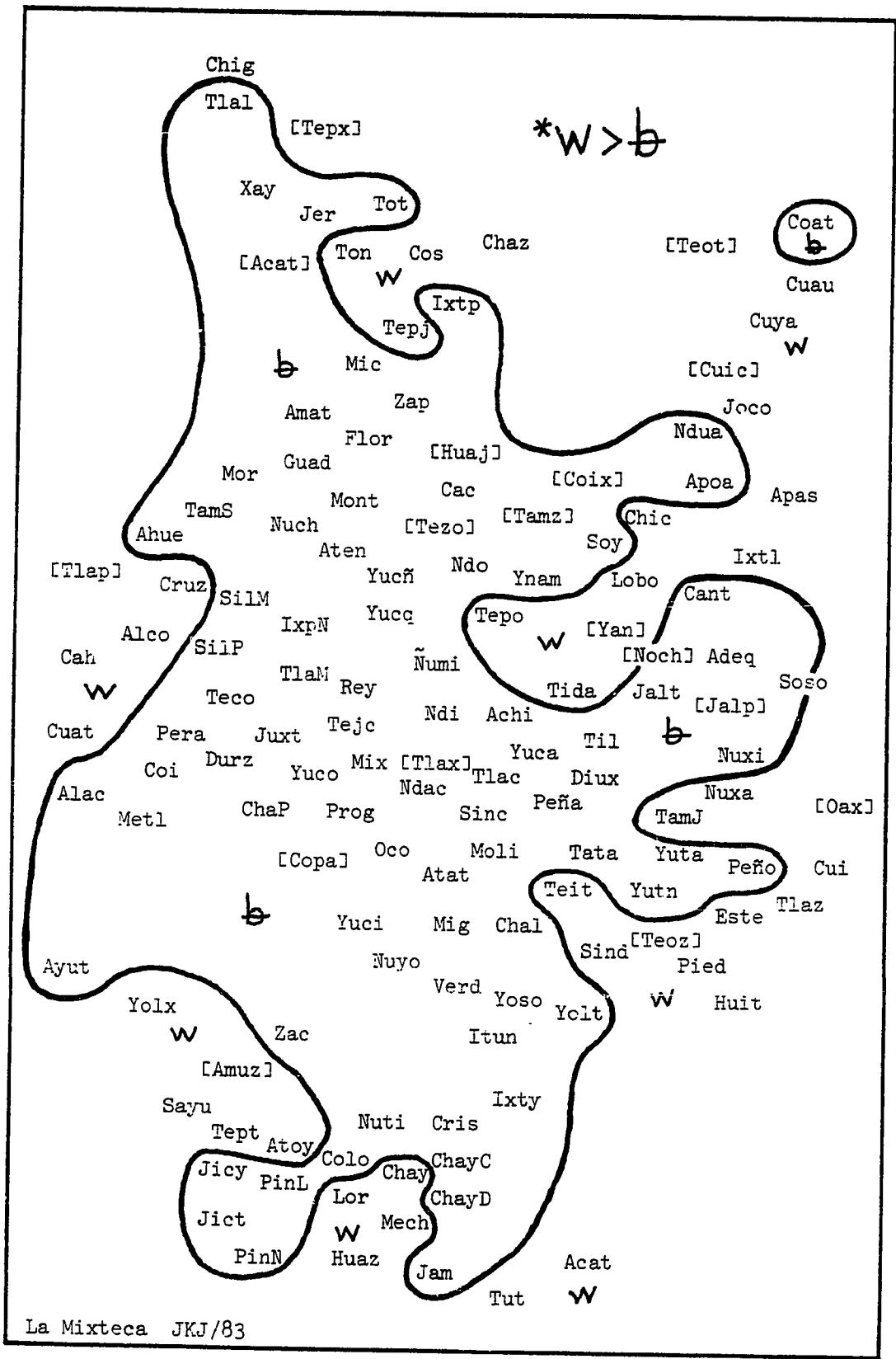
In terms of variety of reflexes, *y is represented by many distinct correspondence sets, which are finely distinguished by their conditioning environments (before front and high vowels, between low vowels, before nasal vowels, in stressed or in post-stress syllables). The major phonological reflexes associated with *y are nasalized ɲ (almost universally before nasalized vowels), fricativized ʃ (often related to couplet position, especially post-tonic syllables--couplet final or enclitics), devoiced fricativized ʃ̥ (unique to the far northeastern town of Coatzacoapan), retained semivowel y, and loss (before high and/or front vowels). Map V-1 shows the most important innovation spheres associated with the development of fricativized reflexes from Proto-Mixtec *y.

The other semivowel, voiced labial continuant *w, had a deficient distribution with regard to the rounded vowels *u and *o; it did not precede them, although it could follow them. Still, *w requires many specific environments to account for the distinct patterns of correspondence associated with it. Much like *y, *w develops nasalized m reflexes in nasal contexts, and fricativized β (often written v) reflexes (in specifiable contexts and regions (see Map V-2); similarly, the semivowel or glide form, w, is retained in at least some contexts throughout the Mixteca, and complete loss of the unit is characteristic for certain environments, especially in ultimate syllables before high vowels, and especially in the Mixteca Alta and Puebla (see Map V-3).

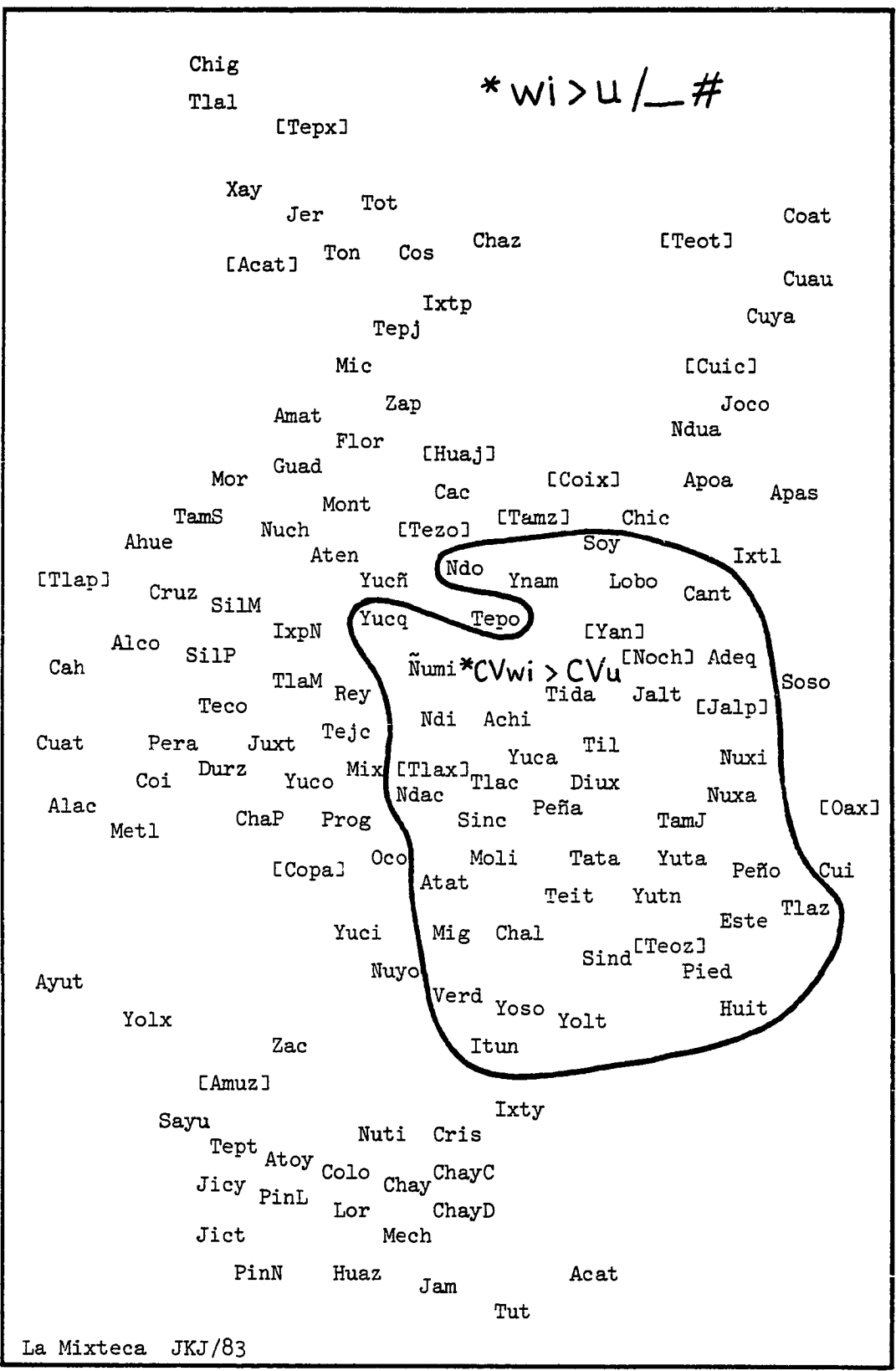
Map V-1. Fricativized Reflexes of *y (before oral *e, *a, *o)



Map V-2. Fricative Developments of *w



Map V-3. *w Loss before *i (in Final Syllables)

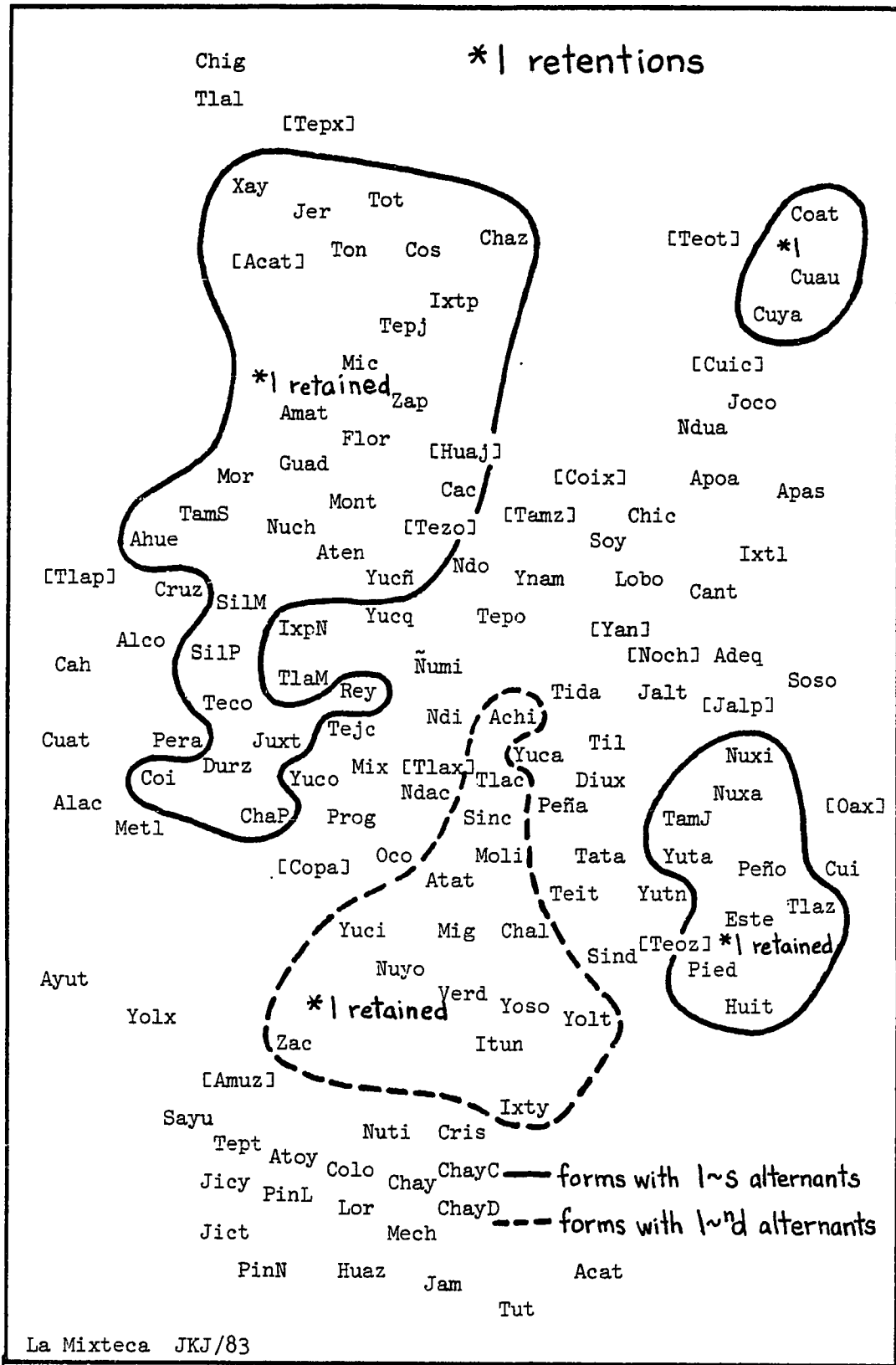


The remaining voiced consonant, *l, is an extremely rare unit, supported by somewhat irregular correspondences. Cognate sets reconstructed with *l as a constituent are few in number and often deficient in data; the reflexes show l, s, ⁿd and n in different combinations in the various lexical items. The geographical distributions of the l reflexes are sporadic, but tend to be more frequent in certain regions (Mixteca Baja and eastern Alta; see Map V-4).

The s, ⁿd and n reflexes may derive from a pre-Proto-Mixtec paradigmatic alternation with *l, rather than being more recent developments of *l. Alternatively, there may be a more specifiable relationship between l and ⁿd (or perhaps n) with respect to nasal environments; note the fact that while neither *l nor *ⁿd precede inherently nasalized vowels, *ⁿd might be interpreted as having "absorbed" the nasality of a following nasal vowel (see Kaufman 1967). Following *n there is no contrast between oral and nasal vowels; if these are interpreted as being structurally nasal, then there would be a complementary distribution with regard to nasality between *l and *n. I have not collapsed *l into any other unit yet, because of the distinct patterns of correspondences associated with the several units, but it is possible that further study will permit the elimination of *l from the Proto-Mixtec phonological inventory.

The voiceless obstruents *t and *k are well-distributed and common in Mixtec etyma; the labialized *k^w is less frequent and shares the same distributional restrictions as *w. Alveolar *t shares many patterns of phonological developments with the other central (i.e., alveolar) consonants *ⁿd, *n, and *s (though not particularly with *l). These common developments include reflexes which show various combinations of features of palatalization and fricativization, and in other contexts, of nasali-

Map V-4. Areas of Retention of *l

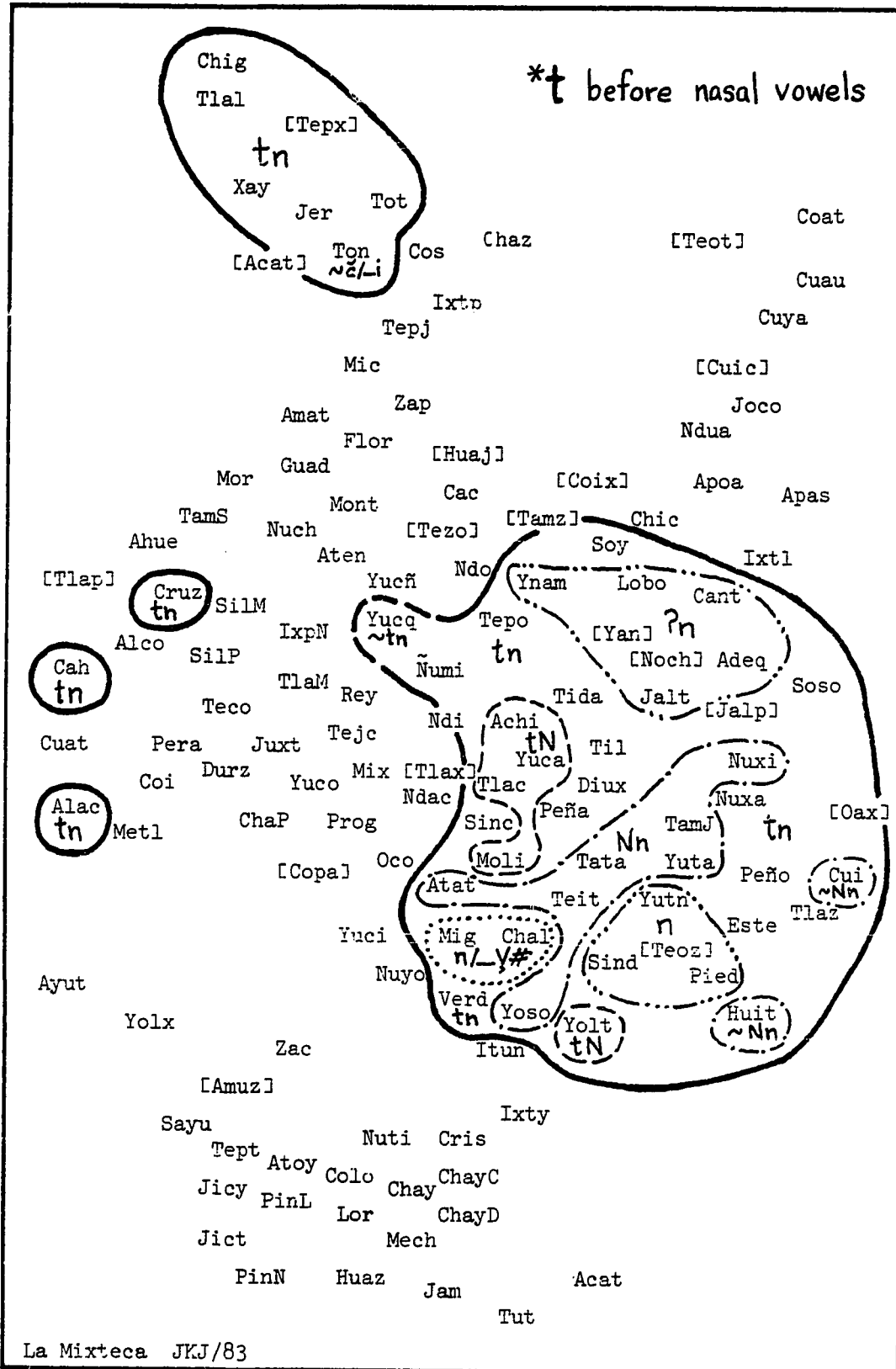


ty. Common reflexes for *t before front and high vowels are t^v, č, č', and s. These would have been allophonic (i.e., positional) variants of *t, and in themselves do not represent a change in overall phonological structure, but later developments in the vowel system, particularly the mergers of *ī with *i and of *e with *a, did affect the overall structure (by merging the conditioning environments of different allophones and leaving them in contrast in analogous or identical contexts). This consequently created weak contrasts between the palatalized and/or fricativized forms and the plain form of *t. Map V-5 shows the distribution of these reflexes. A similar allophonic redistribution of *t occurred before nasalized vowels; in this environment *t added a nasalized segment to become tn in certain parts of the Mixteca (mostly central Mixteca Alta and Puebla). Later developments of this unit produced Nn (voiceless nasal plus voiced nasal) and even n reflexes, which consequently merged with *n. Map V-6 shows the distribution of nasalized reflexes of *t. Another minor reflex for *t, voiceless fricative s, occurs before *ī only in the Puebla region.

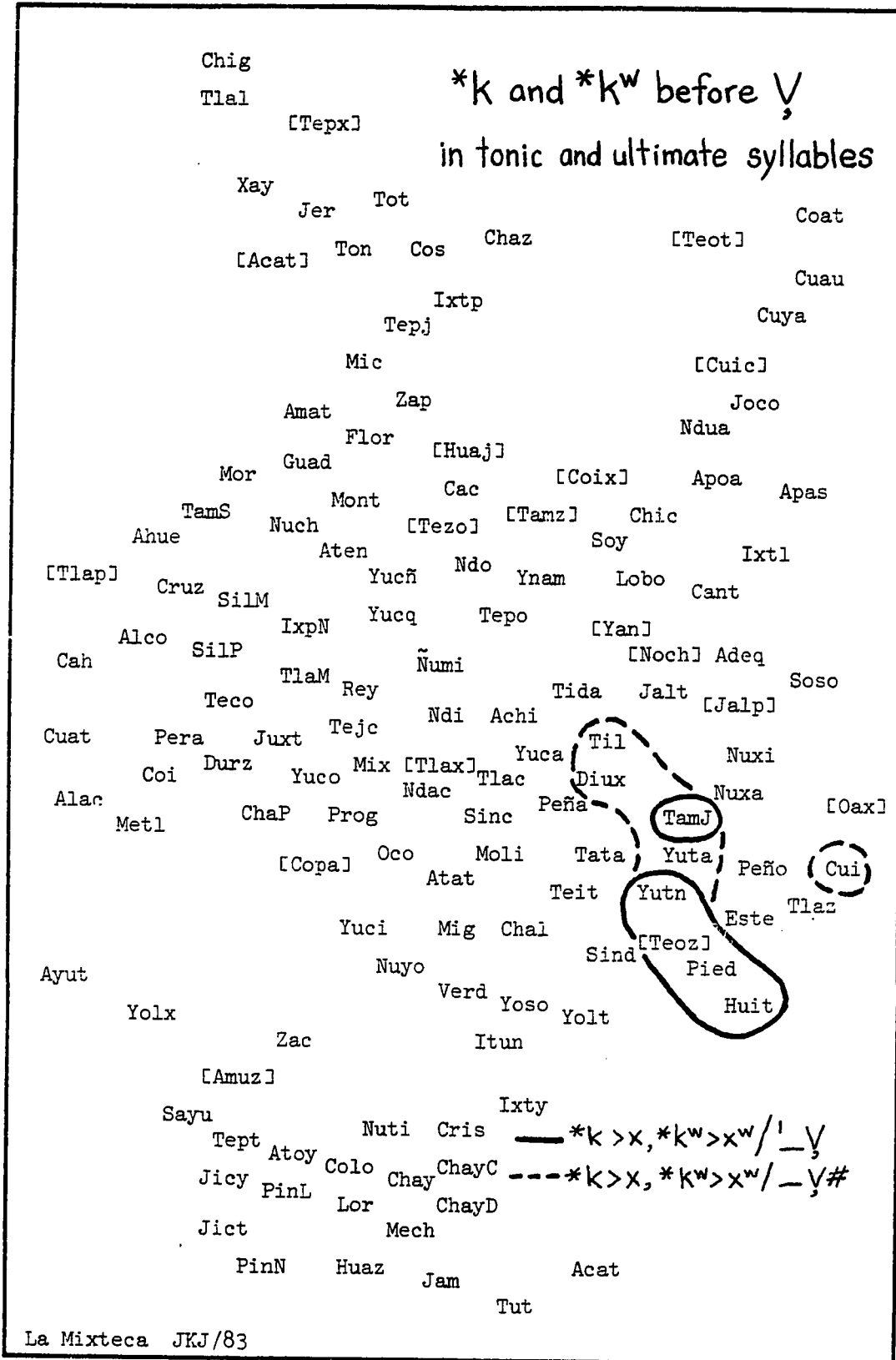
Peripheral voiceless obstruents *k and labialized *k^w also share parallel phonological developments; they fricativize to x and x^w, respectively, preceding nasal vowels. These developments are characteristic of a small region of the southern Mixteca Alta, perhaps coincident with the area of the Post-Classic señorío of Teozacoalco (see Map V-7). The occurrence of these fricativized reflexes for *k and *k^w in the far northeastern Alta town of Cuyamecalco would seem to indicate a special relation between this town and the Teozacoalco innovation sphere.

As discussed in the reconstructions for *u, there are quite a few instances of k^w which are ultimately derivable from multimorphemic combinations of proclitic ku plus a vowel-initial couplet. These may be

Map V-6. Developments of *t before Nasalized Vowels



Map V-7. Developments of *k and *k^w before Nasal Vowels



even more common than previously considered, as I continue to uncover etymologies and developmental histories of words with both k^w and k reflexes.

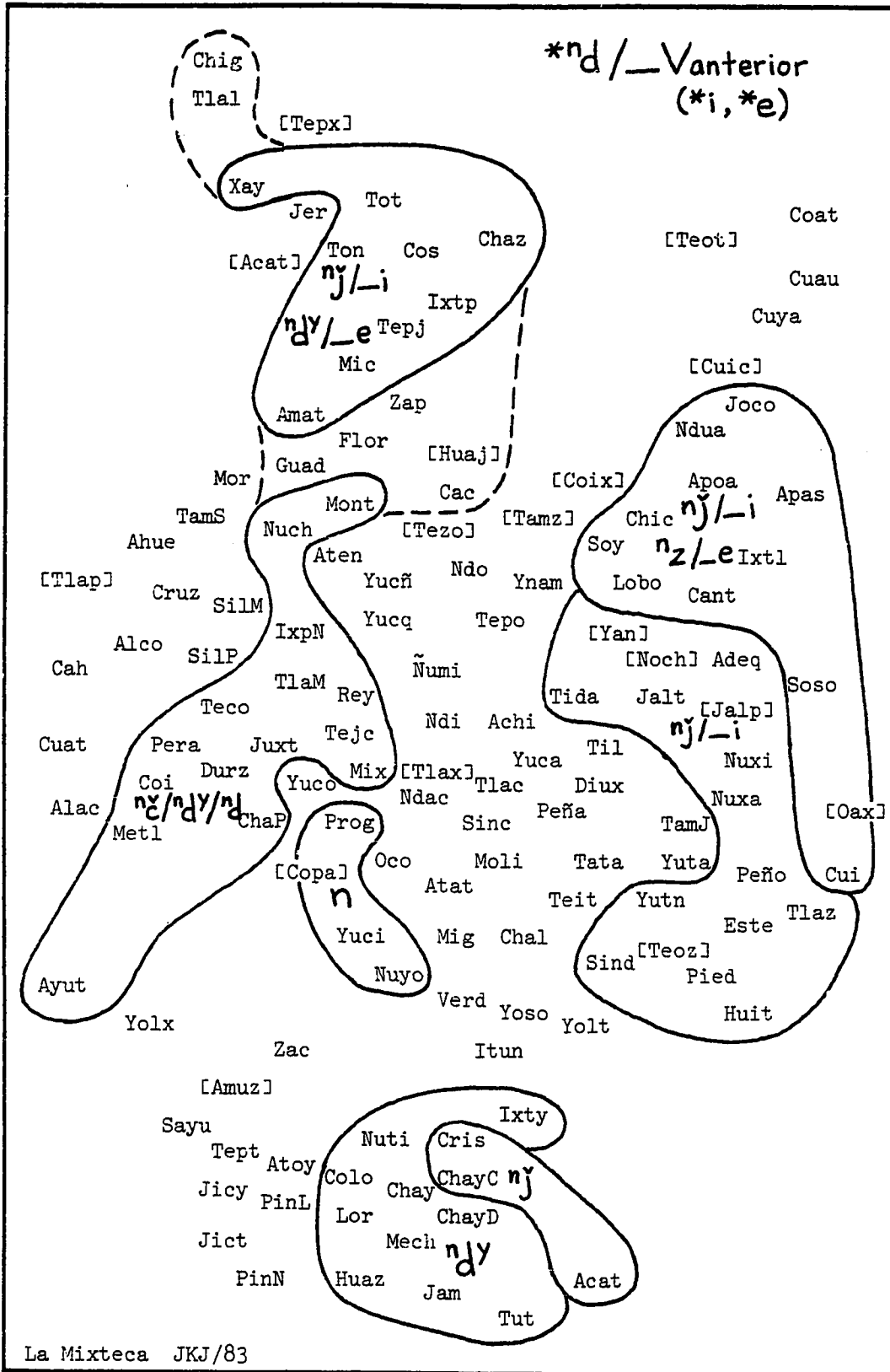
The remaining consonantal obstruent, voiced prenasalized alveolar *ⁿd, shares patterns of development with *t, as already mentioned. Although *ⁿd was a fairly frequent unit, it did not precede inherently nasalized vowels; it could, however, follow glottalized tonics, a feature of distribution it shared with the other voiced consonants, *w, *y, *l and *n (which are otherwise all continuants).

Major reflexes of *ⁿd include the widespread development of palatalized and/or fricativized segments before front and high vowels, yielding ⁿd^y, ⁿdz, ⁿj, ⁿz, ⁿt, ⁿc and ⁿç reflexes, and the reduction to nasal continuant form n in a few towns (effecting a merger between *ⁿd and *n), and the development of ⁿs reflexes before *i, again in the Puebla region. Map V-8 shows the development of fricative and palatalized reflexes for *ⁿd.

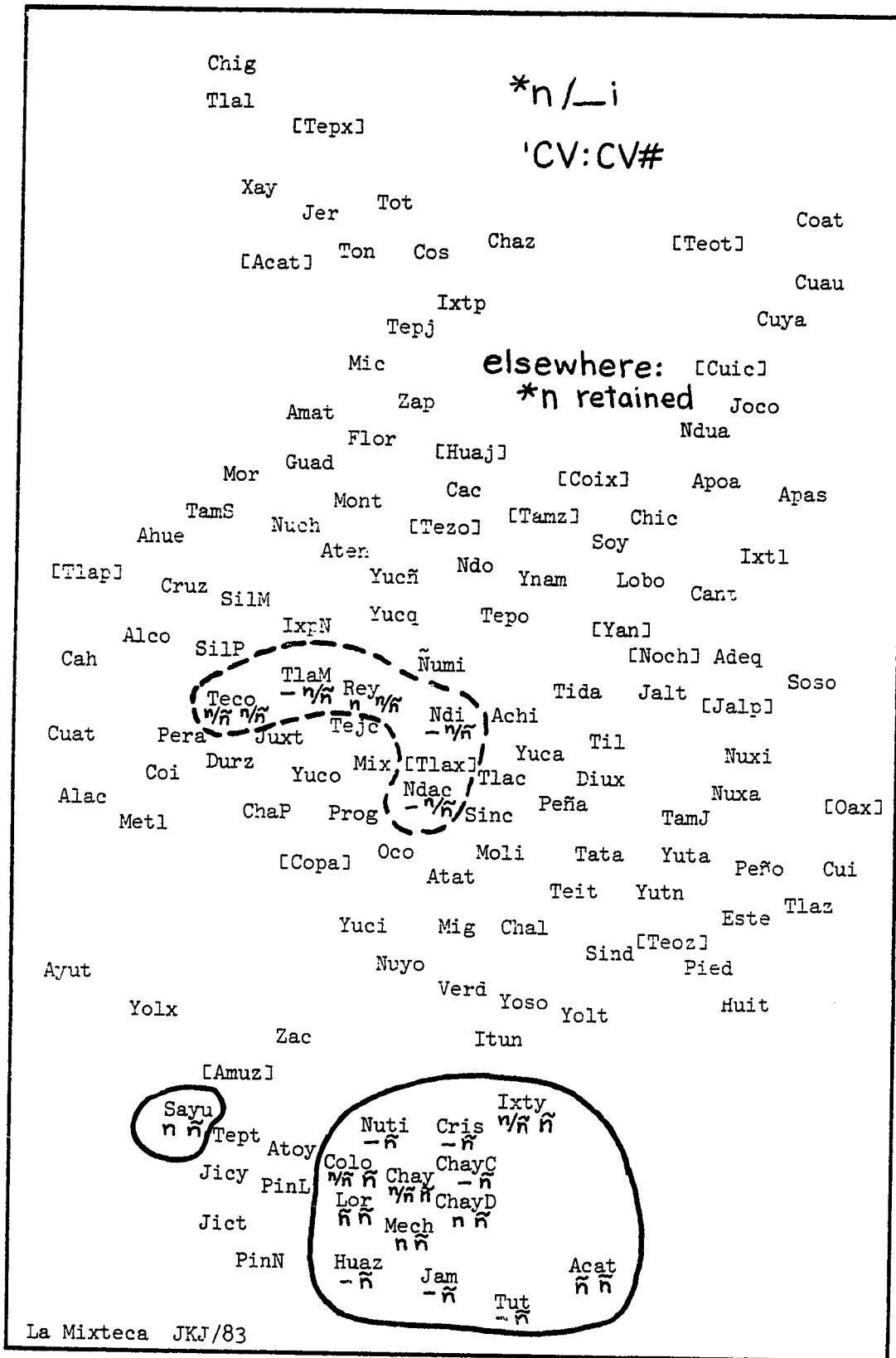
The nasal continuant *n is one of the most stable of Proto-Mixtec units, very little affected by later phonological developments and retained unchanged in almost all contexts throughout the Mixteca. Although *n was distributionally limited with respect to following vowels, where no contrast is seen between oral and nasal vowels, it shows few other restrictions of occurrence, and was a frequent and functionally very important unit in Proto-Mixtec. Within a restricted area of the Coast, principally the east Coast, a palatalized reflex, ⁿi, occurs for *n before front vowels (*i and sometimes *e and *i), parallel to the palatalized developments associated with *t, *s and *ⁿd (see Map V-9).

The eastern Coast region in which this feature is strongest coincides with the sixteenth century señorío of Tututepec. This area has

Map V-8. Developments of *ⁿd before Front Vowels



Map V-9. *n before *i in Tonics and Ultimas



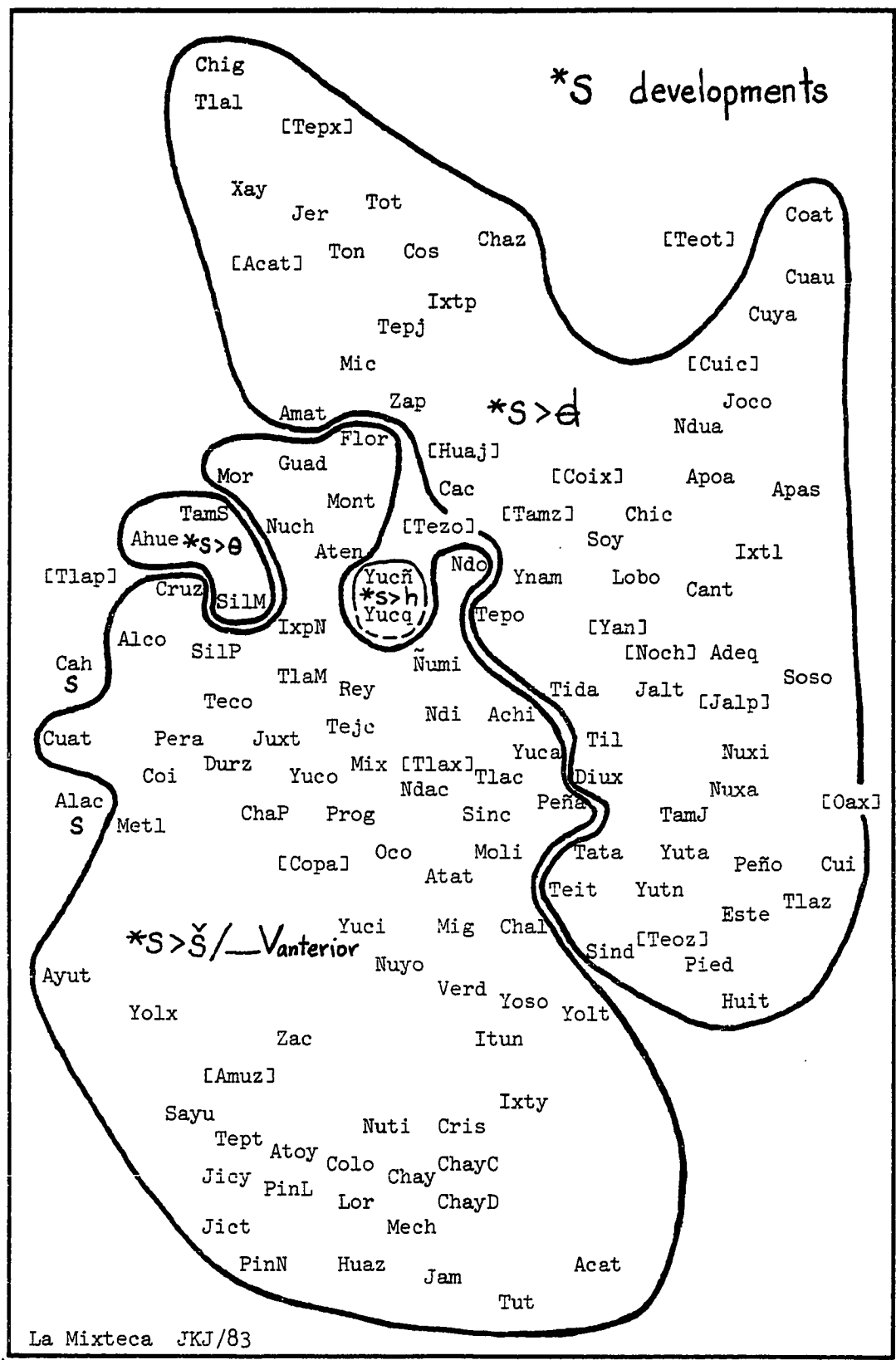
many special dialect features with more or less coincident isoglosses.

The two voiceless continuants, *s and *x, present a confusing array of modern reflexes, many of which merge with other Proto-Mixtec units during the evolution of the various modern phonological systems. Both *s and *x have fricative reflexes of š before high front *i, and either š or s before front *e or high *i. In some parts of the Mixteca *s develops into voiced interdental fricative ǎ (written dz in Colonial sources); this innovation neatly divides the Mixteca into two halves, eastern and northeastern Alta plus Puebla versus western Alta, Baja and Coast (see Map V-10). A marginal area on the Puebla-Baja frontier has either voiceless interdental fricative θ or a voiceless velar fricative which is here always recorded as h, to distinguish this modern reflex of *s from *x and its derivatives. In general it shows lighter friction than the true velar fricative [x].

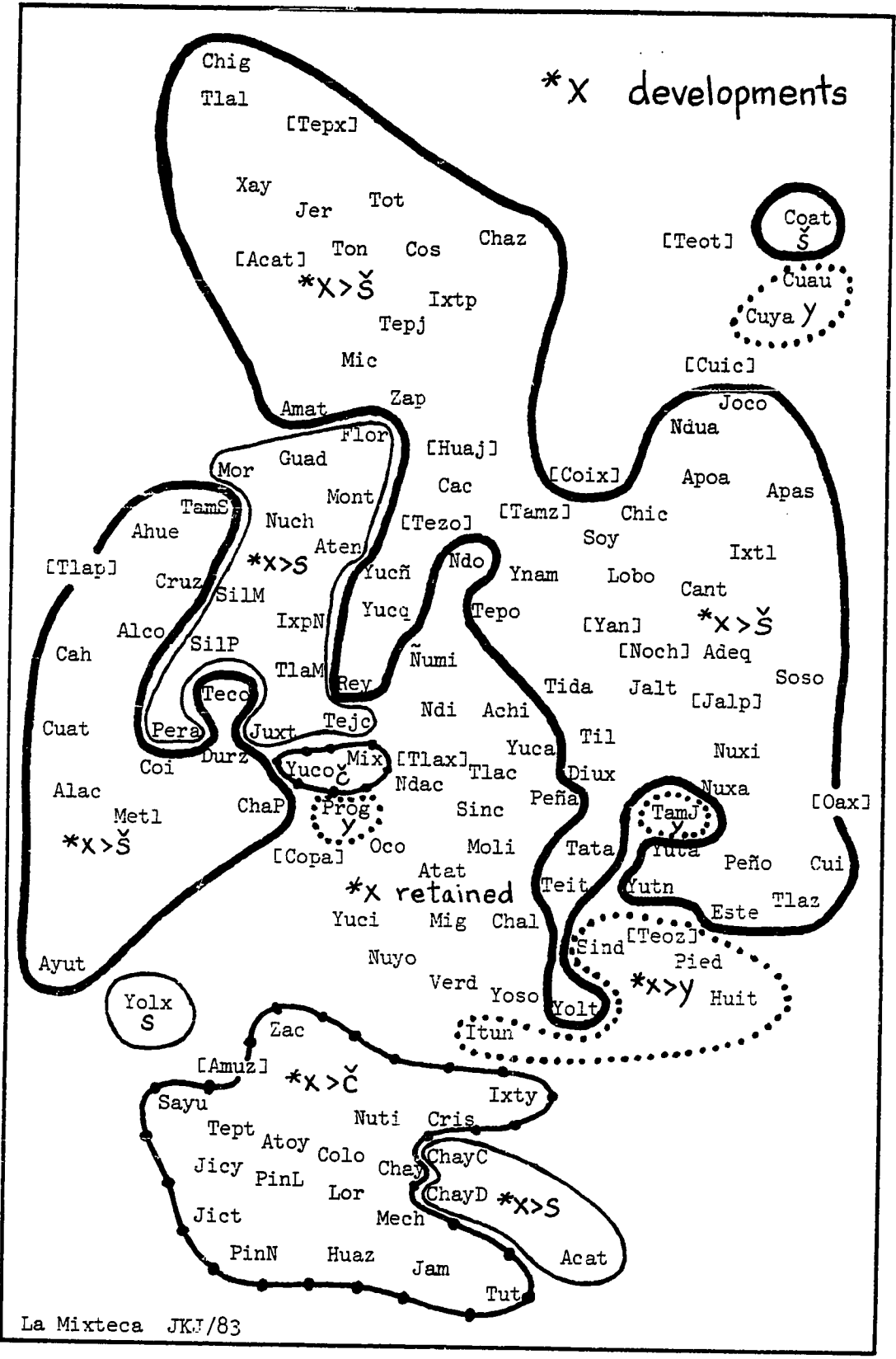
Still another division of the Mixteca into clearly defined areas is achieved by the developments of *x. More specifically, affricated č reflexes are characteristic of the Coastal dialects and of San Juan Mixtepec in the central Baja, exclusively, while the rest of the Mixteca developed the aforementioned š and s reflexes, except for the western Alta, where original x was retained (see Map V-10 for s/ǎ developments; Map V-11 for *x developments; Map V-10 and V-11 for development of š and s reflexes from *s and *x).

The developmental stages and regional characteristics of the modern Mixtec fricative and affricate series are discussed in more detail in Bradley and Josserand (1978, 1982) and will be presented here in some detail in the concluding chapter, in the context of rule ordering and the establishment of developmental stages.

Map V-10. Phonological Developments of *s



Map V-11. Phonological Developments of *s



The Proto-Mixtec Vowel System

Mixtec Vowel Correspondences

Proto-Mixtec's six vowel system was doubtless an intermediate stage between other adjustments. The front vowel *e was apparently weakly distributed even in Proto-Mixtec, and almost completely disappeared in a merger with *a during the period of diversification, leaving only sporadic remnant and highly conditioned instances of e in modern dialects as evidence of its prior existence. But the reconstruction of *e is also supported by various patterns of consonantal palatalizations which occurred before the merger. Some modern instances of e are attributable to reflexes of *a in palatal environments.

The back vowels *o and *u appear to have neutralized their contrast in nasal environments, and other developments further merge *o with *u in the environment of the semivowel *w. This results in deficient distributions for o, but a fairly strong u in the modern varieties. However, *u was also affected (depleted) by sequences with *w, *y, and certain other vowels.

The high vowels *ɨ and *i have fallen together in most modern Mixtec vowel systems, sometimes conditioned by position within the couplet. Both of these units were well distributed and carried a heavy functional load in Proto-Mixtec times; their collapse has made modern i an unusually overloaded phonological unit. It has in turn been affected, principally by the semivowels *y and *w, and in certain sequences with other vowels these syllables are the sources of new manifestations of u and e (and perhaps of other vowels as well). Both *i and *ɨ have been important as conditioning environments for the palatalization and/or fricativization of preceding consonants (mostly alveolars).

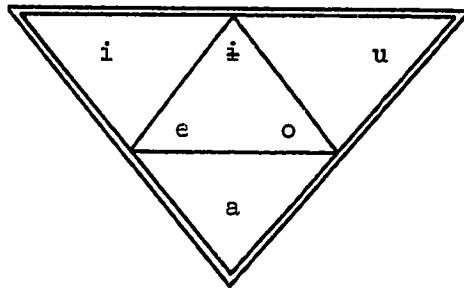
The reflexes associated with *a are among the most regular of all the vowels, showing correspondences of identity uniformly throughout the Mixteca, except in a few highly specified environments. These exceptions are nonetheless difficult to untangle because of the tightly interwoven relationships between certain sequences of units (usually involving *y). Many of the details given for these subsets of correspondences are clearly hypothetical, or "best guesses" for the moment. Obviously more cognate sets of the requisite phonological forms would allow generalizations to be made which are not justifiable with these data.

Prosodic features associated with vowel nuclei, such as nasalization, glottalization and tone, will be less fully described in this study. Since tone was not registered in all the data sources, nor was phonetic nasalization always indicated, and since both require careful internal analyses for sound comparative work, these features will be studied separately in the future. They do not appear to affect the phonological development of segmental units. Glottalization of vocalic nuclei is closely tied to tone, and this aspect of glottalization will likewise not be covered, but the presence or absence of glottalization in modern varieties can be seen in a comparison of the cognate sets involving forms with glottal stop ʔ. Couplet final ʔ has been lost everywhere except in Ayutla and Zacatepec Mixtec; the loss of couplet medial ʔ is much rarer, and is characteristic only of a few towns in the northern Baja.

Proto-Mixtec Vowels

The Proto-Mixtec vowel system was constructed of six vowel qualities arranged into four paradigms which contrasted in prosodic features of nasality and glottal closure (plain oral *v, plain nasal *v̄, checked

oral *V? and checked nasal *V?). The six vowel units fall into two fundamental sets, traditionally called the inner and outer triangles (Pike 1947:167-169; Longacre 1957:23ff). The following diagram represents my own version of the relationship between these two triangles:



Strong, or outer triangle vowels *i, *u and *a enjoyed greater freedom of occurrence in terms of Proto-Mixtec morphological structure and processes, and consequently carried a somewhat heavier structural load, i.e., they were more common, more frequently utilized in Proto-Mixtec to distinguish vocabulary items.

Each of these strong vowels bears a special historical relation with one of the weak, inner triangle vowels *ī, *e and *o. The major phonological developments for vowels include partial or total mergers between these pairs of inner and outer triangle vowels. Only one major merger between strong vowels occurs in Mixtec diversification, that of *u with *i in certain environments, but there is an important merger associated with each pair of inner and outer vowels: *ī merges with *i, *o merges with *u, and *e merges with *a. There are also examples of counter-mergers, where the strong vowels develop weak vowel reflexes, or weak vowels merge with other weak vowels, in certain very specific environments, but these are special cases, limited in geographical extent as well as in phonological importance.

Although there would seem to be a clear trend towards reduction of the Proto-Mixtec six vowel system to one with fewer structural contrasts

on the basis of these diverse mergers, in fact only one vowel, *i, has been completely lost in any modern variety of Mixtec, producing five-vowel systems in most of the western half of the Mixteca. But of the remaining vowels, *e has lost considerable ground, and has been reduced to a rare unit with very limited distribution in most modern varieties. And *o remains a weak unit in most areas, often neutralized with respect to *u, especially in nasal contexts.

The pairs of companion vowels can be defined in terms of shared phonological features, in the same way as the features of nasality, glottalization and centrality distinguish the higher-level groupings. Although more economic feature analyses are surely possible with a more rigorously generative framework, three features--rounding, height and frontness--seem to be important for describing the Proto-Mixtec vowel system and the phonological processes important in vowel developments during Mixtec diversification. While any vowel quality could appear as nasal or non-nasal (oral), or as checked or non-checked (plain), the six contrastive units (vowel qualities) are distinguished by a four feature matrix:

CHART V-5

FEATURE MATRIX FOR PROTO-MIXTEC VOWELS

	*i	*ị	*u	*o	*a	*e
Central	-	+	-	+	-	+
Round	-	-	+	+	-	-
High	+	+	+	-	-	-
Front	+	-	-	-	-	+

The lowest-level feature, frontness, is clearly not necessary to distinguish the six vowels, but it is an important feature for the description of processes affecting vowels and of environments which condition consonantal developments. The features of roundness and height effectively serve to justify the pairings between strong, outer triangle (- central) vowels and weak, inner triangle (+ central) vowels: *i and *ɨ are both high and non-round; *u and *o are the only two round vowels, and *a and *e are both non-round and non-high. It is interesting to note that using this feature matrix, *a is the most unmarked, or neutral, vowel of the six, a fact not unimportant in understanding its notable stability in comparison to the other vowels.

The direction of most mergers is from the marked to the unmarked category; thus the inner triangle vowels (positively marked for the feature of centrality) merge with their companion outer triangle vowels, which are unmarked (or negatively marked) with respect to the feature of centrality. There are also mergers from marked to unmarked categories in the case of the two higher-level prosodic features, nasality and glottalization.

While some vowels may acquire nasality through processes of regressive assimilation, they do not become inherently nasalized, and are usually not identical to structurally nasal vowels, in terms of phonological distribution and morphophonemic features. But inherent nasalization is lost in some contexts, particularly among Coastal dialects, thus effecting a merger between nasal (marked) and oral (unmarked) vowels, again in the direction of reduced markedness. Although this phenomenon is not treated in detail in the vowel reconstructions, it is exemplified by data from the Coastal towns in the following cognate sets, where final nasalized vowels denasalize in *(C)VCY couplets when the ultimate

syllable consonant is not *n, *w or *y (see the following forms in Appendix II):

8 *sit̥i? 'nariz', 10 *yet̥i? 'cerca', 16 *ⁿdux̥e? 'vomita', 17 *sux̥e? 'flojo', 43 *yex̥i? 'jícara', 48 *sik̥o? 'huipil', 66 *suk̥u? 'cuello', 72 *yak̥i^w? 'armadillo', 103 *tas̥u? 'gavilán', 109 *yux̥e? 'masa', 124 *wix̥i? 'frío', 125 *ⁿdix̥e? 'huarache', 130 *as̥i? 'sabroso', 133 *wis̥i? 'dulce', 134 *wit̥i? 'ahora', 151 *lax̥e? 'chachalaca', 167 *ⁿdix̥i? 'ala', 180 *yuk̥u? 'surco'.

Nasalization is apparently not lost in any other contexts, i.e., in geminates or in couplets with medial nasal or semivowel (probably because these semivowels have strengthened the nasal environment by assimilating nasality themselves, becoming m or ñ as the case of their origin dictates.

Similarly, glottalization of vocalic nuclei, another marked category, is lost in some contexts and in some regions. The loss of final syllable glottalization is most pervasive, and occurs everywhere except in two relatively isolated Mixtec towns: Tepango, in the municipio of Ayutla de los Libres, Guerrero (the most western Mixtec settlement), and Zacatepec, Oaxaca, a town in the piedmont intermediate between coastal Mixtec and the Mixteca Baja, isolated from other Mixtec communities by adjacent Trique and Amuzgo populations. These two towns apparently independently retain couplet-final glottalization, and while they do not agree in every instance, the correlation between their reflexes with respect to presence or absence of the final glottal is very high. It is on the basis of these two towns' reflexes that glottalization is reconstructed for ultimate as well as tonic syllables in Proto-Mixtec couplets.

Note that as in the case of nasality and many other features, the loss of markedness is primarily associated with ultimate syllables, while tonic syllables generally retain the potential for more phonologi-

cal contrasts. But loss of tonic syllable glottalization can also be documented in certain contexts and for a very few towns along the Puebla-Mixteca Baja frontier (Tepejillo and Micaltepec, in the state of Puebla, and Cacaloxtepec and Ixtapan in the state of Oaxaca), as well as occasionally in one southwestern Alta town (Monte Verde). Cacaloxtepec and Micaltepec most regularly lose tonic syllable glottalization; all *(C)V[?]CV couplets become (C)VCV, and even glottalized geminates *(C)V[?]V may show very weak or no glottalization (complete loss is more frequent in Micaltepec).

Cognate sets which demonstrate this phenomenon are 34 *yu[?]we 'hilo', 97 *le[?]yi 'sobaco', 153 *lu[?]u 'chico', 177 *yu[?]u 'yo', 144 *ⁿdá[?]yi 'grano', 24 *ⁿde[?]yu 'lodo', 120 *xe[?]ⁿde 'cortar', 65 *ka[?]nu[?] 'grande', 47 *o[?]we 'salado', 128 *si[?]wa 'cacao', 13 *se[?]ę 'manteca' (and many others).

The specific distributional characteristics of the six vowels have been mentioned in preceding sections, and will be more amply discussed in each vowel reconstruction. However, a chart of tonic and ultimate syllable combinations of vowels found in a sample of 594 Proto-Mixtec forms is very revealing of the overall functional distributions of the vowels (Chart V-6). Obviously the most frequent combinations are of like vowels, including both geminate *(C)V[?]V sequences and non-geminate repeats *(C)V[?]CV. Geminates and repeats account for about 55% of all vowel occurrences in this sample. Strong, outer triangle vowels are also overwhelmingly more common in all combinations of dissimilar vowels (all of these dissimilar vowel sequences occur in *(C)V[?]CV canons, since there are no combinations of dissimilar vowels without an intervening consonant in Proto-Mixtec monomorphemic couplets). With regard to the sample, *i occurs as the first vowel in couplets with dissimilar vowels 74 times, and as second vowel in such couplets 98 times; *u occurs as first vowel 57 times and

CHART V-6

TONIC AND ULTIMATE SYLLABLE VOWEL COMBINATIONS IN PROTO-MIXTEC:

FREQUENCIES IN 594 RECONSTRUCTED FORMS

Final syllable vowel		O U T E R			I N N E R		
		*i	*u	*a	*ị	*ọ	*ẹ
O U T E R	*i	ii 49	iu 18	ia 27	ịị 0	iọ 22	iẹ 7
	*u	ui 29	uu 37	ua 3	ụị 0	uọ 0	uẹ 25
	*a	ai 44	au 19	aa 78	ạị 6	aọ 0	aẹ 3
I N N E R	*ị	ịị 4	ịu 2	ịa 3	ịị 70	ịọ 0	ịẹ 0
	*ọ	oị 7	oụ 0	oạ 1	ọị 0	oọ 68	oẹ 2
	*ẹ	eị 15	eụ 19	eạ 4	ẹị 0	eọ 1	eẹ 31

as second vowel in 58 forms, and *a occurs as first vowel 71 times and as second vowel 36 times. Among the inner triangle vowels, *e occurs in couplets with dissimilar vowel sequences considerably more frequently than either *ị or *ọ; there are 37 instances of such couplets with *e in the tonic syllables, and 37 more with *e in the ultimate syllables. But tonic *ị occurs in only 9 forms and tonic *ọ in only 10 forms, while

these two vowels occur in final syllables of couplets with dissimilar vowel sequences only 6 and 23 times, respectively.

Combinations of a strong, outer vowel with another outer vowel account for 139 instances of all dissimilar vowel sequences, while combinations of dissimilar weak vowels are almost non-existent (only three examples in the corpus of 594 forms). Combinations of inner vowels with outer vowels account for 116 forms, about equally divided between those with the strong vowel in the tonic syllable (63 forms) and those with the strong vowel in the ultimate syllable (53 forms).

Outer vowels are more frequent than inner vowels in sequences of dissimilar vowels. But inner vowels are more frequent than outer vowels in geminate and repeat sequences. This suggests that the latter, geminate and repeat sequences with inner vowels, may have their origin in Proto-Otomanguean **CV roots, lengthened in Proto-Mixtec to fit the couplet canons.

In terms of functional loads, however, there is not so great a difference between inner and outer triangle vowels. The most frequently occurring vowels are *i (which is found in 22.7% of all possible vowel occurrences in the sample) and *a (22.6% of all possible occurrences), but *u (15.9%), *o (14.2%), *ɨ (13%) and *e (11.4%) are not far behind.

PROTO-MIXTEC VOWEL RECONSTRUCTIONS

The 29 correspondence sets presented in this chapter are based on a corpus of 188 cognate sets, with data from 120 Mixtec towns (plus two extra data sources for one of the towns). These cognate sets, with their Proto-Mixtec reconstructed forms, appear in Appendix II. It was originally my intention to limit the cognate sets (and consequently the reconstructions) to monomorphemic couplets, but a few multimorphemic forms do appear in the sets presented in Appendix II. The majority of these are verbs, whose citation forms appear to be monomorphemic couplets, but which invariably carry an aspect marker of some kind, in the form of initial consonant (and sometimes vowel) alternants or tone changes, which differentiate the incompletive, completive and future stems. A few others are much more apparently two-morpheme constructions, usually composed of a couplet plus an atonic, single syllable clitic, most frequently a proclitic. Those most suited for analysis within the present framework are constructions of proclitic plus couplet; if there is an initial consonant in the tonic syllable, these couplets can be treated independently of their satellites, but if the couplet is initiated by a vowel, it is often difficult to sort out the tonic syllable correspondences after the confusing effects of morphophonemic reduction of proclitic and original couplet nucleus to a single new bisyllabic couplet. Occasionally these multimorphemic couplets were not recognized as such until quite late in the analysis, and since some were important because of the ultimate syllable contrasts they contained, they have been retained in the cognate sets, with their complex nature noted in the Proto-Mixtec reconstructions.

The cognate sets were chosen to account for, insofar as was possible, the major environments corresponding to all the previously reconstructed units (using the Bradley and Josserand 1978 and 1982 reconstruction). The cognates were then inspected to select the correct phonological reflex in each environment of each reconstructed unit. These reflexes were entered on master sheets with their corresponding environments. Several cognate sets were used to support each proposed correspondence set. These preliminary sets were then reviewed to establish regularity of phonological correspondence; that is, to be able to cite a single phonological reflex in a stateable environment, for each variety of Mixtec in the sample.

When the several cognates selected all yielded the same reflex, it was possible to generalize to a single regular reflex for that environment in that variety of Mixtec. These generalizations were compared to the generalizations for the other environments associated with the same proto-unit, and when the generalized reflexes followed exactly (or very nearly) the same patterns, the environments were combined, or grouped, to enable an even more comprehensive statement of the regular correspondences for that unit.

If the preliminary correspondence sets did not yield uniform reflexes for any significant number of towns, then these mixed reflexes were more carefully analyzed with regard to possible conditioning environments, and more cognate sets were chosen to supplement the newly specified environments. Unusual etyma were closely examined to account for their phonological form. When the selection of environments finally produced uniform reflexes for each town, then the definitive set of phonological correspondences was assembled, with the reconstructed unit to which it was assigned, and with the specification of environments neces-

sary to account for each distinct pattern of reflexes. Although only vowel reconstructions are presented here in detail, the consonant units have also been reconstructed for Proto-Mixtec, as is apparent in the reconstructed forms found in Appendix II and throughout this study. Essentially the same cognate sets were used to make the consonant reconstructions as were necessary for the vowel reconstructions, so that the data necessary for justification of the consonant reconstructions are readily available in Appendix II.

The modern Mixtec vowel reflexes found in the following correspondence sets, while seldom being uniform reflexes of identity, still are limited to essentially the same inventory of phonological units as were found in Proto-Mixtec. That is, few "new" vocalic units have been introduced into any modern variety of Mixtec, but redistributions of the existing vowels in lexical items and in phonological environments have created many correspondences of non-identity.

Assigning these correspondence sets to particular proto-units is possible because of the characteristic geographical distributions of particular reflexes. In terms of the (possible) origins of particular modern reflexes, the following rules of thumb can be established:

1. Modern sets with i reflexes are attributable to three different Proto-Mixtec vowels: sets deriving from *i will show either correspondences of identity (all i) or reflex sets showing i alternating with \emptyset (zero, loss) or u; but *ɨ is reconstructed for sets where i reflexes alternate with ɨ and e reflexes; and *u is reconstructed for sets showing both i and u reflexes but in different distributions than the first case (*i), and usually also containing fronted ü reflexes.

2. Modern sets with ɨ are almost always attributable to *ɨ; correspondence sets show reflexes of ɨ alternating with i and e, and

occasionally with u, although these are more problematic and may ultimately be assigned to *u. Many modern systems have no i reflexes whatsoever, since they have merged *i with *i and/or with *e.

3. Modern sets with u reflexes derive from several sources: *o frequently shows modern u reflexes alternating with o; *i may yield some u reflexes, as mentioned above, and some modern u reflexes derive from reductions of final *wi sequences, giving sets with i or ∅ reflexes alternating with u. All other sets with u reflexes derive from *u, whether they are sets with correspondences of identity (all u), or sets where u reflexes alternate with ü, o, e and/or i reflexes.

4. Modern sets of correspondences which contain e reflexes also derive from a variety of proto-units, but a few of them actually reflect original Proto-Mixtec *e, which merged almost completely with *a in most systems. Sets derived from *e usually show a majority of a reflexes with some e reflexes; a few sets attributable to *e regularly show e reflexes alternating with a few a. Sets where e alternates with i and i reflexes derive from *i, and some few sets with occasional e reflexes alternating with mostly u reflexes derive from *u.

5. Modern sets with a reflexes are almost all correspondences of identity, attributable to *a. If the correspondences show a few scattered e reflexes, they probably derive from *e (see above). A very few sets with mostly e reflexes but with some a reflexes are attributable to phonological developments of *a in palatal environments.

6. Modern correspondence sets with o reflexes are usually derived from either *o or *u. Sets with correspondences of identity (all o) are attributable to *o, as are sets where o and u alternate in certain patterns. Other sets with both o and u reflexes, but which usually contain ü, i or i reflexes as well, are derivations of *u.

7. A few unusual vowel reflexes, such as ü or ĩ, occur in some modern varieties of Mixtec; these rare reflexes are always attributable to one of the six Proto-Mixtec vowels, derived from some special conditioning environment or from some general phonological process, such as fronting. These seem to be mostly attributable to *u, and appear primarily in the Mixteca Baja dialects.

The following presentation of Proto-Mixtec vowel correspondence sets is organized by assignment to the six reconstructed vowels. The vowels are arranged in pairs which group an outer triangle vowel with its inner triangle companion, beginning with high vowels *i and *ĩ, followed by round vowels *u and *o, and concluding with the remaining pair, essentially unmarked vowels *a and *e.

Each proto-unit is accompanied by the several sets of correspondences which support the reconstruction, each one specifying a phonological environment, and each supported by regular correspondences from several etyma. The environments are discussed individually, and overall distributional patterns of both the reconstructed unit and the variant reflexes or allophonics of that unit are noted. Accompanying maps present the generalized reflex for each town, and indicate the extent of certain reflexes (particularly when these represent innovations). Other maps compare the distributions between reflex sets with differing environments, or between sets attributable to different proto-units. Developmental rules are proposed to derive the modern reflexes from the proto-units, and innovating areas are identified.

Most of the symbols used in the correspondence sets and maps are explained either on the charts and maps themselves or in the accompanying text, but the conventions and symbols used throughout this study are also summarized in Appendix I and the introduction to Appendix II.

Proto-Mixtec *i

PM *i high front vowel. There are five sets of correspondences attributable to *i. Four represent final occurrences of *i, following *y or following *w; the remaining set accounts for all other occurrences of *i, both oral and nasal.

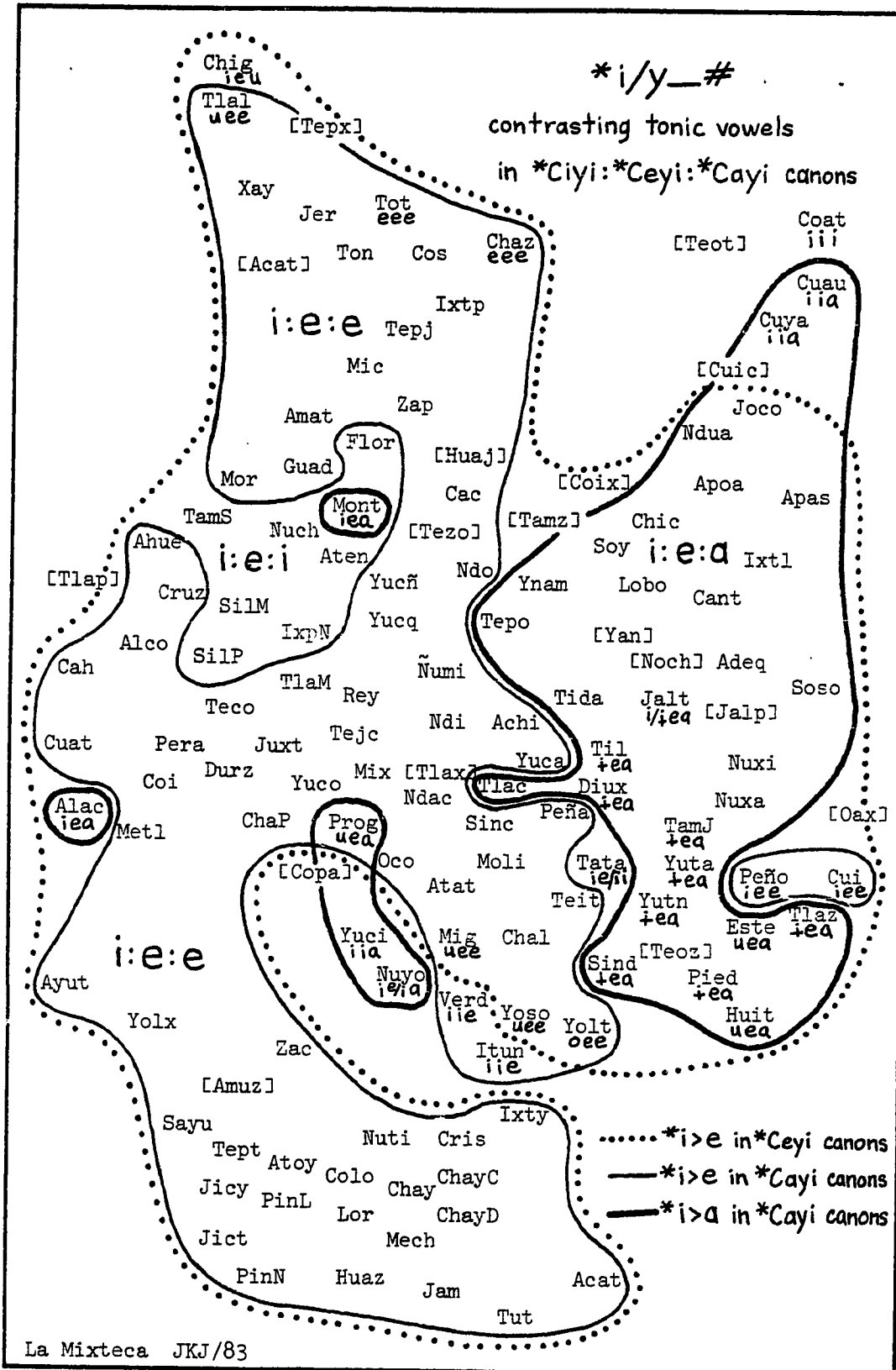
Proto *i was a frequent and well-distributed unit, and has remained as one of the most important vowels in all modern varieties of Mixtec. It combined freely with all consonants, except that the semi-vowel *y apparently did not precede *i in tonic syllables, and there are very few etyma whose reconstructed forms show *yi sequences in ultimate syllables; these are discussed in the first correspondence set attributed to *i. Although these sequences of *yi and also final sequences of *wi have in many places been eliminated by phonological processes which caused either the loss of the vowel or a change in its quality, overall *i has been little affected by phonological change, except to be strengthened by the results of mergers which produce even more occurrences of i in modern systems than are found in Proto-Mixtec.

Correspondence Set 1 presents the reflexes for final *i when this is preceded by *y. It had previously been asserted that *y did not occur before front vowels *i and *e (Bradley and Josserand 1982:285); a review of more data indicates that this proposed restriction is not a valid one for Proto-Mixtec. Sequences of *y followed by either *i or *e are not very common in modern varieties of Mixtec, and were likewise infrequent in Proto-Mixtec forms, but they do occur in several reconstructions. Some irregularities in distribution seem to remain, however: *yi sequences appear only in couplet-final syllables (in this

corpus), while *ye sequences occur mostly in tonic syllables and in ultimate syllables only when preceded by *e as tonic vowel (163 *k^weye 'despacio', 114 *weye 'este', 52 *teye 'hombre'). These anomalous distributions in Proto-Mixtec may be harbingers of the structural limitation which does seem to be valid for many modern Mixtec dialects, prohibiting sequences of *y plus anterior vowels.

The reflexes found in Set 1 reveal an unusual pattern of regular but mostly non-identical developments which vary in accordance with the tonic syllable vowel present in the monomorphemic couplet in which they occur as final syllable. The three canons represented in this corpus are *Ciyi, *Ceyi and *Cayi, and there seems to be a tendency towards vowel harmony throughout the Mixteca, where the final *i is retained only when the tonic vowel is also *i, but *i becomes e when the tonic vowel is either *e or *a. In some areas, notably the northeastern and eastern Alta, *i develops a reflexes in canons with tonic vowel *a. This backing and lowering of what in Mixtec is a strong, outer triangle vowel is quite unusual and runs counter to the general fronting tendencies common to Mixtec. The reconstruction of this *Cayi canon is discussed in detail in the section introducing *a and *e (Introduction to *a and *e; Maps VI-30 and VI-31); even though problematical, it seems to be a valid reconstruction, thus the unusual developments of *i in this canon must be a result of special circumstances. If the explanation of vowel harmony is not sufficient to account for the a reflexes, then perhaps they are later developments from e reflexes, which were affected by the merger of *e with *a; this would indicate a prior loss of the medial *y, since the *y is postulated as a protective environment inhibiting the merger and preserving many such instances of *e (see the Introduction to *a and *e). The i reflexes found in the

Map VI-1. Developments of *i in Ultimate Syllables following *y



southeastern Alta and the sporadic u reflexes throughout the Mixteca are not here treated.

Map VI-1 presents the generalized reflexes for final *i following *y, contrasting tonic vowels *i, *e and *a. Although the situation is confusing, some developmental hypotheses are suggested by the three main patterns of reflexes. Except for the uniform retention of *i in all three canons found in distant northeastern Coatzospan (and possibly in Tataltepec in the Alta), the oldest pattern would seem to be that found in the central Baja, where e reflexes develop only in *Ceyi canons (an almost pan-Mixtec development), but *i is retained in *Ceyi and *Cayi canons. The next development, which apparently did not reach the central Baja region, would seem to be an extension of this lowering rule to *Cayi canons, producing final e reflexes in both *Ceyi and *Cayi forms, while retaining *i in *Ciyi forms. This is the predominant pattern now found over most of the Mixteca, excepting in the aforementioned central Baja and the eastern and northeastern Alta (although these latter two areas most probably conformed to this pattern during an earlier stage, before developing final a reflexes in *Cayi canons).

The third major pattern shows a different reflex for each canon: retained *i in *Ciyi canons, development of harmonic e in *Ceyi canons, and development of harmonic a in *Cayi canons. This set of reflexes, postulated as the most recent of the developments of *i here discussed, is found over most of the eastern Mixteca Alta and in several isolated areas, which may represent out-migrations from the innovation sphere (San Agustín Tlacotepec, San Miguel Progreso, Yucuhiti and Nuyoo in the western Alta, San Sebastián del Monte in the Baja, Alacatlazala in Guerrero). The center of innovation for the a reflexes is most likely the Nochixtlán Valley, since that area is also indicated as the probable

4 *k+iw_j? cuatro 5 *t+ow_j pluma

Northeast

Adeq u -	Apas i i	Apoa i i	Cant u ⁿ u	Chic i i	Coat i i	Cuau i i	Cui i i	Cuya i i	Ixtl i i
Jalt u -	Joco i i	Lobo u ⁿ u	Ndua i i	Soy ɔ/u ɔ/u	Soso u -	Ynam - -			

Alta

Achi u u	Atat u u	Chal u u	Diux u u	Este i i	Huit t u	Itun u u	Mig u u	Moli u i	Ndi u u
Ndac i i	Ndo u ⁿ u	Nuxa u u	Nuxi u u	Nuyo i i	Numi u u	Oco i i	Peña u i	Peño i i	Pied t e
Prog i i	Sind i e	Sinc u i	TamJ t t	Tata u u	Teit u u	Tepo i i	Tida u u	Til o u	Tlac u i
Tlaz i i	Verd u u	Yolt u u	Yoso u u	Yuca u u	Yuci i i	Yuta t i	Yutn i i		

Northwest

Amat i i	Cac i i	Chaz i i	Chig i i	Cos i i	Flor i i	Guad i i	Ixtp i i	Jer i i	Mic i i
Tepj i i	Tlal i i	Ton i i	Tot i i	Xay i i	Zap i i				

Baja

Ahue i i	Alac - i	Alco i i	Aten i i	Ayut i i	Cah i i	ChaP i i	Coi i i	Cruz i i	Cuat i i
Durz i i	IxpN i i	Juxt i i	Metl i i	Mix i i	Mont i i	Mor i i	Nuch i i	Pera i i	Rey i i
SilM i i	SilP i i	TamS i i	Teco i i	Tejc i i	TlaM i i	Yolx i i	Yucñ i i	Yuco i i	Yucq i i

Costa

Acat i i	Atoy i i	Chay i i	ChayC i i	ChayD i i	Colo i i	Cris i i	Huaz i i	Ixty i i	Jam i i
Jict i i	Jicy i i	Lor i i	Mech i i	Nuti i i	PinL i i	PinN i i	Sayu i i	Tept i i	Tut i i

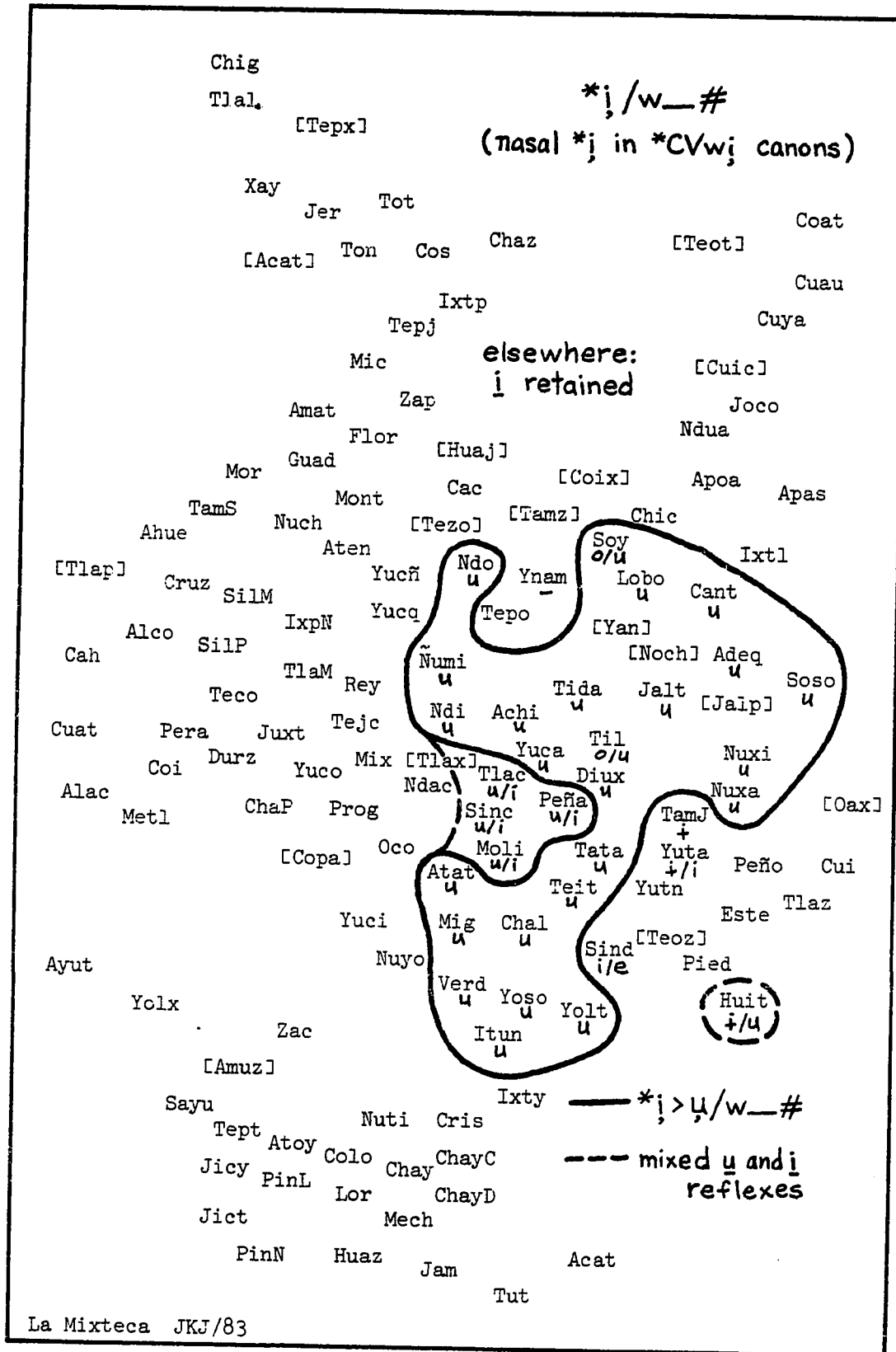
Zac
i i

origin of the merger of *e and *a, which produced a reflexes from *e.

Correspondence Sets 2, 3 and 4 present the reflexes of *i when it occurs in ultimate syllables preceded by the semivowel *w, that is, sequences of couplet-final *wi. Reconstructions and developments of final *wi fall into three subsets, according to whether the final *i is nasal or oral, and for oral canons, according to the quality of the preceding vowel in the tonic syllable, which in this corpus includes only *a and *u.

Reconstructions with final nasal *i preceded by *w include two etyma: 4 *kiwi? 'cuatro' and 5 *towī 'pluma' (Correspondence Set 2). These etyma give a distinct, well-bounded distribution for the phonological change which reduces the *wi sequence to y, a single nasalized vocalic unit (*wi > y/_ #). This change is limited to what might be referred to as the central Mixteca Alta (Map VI-2), including the Nochixtlán Valley towns, westward to the edge of the Alta (with the notable exception of Teposcolula, see below), and eastward to Sosola, but southward only down the Tilantongo Valley, that is, excluding the eastern Mixteca Alta. The distribution also includes the southern Mixteca Alta centers of San Miguel el Grande and Chalcatongo and surrounding towns, while towns in the western Alta show mixed reflexes. Although this change (*wi becomes y finally) should logically precede the phonological change whereby *w becomes m preceding nasalized vowels (*w > m/_ y), and had previously been considered the earliest phonological development (Bradley and Josserand 1982:289), there are a few points which contradict such a proposition. First, Teposcolula, an important sixteenth century and doubtless earlier center, located well within the sphere of this change (which otherwise shows no exceptions to its area of spread), does not show this change. This might indicate

Map VI-2. Nasalized *i in Ultimate Syllables following *w



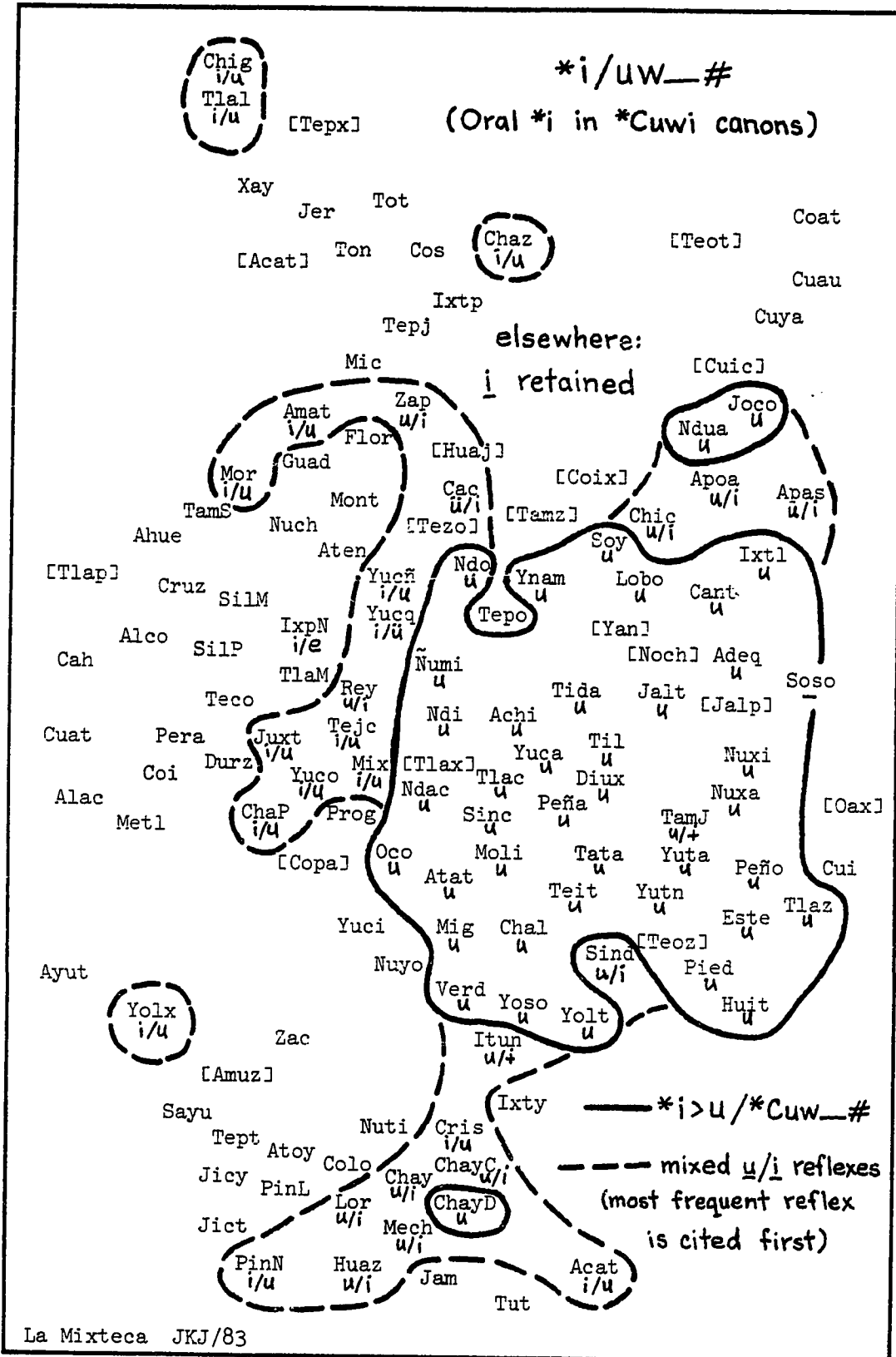
that the change is posterior to the compilation of the Teposcolula vocabulary made in the late sixteenth century. Secondly, the town of Peñoles (in the eastern Alta) also does not show this change, although in most cases its etyma agree with those of Tilantongo, again suggesting a more recent period for the *w_i > y rule. Further expansion of this phonological innovation is presumably blocked by the subsequent change of *w to m before nasal vowels. (Although if m remains an allophonic variant of /w/ this ordering problem can possibly be avoided.)

The remaining etyma with final *wi sequences are those with final oral *i, and these fall into only two sub-types: those preceded by *u (Correspondence Set 3) versus those preceded by *a (Correspondence Set 4). It is not clear why these should be the only sequences encountered, and the absence in this corpus of etyma with oral *Ciwi, *Cewi and *Ciwi sequences may be only accidental.

When the stressed vowel preceding the final *wi is *u, the three etyma examined (3 *yuwi? 'petate', 136 *yu?wi 'tiene miedo', 138 *uwi 'dos') show two basic reflexes (Correspondence Set 3), distributed areally across the Mixteca (Map VI-3): either a retention of *i, or a reduction of the morpheme final *wi sequence to u, producing modern forms with Cuu shapes derived from Proto-Mixtec *Cuwi canons.

The reduction of the couplet-final sequence *wi to the single vowel u is the same as the reduction associated with final nasalized sequences, and the distribution of the reflexes showing this change is also reminiscent of that shown for nasal *i, that is, it is mainly found within the Mixteca Alta. In this case, however, the innovation sphere takes in virtually all of the Mixteca Alta, with fringe areas to the east, northeast, south and particularly to the west all showing the mixed reflexes expected of a still-expanding innovation sphere (Map

Map VI-3. Regular Reflexes for Oral *i in *Cuwi Canons

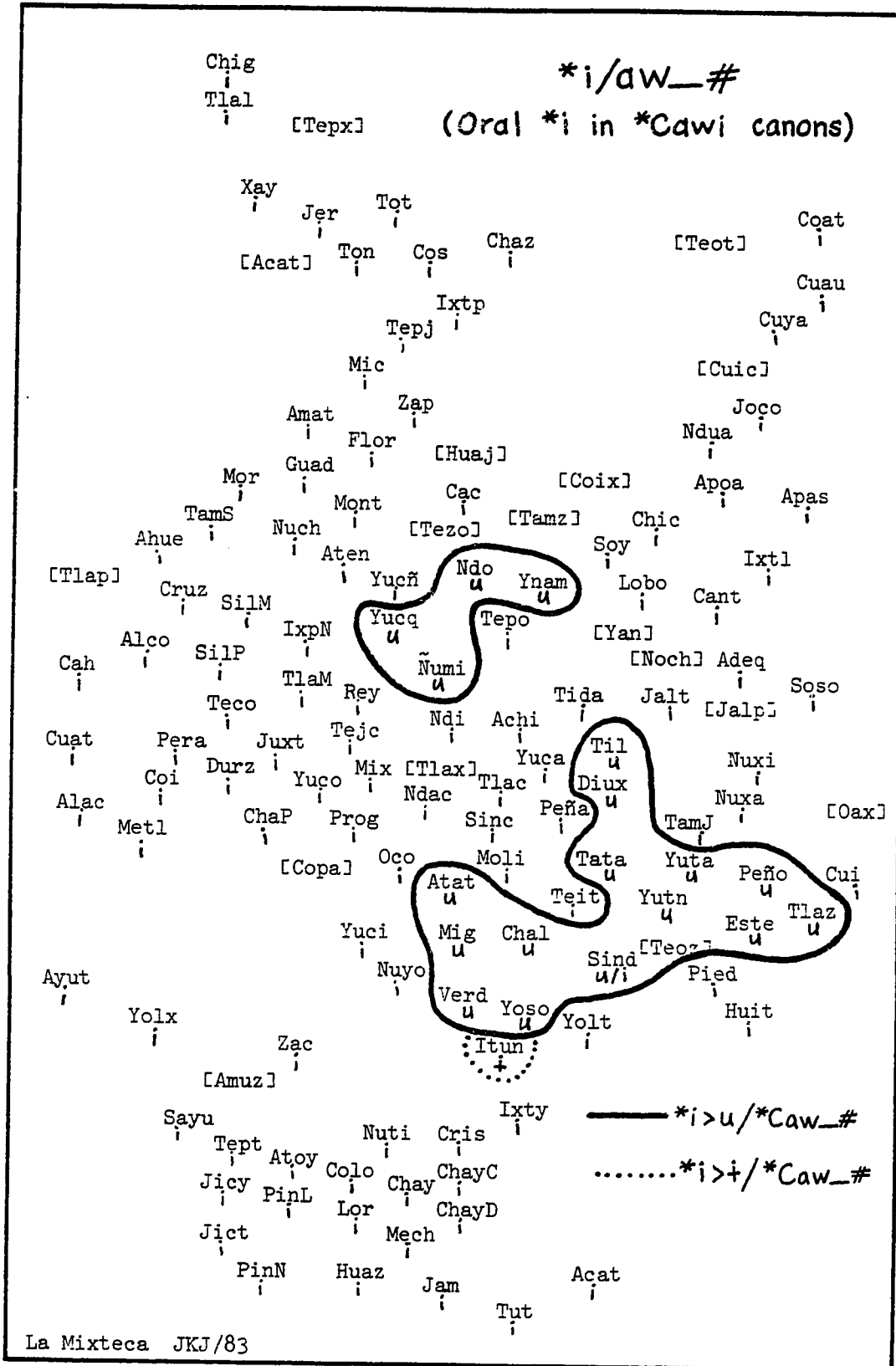


VI-3). In this respect, it is important to note Cuilapa's exclusion from the innovation sphere, which indicates a more recent dating for the change than that previously thought, i.e., posterior to Cuilapa's departure from the Nochixtlán sphere; the same is true for Teposcolula's lack of forms showing this change in the sixteenth century.

On the other hand, the disparate traces of the change as far away as Tlaltempan, Chigmecatitlán and Chazumba in the northwest, Morelia and Amatitlán in the central Baja, Yoloxochitl in Guerrero, and several towns on the coast, are typical of the distributions of earlier rules, where later migrations have taken groups well away from the original innovation sphere. Perhaps knowing more about these specific towns would help resolve the dilemma. The diffusion sphere definitely seems to be undergoing modern expansion, as is evidenced by the areas with alternating reflexes, and at least on the coast the forms showing the reduction to final u seem to be the more modern of the paired reflexes.

The remaining case of final *wi forms, that is, those preceded by the vowel *a in their tonic syllables (Correspondence Set 4), also produce reflexes of final i and u. The four etyma examined here are 1 *sawi? 'lluvia', 137 *ⁿda?wi 'pobre', 2 *yawi? 'maguey', and 135 *yawi 'agujero'. The distributions of these changes (Map VI-4) are, however, significantly different from those of the preceding case, and suggest at least two possible explanations. One proposal would be to consider that the reduction of *Cawi sequences to Cau forms is not the same change as the reduction of *Cwi sequences to Cuu forms, but is instead a distinct innovation. If this is the case, then the area of the innovation sphere is discontinuous, occurring partly in the southeastern Mixteca Alta and partly in the northwestern Alta, but excluding the intervening central Alta. This is a difficult situation to explain,

Map VI-4. Regular Reflexes for Oral *i in *Cawi Canons



although a migration of the four northwestern towns from the larger southeastern area is a feasible proposal. But it seems on the whole unlikely that either group of towns is derived from the other, or that out-migrations from the original innovating area would all relocate in a single contiguous area.

A second, and perhaps better, explanation might be that this development is, in fact, related to the preceding change (the reduction of *C_uwi to C_u forms), and that these two areas associated with the reduction of *C_uwi to C_u forms represent an extension of the rule to further environments (the equivalent of hypercorrection). The two areas of *C_uwi reductions can consequently be considered as fringe areas adjacent to the innovation center itself. They are, in fact, mostly within the main area of the *C_uwi to C_u innovation sphere, although on its edges (except for the Tilantongo valley penetration, but this is also frequently a conservative area). If they are thus interpreted as being secondary to the original innovation center, their distributions aid in pinpointing that same innovation center; my suggestion would be the Nochixtlán Valley as represented by Cántaros, or Achiutla (or even Teposcolula, if the change occurred at some date posterior to the sixteenth century).

Correspondence Set 5 accounts for the remaining instances of *i and its nasalized counterpart *ĩ (that is, in all environments not already specified), contrasting tonic versus ultimate syllables and giving representative examples with different preceding or following consonant and vowel combinations. These are presented on two separate pages showing oral (Set 5a) versus nasal (Set 5b) *i, but both are considered to be part of a single correspondence set, given the uniformity of the reflexes, which mostly show correspondences of identity; that is, *i is retained as i in these etyma.

The exceptions can generally be attributed to morphophonemic processes such as the loss of or change in the quality of the vowel *i in the environment of semivowel *y and of *x, as in the forms 19 *xiyo? 'comal' and 74 *k^wiya 'año'. Another such process, which accounts for couplet initial clusters of fricative s (or sometimes š) plus voiceless stop t, often results in loss of *i. In this case reconstructions such as 15 *sita? 'tortilla' produce modern forms such as ista and išta by metathesis, and these may further reduce to sequences such as staa and štaa, respectively. Similarly, 8 *siti? 'nariz' gives modern etyma of isti, išti, stij and štij, etc. Such forms are characteristically found in the western Alta, and in a few towns in Guerrero. An extension of this morphophonemic rule to forms with s or š derived from proto *x rather than from *s, and with consequent loss of *i, can be seen in the modern etyma corresponding to 18 *xito 'cama', again in a few towns from Guerrero (Ayutla, Alcozauca, Yucunicoco).

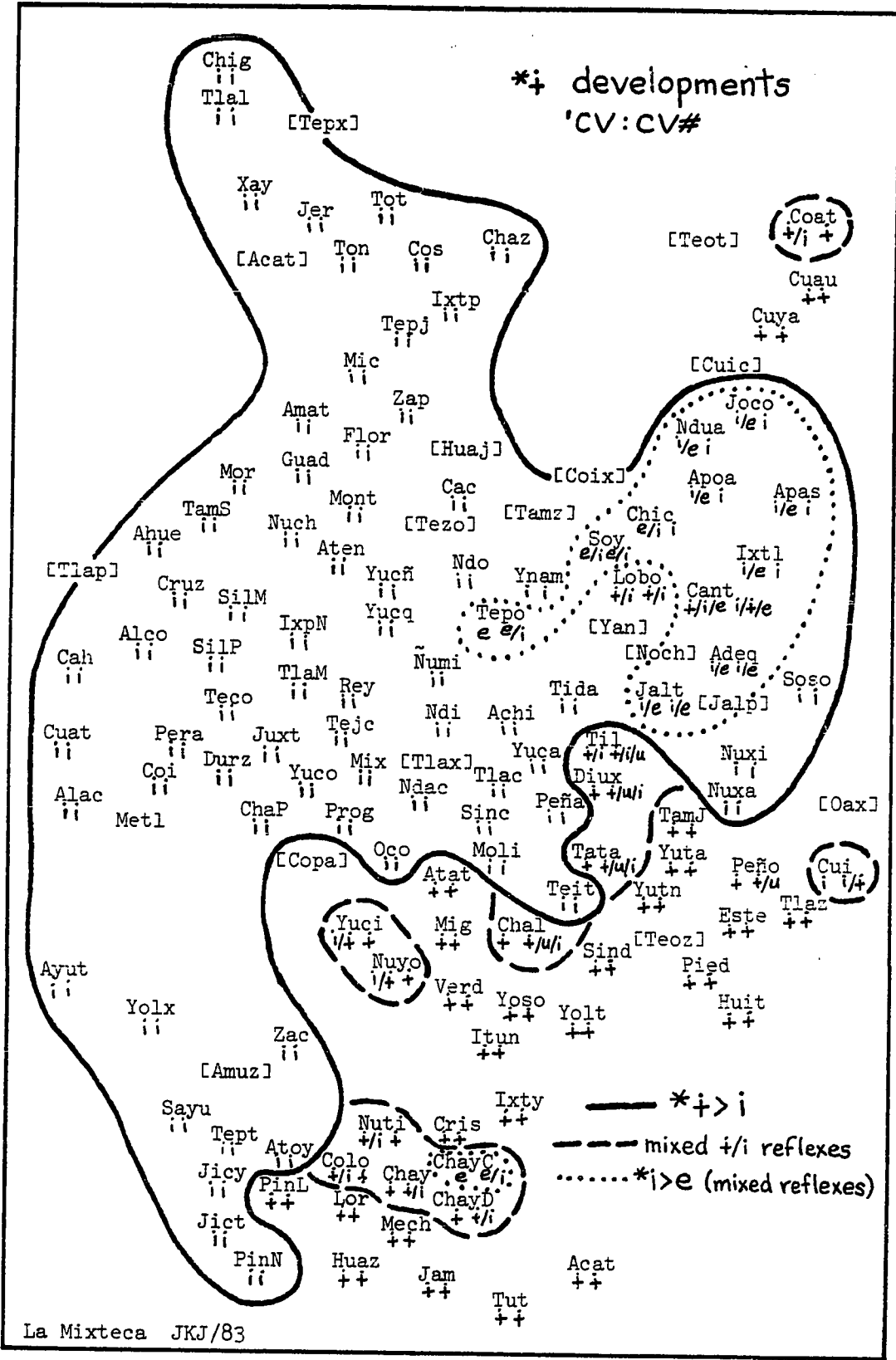
Proto-Mixtec *ɨ

PM *ɨ high central vowel. There are two sets of correspondences attributable to *ɨ, which account for the principal patterns of reflexes on the basis of the contrast in correspondences between tonic versus ultimate syllables within the couplet (Correspondence Sets 6 and 7, respectively). That is, syllable position within the couplet is the relevant feature for determining the reflex patterns in the case of *ɨ.

The so-called "sixth vowel" in the Proto-Mixtec vowel system, *ɨ belongs to what has been described by Pike (1947:167-169) and Longacre (1957:23ff) as the inner vowel triangle (*ɨ, *e, *o), and as such, its freedom of occurrence was markedly more constrained than that of the outer triangle vowels (*i, *a, *u). Although *ɨ does not seem to have had any phonotactic restrictions regarding preceding or following consonants (as is true for both *i and *u with respect to semivowels), it was limited in terms of combinations with other vowels within the monomorphemic couplet. That is, although repeats (sequences of identical vowels) are common, whether geminate or interrupted by a consonant (40 *yɨɨ? 'marido', 36 *ⁿdɨ?ɨ? 'se acaba', 45 *yɨyɨ 'tejón', 94 *kɨsɨ 'olla', etc.), sequences of unlike vowels where one of the vowels was *ɨ are much less common, and the combinations of vowels are limited to *ɨ plus one of the outer triangle vowels, *i, *a or *u (130 *asɨ? 'sabroso', 95 *ⁿdɨsi 'aguardiente', 128 *sɨ?wa 'cacao', 79 *ku ɨku 'coser').

In most modern varieties of Mixtec *ɨ has merged with *i in all environments (Map VI-5); this is true for all of the Mixteca Baja, including Puebla and Guerrero, for the western coastal towns, and for most of the central Mixteca Alta, roughly up to and including the Achiutla Valley, with even more easterly extensions through the Nochixtlán Valley

Map VI-5. Regular Reflexes for *i, Tonic Vs. Ultimare Syllables



to Sosola and Cuilapan. Towns in the southern Alta and in the Tilantongo valley show encroachment of the merger with i reflexes usually appearing first only in one syllable, be it tonic or ultimate.

An alternate form of the merger produces e reflexes from *i; the reflexes are frequently mixed with i developments, however, according to complex patterns of rules of distribution. The e correspondences are most common in sixteenth century Teposcolula, and are also found (mixed with even more i reflexes) in nearby towns of the Nochixtlán Valley and the Apoala areas. Also e reflexes are uniformly given in one of the modern sources for San Agustín Chayuco, a town on the east coast (Josserand, cognate list, 1981); the other two sources for Chayuco (Bradley's 500 list and Pensinger's 1974 dictionary) report ± reflexes in the same etyma, and this retention of *i is in fact the common east coast correspondence. (This e/± alternation is but one of many mixed dialect features found in Chayuco.)

Retention of the sixth vowel is clearly distributionally remnant; that is, the areas showing ± reflexes are not all contiguous, and various are known to be linguistically conservative regions. This retention is characteristic of much of the eastern Mixteca Alta, of the far north-east (Coatzacoapan, Cuauhtémoc, Cuyamecalco), and of the east coast, but almost all towns show some penetration of the innovation, as seen in the admixture of i reflexes, again in very complex patterns. The presence of several phonological rules permitting or blocking the merger, and specifying various phonological environments, results in a jigsaw distribution of subsystems where seldom do more than two or three towns share all the same reflexes.

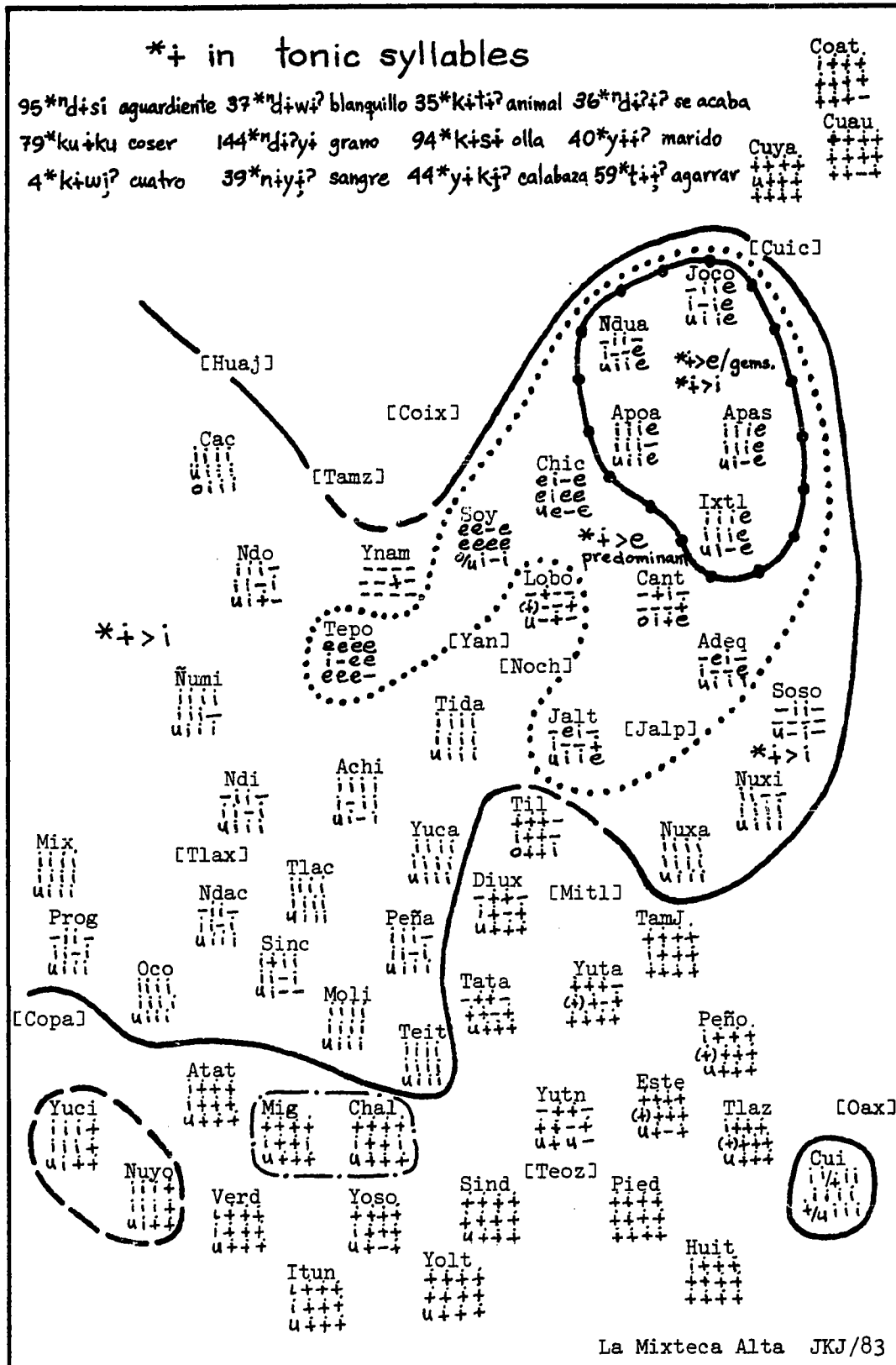
A more detailed inspection of the reflexes for *i found in the Mixteca Alta allows the delineation of a few areas with what might be

called "clear" systems, with storable rules to account for the patterns of correspondences (see Map VI-6 for tonic syllable reflexes and Map VI-7 for ultimate syllable reflexes), but other towns show so many apparent irregularities in their *ɨ reflexes that one must revert to the French dialect geographers' axiom--"each word has its own history"--to explain them. On both of the detailed Mixteca Alta maps, the largest area of common reflexes pertains to the *ɨ > i merger, and covers essentially everything from the Achiutla Valley on west (including Tidaa, Yucuañe and Teita on the eastern edge, and Molinos, Sinicahua, Ocotepéc and San Miguel Progreso on the southern edge, but notably not including Teposcolula, to the north of Achiutla). A separate area of three Alta towns further to the east (Nuxaa, Nuxiño and Sosola) and the Oaxaca valley town of Cuilapa also show essentially the same correspondences. Here there would seem to have been an earlier change of *ɨ to i in certain environments (see below), followed by a later merger of *ɨ with *i producing i reflexes in all other environments.

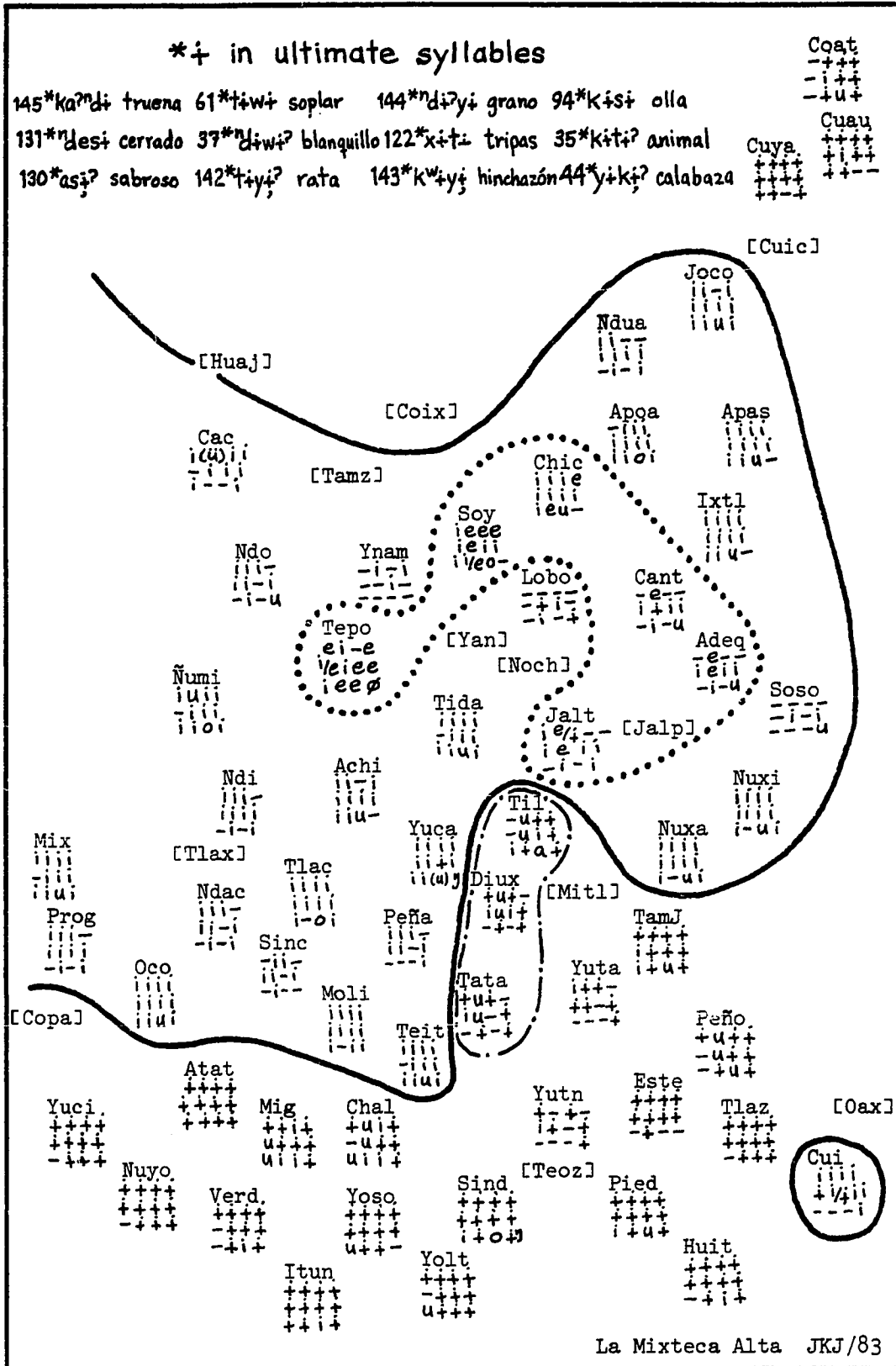
The sixteenth century data recorded for Teposcolula show developments of e for most instances of *ɨ, although there are several etyma with i reflexes (mostly where *ɨ occurred in sequence with a different vowel, or where *ɨ occurred finally after *w). Previously thought to be a unique reflex, or a scribal error (for high central ɨ, which is not found in Spanish), Teposcolula's e reflex for *ɨ has been found in several other neighboring towns.

The Apoala area (Apoala, Nduayaco, Jocotipac, Apasco and Ixtaltepec) shows a different but still regular pattern of *ɨ developments: again *ɨ became u (or sometimes o) in certain environments (4 *kɨwɨ? > kumɨ 'cuatro', 143 *k^wɨyɨ? > k^wiñy 'hinchazón'), but in all geminate sequences *ɨ developed into e (36 *ⁿdɨɨ? > deⁿe 'se acaba', 40 *yɨɨ? > žee

Map VI-6. Developments of *ɨ in Tonic Syllables



Map VI-7. Developments of *i in Ultimate Syllables



or see 'marido', 59 *t_iɨ́? > t_eɛ 'agarra'), while in all other environments *ɨ developed i reflexes (37 *ⁿd_iwɨ́? > ⁿd_iwi or ⁿd_iɨi 'blanquillo', 144 *ⁿd_iʔyɨ́ > ⁿd_iʔi 'grano', 94 *k_isɨ́ > k_id_i 'olla', 95 *ⁿd_isi > ⁿd_id_i 'aguardiente', 130 *as_iɨ́? > a_di 'sabroso'). The intervening towns in the Nochixtlán valley and environs, however, do not show such regular patterns of correspondences (Soyaltepec, Chichahua, Cántaros, Adéquez, Jaltepetongo).

In the southern Mixteca Alta, two subsystems are more or less amenable to generalization: one shared by Yucuhiti and Nuyoo, which are almost always very similar in their reflexes, and the other including San Miguel el Grande and Chalcatongo. The Yucuhiti-Nuyoo reflexes show developments of y (from nasalized *ɨ́) and of i, but both of these are found in tonic syllables only (4 *k_iwɨ́? > k_um_i 'cuatro', and 39 *n_iyɨ́? > n_iɨ́ 'sangre', 61 *t_iwɨ́ > t_iv_i 'sopla'), and even there the merger is blocked by geminate sequences (36 *ⁿd_iʔɨ́? > ⁿd_iʔɨ́ 'se acaba', 40 *y_iɨ́? > y_iɨ́ 'marido', 59 *t_iɨ́? > t_iɨ́ 'agarra') or when *ɨ́ followed *y (44 *y_ik_iɨ́? > ž_ik_i 'calabaza').

San Miguel el Grande and Chalcatongo show still another variety of phonological rules governing *ɨ́ developments. Here *ɨ́ became u in most forms with unlike vowels where *ɨ́ occurred couplet-finally (130 *as_iɨ́? > a_sy 'sabroso', 131 *ⁿdes_iɨ́ > ⁿdas_u 'está cerrado', but contrast the retention of *ɨ́ in 145 *kaʔⁿd_iɨ́ > kaʔⁿd_i 'tronar'), and in forms where *ɨ́ preceded a phonetically nasalized semivowel *w (4 *k_iwɨ́? > k_uy_u 'cuatro'). (Additionally, Chalcatongo--like Tilantongo and Peñoles--has u reflexes in forms which had final *wɨ́ sequences: 37 *ⁿd_iwɨ́? > ⁿd_iu 'blanquillo', 61 *t_iwɨ́ > t_iu 'sopla'.) The merger of *ɨ́ with *i is present in San Miguel el Grande and Chalcatongo only following *y in ultimate syllables (142 *t_iyɨ́? > t_iɨ́ 'rata', 144 *ⁿd_iʔyɨ́ > ⁿd_iʔzi 'grano', 39 *n_iyɨ́ > n_iɨ́

'sangre'; contrast with 44 *yik_ɨ? > žik_ɨ 'calabaza', where ɨ is retained in the tonic) and in geminates following *y (40 *yɨɨ? > žii 'marido'); elsewhere *ɨ was retained (with some non-patterned exceptions).

The rest of the southern and eastern Mixteca Alta towns present correspondences too complicated to describe with compact phonological rules, even when identical patterns of reflexes are shared by more than one town, though in general they retain *ɨ, except where some towns have a variant of the *ɨ > u rule, and occasional occurrences of *ɨ > i. Those towns which show uniform retention of *ɨ in one couplet syllable (tonic or ultimate) show non-ɨ reflexes in the other syllable position (compare Maps VI-6 and VI-7).

As has been noted in the above discussion, there are a number of etyma with *ɨ which develop u reflexes. The patterns of reflexes are irregular, however, and no correspondence set could be constructed to account for them. The etyma most frequently showing these unusual u (or o) reflexes include 4 *kiw_ɨ? 'cuatro', 128 *si^w?wa 'cacao', 75 *si^wk^wa 'ceja' and 143 *k^wi_ɨ? 'hinchazón' (where the final *ɨ often becomes u), although no two of these forms give exactly the same pattern of correspondences for *ɨ developments. There seems to be some association with the semivowel *w (and perhaps with *k^w), and with nasalization, and with sequences of *ɨ with other vowels; compare the reflexes for 37 *ⁿdiw_ɨ? 'blanquillo', 61 *tiw_ɨ 'sopla', 154 *kiw_ɨ? 'día', 127 *siw_ɨ 'nombre', etc., where the identical vowel sequences with intervening *w all produce a single pattern of correspondences different from those discussed here.

Proto-Mixtec *u

PM *u high back vowel. There are nine sets of correspondences attributable to *u, defined by sequential relations between *u and the semivowels *y and *w, between *u and *i (and occasionally other vowels), and by features of nasality, both of *u and of the context in which *u occurs. Because there are so many correspondence sets supporting the reconstruction of *u, a tenth summary set has been added, to give a single final set of generalized reflexes for *u, using numbered environments which correspond to the preceding nine correspondence sets.

Proto *u is another member of the outer triangle of strong vowels (*i, *u, *a), and as such is relatively more stable than the inner triangle vowels (*ī, *e, *o). Although *u is by no means a rare vowel in Proto-Mixtec, its potential occurrences are somewhat reduced by a series of distributional limitations. As has already been mentioned, *u did not follow rounded consonant *k^w or semivowel *w; furthermore there are no occurrences of *u following *x, since *x only precedes front vowels. Geminate sequences of *u are rare except after *y, where both oral and nasal geminates are common; there are also some instances of geminates following *n. However, *u does not occur frequently after *n, and *u contrasts poorly with *o in nasal environments (except after *y), so that it is difficult to establish clearly whether these forms should be reconstructed with *u or with *o.

Additionally, *u occurred in sequences within monomorphemic couplets with certain vowels more readily than with others, regardless of intervening consonants. Combinations of *u with front vowels *i and *e are most common; only identical sequences of *u in both tonic and ultimate syllables occur more frequently. In a sample of 70 Proto-Mixtec

words with reconstructed *u, 19 words showed *u in both tonic and ultimate syllables, giving repeat sequences of the canonical form *CuCu (where C stands for any consonant); another 13 words showed *u in the tonic syllable followed by *e in the ultimate syllable (*CuCe), and 8 words showed the reverse of this sequence, with *e in the tonic syllable and *u in the ultimate, canon *CeCu). Words in the sample showing combinations of *u with *i were equally divided between those with *u in the tonic syllable (9 words of the shape *CuCi) and those with *u in the ultimate syllable (9 words of the shape *CiCu). Geminate sequences of *u uninterrupted by any consonant (*Cuu or *Cu?u canons) account for another 6 words. Combinations of *u with *a are less frequent; only 4 words showed sequences of *a followed by *u (*CaCu), and only one word showed *u followed by *a (*CuCa). This last canon is quite common in modern languages as a result of the merger of *e with *a, which converted sequences of *CuCe into sequences of CuCa. Combinations of *u with the remaining vowels *i and *o are virtually non-existent; only one example of the sequence *CiCu occurred in the sample, and no other examples of the other sequences (*CuCi, *CoCu, *CuCo) have been found in Proto-Mixtec reconstructions of monomorphemic couplets.

Despite the appearance of excessive limitations on the distribution of *u, it was nonetheless a frequently occurring unit in Proto-Mixtec, and has remained an important vowel in almost all modern varieties of Mixtec. Furthermore, the modern high back vowel /u/ has been strengthened by the results of a partial merger between *o and *u, where *o developed u reflexes before *w and in nasal environments. And still another development has contributed to modern /u/; as already discussed under *i, couplet final sequences of *wi were metamorphosed to u reflexes in parts of the Mixteca.

Over most of the Mixteca *u has been retained uniformly as u in all environments where it occurred; it is only in the Mixteca Baja that correspondences of non-identity occur with frequency. Here, however, there are many individual (single town) subsystems created by a variety of very specific phonological rules operating in microenvironments and producing a multitude of subdialects. These give the appearance of non-uniform correspondence sets, but it is not so much the case of sporadic or irregular correspondences (although these too occur in various towns) as of different subsets of patterned reflexes.

There are two competing developments affecting *u in the Mixteca Baja, both also occurring sporadically in the Mixteca Alta. One of these is a fronting process, mostly either to ü or to i (thus producing a partial merger of *u with *i). The other phonological process is the development of o reflexes from *u, which is contrary to the direction of the main merger of *u and *o, where *o yields u reflexes in nasal and labial environments. It seems likely on distributional and other grounds that these two phonological rules are currently active, and are still expanding in scope both phonologically and geographically, as will be discussed in more detail below.

The major conditioning features affecting *u are the semivowels, *y when it precedes *u, and *w when it follows *u; etyma with *yuwV (where V stands for any vowel) sequences are susceptible to conflicting phonological developments. Still another important feature in the conditioning environments is nasality, both of *u itself, and in syllables adjacent to *u, and these features again combine with the semivowels to produce sequences which are susceptible to any of several phonological processes.

The correspondence sets which account for the patterned reflexes

of *u do not represent mutually exclusive environments; because of the special cases of interaction between conditioning features in the environments surrounding instances of *u, it is often convenient for comparative purposes to repeat certain etyma in more than one correspondence set, to show the complex interplay of features other than those specified in the environment under discussion.

The nine environments which specify patterns of correspondences for *u are as follows (this numbering of the environments will remain constant in the following discussion of *u):

1) *u / 'y__ (not before *w); Correspondence Set 8. This environment includes all sequences of oral *yu in tonic (stressed) syllables except when these are followed by the semivowel *w in the ultimate syllable.

2) *u / 'y__w; Correspondence Set 9. This environment accounts for the subset of etyma excluded from environment 1 above. Words with a nasalized vowel in the final syllable are included for possible contrast in reflexes, since the nasalization will pass through the semivowel and may affect the *u in the tonic syllable.

3) *u / y__#; Correspondence Set 10. This environment covers occurrences of oral *u in ultimate syllables with *y as the consonantal onset. In several regions the quality of the vowel in the preceding tonic syllable is also important in determining the resultant reflex of *u; thus sequences of *Cayu may produce different reflexes than sequences of of *Ceyu or of *Cuyu.

4) *y / y__; Correspondence Set 11. This environment parallels the three preceding environments for instances of nasalized *y following *y.

5) *u / __w; Correspondence Set 12. This context includes all etyma with *u in the tonic syllable preceding an ultimate syllable whose onset is *w. Some words appear here as well as in preceding sets, to permit differentiation of conflicting phonological developments in overlapping contexts. Contrasts are between canons with initial *y (*yuwV) and those without--*(C)uwV-- and between nasal and oral final vowels.

6) *u / iC__#; Correspondence Set 13. This context accounts for the interplay between vowels in adjacent syllables, which in the case of *u is most notable when it follows a tonic syllable whose nucleus contains *i. This environment is mutually exclusive with environments 1, 2 and 5 above, but not with environments 3 and 4; although no examples of oral *Ciyu sequences have yet been found, there are several nasalized sequences of *Ciyu which bear comparison with the reflexes appearing in this set.

7) *u / k__+V; Correspondence Set 14. This environment is a special case resulting from the juxtaposition of two morphemes. Here the *u may occur in a proclitic position preceding a bisyllabic morpheme beginning with a vowel (that is, without any consonantal onset separating the vowel of the proclitic from the tonic vowel of the couplet), or the *u may occur as the final vowel of a couplet and be followed by a post-clitic morpheme composed of a single vowel. When such sequences occur following the consonant *k, it is common for *u to desyllabify to w, and the resulting sequences are reinterpreted as unit phoneme /k^w/ followed by a single vowel. This morphophonemic process seems to be motivated by the constant pressure within Mixtec for phonological sequences to conform to the bisyllabic couplet pattern of single consonants and vowels in *CVCV canons.

8) *u elsewhere; Correspondence Set 15. This set groups all in-

stances of nasalized *y except those covered by environment 4 above, i.e., except when *y follows *y. It is likely that further subdivision of this correspondence set into microenvironments would permit more accurate prediction of resultant reflexes.

9) *u elsewhere; Correspondence Set 16. This last correspondence set accounts for all other occurrences of *u not covered by the preceding contextual specifications. Again, it might be possible to discover additional microenvironments which would produce more regular-looking patterns of reflexes, but it would be difficult to do so without greatly increasing the sample of etyma used for those reconstructions. Some attempt has been made nonetheless to cover the different possible sequences of vowels involving *u not already accounted for in the above environments (that is, canons *Cuu, *CuCu, *CuCi, *CuCe, *CuCa, *CeCu, *CaCu).

The generalized patterns of reflexes for *u corresponding to each of these numbered environments are summarized in Correspondence Set 17.

Correspondence Set 8 presents the reflexes for *u in environment 1; that is, stressed syllables of the shape *yu (excepting those followed by *w), based on nine etyma. Three of these reconstructions contain geminate sequences of *u; the others contrast in the following consonant (*y, *t, or *k) or in oral versus nasal vowel in the following syllable. It is immediately apparent that except for the Mixteca Baja, the reflexes show *u retained with great regularity. The very few exceptions do not pattern: two instances of a reflexes (Yuta and San Miguel Progreso in the Mixteca Alta), and five towns with sporadic o reflexes (San Miguel Progreso, Yutanduchi, and Coatzospan in the Mixteca Alta, and Tonahuixtla in the Puebla area). But in the Mixteca Baja, the reflexes are quite

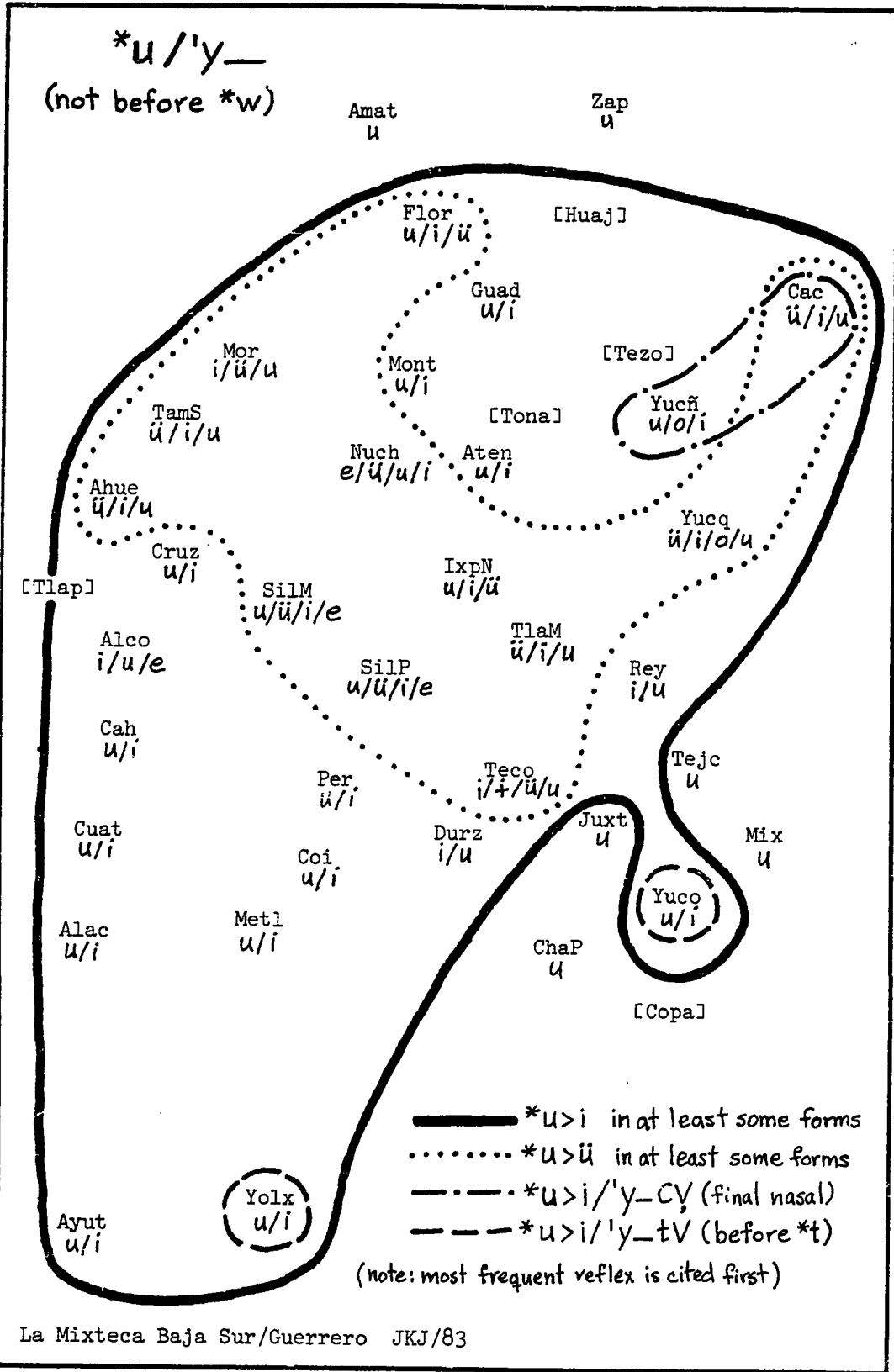
varied, although few clear patterns are discernable.

Map VI-8 presents a resumé of the reflexes for this subset of *u correspondences on a regional map of the Mixteca Baja. Only Amatitlán and Zapotitlán, in the north, and Juxtlahuaca and Mixtepec, with their respective satellites San Pedro Chayuco and Tejocotes, in the south, show uniform retention of *u in this context. All the other towns of the Baja, including Yucunicoco, to the south of the Juxtlahuaca-Mixtepec area, show mixed reflexes with at least some instances of fronted (ü or i) reflexes for *u following *y (in stressed, non-nasalized and non-rounded contexts). All towns within the heavy solid line show at least some instances of i reflexes; the dotted line encloses the area of ü reflexes, generally found in the central and northern Baja, but excluding Atenango and several towns to the northeast. Sporadic o reflexes occur in Yucuñuti and Yucuquimi, and a very few e reflexes occur in Nuchita (2), Silacayoapan-San Martín (1), Silacayoapan-Progreso (1), and Alcozauca (1).

The patterns observed in these data are extremely limited. In the northeast, Cacaloxtepc and Yucuñuti regularly show i reflexes only when the ultimate syllable is nasalized (180 *yuky 'surco', and 179 *yuty 'árbol'). In the south, Yucunicoco and Yoloxochitl show i reflexes only before *t (23 *yute 'río', and 11 *yuty 'árbol'). Otherwise the reflexes in the Baja are unstructured within this environment, but clearly reflect the spread of one or more fronting developments, and I believe that the mixed nature of the correspondences reflects a situation of ongoing innovation, probably towards uniform i reflexes for most of the Baja.

Correspondence Set 9 accounts for *u in the second, complementary environment of stressed sequences of *yu, when followed by *w in the

Map VI-8. Baja Developments of *u following *y in Tonic Syllables

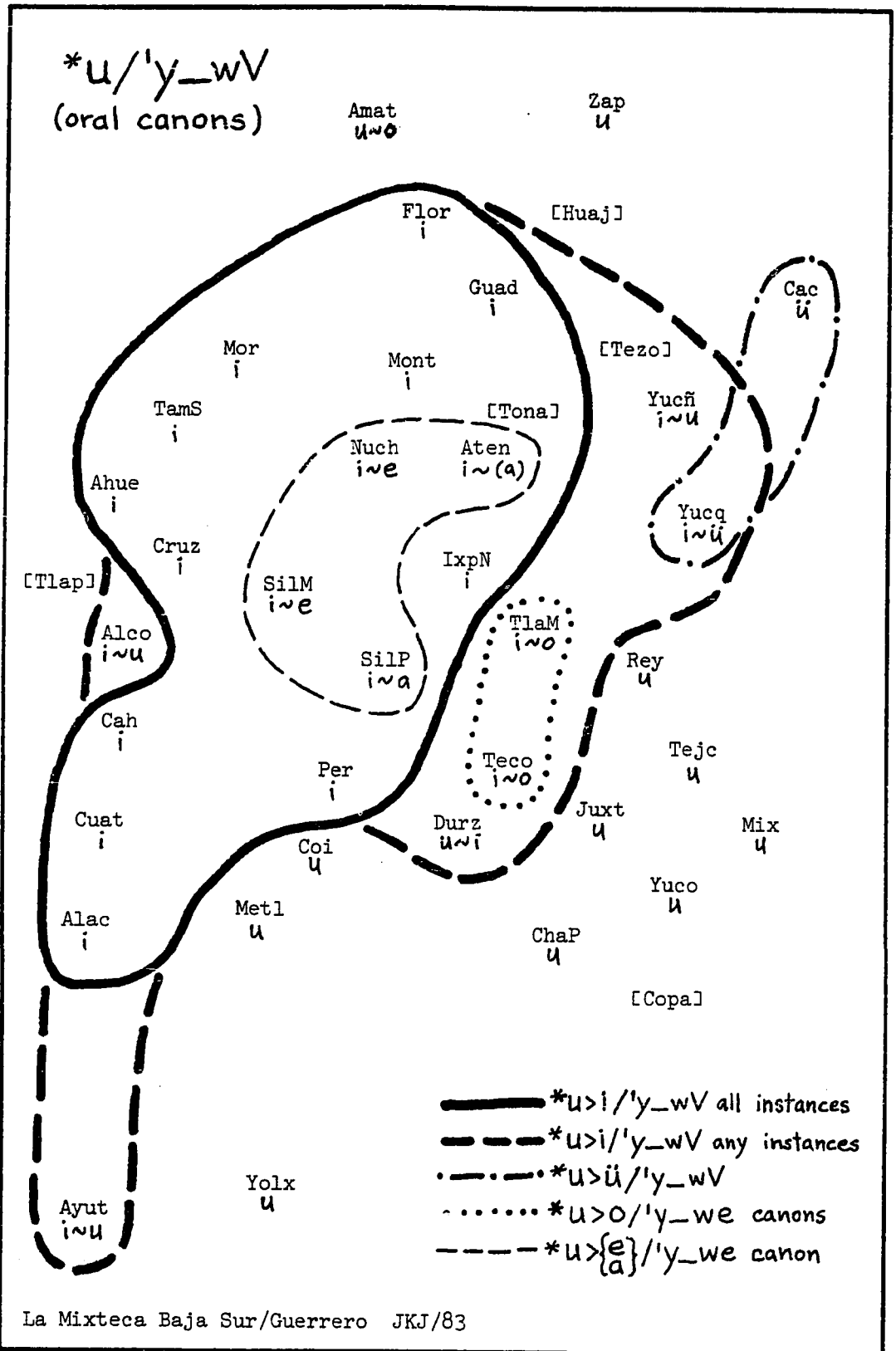


ultimate syllable. Two etyma (3 *yuwi? 'petate', and 136 *yu?wi 'tiene miedo') clearly support this environment; the slightly varied reflexes of a third etymon (34 *yu?we 'hilo') may be due to the second syllable vowel (*e rather than *i). Two more etyma, with nasalized vowels in the final syllable (7 *yuwɛ? 'cera', and 101 *yu?wɛ 'humo'), are presented to show contrasting reflexes in nasal versus oral environments (these forms also appear in Correspondence Set 11 below).

Once again, except for the Mixteca Baja, the reflexes are almost exclusively correspondences of identity showing u retained in all forms. Only four towns outside the Baja show any non-u reflexes; all are in the Mixteca Alta: San Juan Tamazola has one instance of i; Soyaltepec has o before nasalized ultimate syllables, and San Miguel Progreso has o before ultimate syllables containing *e. It is interesting to note that in the Baja-Puebla transition area, Zapotitlán, like Soyaltepec, has o reflexes before nasalized ultimate syllables, while Amatitlán, like San Miguel Progreso, has o reflexes in ultimate syllables containing *e.

Map VI-9 presents the varied reflexes found in the Mixteca Baja for *u following *y and preceding *w. Although quite a few towns (mostly in the northwestern Baja) show a complete, exceptionless development of i between *y and *w (encircled by the heavy solid line), most have one or more variant reflexes besides i. The extension of the heavy line in dashed form encloses all towns showing any i reflexes for *u in this environment. Several areally restricted patterns can be detected (these are marked with various line and dot combinations), but other towns simply show different reflexes in etyma which avowedly present the same phonological environment. These last cases may represent the frontiers of a still-active innovation sphere, where the alternants are soon to be regularized, again probably as i.

Map VI-9. Baja Developments of *u in *yuv Oral Canons



In the central Baja (Nuchita, Atenango, Silacayoapan-San Martín, Silacayoapan-Progreso) the pattern of reflexes seems to show e before ultimate syllables containing oral *e, but i reflexes elsewhere (including before the ultimate syllables containing nasal *e). Tecomaxtlahuaca and San Miguel Tlacotepec retain u reflexes before nasalized ultimas, but show o reflexes before oral ultimas with *e, and i reflexes before oral ultimas with *i. Still another subsystem is found in Cacaloxtepec and Santos Reyes Tepejillo, where i reflexes occur before nasal ultima and u reflexes (or ü in Cacaloxtepec) before oral ultima in *yuwV canons.

It is clear that these various subsystems of reflexes for *u in tonic syllables beginning with *y are reshufflings of the same basic reflexes in slightly different patterns, but using only a few defining features: presence of *w following the tonic syllable, quality of the vowel in the ultimate syllable (*i or *e, at least), and nasality in the vowel of the ultimate syllable.

Correspondence Set 10 presents the regular correspondences for *u in ultimate syllables with onset of *y. This set is constructed with reflexes from seven proto-words which show a three-way contrast in their preceding stressed syllables: two forms have *a in the tonic syllable, four have *e in the tonic syllable, and one has *u occurring in the tonic as well as in the ultimate syllable.

The reflexes of *u are much less uniform in this environment than in the preceding two cases (Correspondence Sets 8 and 9), although all three correspondence sets involve *u following *y. Unfortunately the data are somewhat deficient for this third set, but it is frequently possible to group towns with incomplete reflexes into larger patterns of reflexes. Most of the non-u reflexes are the results of fronting developments which have produced ü, i, e and i reflexes in most of the

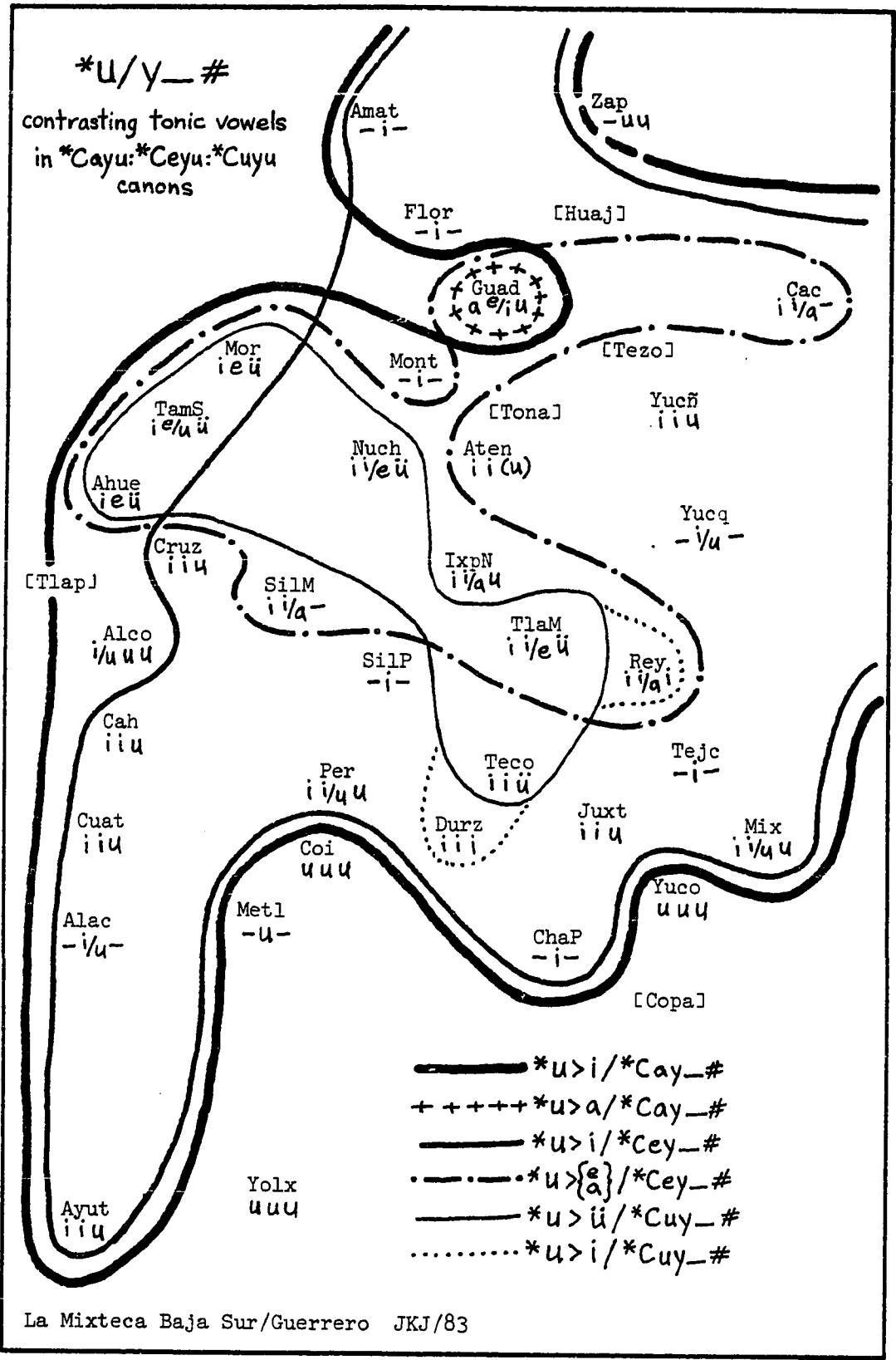
Mixteca Baja and Puebla, and in quite a few towns scattered throughout the Mixteca Alta. The occasional a reflexes (Cacaloxtepec, Ixpantepec Nieves, Guadalupe, Santos Reyes, Silacayoapan-San Martín; Molinos) are mostly later developments of the e reflexes; in the case of Guadalupe, the final a may be due to a vowel harmony rule in *Cayu canons. There are also a very few instances of lowered o reflexes (one instance each in Cántaros, Cuauhtémoc and Coatzospan, all in the northeastern Alta.

Of the three canons contrasted in this correspondence set, the *Cayu pattern most frequently results in i reflexes for *u; that is, the distribution of this fronting innovation reaches its greatest areal extent in words with this phonological shape. Second most common in i reflexes is the *Ceyu canon, although this canon also produces e reflexes (some of which later develop into a reflexes, as mentioned). And in words of canonical form *Cuyu, the presence of an identical tonic vowel seems to have inhibited the fronting process, for this canon most frequently retains u in the ultimate syllable. The strengthening effect of the tonic vowel may also be responsible for the harmonic final e developments in the *Ceyu canons and the rare final a reflexes in the *Cayu canons.

Map VI-10 shows the distributions for reflexes of couplet final *u following *y, and contrasting tonic vowels *a, *e, and *u, and it delineates the perceivable subsystems in the Mixteca Baja. The heavy solid line encloses all towns with i (fronted) reflexes for *u in *Cayu canons. Only Zapotitlán in the north and the southernmost Baja towns (Coicoyán, Metlatónoc, Yoloxochitl, Yucunicoco) do not show any evidence of this fronting innovation. A few other towns not shown on this map, in the northwestern Baja and Alta, also show i reflexes for *u in *Cayu canons.

The medium solid line encloses towns whose reflexes show i in

Map VI-10. Regular Reflexes of *u in Ultimate Syllables following *y



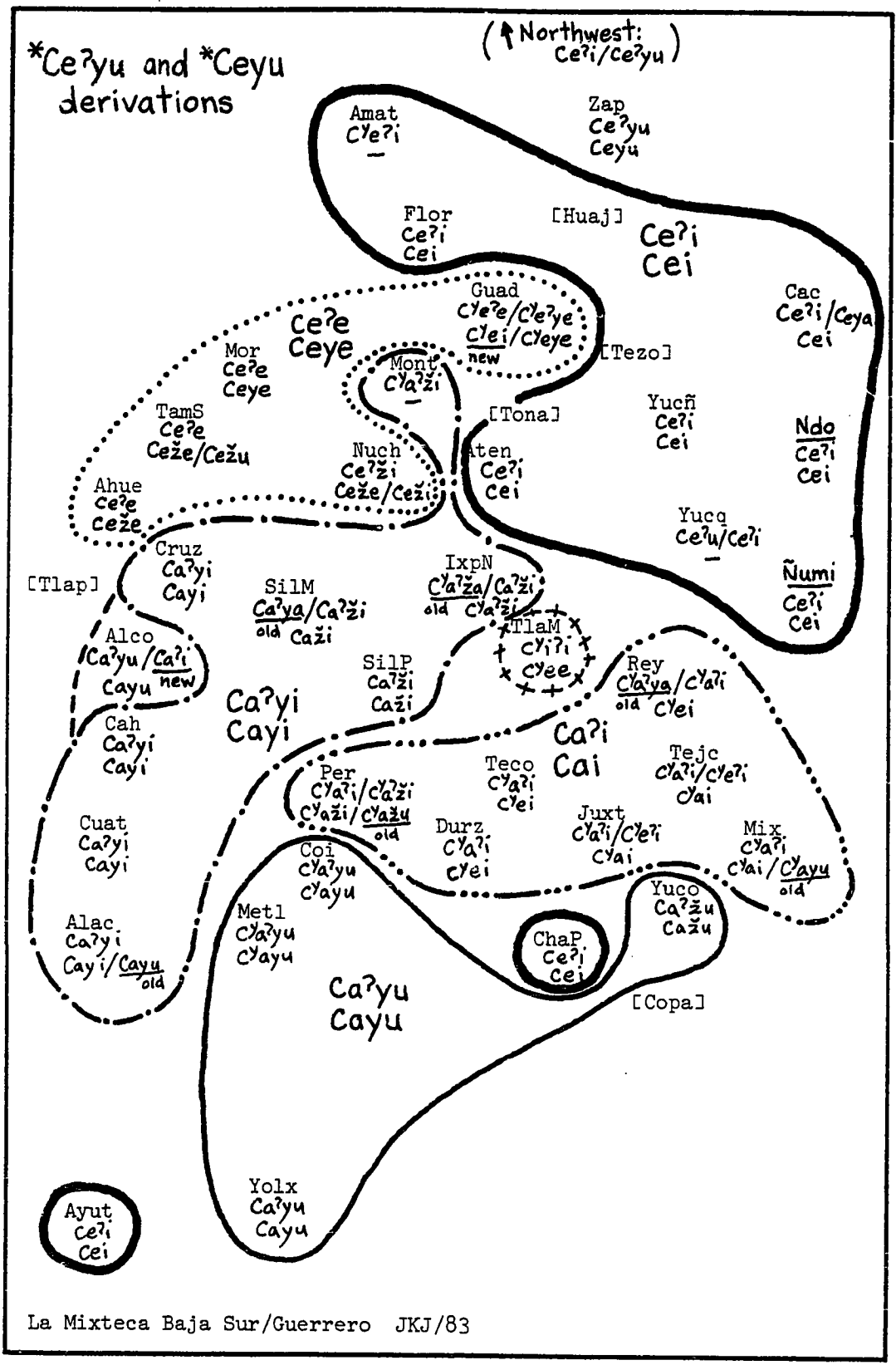
*Ceyu canons. This line would also include most of the northern Baja-Puebla towns (except Tonahuixtla and Chigmecatitlán), and probably also two towns in the adjacent Alta (Nundó and Ñumí), except that these areas are not shown on the map. The most common pattern of reflexes is that which shows fronting of *u to i in *Cayu and *Ceyu forms, but retention of u in *Cuyu canons. This fronting pattern is widespread in the Baja, where the reflexes are most regular in the central and southern regions, with mixed reflexes more common around the peripheries of the distribution. This, too, seems to be a system undergoing expansion in modern times; note the encroachment of forms with i reflexes in far western Alcozauca. In the northern Baja-Puebla region the reflexes are sometimes mixed, and often incomplete, but I believe that the general tendency is towards this new pattern of reflexes (i, i, and u in *Cayu, *Ceyu, and *Cuyu canons, respectively). The two towns which show i reflexes for all three canons are both in the Baja (Santos Reyes Tepejillo and Duraznos), and are both geographically isolated and probably marginal to the diffusion sphere; their more regularized system can probably be considered a typical case of hypercorrection of the *Cuyu forms (i.e., generalization of the rule, to apply to more environments), when seen in terms of the more accepted pattern, which retains u in *Cuyu forms.

There is another, perhaps older, pattern represented by several towns in the western and central Baja (Ahuehuetitlán, Santiago Tamazola, Morelia, Nuchita, and San Miguel Tlacotepec, although these last two towns show more tendencies towards the dominant pattern). In these towns, rules of fronting linked to vowel harmony seem to have operated, so that *Cayu canons produced final i reflexes, but *Ceyu canons produced e reflexes, and *Cuyu canons fronted the final *u only to ü, avoiding any merger with other vowels.

The development of i reflexes following tonic vowel *a might be seen as inevitable in the context of a fronting process, since both *a and *u are strong vowels, belonging to the inner vowel triangle, and the third strong vowel is *i. In view of the rarity of strong-weak vowel sequences within the couplet, it is predictable that any fronting of *u in the context of tonic vowel *a would produce i reflexes. In *Ceyu canons, however, the harmonic tendency has in these towns created a copy vowel e as the reflex of *u in this environment. This is also a fronting process, but since its product is a weak (inner triangle) vowel, it is receptive to further fronting to strong vowel i, which is, in fact, the dominant process, and is almost certainly a later rule in the phonological development of these dialects. Thus Nuchita and Guadalupe Villahermosa show mixed forms for *Ceyu canons (Map VI-11), the older pattern generating Ceye forms, the newer pattern changing these to Ceyi (Ceži, C^yei) forms.

It is interesting to note that forms with medial glottal (i.e., glottalized tonic vowel) may be more innovative than forms without medial glottal (at least with respect to these rules). More retained forms and "older" or earlier stage (post-Proto-Mixtec) forms are found in *Ceyu canons, while *Ce^yu canons more frequently show both fronted reflexes for final *u and, especially, loss of medial *y (Map VI-11). Thus several towns show regular alternation between newer and older forms, according to whether the forms have a glottalized tonic or not, respectively. Notice the loss versus the retention of *y in the Ce^e versus Ceye forms found in Morelia, Santiago Tamazola and Ahuehuetitlán; see also the various forms, especially alternants in pattern, in Mixtepec, Peras, San Miguel Tlacotepec, Alacatlazala, Alcozauca and Nuchita, where new patterns appear only in *Ce^yu canons, or older forms still occur

Map VIçll. Modern Canonical Forms Derived from *Ceyu and *Ce?yu Canons

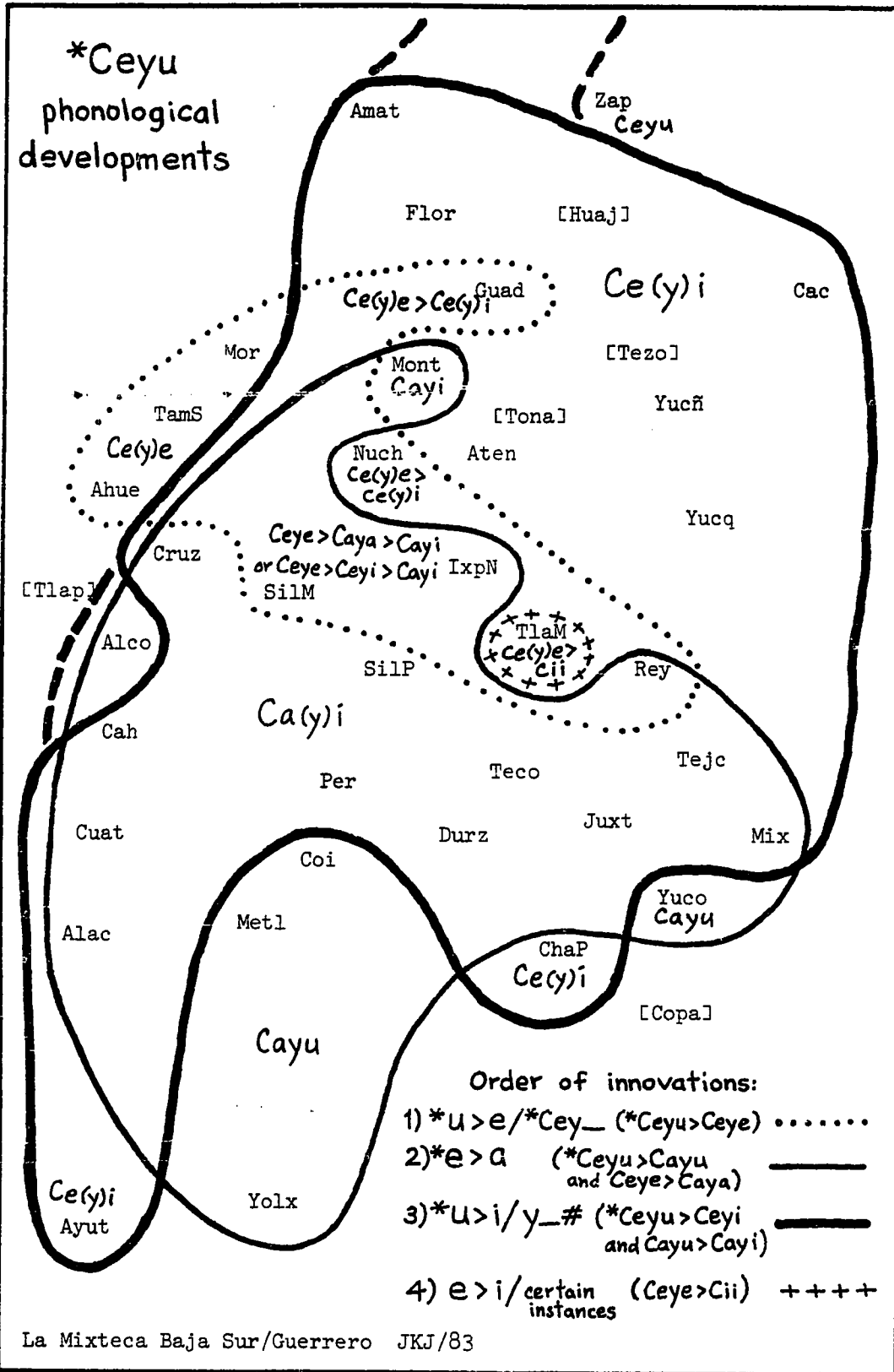


only in *Ceyu canons (Map VI-11). (A few towns show the opposite tendency, retaining an older form, in this case the Ca?ya forms which are now being replaced by Ca?yi forms, while Cayi forms have been innovated in the unglottalized canons; see Silacayoapan-San Martín, Ixpantepec Nieves and Santos Reyes Tepejillo.)

As already mentioned, the development of e reflexes in this environment (in *Ceyu proto-forms) may also be related to the *e merger with *a, in the sense that some of these newly created instances of e were also later affected by the merger, thus producing a sequence of *Cayu to Ceye to Caya forms in a few central Baja towns (Silacayoapan-San Martín, Santos Reyes Tepejillo, Ixpantepec Nieves, and probably San Miguel Tlacotepec, and possibly Cacaloxtepec, although the Ceya form found there is certainly aberrant, and does not yield to facile explanation). Also, the change in tonic vowel, from *e to a, after the merger, would set up a parallel to the other major fronting environment, the *Cayu canon, so that the fronting would be to i rather than (previously) harmonic e. Whether or not any towns passed from *Ceyu to Ceye, then to Caya and finally to Cayi forms may be a moot question (but see below).

It does seem likely that the sequence of changes for *Ceyu forms (whether or not all changes affected all towns) began with the harmonic fronting rule, and that the *e to *a merger followed this, and that the development of i reflexes (from final yu or ye and possibly ya sequences) was the latest change in this sequence. Loss of medial *y, also involved in the generation of these modern forms, is not here discussed, although it is probably a late rule, perhaps even later than the other three. Map VI-12 shows the overlapping innovation spheres of these three changes in the Mixteca Baja; the generalized forms shown in each of discrete areas formed by the three isoglosses are representative of the modern

Map VI-12. Major Phonological Developments Affecting *Ceyu Canons



forms (which are shown in Map VI-11).

The ordering of the three phonological rules permits the derivation of all forms encountered and offers very strong evidence for the direction of change in towns which show varied modern reflexes. Thus although only San Miguel Tlacotepec and the northwestern towns (Ahuehuetitlán, Santiago Tamazola, Morelia, Nuchita, Guadalupe) today show Ce(y)e forms derived from *Ceyu protoforms, the towns which have modern Ca(y)a forms (Silacayoapan-San Martín, Ixpantepec Nieves, Santos Reyes Tepejillo) can be shown to be later derivations of the Ceye forms, affected by the *e to a merger, and still later by the further fronting of the final vowel to i. The change from a to i may be more a case of lexical replacement (that is, introductions from adjacent towns to the south and west) than the result of a phonological rule, since few instances of *a develop i reflexes, under whatever conditions. But some support for the postulation of just such a phonological rule, at least for San Martín del Estado, Silacayoapan, is found in its modern form for 'cucaracha', where 159 *ti te?ya? develops as ndi ta?yi, perhaps analogous to the Caya to Cayi shift found in derivations of old *Ceyu canons. In any case, these few a reflexes for *u, like the e reflexes (and the later unusual geminate i developments in San Miguel Tlacotepec), are doubtless remnants of this older pattern, but are now almost completely erased by the more recent innovation of final i reflexes.

The central Baja town of Guadalupe Villahermosa (Portezuelo) is an isolate which shows remnants of an even stronger form of the harmonic, or vowel copy, rule, where the *Cayu canons give a reflexes for final *u, producing modern Caya forms like 141 ka?ya 'pintar' and 111 daya 'cántaro' (see Map VI-10). These repeat strong vowel sequences are very resistant to further fronting (despite the counterexample just mentioned),

and thus Guadalupe is unlikely to assimilate fully to the dominant pattern, even though final i reflexes are beginning to appear in *Ceyu derivations where e reflexes had already been developed. As discussed above, these e reflexes are probably intermediate, and may well all assimilate to i forms in the near future, in Guadalupe and elsewhere. In general, I suspect that new questionnaires collected in these same Baja towns today would produce more examples (i.e., higher frequencies) of final i forms than are shown by the data used here, which in many instances were collected from 10 to 15 years ago.

Map VI-13 reviews the various innovated subsystems associated with final *yu sequences throughout the Mixteca. The Baja subsystems form a coherent, structurally related whole, which is also unified in terms of geographical distribution, with only faint echoes of these fronting processes scattered across the Alta. Except for Ñumí and probably Nundó, two towns on the edge of the Alta which appear to fall within the Baja fronting sphere, none of the Alta towns which show fronted reflexes present any consistent pattern; the reflexes are always either mixed (both i and u reflexes in the same environment) or, unfortunately, missing (no data available). But still notable is the fact that no Alta towns appear to combine the two most common *u fronting rules (i.e., in both *Cayu and *Ceyu derivations).

Some towns appear to have fronted (ɨ or i) reflexes for *u only in *Ceyu etyma, although various of these are lacking relevant data, and thus might show such reflexes in *Cayu canons also; these are primarily Nochixtlán Valley towns and their satellites (Monte Lobos, Jaltepetongo, Adéquez and Cuilapan). Other towns have fronted (again ɨ or i reflexes only in *Cayu etyma; these are found mostly in the southern Alta (San Miguel el Grande, Sindihui, Piedras, Yutanduchi, San Juan Tamazola, and

Tidaa and Ixtaltepec further to the north. The unique a reflex of final *u in Molinos is unexplained.

The fronting developments of *u in this environment (couplet final syllables of the shape *yu) are characteristically Baja phenomena, although the innovating center of this great diffusion sphere is not easy to identify. My impressions from the distributions, particularly the spread both north into Puebla and south into Guerrero, are that the center was within the central Mixteca Baja, perhaps somewhere in the Tonalá Valley area or even further east. The eastern Baja/western Alta interface (particularly around the Tamazulapan valley and just south and west) is an area known to have been very important in both pre-Conquest and early Colonial times, but modern linguistic data from this region are lamentably sparse. An important sixteenth century town like Santa María Tutla, in the western part of the Tamazulapan Valley, might be a good candidate for the prestigious center responsible for these fronting innovations and their consequent spread.

Correspondence Set 11 covers all instances of nasalized *y following *y, thus completing the four environments involving *u following *y (Correspondence Sets 9, 10, 11 and 12). There is some overlap with Set 9, since *yuȳ canons appear in both sets, for comparative purposes. For tonic syllables, the following canons are included in Set 11: *yu?y, *yuȳ, and *yux̄. In tonic syllables there are no inherently nasalized vowels, but nasalized geminates are fairly common (*yu?y), where the nasalization in the ultimate vowel carries over to the tonic vowel without any impediment. Less strong cases of tonic vowel nasalization are produced by canons with a semivowel as the onset of an ultimate syllable which contains a nasalized vowel (in this case, *yuȳ, for which no examples were found, or *yuȳ, for which two examples are given in Set 11).

In modern varieties of Mixtec, etyma of this type have usually developed nasal consonant ñ as the reflex of medial *y, or m as the reflex of *w, thus strengthening the nasal features of the syllable following *yu. Sometimes *x also permits the regressive assimilation of nasalization in the tonic vowel, thus the *yuxŷ canon is also represented in this correspondence set.

Couplet final sequences of nasalized *y_y (canons of the shape *CVy_y) are more numerous than couplet initial sequences, but are difficult to distinguish from analogous *y_q sequences (see *o, Correspondence Set 20). The only examples found in these data all have *i as the tonic vowel preceding the *y_y ultima, and consequently the reflexes given for this syllable position should not be considered exhaustive.

As in other environments involving *u following *y, the reflexes found in this correspondence set for nasalized *y are mostly correspondences of identity, with retained u reflexes common everywhere but in the Mixteca Baja and a few Alta towns. Reflexes of non-identity in these latter areas include o, i, and a very few examples of ü, í, and a. These reflexes structure into several different subsystems, in accordance with the effects of the consonants following *y.

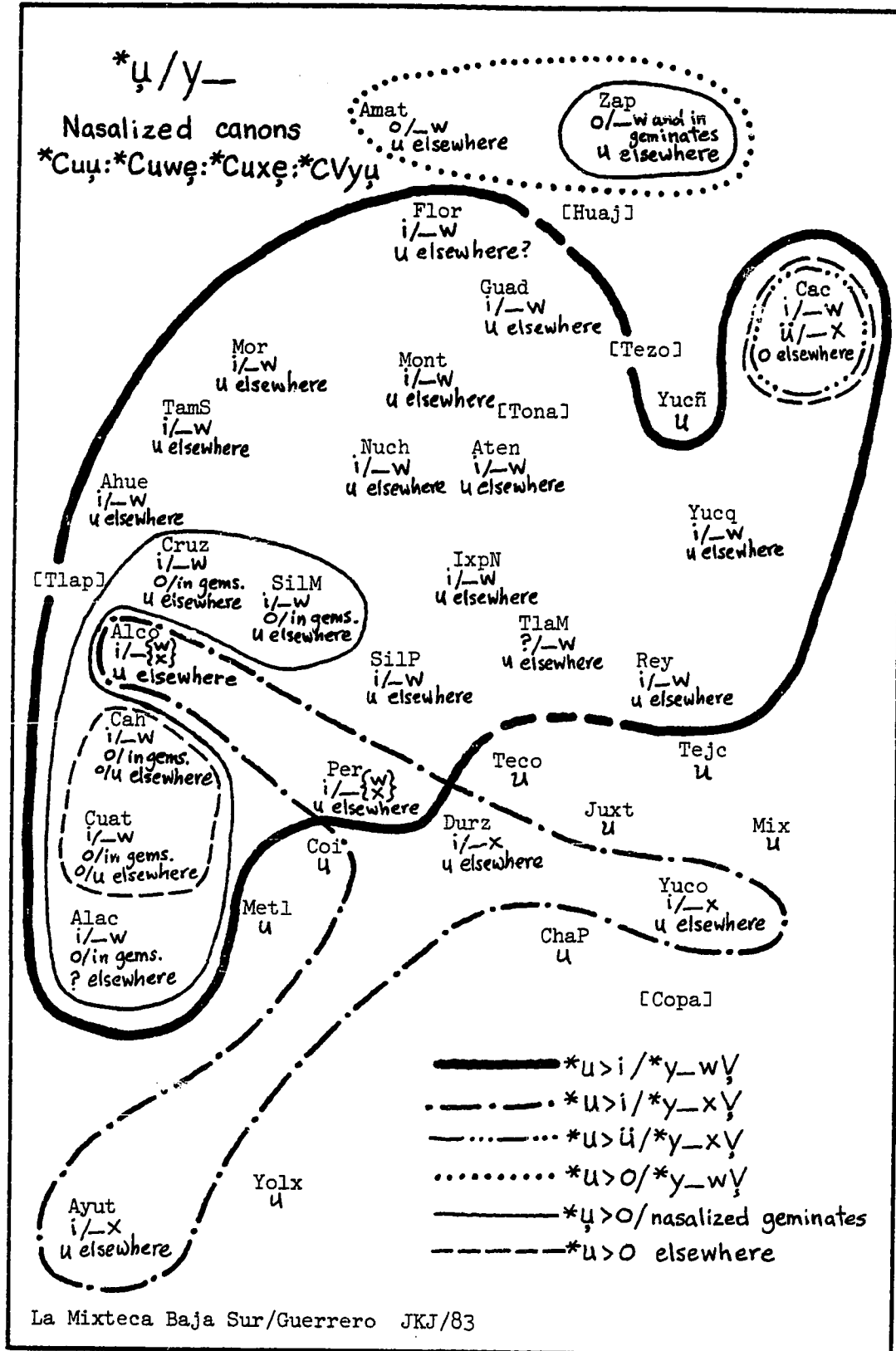
There appear to be two competing innovations, both with several alternant phonological realizations. There is a fronting process whereby nasalized *y becomes i before *w; towns which show this pattern are encircled by the heavy solid line on Map VI-14. Some towns also innovate i reflexes before *x (Alcozauca and Peras), and a few isolated towns show i reflexes but only before *x and not before *w (Durazos, Yucunicoco, and Ayutla). There are no i reflexes for nasalized *y_y sequences anywhere outside of the Baja and far western Mixtec region. More importantly, there are no i reflexes for *y in ultimate syllables

even within the Baja; all that do occur are developments of tonic syllable vowels followed by second syllable consonants *w or *x. No geminate nasalized *y etyma produce fronted i reflexes anywhere.

The other innovation affecting these etyma is a lowering process, of *y to o. Such o reflexes are found scattered throughout the Mixteca Alta, in several Baja towns, and in Guerrero. Map VI-14 presents a summary of the reflexes for nasalized *y following *y, and shows the distributions of the two major innovations, the fronting of *u to i, and the lowering of *u to o. The heavy solid line encircles a large number of towns in the Mixteca Baja where *y develops fronted reflexes before *w, and following *y, as already specified. (It should be noted, however, that the only examples cited for this *yuwY canon have *e as the ultimate syllable vowel, and it is not unlikely that a different following vowel, such as *i, would produce different reflexes, as is suggested by the data for oral *yuwi forms in Correspondence Set 9.) A variant of this fronting rule produces i reflexes for *y before *x in canons of the form *yuwY (again, the only data available have final vowel *e). Towns showing this development are encircled by a line of dots and dashes. Sometimes this rule is combined with the above rule, which fronts *u before *w; in this case, the towns fall within the area of the heavy solid line as well (Alcozauca and Peras). Other towns, in a discontinuous distribution, have i reflexes only before *x (Duraznos, Yucunicoco, Ayutla).

The distribution spheres of the rules producing lowered o reflexes for *y in these environments are marked with a variety of thin solid or dashed lines, lines of dots, and other combinations of dashes with dots. The largest area (marked by a narrow solid line) is found within the main fronting innovation sphere (which is marked by the heavy solid

Map VI-14. Regular Reflexes for Nasal *y following *y



line); here o is the general reflex of *y after *y, but i is developed before *w and u is retained before *x (Silacayoapan-San Martín, Santa Cruz, Cahuatache, Cuatzoquitengo, Alacatlazala--and, with ü before *x, Cacaloxttepec). Outside of the fronting sphere, but obviously related to the just-cited Baja system, Zapotitlán Palmas has o reflexes in geminates and before *w, but shows u reflexes elsewhere. These retentions of u probably indicate that the nasality of the final vowel does not penetrate the consonantal barrier of *x, and thus does not affect *u in the tonic syllable (i.e., *u in these cases is not effectively nasalized). In the Mixteca Alta, Soyaltepec shows a similar distribution of o reflexes, while Cuilapan shows mixed o and u reflexes, with u regularly before *w and a before *x (this latter is an unusual development, shared only by nearby Estetla; the a is probably generated by an intermediate e development). Amatitlán (and San Miguel Progreso in the western Alta) have an inverted form of these rules which produces lowered o reflexes rather than fronted i reflexes before *w, retaining u elsewhere.

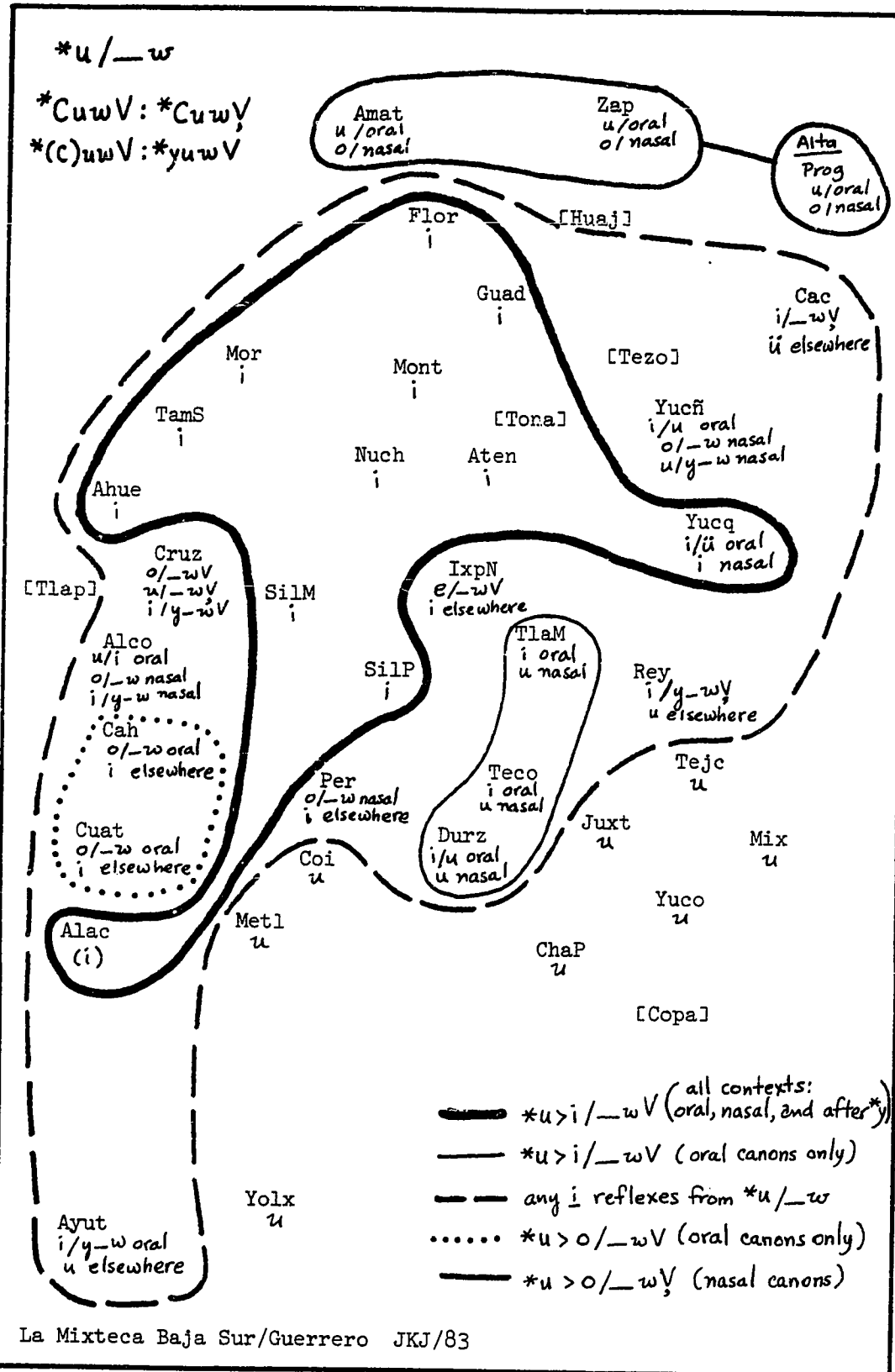
Correspondence Set 12 presents the reflexes for *u before *w; obviously these are all tonic syllable vowels. The eight etyma on this chart fall into four classes: oral *u before *w (138 *uwi 'dos', 174 *tu'we 'sabio'); nasal *u before *w, or more precisely, *u before *w with a following nasal vowel, producing a nasalized context for *u (139 *t± lu'wɛ? 'alacrán', 6 *lu'we? 'cola'); oral *u after *y and before *w (3 *yuwi? 'petate', 136 *yu'wi 'tiene miedo'), and nasalized *u (as before) after *y and before *w (7 *yuwɛ 'cera', 101 *yu'wɛ 'humo'). Most of these etyma have appeared in previous correspondence sets for *u (Sets 9 and 11), but are repeated here for comparative purposes, to present all cases of *u before *w at one time. This set serves

as an intermediate summary for reflexes of *u in the cross-cutting environments involved when *u follows *y and precedes *w.

As with previous sets for *u, most of the correspondences of non-identity are found in the Mixteca Baja; this area is shown on Map VI-15. The major reflexes, other than retained u, are fronted i (and ü in Cacaloxtepec) and lowered o. One e reflex is found in Ixpantepec Nieves, and one ɨ reflex each in the Alta towns of Itundujia and San Juan Tamazola. In Map VI-15, the dashed line encloses all towns with at least some fronted i reflexes for *u before *w, including almost all of the Baja except for the Juxtlahuaca-Mixtepec area and the area from Coicoyán on south. The heavy solid line encloses those towns with i reflexes for all etyma with *u before *w; these form a continuous distribution in the northern and central Baja, centering around the Tonalá Valley, plus one isolate, Alacatlazala, in Guerrero. Only two other groupings of towns with fronted reflexes are noted: Cahuatache and Cuatzoquitengo in the west, and San Miguel Tlacotepec, Tecomaxtlahuaca, and Duraznos in the south of the Baja. Outside the fronting sphere, two towns in the northern Baja (Amatitlán and Zapotitlán) share a pattern of reflexes with another town, San Miguel Progreso, in the western limits of the Alta. The only other towns outside the Mixteca Baja with reflexes of non-identity are Soyaltepec (with o reflexes in *yuw̄ canons) and the previously mentioned ɨ reflexes in Itundujia and San Juan Tamazola.

The lowering rule (*u > o) is very irregular for these environments (preceding *w), although two areal concentrations can be noted. The northern towns of Amatitlán and Zapotitlán, with Yucuñuti a little to the south, plus the Alta towns of Soyaltepec and San Miguel Progreso, all show o reflexes in at least some nasalized environments. In the far western Baja, a number of towns show o reflexes in varying contexts.

Map VI-15. *u/_w. Contrasting Oral Vs. Nasal Canons, and following *y



Again, as with other correspondence sets for *u, although the content, i.e., the reflex for a given environment, varies, the very disparate individual subsystems can be grouped according to what structural contrasts they use to differentiate *u developments before *w; these are presented in chart form (Chart VI-1), and the systems are mapped in the accompanying Map VI-16.

The simplest systems (type I) have uniform reflexes in all cases of *u before *w; these include the large majority of the Mixteca, which retains u in all these environments, as well as the very extensive area of the central Baja which shows all i reflexes in these canons. The next simplest systems (type II) oppose oral versus nasal *u before *w; that is, oral canons with or without *y before *u (*CuwV and *yuwV) have one reflex, while nasal canons with or without *y before *u (*CuwY and *yuwY) have a different reflex. Thus Cacaloxtotec has ü in the oral canons and i in the nasal canons, while Amatitlán, Zapotitlán, and San Miguel Progreso have u in the oral canons but o in the nasal ones, and San Miguel Tlacotepec, Tecomaxtlahuaca and Duraznos have i in the oral canons and u in the nasal ones. All share the same structure, of nasal versus oral contrasts, but the realizations are quite different.

Similarly, Soyaltepec (in the Mixteca Alta) and Santos Reyes Tepejillo (in the Baja) both share a common structure (type V) which differentiates reflexes in *yuwY canons from all other canons in this set, but while Soyaltepec has o reflexes in these canons and u reflexes elsewhere, Reyes has i reflexes in nasal canons after *y and u reflexes elsewhere. Other such groupings of similar structures with different content include Santa Cruz and Alcozauca (type VII), which both have i reflexes after *y but o or u elsewhere, or Ixpantepec Nieves (with e in *CuwV canons but i elsewhere) with Cahuatache and Cuatzoquitengo

STRUCTURAL SYSTEMS DERIVED FROM *u BEFORE *w

Environments of *u before *w:

- | | |
|----------------|-------------------------|
| 1) *CuwV oral | 3) *yuwV oral after *y |
| 2) *CuwY nasal | 4) *yuwY nasal after *y |
-

I. One reflex common to all four environments

- A. u (retained); Alta, Puebla, Southern Baja, Costa
- B. i (fronted); Central Baja: Flor, Guad, Mont, Aten, Yucq, Nuch, Sil-M, Sil-P, Tam-S, Mor, Ahue, Alac
-

II. Two reflexes, one for both oral environments, one for both nasal environments

- A. u/o u before oral ultimas, o before nasal ultimas; Amat, Zap, Prog
- B. ü/i ü before oral ultimas, i before nasal ultimas; Cac
- C. i/u i before oral ultimas, u before nasal ultimas; Tla-M, Teco, Durz
-

III. Two reflexes, one for *u following *y and before nasal ultimas, one for oral *CuwV

- A. e/i e in *CuwV oral canons, i in *CuwY nasal canons and in *yuwV and *yuwY canons; Ixp-N
- B. o/i o in *CuwV oral canons, i after *y and in nasal canons; Cah, Cuat
-

IV. Two reflexes, one for *u following *y in oral canons, one for the other three environments

- i/u i in oral *yuwV canons, u retained elsewhere; Ayut
-

V. Two reflexes, one for *u following *y in nasal canons, one for the other three environments

- A. o/u o in nasal *yuwY canons, u retained elsewhere; Soy
- B. i/u i in nasal *yuwY canons, u retained elsewhere; Rey
-

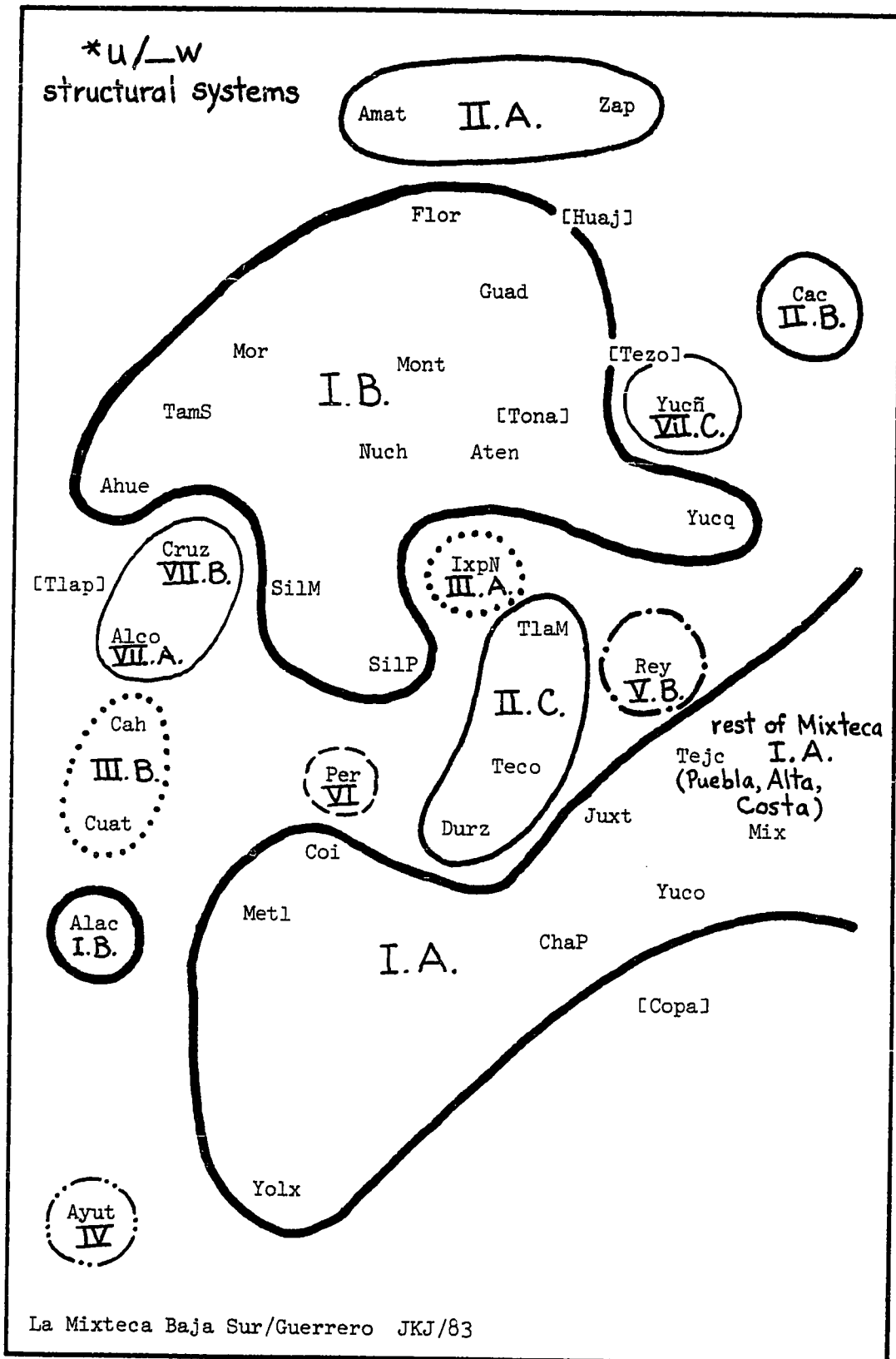
VI. Two reflexes, one for *u following *y and before *w in oral canons, one for nasal *CuwY

- o/i o in nasal *CuwY canons, i in oral and nasal *yuwV canons, and in oral *CuwV; Peras
-

VII. Three reflexes

- A. i/o/u i in *yuwV oral and nasal canons, o in *CuwY nasal canons, u retained in *CuwV oral canons; Alco
- B. i/o/u i in *yuwV oral and nasal canons, o in *CuwV oral canons, u retained in *CuwY nasal canons; Cruz
- C. i/o/u i in *CuwV and *yuwV oral canons, o in *CuwY nasal canons, u retained in *yuwY nasal canon; Yucñ
-

Map VI-16. Structural Systems of *u before *w in the Mixteca Baja



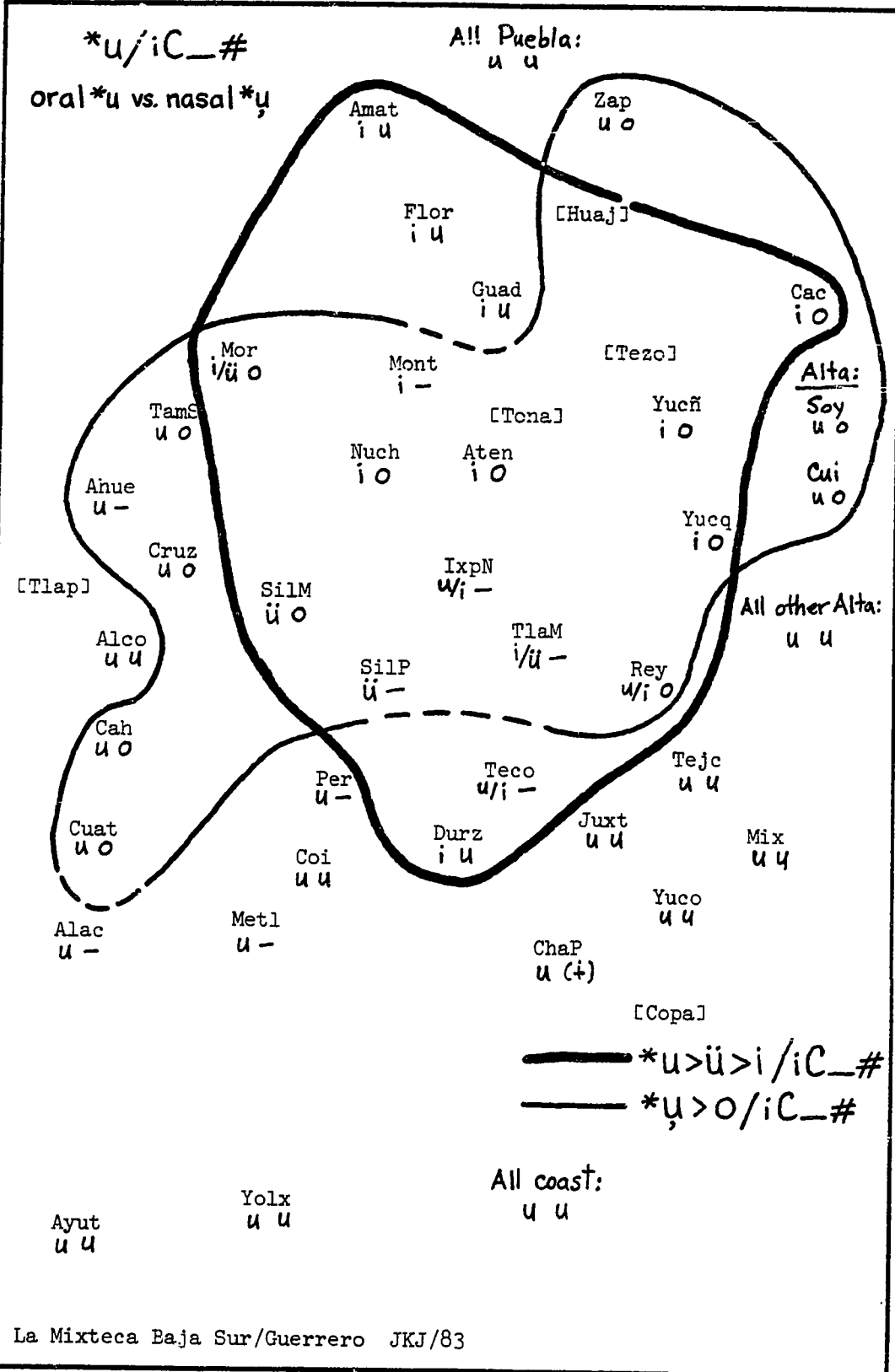
(with o in *CuwV canons but i elsewhere) (type III). These groupings (shown in Map VI-16) are interesting, but though they do achieve a certain "lumping" effect, they are not necessarily any more revealing than the groupings presented in Map VI-15, where only towns whose reflexes are all the same are grouped together.

Correspondence Set 13 is the sixth set constructed for *u, and it presents the reflexes of *u when this occurs as the second vowel in sequences with *i; that is, in couplets of the canonical form *CiCu (with or without an initial consonant). This sequence of two strong, outer triangle vowels, the high front vowel in the tonic syllable, followed by the high back vowel in the post-tonic syllable, is very susceptible to the prevalent fronting innovations, doubtless due to the influence of the tonic vowel. This fronting sphere again covers a large, areally contiguous portion of the Mixteca Baja, but it is important to note that the fronted reflexes (i or ü) are found only in oral canons. In nasal canons (*CiCu), the final nasalized *u is either retained as u or lowered to o; again this is a development limited to the Mixteca Baja, with only two instances of o reflexes in the Alta (Soyaltepec and Cuilapan, in nasal canons).

Map VI-17 displays the two overlapping innovation spheres for *u in couplets with tonic vowel *i, contrasting oral versus nasal *u. The innovations appear not to be in conflict, since fronted i reflexes do not appear anywhere in nasal canons, nor do lowered o reflexes ever appear in oral canons of this type (*CiCu).

Correspondence Set 14 is an attempt to sort out unusual reflexes of *u in a fairly well-defined environment, even though the modern developments do not reflect a single clear pattern. This set involves instances of *u following *k and preceding another vowel; in all cases

Map VI-17. Regular Reflexes for *u in Ultima, following Tonic *i

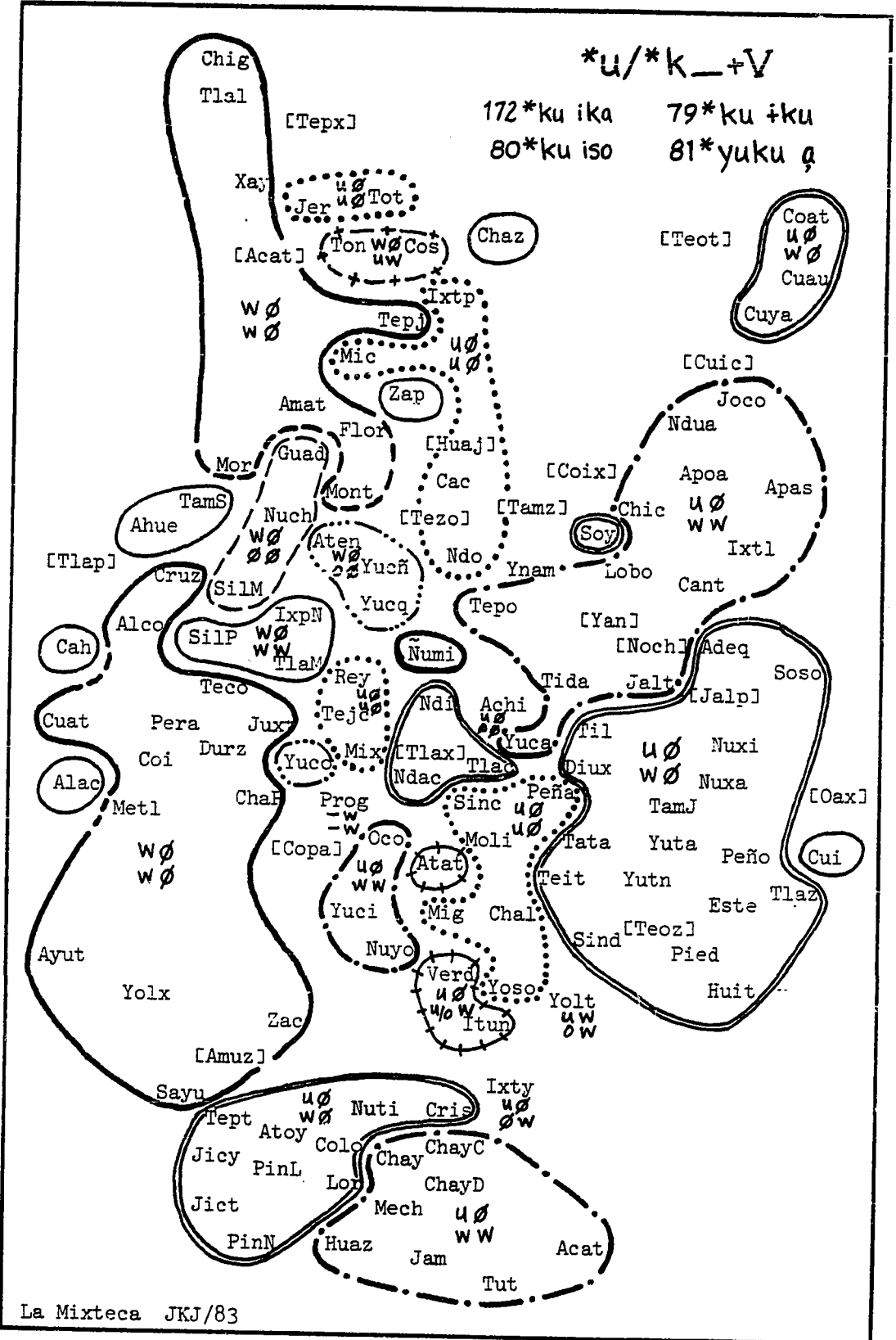


there is a morpheme break or juncture between *u and the following vowel. The two-morpheme construction involves a couplet either preceded or followed by a phonologically-dependent clitic.

The sequence of two adjacent vowels separated by internal (or close) juncture is a very weak phonological structure in Mixtec, and the two vowel distinctions tend to break down, usually producing a glide or semivowel reflex for one of the vowels, most often a w from *u. This is then reinterpreted as part of the consonantal onset, thus changing velar *k to its labialized counterpart k^w. In other cases, one of the vowels is simply dropped, often with some transfer of features, such as nasality, fronting or height, to the remaining vowel. This morphophonemic process is very common in Mixtec, particularly as seen in the incorporation of single-vowel pronominal enclitics into verbal or nominal stems. Both of these solutions preserve the *CVCV couplet structure at the level of phonological word. This assimilation to the preferred canonical model produces multimorphemic couplets, which do not follow the same patterns of phonological structure as do monomorphemic couplets, and so they are included here only insofar as they affect the reflexes of monomorphemic couplets in describable ways.

The actual outcome of this particular bimorphemic situation, involving *k and *u, is difficult to predict, although the most general tendencies seem to be the loss of *u before non-front vowels (*i and *a in these examples), or the desyllabification of *u (to semivowel w) before front vowels (*i in these data). No town has all w reflexes, nor does any town retain u in all four forms cited in Correspondence Set 14. All towns except Yolotepec (and possibly San Miguel Progreso) have at least one instance of complete loss of *u. On the whole, there appear to be more instances of w reflexes in the Nochixtlán-Apoala region and in

Map VI-18. Reflexes for *u following *k and preceding Juncture



Puebla and the southern Baja. It is not possible to make such areal generalizations about the loss of *u in this context, but *u is more frequently retained in the Mixteca Alta and in adjacent parts of Puebla and the Baja than in other areas.

Map VI-18 presents the reflexes from Correspondence Set 14, throughout the Mixteca. Different line qualities have been used to delineate areas with identical patterns of reflexes; some towns with deficient information have been interpreted as pertaining to an areal subsystem when this seemed probable. What is most interesting is not the multiplicity of subsystems, but rather the geographical distributions, for these reflect the modern locations of virtually all towns, and in fact, often correspond closely to both modern dialect areas and to genealogical groupings. This must almost certainly indicate that these phonological developments are either modern or very recent.

Correspondence Set 15 is a complement to Set 11, in that it covers all instances of nasalized *y, except when *u is preceded by *y, which is precisely the environment specified by Set 11. As with most sets for *u, correspondences of identity are prevalent in most parts of the Mixteca: in the northwest, on the coast, and in the Alta. The most frequent reflex of non-identity is o, found mostly in the Mixteca Baja and in adjacent areas (Cacaloxtepec, Zapotitlán, Flores and Guadalupe in the northwest; San Miguel Progreso in the Alta), and occasionally in the northeastern Alta (Soyaltepec, Monte Lobos, Cuilapan). Lowered o reflexes for *u occur more commonly in ultimate syllables than in tonic syllables.

There are only a few instances of fronting (ü or i reflexes) of *y; those that do occur are most often found in tonic syllables before *w or *x. The very varied reflexes found in the Baja are probably

susceptible to further regularization; that is, a careful search for more restricted environments might result in the patterning of what now seem somewhat random reflexes. Also, it is possible that alternant reconstructions of some etyma would remove incongruous reflexes from the set, and thus produce more uniform patterns of phonological development.

Correspondence Set 16 purports to cover all remaining environments necessary for describing and reconstructing *u; it is, like Set 15, a catch-all category, but for oral rather than nasal *u. The etyma supporting this correspondence set were chosen taking into consideration the preceding and following consonants as well as the vowel sequences not covered in the environments already presented. As expected, the reflexes shown in Set 16 are very diverse, even more so than in Set 15; in the Baja and occasionally elsewhere there are many fronted reflexes (i and ü), as well as some lowered (o) reflexes, and a few e and a reflexes.

In the northwest, the reflexes are mostly retained u (except for Amatitlán, Cacaloxtepec, Flores and Guadalupe), following the pattern established in almost all the preceding sets for *u. Again it is in the Baja that the reflexes are most varied, although u is the most common reflex in nearly all towns. The lowered o reflexes are generally limited to a single etymon, 153 *lu?u 'chico', which throughout the western Baja has developed as lo?o. The fronted i reflexes are in many towns limited to post-tonic (ultimate) syllables, and are especially common when the tonic vowel is also front, specifically low front *e (it will be remembered that etyma with *i in the tonic syllable appeared in Correspondence Set 13, and that these were also often associated with fronted reflexes for *u in ultimate syllables).

On the coast, u reflexes are pervasive, with a single exception (one o in Ixtayutla); the same holds for most of the northeastern Alta

and for the Alta proper. A very few towns show occasional i reflexes; fewer still a rare í or a reflex. Only San Miguel Progreso, on the western edge of the Alta, has any o reflexes.

On the whole, there are few clear patterns discernible in these last two correspondence sets, and they are better understood when considered in combination with all the other sets established for *u. In this manner it is possible to see some overall tendencies, or general "trends". In order to facilitate this comparison, a summary table of correspondences for *u has been prepared, which appears as Correspondence Set 17, presented in two pages, Set 17a and Set 17b, because of the complexity of the Baja reflexes. Set 17a gives the correspondences for towns with regularly retained u reflexes for all environments of *u, as well as for towns with some fronted i reflexes or lowered o reflexes, in specifiable environments of *u. Set 17b details the reflexes for those Baja and northwestern towns whose patterns of reflexes are too complex to summarize briefly.

In this summary correspondence table, each of the previously discussed environments (except that of Set 14, *u after *k and before juncture followed by another vowel) is treated as though it were a single etymon, and wherever possible a single reflex is cited for each environment (i.e., from each separate correspondence set). When this is not feasible, alternant reflexes appear. The numbering of the environments follows that of the presentation above, in the introduction to the section on *u.

In the northwest-Puebla region, only the southernmost towns of Amatitlán, Cacaloxtepec, Flores, Guadalupe and Zapotitlán have frequent fronted (ü or i) or lowered (o) reflexes in more than one environment, although several northwestern towns have i reflexes finally after *y

Correspondence Set 17a. Regular reflexes for *u by numbered environments

- 1)*u/'y_ (not before *w) 2)*u/y_w (oral only) 3)*u/y_# (*Cayu:*Ceyu)
- 4)*u/'y_ (geminate; before *w) 5)*u/_w (oral: nasal) 6)*u/iC_#
- 8)*u elsewhere (nasal) 9)*u elsewhere (oral) KEY: /specification of context
~alternation of reflexes

Northeast

Adeq u i/y_# ₃	Apas u	Apoa u	Cant u	Chic u	Coat u	Cuau u	Cui u o/_Nas 4,6,8	Cuya u	Ixtl u i/Cay_# ₃
Jalt u u~i/y_# ₃	Joco u	Lobo u u~i/y_# ₃ u~o/_Nas 8	Ndua u	Soy u o~u/_Nas 4,5,8	Soso u	Ynam u			

Alta

Achi u	Atat u	Chal u	Diux u	Este u	Huit u	Itun u	Mig u u~i/y_# ₃	Moli u u~a/y_# ₃	Ndi u
Ndac u	Ndo u i/y_# ₃	Nuxa u	Nuxi u u~i/_# ₉	Nuyo u	Numi u i~u/y_# ₃	Oco u	Peña u	Peño u	Pied u i/Cay_# ₃
Prog u o~u/_Nas 2,4,5,8,9	Sind u i~u/y_# ₃	Sinc u	TamJ u i~u/y_# ₃	Tata u	Teit u	Tepo u	Tida u i~u/y_# ₃	Til u	Tlac u
Tlaz u	Verd u	Yolt u	Yoso u	Yuca u	Yuci u	Yuta u	Yutn u		

Northwest

Amat *	Cac *	Chaz u i~u/y_# ₃	Chig u	Cos u i~u/y_# ₃	Flor *	Guad *	Ixtp u i/y_# ₃	Jer u i/y_# ₃	Mic u i/y_# ₃
Tepj u i/y_# ₃	Tlal u i/y_# ₃	Ton u	Tot u i/y_# ₃	Xay u i/y_# ₃	Zap u o/_Nas 4,5,6,8				

Baja

Ahue *	Alac *	Alco *	Aten *	Ayut *	Cah *	ChaP u i/y_# ₃	Coi u u~i/'y_# ₁	Cruz *	Cuat *
Durz *	IxpN *	Juxt u i/y_# ₃	Metl u u~i/'y_# ₁	Mix u i/y_# ₃	Mont *	Mor *	Nuch *	Pera *	Rey *
Silm *	SilP *	TamS *	Teco *	Tejc u i/y_# ₃	TlaM *	Yolx u u~i/'y_# ₁	Yucñ *	Yuco u u~i/'y_# ₁	Yucq *

Costa

Acat u	Atoy u	Chay u	ChayC u	ChayD u	Colo u	Cris u	Huaz u	Ixty u	Jam u
Jict u	Jicy u	Lor u	Mech u	Nuti u	PinL u	PinN u	Sayu u	Tept u	Tut u

Zac
u

* Reflexes for these towns are found on the following page, as Correspondence Set 17b.

Correspondence Set 17b. Regular reflexes for *u by numbered environments
(detailed reflex summaries for towns not shown in Correspondence Set 17a)

- 1)*u/'y_ (not before *w) 2)*u/y_w (oral only) 3)*u/y_# (*Cayu: *Ceyu)
4)*u/'y_ (geminate; before *w) 5)*u/_w (oral: nasal) 6)*u/iC_#
8)*u elsewhere (nasal) 9)*u elsev:here (oral)

KEY: / unspecified alternation of reflexes : conditioned (structural) alternants

Northwest

Amat	Cac	Flor	Guad
u u i	ü/i ü i/a	u/i/ü i i	u/i i a:e
u:o u:o u/i	o:i ü:i o/i	u:i i u/i	u:i i o/i
u u/i/o	ü/u/o ü/u/efi	u/o u/o	u/o i/o/u

Baja

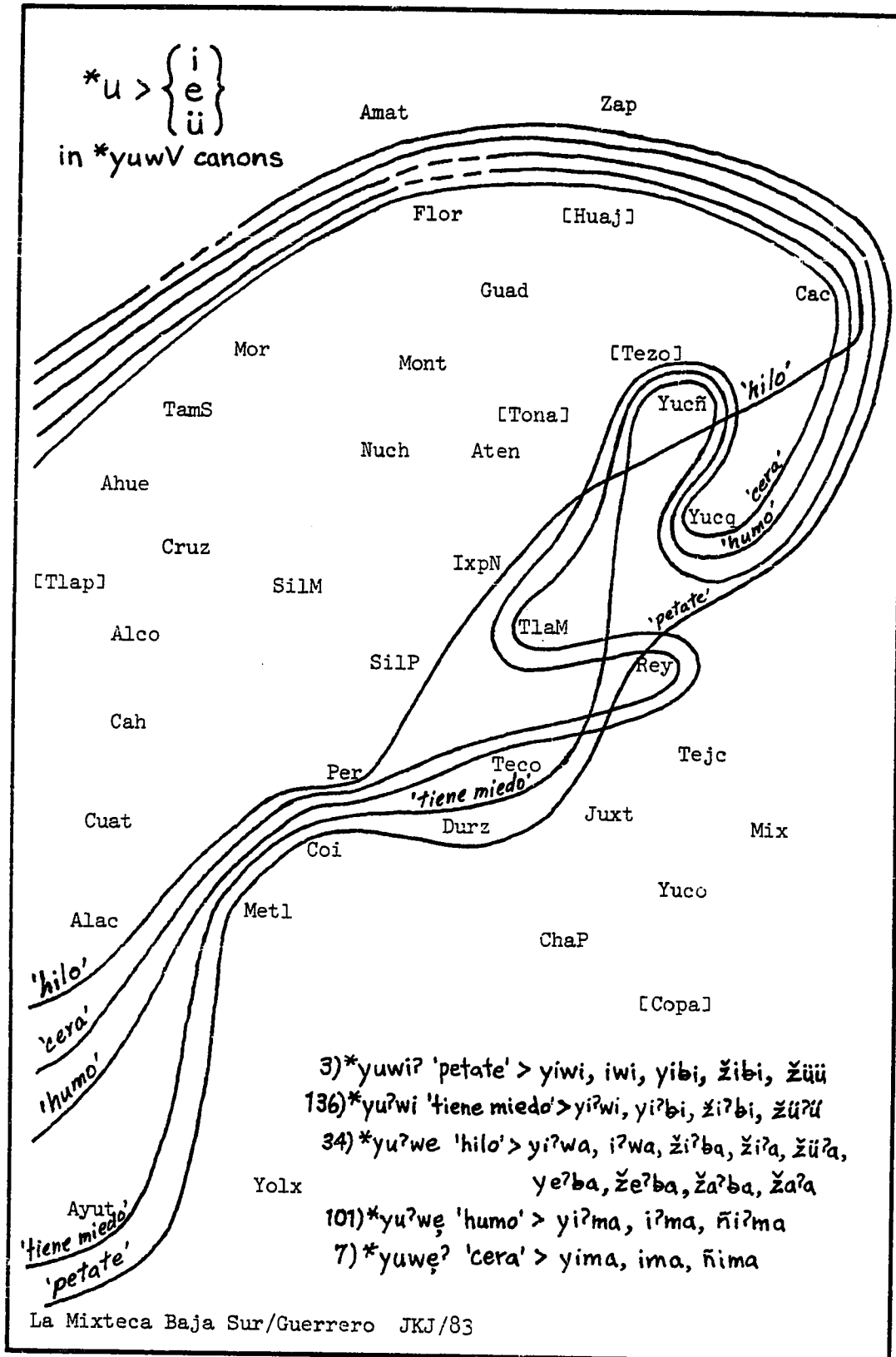
Ahue	Alac	Alco	Aten	Ayut
ü/i/u i i:e	u/i i i/u	i/u i/u u/i	u/i i i	i/u i/u i
u:i i u	o:i i u	u:i i:a:u u	u:i i o/i	u u u
u/o i/ü/o	u/i/o u/i	u/o u	u/o i/u	u u
Cah	Cruz	Cuat	Durz	IxpN
u/i i i	u/i i i	u/i i i	i/u u/i i	u/i i i/a
i:º/u i u/o	i:o:u u:i u/o	i:o:u i u/o	u/i u i:u	u:i i u/i
o/u/i u/i	u/o u	u/o u/i	u i/u	o/u i/u
Mont	Mor	Nuch	Pera	Rey
u/i i i	ü/i i i:e	e/ü/i i i	u/i i i	i/u u i/a
u:i i i	u:i i i/o	u:i i i/o	u:i o/i u	u:i u:i u/i:o
o/u i/u	o/u i	u/o i/u	u/o u/i	u/o u/i
SilM	SilP	TamS	Teco	TlaM
u/ü/i i i/a	ü/i/u i i	ü/i i i:e	i/+/ü i/o i	ü/i i/o i
i:º/u i ü:o	u:i i ü	u:i i u:o	u u:i i/u	u u:i i/ü
u/o i/ü/u	u/o i/ü	u/o i/u	u u/i	u u
Yucñ	Yucq			
u/o/i u/i i	ü/i/u i/ü u/i			
u i:u/o i/o	u:i i i/o			
o/i i/u	u/o i/u			

(environment 3, Correspondence Set 10). The central and western Baja region, however, is characterized by its great diversity of reflexes; here there are no towns which retain *u unchanged in all environments. The coast, on the other hand, shows exceptionally uniform reflexes in all environments. In both the northeast region and in the Alta proper there are a few towns with variant reflexes in specifiable environments, but most environments and most towns show uniform u reflexes for *u.

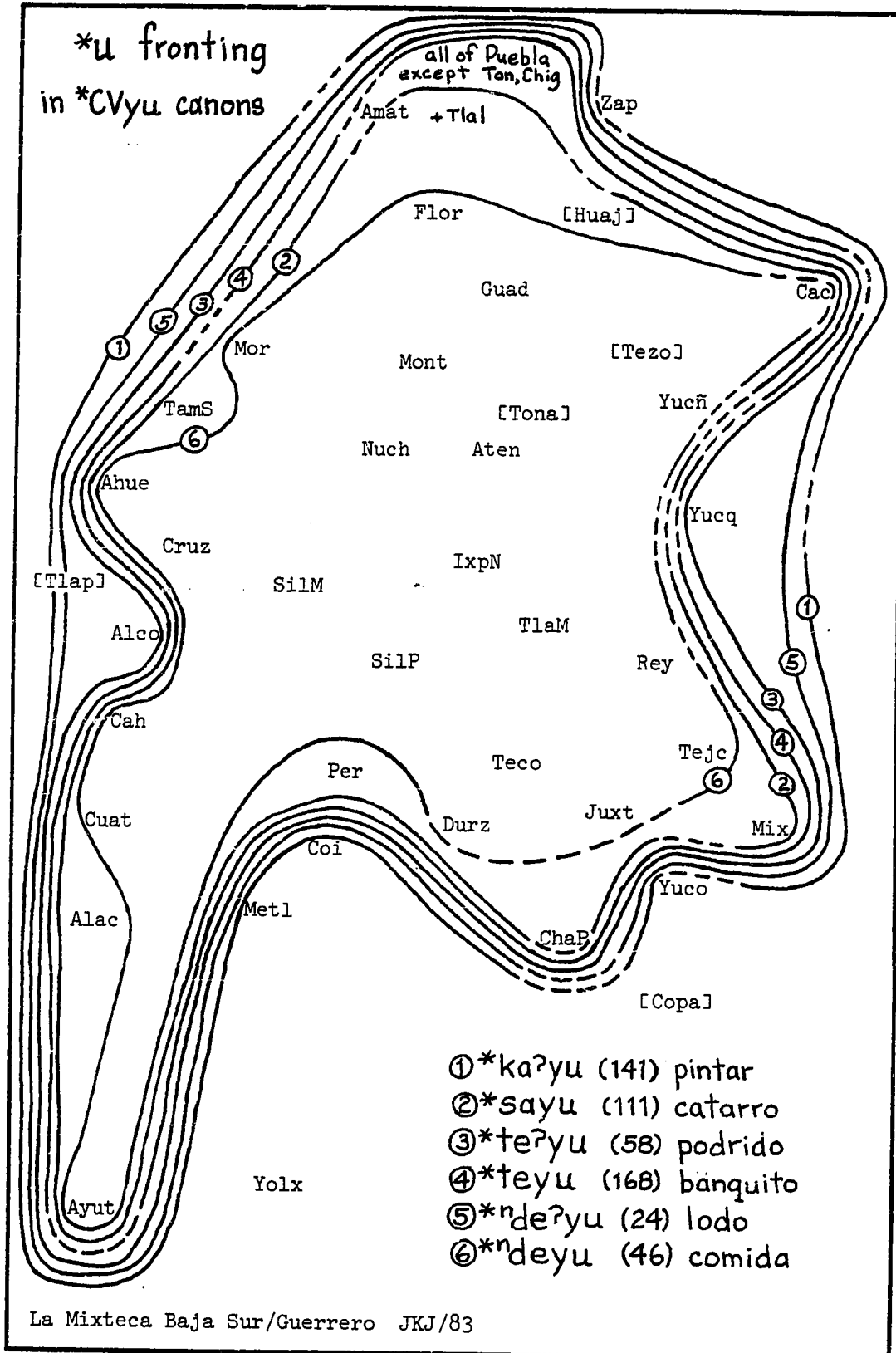
When the two major, often competing, innovations--fronting versus lowering--are separated out, and evaluated individually, the results are considerably more uniform, and even produce innovation spheres which conform to the hopes and expectations of traditional dialectology. The highly congruent distributions of fronted reflexes for *u, in several of the cited environments, are worthy of note. Map VI-19 shows the individual isoglosses for forms with fronted reflexes in the five words of the *yuwV canon, corresponding to environment 2 (Correspondence Set 9), and Map VI-20 presents similar isoglosses for the six words most commonly showing fronted reflexes in *CVyu canons, corresponding to environment 3 (Correspondence Set 10). It is bundles of coincident isoglosses such as these which have made possible the establishment of overall, or single, generalized isoglosses for the fronting of *u in each of the eight key environments.

These summary isoglosses, based on the generalized reflexes shown in Correspondence Sets 17a and 17b, are presented in Map VI-21, which shows the extent of fronting of *u in the Mixteca Baja. In these three maps (VI-19, VI-20, VI-21) no distinction has been made between different realizations of the fronting process; the great majority of fronted reflexes are i, but both ü and e or a are not uncommon in certain areas. These latter reflexes are shown in Maps VI-22 (ü) and VI-23 (e and a).

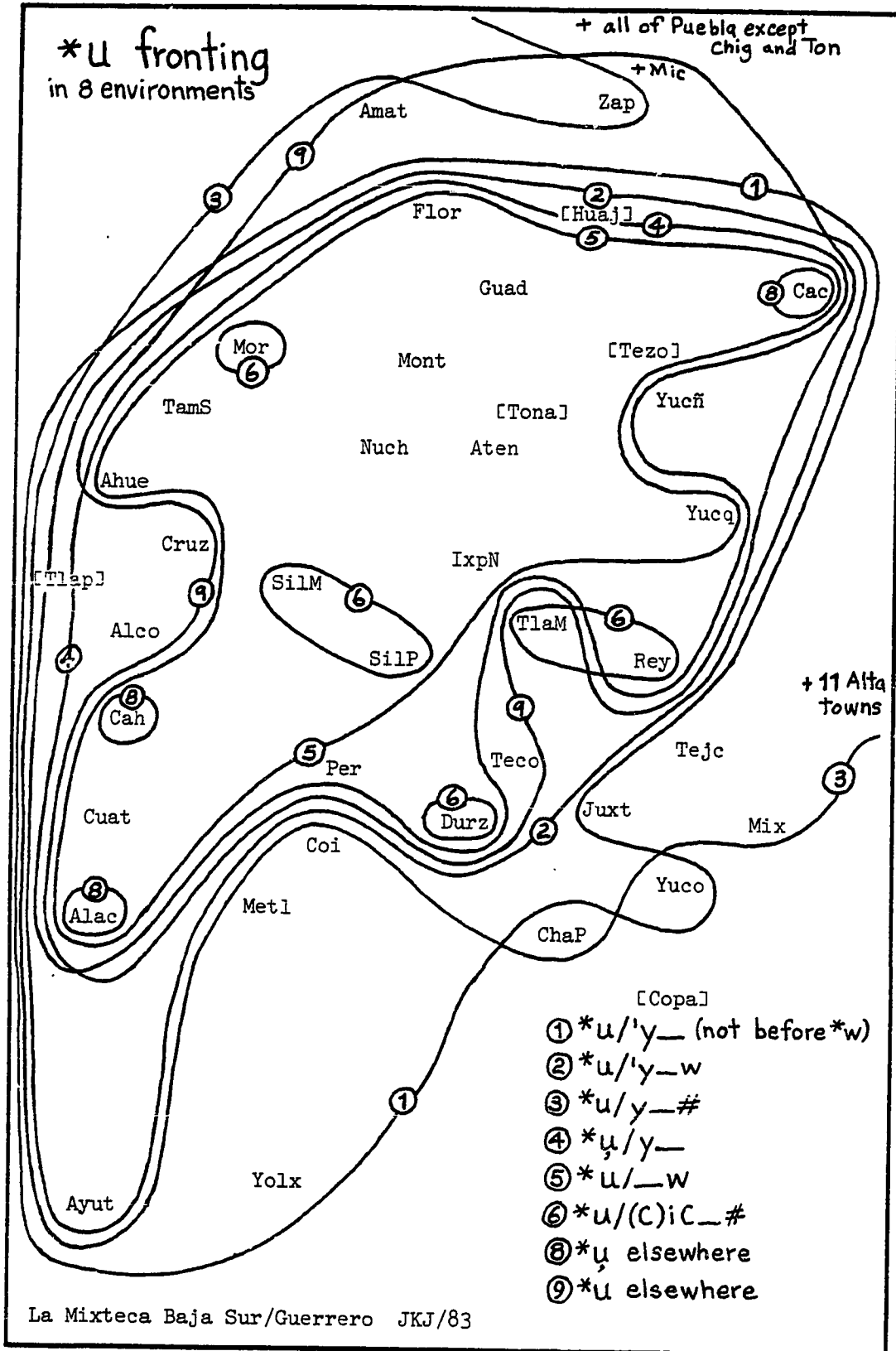
Map VI-19. Lexical Items with Fronted Reflexes for *u in *yuwV Canons



Map VI-20. Fronting Spheres for *u in Ultimate Syllables following *y



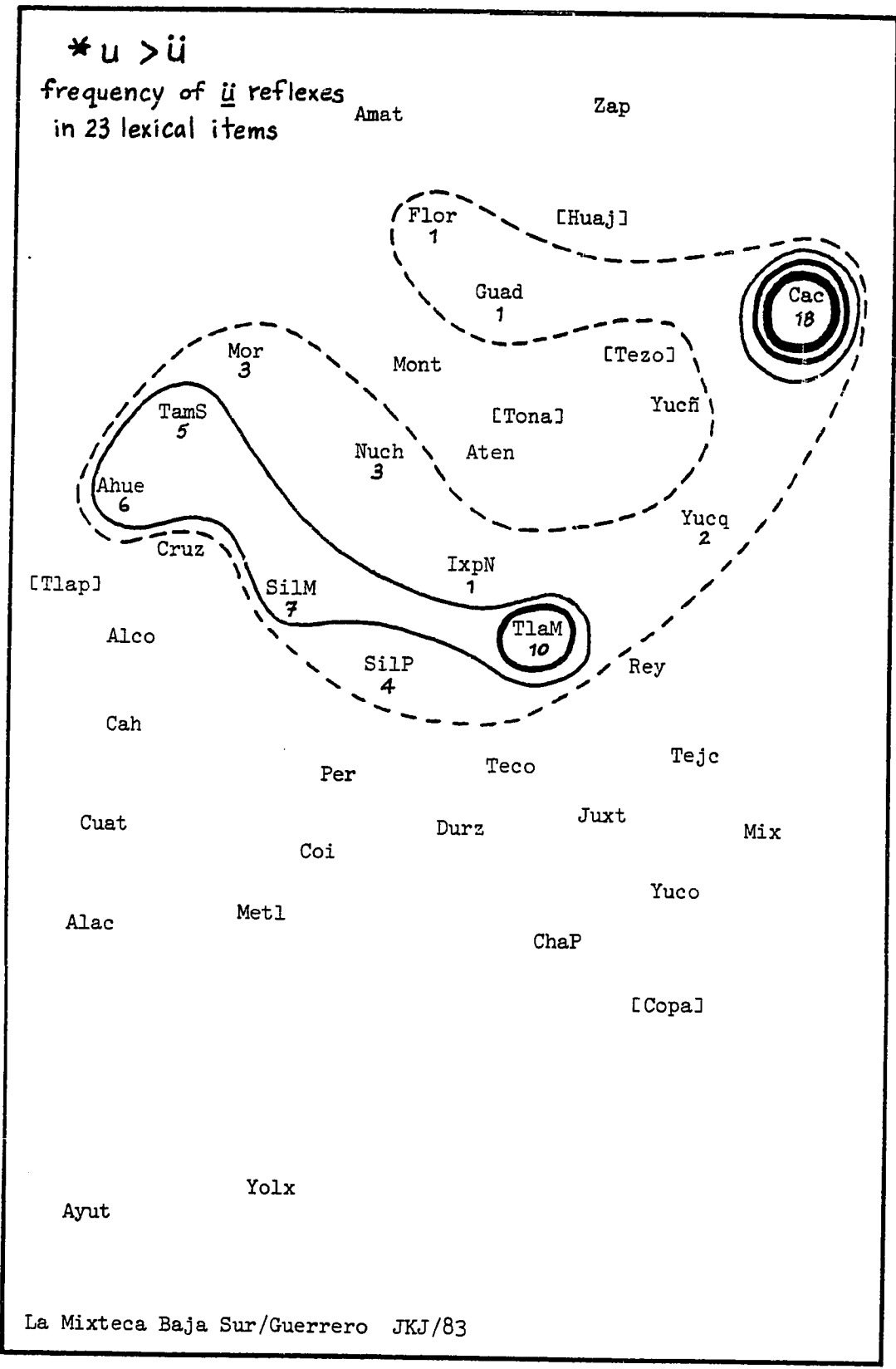
Map VI-21. *u Fronting, by Numbered Environments

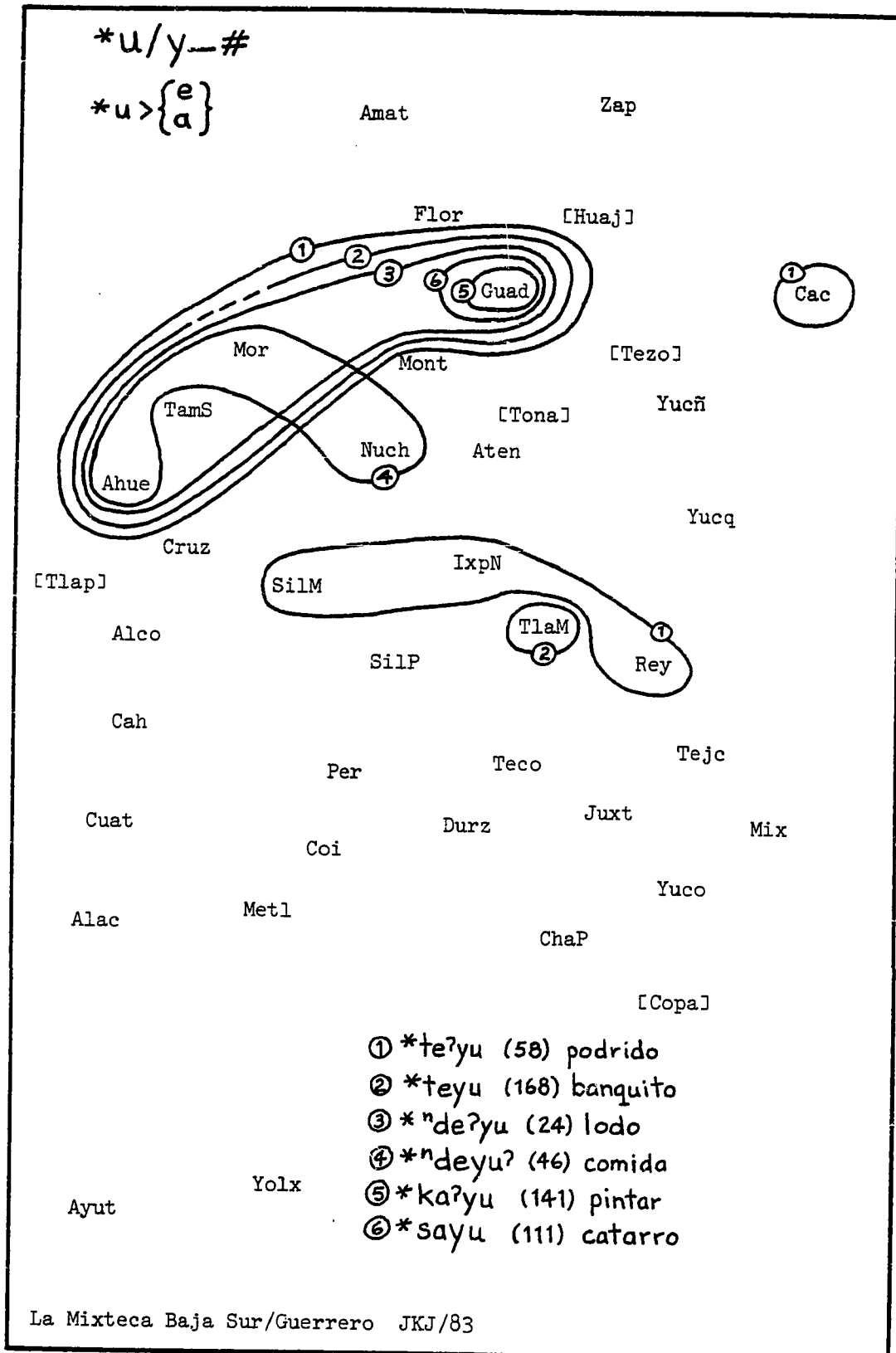


Map VI-22, which plots all the instances of ü reflexes derived from *u found in these data (other ü reflexes are derived from *i and *i), reveals several concentrations of ü reflexes within the Baja. Clearly, Cacaloxtepec shows ü more consistently than any other town, with 18 out of 26 forms producing ü reflexes; San Miguel Tlacotepec has 10 ü reflexes, Silacayoapan-San Martín has 7, and Ahuehuetitlán 6. The discontinuous distribution of this phonological development is somewhat puzzling, and is perhaps best explained as being the remnants of an earlier, more continuous distribution, now displaced in the central Baja area (the Tonalá valley and environs) by a new, more fronted innovation. Certainly ü could be considered as an intermediate stage between *u and i. In systemic terms, the development of ü reflexes is without cost; it is a phonetic shift, a change which does not affect the phonological structure. But the subsequent fronting to i has the effect of changing some instances of /u/ to /i/, and even if this partial merger does not remove /u/ from the overall structure, certainly it has more important structural significance than the allophonic alternation of /u/ seen in the ü reflexes.

Another case of what seems to have been an earlier form of fronting, producing e and a reflexes from *u, is shown in Map VI-23. The area affected is somewhat similar to that of the ü reflexes, except that Cacaloxtepec shows no e developments, and only one a reflex. Guadalupe Villahermosa and Ahuehuetitlán have more e and a forms than any other towns; both are on the edges of Mixtec territory, and nearby towns along this northwestern frontier of the central Baja also show various instances of e reflexes. Some of the a reflexes seem to be direct developments of *u through a process of vowel harmony with (or copying of) the tonic vowel (see the derivations of 141 *ka?yu 'pintar' and 111 *sayu 'catarro', in Guadalupe). Other a reflexes are probably indirect developments from *u,

Map VI-22. i Reflexes from *u



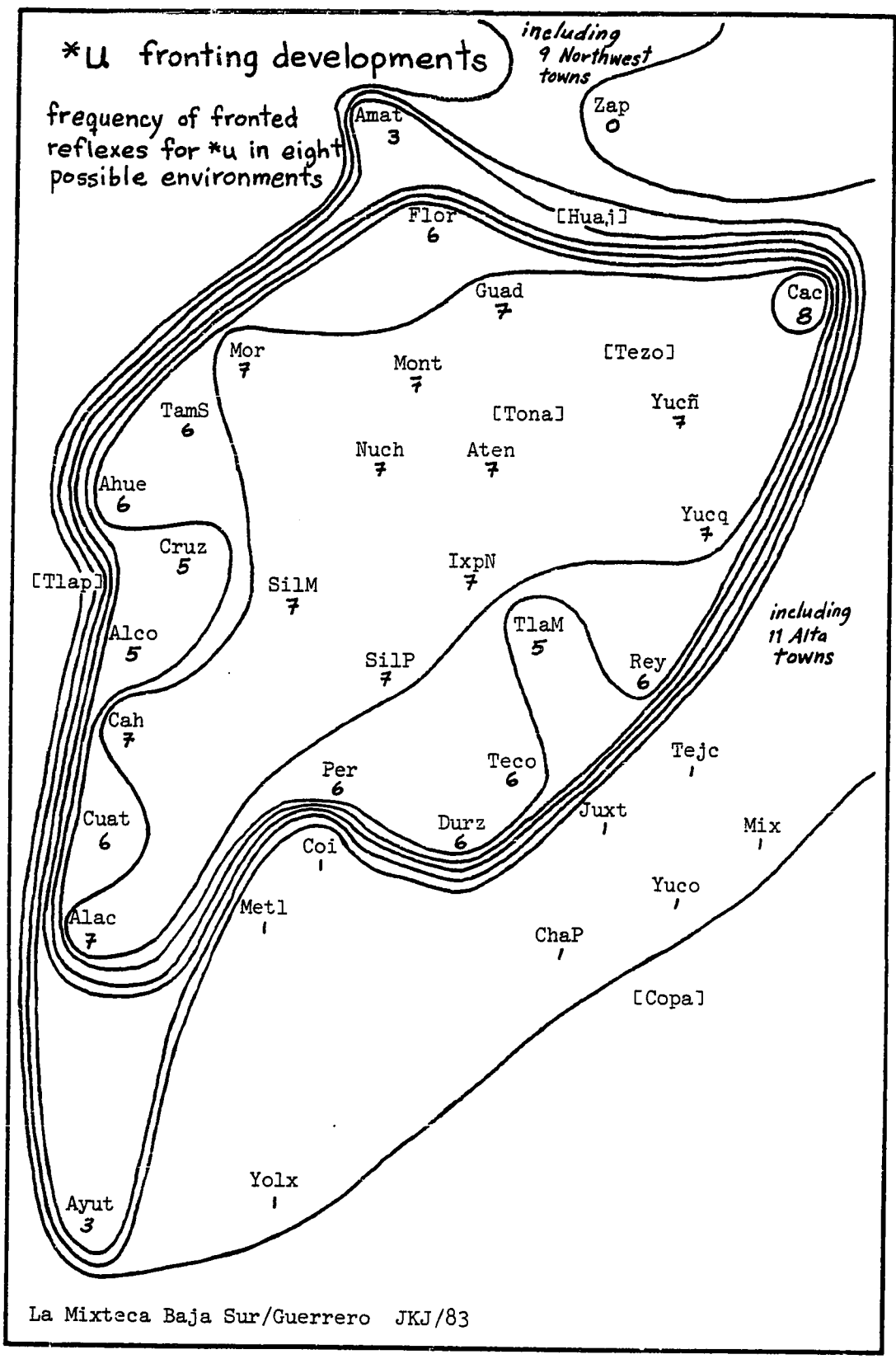
Map VI-23. e and a Reflexes from *u

which first developed as e forms, and later lowered to a reflexes when the merger of *e with *a took place (see the derivations of 58 *te?yu 'podrido' in Silacayoapan-San Martín, Ixpantepec Nieves and Santos Reyes). It seems that in at least some towns, the palatal environment of y between two e vowels protected these instances of e from being affected by this same *e to a merger.

Even though these ü, e and a reflexes are not as unambiguously related to the fronting of *u to i as might be desired, I believe that on both distributional and structural grounds they may all be considered as part of a larger fronting process still active in the Mixteca Baja. It would even seem to be expanding in scope, both in terms of the number of environments of *u affected by the fronting process, and in terms of the number of towns showing fronted reflexes.

Map VI-21, based on Correspondence Sets 17a and 17b, that is, on the generalized reflexes from eight environments for *u, shows eight isoclines which encircle instances of fronted reflexes for each environment. Map VI-24 reinterprets this information in terms of frequencies; that is, according to the number of environments in which *u produces fronted reflexes. This treatment results in a much less fragmented innovation sphere, and gives a very strong definition to the area involved. The highest frequencies of fronting, in all eight or in seven out of eight environments listed, occur only in the central Baja region and in two Guerrero towns. The maximum spread of the fronting innovation in its most accepted form would seem to be that delineated by the isocline which encircles frequencies of fronting in six environments (generally environments 1, 2, 3, 4, 5 and 9). Lower frequencies, which appear on the peripheries of this major extension, would then be seen as gradually being included in the diffusion sphere. Perhaps the maximum spread of fronting

Map VI-24. Frequency of Fronted Reflexes for *u



into Puebla and several Alta towns, and almost exclusively associated with environment 3, could reflect a different innovation center for this particular development, but certainly for the fronting process taken as a whole, the center of innovation would appear to be in the central river valleys of the Baja, along the northern and southern branches of the Río Mixteco, again perhaps around Tonalá.

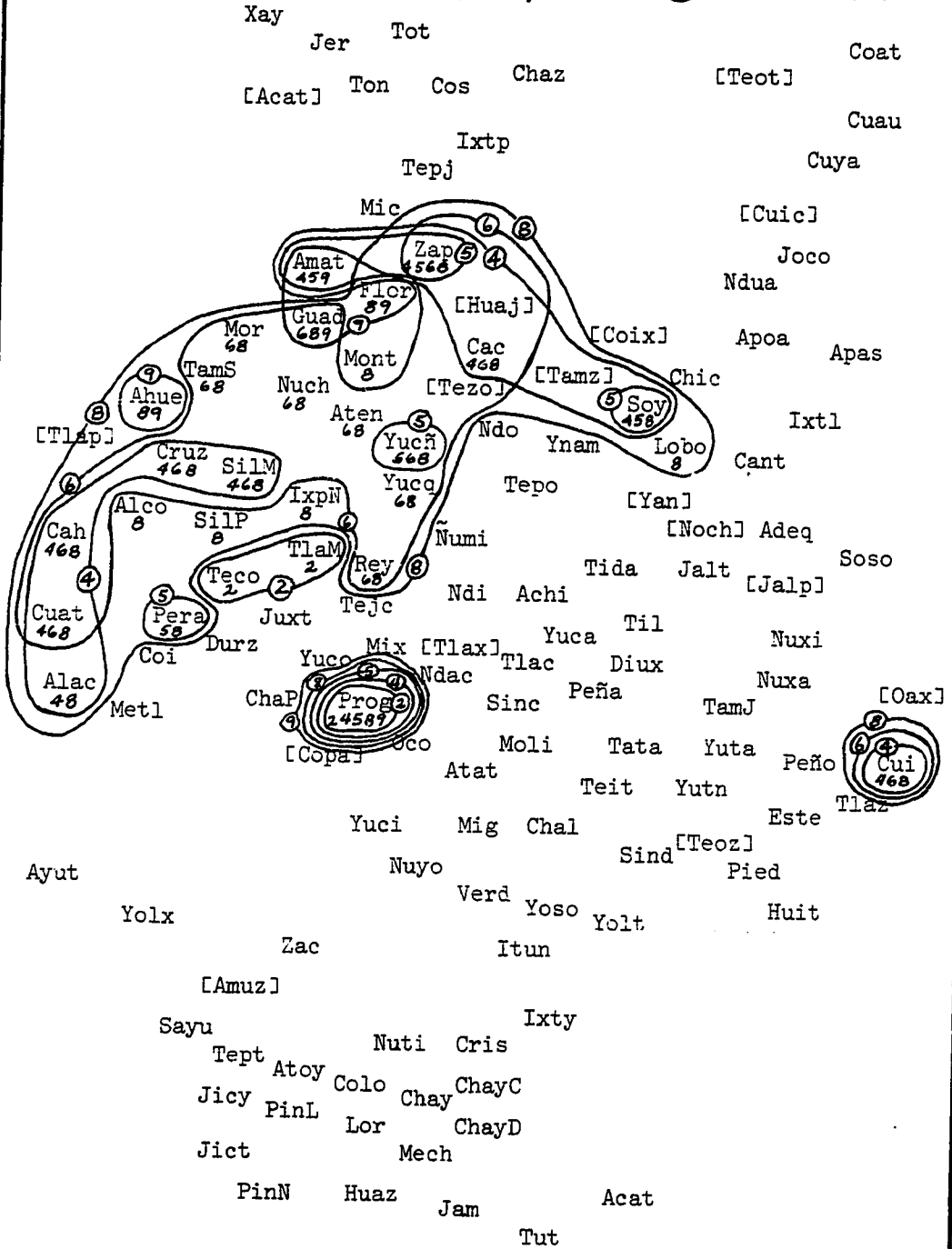
With the single exception of the outermost isocline, which extends into the Alta and Puebla, the strongly-defined innovation sphere for the fronting of *u is quite compact, and includes all of the Baja and Guerrero towns except for two areas on the southern fringe: the Juxtlahuaca-Mixtepec group (also including San Pedro Chayuco, Tejocotes and Yucunicoco), and the Coicoyán-Metlatónoc axis (with Yoloxochitl far to the southwest). There is a very clear and strong linguistic boundary between these areas and the central Baja sphere, and this boundary continues along the Alta-Baja interface to the north of Mixtepec, and is fairly strong across the northern frontier as well, dividing the central Baja from the northwestern and Puebla area. This line coincides fairly closely with the limits of the drainage basin of the Río Mixteco which flows through Huajuapán de León.

The second, sometimes competing, innovation involving *u is the lowering process which produces o reflexes, mostly in nasalized environments and/or preceding *w (conversely, the fronting process just discussed seems to be inhibited by nasal contexts, though not by *w). This partial merger is counter to the direction of the more prevalent merger of *o with *u, which produces u reflexes from *o, in similar environments to those which here produce o reflexes from *u.

Map VI-25 presents the distribution of lowered reflexes for *u, according to the numbered environments which appear in Correspondence

*u > o

- Chig
- Tlal [Tepx]
 - ② *u / y - w
 - ④ *u / y -
 - ⑤ *u / - w
- Xay
 - ⑥ *u / i C - #
 - ⑧ *u elsewhere
 - ⑨ *u elsewhere



Set 17 (environment 7 does not appear on this map); each numbered isocline corresponds to a single environment. The greatest areal extent of lowered reflexes is in the Baja, but the most frequent lowering, i.e., the greatest number of environments in which lowering takes place, is found in towns mostly peripheral to the central Baja: in the north, Zapotitlán has lowered reflexes in four different environments, and the nearby towns of Amatitlán, Cacaloxtepec, and Yucufuti show o reflexes in three environments each, as do several towns in the far western Baja (Silacayoapan-San Martín, Santa Cruz, Cahuatache, and Cuatzoquitengo).

Outside the Baja, the western Alta town of San Miguel Progreso shows an unusual concentration of lowered reflexes (five environments), as does Cuilapan, in the Valley of Oaxaca (three environments). In the Yanhuitlán area (western Nochixtlán valley), two towns show one or more instances of lowering (Soyaltepec and Monte Lobos). But in general, the Alta towns have lowered reflexes in a different selection of environments than those commonly found in the Baja, so that it is hard to consider them fully comparable developments. On the other hand, it is difficult to believe that they are completely unrelated. Cacaloxtepec, a town practically on the crossroads between the big valleys of the Alta and the openlands of the Baja, is within the area of overlap between Alta and Baja distributions for lowering, but it is unclear whether it is the center of both innovation spheres or simply on the edges or between two different spheres.

The Baja distribution of lowered reflexes for *u, though more circumscribed areally to the south, is quite similar to the distribution of fronted reflexes for *u (compare Maps VI-24 and VI-25). The Juxtlahuaca-Mixtepec and the Coicoyán-Metlatónoc regions are again outside the innovation sphere, and other southern Baja towns such as San Miguel Tlaco-

tepec, Tecomaxtlahuaca and Duraznos are also generally excluded from the lowering innovation, as are Ayutla and Yoloxochitl, in Guerrero.

The high mountain range south of Peras seems to function as a barrier to innovations from the central Baja. Certainly Coicoyán, Metlatónoc and Yoloxochitl are the most isolated towns in the Baja; few innovations relevant to *u, at least, penetrate to them. Ayutla, the farthest western outreach of Mixtec, is also marginal to the innovation sphere, but does show a surprising number of instances of fronting of *u (in various environments following *y). It seems likely that geographic removal from the actual area of innovation is responsible for the lack of participation of the southern and western Mixtec towns in these important Baja developments.

A different case is presented by the more centrally located Mixtepec region which is also excluded from the two innovation spheres, but more likely because of linguistic rather than geographic barriers to communication. The Mixtepec region, as far west as the Juxtlahuaca area (including Mixtepec, Tejocotes, Yucunicoco, San Pedro Chayuco, and sometimes San Miguel Tlacotepec, Juxtlahuaca, Tecomaxtlahuaca and Duraznos), generally does not participate in the *u developments characteristic of the Baja. The absence of these innovations does not provide any basis for grouping these towns, but other, apparently prior, developments involving *x, *t and *ⁿd had by this time resulted in a very different variety of Mixtec being spoken in the Mixtepec region, producing a clear linguistic boundary between it and the adjoining areas of the Mixteca Baja (and Alta), and effectively preventing the penetration of most innovations from these other areas.

Within the Baja, there is a multiplicity of rules governing the distribution of u, i and o reflexes for *u in any given town, and few

towns share the same subsystem, as was clearly demonstrated in Chart VI-1. Even when the structures are similar, the realizations may still be quite diverse. This situation may be the result of a classic example of the effects of a linguistic drift following the breakup of an earlier innovation sphere. The structural weakening of *u, resulting in splits and partial mergers with *i and *o, must have begun while all the Baja towns (except for the two areas to the south already discussed) were still locally integrated into a large innovation sphere, probably also involving parts of the Alta. The subsequent movement of many segments of this population into a new area (the southern and western Baja and Guerrero) meant that the incipient phonological processes affecting *u did not develop communally, but rather differentially and in situ in their modern locations, perhaps influenced by contact with new neighbors as well as by old tendencies.

Proto-Mixtec *o

PM *o low back vowel. There are four sets of correspondences attributable to *o, defined by features of roundness (when *o precedes *w, Correspondence Set 18) and by features of nasality, both of *o itself and of the surrounding environment in which *o occurs. The correspondences involving nasalized *o (including both inherent and assimilated nasalization) are difficult to define, and are here rather arbitrarily divided into two sets: Proto-Mixtec canons with geminate or repeat sequences of nasalized *o (Correspondence Set 19), and canons containing nasalized *o in either the tonic or the ultimate syllable of a monomorphemic couplet, but not in both syllables (Correspondence Set 20). The final set for *o covers all other instances of *o; that is, oral *o not preceding *w (Correspondence Set 21).

Proto *o is the third member of the inner triangle of vowels in Proto-Mixtec, and as such is relatively less prominent than its strong, outer triangle vowel counterpart *u. Like other inner triangle vowels, *o occurs relatively less frequently and is limited in terms of patterns of co-occurrence with other vowels in Proto-Mixtec monomorphemic couplets. In a sample of nearly 600 reconstructed etyma, *o occurs in 17% of the words in the sample, and accounts for 14% of all vowel occurrences (counting two vowels per word). Most instances of *o are in words with geminate or repeat sequences (38 instances of geminates and 28 of repeats); in sequences of dissimilar vowels *o occurs in 10 tonic syllables and in 23 ultimate syllables, almost invariably in combination with *i (only four etyma show other sequences). Additionally, *o, like *u, did not follow *w or *k^w in Proto-Mixtec monomorphemic couplets, nor did it follow *x (which only preceded front vowels). No

other distributional restrictions have been discerned for *o, except that it should be noted again that *o and *u do not contrast well in nasalized environments, as will be discussed in relation to Correspondence Sets 19 and 20.

The primary and virtually the only phonological development affecting *o is the raising of *o to u (and occasionally to ɨ or i) in nasalized and rounded contexts. This partial merger between *o and *u is widespread throughout the Mixteca, and the distributional characteristics of the innovation sphere imply that this is a recent, probably on-going phonological development. Reconstructions of *o in these environments are further complicated by the countermerger of *u to o in similar environments (see Map VI-25). But except for this neutralization between *o and *u in these few environments, *o has been uniformly retained in all other contexts, producing correspondences of identity throughout the Mixteca, as can be seen in Correspondence Set 21.

Modern instances of o are almost always attributable to *o; a few dialects also derive modern o reflexes from *u, as just mentioned, but this origin is restricted to a relatively small area of the Mixteca. Any other origin for modern instances of o must be attributed to sporadic, unsystematic, and perhaps equivocal derivations.

Correspondence Set 18 presents the regular reflexes for *o in tonic syllables preceding *w, where the ultimate syllable vowel is not *o, but usually *i or *e, either nasalized or oral. Unfortunately the data available do not permit as direct a contrast as might be wished, since the only nasalized sequence documented in this corpus is the *Cowi canon, while the oral ones are both *owe canons. These etyma seem adequate to establish that the most important conditioning environment is the *w (rather than the final nasal vowel). There are some differences in the

reflexes which are attributable to the oral versus nasal contrast, but these are limited to a few towns in the Baja, while the more prevalent pattern of correspondences is that of a single reflex, usually u, for both oral and nasal environments.

Map VI-26 is based on the reflexes found in Correspondence Set 18, and indicates the innovation spheres associated with developments of *o before *u, in both oral and nasal contexts. The Baja towns showing o reflexes fall into several distinct groups; only a few retain *o uniformly before *w in both oral and nasal environments (Cacaloxtepec, Silacayoapan-San Martín, Peras, Cahuatache, and perhaps Alacatlazala, San Sebastián del Monte and Flores). A group of adjacent towns retain o only in the nasalized etyma, while showing a distinct reflex in the oral etyma, though this latter reflex varies from town to town (Zapotitlán, Yucufñuti, Atenango, Nuchita, and Ixpantepec Nieves). Still other towns reverse this pattern, preferentially retaining o in oral etyma while developing u reflexes in nasal etyma (Ahuehuetitlán, Morelia, Santiago Tamazola, Cuatzoquitengo, San Miguel Tlacotepec, Santos Reyes). Several towns show mixed reflexes, making identification of a set pattern difficult, but indicating the encroachment of the innovation on the fringes of the innovation sphere. It appears that a definite barrier to the spread of the innovation existed in the central and western Baja region, and perhaps also in the Nochixtlán Valley town of Soyaltepec, but whether these two areas are consequently related is not discernable. Only San Juan Tamazola, in the eastern Alta, shows i as the reflex for nasalized *y in this environment.

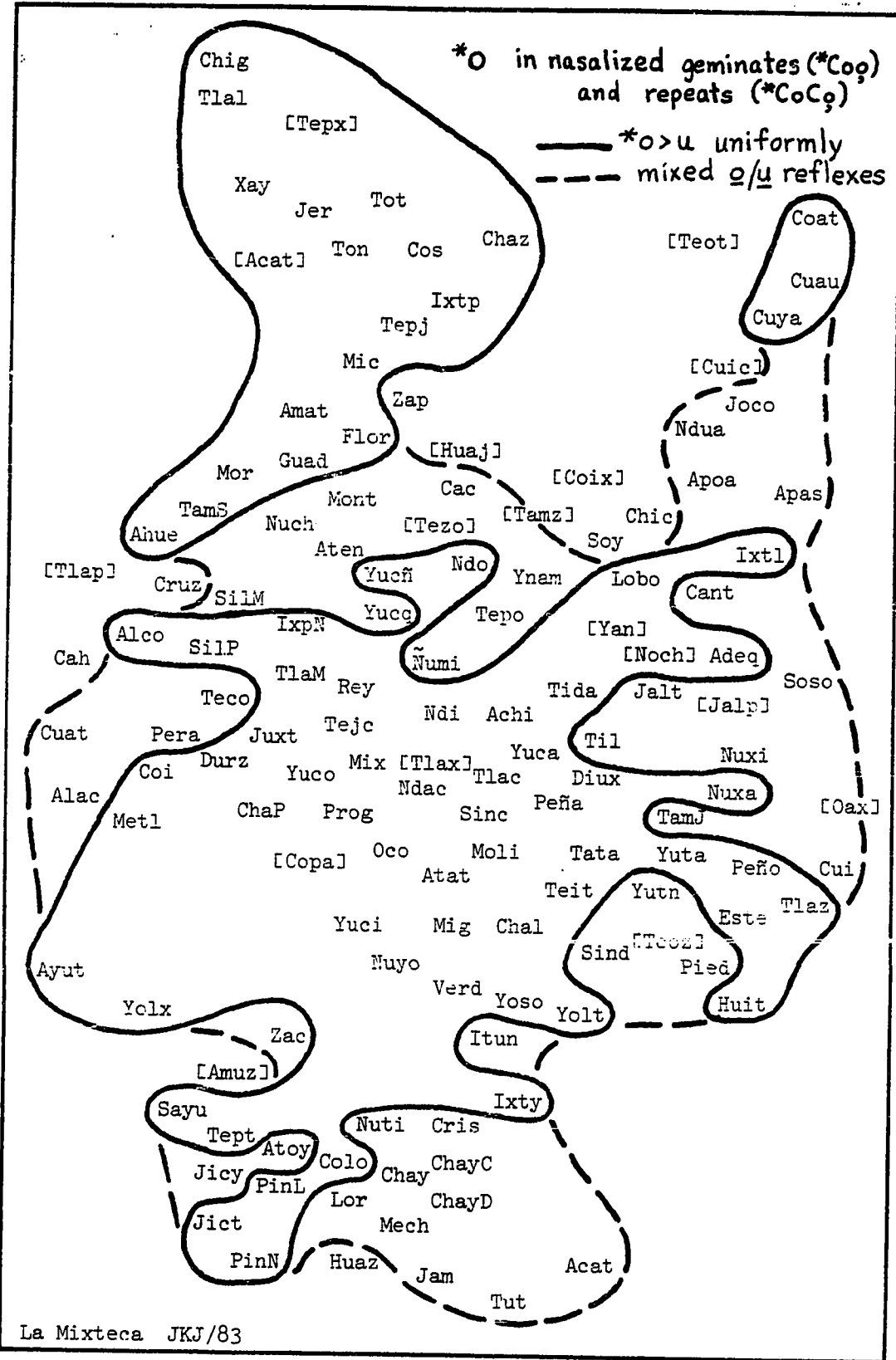
Correspondence Set 19 presents the reflexes for *o in etyma with nasalized geminates or repeat sequences of *o interrupted either by medial *n or by *y when the final *o is inherently nasalized. (This set

would also cover parallel instances of repeat *o separated by *w, except for the stricture prohibiting such sequences in Proto-Mixtec.) In the case of geminates, both vowels always follow the same pattern of development, producing identical reflexes in both structural vowels (predictably, since the two mora are phonetically a single long vowel). This also tends to be true for repeat sequences, although a few instances to the contrary do show up (for 30 *koyō 'carne', Atenango has kōj, Tecomaxtlahuaca has kufō, Nduayaco has kōñy; for 42 *yono' 'red', Silacayoapan-San Martín has yona, Yosondua has ñuna).

Map VI-27 is based on the reflexes for nasalized *o in geminates and repeat sequences, as given in the preceding correspondence set. The map shows the extent of exceptionless spread of the merger of *o with *y; that is, all towns with uniform y reflexes. Areas which show mixed reflexes, alternating between o and y, either in a single word or in various etyma, are enclosed by dashed lines. The distribution of the innovation is nearly continuous, except for two areas--the northwestern Baja and the three most northeasterly towns--which are separated from the main innovation sphere by intervening areas with mixed reflexes. Other areas of mixed reflexes, on the edges of the area of completely merged reflexes, may indicate an on-going change. The towns conserving *o in all instances are few and widely scattered: Soyaltepec and Chicahua in the northeastern Alta, Zapotitlán in the north-central Baja, Santa Cruz and Cahuatache in the far western Baja, and Huazolotitlán on the coast. A predominance of o reflexes is found in many other towns in the same areas (eastern coast, central and western Baja, central valleys and northeastern and eastern Mixteca Alta).

Few regular patterns can be discriminated in the mixed reflexes, although some towns show a different reflex for geminate sequences than

Map VI-27. *o in Nasalized Geminates (*Coq) and Repeats (*CoCq)



for repeats (Silacayoapan-San Martín in the Baja; San Cristóbal and San Lorenzo on the coast; Itundujia and Nuxiño in the Alta); usually the innovated u is found in geminates, while o is retained in repeat sequences.

Correspondence Set 20 presents the reflexes for all other instances of nasalized *q, that is, neither geminate nor repeat, but combinations of *o with another vowel in *CoCV̄ or *CVCq̄ canons. These instances of nasalized *q̄ have been divided into two structural subsets, contrasting tonic versus ultimate syllable position within the monomorphemic couplet. Instances of nasalized *q̄ in tonic syllables are all cases of assimilated nasalization derived from a following, couplet medial *n (85 *noni? 'maíz', 26 *oni 'tres', 89 *one 'ocho'). Final syllable nasalized *q̄ can derive either from inherent nasalization of the final vowel (49 *tiyq̄ 'trabajo', 106 *iyq̄ 'seis', 48 *sikq̄ 'huipil', 30 *koyq̄ 'carne') or from assimilated nasalization produced by a preceding, couplet medial *n (82 *nino 'abajo', 188 *ino? 'tobaco'). Although there are a few indications of different reflexes for *q̄ according to syllable position, the apparent tendency is to develop uniform u reflexes for nasalized *q̄ in both syllable positions, and most towns with mixed o and u reflexes again show no regular pattern, but rather represent an intermediate and transitory stage in the developmental process of the merger between *o and *u.

Map VI-28 is based on the reflexes for nasalized *q̄ found in Correspondence Set 20. Again, the map delineates the extent of exceptionless development of u reflexes with a solid line, while areas of mixed reflexes are enclosed with a dashed line. This time no towns retain *q̄ in all etyma; all the Mixteca shows at least some evidence of the encroaching merger, with about the same distributional patterns as seen in Map VI-27, except for the additional area of mixed o and u reflexes

found in the western Alta.

The towns which show patterned reflexes according to syllable position within the couplet are encircled with dotted or dashed-dotted lines. Three towns (Teposcolula in the Alta, Santa Cruz and Cahuatache in the Baja) develop u reflexes in tonic syllables while (mostly) retaining *o in ultimate syllables; one town in the central Baja (Atenango) shows the reverse pattern, with *o retained in tonics and u developed in ultimas. Two towns on the southwestern edge of the Mixteca Alta (Yucuhite, Nuyoo) show i developments in one word, 48 *sikʷ 'huipil', and nearby Ocotepéc has i in the same form; a very few other towns have i or i reflexes in some other word, but no regular pattern of phonological development can be adduced to explain these aberrant reflexes, with the possible exception of instances of i derived from couplet final sequences of *yo, by analogy with the development of i reflexes from similar final sequences of *yu; thus the confusion between *o and *u may be responsible for the sporadic i reflexes in 30 *koyʷ 'carne', producing forms such as koyi in Atenango and kufi in Yucuquimi, and in 49 *tiyʷ 'trabajo', which develops as tnii in Sinicahua.

As has been mentioned earlier, *u and *o do not contrast well in nasalized environments, and where there is no direct contrast it is especially difficult to reconstruct with certainty. In environments where *u normally develops i reflexes (such as following *y) there is a fairly clear distinction between *o and *u, since *o does not regularly develop i reflexes in any area of the Mixteca. But certain other environments are more problematical, since *o and *u produce both o and u reflexes in similar contexts; only occasionally do the results show a symmetrical exchange (flip-flop), so that *o regularly develops as u while *u develops as o.

Contrasts between *o and *u are relatively frequent before *w (compare the etyma in Correspondence Sets 9, 12, and 18), and there are some near minimal contrasts in couplets with nasalized tonics (such as 88 *nune? 'abierto' versus 85 *noni? 'maíz'). But in cases of nasalized geminates, while nasal *y occurs following *y (105 *yu?y 'fuego', 100 *yuy 'pueblo'), nasalized *ç does not, and conversely nasalized *ç occurs in vowel-initial geminates and following consonants other than *y (28 *o?ç 'cinco', 9 *to?ç 'palabra', 27 *no?o 'diente') while nasalized *y does not seem to occur in such canons.

Similarly, *u does not seem to occur in repeat sequences with medial *n, or with medial *y and final nasalized vowel, though such canons are reconstructed for *o (42 *yono? 'red', 30 *koyç 'carne'). And lastly, nasalized ultima in canons with dissimilar vowels in the tonic syllables are most frequently attributable to *u rather than *o (65 *ka?nu? 'grande', 103 *tasu? 'gavilán', 55 *xetu? 'cajón', 54 *xity 'horno', but compare 48 *sikç 'huipil', as well as contrasts following *y, such as 83 *niyu 'de noche', versus 106 *iyç 'seis' and 49 *tiyç 'trabajo'); the patterns of correspondence are not, however, unambiguous.

Because *o and *u distinctions are so difficult to identify, a larger data base is required to establish adequate contrasts in proto-forms. The "apparent" distributional restrictions just noted may well be due to deficiencies in the sample, since a review of the three published vocabularies (sixteenth century Teposcolula and modern San Miguel el Grande in the Alta, and San Agustín Chayuco on the coast) shows that several of these contrasts do exist in one or another of these towns. For example, Chayuco has forms contrasting /ç/ and /y/ following consonants (tç?ç 'arrancamos', ty?y 'palabra'; nçç 'bajamos',

nyu 'cara'), but not in vowel initial geminates; there is oral u'u 'doloroso', but no oral /o/ counterpart, and there is nasal o'o 'cinco', but no nasal /y/ counterpart.

San Miguel el Grande has a contrast between /o/ and /y/ following /n/ (no'o 'volver' and ny'u 'diente'), but has only /y/ following /t/ (nasal ty'u 'palabra', oral tū'u 'viejo', and oral to'o 'jefe', but no nasalized /o/ forms). Furthermore, San Miguel has only oral and nasal /u/ in vowel initial geminates (oral u'u 'dolorido', nasal y'u 'cinco'), but no corresponding forms with geminate /o/, oral or nasal.

Teposcolula, like Chayuco, has contrasts between /o/ and /y/ following both /n/ and /t/, but not in vowel initial geminates; in Teposcolula these latter occur only with /o/ (oral oo 'una vez' and nasal o'o 'cinco'). Such modern-day contrasts may or may not derive from Proto-Mixtec contrasts between *o and *u; they may simply be intermediate stages in a very complicated series of phonological developments involving only partially resolved mergers.

The three preceding Correspondence Sets (18, 19 and 20) all show the effects of the same general phonological process, i.e., the raising of *o to y, thus resulting in a partial merger between *o and *u in almost all varieties of Mixtec. Although they might be regarded as a single correspondence set, the patterns of reflexes are not quite the same in the three sets presented here. Furthermore, the conditioning environments are sufficiently different, at least with regard to the contrast between features of roundness and those of nasality. But even granting these distinctions, it seems clear that all are part of a single, larger-scale phonological shift, with a rather "classic"-looking innovation sphere.

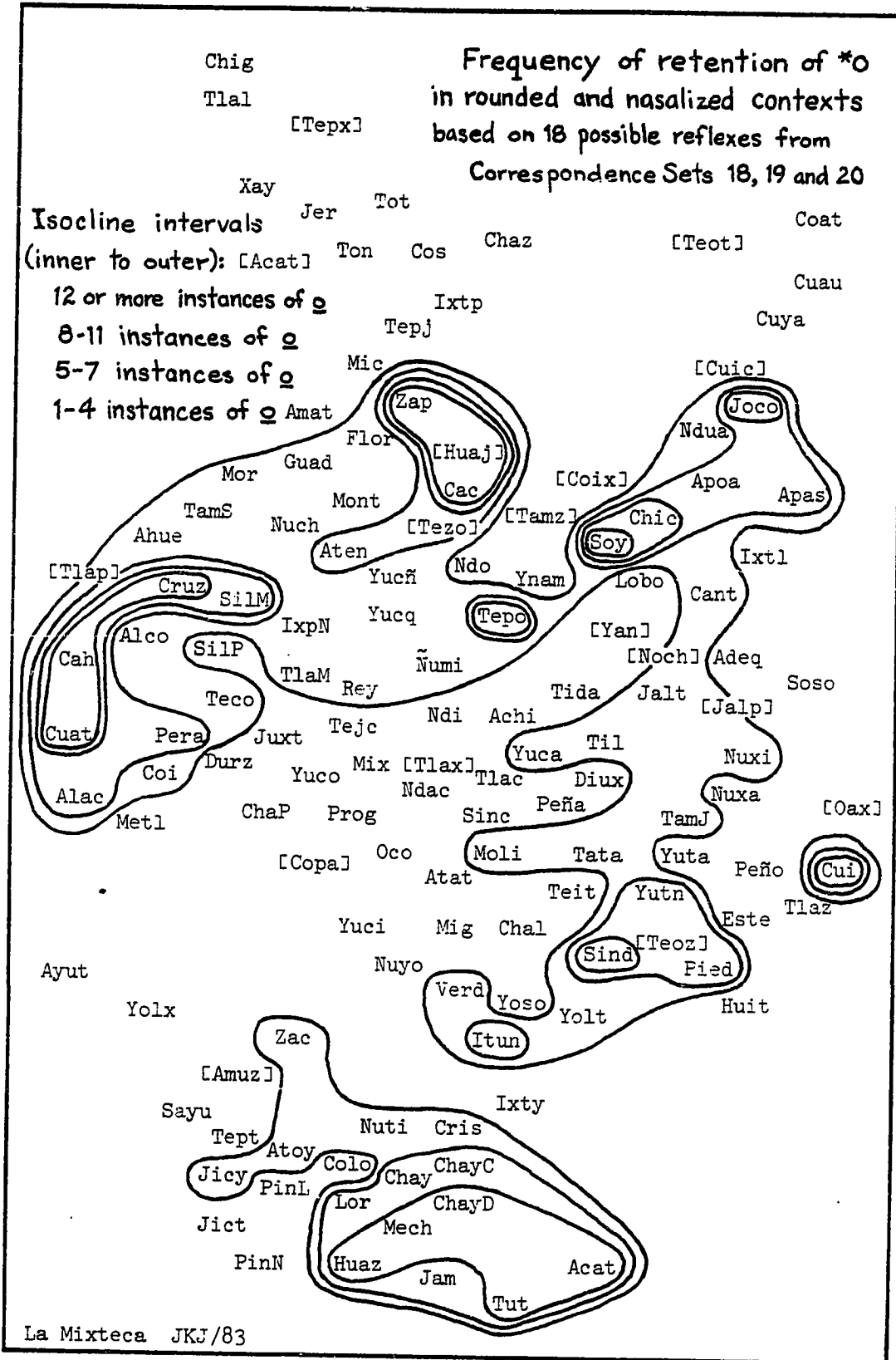
In the case of the partial merger of *o with *u, an isocline could

be drawn around a large, almost wholly contiguous area of the Mixteca (excepting the Coatzospan area, which is usually separated from the main innovation sphere for this merger by an intermediate area of mixed reflexes (see Maps VI-26, VI-27 and VI-28). Few towns can be found in the central innovation area which do not show complete action of the merger, while towns on the edges show mixed reflexes in irregular patterns, as might be considered normal for areas still undergoing change. With the possible exception of the aforementioned group of towns around Coatzospan, no towns from the central, fully-innovated area have (yet) migrated to areas of incomplete innovation (and the Coatzospan area may have a better explanation than migration). This is the most unusual feature of the innovation sphere in terms of Mixtec phonological history, since obviously frequent outmigrations have produced discontinuous distributions for the innovation spheres of most other phonological changes.

Perhaps of more or at least equal interest than the innovation sphere is a consideration of the areas of retention (as shown in Map VI-29). It is intriguing to speculate on why such a widespread innovation should not have reached certain areas, particularly the central Baja, which is an almost encapsulated island within the innovation sphere. Some Baja towns may be more resistant to the development of u from *o because of the counter-merger which produces o reflexes from *u in similar environments, but generally these towns simply show a flip-flop of reflexes, resulting in the exchange of o and u reflexes in these etyma.

But more significantly, besides being on the "edges" of the innovation sphere, several of the large areas of complete or partial retention of *o also coincide with the kingdoms of important pre-Conquest and early Colonial Mixtec señoríos, such as Tututepec on the east coast,

Map VI-29. Retention of *o in Certain Environments



Teozacoalco in the southern Mixteca Alta, Apoala in the northeastern Alta, Yanhuitlán in the Nochixtlán Valley, and Huajuapán in the central Baja. This coincidence does not imply any necessary connection between these areas, but it may help to explain the resistance they offered to the effects of the innovation, because each was a center of prestigious speech in its own right, and consequently not unlikely to maintain its own forms, be they innovations or retentions, rather than to adopt readily innovations from some other center.

At the same time, it is difficult to identify the actual center of innovation for this partial merger between *o and *u, but the most likely candidates would seem to be located somewhere within the western Alta or adjacent Baja. In view of the prominence of the market center of Tlaxiaco, and its central location with respect to the innovation sphere, I would favor this identification of the center from which the *o raising innovation spread.

Correspondence Set 21 presents the reflexes for all remaining instances of *o (oral *o, not before *w). This final set shows correspondences of identity retaining *o throughout the Mixteca, with very rare exceptions (Amatitlán and Flores in the central Baja have a few instances of u). Little more can be said about this correspondence set, except to point out that it justifies the contrast between *o and *u in a wide variety of environments, excepting only those of roundness and nasality just discussed.

Introduction to *a and *e

The Proto-Mixtec reconstructions involving *e and *a are among the most difficult to resolve, especially when these precede *y. Very few etyma have been found for the several reconstructions herein suggested involving these three units, which is another indication of the difficulties encountered. Several of these forms have been the object of previous attempts at reconstructions (Mak and Longacre 1960; Bradley and Josserand 1978, 1982), but data from more towns offer convincing arguments against some of these reconstructions, and support new reconstructions in their place.

In the present study, much attention has been directed towards the canonical patterns of Proto-Mixtec; that is, the monomorphemic, two-syllable couplets have been considered as wholes, rather than simply as combinations of independent syllables. Also, geographical distribution criteria have played an important role in the reconstructions, particularly in terms of areas with high frequencies of retention of certain proto-units (this is especially true for *e). Several problems do remain, however, and it seems likely that not all of the reconstructions presented in the following two sections (covering *e and *a) will be definitive. Several of the newly proposed proto-forms break with previously held conceptions of phonological constraints in Proto-Mixtec, with regard to the purported restrictions of occurrence of *y before front vowels *i and *e (Bradley and Josserand 1982:285).

The greatly increased number of proto-forms with *e reconstructed in tonic syllables preceding *y represents a major change of status for *e, as compared with earlier statements on Proto-Mixtec, but it is interesting to note that it is but another extension of a steady trend to-

wards reaffirming the presence of *e in Proto-Mixtec. Thus Longacre, in his 1957 monograph of Proto-Mixtecan (Mixtec, Cuicatec and Trique), asserts that "M [Mixtec] has unconditionally merged PMx [Proto-Mixtecan] *e with i," and he further suggests that many instances of e in modern Mixtec dialects are reflexes of Proto-Mixtec and Proto-Mixtecan *a (Longacre 1957:26, 43).

But by 1960, Mak and Longacre's study of Proto-Mixtec phonology, with its greatly increased data on varieties of Mixtec, states that (1960:26):

At one stage in the development of PM from PMx there may have been a complete merging of PMx *e with *i... If this occurred, it left a gap in the pattern of vowel contrasts in that there were at that time two back vowels and two central vowels but only one front vowel. Nevertheless this gap was soon filled by the reappearance of *e as phonemic by the split-off of an allophone of *i in a few restricted environments, and by merger of this allophone with certain allophones of *a as well as with e...e sequences developed from *a...i and *i...a in certain environments... It is, however, possible that *e never entirely merged with *i in PM but that the latter continued to contrast with the former in a few environments. Nevertheless, PM *e, if a phoneme, must have had a very restricted distribution until its distribution was augmented by merger of allophones of *a, *a...i, and *i...a as just indicated.

Although Mak and Longacre reconstruct only ultimate syllables, not whole bisyllabic canons, they base some ultimate syllable reconstructions on supposed Proto-Mixtec couplets. Thus Mak and Longacre suggest that Proto-Mixtecan forms with geminate *e (*CVV and *CV?V canons) were not susceptible to the merger of *e with *i, and thus such forms provided the weak contrast between *e and *i in Proto-Mixtec, and that this weak unit was further strengthened (perhaps in just post-Proto-Mixtecan times) by the development of e reflexes from the following canons: *Cayi, *Ca?yi, *Ci?a and *Ca?ya (Mak and Longacre 1960:38). Although not all of the forms cited by Mak and Longacre appear in the present study, in all cases where the data do coincide, such forms are here reconstructed differently, usually with *e in their tonic syllables, as will be discussed below.]

By 1978, Bradley and Josserand's reconstruction of Proto-Mixtec included a considerably augmented *e (in terms of number of etyma reconstructed with *e and in terms of environments in which *e occurs), and noted that certain occurrences of Mak and Longacre's *a should be reinterpreted as *e. These are mostly justified by the patterns of palatalization which *e produced in preceding consonants (in *CeCV and *CVCe canons), before later merging with Proto-Mixtec *a (these instances are generally also documented by the retention of the original *e in a few scattered towns).

The present study further strengthens the case for Proto-Mixtec *e by presenting cognate sets which support contrasting canons involving *e, *a and *i. At the same time, these new reconstructions have necessitated a refutation of Bradley and Josserand's claim that *y did not occur before anterior vowels *i and *e (1978:5, 1982:285). This new reconstruction of Proto-Mixtec vowels may also alter the picture of Proto-Mixtecan vowel developments, but such is beyond the scope of this thesis. In summary, it may well be that Proto-Mixtecan *e became *i in Proto-Mixtec, but Proto-Mixtec clearly had an *e in its vowel inventory, whether this was derived from Proto-Mixtecan *e, or from some other source.

As mentioned above, Proto-Mixtec reconstructions with *e have been the object of continual revision in earlier attempts at reconstruction. Although reconstructions with *e are infrequent in Mak and Longacre (1960), they did propose the existence of geminate *e canons (*Cee and *Ce'e) for Proto-Mixtec. This tendency to view geminate *e sequences as a major source of modern e reflexes was also shared by Bradley and Josserand (1978), although no specific discussion of these points appears there. But, as shown in the cognate sets presented by Bradley and Josserand (1982: Apéndice I), proto-forms with geminate *e largely yield

a reflexes in modern forms (see 13 *seʔe 'manteca', 31 *k^weʔe 'rojo', and 32 *k^weʔe 'se fue'; the numbering of cognate sets used in Bradley and Josserand 1982 corresponds with that used here for the first 45 cognate sets).

The existence of a fair number of modern forms in almost all dialects with geminate e (e.g., šeʔe 'sobaco', kee 'salir', ⁿdeʔe 'está viendo', weʔe 'casa', k^wee 'despacio') necessitates a proto-form (or possibly more than one proto-canon) which differs from the *Cee and *Ceʔe canons--which regularly produce modern Caa and Caʔa forms--in such a way as to account for the distinct modern developments. Although Mak and Longacre proposed a number of Proto-Mixtec geminates to account for various of these forms (*ⁿdee 'to look at', *veʔe 'house', *k^wee 'slowly' and others), these seem unsatisfactory when compared with the *Cee forms proposed by Bradley and Josserand, which yield mostly modern Caa reflexes but show retained Cee forms in areas which are distributionally remnant (see Correspondence Sets 25, 26, 27 and 28).

The solution which I propose to resolve this problem usually posits *e in the tonic syllable, with a following medial *y as a protective environment preventing the tonic *e from merging with *a, as happened in the *Cee canons. Mak and Longacre's solution, when they did not propose geminates in the proto-forms, was to derive modern Cee forms from various combinations of *a and *i, usually in association with a *y. Thus they propose that Proto-Mixtec canons *Ciʔa, *Caʔyi, *Cayi, *Caʔya all generate modern forms with e reflexes. In general, this seems to be an adequate strategy, to reconstruct *a and *i and then change these to e, but in many of these cases an original *e in the tonic syllable can be justified for Proto-Mixtec, with a following *y to prevent the merger of *e with *a, as mentioned.

Although Mak and Longacre list some 28 Mixtec towns as providing their data base, it seems unlikely that they had comparable data for all towns, and in particular for these forms involving *e they cite fewer than half a dozen towns, usually showing only one or two variant forms. Thus for Proto-Mixtec *Cayⁱ and *Ca[?]yi, Mak and Longacre (1960:38) reconstruct *k^wa[?]yi 'sickness' on the basis of only two modern forms: k^we[?]e, documented in four towns (San Miguel el Grande, Ocotepec, Jicaltepec and Mixtepec), and k^we[?]yi, in one town (Atatlahuca). Similarly, they reconstruct *vayi 'heavy' from vee (San Miguel el Grande, Ocotepec, Mixtepec, Tonahuixtla) and veyi (Atatlahuca), and *ku-ⁿdayi 'to win' from ku-ndee (San Miguel el Grande, Ocotepec) and ku-ⁿdeyi (Atatlahuca). The fact that none of the modern Mixtec forms shows a in the tonic syllables seems to weaken the argument for proto-forms with *a, and conversely, to strengthen the postulation of *e in tonic position.

Two of these etyma appear in the data herein presented; of the more than 120 towns used in the present sample, only one town, Teposcolula, has forms with a reflexes (161 *k^we[?]yi 'enfermedad' became k^wa[?]i, and 184 *weyi 'pesado' became wai in Teposcolula, where the *e to a merger is much more extensive than in any other town). Arana and Swadesh (1965) also cite forms with tonic a from San Miguel el Grande (k^wa[?]e 'enfermedad' and k^wae 'despacio'), but these do not agree with data which I and other investigators have collected in San Miguel, and I have essentially discounted them in this study. Mak and Longacre do cite a Trique form with tonic syllable a in support of their reconstructions, Trique (g)a³i⁴⁵ 'to be heavy', but another Trique form, zi³i⁵³ 'sickness' offers conflicting evidence for reconstructions of this type. Furthermore, it should be remembered that although external evidence is often helpful in resolving problematic forms, the principal basis for recon-

struction should be internal evidence, and in this case there is no lack of Mixtec dialect forms on which to base reconstructions.

Other canons proposed by Mak and Longacre to account for modern e reflexes are Proto-Mixtec *Ci'a, *Ca'ya, *Ce'e and *Cee. The first of these, *Ci'a, is used in three reconstructions: *ⁿdi'a 'fruit' (based on modern forms ⁿde'e, ⁿdi'a, ⁿdi'e), *ti-ti'a 'cockroach' (based on modern forms ti-te'e, ti-ti'a), and *ti'a 'hoof' (based on modern forms te'e, ti'a); the modern Ci'a forms occur only in Ocotepéc. Unfortunately only one of these etyma, 'cockroach' (159) appears in my data, but the range of modern forms is greatly amplified, although none of the forms attested shows the Ci'a canon (Ocotepéc has ti te'e in my data). The most common modern form, by far, is some variant of a Ce'e canon (te'e, t^ve'e, če'e, č^ve'e); most of the other modern reflexes have e in the tonic syllable (te'i, te'že, ste'ye, te'ya, ste'ža, te'a, ste'a). Only a few towns have forms with a in the tonic syllable (ta'ya and t^va'ya on the coast, ta'yi in Silacayoapan-San Martín), and only one town, Ayutla, has i in the tonic syllable (ti'e?).

As may be readily noted, various modern forms show medial y, which I consider to be very strong evidence for *y in the proto-form. There are few instances of epenthetic y in Mixtec, that is, the development of y with no antecedent unit in the proto-form. Only in some areas of the Mixteca Baja is y generated before some vowel initial forms (see cognate sets 84, 132, 189, 106 and 29, 47 in Appendix II). There are no examples of y generation in couplet-medial position, except for those proposed by Mak and Longacre. There is, however, ample evidence for loss of *y in certain situations, and this is further support for the postulation of original medial *y whenever representative modern forms contain y reflexes in that position.

Thus I would reconstruct 'cucaracha' (159) as *t̄i te?ya?, a form attested in various conservative towns in the southern Mixteca Alta (Yucuhite, Nuyoo, Itundujia, Yucuañe, Teita), as well as in two conservative and very peripheral towns of the extreme northeastern Alta (Cuauh-témoc and Coatzospan). I believe that the tonic *e was protected from later merger with *a by the medial *y, and that the final *a was susceptible to subsequent fronting through a process of vowel harmony common in Mixtec. Raising of the final vowel or of the tonic vowel to i is not frequent, but fronting and raising processes are certainly common enough in Mixtec, and in this case such fronting may perhaps be attributed to the presence of the *y. The loss of *y, common in many modern forms, is very prevalent before front vowels, less so before low and back vowels.

Alternate reconstructions for this etymon might be considered, but most can be discounted on the basis of other cognate sets with distinct patterns of reflexes, which more satisfactorily compete for the alternative canons. For example, there are other etyma with reconstructed canons *Caya, *Ca?yi, *Ceye, and *Ceyi or *Ce?yi (I do not think any strong argument can be made for distinctions in permissibility between Proto-Mixtec canons with medial *? and those without it, in these examples).

As far as a Proto-Mixtec *Ci?a or *Cia canon is concerned, I have found no modern forms which could support such a reconstruction, and indeed, such forms seem to be extremely rare in modern Mixtec. The few which I have discovered all relate back to proto-forms with a medial *y: 74 *k^wiya 'año', and three words not appearing in the cognate sets, *si?ȳa 'halcón', *i?ya 'aquí', and *i?ya 'noble'. (In fact, forms with non-identical vowels and no intervening medial consonant probably did not exist in Proto-Mixtec.) In none of these three cases do forms with

e occur in the modern Mixtec dialects; both the tonic *i and the ultimate *a appear very stable, even in the presence of medial *y. The reverse sequence of vowels, however, as in the *Ca?yi canon, does produce e reflexes in some areas of the Mixteca (see *a and below).

The last alternative reconstruction for 'cucaracha' which I consider even remotely possible would be canons with tonic *a, *Ca?yi or *Ca?ye. The first canon is preempted by another etymon (110 *sa?yi 'hijo') which seems to justify that reconstruction better than the data for 'cucaracha'. As it happens, I have not reconstructed any forms for the *Ca?ye canon, although I do not consider it structurally unlikely. Although the *Ca?yi canon does produce some e reflexes, the other canons with *a before *y (*Caya and *Cayu canons; see below) offer scant evidence for the fronting of *a to e. Furthermore, supporting evidence can be found in the palatalized developments of the couplet-initial consonants which occur in such forms, for the reconstruction of a front vowel-- either *i or *e--in the tonic syllable. Given the above arguments, *e seems the more likely reconstruction for the etymon in question, 159 *ti te?ya? 'cucaracha'.

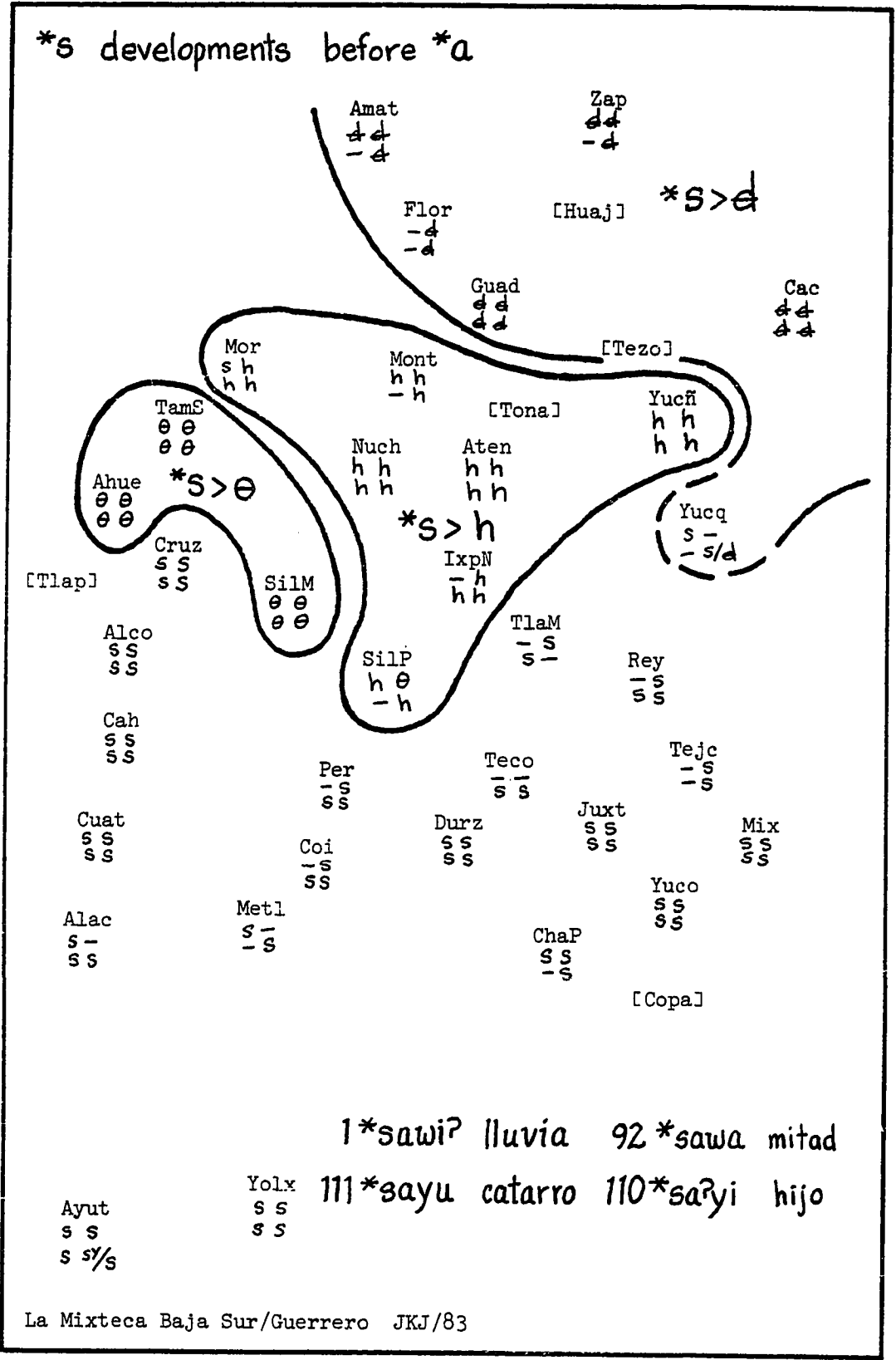
This brings us to the next canon suggested by Mak and Longacre to account for modern Ce?e forms; they propose Proto-Mixtec *Caya on the basis of a single etymon, *sa?ya (or perhaps *θa?ya 'offspring' (1960: 39). Although their data base is larger here than in other cases, and there are several modern forms with a in both syllables, this does not seem to be the most satisfactory reconstruction, especially in the face of competing forms for this same canon (see 186 *taya 'flojo', which shows extremely uniform modern reflexes with *a retained in both syllables).

The range of modern forms found for 'offspring', both in Mak and

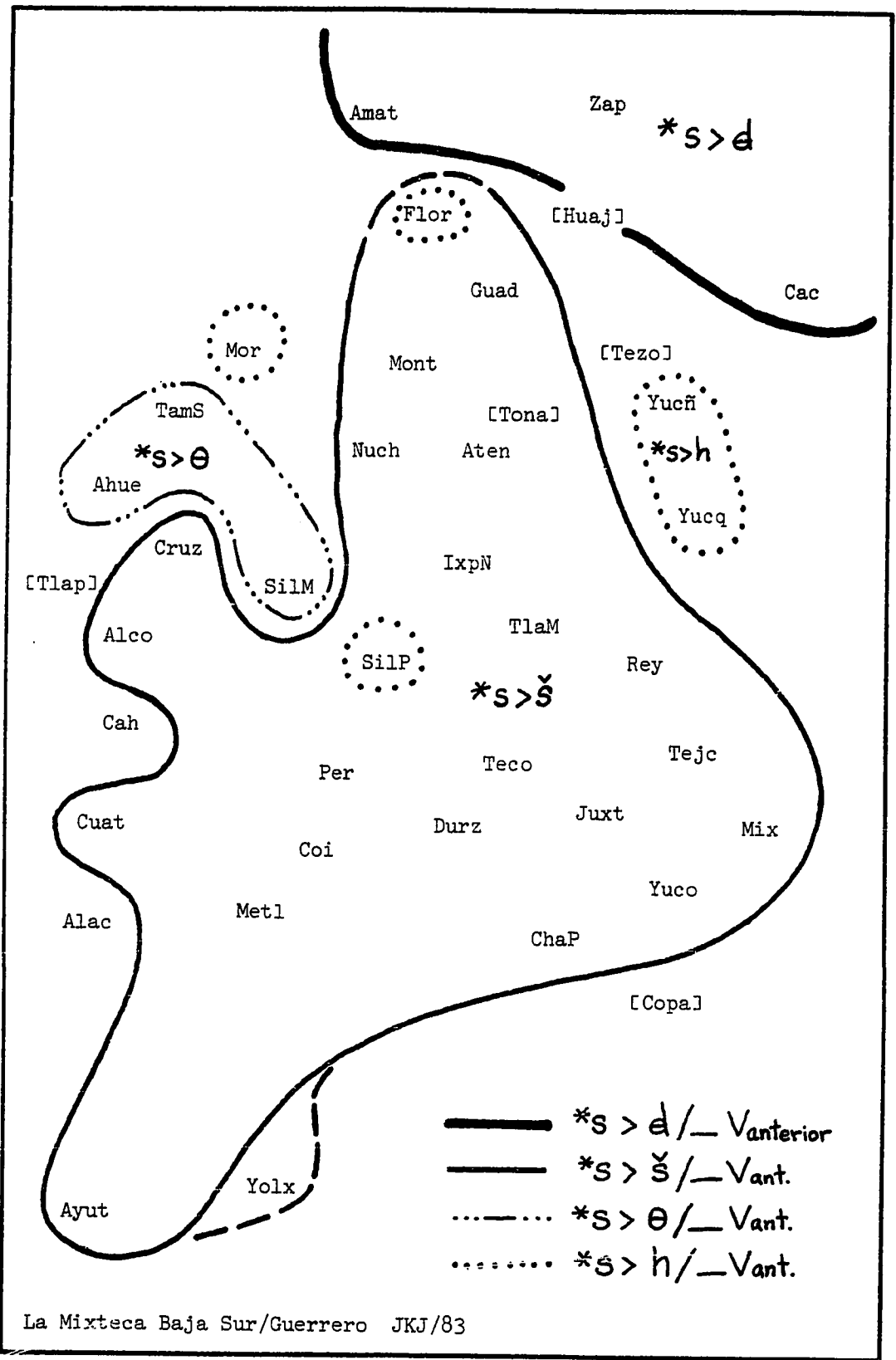
Longacre's and in my own data, is very great (see cognate set 10 in Appendix II). The most frequently-occurring modern canon is again Ce'e (se'e, še'e, he'e, de'e, θe'e, and Ayutla s^ve'e, which is documented as now changing to si'e). A few other forms have tonic e (de'i, θe'i, se'ya). Also common are forms with a in one or both syllables (ha'yi, ha'ži, θa'ži, da'i; ši'a, i'ya, i'ža, and sa'a, da'a, sa'ya, θa'ya, ha'ya, da'ya, da'ža). A few scattered forms show neither a nor e (di'u, si'i, si'í, i'i). I had first thought that a reconstruction of *se'ya 'hijo' would be adequate, but on further reconsideration of the variant reflexes encountered when compared to other forms with the same reconstructed canon (159 *t_i te'ya 'cucaracha' and 162 *ⁿde'ya 'está viendo'), I now think a reconstruction of *sa'yi might be more amenable. This form is documented in modern dialects in the Mixteca Baja (Silacayoapan-Progreso, Ixpantepec Nieves, Silacayoapan-San Martín, Nuchita, Atenango), where a similar canon, *Cayu, also produces modern Cayi (or Cai) forms.

The reconstruction of the tonic syllable *a in *sa'yi 'hijo' is further supported by the very low frequency of palatalization in the initial consonant, a development which regularly occurs before *e and *i (compare 97 *le'yi 'sobaco', which has frequent š reflexes). In fact, the consonantal variation in 'hijo', where *s develops as s, θ, d, and h, matches perfectly the developments of *s before *a as established by three other forms with secure reconstructions (Map VI-30), and contrasts with the developments of *s before anterior vowels *i and *e, where it palatalizes to š over a wide area. The key reflexes are the development of h instead of š in the central Baja towns of Nuchita, San Sebastián del Monte, Atenango, and Ixpantepec Nieves (Map VI-31). The final syllable of *yi reconstruction is also supported by the parallel development of widespread e reflexes for final *i in *Ceyi and *Ce'yi canons (see Cor-

Map VI-30. *s Developments before *a



Map VI-31. *s Developments before Anterior Vowels



response Set 1, *i/y_#, contrasting tonic vowels *i:*e:*a, in the section on Proto-Mixtec *i).

But this reconstruction is still not without worrisome problems, not the least of which is the flip-flop of vowels found in modern forms like ši'a (San Miguel Progreso), i'za (Cuauhtémoc), and i'ya (Cuyamecalco). The development of forms with a in both syllables can be explained as a consequence of vowel harmony. And perhaps a fronting sequence of *Ca?yi to Ce?yi to Ce?e (and with loss of *y in various other forms as well) can be preferred to account for other prominent modern canons. As an alternative for other areas, the just-mentioned fronting sequence could be hypothesized as prior to both the loss of medial *y and to the merger of *e with *a, so that in some areas, especially in the eastern Mixteca Alta, this canon (*Ca?yi) would finally develop a reflexes in the tonic and in the ultimate syllable as well. This still leaves a residue of recalcitrant modern forms for llo 'hijo' (se?ya, si?i, si?i, i?i and ai?u), but I have not been able to reduce the problems even this far with other hypothetical reconstructions.

Finally, Mak and Longacre's reconstructions with geminate *e, corresponding to their Proto-Mixtec *Cee and *Ce?e canons, must also be reinterpreted. As mentioned briefly above, Bradley and Josserand's reconstructed canons with geminate *e produce widespread a reflexes in modern Mixtec dialects, in contrast to the patterns of reflexes characteristic of the forms reconstructed by Mak and Longacre with geminate *e. Furthermore, in the cognate sets for *Cee and *Ce?e canons reconstructed by Bradley and Josserand, there are no modern developments other than Caa and Cee canons, the latter regularly retained in specific environments defined by initial consonants, and in certain geographical areas, as shown in the correspondence sets and maps for *e (see Correspondence

Sets 25, 26, 27 and 28, as well as Maps VI-34, VI-35, VI-36, VI-37 and VI-38).

In the forms reconstructed by Mak and Longacre with geminate *e, however, there are a variety of canons represented in the modern developments. On the basis of these modern developments and the distributions of the variant forms, it is possible to distinguish at least three different patterns of reflexes, and I have therefore proposed three different Proto-Mixtec canons to account for them.

Mak and Longacre's geminate *e reconstructions are based on five etyma: *ⁿde'e 'to look at', *ve'e 'house', *k^wee 'slowly', *ke'e 'to touch', and *(ñu'u) te'e 'uninhabited (land)' (1960:39). Of these five items, only the first three appear in my data, so that I am unable to discuss the remaining two forms, although I am certain that they should not be reconstructed with geminate vowels. For all five of these forms, the most common modern developments are canons with geminate e, and in fact Mak and Longacre's data show only such Cee or Ce'e reflexes except for the first two etyma.

For *ⁿde'e 'to look at', Mak and Longacre show ⁿde'e in three towns in the Mixteca Alta (San Miguel el Grande, Atlatlahuca, Ocotepc) and one from the coast (Jicaltepec), but they also list ⁿdi'e as the form from Estetla (eastern Mixteca Alta). For *ve'e 'house', the Ce'e form (ve'e) is documented in seven Mixteca Alta towns (San Miguel el Grande, Atlatlahuca, Ocotepc, Estetla, Tilantongo, Diuxi, Mitlatongo) as well as in Jicaltepec (Coast), Tonahuixtla (Puebla) and Mixtepec (Baja). But an alternant modern reflex, vi'i, occurs in three widely separated Alta towns (Coatzospan, Itundujia, and San Juan Tamazola; but in my data Tamazola shows the ve'e form).

The data which support my reconstructions again show a much

larger range of modern developments. In all cases the most prevalent reflexes are Ce'e or Cee canons, but for 'to look at' there are a total of 10 canons represented in the modern forms, for 'house' there are five alternant reflexes, and for 'slowly', four, as the following chart indicates (Chart VI-2).

CHART VI-2

MAK AND LONGACRE'S RECONSTRUCTIONS WITH GEMINATE *e

New Recon- struction	Coatzos- pan area	Itun- dujia	South- western Alta	Tepos- colula	Else- where
162 'está viendo' * ⁿ de?ya	----	----	ne?ya	(ⁿ da?ya, ⁿ da?a)	various canons
163 'despacio' *k ^w eye	k ^w ii	k ^w ee	k ^w ee	k ^w ai	k ^w ee
164 'casa' *we?yi	bi?i	bi?i	ve?i	wa?i	be?e/ we?e

It would seem justifiable, considering these patterns of reflexes, to propose a different proto-canon for each of these correspondence sets, even if they were each unique, but fortunately, for at least the last set of patterned reflexes there are several other etyma which correspond almost exactly in terms of vowel sequences (to 164 'casa', compare 140 *keyi? 'salir', 187 *weyi 'pesado', 161 *k^we?yi 'enfermedad', and 97 *le?yi 'sobaco'). For the set of reflexes represented by 163 *k^weye 'despacio', it is possible that two other items belong to the same pattern (52 *teye 'hombre' and 114 *weye? 'este', although these reconstructions are tentative). And for the first set, represented by 162 *ⁿde?ya 'está viendo', it is likely that one other etymon in my data sample

shares the same proto-canon (159 *t̥i te'ya? 'cucaracha', discussed above). Thus, the Proto-Mixtec canons which I would reconstruct for these three patterns of reflexes, all reconstructed by Mak and Longacre with geminate *e, are *Ce'ya, *Ceye and *Ce'yi, respectively.

The *Ce'ya canon was discussed above, in the section on Mak and Longacre's *Ci'a reconstruction, and I believe that the arguments supporting the new reconstruction *ⁿde'ya 'está viendo' are essentially the same as those presented for my reconstruction of *t̥i te'ya? 'cucaracha'. There are some differences in the reflexes shown in these two items, but perfect agreement is not a frequent characteristic of Mixtec correspondence sets, and until more forms derived from the same proto-canon are discovered, it will be difficult to say much about the discrepancies. Both of these etyma--*t̥i te'ya? 'cucaracha' and *ⁿde'ya 'está viendo'--show a diversity of modern canons; they share six, in approximately congruent geographical distributions (Ce'ya, Ce'a, Ce'e, Ce'i, Ca'ya, Ca'a). Those not shared are usually locally restricted if not unique forms (for 'cucaracha', Ce'ye and Ca'yi forms are found mostly in the Baja, while for 'está viendo', Ci'i forms appear in the Baja, Ci'a forms are found in a small area of the eastern Alta, and a few Ce'yo or Ce'o forms occur in the western Alta; these last are questionably cognate).

These *Ce'ya reconstructions, as well as the other two reconstructions just proposed--*Ce'yi and *Ce'ye--can perhaps best be understood when considered along with the other Proto-Mixtec canons involving *i, *e and *a, and taking into account the special characteristics of the Proto-Mixtec vowel system. In the system of reconstructions which I am proposing, all six Proto-Mixtec vowels occur in canons with geminate vowels (*Cii, *Cee, *Cii, *Caa, *Cuu, *Coo, as well as their glottalized and/or nasalized counterparts), and all occur in repeat sequences of

identical vowels separated by semivowel *y (*Ciyi, *Ceye, *Ciyi, *Caya, *Cuyu, *Coyo). Sequences with other medial consonants are not here considered, nor are combinations of different vowels separated by consonants other than *y. But as for sequences of non-identical vowels with medial *y, there are very regular patterns identifiable in the reconstructed proto-canons.

The distinction between inner and outer triangle vowels is again pertinent, and on this basis it is possible to construct a chart of potential combinations, which shows confirmed, probable, and unlikely canons for Proto-Mixtec. In Chart VI-3, canons which correspond to undisputed Proto-Mixtec reconstructions are doubly underlined, those which are herein discussed as new reconstructions are underlined (once), and those which do not correspond to any proposed reconstruction are not underlined.

Clearly the tendency is for strong, or outer triangle, vowels to combine with each other, and although no examples for proto-canons *Cuyi and *Cuya have yet been found, they should be considered acceptable reconstructions if appropriate data are encountered. On the other hand, inner triangle vowels mostly occur in canons with repeat or identical vowels in both syllables (*Ceye, *Ciyi, *Coyo), except for *e, which according to my reconstructions, occurs in tonic syllables in combination with all three outer triangle vowels (*Ceyi, *Ceya, *Ceyu).

In this connection it is pertinent to mention the general statistics of *e distribution (discussed in more detail in the section corresponding to *e), which confirm that *e occurs far more frequently in combination with dissimilar (usually outer triangle) vowels than do the other two inner triangle vowels, in both tonic and ultimate syllable positions (*CeCV and *CVCe canons). Except for these two types of bisyl-

CHART VI-3

CANONICAL POSSIBILITIES FOR PROTO-MIXTEC

COUPLETS WITH MEDIAL *y

Outer Triangle Vowels in Tonic Syllables

	With Outer Triangle Ultimas	With Inner Triangle Ultimas
*i	<u>Ciyi</u> <u>Ciya</u> <u>Ciyu</u>	Ciye Ciyɨ <u>Ciyo</u>
*a	<u>Cayi</u> <u>Caya</u> <u>Cayu</u>	Caye Cayɨ Cayo
*u	Cuyi Cuya <u>Cuyu</u>	Cuye Cuyɨ Cuyo

Inner Triangle Vowels in Tonic Syllables

	With Outer Triangle Ultimas	With Inner Triangle Ultimas
*e	<u>Ceyi</u> <u>Ceya</u> <u>Ceyu</u>	<u>Ceye</u> <u>Ceyɨ</u> Ceyo
*ɨ	Cɨyi Cɨya Cɨyu	Cɨye <u>Cɨyɨ</u> Cɨyo
*o	Coyi Coya Coyu	Coye Coyɨ <u>Coyo</u>

labic canons--combinations of strong vowels, or of tonic *e with a strong vowel--only two other canons with medial *y occur in Proto-Mixtec as now reconstructed: *Ciyo and *Ceyi. Both of these forms are rare, although their reconstruction is not particularly in question. It may be significant that in both cases the tonic vowel is anterior (*i or *e).

The most important feature of the canons under discussion here is the presence of medial *y. The palatal features of *y seem to have been essential for perpetuating and creating new instances of e, a vowel heavily marked for its own palatal qualities in Mixtec, as documented in the regressive assimilation of palatalization in many consonants preceding *e. Even though some of the cognate sets assigned to reconstructions with medial *y show no modern canons retaining y, the reconstruction of this unit was considered necessary to produce the modern vowel reflexes encountered. Furthermore, to reconstruct canons with dissimilar vowel sequences without any intervening consonant would be to open a completely new pattern of vowel clusters not otherwise attested in Proto-Mixtec. In some cases, particularly for the *Ceyi/*Ce?yi canon, some etyma preserve modern y while others do not. These medial y may all be short-lived; if *y loss in these canons must be considered relatively late, in order to postdate the also recent *e to *a merger which would have affected them were they without medial *y, then it is not unlikely that this is a phonological process still active and expanding (as can, in fact, be shown in the *y developments). This would explain why in a given town some forms from the same proto-canon still have a medial y while other forms have already lost it.

In conclusion, the new reconstructions here proposed involving *e and *a are based on both phonological and morphological structural criteria, as well as the support offered by direct and indirect phonologi-

cal evidence and by geographical distribution of the modern developments. The developmental rules which derive the modern reflexes from these reconstructed canons will be discussed as the individual correspondence sets are presented under their respective Proto-Mixtec vowel, *a or *e.

Proto-Mixtec *a

PM *a low central vowel. There are three sets of regular correspondences attributable to *a, two of which treat developments of *a either preceding or following medial *y (Sets 22 and 23, respectively), and one which covers all other instances of *a (Set 24).

Proto *a is an outer triangle, or strong, vowel, and is very stable in Mixtec, neither affecting nor being affected directly by phonological changes, except in a few very limited environments. It was a frequent, functionally important vowel in Proto-Mixtec times; for example, in a sample of 594 Proto-Mixtec reconstructions, *a occurs in 269 of the reconstructed forms, with the following distribution: in geminate (*Caa) sequences, 31 times; in repeat (*CaCa) sequences, 47 times; in tonic syllables (*CaCV), 72 times, and in ultimate syllables (*CVCa), 38 times. Its functional load is statistically about the same as *i. Together they account for nearly half of all possible vowel occurrences in the sample, but *a occurs considerably more frequently in words with geminate and repeat sequences than does *i, and considerably less frequently in ultimate syllables (with non-identical tonic vowels) than does *i, while they both occur with about equal frequency as tonic vowel (in couplets with non-identical ultimate vowels).

In terms of dissimilar vowel sequences, *a combines most frequently with *i (44 etyma with sequences of *CaCi and 27 etyma with sequences of *CiCa). Sequences with tonic *a followed by ultimate *u are also common (19 instances of *CaCu), but other dissimilar sequences are markedly less frequent (no cases of *CaCo sequences occur in the sample, one word of *CoCa form, 3 etyma each for *CuCa, *CiCa, and *CaCe sequences, 4 examples of *CeCa sequences and 6 of *CaCi etyma). With respect to

consonants, *a seems to have combined freely with all consonants in all positions (preceding and following), except following *x, which itself is limited in that it only precedes front vowels.

Virtually no major phonological process has affected *a; that is, most of its modern reflexes are correspondences of identity, retaining a in all positions. Only very sporadic combinations of *a with *y and front vowels (*e and *i) have resulted in the development of fronted reflexes for *a, as shown in Correspondence Sets 22 and 23. Although the environments for these two sets are broadly stated (*a preceding *y in tonic syllables, Set 22, and *a following *y in ultimate syllables, Set 23), the canons actually involved in the fronting processes are only a subset of each of these environments; i.e., for ultimate syllables with *ya sequences, only etyma of *Ceya shape (and to a very limited extent, *Caya canons) produce fronted reflexes, while for tonic syllable *a, only *Cayi etyma and occasionally *Cayu etyma (and very rarely *Caya etyma) result in fronted reflexes for *a.

Modern occurrences of a are not solely derived from *a, however. As will be discussed in the following section on *e, there has been an almost complete merger of *e with *a in most modern varieties of Mixtec. It is extremely rare for any other proto-unit to produce a reflexes, but a very few instances have been documented, all attributable to a prior development of e reflexes from *i or *u, which later were affected by the merger of *e with *a. The increment in load for modern /a/ due to the influx of instances of a derived from *e might be expected to result in pressures on /a/ to reduce its high frequency and heavy lexical load; a similar situation exists with regard to modern /i/, another prominent vowel whose load has also been increased in most modern varieties of Mixtec by the merger of *i with *i. To date, however, few ten-

dencies towards reduction in the importance or frequency of these two vowels have been detected.

Correspondence Set 22 presents the reflexes for *a in tonic syllables preceding medial *y; three canons conforming to this environment have been documented, but only one of them occurs in both glottalized and plain forms in these data: *Caya, *Ca?yi, and *Cayu/*Ca?yu. These represent all the possible combinations of tonic *a with strong, outer triangle vowels in the ultimate syllable.

The *Ca?yi canon regularly results in fronted (usually e, sometimes i) developments of *a; only the eastern and northeastern Alta towns and a group of Baja towns around the Tonalá Valley conserve *a in this canon. Map VI-32 shows the extent of this large innovation sphere, where the area of e reflexes is delineated by the solid line, while towns with i reflexes for *a in the *Ca?yi canon are encircled by a line marked with dots (Ayutla, Tejocotes, San Pedro Chayuco in the Baja; San Miguel Progreso in the adjacent Alta; Chigmecatitlán in the northwest, and Coatzospan, Cuauhtémoc, and Cuyamecalco in the northeastern Alta).

Although the distribution of the i reflexes in the *Ca?yi canon has the appearance of a remnant phenomenon, the phonological histories producing these reflexes seem distinct, so that the coincident results in reflexes for *a are deceiving. The i reflexes occur in 110 *sa?yi 'hijo', which in the far northeast developed into modern couplets of the form i?i (in Coatzospan) and i?ya or i?za (in Cuyamecalco and Cuauhtémoc, respectively). In the northwestern town of Chigmecatitlán, two forms with tonic i reflexes (as well as another with e reflex) have been documented for 'hijo': i?a and ai?u (the third alternant, de?e, conforms to the prevalent regional pattern, with e reflexes for *a in this canon). While the i?ya, i?za and i?a forms in these two areas

may be related historically, it is unlikely that they have any connection with the i reflexes in far southwestern Ayutla, where an intermediate form for 'hijo', s^ye?ε, similar to forms found elsewhere in Guerrero and the Baja, is apparently undergoing further phonological evolution to the form si?ε. Robert Hills, who collected the data from Tepango, Ayutla, for me, and who is currently working on the Ayutla dialect, reports that the s^ye?ε form is mostly used by people in the mountains, while the si?ε form is favored by younger speakers and by those from the central village of Tepango. This change is also documented in other modern Ce?ε forms in the Ayutla dialect, even though they ultimately derive from distinct Proto-Mixtec canons, such as 164 *we?yi 'casa', which similarly produces v^ye?ε and more recently vi?ε forms in Ayutla.

The e reflexes in *Ca?yi derivations are part of an identical vowel sequence, where the final syllable *yi has also produced modern e reflexes through a process of vowel harmony with the tonic vowel (usually with consequent loss of *y); thus Proto-Mixtec *Ca?yi developed as Ce?e over much of the Mixteca (in a contiguous area except for the far eastern Alta towns of Peñoles and Cuilapan). It is unclear which vowel change came first, tonic *a to e, or final *i to e, but it seems certain that the phonological processes affecting this canon are related to those involved in the developments of a similar canon, *Ceyi, where the final *yi sequence was reduced to e over an even more extensive area of the Mixteca. Perhaps the development of Ce?e forms from *Ca?yi canons is best understood as a case of analogous change, patterned on the supposedly prior development of Cee and Ce?e forms from *Ceyi and *Ce?yi canons.

The very scattered e reflexes for *a associated with the *Cayu canon (marked with a hatched solid line on Map VI-32) apparently coincide in their phonological development, all being part of modern Cei

forms (found in Ayutla, Tecomaxtlahuaca, and Yucufuti), whereas the more common development throughout the Baja is of Cai forms, which retain tonic *a (while both areas share the development of fronted i from final *u). The fronting of tonic syllable *a to e in these few towns seems almost accidental; the fact that three widely separated towns show essentially the same final product should be considered coincidental, rather than requiring any special explanation. The mechanism might well be hypercorrection, on the model of the fronting of *a to e found in the other canon which has tonic *a before *y, followed by a high vowel, in this case *u rather than *i (*Cayu canon). The fact that the original *u found in the final syllable of the *Cayu canon develops i reflexes indicates that the fronting of *u must have occurred subsequent to the lowering of i to e (which happened in *Cayi canons); otherwise these etyma with Cai and Cei derivations would be subject to further change to (hypothetical) Cae and Cee forms, but this does not seem to have happened anywhere.

In summary, *Ca?yi canons frequently produce modern Ce?e forms, while *Cayu or *Ca?yu canons produce Ca(y)i or Ca?(y)i forms and a very few Cei forms, which last are assumed to be hypercorrections on the model of the *Cayi/*Ca?yi canon tonic vowel development, where *a became e.

The *Caya canon, with repeat strong vowels, seems very resistant to the pressures of fronting, and retains *a in both syllables throughout the Mixteca, except for a few Baja towns which develop Ca(y)i (see Correspondence Set 23), and one town, Cacaloxtepec, which also fronts tonic *a to e to produce a modern Cei form (indicated by the dotted-dashed line in Map VI-32).

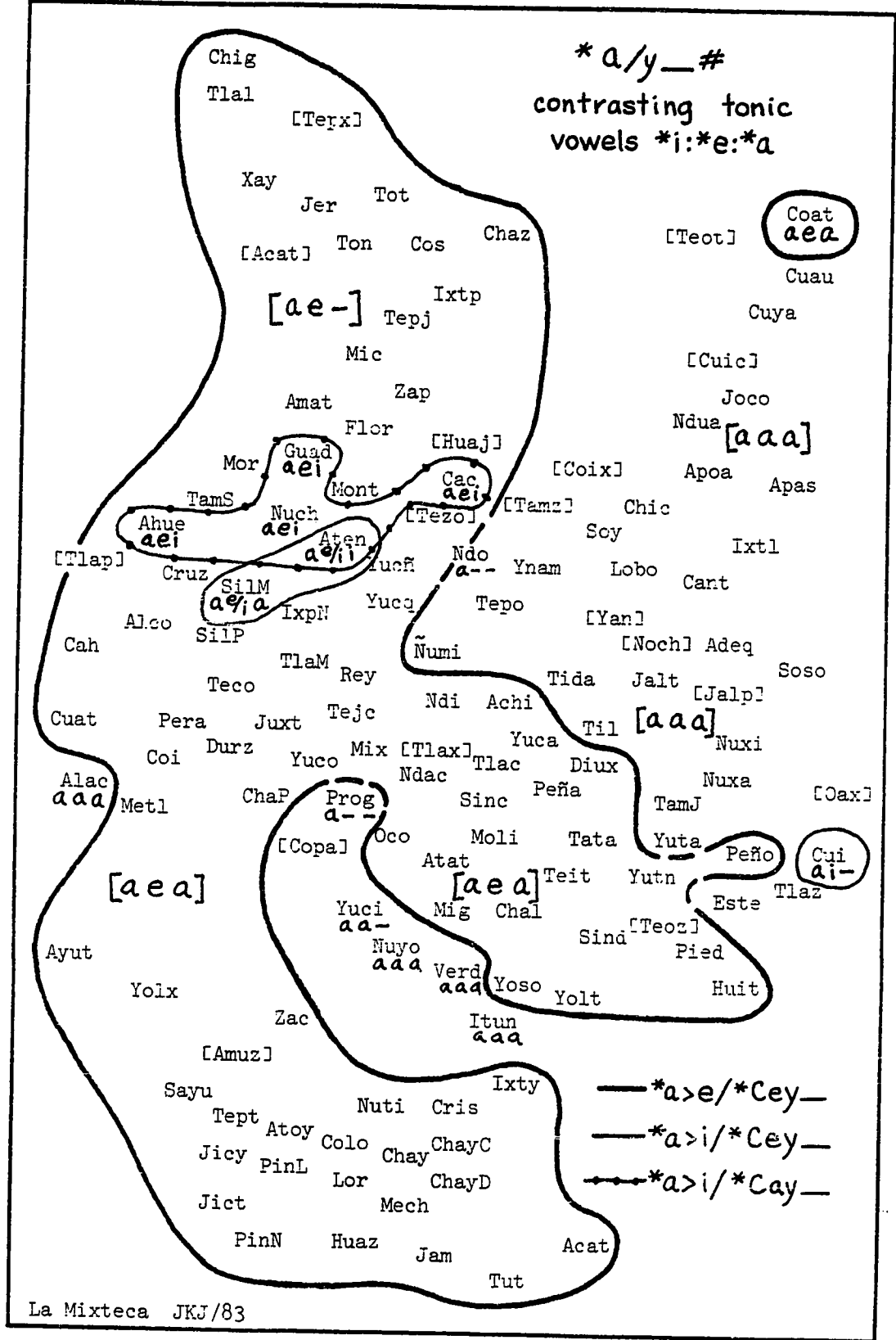
Correspondence Set 23 presents the reflexes for *a following *y

in ultimate syllables. In these data, four etyma have been found from three different canons fitting this specification of environment: *Ce?ya, *Caya and *Ciya. Only the first of these, which combines inner triangle vowel *e with outer triangle *a, regularly results in fronted (e, and occasionally i) reflexes for final syllable *a. As mentioned above, the *Caya canon produces i reflexes for final syllable *a in a few Baja towns, otherwise retaining *a, while the *Ciya canon retains *a uniformly.

Map VI-33 presents the distribution of fronted reflexes for *a following *y in ultimate syllables. The heavy solid line encloses the large area of e reflexes for *a in the *Ce?ya canon. In these forms the *y is usually lost as well, producing geminate sequences of Ce?e throughout virtually all of the Puebla, Baja and Costa areas as well as in much of the Mixteca Alta. Only the northeastern Alta and the southeastern and southwestern fringes of the Alta retain final *a in the *Ce?ya canon. The area of innovations of e reflexes is continuous except for Cuyamecalco, an isolate in the far northeastern Alta. Two towns in the central Baja, Atenango and Silacayoapan-San Martín, and Cuilapan, in the Valley of Oaxaca, have i reflexes for final *a in these etyma (marked by a narrow solid line in Map VI-33); in the Baja towns the i reflexes alternate with e reflexes, but it is hard to discern which of these represents the older pattern.

Slightly more common are the i reflexes for final *a found in the *Caya canon; these are encircled by a line marked with dots in Map VI-33. These developments of the *Caya canon may be formed by analogy with the *Cayu canon, which produces similar modern forms in the same central Baja towns.

Map VI-33. Generalized Reflexes for *a in Final Syllables following *y



The *Ciya canon is even more stable than the *Caya canon; throughout the Mixteca this sequence of vowels is retained unchanged, with only the loss of medial *y, or the development of z̃ from *y distinguishing some varieties from others.

Correspondence Set 24 presents the reflexes for *a in all environments other than the two just specified (i.e., except in tonic syllables preceding *y and in ultimate syllables following *y). The twelve forms cited include geminates and repeat sequences of *a, as well as different combinations of *a with other vowels, in both tonic and ultimate syllable positions, and with both oral and nasal instances of *a in all of these structural positions. Except for the previously specified conditions with respect to *y, the nature of preceding and/or following consonants does not affect the development of *a; even *y before *a in tonic syllables does not produce fronted reflexes (see 73 *yak^we? 'chueco' in Correspondence Set 24, and other forms with tonic syllable *ya in the cognate sets in Appendix II). Only in a very few cases of combinations of *k^w with *a do modern reflexes of o (or u) occur in place of *a, accompanied by loss of labiality in the consonant, so that sequences of *k^wa became ko (or ku) in a few towns (see 76 *lak^wa? 'pus' in Correspondence Set 24). Otherwise almost all modern developments are reflexes of identity, retaining *a in all positions; exceptions are rare and without systematic explanation.

Proto-Mixtec *e

PM *e low front vowel. There are five sets of correspondences attributable to *e, four of which account for occurrences of *e following different consonants (or classes of consonants), and one for instances of *e in tonic syllables preceding *y.

Proto *e is an inner triangle vowel and as such is structurally weak and prone to phonological change. Although it is neither significantly more nor less common than its companion inner triangle vowels, *ɨ and *o, there are certain distributional characteristics which mark it off from the other two. In a sample of nearly 600 Proto-Mixtec etyma, *ɨ and *o occur much more frequently than does *e in canons with identical vowels in both syllables (70 etyma of *Cɨɨ or *CɨCɨ canons, 68 etyma of *Coo or *CoCo canons, and only 32 etyma of *Cee or *CeCe canons). But *e occurs much more frequently than either *ɨ or *o in couplets with dissimilar vowels, appearing in more than 80 such Proto-Mixtec forms, while *ɨ occurs only 15 times and *o only 33 times in monomorphemic couplets with non-identical vowels in both syllables. Furthermore, occurrences of *e in these instances are about equally divided between tonic versus ultimate syllable positions. In all cases, the other vowel is almost always an outer triangle vowel, and *e combines with *i and *u much more frequently than with *a.

Although it was previously considered that geminate sequences of *e were an important factor in the retention of this unit in modern Mixtec dialects, the correspondence sets presented here indicate a different, previously unsuspected, conditioning factor, namely the phonological characteristics of the consonant preceding an occurrence of *e.

[The influence of preceding consonants on *e seems to have been second in]

importance only to the effect of a following (i.e., couplet-medial) *y. Nasality and syllable position within the couplet are only occasionally influential in determining modern reflexes of *e. Thus while one correspondence set treats instances of tonic syllable *e before medial *y and ultimate syllable *e following medial *y (Set 29), the other four correspondence sets for *e are differentiated according to the qualities of the preceding consonants; Set 25 presents instances of *e following alveolar consonants, Set 26 treats *e following *x, Set 27 treats *e following round consonants (*w and *k^w), and Set 28 presents instances of *e following *y.

These groupings seem to represent the major classes of consonants in Mixtec; examples in the correspondence sets include etyma with *e following all consonants except *k, for which no etyma have been identified except in two canons containing medial *y (140 *keyi? 'salir' and another form not included in these cognate sets, *ke?yi 'patio'). One other form has very incomplete data and was consequently not included, *keⁿda 'salir afuera', which may ultimately derive from a two-morpheme construction, *keeⁿdaa. No other examples of *ke sequences occur in my data sample; curiously, and at the moment inexplicably, there seem to be extremely few instances of *ke sequences, either in Proto-Mixtec or in the modern varieties. A quick check of available dictionaries, for example, reveals that in Coastal (Chayuco) Mixtec, there are no examples of word-initial ke (final syllables were not checked, but probably do not occur either) and in sixteenth century Teposcolula all ke sequences appear to derive from *ki. In San Miguel el Grande there are a fair number of proclitics with ke form, but proclitic correspondences are not treated here, and except for keⁿda 'ir afuera', all forms with initial ke sequences are geminates (kee, ke?e) from earlier canons with medial *y.

It would certainly be interesting to obtain data on *ke sequences, but in their absence I would be disinclined to group *k with other consonants, in defining environments relevant to *e. Perhaps if considered non-round, non-alveolar and non-palatal, *k might be expected to group with *x, which, as the only other velar, shares at least some back or posterior features with *k. In fact, in some eastern Alta towns (Huitepec, Piedras, Yutanduchi, San Juan Tamazola, Cuilapan, Diuxi, Tilantongo) *k develops as modern x before nasalized vowels (see Cognate Sets 65 *ka?nu? 'grande', 30 *koyq 'carne', 44 *yikĩ? 'calabaza', 66 *sukũ? 'cuello'). Although *k^W also develops x^W reflexes in similar environments, it is interesting to note that with regard to *e retention, its features of labiality group *k^W with *w.

The most important and most widespread phonological development affecting *e is the merger with *a found throughout the Mixteca. It was previously considered that in most areas this was a complete merger, leaving no modern examples of *e, and it was supposed that all instances of modern e derived from some other source, but the new reconstructions with medial *y provide a proper derivation for many such modern forms (mostly geminates) and indicate that *e was almost universally retained under these very limited circumstances.

Except for this special environment of medial *y, however, only two widely separated towns retain *e in all environments: Coatzospan, in the far northeastern Alta, and Itundujia, in the extreme southern Mixteca Alta. The rest of the Mixteca Alta towns retain *e in varying proportions according to specified environments. The greatest extent of *e retention in lexicon is in forms where *e follows an alveolar consonant, while the geographic area most frequently retaining *e in all environments (except for the two towns just mentioned) is the south-

eastern Mixteca Alta. Other parts of the Mixteca--the northeastern Alta, Puebla, the Baja and Costa--almost invariably merge *e with *a, except for the protected environment preceding *y.

The only modern reflexes consistently associated with *e are e, a and i, and i reflexes appear most consistently in etyma with medial *y. Other sources for modern e reflexes do exist, however, including developments of *i, *u and *a, in special environments and in restricted areas; these are discussed under the respective Proto-Mixtec vowels.

Correspondence Set 25 presents the reflexes for *e following alveolar consonants (*l, *s, *n, *ⁿd, *t), contrasting tonic versus ultimate syllable position within the couplet. An attempt has been made to cover all other relevant variables as well, such as nasality, quality of the other vowel in the couplet, and examples of geminates following alveolars. Map VI-34 summarizes these reflexes and shows the extent of the merger between *e and *a; towns within the solid line show uniform a reflexes for all etyma, while those within the dashed line show mostly a reflexes mixed with some retained e reflexes or with occasional i reflexes. Towns within the dotted line show the encroachment of the merger into areas which have mostly retained e reflexes but show some a developments. This same convention of line values is used on the following three maps corresponding to *e developments.

The northeastern Alta, including the Nochixtlán Valley, Teposcolula and Apoala areas and also extending into the Valley of Oaxaca (Cuilapan), has uniform a reflexes, as does most of the Baja and Guerrero and all of the Coast. The fringes of the Baja (Yucunicoco, Tecomaxtlahuaca, Duraznos, Coicoyán) and also the central Baja area near the Tonalá Valley (Atenango, Ixpantepec Nieves, San Sebastián de las Flores) show occasional retentions of e, and the latter area also has a few i reflexes, but

no particular pattern is discernable, except that the i reflexes are usually found in a single lexical item, 120 *xe?ⁿde 'cortar'.

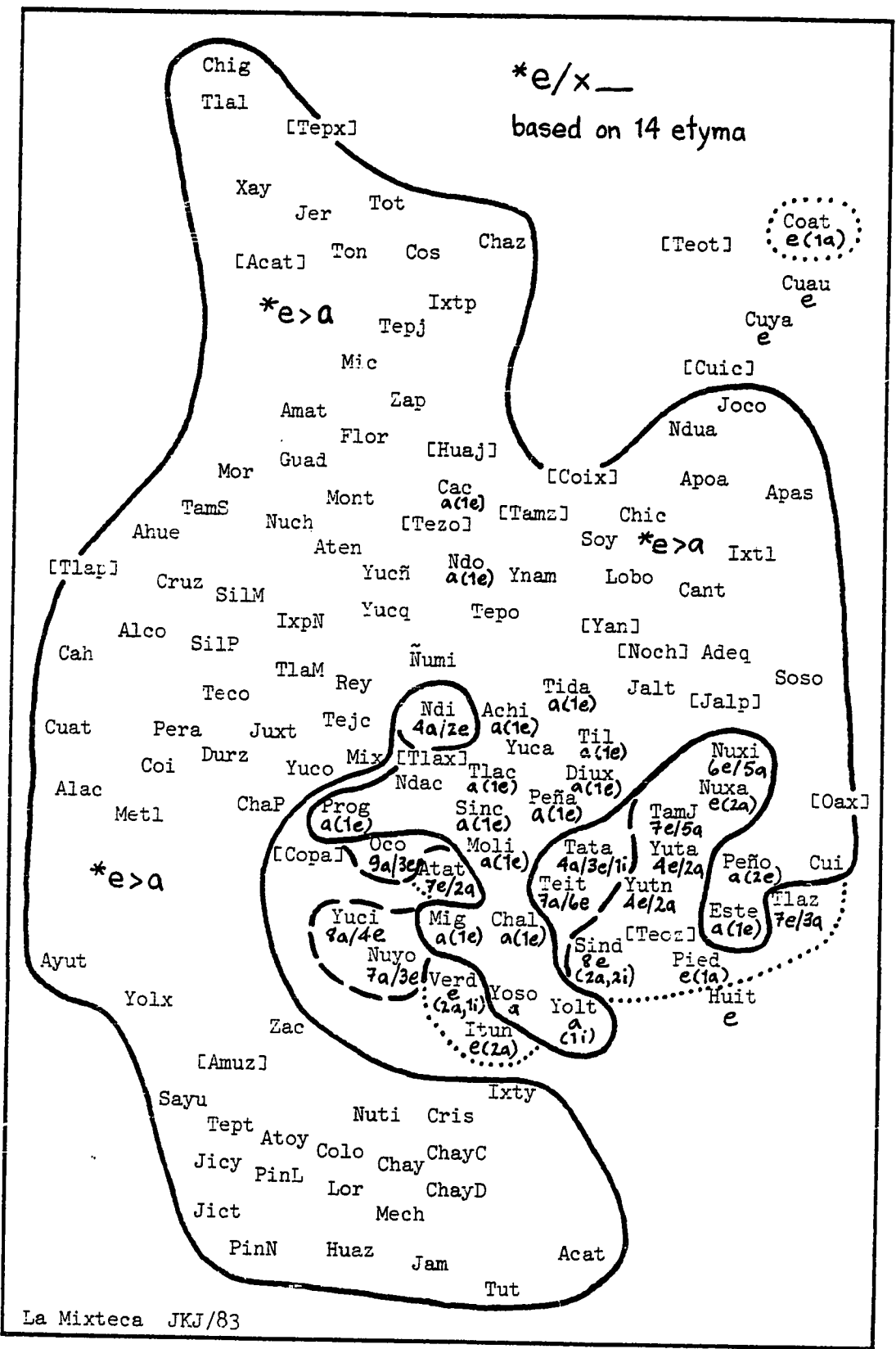
The Puebla area, however, shows a fairly clear pattern of retention of *e in ultimate syllables contrasted with the development of a reflexes in tonic syllables. Notice in Correspondence Set 25, in the section of northwest towns, that while a reflexes are uniformly encountered in the tonics, there is some alternation of e and a in ultimate syllable reflexes, so that while retentions prevail at the moment, the frequency distribution is almost certainly changing, and more and more lexical items will develop a reflexes in this environment (compare with the reflexes in Sets 26, 27 and 28). Intermediate to the Baja and Puebla regions are the towns of Zapotitlán and Cacaloxtepec, which are only beginning to develop a reflexes following alveolars.

This same situation holds for a few towns on the western fringes of the Mixteca Alta, adjacent to the area of *e and *a merger in the Baja (Nundaco, San Miguel Progreso), and also for the three northernmost towns in the Alta (Coatzospan, Cuauhtémoc, Cuyamecalco). In the Alta only a small area in the south has predominantly a reflexes for *e following alveolars (Yolotepec, Yosondua, San Miguel, Chalcatongo), although this area may also be expanding its influence northward (Molinos) and westward (Yucuhite, Nuyoo).

The sporadic i reflexes which turn up mostly in the central Baja and in the far northwestern Mixtec area in the state of Puebla (Tlaltempan, Chigmeatitlán) do not have a ready explanation; they are consistently limited to certain etyma, however, and are probably not random. They may even be remnants of some earlier phonological unit.

Correspondence Set 26, which gives the modern reflexes for *e following *x, is presented in two pages, one for tonic syllables (Set 26a)

Map VI-35. Developments of *e following *x



and one for ultimas (Set 26b); the corresponding Map VI-35 summarizes the reflexes and shows the extent of the merger between *e and *a. Notice the contrast between the reflexes for this environment and the preceding one (Set 25). Here the area where only a reflexes are found is much more extensive, including the same areas as in Map VI-34, but also including all the marginal areas of the Baja and all of Puebla. Also the area of mixed but predominantly a reflexes is much more pervasive in the Alta, leaving only part of the eastern Alta and a few towns in the southern Alta with a predominance of e reflexes over a reflexes. Only Huitepec, in the far southeast, and two of the towns in the far northeast (Cuyamecalco and Cuauhtémoc) retain *e unequivocally in this environment.

There seems to be no pattern for *e retention with regard to tonic and ultimate syllables except in two towns in the Mixteca Alta, Teita and Nuxiño, which both show mostly e reflexes in tonic syllables but a reflexes in ultimas.

Once again, there are a few i reflexes for *e in this environment, but the towns involved are not the same as those showing i reflexes in Correspondence Set 25. Here, several towns in the southern Mixteca (rather than in Puebla and the Baja as before) show a few i reflexes, mostly in ultimate syllables (Tataltepec, Yutanduchi, Sindihui, Monte Verde, Yololtepec).

Correspondence Set 27 presents the reflexes for *e following rounded or labialized consonants *w and *k^w, again contrasting tonic versus ultimate syllables, as well as taking into account a variety of vowel sequences, geminates, and nasal versus oral environments. Map VI-36, which presents the generalized reflexes for Set 27, is similar to but not identical to Map VI-35. Again, few areas show significant *e retention; these are the far northeastern Alta towns of Cuauhtémoc,

Cuyamecalco, and Coatzospan, in the eastern Alta, and two towns further west but on the fringes of the Alta, Itundujia and San Miguel Progreso. The only i reflex encountered in this set was in a single item in Teposcolula; a very few o and u reflexes occur in scattered towns (Amatitlán, Yucuquimi, Monte Lobos, Adéquez).

Correspondence Set 28 presents the reflexes for *e following *y. Although an attempt was made to contrast reflexes from tonic versus ultimate syllables, the one etymon with ultimate syllable *ye has tonic *e as well (163 *k^weye 'despacio'), and as such it is a special case and does not conform to this correspondence set. It has been included in the page of reflexes for comparative value and because no other examples of final *ye have yet been found, though they may well exist.

This correspondence set also lacks other forms which would be desirable for a fuller understanding of the behavior of *e in the environment of palatal *y; in particular it would be interesting to see the reflexes of geminate *e following *y (*yee or *ye?e canons), and of canons with repeat *e sequences interrupted by a consonant other than *y (*yeCe canons).

Correspondence Set 28 contrasts with Set 29 in terms of the effects of *y on *e; the former presents *e following *y, while the latter accounts for *e preceding *y. These two environments produce markedly different modern reflexes; the contrast is most effectively realized in tonic syllables, where tonic *e following *y develops mostly a reflexes, but tonic *e preceding *y develops mostly e reflexes (retentions of *e).

Thus while following *y has a marked effect of *e retention, preceding *y (the case of Correspondence Set 28) does not. There is, in fact, more development of a reflexes following *y than following any of the other consonants, as is shown in Map VI-37. Here, only Itundujia

(in the extreme southern Mixteca Alta) and Coatzospan (in the extreme northeastern Alta) preserve e reflexes and show virtually no effects of the merger with *a. And only a very few fringe areas around the edges of the Alta show any significant alternation between e and a reflexes.

For most of the Mixteca, the merger between *e and *a reaches its greatest extent and most complete development in this environment, following *y. Map VI-38 compares the four consonantal classes with respect to their effects on the reflexes of following *e. Here the isoclines delimit the extent of the merger in terms of the majority of reflexes; within a given isocline, the majority of the reflexes are a (each cline corresponds to one of the four consonant classes), while outside the isocline, e is retained in a majority of the reflexes for that particular environment.

While the coincidence of the four lines in most of the Mixteca is of course important, the most interesting comparison is within the Alta, where a dialect gradient is established for e versus a reflexes. On the northeastern, southeastern, and southwestern margins of the Mixteca Alta there is greater retention of *e, and adjacent areas, moving towards the heart of the Mixteca Alta, show progressively more presence of the merger. The island of uniform a reflexes found in the southern Alta (San Miguel el Grande, Chalcatongo, Yosondua, Yolotepec) is a very interesting phenomenon because of its distance from the probable center of innovation for this merger, which I think was in the Nochixtlán Valley area.

Correspondence Set 29 presents the reflexes for *e in tonic syllables preceding *y; that is, in canons with medial *y (*CeyV). The cognates supporting this correspondence set vary in final syllable vowel, contrasting ultimas with *i, *e, *a, *u and *ɨ, and offering two

etyma with nasalized ultimas. These last more regularly produce a reflexes than do etyma with oral ultimas.

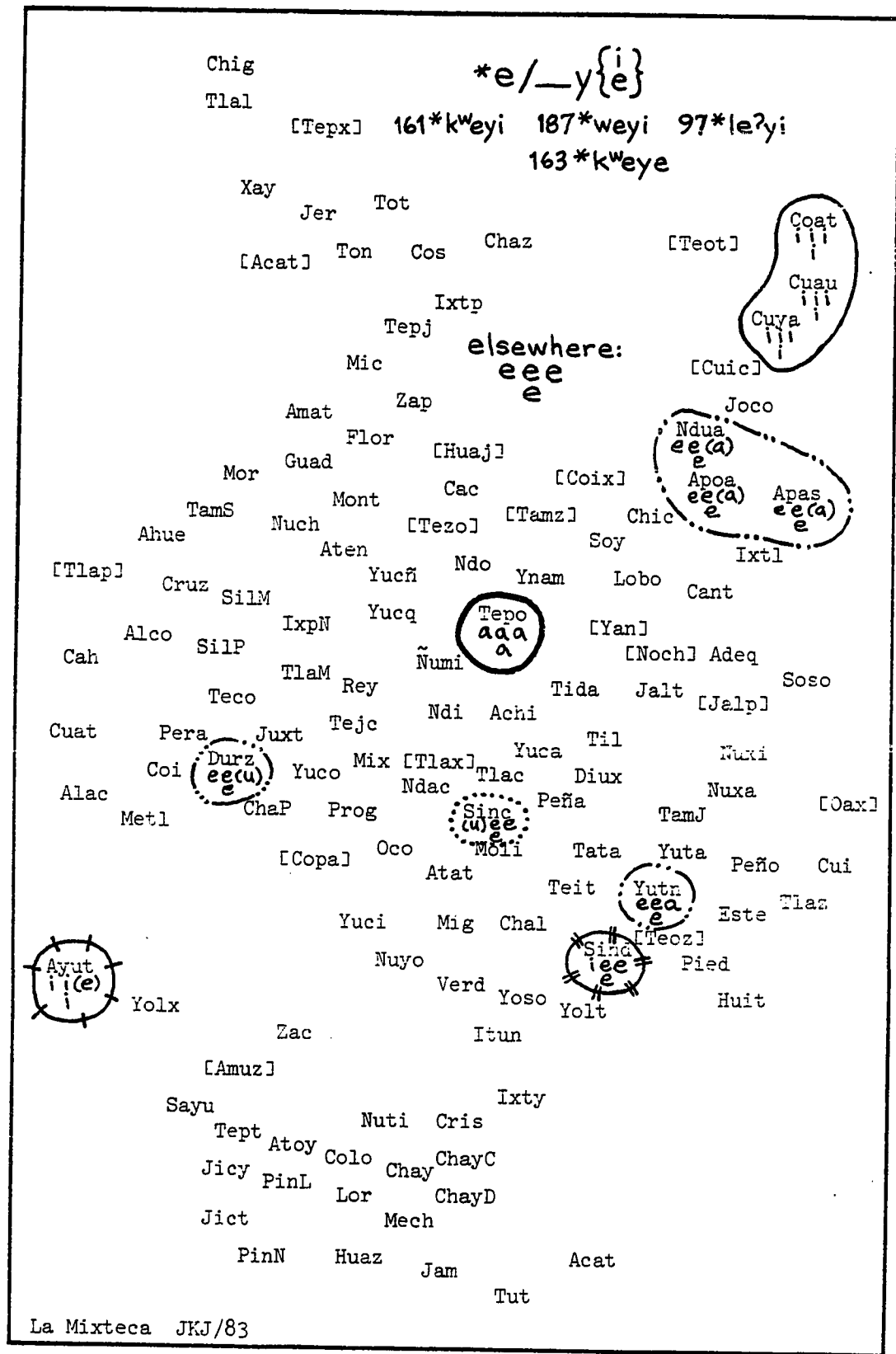
In this correspondence set the effect of following *y overrides the effects of the preceding consonants, which would otherwise govern the development of *e reflexes. The result of the regressive influence from palatal *y is the widespread retention of e as the tonic vowel, rather than the development of a reflexes, as is usual for *e in most contexts.

In some towns, the effect of the *y is to raise *e to i; this happens mostly when the following vowel is also anterior (*i or *e). Such i reflexes are found widely scattered but with little discernible pattern. They are probably related to earlier changes in the vowel sequences of the canons in question, and are not necessarily related to one another. The coincident reflexes are more likely derived from independent and distinct phonological processes.

Set 29 must be broken down into several sub-sets of correspondences in order to understand the specific patterns, before generalizing for the major environment. These subsets are determined by the quality of the vowel in the final syllable, and have been divided into three groups: anterior (*i and *e), low (*a), and posterior (*u).

Map VI-39 presents the patterned reflexes for *Ceyi and *Ceye canons, where the great predominance of e retentions is immediately apparent. Even the scattered areas enclosed by different line qualities, each indicating a different pattern of reflexes, usually retain e in most items in this set of cognates. In fact, the great majority of towns develop geminate e sequences from both of these canons (*Ceyi and *Ceye), through a probable sequence of *y loss followed by assimilation of *i to tonic *e in the *Ceyi canons. Only Teposcolula shows all a reflexes; other a reflexes are limited to single lexical items (in the

Map VI-39. Developments of Tonic *e in *Ceyi and *Ceye Canons



towns of Yutanduchi, Apasco, Apoala, Nduayaco). Two towns show possible (and aberrant) u reflexes for one or another word (Duraznos and Sinicahua).

The most interesting innovations are of i reflexes, found in three widely separated areas, but not with the same patterns of reflexes. Sindihui, in the southeastern Alta, shows a single i mixed with predominantly e reflexes; Ayutla, on the far western fringes of Mixtec distribution, has three i reflexes and one e retention. But in the far northeast, Coatzospan and its two companions, Cuyamecalco and Cuauhtémoc, show uniform i reflexes for all words in this set; thus they have a regular rule deriving raised i reflexes from *e when this precedes final syllables of *y plus an anterior vowel, either *i or *e. Although I do not know the exact history of these developments, I think they are probably different from those deriving i reflexes in Ayutla. In Ayutla the i reflexes appear to be modern innovations still coexistent with earlier forms, where a palatalized consonant preceding the geminate e commonly found in these derived canons (C^vee) is now developing an i in the tonic and slightly lowering the final syllable e to ɛ, thus producing a new canon without a palatalized initial consonant (Ciɛ). The Coatzospan area reflexes, on the other hand, are part of geminate i canons (*Ceyi and *Ceye both became Cii), and probably thus reflect a different process for the raising of *e to i in the environment of following *y.

Map VI-40 presents the reflexes for *Ceya canons. Once again, the most common development involves the retention of *e, associated with a fronting of the final syllable vowel *a to e; this process of vowel harmony with the tonic vowel results in geminate e canons (Ce?e) over most of the Mixteca.

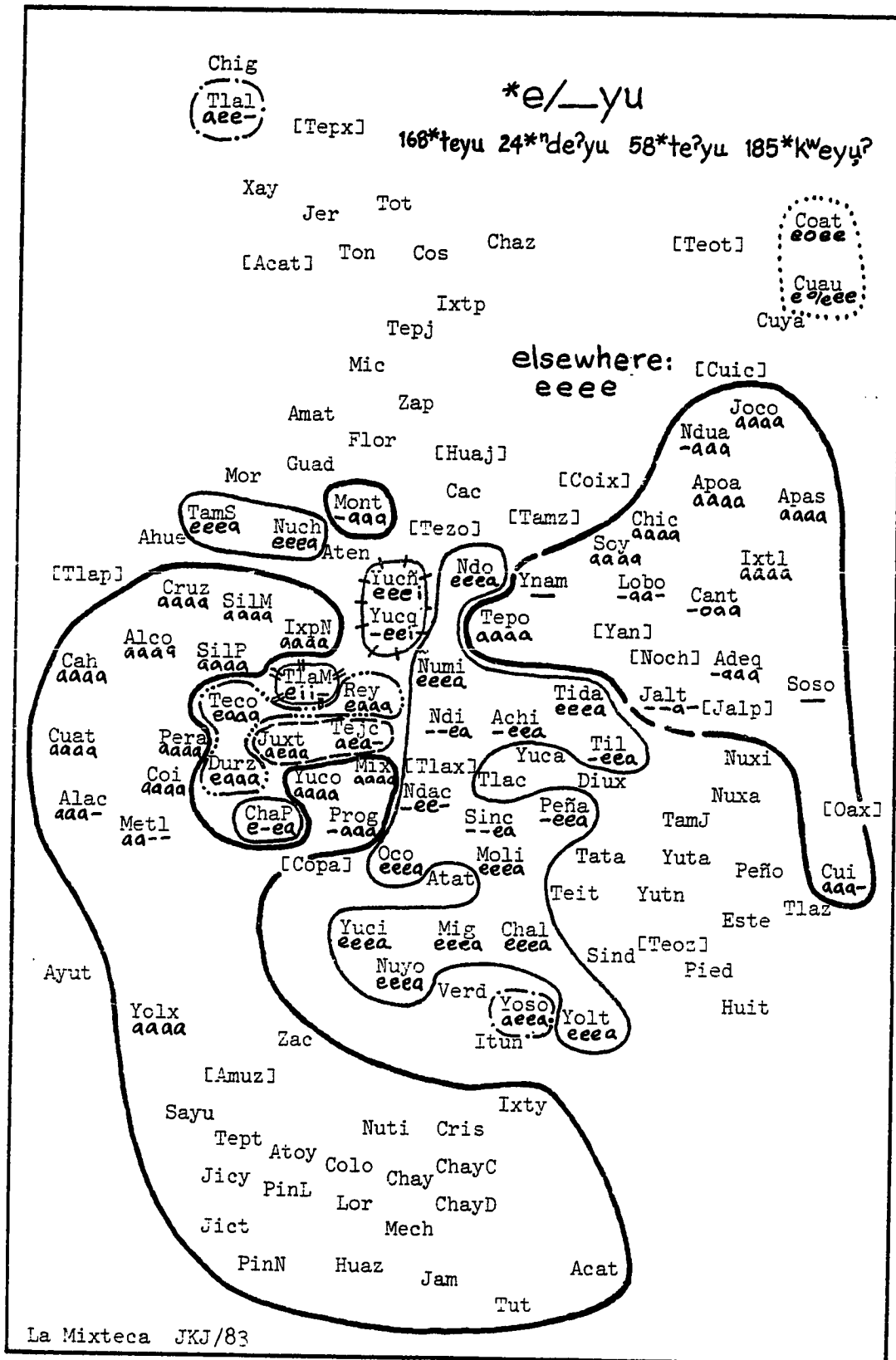
There is, however, a clearly delimited innovation sphere where the

tonic *e develops as a, producing a harmonic sequence of low a vowels in both syllables, usually retaining the medial *y (*Ce?ya > Ca?ya). This innovation sphere is characteristic of the northeastern Alta, and almost certainly includes Teposcolula, which more regularly shows a reflexes for *e than any other town, even though data are lacking for these etyma. A few other towns show a reflexes in one of the two etyma in this set (Silacayoapan-San Martín in the Baja, Zacatepec, Tepetlapa, Jicayán and Jamiltepec on the coast), and possibly one town in Guerrero, Alacatlazala, shares the complete merger with the northeastern Alta, although some data are lacking.

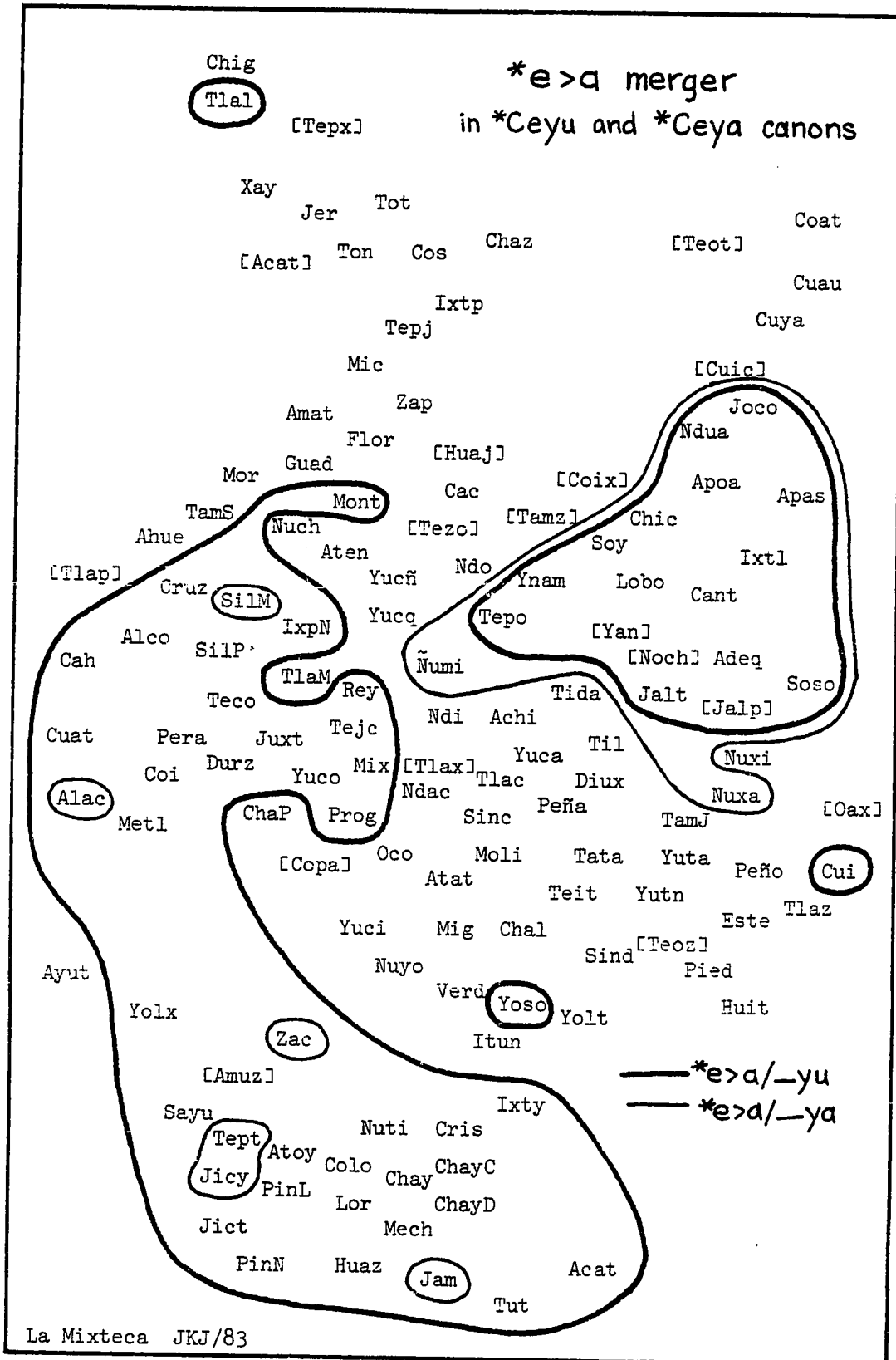
The other reflexes of non-identity associated with *Ceya canons are i developments, again scattered, again with little discernible pattern. Ayutla, Guerrero, again develops Ci?ε canons from earlier C^ve?e forms. The other areas in the Baja with i reflexes in one etymon show e in the other etymon, or alternate with e in a single form, and these are always geminates, either Cii or Cee (Morelia, Tecomaxtlahuaca, Durazos). And in the eastern Alta, three towns (San Juan Tamazola, Estetla, Tlazoyaltepec) have developed Ci?a canons from original *Ce?ya for one etymon, and lack data for the other. Clearly the i reflexes are derived through several distinct phonological processes, and should not be viewed either as common retentions or as shared innovations.

Map VI-41 presents the reflexes for *Ceyu canons. Although *e is still retained over a large part of the Mixteca in this canon, an equally prevalent reflex is a, found in the northeastern Alta and throughout most of the Baja and all of the Coast. The western Alta shows a reflexes only when the final *u is nasalized. Several areas in the Baja show mixed e and a reflexes, which I interpret as indicating that the merger of *e with *a in this context is at the moment incomplete, but

Map VI-41. Developments of Tonic *e in *Ceyu Canons



Map VI-42. Innovation Spheres for *e to a Merger before *y



almost certainly still active. The very few i reflexes found in *Ceyu canons are limited to the Baja, and offer no coherent pattern. Two towns in the far northeast (Coatzospan and Cuauhtémoc) show o reflexes in one etymon, but otherwise retain *e.

In summary, there are three main reflexes associated with *CeyV canons: e, i and a. The retention of e reflexes is most pervasive in canons with final *e or *i (anterior vowels), and is usually part of the development of modern geminate e canons (*Ceyi and *Ceye produce modern Cee sequences). Such geminate canons also occur as derivations of *Ceya and *Ceyu forms, but in these cases they compete with the influence of the predominant merger of *e with *a. Thus while *Ceya proto-forms do produce some modern Cee forms, a significant area of the northeastern Alta has Caya derivations from these *Ceya proto-forms. And for *Ceyu proto-forms, only a few towns in the northern Baja develop modern geminates with e (Ahuehuetitlán, Santiago Tamazola, Morelia, Guadalupe); more common is the development of modern Ceyi, Cayi or Cayu canons, or the retention of the original Ceyu forms. Map VI-42 compares the innovation spheres for development of a reflexes from *e in *Ceya and *Ceyu canons. The northeastern Alta regularly develops a reflexes in both canons, in nearly coincident innovations spheres. In the southern Baja-Guerrero and Costa regions, however, the large innovation sphere corresponds only to *Ceyu canons, while a reflexes in *Ceya canons are sporadic.

THE DIVERSIFICATION OF MIXTEC

The language structures which have been herein described and referred to as Proto-Mixtec are hypotheses about the structure of a real language spoken by the ancestors of the Ñu Sawi, or Rain People, the Pueblo Mixteco. This name--variously translated as 'rain people' or 'cloud people'--is also used by Amuzgos and Zapotecans when referring to themselves in their own languages. (A similar case is that of the Tzeltal and Tzotzil, Mayan groups who refer to their languages as bač'il k'op 'real speech' and to themselves as bač'il winik 'real people', reflecting the common cultural heritage they share; see Kaufman 1972: 15.) The common identification of the Mixtecs, Amuzgos and Zapotecs as the rain people reflects not only their genealogical relationship but also their association with an area of Mesoamerica which can also be broadly characterized as rainy and cloudy: this is the Mesa del Sur of Oaxaca, perhaps more specifically the western highlands, or the Mixteca Alta and the adjacent Valley of Oaxaca.

Otomanguan groups originally occupied most of the highland areas of Mesoamerica, and as they nucleated and became separate speech communities, sometime after 4400 B.C., each branch became associated with certain geographical subregions (as was described in chapter III; see also Josserand, Winter and Hopkins, In press). The long-time association of the Mixtecan languages with the highlands of the Mixteca Alta cannot be denied, and the location of Mixtec's two closest congeners--Trique and Cuicatec--within the Mixteca Alta further strengthens the argument for this area as the homeland for Mixtec proper. My own feelings are that the earliest Mixtec communities, as distinct from Cuicatec and

Trique, were located in the northern and northeastern area of the Mixteca Alta, in an area almost certainly including the Nochixtlán Valley.

The time period associated with Proto-Mixtec is not well established, although it seems most likely to have its beginnings in the late Preclassic, in archaeological terms, around 500 B.C., the date commonly cited for the separation of Cuicatec from Mixtec proper (Arana 1957, Kaufman 1978). This corresponds, as well, to an archaeological "flore-scence," a period of early urban centers in various parts of Oaxaca, including Yucuita in the Nochixtlán Valley and Huamelulpan and Montenegro (above Tilantongo) just to the south in the Mixteca Alta, as well as Monte Albán in the Valley of Oaxaca (Winter 1982).

From these early communities, Mixtec speakers spread mostly westwards, with early major expansions into Puebla and the central Baja areas, and with somewhat later expansions into the southern Baja, Guerrero, and the coastal region of Oaxaca. Later still were movements further north (again into Puebla, and towards the Papaloapan headwaters, to Coatzacoapan) and east, into the Valley of Oaxaca. The earliest published dates for internal separations within Mixtec are from about 500 A.D. (Arana 1960; Kaufman 1978), but these should be regarded as very preliminary figures, since much more is known about Mixtec and the divergence of varieties of modern Mixtec than was known when the first glottochronological studies were carried out (Arana 1960; Holland 1959). Very preliminary processing of some of the glottochronological material collected in association with my own dialect survey of Mixtec indicates that the time depth for Mixtec is considerably earlier than the published dates. A separation date of 290 B.C. between Zapotitlán Palmas and San Miguel Sosola was calculated from these data (Bradley and Josserand 1982:282, note 2; the calculations were done by Víctor Manuel Franco).

I hope to be able to process more glottochronological material soon; I feel that the selection of towns to be compared is extremely important for correctly gauging Mixtec internal time depth.

Major Phonological Processes in the Diversification of Mixtec

A complete history of Mixtec linguistic diversification is still a goal for future work, but on the basis of this and previous studies it is now feasible to propose an outline of major phonological developments and of interrelations between dialect areas.

There are few units in Proto-Mixtec which have not participated in the phonological developments that accompanied diversification. Certain units, like *y and *i, and certain series, like the alveolars, seem to be more involved in the distinct changes than others. The similarities in individual phonological processes discernible among these units are very suggestive of the overall structural forces involved in diversification, and many of these have been commented on in detail in the preceding chapter on Mixtec vowel reconstructions. Processes of palatalization and fricativization of consonantal units are widespread, while nasalization of both consonants (*w, *y, *t, *x) and of vowels is even more pervasive. Fronting of vowels (especially *i and *u) and of consonants (*x, *s) is another important process.

Partial mergers between existing units are common to both vowels and consonants, but while few new units are created in vowel systems, among consonants whole new structural series are generated. These last are usually still not stable systems, however, as many of the present-day contrasts originated in allophonic resortings in very restricted environments. These positional variants of a single unit later came into contrast because of independent changes in their environments; the

new units invariably have very limited distributions. Thus the vowel mergers which confuse the previous distinctions between front and non-front vowels (*i > i, *u > i, *e > a) have provoked a series of structural changes in the consonantal units which precede them. For example, palatalized t^y developed as an allophone of *t before front vowel *e, but when *e became a, then [t^y] preceded a, and consequently contrasted with plain [t] (which had regularly preceded a previously).

Mixtec comparative phonology presents patterns of great complexity. There are relatively few major rules, and these often affect large areas of the Mixteca, but there are frequently many sub-variants of each rule, involving slightly different environments and/or slightly different phonological realizations of the overall process described by the major rule. Again, the rules are combined in distinct sets and sequences in the many dialect variants.

A review of the reconstructed units from Proto-Mixtec and their modern reflexes permits the identification of the major phonological developments which have taken place in the process of development of the modern varieties. Without specifying anew the details of conditioning environment or of geographical distribution, these developments, or rules, are listed in Chart VII-1 with a brief characterization of their action and areal extent. The list is unordered except that the rules are grouped according to the reconstructed unit which they affect.

Rule Ordering

Each of the rules in Chart VII-1 can hypothetically be ordered with respect to each other rule, to produce a developmental sequence which approximates, albeit schematically, the diversification of the modern varieties of Mixtec. Each of the rules is conceived of as

CHART VII-1
 MAJOR PHONOLOGICAL DEVELOPMENTS
 OF PROTO-MIXTEC RECONSTRUCTED UNITS

Conso- nants	Rule	Characteristics and Context
*t	*t > č or t ^y or t̥ *t > tn or n	*t develops palatalized and sometimes affricated variants before front vowels *t develops nasalized variants before nasal vowels
* ⁿ d	* ⁿ d > n ^y _j or n ^d _y or n _z * ⁿ d > *n	* ⁿ d develops palatalized/affricated variants before front vowels * ⁿ d develops nasal alternant before nasalized vowels
*k	*k > x	*k develops fricative alternant before nasalized vowels
*k ^w	*k ^w > x ^w	*k ^w develops fricative alternant before nasalized vowels
*n	*n > ñ	*n develops a palatalized alternant before front vowels
*s	*s > d or θ *s > š *s > h	*s shifts its phonetic realization to a voiced or voiceless fricative, essentially a fronting process *s develops a palatalized alternant before front vowels *s shifts its phonetic realization to a voiceless velar/post-palatal fricative, essentially a backing process
*x	*x > y *x > s or š *x > č	*x shifts its phonetic realization to a voiced semivowel in certain environments *x shifts its phonetic realization to an alveolar or alveopalatal fricative, a fronting process *x shifts its phonetic realization to an alveopalatal affricate
*y	*y > ž *y > Ø *y > ñ	*y develops a voiced fricative alternant in some environments *y is lost completely in some environments *y develops a nasalized alternant before nasalized vowels

*w	*w > b	*w develops a voiced fricative alternant in some environments
	*w > ∅	*w is lost completely in certain environments
	*w > m	*w develops a nasalized alternant before nasalized vowels
Vowels	Rule	Characteristics and Context
*i	*i > ∅	*i is lost completely in certain contexts
*ɨ	*ɨ > i or e	*ɨ merges completely or partially with *i or *e in some areas
*u	*u > i or ɨ or o	*u merges partially with *i, *ɨ and/or *o in certain environments
*o	*o > u	*o develops as u in a few environments
*a	*a > e	*e develops as a in most environments
*e	*e > a	*a occasionally develops as <u>e</u> , in certain environments

taking place in a delimitable area (although that area may still be expanding for some rules), and also during a specifiable time period.

Some rules may be of long-term or even continuing action, but most will have a certain period of acceptance and spread, and then as the changed forms are incorporated into the language, the rule may cease to be prominent, and finally fall out of use. Thus, if any new forms are created from other sources which would have been affected by the rule in question, they are not affected, but remain unchanged. This is evidence that the first rule was not only prior, but was not still active when the later rules occurred.

Many of the rules given in Chart VII-1 to account for the modern varieties of Mixtec can be arranged in an approximation of the actual developmental sequence which led to the modern varieties. This requires that the rules be ordered with respect to one another, and although this is not always possible, in the case of Mixtec there is considerable evidence concerning the internal ordering of these rules. Hopefully some-

day some of the changes can even be dated absolutely, but at least the specification of relative dating relationships is very necessary for the construction of a developmental model of diversification.

In terms of the logical relations between rules, particularly what are called "feeding" and "bleeding" relations (where one rule increases or decreases the number of forms susceptible to the action of another rule), it is clear that certain rules must precede others. For example, rules which depend on front vowels as the conditioning environment for the change must precede any rule which merges front vowels with non-front vowels. Thus in the case of Mixtec, the changes $*t > t^y$, $*t > \check{c}$, $*s > \check{s}$ and $*^n d > ^n d^y$ or $^n j$ must all have occurred before the vowel merger rules $*i > \underline{i}$ and $*e > \underline{a}$. If the orders were reversed, the results in modern etyma would be different than they actually are. For example, if $*e > \underline{a}$ occurred before the consonant palatalizations, it would remove, or bleed, certain etyma from the domain of action of the palatalization rules, since words which had $*te$ sequences would become \underline{ta} sequences before the change of $*te$ sequences to $\underline{t^y e}$ could occur. Or if the $*i > \underline{i}$ rule preceded the consonant palatalizations, it would add to, or feed, possible instances to the domain of action of the palatalization rule. Here, sequences of $*t\underline{i}$, which do not in actuality develop as $\underline{t^y i}$ anywhere, would be changed first to \underline{ti} sequences, and then would be affected by the palatalization rules to become $\underline{t^y i}$.

Thus, as a general principle in Mixtec, rules which depend on anterior vowels as conditioning environments for the domain of their change must precede rules which merge anterior vowels with another vowel (or which merge other vowels with anterior vowels).

On the other hand, the loss of $*y$ before high front vowel \underline{i} has affected forms with \underline{i} derived from $*i$, as well as forms with \underline{i} derived

from *u, showing that this is either a late rule, posterior to the *i > i and *u > i mergers, or that it is a long-term, old but still on-going phonological constraint of Mixtec, which continues to act upon new instances of yi generated from whatever source.

The phonological rules can also be ordered by other criteria, such as the patterns of distribution of the reflexes. For example, compare the distributions of the modern reflexes of *s and *x, as presented in Chapter V (Maps V-10 and V-11, respectively). While the distributions of the several reflexes derived from *s can be considered consistent with the modern locations of the towns, the distributions associated with *x derivations can more easily be accounted for by retracting some of the areas into earlier, more restricted distributions. The coastal towns with ç reflexes would be associated with the southern Baja towns of Mixtepec and Yucunicoco, and regrouped in a single region, in this case, probably in the Baja. The far western Baja and Guerrero towns with š reflexes would be considered a later outmigration from the Alta-northern Baja sphere. This would imply, on purely distributional grounds, that the rules affecting *x took place during an earlier period of time, before the expansions of Mixtec populations to the coast and the far western Baja, while the rules affecting *s occurred after (or perhaps during) these expansions.

Furthermore, an examination of the more than two dozen phonological rules listed in Chart VII-1 reveals a number of parallel changes, which are all manifestations of more general, overall processes, which continued to act over long periods of time and which affected large parts of the Mixteca. In fact, four major processes--palatalization, fricativization, nasalization and fronting--are involved in at least 14 phonological developments. Palatalization is involved in the rules which

affect *t, *ⁿd and *n (*t > č or t^y; *ⁿd > n^y or n^d^y; *n > ñ). Fricativization is involved in rules affecting *t, *ⁿd, *y and *w (*t > č or č; *ⁿd > n^y or n^d^y; *y > ž; *w > ɸ). Nasalization accounts for certain developments of *t, *y and *w (*t > tn or n; *y > n̄; *w > m). And fronting processes are reflected in the changes affecting *x, *s, and vowels *i and *u (*x > s or s̄; *s > ɖ or θ; *i > i; *u > i).

On the basis of the various criteria for ordering phonological rules with respect to one another, and taking into account the action of the major processes involved in the developments of several phonological units or classes of units, the rules deriving modern varieties of Mixtec from their common ancestor, Proto-Mixtec, can be relatively ordered and grouped into major time periods. These major periods correspond to the action of different phonological processes, though these processes are not always limited in their action to a single period, as was mentioned above. A first approximation of such a chronological ordering is presented in Chart VII-2, where the four periods proposed encompass the dialectal variation of Proto-Mixtec and carry the diversification process more or less up to modern times. The three later periods are each characterized by one or more types of phonological change: nasalization, palatalization and/or fricativization, and vowel mergers (mostly frontings). Other changes than those shown in the chart doubtless took place alongside or between the various rules comprising the four major developmental periods.

Diversification and Subgrouping

By any measure, modern varieties of Mixtec must include over a dozen mutually unintelligible varieties, or languages, each with many local dialects. In my own sample of 120-Mixtec speaking villages,

CHART VII-2

MAJOR PERIODS OF MIXTEC DEVELOPMENT

Period I. The earliest period, which perhaps represents the breakup of Proto-Mixtec into dialect areas.

*y > Ø/ __i,e

*wi > u/ __#

Period II. Nasalization.

*w > m

*y > ñ

*t > tn

Period III. Palatalization and Fricativization.

*x > y/s/š/č

*s > š/θ/h/š

*t > č/tʲ/č/s

Period IV. Vowel Mergers.

*e > a

*i > i

*o > u

the speech of any one village never coincided in all its details with that of any other. This extreme local and regional variation is the result of a long process of diversification which began during the late Preclassic period (perhaps as early as 500 B.C.), and which has continued since the Spanish conquest, with Mixtec now under the influence of Spanish and in a Spanish-speaking environment.

Many of the modern phonological systems are superficially quite similar, with phoneme inventories largely in common. The real differen-

ces are obscured, but their existence can be demonstrated in the many correspondences of non-identity found in the comparative study of Mixtec and in the reconstruction of Proto-Mixtec. The structural units which on the surface appear to be the same actually have different patterns of allophonic distribution, or of morphophonemic alternation, reflecting their different historical developments. The splits and mergers of phonological history have somehow managed to create several major branches of Mixtec which mostly look alike despite their checkered phonological histories. This means that only a thorough knowledge of the historical development of these varieties can result in an accurate genealogical classification.

Subgrouping implies shared history, and the reconstruction of Mixtec linguistic history can shed light on other aspects of this important but hitherto relatively undocumented region of Mesoamerica. There is strong evidence to suggest that some linguistic areas correlate with preconquest Mixtec señoríos; linguistic subgrouping of adjacent varieties can help establish the boundaries of such socio-political entities. Subgrouping of non-adjacent varieties can help document migrations and population movements, constant phenomena in the Mixteca.

Intimately tied to subgrouping is the reconstruction of the intermediate stages in Mixtec development, between Proto-Mixtec and the modern varieties. Some of the later stages of this intermediate range are documented in sixteenth to eighteenth century materials written in Mixtec (Josserand, Jansen and Romero, In press, report hundreds of documents, from various dialect areas). The present reconstruction is direct from the modern varieties to Proto-Mixtec, with no intervening stages, or intermediate reconstruction levels between. If intermediate stages can be reconstructed, it will be on the basis of understanding the overall

processes at work in Mixtecan languages. One of the most important of these is reduction of multisyllabic constructions to the favored two-syllable couplet form. This same type of process--reduction to shorter, more standard forms--was also important in the longer-term development of Mixtecan from Proto-Otomanguean. Some pre-Proto-Mixtecan patterns are fairly clear, such as the development of older CV morphemes to a couplet shape, either by lengthening the vowel to a structural CVV canon, or by combining such CV forms with other morphemes, to form CVCV canons. It seems that many such old CV roots, either Proto-Otomanguean or Proto-Mixtecan, developed into CVCV forms by Proto-Mixtec times, and the old CV root is usually the ultimate syllable of the couplet. (Related to this development was a stress change rule, which moved stress to the first syllable of such couplet stems.) This explains why Longacre reconstructed only ultimate syllables in his study of Proto-Mixtecan (1957) and in his collaborative reconstruction of Proto-Mixtec with Cora Mak (Mak and Longacre 1960); the same is true for Rensch's reconstruction of Proto-Otomanguean (1976), which uses only final syllable forms for purposes of comparison with other Otomanguean languages.

The development of models of structural stages which would correspond to intermediate language states is the next step in understanding Mixtec linguistic prehistory. A first attempt at ordering phonological innovations and grouping them into chronological stages was presented by Bradley and Josserand (1978, 1982). They discuss in some detail the stages in the development of Mixtec fricative and affricate systems (Period III in Chart VII-2), and propose that the vowel mergers have been among the more recent innovations (Period IV in Chart VII-2).

The present work demonstrates that the reconstructions and overall outlines of diversification proposed by Bradley and Josserand are in

fact adequate for a much wider range of dialects than was taken into account in their initial formulation. It can now be asserted that virtually all Mixtec dialect variation can be accounted for in terms of an integrated developmental model which derives the modern varieties from the proposed reconstruction. Furthermore, this model of diversification and of historical development of Mixtec forms a coherent theory which requires no unlikely sound changes or unreasonable innovation and diffusion spheres. And the geographical regions involved in the diffusion spheres do, in at least some cases, correspond to known or suspected zones of influence of major Mixtec population centers.

The present study has emphasized accountability, and has sought to ensure that each of the known variants can be reasonably derived from the reconstructed Proto-Mixtec system, and that this development scheme takes into account regional as well as local innovation phenomena. What remains to be done is to exploit fully what is known about each local dialect in a model of overall development of Mixtec varieties since Proto-Mixtec was spoken. That is, the individual lines of development must be integrated into a larger scheme of subgrouping, where each subgroup represents a phase in the diversification process.

On the basis of the Mixtec data presented here--cognate sets, correspondence sets and innovation sphere maps--it should be possible to subgroup dialects meaningfully in order to reconstruct some intermediate stages between the modern varieties and Proto-Mixtec. Some dialects are obviously the result of influences from so many sources that they may have unclear parentage, and as such are not central to the task of reconstructing the intermediate stages. But other dialects and groups of dialects have regularly-evolved phonological systems, and these dialects can form a reasonable base for the reconstruction of stages later

than Proto-Mixtec but much earlier than the modern varieties: the majority of the Coastal dialects, for example, or the Nochixtlán area dialects, those of the Tonalá Valley in the Mixteca Baja, or the Acatlán area of southern Puebla. Mixtec archaeology and ethnohistory suggest that the Postclassic period (but beginning perhaps as early as A.D. 700) would be a likely time for such intermediate stages to have existed.

Mixtec Dialect Areas

A preliminary grouping of Mixtec communities into dialect areas, using Bradley and Josserand's phonological criteria (1978, 1982) appears in Josserand, Jansen and Romero, 1978 and In press), but since that study was written, much new material has been analyzed, which must be taken into account in any discussion of dialect areas. While phonological criteria alone are usually used for defining basic genealogical relationships (i.e., for subgrouping and classification), the establishment of dialect areas need not rely wholly on phonological data.

Dialect areas are created by linguistic barriers in all levels of language structure: phonology, morphology, syntax, and especially lexicon, and coincident isoglosses from all of these types of variants are the best indicators of dialect boundaries. For example, the distribution of palatalized alveolars (\underline{t}^y , \underline{n}_d^y , $\underline{\eta}$) in Tututepec and surrounding east coast towns coincides with the distributions of a number of vocabulary items unique to the east coast. Also, the various *u fronting innovations in the Mixteca Baja are reminiscent of the lexical innovations which define that area.

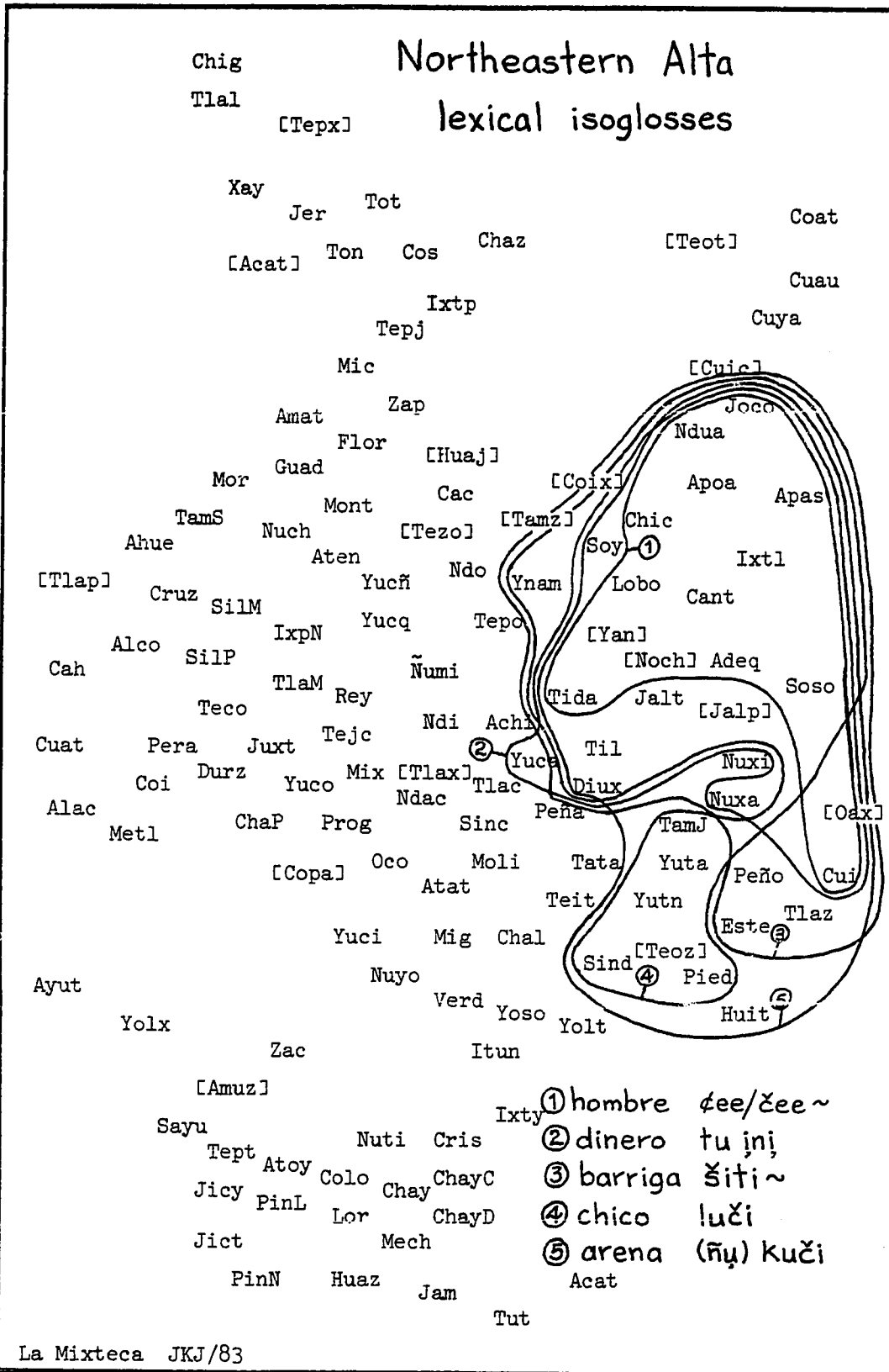
Many phonological innovations affect the Mixteca Alta, with criss-crossing isoglosses which fragment the Alta into multiple subdialects. The lexical isoglosses reflect this diversity, and it is difficult to

find many words which share distribution spheres exactly. The lexical sub-area in the Alta which seemingly has the most importance is that of the northeastern Alta, shown in Map VII-1. It is unusual for any linguistic feature to differentiate the Alta as a single zone in contrast to other regions. The Mixteca Alta has many lexically as well as phonologically defined subgroupings, reflecting its complex history and the fact that Mixtec populations have probably occupied the Mixteca Alta longer than any other region where they are now found.

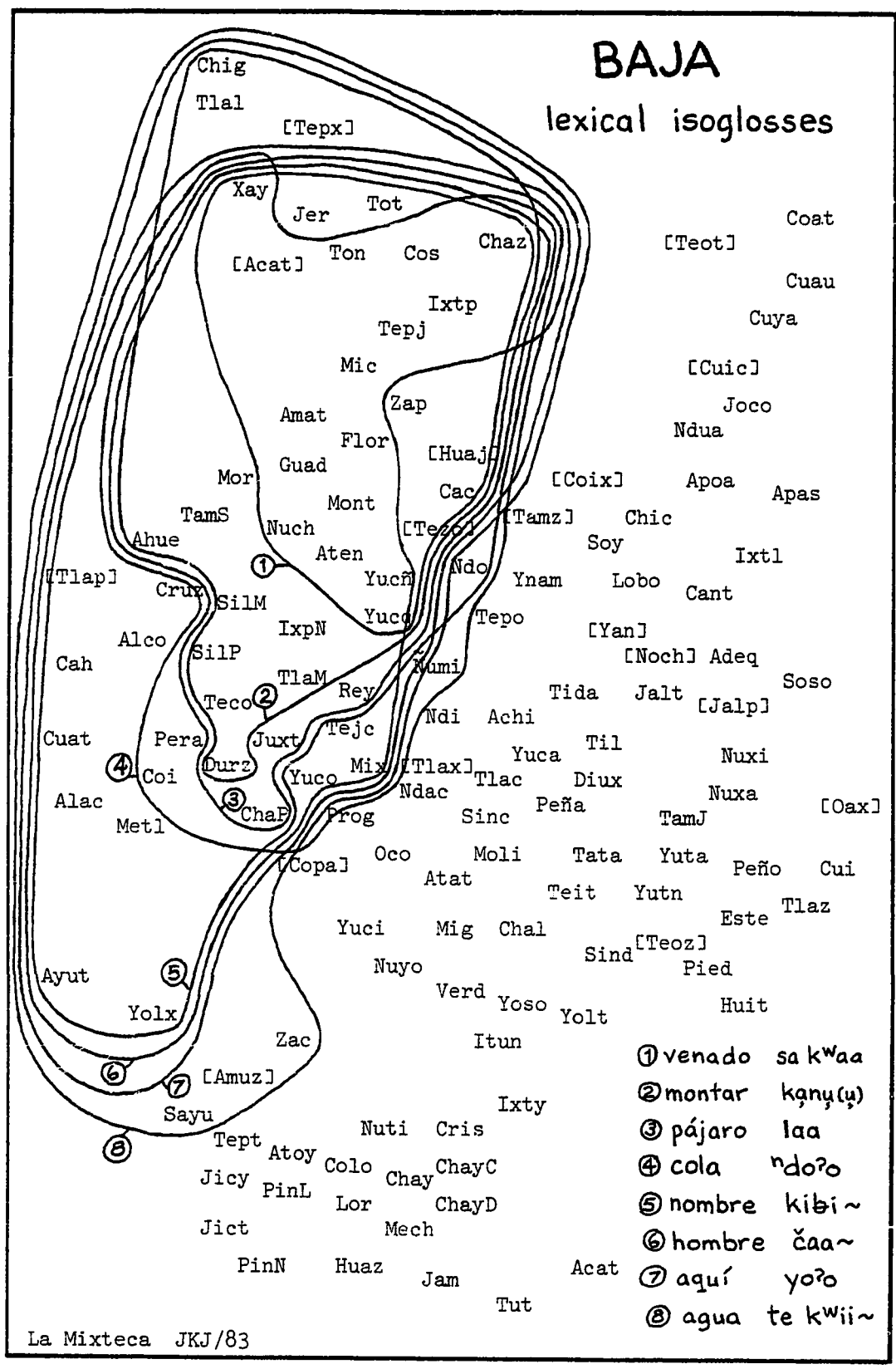
The Mixteca Baja, extending from southern Puebla as far south as Juxtlahuaca, Oaxaca, is an area of many widespread lexical innovations which clearly separate it from the other regions, despite its sharing many phonological innovations with them (Map VII-2). The Coastal dialects are internally fairly homogeneous, lexically and phonologically (Map VII-3), although several sub-dialects can be discerned. This relative uniformity reflects their relatively recent arrival to the coastal region and their isolated location; they differ quite markedly from other regions, however, both in terms of lexical novelties and phonological changes. Their vocabulary items are often so affected by phonological developments as to render them unrecognizable as cognates except by a linguist familiar with Mixtec comparative linguistics.

Studies of the origins of intervarietal synonyms (lexical variants) reveal that most are internal Mixtec innovations. These probably originated in sociolinguistically important centers, such as Tututepec, Teozacoalco, Tilantongo, Apoala, Acatlán, Tonalá, and other seats of once-powerful señoríos, the prehispanic kingdoms whose histories of alliances, wars and ruling lineages are recounted in the Mixtec codices and lienzos. It is possible to identify some interdialect loans, and these include most of the numbers and several items important in interregional trade.

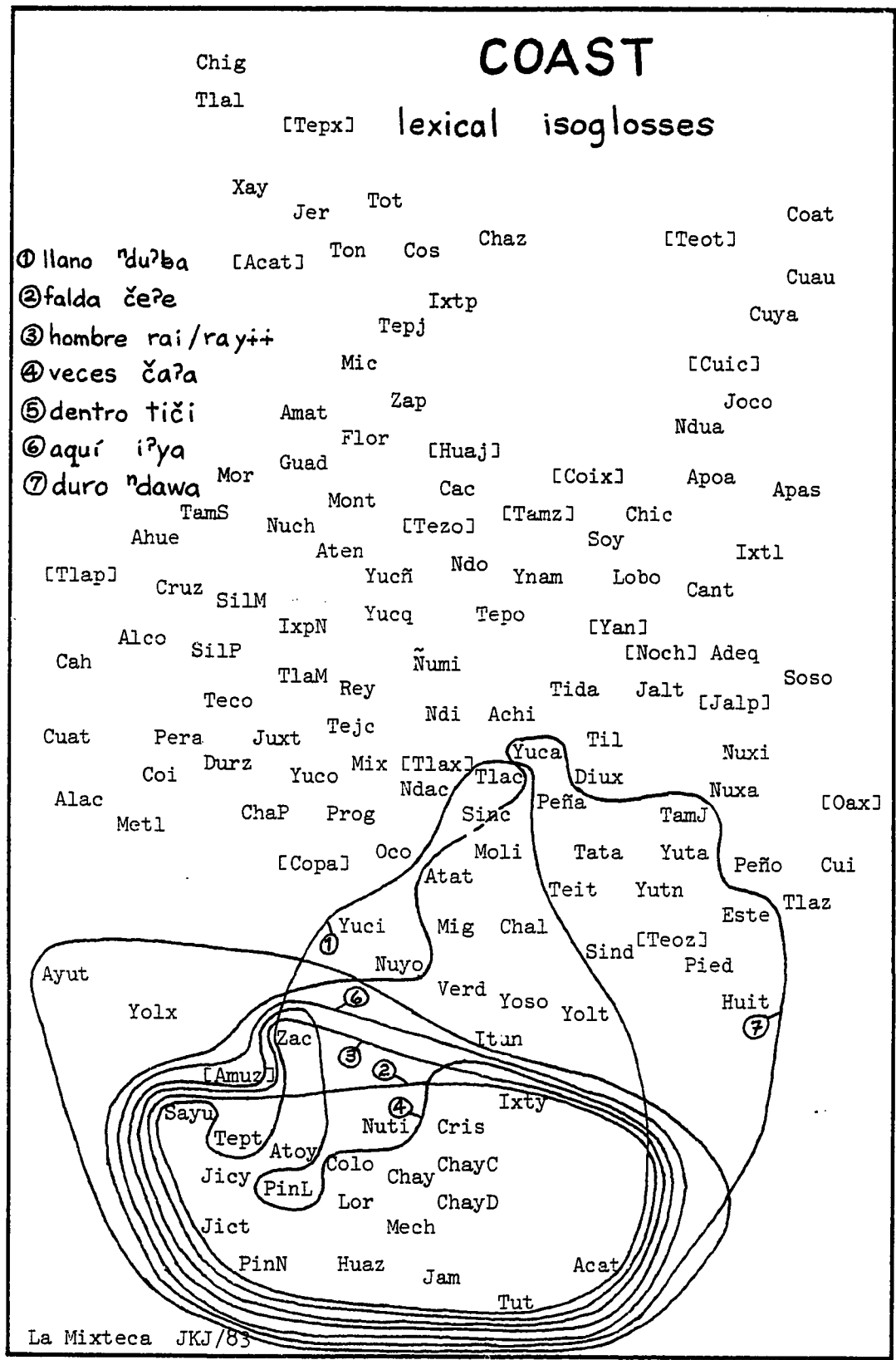
Map VII-1. Northeastern Alta Lexical Isoglosses



Map VII-2. Baja Lexical Isoglosses



Map VII-3. Coast Lexical Isoglosses



Included in the latter category, for example, are the terms for 'salt', 'petate', and 'feather'.

Loans from non-Mixtec languages are not common. The Mixtec solution to introduced items was usually the extension of an existing Mixtec etymon to the new concept. This usually resulted in a series of semantic shifts to adjust for new distinctions in meaning. For example, the etyma whose reconstructed senses are 'animal' or 'deer' (135 *kiti[?] and 12 *isu, respectively) shift to mean 'horse' after the Spanish conquest. A few loans from Nahuatl are widespread, and certain vocabulary domains are highly marked for Spanish loans (the introduced civil-religious hierarchy, and other introduced material and ideological lexicon). But only in regions where Mixtec is being lost is there any great presence of Spanish influence in native phonology and lexicon (these include the Acatlán, Puebla, area and the chain of great valleys connecting Acatlán to the Valley of Oaxaca). Very little identifiable evidence of Tlapanec or of any other linguistic neighbor on Mixtec's western frontier (other than Nahuatl) has been documented. This is surely due in part to the general lack of information about the far western Baja and Guerrero Mixtec regions; it may also be due to a relatively recent expansion of Mixtec into this area (perhaps mostly post-Conquest). If this is true, then it is to be expected that this situation will be reflected in the age and distribution of common innovations.

In terms of ordered phonological developments, the Baja is the area where the innovation spheres for the more recent rules are centered. Throughout most of the Mixteca, Spanish is the language of relation between communities whose dialects are different enough to hamper communication, and all official communication has been obligatory in Spanish for hundreds of years. But in the isolated Baja and Guerrero settlements

Spanish is much less prevalent, and the language of relation between communities remains Mixtec. This, as well as the loss of other important Mixtec centers to Spanish, may explain the continued spread of linguistic innovations in the Baja; elsewhere communities began more independent lines of development within the framework of shared processes already in progress. The result is different solutions to common problems, as is represented by the multitude of single-town varieties of Mixtec reported in this study. It is possible to identify the influence of drift on Mixtec sound change, as well as that of structure, the "pattern pressure" invoked by principles of internal symmetry and by external examples deriving from sociolinguistic situations involving at least two other major languages, Spanish and Nahuatl.

The earliest documented example of such sociolinguistic dominance is that of Nahuatl, during the Aztec empire expansions into the Mixteca. The more recent example is that of Spanish, which maintains a rigorously superior attitude towards its indigenous compatriots. Since both Nahuatl and Spanish have fewer vowels in their vowel systems than Mixtec, it is reasonable to assume that they maintained a continuing positive pressure on the Mixtec mergers of inner with outer triangle vowels over the past 400 to 500 years. Thus at least one case for external pattern pressure can be suggested in a discussion of the motive for certain Mixtec phonological developments. The loss of one entire vowel unit, reducing the basic contrast from a six vowel system to a five vowel system in over half the Mixteca, can perhaps be interpreted as being a response to continued interaction with dominant languages whose vowel systems depend on fewer structural units. Both Spanish and Nahuatl lack /i/ or any other central vowel other than /a/, which reinforces the loss of *i in much of the Mixteca. With regard to the developments of *o and *u,

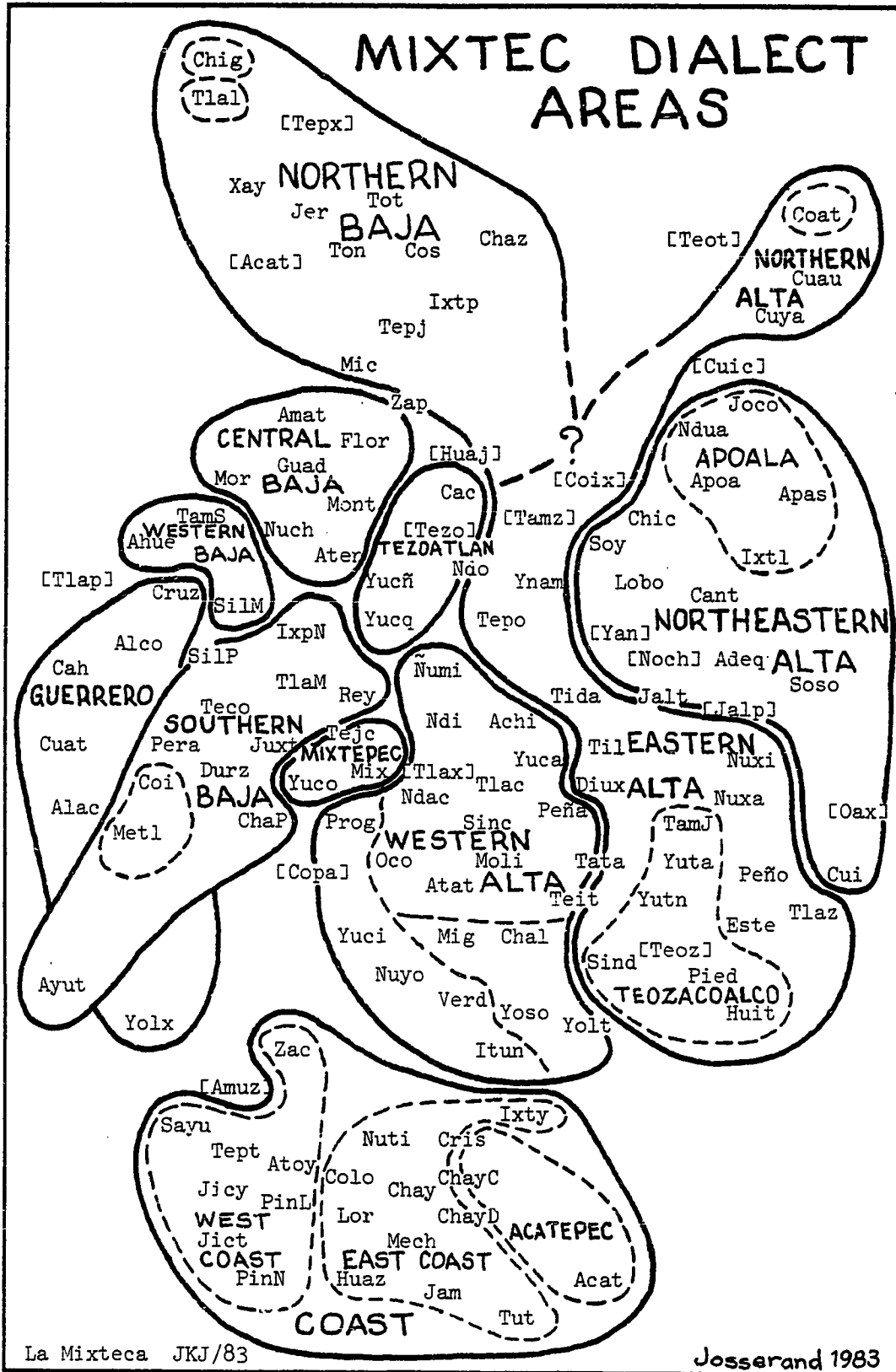
Nahuatl has phonetic [o u] representations for the phonemic /o o:/ contrast in its four-vowel, two-length system (/i e a o/, each long and short). This pattern may have influenced the *o > u and *u > o developments in the Mixteca Baja. Note that these mergers, as well as the loss of *i through merger with *i, mostly affected the western varieties of Mixtec, which can be expected to have had most contact with Nahuatl speakers over the past several hundred years.

It is also of interest to note that Mixtec was almost certainly triglossic during its period of florescent cultural unity (the Mesoamerican Postclassic). That is, at least three varieties of Mixtec were commonly used in the society: a court language called iya (more properly /i?ya/), used among the noble lords; a commercial standard intelligible throughout the Mixteca (probably the Teposcolula variety used by the Dominicans because of its widespread intelligibility), and a local dialect, which varied considerably from one señorío to another.

By combining phonological with lexical and other linguistic data, I have delineated a series of dialect areas which I consider to be important in any discussion of Mixtec diversification, and which represent the genealogical groupings susceptible of intermediate level reconstructions. These dialect areas are presented in Map VII-4.

Large areas are not unlike those proposed by Jiménez Moreno in 1962 (which is only to be expected), but differences are of interest and are important to our understanding of Mixtec history. Especially note that I propose more divisions in the Mixteca Baja and in Guerrero, the large, westernmost area of Mixtec, relatively little known even today. But the central Baja was certainly very important during late pre-Hispanic and early Colonial periods (the old señoríos of Acatlán, Tonalá, etc.). Our knowledge of these areas is still inadequate in many ways.

Map VII-4. Mixtec Dialect Areas



A serious problem for defining dialect areas, and especially in terms of identifying the influential centers around which they were formed, is the virtual loss of these same centers, in modern linguistic terms. Almost all the seats of once-great señoríos became completely hispanicized: all the Nochixtlán Valley, Teposcolula, Yanhuitlán, Tamaulapan in the central Alta, as well as Tlaxiaco, and Acatlán and Huajuapán in the Baja, and even Teozacoalco, in the heart of the southern Mixteca Alta.

Migration within the Mixteca has also played an important role in Mixtec diversification, and these are among the most interesting threads of history which can be investigated and sometimes reconstructed through linguistic data. Cases in point are the three waves of migration from the central Baja to the coastal area of Oaxaca from A.D. 900 to 1000, documented only through linguistic evidence (at the moment); or the expansion of Mixtec on its western frontiers, mostly after A.D. 1500. Much of this type of linguistic history can be supplemented and confirmed with ethnohistorical documents, local traditions, and archaeological data, and Mixtec has unique resources for this kind of integrative approach, including early Colonial documents written in Mixtec in Roman script and pre-Columbian manuscripts in a pictorial hieroglyphic writing. It is to be hoped that the integration of all these sources of information will soon bear fruit in a more comprehensive view of Mixtec and greater Mesoamerican culture history.

APPENDIX I

A. Symbols and Conventions

All transcriptions use standard phonetic symbols; most transcriptions reflect a phonemic analysis of the language material, but considerable phonetic detail has been included, especially in the cognate set arrays presented in Appendix II. Some special usages are indicated below.

Modern Mixtec forms mentioned in the text are underlined, dawi; all reconstructed forms are cited with a preceding asterisk, *sawi?; their Spanish or English equivalents are cited with single quotation marks, 'lluvia', 'rain'. Individual sounds may also be similarly marked, as modern reflexes, a, or as reconstructed units, *s. If the phonological or orthographic nature of the unit is under discussion, additional symbols indicate their status: square brackets enclose phonetic transcriptions, [tnij]; diagonals enclose phonemic transcription, /tj/, and purely orthographic symbols are distinguished by diamond brackets, <toho> versus phonemic /to'o/.

In the cognate sets these symbols are used differently. There, the square brackets [] are used to designate non-cognate forms which have been included for various reasons, and single diagonals appear between alternant forms, for example, tj/tnij 'agarrar', or yoso/[ⁿdu?ba] 'llano'. Parentheses indicate optional elements in a construction, especially parts which are not relevant to the reconstruction, (nã) kaku 'se nació', or wiN(n)ã 'ahora'.

Certain other symbol conventions are used in the text, especially with reference to the phonological rules discussed in Chapters VI and VII. There the capital letters C and V are used as class or cover symbols, standing for any consonant and for any vowel, respectively. Parentheses indicate optional elements, so that, for example, the formula (C)Vyu would include both sequences with an initial consonant, CVyu, and those without, Vyu. The increase signs > or arrows → are used interchangeably and represent the action of a phonological rule or development, where the unit to the left of the arrow is replaced by the unit to the right of the arrow. If the rule requires the specification of an environment, or phonological context within which it may occur, this is shown by an immediately following diagonal /, which is then followed by the description of the relevant context; for example, *u > i/y_#, which states that Proto-Mixtec *u became i when it followed *y in couplet (word) final position.

Special Usages

In addition to the standard vowels i e a o u, a sixth vowel is common to many varieties of Mixtec, high central *ɨ*. Other vowel symbols found in the transcriptions include front rounded *ü*, and mid front open *ɛ*. Vowel length is indicated by a following raised dot, a· (macron *ā* is used in tone markings).

Glottalization is marked by a glottal ? following the vowel. Phonetic echo vowels occur following such glottalized nuclei under certain circumstances; these are indicated by raising the second vowel slightly, kaʔ^{sn}ji 'truená'.

Raised letters are usually part of a complex phoneme, as in the case of the rearticulated vowel nuclei just mentioned, or more commonly,

as part of consonantal units, such as the prenasalized stops ${}^n d$, η_g , or the palatalized stops, t^y , ${}^n d^y$, or labialized velars, k^w , x^w . Also, the devoicing of vowels (or preaspiration of consonants) is sometimes shown with a raised h, as in $\check{s}a^h tu$ 'calzón'.

Capitalized letters represent the voiceless counterparts of normally voiced units, both of vowels and of consonants, as in $\check{s}aAtu$ 'calzón', or $tNyu$ 'árbol'. These voiceless segments are occasionally transcribed with h. Dental and alveopalatal fricatives are sometimes distinguished as being retroflex, pronounced with the tip of the tongue, \check{s} , or fronted, pronounced with the blade of the tongue, \check{s} .

Nasalization on vowels is marked by a cedilla below the vowel, $\underset{\cdot}{e}$. Nasalization on consonants, especially semivowels, is usually marked by a tilde, \tilde{y} , but may also appear marked by the cedilla, $\underset{\cdot}{y}$.

Most varieties of Mixtéc have three level tones, as well as a number of modified tones, which include glides on single vowels. These are marked variously in the data sources; the two most common systems mark either all three levels (high \acute{a} , mid \bar{a} , low \grave{a}), or only two of the levels (high \acute{a} , low \bar{a} , mid is unmarked). The markings for any given town should be examined to determine the values of the tone marks used. Glides are usually combinations of two level tones, and are written as sequences; the two tones occur on a single vowel; for example, Yucuhite $?it\bar{u}^{\grave{}} 'milpa'$, where the final vowel has a tone glide of mid-low. Low-high glides and high-low glides are written with available single symbols, hachek \check{a} and circumflex \hat{a} , respectively.

B. Alphabetical Index of Town Abbreviations

The following list includes the abbreviations used for names of towns on maps and in the cognate set arrays of Appendix II. For towns which were sources of data used in this study, a reference is given to the cognate set arrays in Appendix II. For example, "Costa 21" after the name of Santa María Acatepec indicates that the data from this town are located in Appendix II on pages labeled Costa in the upper left-hand corner, and are on line 21 of those pages. For towns which do not form part of the sample, but which are included for reference points, their political status is indicated (they are usually cabeceras of municipios or distritos), and if Indian-language speaking but not Mixtec, their linguistic affiliation is noted.

Acat	Santa María Acatepec, Costa 21
[Acat]	Acatlán de Osorio, Puebla; cab. mun./dist.
Achi	San Miguel Achiutla, C Alta 2
Adeq	Santa Catarina Adéquez, NE Alta 14
Ahue	San Miguel Ahuehuetitlán, S Baja 24
Alac	Alacatlazala, S Baja 3
Alco	Alcozauca de Guerrero, S Baja 9
Amat	San Miguel Amatitlán, N Baja 8
[Amuz]	San Pedro Amuzgos, Oaxaca; cab. mun.; Amuzgo
Apas	Santa María Apasco, NE Alta 21
Apoa	Santiago Apoala, NE Alta 22
Atat	San Esteban Atatlahuca, C Alta 16
Aten	San Agustín Atenango, N Baja 3
Atoy	San Pedro Atoyac, Costa 4
Ayut	Tepango, S Baja 1
Cac	Santiago Cacaloxtepec, N Baja 10
Cah	Cahuatachi/Cahuatache, S Baja 8
Cant	San Pedro Coxcaltepec Cántaros, NE Alta 15
ChaP	San Pedro Chayuco, S Baja 14
Chal	Chalcatongo de Hidalgo, C Alta 18
Chay	San Agustín Chayuco, Costa 17 (Bradley's data)
ChayC	San Agustín Chayuco, Costa 18 (Josserand's data)
ChayD	San Agustín Chayuco, Costa 19 (Pensinger 1974)
Chaz	Santiago Chazumba, N Baja 16
Chic	San Miguel Chicahua, NE Alta 19
Chig	Santa María Chigmeocatitlán, N Baja 22
Coat	San Juan Coatzospan, NE Alta 27
Coi	Coicoyán de las Flores, S Baja 5

[Coix]	San Juan Bautista Coixtlahuaca, Oaxaca; cab. mun./ dist.; Chocho
Colo	San Juan Colorado, Costa 9
[Copa]	San Juan Copala, Oaxaca; Trique
Cos	Cosoltepec, N Baja 15
Cris	San Cristóbal, Costa 12
Cruz	Santa Cruz de Bravo (?), S Baja 10
Cuat	Cuatzoquitengo, S Baja 7
Cuau	Santa Ana Cuauhtémoc, NE Alta 26
Cui	Santiago Cuilapan de Guerrero, NE Alta 11
[Cuic]	San Juan Bautista Cuicatlán, Oaxaca; cab. mun./dist.; Cuicatec
Cuya	Cuyamecalco Villa de Zaragoza, NE Alta 25
Diux	San Juan Diuxi, NE Alta 4
Durz	San Martín Durazos, S Baja 11
Este	Santa Catarina Estetla, NE Alta 10
Flor	San Francisco de las Flores, N Baja 7
Guad	Guadalupe Portezuelo/Villahermosa, N Baja 6
[Hua.j]	Huajuapán de León, Oaxaca; cab. mun./dist.
Huaz	Santa María Huazolotitlán, Costa 15
Huit	San Antonio Huitepec, C Alta 26
Itun	Santa Cruz Itundujia, C Alta 21
IxpN	Nieves Ixpantepec/Ixpantepec Nieves, S Baja 21
Ixtl	Santiago Ixtaltepec, NE Alta 20
Ixtp	San Miguel Ixtapan, N Baja 12
Ixty	Santiago Ixtayutla, Costa 11
[Jalp]	Magdalena Jaltepec, Oaxaca; cab. mun.
Jalt	San Francisco Jatepetongo, NE Alta 13
Jam	Santiago Jamiltepec, Costa 16
Jer	San Jerónimo Xayacatlán, N Baja 19
Jict	Santa María Jicaltepec, Costa 6
Jicy	San Pedro Jicayán, Costa 5
Joco	San Pedro Jocotipac, NE Alta 24
Juxt	Santiago Juxtlahuaca, S Baja 13
Lobo	San Agustín Montelobos, NE Alta 16
Lor	San Lorenzo, Costa 13
Mech	Santa Catarina Mechoacán, Costa 14
Metl	Metlatónoc, S Baja 4
Mic	Rosario Micaltepec, N Baja 13
Mig	San Miguel el Grande, C Alta 17
[Mitl]	Santiago Mitlatongo, Oaxaca; cab. mun.
Mix	San Juan Mixtepec, S Baja 16
Moli	San Pedro Molinos, C Alta 7
Mont	San Sebastián del Monte, N Baja 1
Mor	San Luís Morelia, S Baja 25

Ndac	Santa Cruz Nundaco, C Alta 11
Ndi	Santiago Nundichi, C Alta 10
Ndo	Santo Domingo Nundó, N Baja 11
Ndua	San Antonio Nduayaco, NE Alta 23
[Noch]	Asunción Nochixtlán, Oaxaca; cab. mun./dist.
Nuch	San Jorge Nuchita, N Baja 2
Nuti	Santa María Nutío, Costa 10
Nuxa	Santo Domingo Nuxaa, NE Alta 6
Nuxi	San Andrés Nuxiño, NE Alta 5
Nuyo	Santiago Nuyoo, C Alta 15
Ñumi	San Juan Ñumí, C Alta 1
Oco	Santo Tomás Ocotepec, C Alta 12
[Oax]	Oaxaca de Juárez, Oaxaca; state capital; Zapotec
Peña	San Mateo Peñasco, C Alta 4
Peño	Santa María Peñoles, NE Alta 9
Pera	San Martín Peras, S Baja 6
Pied	San Miguel Piedras, C Alta 25
PinL	Pinotepa de Don Luís, Costa 8
PinN	Santáago Pinotepa Nacional, Costa 7
Prog	San Miguel Progreso, C Alta 13
Rey	Santos Reyes Tepejillo, S Baja 18
Sayu	San Francisco de Asís Sayultepec, Costa 2
SilM	San Martín del Estado, S Baja 22
SilP	San Jerónimo Progreso, S Baja 20
Sinc	San José Sinicahua, C Alta 8
Sind	San Mateo Sindihui, C Alta 24
Soso	San Jerónimo Sosola, NE Alta 12
Soy	San Bartolo Soyaltepec, NE Alta 18
TamJ	San Juan Tamazola, NE Alta 7
TamS	Santiago Tamazola, S Baja 23
[Tamz]	Tamazulapan del Progreso, Oaxaca; cab. mun.
Tata	Santa María Tataltepec, C Alta 5
Teco	San Sebastián Tecomaxtlahuaca, S Baja 12
Teit	San Juan Teita, C Alta 6
Tejc	Los Tejocotes, S Baja 17
[Teot]	Teotitlán del Camino, Oaxaca; cab. mun./dist.; Nahuatl
[Teoz]	San Pedro Teozacoalco, Oaxaca; cab. mun.
Tepj	Tepejillo, N Baja 14
Tepo	San Pedro y San Pablo Teposcolula, NE Alta 1
Tept	San Antonio Tepetlapa, Costa 3
[Tepx]	Tepexí de Rodríguez/de la Seda, Puebla; cab. mun./ dist.; Popoloca
[Tezo]	Tezoatlán de Segura y Luna, Oaxaca; cab. mun.
Tida	San Pedro Tidaa, NE Alta 2
Til	Santiago Tilantongo, NE Alta 3
Tlac	San Agustín Tlacotepec, C Alta 9
Tlal	Santa Catarina Tlaltempan, N Baja 21
TlaM	San Miguel Tlacotepec, S Baja 19

[Tlap]	Tlapa, Guerrero; cab. mun./dist.; Tlapanec
[Tlax]	Santa María Asunción Tlaxiaco, Oaxaca; cab. mun./ dist.
Tlaz	Santiago Tlazoyaltepec, C Alta 27
Ton	San Jerónimo Tonahuixtla, N Baja 18
[Tona]	Santo Domingo Tonalá, Oaxaca; cab. mun.
Tot	Santa María Totoltepec de Guerrero, N Baja 17
Tut	San Pedro Tututepec, Costa 20
Verd	Santa Lucía Monteverde, C Alta 19
Xay	Kayacatlán de Bravo, N Baja 20
[Yan]	Santo Domingo Yanhuitlán, Oaxaca; cab. mun.
Ynam	San Pedro Yucunama, NE Alta 17
Yolt	Santa María Yolotepec, C Alta 22
Yolx	Yoloxochitl, S Baja 2
Yoso	Santiago Yosondua, C Alta 20
Yuca	San Bartolomé Yucuañe, C Alta 3
Yuci	Santa María Yucuhiti, C Alta 14
Yucñ	Santa María Yucufuti de Benito Juárez, N Baja 5
Yuco	Santa María Yucunicoco, S Baja 15
Yucq	Santa María Yucuquimi de Ocampo, N Baja 4
Yuta	San Juan Yuta, NE Alta 8
Yutn	Yutanduchi de Guerrero, C Alta 23
Zac	Santa María Zacatepec, Costa 1
Zap	Zapotitlán Palmas, N Baja 9

C. Alphabetical Indices of Reconstructed Proto-Mixtec Forms

1. Proto-Mixtec forms with Spanish and English equivalents, and reference numbers to the corresponding cognate set arrays presented in Appendix II.

asɨ?	sabroso/tasty, 130	tɨ laa	pájaro/bird, 147
awɨ	cuándo/when, 155	lak ^w a?	pus/pus, 76
iku	ayer/yesterday, 170	tɨ lana?	jitomate/tomato, 90
ino?	tobaco/tobacco, 188	laxɨ?	chachalaca/chachalaca, 151
isa	pasado mañana/day after tomorrow, 132	la ^w wa	rana/fron, 148
ku iso	va a cargar/will carry, 80	lele	orina/urine, 150
isu	venado/deer, 12	le ⁿ du	ombligo/navel, 149
itu	milpa/cornfield, 169	le ^w yi	sobaco/armpit, 97
iyɨ	seis/six, 106	lɨ ^w ɨ?	liso/smooth, 152
tɨ iyɨ	espuma/foam, 38	lo ^o	oreja/ear, 129
ku ɨku	coser/sew, 79	lu ^u	chico/little, 153
		lu ^w ɨ?	cola/tail, 6
		tɨ lu ^w ɨ?	alacrán/scorpion, 139
		nawɨ	pared/wall, 86
ni kaku	se nació/be born, 173	ne ^e	temprano/early, 87
kati?	algodón/cotton, 50	nino	abajo/below, 82
ka ^{nu} ?	grande/big (sg.), 65	nivy	toda la noche/all night, 83
ka ^{ndɨ}	trueno/(it) thunders, 145	nɨyɨ?	sangre/blood, 39
ka ^{yu}	pintar/paint, 141	noni?	maíz/corn (grain), 85
keyi?	salir/go out, 140	no ^o	diente/tooth, 27
kini	feo/ugly, 70	nune?	abierto/open, 88
kixi	va a venir/will come, 67	n ⁿ da ^{wi}	pobre/poor, 137
kásɨ	olla/clay pot, 94	n ⁿ deka	pegamento/glue, 160
kátɨ?	animal/animal, 35	n ⁿ dese	cómo/how, 157
káwɨ?	cuatro/four, 4	n ⁿ desɨ	cerrado/closed, 131
káwɨ?	día/day, 154	n ⁿ detu?	esperar/wait for, 57
koo ye ^{ndi} ?	arco iris/rainbow, 146	n ⁿ deyu?	comida/food, 46
koo?	culebra/snake, 69	n ⁿ de ^w ya	está viendo/see, 162
koyɨ	carne/meat, 30	n ⁿ de ^w yu	lodo/mud, 24
kuka	peine/comb, 172	n ⁿ dika?	mamey/mamey, 165
kuni	sabrá/will know, 184	n ⁿ diko?	moler/grind, 166
kute	redondo/round, 53	n ⁿ diso?	cargar/carry, 158
k ^w ag	amarillo/yellow, 78	n ⁿ diti	ejote/green bean, 91
k ^w e ^e	rojo/red, 31	n ⁿ dixe	verdad/truth, 104
k ^w e ^ɨ	se fue/(he) went, 32	n ⁿ dixɨ?	huarache/sandal, 125
k ^w eti	culpa/sin, 20	n ⁿ dixɨ	ala/wing, 167
k ^w eye	despacio/slow, 163	n ⁿ dɨkɨ?	cuerno/horn, 68
tɨ k ^w eyɨ?	zancudo/mosquito, 56	n ⁿ dɨsi	aguardiente/liquor, 95
k ^w eyu?	ardilla/squirrel, 185	n ⁿ dɨwɨ?	blanquillo/egg, 37
k ^w e ^w yi	enfermedad/sickness, 161	n ⁿ dɨ ^w ɨ?	se acaba/(it) finishes, 36
k ^w iya	año/year, 74	n ⁿ dɨ ^w ɨ?	grano/pimple, 144
k ^w i ^{na}	demonio/demon, 77	n ⁿ doo?	caña/cane, 93
k ^w ɨyɨ	hinchazón/swelling, 143	n ⁿ dusi	miel/honey, 96
		n ⁿ dute	agua/water, 22
		n ⁿ duti?	frijol/bean, 21
		n ⁿ duxɨ?	vomitar/vomits, 16

one	ocho/eight, 89	wilu [?]	gato/cat, 117
oni	tres/three, 26	wisj	dulce/sweet, 133
owe	amargo/bitter, 29	witj	ahora/now, 134
o ^o q	cinco/five, 28	wixj	frío/cold, 124
o ^o we	salado/salty, 47	wi ^o i [?]	basura/trash, 116
		wi ^o nde [?]	nopal/prickly pear, 118
sawa	mitad/half, 92	xe ^o kj	poner (huevo)/lay (egg), 64
sawi [?]	lluvia/rain, 1	xetu	calzón/trousers, 181
sayu	catarro/cold, phlegm, 111	xety [?]	cajón/box, 55
sa ^o yi	hijo/child, 110	xexi [?]	comer/eat, 102
se ^o q	manteca/lard, 13	xe ^o e	pie/foot, 119
siko	olor/smell, 14	xe ^o nde [?]	cortar/cut, 120
sik ^o	huipil/blouse, 48	xito	cama/bed, 18
sita [?]	tortilla/tortilla, 15	xity	horno/oven, 54
siti [?]	nariz/nose, 8	xiyo [?]	comal/griddle, 19
sá ^o k ^o a [?]	ceja/eyebrow, 75	xítá	tripas/guts, 122
sá ^o wá [?]	nombre/name, 127	yak ^o e [?]	chueco/crooked, 73
sá ^o í [?]	horcón/housepost, 126	yak ^o i [?]	armadillo/armadillo, 72
sá ^o wa	cacao/cacao, 128	yawq [?]	rastrajo/cornstalk, 108
suky [?]	cuello/neck, 66	yawi	agujero/hole, 135
sutu	sacerdote/priest, 182	yawi [?]	maguay/agave, 2
suxq [?]	flojo (hombre)/lazy, 17	yeni	hermano/brother, 25
		yeti	(está) cerca/near, 10
tasu [?]	gavilán/hawk, 103	yexi [?]	jícara/gourd, 43
tati [?]	viento/wind, 51	yá ^o í [?]	marido/husband, 40
taya	floja(silla)/loose, 186	yá ^o í [?]	sal/salt, 41
teye	hombre/man, 52	yá ^o kí [?]	calabaza/squash, 44
teyu	banquito/stool, 168	yá ^o wá [?]	gente/people, 99
tá ^o	cucaracha/cockroach, 159	yá ^o yá	tejón/coatí, 45
te ^o ya [?]	podrido/rotten, 58	yoko [?]	espiga/tassel, 98
te ^o yu	uffa/fingernail, 107	yono [?]	red/net bag, 42
tiyi [?]	trabajo/work, 49	yoso [?]	llano/plain, 156
tiy ^o	agarrar/grab, 59	yuku	hierba/brush, 179
tá ^o í [?]	soplar/blow, 61	yuku q	aquel/that (one), 81
tá ^o wá	rata/rat, 142	yuku [?]	cerro/hill, 71
tá ^o yí [?]	cuarta/handspan, 62	yuky	surco/furrow, 180
too	pluma/feather, 5	yute	río/river, 23
towj	dueño/owner, 63	yuty [?]	árbol/tree, 11
xi to ^o	palabra/word, 9	yuu [?]	piedra/stone, 175
to ^o q	otro/other, 171	yuy	pueblo/town, 100
tuku	fierro, marca/brand, 183	yuwq [?]	cera/wax, 7
tuni	tendón/tendon, 60	yuwi [?]	petate/straw mat, 3
tuti	sabio, listo/smart, 174	yuxq [?]	masa/cornmeal, 109
tu ^o we		yuyu [?]	rocío/dew, 178
		yu ^o u	yo/I (independent), 177
uwi	dos/two, 138	yu ^o u [?]	boca/mouth, 176
uxe	siete/seven, 33	yu ^o y	lumbre, fuego/fire, 105
uxi	diez/ten, 123	yu ^o we	hilo/thread, 34
uxi o ^o q/xé ^o y	quince/fifteen, 121	yu ^o wq	humo/smoke, 101
		yu ^o wi	tiene miedo/afraid, 136
wati	porque/because, 113		
wa ^o a	bueno/good, 112		
wexi	ya viene/is coming, 115		
weyq	este mismo/this one, 114		
weyi	pesado/heavy, 187		
we ^o yi	casa/house, 164		

2. Spanish to Mixtec inversion: alphabetical index of Spanish glosses for reconstructed Proto-Mixtec forms, with reference numbers to the corresponding cognate set arrays presented in Appendix II.

abajo	nino (82)	cuándo	awə (155)
abierto	nune? (88)	cuarta	too (62)
agarrar	tii? (59)	cuatro	kiwi? (4)
agua	ⁿ dute (22)	cucaracha	tí te'ya? (159)
aguardiente	ⁿ disi (95)	cuello	suky? (66)
agujero	yawi (135)	cuerno	ⁿ diki? (68)
ahora	witi (134)	culebra	koo? (69)
ala	ⁿ dixi (167)	culpa	kWeti (20)
alacrán	tí lu'we? (139)	chachalaca	laxə? (151)
algodón	kati? (50)	chico	lu'u (153)
amargo	owe (29)	chueco	yakWe? (73)
amarillo	k ^w aa (78)	demonio	k ^w i'na (77)
animal	kiti? (35)	espacio	kWeye (163)
año	k ^w iya (74)	día	kiwi? (154)
aquel	yuku ə (81)	diente	no'o (27)
árbol	yuty? (11)	diez	uxi (123)
arco iris	koo ye ⁿ di? (146)	dos	uwi (138)
ardilla	k ^w eyu? (185)	dueño	xi to'o (63)
armadillo	yak ^w i? (72)	dulce	wisi (133)
ayer	iku (170)		
banquito	teyu (168)	ejote	ⁿ diti (91)
basura	wi'i? (116)	enfermedad	kWe'yi (161)
blanquillo	ⁿ diiwi? (37)	esperar	ⁿ detu? (57)
boca	yu'u? (176)	espiga	yoko? (98)
bueno	wa'a (112)	espuma	tí iyu (38)
		está cerca	yeti (10)
		este mismo	weye (114)
cacao	si'wa (128)	feo	kini (70)
cajón	xety? (55)	fierro, marca tuni	(183)
calabaza	yiki? (44)	floja (la silla) taya	(186)
caliente	i'ni? (84)	flojo (el hombre) suxə?	(17)
calzón	xetu (181)	frijol	ⁿ duti? (21)
cama	xito (18)	frío	wixi (124)
caña	ⁿ doo? (93)		
cargar	ⁿ diso? (158)	gato	wilu? (117)
carne	koyə (30)	gavilán	tasy? (103)
casa	we'yi (164)	gente	yə yiwi? (99)
catarro	sayu (111)	grande (sg.)	ka'nu? (65)
ceja	sik ^w a? (75)	grano	ⁿ dii'yi (144)
cera	yuwe? (7)		
cerrado	ⁿ desi (131)	hermano (de hombre) yeni	(25)
cerro	yuku? (71)	hierba	yuku (179)
cinco	o'ə (28)	hijo	sa'yi (110)
cola	lu'we? (6)	hilo	yu'we (34)
comal	xiyo? (19)	hinchazón	k ^w iyi (143)
comer	xexi? (102)	hombre	teye (52)
comida	ⁿ deyu? (46)	horcón	si'i (126)
cómo	ⁿ dese (157)	horno	xity (54)
cortar	xe ⁿ de (120)	huarache	ⁿ dixe? (125)
coser	ku iku (79)	huipil	sikə (48)
		humo	yu'we (101)

jícara	yexi? (43)	rana	la?wa (148)
jitomate	tí lana? (90)	rastroyo	yawg? (108)
liso	lá?wá? (152)	rata	tá?yá? (142)
lodo	nde?yu (24)	red	yono? (42)
lumbre, fuego	yu?y (105)	redondo	kute (53)
llano	yoso? (156)	río	yute (23)
lluvia	sawi? (1)	rocío	yuyu? (178)
magüey	yawi? (2)	rojo	k ^w e?e (31)
maíz	noni? (85)	sabio, listo	tu?we (174)
mamey	ndika? (165)	sabrá, va a saber	kuni (184)
manteca	se?e (13)	sabroso	asá? (130)
marido	yáá? (40)	sacerdote, cura	sutu (182)
masa	yuxe? (109)	sal	yáá? (41)
miel	ndusi (96)	salado	o?we (47)
milpa	itu (169)	salir	keyi? (140)
mitad	sawa (92)	sangre	niyá? (39)
moler	ndiko? (166)	se acaba	ndá?á? (36)
nariz	siti? (8)	se fue	k ^w e?e (32)
nombre	sáwá? (127)	se nació	ni kaku (173)
nopal	wi?nde? (118)	seis	iyo (106)
ocho	one (89)	siete	uxe (33)
olor	siko (14)	sobaco	le?yi? (97)
olla	kisá (94)	soplar	táwá (61)
ombligo	le ⁿ du (149)	surco	yuku (180)
oreja	lo?o (129)	tejón	yá?yá (45)
orina	lele (150)	temprano	ne?e (87)
otro	tuku (171)	tendón	tuti (60)
pájaro	tí laa (147)	tiene miedo	yu?wi (136)
palabra	to?g (9)	tobaco	ino (188)
pared	nawg (86)	toda la noche	niyu (83)
pasado mañana	isa (132)	tortilla	sita? (15)
pegamento	ndeka (160)	trabajo	tiyo (49)
peine	kuka (172)	tres	oni (26)
pesado	weyi (187)	tripas	xitá (122)
petate	yuwi? (3)	truena	ka?ndi (145)
pie	xe?e (119)	uffa	tiyi? (107)
piebra	yuu? (175)	va a cargar	ku iso (80)
pintar	ka?yu (141)	va a venir	kixi (67)
pluma	towj (5)	venado	isu (12)
pobre	nda?wi (137)	ver (está viendo)	nde?ya (162)
podrido	te?yu (58)	verdad	ndixe (104)
poner (huevo)	xekj (64)	viento	tati? (51)
porque	wati (113)	vomitara	nduxe? (16)
pueblo	yuy (100)	ya viene	wexi (115)
pus	lak ^w a? (76)	yo	yu?u (177)
quince	uxi o?g/xe?y (121)	zancudo	tí k ^w eyá? (56)

3. English to Mixtec inversion: alphabetical index of English glosses for reconstructed Proto-Mixtec forms, with reference numbers to the corresponding cognate set arrays presented in Appendix II.

afraid	yu'wi (136)	ear	lo'o (129)
agave	yawi' (2)	early	ne'e (87)
all night	niiy (83)	eat	xexi' (102)
animal	kiti' (35)	egg	ⁿ diwi' (37)
armadillo	yak ^w i' (72)	eight	one (89)
armpit	le'yi' (97)	eyebrow	sik ^w a' (75)
bean	ⁿ duti' (21)	feather	towi (5)
be born	ni kaku (173)	fifteen	uxi o'o/xeyu (121)
because	wati (113)	fingernail	tiyi' (107)
bed	xito (18)	(it) finishes	ⁿ di'i' (36)
below	nino (82)	fire	yu'yu (105)
big (sg.)	ka'nu' (65)	five	o'o (28)
bird	ti laa (147)	foam	ti iyu (38)
bitter	owe (29)	food	ⁿ deyu' (46)
blood	naiy ⁱ ' (39)	foot	xe'e (119)
blouse	sik ^o (48)	four	kiwi' (4)
blow	tiwi' (61)	frog	la'wa (148)
box	xety' (55)	furrow	yuku (180)
brand	tuni (183)	glue	ⁿ deka (160)
brother (of man)	yeni (25)	go out	keyi' (140)
brush	yuku (179)	good	wa'a (112)
cacao	si'wa (128)	gourd	yexi' (43)
cane	ⁿ doo' (93)	grab	ti'i' (59)
carry	ⁿ diso' (158)	green bean	ⁿ diti (91)
cat	wilu (117)	griddle	xiyo' (19)
chachalaca	lax ^o ' (151)	grind	ⁿ diko' (166)
child	sa'yi (110)	guts	xiti (122)
closed	ⁿ desi (131)	half	sawa (92)
clay pot	kisi (94)	handspan	too (62)
coati(mundi)	yiyi (45)	hawk	tasyu' (103)
cockroach	ti te'ya' (159)	heavy	weyi (187)
cold	wixi (124)	hill	yuku' (71)
cold, phlegm	sayu (111)	hole	yawi (135)
comb	kuka (172)	honey	ⁿ dusi (96)
come (is coming)	wexi (115)	horn	ⁿ diki' (68)
corn (grain)	noni' (85)	hot	i'ni' (84)
cornfield	itu (169)	house	we'yi (164)
cornmeal	yux ^o ' (109)	housepost, crotch	si'i' (126)
cornstalk	yaw ^o ' (108)	how	ⁿ dese (157)
cotton	kati' (50)	husband	yii' (40)
crooked	yak ^w e' (73)	I (independent pronoun)	yu'u (177)
cut	xe ⁿ de (120)	lard	se'e (13)
day	kiwi' (154)	lay (eggs)	xeki (64)
day after tomorrow	isa (132)	lazy	sux ^o ' (17)
deer	isu (12)	liquor	ⁿ disi (95)
demon	k ^w i'na (77)	little	lu'u (153)
dew	yuyu' (178)	loose	taya (186)

mamey	ⁿ dika? (165)	straw mat	yuwi? (3)
man	teye (52)	stone	yuu? (175)
meat	koyq (30)	stool	teyu (168)
mosquito	tɛ k ^w eyɛ? (56)	sweet	wisɪ (133)
mouth	yu'u? (176)	swelling	k ^w ɛyɛ (143)
mud	ⁿ de?yu (24)	tail	lu'wɛ? (6)
name	sɪwɛ? (127)	tassel (corn)	yoko? (98)
navel	le ⁿ du (149)	tasty	asɛ? (130)
near	yetɪ (10)	ten	uxi (123)
neck	suky? (66)	tendon	tuti (60)
net bag	yono? (42)	that (one)	yuku ɛ (81)
nose	siti? (8)	thread	yu'we (34)
now	witi (134)	three	one (26)
open	nune? (88)	this one	weyɛ (114)
other	tuku (171)	(it) thunders	ka ⁿ daɪ (145)
oven	xity (54)	tobacco	ino (188)
owner	xi to'o (63)	tomato	tɛ lana? (90)
paint	ka?yu (141)	tooth	no'o (27)
people	yɛ yɛwɛ? (99)	tortilla	sita? (15)
pimple	ⁿ daɪ?yɛ (144)	town	yuy (100)
plain, valley	yoso? (156)	trash	wi'ɪ? (116)
poor	ⁿ da?wi (137)	tree	yuty? (11)
prickly pear (cactus)	wi ⁿ de? (118)	trousers	xetu (181)
priest	sutu (182)	truth	ⁿ dixe (104)
pus	lak ^w a? (76)	two	uwi (138)
		ugly	kini (70)
		urine	lele (150)
		(is) vomiting	ⁿ duxɛ? (16)
rain	sawi? (1)	wait for	ⁿ detu? (57)
rainbow	koo ye ⁿ di? (146)	wall	nawɛ (86)
rat	tɛyɛ? (142)	water	ⁿ dute (22)
red	k ^w e'e (31)	wax	yuwɛ? (7)
river	yute (23)	(he) went	k ^w e'ɛ (32)
rotten	te?yu (58)	when	awɛ (155)
round	kute (53)	wind	tati? (51)
		wing	ⁿ dixɪ (167)
salt	yɛɛ? (41)	will carry	ku iso (80)
salty	o'we (47)	will come	kixi (67)
sandal	ⁿ dixɛ? (125)	will know	kuni (184)
scorpion	tɛ lu'wɛ? (139)	word	to'o (9)
see	ⁿ de?ya (162)	work	tiyq (49)
seven	uxe (33)	year	k ^w iya (74)
sew	ku iku (79)	yellow	k ^w ag (78)
sickness	k ^w e?yi (161)	yesterday	iku (170)
sin, fault	k ^w eti (20)		
six	iyo (106)		
slow	k ^w eye (163)		
smart	tu'we (174)		
smell	siko (14)		
smoke	yu'wɛ (101)		
smooth	li'wɛ? (152)		
snake	koo? (69)		
squash	yɛkɛ? (44)		
squirrel	k ^w eyu? (185)		

APPENDIX II
COGNATE SETS

The 188 cognate sets which form the primary data base for this study are presented in the following pages. The individual towns whose forms are cited are grouped into five areal sets, each areal set corresponding to one of the five pages in a page group, which always appear in the following order: NE Alta, Cen. Alta, No. Baja, So. Baja, Costa. The map on the page preceding the cognate sets is the key to locating forms for individual towns within the cognate set arrays. The abbreviations for the town names used in this appendix and throughout this study are indexed alphabetically in Appendix I, along with the full names of the towns they stand for.

Each cognate set requires five pages to present the corresponding modern forms from all 122 modern sources. But since each page allows up to five columns, the several columns are used for different cognate sets, giving an average of five cognate sets for every five appendix pages. The numbering of cognate sets thus breaks into page sets by multiples of five, so that sets 5 through 9, 10 through 14, 15 through 19, etc., are found together. The cognate sets are not presented in any particular order; three indices of the reconstructed etyma appear in Appendix I, cross-referenced with the cognate set numbers used in this appendix.

The Spanish glosses are usually the same as the original elicitation forms, with the exception of verbs, which are cited here as infinitives or futures, corresponding to their aspect-related morpheme alternants. Spanish infinitives are short translations of elicitation

phrases for continuative aspect with está plus a gerund: ver 'see' represents está viendo 'is seeing'. Similarly, incompletive aspect stems were elicited with auxiliaries: va a ver 'going to see' or 'will be seeing', or va a saber 'going to know', which for brevity's sake sometimes appear in the cognate set arrays as Spanish future constructions, e.g., sabrã 'will know'.

The sources of the data presented in these cognate sets are discussed at the end of Chapter III. The reconstructions are largely those of C.H. Bradley, with certain modifications of my own which have been discussed throughout this study. Nearly two-thirds of the data presented here were also collected by Bradley and his associates of the Summer Institute of Linguistics. This material has been slightly regularized to conform to the transcription practices used in the material collected by myself and members of the Programa de Lingüística of the Centro de Investigaciones Superiores del Instituto Nacional de Antropología e Historia. The Teposcolula forms were checked directly with Alvarado's 1593 Vocabulario as well as with Arana and Swadesh's short presentation (1965); again, the orthography has been somewhat modified to facilitate comparison. In particular, in all these cases I have retranscribed all glottals as ʔ (rather than as h), and all velar fricatives as x (rather than j), in order to distinguish clearly between velar x and alvopalatal ǰ. Some velar segments remain transcribed as h, representing almost frictionless velars, usually deriving from Proto-Mixtec *s rather than *x. Some confusion remains between y and b, since the former is sometimes used as a phonemic symbol including both [b] and [w] alternants. A discussion of the symbols used and conventions used in the transcriptions appears in Appendix I.

A final word on the transcriptions themselves: these present an intermediate level of phonological structure, somewhere between strict, tight phonetic transcription and full phonemic rendering. Data from some towns seem more phonemically presented than data from other towns, particularly with respect to markings for nasalization, voicing and palatalization of consonants, and vowel rearticulation, length and devoicing. Obviously it is not possible to regenerate these missing features, but complementary data suggest their widespread presence. Tone transcription, when present, almost always reflects some underlying phonemic analysis. Tone markings have not been regularized, and are discussed in Appendix I. But overall the limitations of the data are nothing in comparison to the richness of the material which they offer, and in general there is quite good attention to phonetic detail, certainly enough to justify the kinds of analysis which are made in this study.

NE Alta P-Mixtec	1) lluvia rain *sawi?	2) maguey agave *yawī?	3) petate straw mat *yuwi?	4) cuatro four *kawi?
Tepo	ɔawi	yawi	yuwi	kɛmi
Tida	ɔawi/ɔau	ʒawi/yabi	ʒuu	kyy
Til	ɔau	ʒau	ʒuu	kɔɔ
Diux	ɔau	ʒau	ʒuu	kyy
Nuxi	ɔabi	ʒabi	ʒuu	kyy
Nuxa	ɔawi	ʒawi	ʒuu	kyy
TamJ	ɔawi	ʒawi	ʒuu	xɛmi
Yuta	ɔau	—	ʒuu	kɛmi
Péño	ɔáú	ʒau	ʒùù	kýmí
Este	ɔau	ʒau	ʒuu	kymj
Cui	ɔawi/ɔabi	ʒabi	ʒuwi/ʒubi	kymi/kɛmi
Soso	—	ʒai	—	kyy
Jalt	ɔabi	—	ʒuu	kyy
Adeq	ɔai/ɔawi	ʒai/ʒabi	ʒuu	kyy
Cant	ɔabi	ʒabi	ʒuu	kɔy ⁿ /kɔn
Lobc	ɔabi	ʒabi	ʒuu	kyy(n)
Ynam	—	ʒau	—	—
Soy	(kyy) ɔawi	ʒawi	ʒúú	kyy/kɔɔ
Chic	(kɔɔ) ɔawi	ʒawi	ʒuu	kymi
Ixtl	(kyy) ɔai	ʒawi	ʒúú	kymi
Apas	(kyy/kɔɔ) ɔawi	ʒawi	ʒuu/ʒuwi	kymi
Apoa	ɔabi	ʒabi	ʒuu	kymi
Ndua	ɔabi	ʒabi	ʒuu	kymi
Joco	(kɔɔ) ɔawi	yawi	yuu	kymi
Cuya	(ka kɛɛ) ɔawi	yawi	yuwi	kɛmi
Cuau	(ka kɛɛ) ɔawi	yawi	ʒuwi	kɛmi
Coat	ɔabi	ʒabi (fiy'ɔ)	ʒubi	kɛmi

<u>Cent. Alta</u>	1) lluvia rain *sawi?	2) maguey agave *yawí?	3) petate straw mat *yuwí?	4) cuatro four *k'áwí?
P-Mixtec				
Numí	sau	žau	žuu	kyy
Achi	(k'úú) sabi	žabi	žúú	kyy
Yuca	sawi	žawi	žuu	kyy
Peña	sabi	žabi	žuu	kyy
Tata	éau	šau	žuu	kyy
Teit	éawi	šawi	šuu	kyy
Moli	sabi	žabi	žuu	kyy
Sinc	sabi	žabi	žuu	kyy
Tlac	(kyy) sabi	žabi	žuu	kyy
Ndi	sabi	žabi	žuu	kyy
Ndac	sabi	yabi	yuu	kymj
Oco	(k'úú) sãbì	žãbī	žūū	k'ymj
Prog	sabi	žabi/yabi	žubi	kymj
Yuci	(k'úú) sãbì	yãbī	yūbī	k'ymj
Nuyo	(k'úú) sãbì	žãbī	žūbī	k'ymj
Atat	saū/sabū	yau/yabū	yuu	kyy
Mig	saū	žau	žuu	kyy
Chal	sau	žau	žuu	kyy
Verd	sau	žau	yuu	kyy
Yoso	sau	žau	žuu	kyy
Itun	sawí	yawí/žawí	yuu	kyy
Yolt	(kyy) sabi	žabi	žuu	kyy
Yutn	éau	yau	žuu	xymj
Sind	éau	žau	žuu	kymj
Pied	éawi	žawi	žuu	x'ámž
Huit	éawi	žawi	žuu	x'ámž
Tlaz	éau	žau	žuu	kymj

<u>No. Baja</u>	1) lluvia rain *sawi?	2) maguey agave *yawī?	3) petate straw mat *yuwi?	4) cuatro four *kɨwi?
P-Mixtec				
Mont	həbi	žabi	žibi	kɔmi
Nuch	(kūū) həbi	žabi	žibi	kɔmi
Aten	(kyy) həbi	žābī	žibi	kɔmi
Yucq	sau	yau	žibi	kɔmi
Yucñ	(kyy) həbī	žābī	žibi	kɔmi
Guad	(kyy) əabi	yābī	yibi	kɔmi
Flor	—	yabi	žibi	kɔmi
Amat	əabi	yabi	yubi	kumi
Zap	(kyy) əawi	yawi	yuu	kɔmi
Cac	əabi	žawi	žūū	kɔmi
Ndo	sau	žau	žuu	kyy ⁿ
Ixtp	əabi	žabi	žuui	kumi
Mic	əawi	yawi	žuui	kumi
Tepj	(kyy) əawi	yawi	yui	kumi
Cos	əawi (kyy)	yawi	yui	kumi
Chaz	əawi	yawi	yuwi	kumi
Tot	əabi	yašwi	yuui	kumi
Ton	(kyy) əawi	yawi	yui	kumi
Jer	əabi	yabi	žui	kumi
Xay	əābī	yāwī	yūī	kumi
Tlal	əabi	yabi	yubi	kumi
Chig	(ij) əawi	yawi	yuwi	kumi

<u>So. Baja</u>	1) lluvia rain	2) maguey agave	3) petate straw mat	4) cuatro four
P-Mixtec	*sawí?	*yawí?	*yuwí?	*kíwí?
Ayut	sawí?	yawí?	yiwí?	kymí?
Yolx	sawí	yawí	yuwí	kymí
Alac	sàwì/sàbì	yawí/yabì	yìbì	komí
Metl	sàbìi	—	yūbì	kūmí
Coi	(kúy)	yàbì	yūbì	kūmí
Per	(kúy)	žàAbì	žì?bì	kòQmí
Cuat	(kòq) sawí	yawí	yiwí	kymí
Cah	(kòq) sawí	yawí	yiwí	kymí
Alco	(kuy) sawí	yawí	iwí	kqmí
Cruz	(kuy) sawí	yawí	yiwí	kymí
Durz	(kuy) sàbì	žābì	žìbì	kūmí
Teco	(kúy)	žabì	žìbì	kūmí
Juxt	sabì	žabì	žubì	kymí
ChaP	sabì	žabì	žubì	kymí
Yuco	(kúy) sàbì	žābì	žūbì	kūmí
Mix	sabì	yabì	yubì	kymí
Tejc	sabì	yabì	yubì	kymí
Rey	(kúy)	žābì	žūù	kqmí
TlaM	—	žābì	žìbì	kūmí
SilP	habì	žabì	žìbì	kymí
IxpN	(kuy)	žabì	žìbì	kòmí
SilM	θabì	yabì	y/žìbì	kqmí
TamS	(kuy) θabì	žabì	žìbì	kūmí
Ahue	(kuy) θabì	žabì	žìbì	kūmí
Mor	(kuy) sabìi	yabì	—	kqmí

<u>Costa</u>	1) lluvia rain	2) maguey agave	3) petate straw mat	4) cuatro four
P-Mixtec	*sawi?	*yawī?	*yuwi?	*kawi?
Zac	sabi?	yabi?	yubi?	kumi?
Sayu	sawi	yawi	yuwi	kumi
Tept	(kyu) sawi	yawi	yuwi	kumi
Atoy	sawi	yawi	yuwi	kumi
Jicy	sabi	yabi	yubi	kumi
Jict	sabi	yabi	yubi	kumi
PinN	sabi	yabi	yuwi/yui	kumi
PinL	sabi	yabi	yubi	kumi
Colo	sabi	yabi	yuwi	kumi
Nuti	sabi	yabi	yubi	kumi
Ixty	sabi	yabi	yubi	kumi
Cris	sabi	[magei]	ǰubi	kumi
Lor	(kyu) sawi	yawi	yuw/yuwi	kumi
Mech	(kyu) sawi	yawi	yuw/yuwi	kumi
Huaz	(kqg) sawi	yawi	yuwi	kumi
Jam	sabi	yabi	yubi	kumi
Chay	(kyu) sawi	yawi	yuw/yuwi	kumi
ChayC	θabi	yabi	yubi/ǰuwi/yuu	kumi
ChayD	θavi	yāvī	yūū	kumi
Tut	(kqg) sawi	[ta yee]	yuwi	kumi
Acat	(kqg) sawi	[yee]	yuwi	kumi

NE Alta	5) pluma feather	6) cola tail	7) cera wax	8) nariz nose	9) palabra word	494
P-Mixtec	*towj	*lu'weʔ	*yuweʔ	*sitjʔ	*toʔo	
Tepo	tnymi	əy'mə	ŋymə	əjtnj	tny'y	
Tida	tnyy	əy'a/əy'mə	ŋyʷə/ŋyʷə	əjtnj	tny'y	
Til	tnyy	əy'ə	ʎyʷə/ŋyʷə	əjtnj	tny'y	
Diux	tnyy	əy'ə	ŋyʷə	əjtnj	tny'y	
Nuxi	tŋyy	dy'ə	ŋymə	—	tʎʷoʔo	
Nuxa	tʎyy	əy'mə/əy'wə	ŋymə/ʎyʷə	əiti	tʎy'y	
TamJ	Nnəm̄j	əy'mə	ŋymə	əjNnj	Nny'y	
Yuta	Nnyymi	ly'mə	ŋymə	əj'Nnj	Nny'y	
Peŋo	tnym̄j	ly'mə	ŋym̄j	əjtnj	tny'y	
Este	tymi	ly'mə	ŋymə	əjtnj	ty'y	
Cui	tymi	əy'mə	ŋymə	əjNnj	Nnoʔo	
Soso	—	—	—	—	—	
Jalt	[ʃa'a]	əy'ə	—	əj(?)nj	[da'ii]	
Adeq	Nnyy	əy'ə	ŋyʷə	əj'nj	Nny'y	
Cant	'nyy	əy'ə/[əditu]	ŋy'ə/ŋyy	əj'nj/əj'Nnj	tny'y	
Lobo	tnyy/Nnyy	əy'ə	ŋymə/ŋyʷə	əjNnj	[ka'ə-ndo]	
Ynam	—	—	—	əj'nj	—	
Soy	tnyy/tnoq	əy'mə	ŋomə	əjtnj	tnoʔo	
Chic	tymi	əy'mə	ŋymə	ʃiči	toʔo	
Ixtl	tymi	əy'mə	ŋymə	əiti	ty'y	
Apas	tymi	əy'mə	ŋymə	ʃiči	ty'y	
Apoa	tymi	əy'mə	ʎymə	ʃiči	toʔo	
Ndua	(s)tymi	θy'mə	ŋymə	ʃiči	toʔo	
Joco	tymi	əy'mə	ŋymə	iči	toʔo	
Cuya	[idi]	əy'mə	ŋymə	əi ^h či	[ⁿ duəu]	
Cuau	[idi]	əy'mə	ʒymə	əi ^h çi	[ⁿ duəu]	
Coat	[idi]	əy'mə	ʃymə	əiçi	ty'y	

Cen. Alta	5) pluma feather	6) cola tail	7) cera wax	8) nariz nose	9) palabra word
P-Mixtec	*towj	*lu'weʔ	*yuweʔ	*sitjʔ	*toʔo
Numí	tnyy	[ⁿ do'o]	ʔymə	stnij	tnoʔo
Achi	tNyy	sy'mə	ʔymə	šitNj	tNyʔy
Yuca	tnyy	sy'mə	ʔymə	šitni	tnyʔy
Peña	tnymi	sy'mə	ʔymə	šitni	tnyʔy
Tata	Nnyy	əy'mə	ʔymə	əiNni	Nnyʔy
Teit	Nyy	əy'mə	ʔymə	əiNni	Nnyʔy
Moli	tNymi	sy'mə	ʔymə	stNij	tNyʔy
Sinc	tnymi	—	ʔymə	[ta'bi]	tnyʔy
Tlac	tNymi	sy'mə	ʔymə	stNij	tNyʔy
Ndi	tyy	sy'mə	ʔymə	stij	[palabra]
Ndac	tymi	sy'mə	ʔymə	šiti	tyʔy
Oco	tymj	sɥ'mə	ʔymə	šiti	tɥʔy
Prog	tymi	sq'əme	žome	—	tyʔy
Yuci	tymj	sɥ'mə	ʔymə	šiti	tɥʔy
Nuyo	tymj	sɥ'mə	ʔymə	šiti	tɥʔy
Atat	Nnyy	sy'mə	ʔymə	šinNi	Nnyʔy
Mig	tɥy	sy'mə	ʔymə	[kutū]	tɥʔy
Chal	tyy	sy'mə	ʔymə	[kutu]	tyʔy
Verd	tnyy	sy(?)mə	ʔymə	istni	tnyʔy
Yoso	Nnyy	sy'mə	ʔymə	(žu) šinNi	Nnyʔy
Itun	tnyy	sy'mə	ʔymə	isti	tyʔy
Yolt	tNyy	sy'mə	ʔymə	šitNj	tNyʔy
Yutn	nyyj	əy'mə	ʔymə	əini	nyʔy
Sind	nyyme	əy'mə	ʔymə	əini	nyʔy
Pied	Nyyme	əy'mə	ʔymə	əini	nyʔy
Huit	Nyy	əy'mə	ʔymə	əjNj	Nnyʔy
Tlaz	nyyj	əy'mə	ʔymə	əitni	nyʔy

No. Baja	5) pluma feather	6) cola tail	7) cera wax	8) nariz nose	9) palabra word
P-Mixtec	*towj	*lu'weʔ	*yuweʔ	*sitjʔ	*toʔo
Mont	tɔmj	[ⁿ doʔo]	ɲjma	ʃiti	tɔʔo
Nuch	tɔ̃mj	[ⁿ doʔo]	yjma	ʃiti	tɔ̃ʔo
Aten	tɔ̃mj̄	[ⁿ doʔo]	ɲjma	ʃiti	tuʔu/tɔʔo
Yucq	tymj	[ⁿ doʔo]	ɲjma	si ⁿ ti	tɔʔo
Yucñ	tɔ̃mj̄	[ⁿ doʔo]	ɲjma	hiti	tuʔu
Guad	tymj	[ⁿ doʔo]	yjma	ʃiɕi	tɔ̃ʔu
Flor	tɔmj	[ⁿ doʔo]	ɲɲjma	ʃiti	[kaʔyu]
Amat	tymj	[ⁿ doʔo]	ɲɔma	ɛiɕi	tuʔu
Zap	tɔmj	[ⁿ doʔo]	ɲɔma	ɛiɕi	—
Cac	tɔmj	[ⁿ doʔo]	ɲjma	ɛiɕi	tuʔu
Ndo	tuʔu	[ⁿ doʔo]	ɲjma	ʃti	tuʔu
Ixtp	tymj	[ⁿ doʔo]	ɲjma	ɛiɕi	[kaʔo]
Mic	tymj	[ⁿ doʔo]	ɲjma	ɛiɕi	[ɲa kani]
Tepj	tymj	[ⁿ doʔo]	ɲjma	ɛiɕi	[ɛaʔa]
Cos	tymj	[ⁿ doʔo]	ɲjma	ɛiɕi	tu (ɛawi)
Chaz	tymj	[ⁿ doʔo]	ɲjma	ɛiɕi	—
Tot	tnymj	[ⁿ doʔo]	ɲjma	ɛitni	[palabra]
Ton	tymj	[ⁿ doʔo]	ɲjma	ɛitni	—
Jer	tnymj	[ⁿ doʔo]	ɲjma	ɛitni	[taɕi]
Xay	tnɔ̃mj̄	[ⁿ dɔʔɔ]	ɲjma	ɛitni	[ɛaʔa]
Tlal	tnymj	ɛyʔma	ɲjma	ɛitni	tnyʔu =lengua
Chig	tnymj	ɛyʔma	ɲjma	ɛitni	tnyʔu

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So. Baja	5) pluma feather	6) cola tail	7) cera wax	8) nariz nose	9) palabra word
P-Mixtec	*towj	*ju'wəʔ	*yuwəʔ	*sitjʔ	*toʔo
Ayut	tumi	su'məʔ	ñuməʔ	šitiʔ	tuʔu
Yolx	tumi	su'mə	yumə	isti	tuʔu
Alac	təm̃i	si'mə	ñimə	siti/sitni	təʔo/tnəʔo
Metl	t̃um̃i	s̃u'mə	—	—	t̃uʔu
Coi	t̃umi	[ⁿ dōʔo]	ñumə	šiti	t̃uʔu
Per	təm̃i	[ⁿ doʔo]	ʔijmə	šiti	t̃uʔu
Cuat	tumi	si'mə	imə	šiti	toʔo
Cah	tnomi	si'mə	ñimə	šitni	tnoʔo
Alco	tumi	[ⁿ dəʔmə]	imə	isti	tuʔu
Cruz	tnumi	su'mə	imə	šitni	tnoʔo
Durz	t̃um̃i	[ⁿ doʔo]	ñumə	šiti	t̃uʔu
Teco	tumi	[ⁿ doʔo]	ñumə	šiti	tuʔu
Juxt	tumi	[ⁿ doʔo]	ñumə	šiti	tuʔu
ChaP	tumi	[ⁿ doʔo]	ñumə	hiti	tuʔu
Yuco	t̃um̃i	[ⁿ dōʔo]	ñumə	ʔišt̃i	t̃uʔu
Mix	tumi	[ⁿ doʔo]	ñumə	šiti ^v i	tuʔu
Tejc	tumi	[ⁿ doʔi]	ñumə	šiti	tuʔu
Rey	tumi	[ⁿ doʔo]	ñimə	šiti	t̃uʔu
TlaM	t̃um̃i	—	ñumə	šiti	—
SilP	tumi	[ⁿ doʔo]	ñimə	hiti	tuʔu
IxpN	təm̃i	[ⁿ doʔo]	ñimə	šiti	tuʔu
SilM	tomi	[ⁿ doʔo]	ñimə	θiti	tuʔu
TamS	t̃um̃i	[ⁿ doʔo]	ñimə	θiti	t̃uʔu
Ahue	t̃um̃i	[ⁿ dōʔo]	ñimə	θiti	t̃uʔu
Mor	tumi	[ⁿ doʔo]	ñimə	šiti	tuʔu



Costa	5) pluma feather	6) cola tail	7) cera wax	8) nariz nose	9) palabra word
P-Mixtec	*towj	*lu'wɛʔ	*yuwɛʔ	*sitjʔ	*toʔo
Zac	tumi	sy'mɔʔ	ɸyumaʔ	šitiʔ	tuʔu
Sayu	tumi	sy'mɔ	ɸyuma	šitʲi	tuʔu
Tept	tumi	sy'ma	ɸyuma	šiti	tuʔu
Atoy	tumi	sy'mɔ	yuma	šiti	tuʔu
Jicy	tumi	sy'mɔ	yuma	šiti	tuʔu
Jict	tumi	sy'mɔ	yuma	šiti	tuʔu
PinN	tumi	sy'mɔ	yuma	šiti	tuʔu
PinL	tumi	sy'mɔ	yuma	šiti	tuʔu
Colo	tumi	hy'mɔ	yuma	šitʲi	tuʔu
Nuti	tumi	sy'mɔ	yuma	šitʲi	toʔo
Ixty	tumi	sy'mɔ	ɸyuma	šitʲi	tuʔu
Cris	tumi	čy'mɔ	ɸyuma	šiči	tuʔu
Lor	tumi	sy'mɔ	yuma	šitʲi	tuʔu
Mech	tumi	sy'mɔ	ɸyuma	šitʲi	tuʔu
Huaz	tumi	sy'mɔ	yuma	šitʲi	toʔo
Jam	tumi	sy'mɔ	ɸyuma	šitʲi	tuʔu
Chay	tumi	sy'mɔ	ɸyuma	šitʲi	tuʔu
ChayC	tumi	θy'mɔ	ɸyuma	šiči/hiči	tuʔu
ChayD	tumi	θy'mɔ	ɸyuma	šitʲi	tuʔu
Tut	tumi	sy'mɔ	ɸyuma	šitʲi	tuʔu
Acat	tumi	sy'mɔ	ɸyuma	siči	tuʔu

	NE Alta	10) está cerca	11) árbol	12) venado	13) manteca	14) olor	499
		near	tree	deer	lard	smell	
P-Mixtec		*yetɨ	*yutyʔ	*isu	*seʔe	*siko	
Tepo		yatni	yutny	iəu	əɟʔe	əiko	
Tida		ʒatni/ʒaʔni	ʒutny	iəu	əɟʔe	əiko/[sɟʔe]	
Til		—	ʒutny	iəu	əɟʔe	[ʒeʔe]	
Diux		ʒatni ⁿ	ʒutny	iəu	əɟʔe	[sʔeʔe]	
Nuxi		—	ʒuNrai	iəu	əɟʔe	[yu sʔeʔe]	
Nuxa		ʒati	ʒut ^y y	iəu	əɟʔe	əiko	
TamJ		yaNni	ʒuNny	iəu	əɟʔe	əiko	
Yuta		ʒaNni	—	iəu	əɟʔe	əiko	
Peño		ʒāt ⁿ i	ʒutny	iəu	əɟʔe	əikō	
Este		ʒatni	ʒutny	iəu	əɟʔe	əiko	
Cui		—	yutny	iəu	əɟʔe	[sɟʔe-si]	
Soso		—	—	—	əɟʔe	—	
Jalt		[ʒaʔa]	ʒuny	iəu	əɟʔe	—	
Adeq		ʒəʔni/ʒəʔNni	ʒuNny/ʒyʔNny	iəu	əɟʔe	[sɟʔe]/əiko	
Cant		[ya]	ʒyʔny/ʒyʔNny	iəu	əɟʔe	—	
Lobo		ʒəʔni/ʒəni	ʒyʔny/syʔny	iəu	əɟʔe	[sɟʔe-si]	
Ynam		—	—	—	—	—	
Soy		ʒatni	ʒutny	iəu	əɟʔe	əiko	
Chic		yači/zači	ʒutu	iəu	əɟʔe	əiko	
Ixtl		ʒati	ʒutu	iəu	əɟʔe	əiko	
Apas		zači	ʒutu	iəu	əɟʔe	əiko	
Apoa		yači	ʒutu	iəu	əɟʔe	əiko	
Ndua		[ⁿ ja-xaʔa]	ʒutu	iəu	əɟʔe	əiko (sɟɟ)	
Joco		yači	yutu	iəu	əɟʔe	—	
Cuya		fiɟči	fiyty	[əu-kuʔu]	əɟʔe	əiko	
Cuau		yaɸi	ʒyty	[əi-kuʔu]	əɟʔe	əiko	
Coat		eɸi	uty	[kuʔu]	əɟʔe	əiko	

<u>Cen. Alta</u>	10) está cerca near	11) árbol tree	12) venado deer	13) manteca lard	14) olor smell	500]
P-Mixtec	*yetj	*yutyʔ	*isu	*seʔe	*siko	
Ñumi	žatnj	žutny	isu	šeʔe	šiko	
Achi	žatNj	žutNy	isu	šeʔe	(xəg) šiko	
Yuca	žatNj	žutny	isu	šeʔe	šiko	
Peña	žatnj	žutny	isu	šeʔe	šiko	
Tata	[fŋeʔe]	šunNy	iəu	əeʔe	əiko	
Teit	šaNnj	šunNy	iəu	əeʔe	(fŋe) əiko	
Moli	žatNj	žutNy	isu	šəʔə	šiko	
Sinc	—	žutny	isu	šeʔe	—	
Tlac	žatNj	žutNy	isu	šeʔe	šiko	
Ndi	—	žutny	isu	šeʔe	šiko	
Ndac	[kij-nj]	—	isu	šeʔe	šiko	
Oco	ŋətj	ŋytj	?isū	šəʔə	šiko	
Prog	[ča]	žaty/yaty	isu	šeʔe	šiko	
Yuci	yātj	yūtj	?isū`	šəʔə	šikō	
Nuyo	žātj	žūtj	?isū	šəʔə	šiko	
Atat	yaNnj	yunNy	isu	šeʔe	šiko	
Mig	žənj	žyny	isū	šəʔə	šikō	
Chal	žənj	žyny	isu	šəʔə	šiko	
Verd	yatnj	yutny	isu	šeʔe	šiko	
Yoso	žaNnj	žunNy	isu	šəʔə	šiko	
Itun	yetj	yuty	isu	šeʔe	šiko	
Yolt	žatNj	žutNy	isu	šəʔə	šiko	
Yutn	—	ŋyny	iəu	əeʔe	[fŋeʔe]	
Sind	žənj	žynə	iəu	əeʔe	əiko	
Pied	žənj	žyny	iəu	əeʔe	əiko	
Huit	žaNnj	žun(n)y	iəu	əeʔe	əiko/[fŋeʔe]	
Tlaz	žetnj	žutny	iəu	əeʔe	əiko	

No. Baja	10) está near	cerca	11) árbol tree	12) venado deer	13) manteca lard	14) olor smell
P-Mixtec	*yetj		*yuty?	*isu	*seʔe	*siko
Mont	—		žito	si-k ^W aa	šəʔə	šiko
Nuch	žati		žito	sa-k ^W aa	šəʔə	šiko
Aten	žati		yuto	sa-k ^W aa	šəʔə	šiko
Yucq	žatnj		žito	sa-k ^W aa	səʔə	sitʋo
Yucñ	žati		žito	sa-k ^W aa	həʔə	híkò
Guad	žaçi		yito	sa-k ^W aa	šəʔə	šiko
Flor	—		yitu	sa-k ^W aa	šəʔə	šiko
Amat	žaçi		žuty	sa-k ^W aa	əʔə	[səʔə]
Zap	yaçi		yuto	sa-k ^W aa	əʔə	əiko
Cac	žati		žity	sa-k ^W aa	əʔə	əiko
Ndo	—		žuty	isu	šəʔə	šiko
Ixtp	—		žuty	sa-k ^W aa	əʔə	əiko
Mic	—		žutu	sa-k ^W aa	əʔə	əiko
Tepj	yaçi		yutu	sa-k ^W aa	əʔə	əiko
Cos	yaçi		yuty ⁿ	sa-k ^W aa	əʔə	əiko
Chaz	yaçi		yuty	sa-k ^W aa	əʔə	əiko
Tot	[čigayo]		yutny	sa-k ^W aa	əʔə	[səʔə]
Ton	yaçi		yutny	sa-k ^W aa	əʔə	əiko
Jer	—		žutny	sa-k ^W aa	əʔə	[səʔə]
Xay	yātnī		yūtnū	sā-k ^W āā	əʔə	əikō
Tlal	yatni		yutny	sa-k ^W aa/çi-k ^W aa	əʔə	[šaʔa]
Chig	yatni		yutny	ša-k ^W aa =grasa	əʔə	əiko

So. Baja	10) está near	cerca	11) árbol tree	12) venado deer	13) manteca lard	14) olor smell
P-Mixtec	*yət̪i		*yutuʔ	*isu	*seʔe	*siko
Ayut	yati		ituʔ	isu	šəʔe	šiko
Yolx	yati		itu	isu	šəʔe	siko
Alac	yati/yatni		yit̪ə/yitn̪ə	yusu/ nd yusu	səʔe	—
Metl	—		yūt̪i	—	—	—
Coi	žāč̪i		ʔit̪i	ʔisū	šəʔe	šikò
Per	yaç̪i		ʔit̪y	ʔusu	šəʔe	šiko
Cuat	yati		itu	yusu	šəʔe	šiko
Cah	yatni		yitn̪ə	yusu	səʔe	siko
Alco	yati		itu	isu	šəʔe	šiko
Cruz	yatni		itn̪y	usu	šəʔe	—
Durz	žāci		it̪y	ʔisi	šəʔe	šiko
Teco	žāci		ʔit̪ə	ʔisu/ʔisa	šəʔe	šiku
Juxt	žat̪ ^y i		žutu	isu	šəʔe	šiku
ChaP	žati		žutu	isu	šəʔe	šiko
Yuco	žāt̪i		ʔit̪i	ʔisū	šəʔe	šikò
Mix	yat̪ ^y i		yutu	isu	šəʔe	šiko
Tejc	yaçi		yutu	isu	šəʔe	šiko
Rey	žāč̪i		ʔit̪ə	ʔusu	šəʔe	šiko
TlaM	žaç̪i		—	ʔusi	səʔe	šiko
SilP	žati		žito	ühü	həʔe	šiko
IxpN	žāci		žito	ʔuhu	šəʔe	siko
SilM	yati		yit̪ə/žit̪ə	üü	θəʔe	θiko
TamS	žati		ʔito	ʔuθu	θəʔe	θiko
Ahue	žati		ʔito	ʔuθu	θəʔe	θiko
Mor	yati		itu	isi	səʔe	əiko

Costa	10) está near	cerca	11) árbol tree	12) venado deer	13) manteca lard	14) olor smell
P-Mixtec	*yati		*yutu?	*isu	*seʔe	*siko
Zac	yati		yutu?	isu	šəʔə	šiko
Sayu	yatʲi		yutu	isu	šəʔə	šiko
Tept	yati		yutu	isu	šəʔə	šiko
Atoy	yati		yutu	isu	šəʔə	šiko
Jicy	yati		yutu	isu	šəʔə	šiko
Jict	yati		yutu	isu	šəʔə	šiko
PinN	[tiʔa]/yati		yutu	isu	šəʔə	šiko
PinL	yati		yutu	isu	šəʔə	šiko
Colo	yatʲi		yutu	isu	šəʔə	—
Nuti	yatʲi		yutu	isu	šəʔə	šiko
Ixty	yatʲi		yutu	isu	šəʔə	šiko
Cris	yači		yutu	iču	čəʔə	šiko
Lor	yatʲi		yutu	isu	šəʔə	šiko
Mech	yatʲi		yutu	isu	šəʔə	šiko
Huaz	yatʲi		yutu	isu	šəʔə	šiko
Jam	yatʲi		yutu	isu	šəʔə	šiko
Chay	yatʲi/yači		yutu	isu	šəʔə	šiko
ChayC	yači		yutu	isu	šəʔə	šiko
ChayD	yatʲi		yutu	iθu	šəʔə	šiko
Tut	yatʲi		yutu	isu	šəʔə	šiko
Acat	yatʲi		yutu	isu	šəʔə	šiko

NE Alta P-Mixtec	15) tortilla tortilla *sita?	16) vomita vomits * ⁿ duxę?	17) flojo lazy *suxę?	18) cama bed *xito	19) comal griddle *xiyo?	504
Tepo	áita	ⁿ dusa	áusa	sito	siyo	
Tida	áita	ⁿ dusa	áusą	šito	šoo/šio	
Til	áita	[kəɲi ɲiɲ]	[kuɛi]	šito	šio	
Diux	áita	—	—	šito	šio	
Nuxi	áita	—	—	šito =tapanco	šio/s ^y oo	
Nuxa	áita	ⁿ d ^y uše	áušę	sito	šio	
TamJ	áita	ⁿ dyušę	áušę	ito	io	
Yuta	áita	—	—	ito	io	
Peño	áitá	ⁿ dūsà	[kù?ù ⁿ dùù]	šitò =stretcher	šíó bridge	
Este	áita	ⁿ dusa	[fɲę ky? ⁿ du]	šito	šio	
Cui	áita	ⁿ dusa	—	šito	šio	
Soso	—	—	—	—	—	
Jalt	áita	—	—	[kama]	šio	
Adeq	áita	[ta bəši]	áusą(są)	šito =tapanco	šio	
Cant	áita	[ta bəɲi]	áusa	šito =tapanco	šio	
Lobo	áita	[kəɲə šisi]/ ⁿ dusa	áusą	šito =tapanco	šio	
Ynam	áita	—	—	—	—	
Soy	áita	[kəɲə ɲi?i]	áusa	—	šiyó	
Chic	ita	ⁿ dusa	áusa	šito	šiyó	
Ixtl	áita	ⁿ dusa	áusa	—	šiyó	
Apas	ita	ⁿ dusa	áusa	šito	šiyó	
Apoa	ita	ⁿ dusa	áusa	šito	šiyó	
Ndua	ita	—	—	šito	šio/šoo	
Joco	ita	ⁿ dusa	áusa	šito	šiyó	
Cuya	ita	(ka) ⁿ duŋŋę	áuŋŋę	žito	yiyo	
Cuau	ita	(ka) ⁿ dux ^y ę	áux ^y ę/áuŋŋę	žito	žizo	
Coat	ita	(ka) ⁿ dušę	(fɲę) áušę	ito	šio	

						505
<u>Cer. Alta</u>	15) tortilla	16) vomita	17) flojo	18) cama	19) comal	
P-Mixtec	tortilla	vomits	lazy	bed	griddle	
	*sita?	* ⁿ duxɛ?	*suxɛ?	*sito	*xiyo?	
Ñumi	staa	ⁿ duxɔ	[ku kuʃi]	xito	xiyo	
Achi	ʃita	—	[kuʃi]	xito	xio	
Yuca	ʃita	ⁿ duxɔ	[kuʃi]	xito	xižo	
Peña	staa	—	—	xito	xižo	
Tata	ɛita	—	—	ito	io	
Teit	ɛita	ⁿ dux ^y ɛ/[kɔɔɔ ⁿ daa]	[ku ɛiʔi]	ito	iyo	
Moli	stāā	—	[kuʃi]	xīto	xižo	
Sinc	hita	—	—	[kama]	ʃižo	
Tlac	stāā	ⁿ duxɔ	[kuʃi]	xito	xižo	
Ndi	staa	—	—	[kama]	ʃio	
Ndac	ʃita	—	—	ʃito	čiyo	
Oco	sità/stāā	núxɔ	[kúʃi]	xitō	xižō	
Prog	išta	—	—	ʔito	ʔiyo	
Yuci	ʃitā`	núx ^y ɛ-(xɛ)	[kúʃi]	ʔitō	ʔiyō	
Nuyo	stāā	núx ^y ɛ	[kuʃi]	ʔitō	ʔiyō	
Atat	staā	ⁿ duu	[kúxí]	xito	xīyo	
Mig	staā	ⁿ dux ^y ɔ	[kúʃi]	xīto (yuu)	xiō	
Chal	staa	ⁿ dux ^y ɔ/[kɔɔɔ inɪ]	[kuʃi]	xito	ʃoo	
Verd	ista	ⁿ duxɛ	[kuʃi]	ito	xiyo	
Yoso	staa	ⁿ dux ^y ɔ	[kuʃi]	xito	xižo	
Itun	ista	ⁿ dux ^y ɛ	[kuʃi]/[taya]	ito	iyo	
Yolt	staa	ⁿ dux ^y ɔ	[ⁿ di kuʃi]	ʃito	ʃižo	
Yutn	ɛita	—	—	[kama]	iyo	
Sind	ɛita	ⁿ duñɛ	nɔ ɛyñɛ	ito	i(y)o	
Pied	ɛita	[koku xini]	ɛyñɛ	ito	ižo	
Huit	ɛita	ⁿ dux ^y ɛ?	ɛux ^y ɛ	ito	ižo	
Tlaz	ɛita	ⁿ dusɛ	—	ʃito	ʃio	

No. Baja	15) tortilla tortilla *sita?	16) vomita vomits * ⁿ duxɛ?	17) flojo lazy *suxɛ?	18) cama bed *xito	19) comal griddle *xiyo?
Mont	šita	—	—	sito	siyo
Nuch	šitâ	ⁿ dūsa	husa	šito	šoo
Aten	šita	ⁿ dusa	tì hùsá	sito	s ^y oo
Yucq	áita	—	—	šito	šoo
Yucñ	hita	ⁿ dūsâ	[ta ku ⁿ di]	šito	šòò
Guad	šita	ⁿ d ^y usa	əusa	sito	siò
Flor	hita	—	—	šitu	šiu
Amat	áita	—	—	šitu	šoo
Zap	áita	ⁿ d ^y usɛ	əusɛ	šito	šoo
Cac	áita	ⁿ dūsa	əūsa	šito	šoo
Ndo	staa	—	—	xito	xio
Ixtp	áita	—	—	šito	šoo
Mic	áita	—	—	šito	šio
Tepj	áita	ⁿ dusa	əusɛ	šito	š ^y oo
Cos	áita	ⁿ dusa	əusɛ	šito	šio
Chaz	áita	ⁿ dusa	əusa	—	šio
Tot	áita	—	—	[kəma]	šio
Ton	áita	ⁿ dusɛ/[kəɲɛ]	əusɛ	šito	šio
Jer	áita	—	əusɛ	[kəma]	šio
Xay	áitâ	[kəɲɛ]	əūsɛ	šitó =loft	ččio/šio
Tlal	áita	ⁿ dusa	əuša	šito	š ^r oo
Chig	áita	ⁿ duša	əuša	isto	šoo

So. Baja	15) tortilla	16) vomita	17) flojo	18) cama	19) comal
P-Mixtec	tortilla	vomits	lazy	bed	griddle
	*sita?	* ⁿ duxə?	*suxə?	*xito	*xiyo?
Ayut	šita?	ⁿ duxə?	suxə?	(i)što/šito	šiyə?
Yolx	ista	ⁿ duxə	šuxə	nisto	šio
Alac	šitā	ⁿ duxə	šuxə	šito	šiyō
Metl	šitā	—	šuxə	—	—
Coi	šita	ⁿ duxə	na šuxə	šitō	šiyō
Per	šita	ⁿ duxə	[kušu]	šitō	šix ^v ō
Cuat	šita	ⁿ duxə	šuxə	šito	šiyə
Cah	sita	ⁿ duxə	šuxə	šito	šiyə
Alco	šta/išta	ⁿ duxə	šuxə	iš ^h to/šito	šiyə
Cruz	šita	ⁿ duxə	šuxə	šito	šiyə
Durz	šita	ⁿ duxə	ku šuxə	šito	š ^v oo
Teco	šita	ⁿ dixa	[kuší]	šito	s ^v ōō
Juxt	šita	ⁿ duxə	[kuší]	šito	s ^v oo
ChaP	šita/hita	—	—	šito	šio
Yuco	?ištā	[kəŋə ŋə-yuu]	[kuší]	?ištō	šizō
Mix	staa	ⁿ duxə	[ku kuší]/ [ⁿ di ku ⁿ du]	šito	šioo
Tejc	staa	—	—	šito	šio
Rey	šitā	ⁿ duxə	[ku kuší]	šitō	šizō
TlaM	šitā	ⁿ duxə	[kušu]	—	š ^v oo
SilP	hita	—	—	šito	šoo
IxpN	šitā	ⁿ duxə	ku huxə	šitō	šizō
SilM	θita	ⁿ duxə	θuxə	šito	šoo
TamS	θitā	ⁿ duxə	—	šito	šizō
Ahue	θitā	ⁿ duxə	šuxə	[šōō]	šoo
Mor	hita	—	šuxə	šito	šoo

Costa P-Mixtec	15) tortilla tortilla *šita?	16) vomita vomits * ⁿ dučę?	17) flojo lazy *suxę?	18) cama bed *xito	19) comal griddle *xiyo?
Zac	šita?	ⁿ duča/ ⁿ dučę	suča	čito	čiyo?
Sayu	šita	ⁿ dučę	suča	čito	čiyo
Tept	šita	ⁿ dačę	sučę	čito	čiyo
Atoy	šita	ⁿ dučę	hučę	čito	čiyo
Jicy	šita	ⁿ duča	sučę	čito	čiyo
Jict	šita	ⁿ duča	sučę	čito	čiyo
PinN	šita	ⁿ duča	suča	čito	čio
PinL	šita	ⁿ duča	suča	čito	čiyo/čio
Colo	šita/išta	ⁿ duča	učę	čito	čiyo
Nuti	šita	—	—	čito	čiyo
Ixty	šita	ⁿ dačę	sučę	čito	čiyo
Cris	čita	—	—	[kama]	čiyo
Lor	šita	ⁿ duča	suča	čito	čiyo
Mech	šita	ⁿ dučę	sučę	čito	čiyo
Huaz	šita	ⁿ dučę	sučę	čito	čiyo
Jam	šita	ⁿ dučę	suča	čito	čiyo
Chay	šita	ⁿ duča	sučę	čito	čiyo
ChayC	šita	ⁿ dusa	susa	šito	siyo
ChayD	šita	ⁿ dusa	susa	sito	siyo
Tut	šita	ⁿ duča	suča	čito	čiyo
Acat	šita	ⁿ dusę	susę	sito	siyo

NE Alta	20) culpa sin *k ^w eti	21) frijol bean * ⁿ duči?	22) agua water * ⁿ dute	23) río river *yute	24) lodo mud * ⁿ de?yu	509
P-Mixtec						
Tepo	k ^w ači	ⁿ duči	ⁿ duta	yuta	ⁿ da?yu	
Tida	k ^w eči/k ^w eti	ⁿ duči	ⁿ dute	žute	ⁿ de?yu/ ⁿ de?žu	
Til	k ^w eči	ⁿ duči	ⁿ dute	žute	ⁿ de?yu	
Diux	—	ⁿ duči	ⁿ dute	[d̥i?wa ka?ny]	ⁿ de?yu	
Nuxi	—	ⁿ duči	ⁿ d ^y ute	žute	ⁿ de?yu	
Nuxa	k ^w eči	ⁿ d ^y uči	ⁿ d ^y ute	žute	ⁿ de?žu	
TamJ	k ^w eci	ⁿ duči	ⁿ dute	žute	ⁿ de?žu	
Yuta	—	ⁿ duči	ⁿ dute	yute	ⁿ de?žu	
Peño	k ^w eči	ⁿ dũčî	ⁿ dũtê	žute	ⁿ dé?žú	
Este	k ^w eči	ⁿ duči	ⁿ dute	žute	ⁿ de?žu	
Cui	—	ⁿ duči	ⁿ duča	šuča/žuča	ⁿ za?yu/ ⁿ za?žu	
Soso	—	—	—	—	—	
Jalt	—	ⁿ duči	ⁿ dusa/ ⁿ duša	žusa	—	
Adeq	k ^w ači	ⁿ duči	ⁿ duča	žuča/žuča	ⁿ ya?i/ ⁿ ca?i	
Cant	—	ⁿ duči	ⁿ dusa/ ⁿ duča	žuča	ⁿ do?yo/ ⁿ do?žo	
Lobo	—	luči	—	šuča/žuča	ⁿ sa?yu	
Ynam	—	—	ⁿ duča	—	—	
Soy	k ^w ači	ⁿ duči	ⁿ duča	žuča	ⁿ za?yu	
Chic	k ^w ači	ⁿ ručî	ⁿ ručă	žuča	ⁿ za?yu	
Ixtl	k ^w ači	ⁿ duči	ⁿ duča	žuča	ⁿ za?yu	
Apas	k ^w ači	ⁿ duči	ⁿ duča	žuča	ⁿ za?yu	
Apoa	k ^w ači	ⁿ duči	ⁿ duča	žuča	ⁿ za?yu	
Ndua	—	ⁿ duči	ⁿ duča	žuča	ⁿ za?yu	
Joco	k ^w ači	ⁿ duči	ⁿ duča	yuča	ⁿ za?yu	
Cuya	k ^w eči	ⁿ duči	ⁿ dute	[ⁿ dute ka?ny]/ yu yute	ⁿ de?yu	
Cuau	k ^w eči	ⁿ duči	ⁿ dute	[ⁿ dute ka?ny] ⁿ do?žo/ ⁿ de?yu	ⁿ de?yu	
Coat	k ^w eči	ⁿ d ^y uči	ⁿ d ^y ute	šu šute	ⁿ do?šo	

Cen: Alta	20) culpa sin *k ^w eti	21) frijol bean * ⁿ duti?	22) agua water * ⁿ dute	23) río river *yute	24) lodo mud * ⁿ de?yu	510
P-Mixtec						
Ñumi	k ^w eči	ⁿ duči	ⁿ dute	žute	ⁿ de?i	
Achi	k ^w eči	ⁿ duči	ⁿ dute	žute	ⁿ de?žu	
Yuca	k ^w eči	ⁿ duči	ⁿ dute	žute	ⁿ de?žu	
Peña	—	ⁿ duči	ⁿ dute	žute	ⁿ de?žu	
Tata	—	ⁿ diči	ⁿ dute	žute	—	
Teit	te kweči	ⁿ duči	ⁿ dute	šute	ⁿ de?yu	
Moli	k ^w eči	ⁿ duči	ⁿ dute	žute	ⁿ de?ža	
Sinc	—	ⁿ duči	ⁿ dute	žute	—	
Tlac	k ^w eči	ⁿ duči	ⁿ dute	žute	ⁿ de?ežu	
Ndi	—	ⁿ duči	ⁿ dute	žute	—	
Ndac	—	ⁿ duči	ⁿ dute	yute	ⁿ de?yu	
Oco	k ^w ači	ⁿ duči	ⁿ dutē	žute	ⁿ tē?žù	
Prog	—	ⁿ duči	ngte	žute/nyte	nq?yu	
Yuci	k ^w ači	ⁿ duči	ⁿ ūtē	žūbī` žūtē	nq?žù	
Nuyo	k ^w ači	ⁿ duči	ⁿ ūtē	žūtē	nq?žù	
Atat	k ^w ači	ⁿ duči	ⁿ dute	yute	ⁿ de?yū	
Mig	k ^w ači	ⁿ duči	ⁿ duča	žuča	ⁿ de?žū	
Chal	k ^w ači	ⁿ duči	ⁿ duča	žuča	ⁿ de?žu	
Verd	k ^w eči	ⁿ duči	ⁿ dute	yute	[lak ^w a]/ ⁿ de?yu	
Yoso	k ^w ači	ⁿ duči	ⁿ duča	žuča	ⁿ de?žu	
Itun	k ^w eči	ⁿ duči	ⁿ dute	[tixi]	ⁿ de?yu	
Yolt	k ^w ači	ⁿ duči	ⁿ dut ^y a	žut ^y a	ⁿ de?ežu	
Yutn	—	ⁿ duči	ⁿ dute	yute	[lodo]	
Sind	k ^w eči	ⁿ duči	ⁿ dute	žute	ⁿ de?žu	
Pied	k ^w eči	ⁿ duči	ⁿ dute	žute	ⁿ de?žu	
Huit	k ^w eči	ⁿ duči	ⁿ dute	—	ⁿ de?žu	
Tlaz	k ^w eči	ⁿ duči	ⁿ dute	žute	ⁿ de?žu	

No. Baja	20) culpa sin *k ^w eti	21) frijol bean * ⁿ duči?	22) agua water * ⁿ dute	23) río river *yute	24) lodo mud * ⁿ de?yu
P-Mixtec					
Mont	—	ⁿ duči	[ti k ^w ii]	yut ^y a	ⁿ d ^y a?ži
Nuch	k ^w ači	ⁿ duču	[tì k ^w íí]	žut ^y a	ⁿ de?ži
Aten	k ^w ači	ⁿ dūčì	[ti k ^w ii]	žut ^y a	ⁿ de?i
Yucq	—	ⁿ diši	[te k ^w ii]	žuta/yuta	ⁿ de?i
Yucñ	k ^w ači	ⁿ duči	[tâ k ^w íí]	žuta	ⁿ dē?î
Guad	k ^w ači	ⁿ duči	[çì k ^w íí]	yuča	ⁿ çe?ye
Flor	—	—	[či k ^w ii]	yuča	ⁿ de?i
Amat	—	ⁿ juči	[či k ^w ii]	yuča	ⁿ je?i
Zap	k ^w ači	ⁿ d ^y uči	[te k ^w ii]/ ⁿ d ^y ute/ ⁿ s ^y ute	yute	ⁿ de?yu
Cac	k ^w ači	ⁿ d ^y uči	[te k ^w ii]	žute	ⁿ de ⁱ ?i
Ndo	—	ⁿ duči	ⁿ dute	žute	ⁿ de?i
Ixtp	—	ⁿ duči	[te k ^w ii]/ ⁿ dute	žute	ⁿ de?i
Mic	—	ⁿ duči	[te k ^w ii]	ⁿ liquid yute	ⁿ dei
Tepj	k ^w ači	ⁿ duči	[te k ^w ii]/ ⁿ dute	yute	ⁿ de?i
Cos	k ^w ači	ⁿ duči	[ti k ^w ii]/ ⁿ dute	yute	ⁿ de?i
Chaz	k ^w ači	ⁿ duči	[te k ^w ii]/ ⁿ dute	ⁿ liquid yute	ⁿ de?i
Tot	—	ⁿ duči	[te k ^w ii]/ ⁿ dute	ⁿ liquid yute	ⁿ de?i
Ton	k ^w ači	ⁿ duči	[te k ^w ii]/ ⁿ dute	ⁿ liquid yote	ⁿ de?yu
Jer	—	ⁿ duči	[te k ^w ii]	žute	ⁿ de?i
Xay	k ^w ači	ⁿ dūčì	[tê k ^w íí]	yūtē	ⁿ de?i
Tlal	k ^w ači	ⁿ duči	[ti k ^w ii]/ ⁿ dute	yute	ⁿ de?i/ ⁿ de?yu
Chig	k ^w ači	ⁿ duči	[ti k ^w ii]	[ti ka?ny]	ⁿ de?yu

So. Baja	20) culpa sin *k ^w eti	21) frijol bean * ⁿ duti?	22) agua water * ⁿ dute	23) río river *yute	24) lodo mud * ⁿ de?yu
Ayut	k ^w āci	ⁿ duči?	[ti k ^w iɪ]	it ^y a	ⁿ de?i
Yolx	k ^w āci	ⁿ duči	[ta k ^w iɪ]	ita	ⁿ da?yu
Alac	k ^w āci	ⁿ dučù	[ta k ^w iɪ]/ ⁿ duta	yuta	ⁿ da?yi
Metl	k ^w ācī	—	ⁿ dūt ^y á =liquid	it ^y ā	ⁿ d ^y á?yū
Coi	k ^w ācī	ⁿ duči	[ti k ^w iɪ]	it ^y a	ⁿ d ^y a?yu
Per	k ^w ācī	ⁿ duči	[čk ^w iɪ]	?iǵá	ⁿ ča?yi
Cuat	k ^w āci	ⁿ duči	[ti k ^w iɪ]/ ⁿ duta	ita	ⁿ da?yi
Cah	k ^w āci	ⁿ duču	[ta k ^w iɪ]/ ⁿ duta =liquid	yuta	ⁿ da?yi
Alco	k ^w āci	ⁿ duči	[ti k ^w iɪ]/ ⁿ duta =liquid	ita	ⁿ da?yu/ ⁿ da?i
Cruz	k ^w āci	ⁿ duču	[ta k ^w iɪ]/ ⁿ duta	ita	ⁿ da?yi
Durz	k ^w ācī	ⁿ duči	[či k ^w iɪ]	žiča	ⁿ ča?i
Teco	k ^w ācī	ⁿ dūčì	[či k ^w iɪ]	žīt ^y á	ⁿ ča?i
Juxt	k ^w āci	ⁿ duči	[t ^y i k ^w iɪ]	žut ^y a	ⁿ d ^y e?i
ChaP	—	ⁿ duči	[ti k ^w iɪ]	žut ^y a	[žāci-ra]
Yuco	k ^w ācī	ⁿ dūčī	[tā k ^w iɪ]	?itē	ⁿ da?žu
Mix	k ^w at ^y i	ⁿ dut ^y i	[t ^y i k ^w iɪ]	yut ^y a	ⁿ d ^y a?i
Tejc	—	ⁿ duči	[či k ^w iɪ]	yuča	ⁿ če?i
Rey	k ^w ācī	ⁿ dūčì	[či k ^w iɪ]	žiča	ⁿ ča?i
TlaM	k ^w ācī	ⁿ dūčì	—	žuča	ⁿ či?i
SilP	—	ⁿ dūčì	[ti k ^w iɪ]	žuta	ⁿ da?ži
IxpN	k ^w ācī	ⁿ duču	[tí k ^w iɪ]	žuča/žut ^y a	ⁿ d ^y a?ži
SilM	k ^w āci	ⁿ dučü	[ti k ^w iɪ]	yuta	ⁿ da?ži
TamS	k ^w āci	ⁿ dučü	[ti k ^w iɪ]	žuta	ⁿ de?e
Ahue	k ^w āci	ⁿ dūčü	[tì k ^w iɪ]	[kūčü]/žuta	ⁿ de?e
Mor	—	ⁿ diči	[ti k ^w iɪ]	žuta/žita	ⁿ de?e

Costa	20) culpa sin *k ^w eti	21) frijol bean * ⁿ duti?	22) agua water * ⁿ dute	23) río river *yute	24) lodo mud * ⁿ de?yu
P-Mixtec					
Zac	k ^w ati	ⁿ duti?	[ta k ^w ii]	yuta	ⁿ da?yu
Sayu	k ^w at ^y i	ⁿ dut ^y i	[ta k ^w ii][ta ka?ny]/yuta		ⁿ da?yu
Tept	k ^w ati	ⁿ duti	ⁿ duta	yuta	ⁿ da?yu
Atoy	k ^w ati	ⁿ duti	ⁿ duta	yuta	ⁿ da?yu
Jicy	k ^w ati	ⁿ duti	ⁿ duta	yuta	ⁿ da?yu
Jict	k ^w ati	ⁿ duti	ⁿ duta	yuta	ⁿ da?yu
PinN	k ^w ati	ⁿ duti	ⁿ duta	yuta	ⁿ da?yu
PinL	k ^w ati	ⁿ duti	ⁿ duta	yuta	ⁿ da?yu
Colo	k ^w at ^y i	ⁿ dut ^y i	ⁿ dut ^y a	yut ^y a	ⁿ d ^y a?yu
Nuti	—	ⁿ dut ^y i	ⁿ dut ^y a	yut ^y a	ⁿ d ^y a?yu
Ixty	k ^w at ^y i	ⁿ dut ^y i	ⁿ dut ^y a	yut ^y a	ⁿ d ^y a?yu
Cris	—	ⁿ duči	ⁿ dut ^y a/ ⁿ duča	nju njuča	ⁿ ja?yu/ ⁿ ja?zu
Lor	[čat±]	ⁿ dut ^y i	ⁿ dut ^y a	yut ^y a	ⁿ d ^y a?yu
Mech	[čat±]	ⁿ dut ^y i	ⁿ dut ^y a	[yuu]	ⁿ d ^y a?yu
Huaz	[čat±]	ⁿ dut ^y i	ⁿ dut ^y a	[yuu]	ⁿ d ^y a?yu
Jam	k ^w at ^y i	ⁿ dut ^y i	ⁿ dut ^y a	yut ^y a	ⁿ d ^y a?yu
Chay	[čat±]	ⁿ dut ^y i	ⁿ dut ^y a	yut ^y a	ⁿ d ^y a?yu
ChayC	k ^w ači	ⁿ duči	ⁿ duča	[yuu]/yuča	
ChayD	k ^w at ^y i	ⁿ dut ^y i	ⁿ dut ^y a	[yũũ]/yut ^y a =arroyo	ⁿ d ^y a?yu
Tut	k ^w at ^y i	ⁿ dut ^y i	ⁿ dut ^y a	yut ^y a	ⁿ d ^y a?yu
Acat	k ^w ači	ⁿ duči	ⁿ duča	yuča/yut ^y a	ⁿ ja?yu

	NE Alta	25) hermano de h. man's brother	26) tres three	27) diente tooth	28) cinco five	29) amargo bitter
	P-Mixtec	*yeni	*oni	*no'o	*o'o	*owe
	Tepo	fiɲi	uni	no'o	o'o	uwa
	Tida	fiɲi	uni	ny'u	y'u	ua
	Til	ʃɲi/fiɲi	uni	ny'u	o'o	ua
	Diux	—	uni	—	y'u	—
	Nuxi	fiɲi	uni	—	o'o	—
	Nuxa	fiɲi	uni	ny'u	y'u	uwa
	TamJ	fiɲi	uni	ny'u	o'o	ua
	Yuta	—	uni	—	y'u	—
	Peño	fiɲi	ɲi	no'o	o'o	úa
	Este	fiɲi	uni	ny'u	y'u	ua
	Cui	fiɲi	oni	no'o	y'u	—
	Soso	—	—	—	—	—
	Jalt	—	uni	ny'u	o'o	—
	Adeq	fiɲi	uni	ny'u	y'u	ua
	Cant	fiɲi	uni/oni	ny'u	y'u/o'o	ua
	Lobo	fiɲi	uni	ny'u	y'u	ua
	Ynam	—	uni	—	—	—
	Soy	fiɲi	oni	no'o	o'o	uwa
	Chic	ʃɲi(-ni)	uni	no'o	o'o	uwa
	Ixtl	fiɲi	uni	ny'u	y'u	uwa
	Apas	fiɲi	uni	ny'u	y'u/o'o	uwa
	Apoa	ʃɲi/ ⁿ di yɛni	uni	ny'u	o'o	uɛa
	Ndua	ʃɲi	uni	—	o'o	—
	Joco	ʃɲi-da	uni	ny'u	o'o	uwa
	Cuya	yɛni	uni	ny'u	y'u	uwe
	Cuau	ʒɛni	uni	ny'u	y'u	uwe
	Coat	ɛni	uni	ny'u	y'u	uɛe

Cen. Alta	25) hermano de h. man's brother	26) tres three	27) diente tooth	28) cinco five	29) amargo bitter
P-Mixtec	*yeni	*oni	*no'o	*o'o	*owe
Ñumi	ʃəni	yni	no'o	y'o	uwa
Achi	fiəni	yni	ny'o	y'o	uwa
Yuca	fiəni	yni	ny'o	y'o	uwa
Peña	fiəni	yni	—	y'o	—
Tata	fiəni	yni	—	y'o	—
Teit	fiəni	yni	ny'o	y'o	(ku) uwa
Moli	fiəni	yni	ny'o	y'o	uwa
Sinc	fiəni	yni	—	y'o	—
Tlac	fiəni	yni	ny'o	y'o	uwa
Ndi	fiəni	yfi	—	y'o	—
Ndac	[k ^W a'ni]	yni	—	y'o	—
Oco	fiəni	ʔni	ny'o	ʔo	ʔuə
Prog	fiəni	yni	—	y'o	—
Yuci	fiəni	ʔni	ny'o	ʔo	ʔuə
Nuyo	fiəni	ʔni	ny'o	ʔo	ʔuə
Atat	fiəni	yni	ny'o	y'o	uə
Mig	fiəni	yni	ny'o	y'o	uə
Chal	fiəni	yni	ny'o	y'o	uə
Verd	fiəni	yni	ny'o	y'o	uə
Yoso	fiəni	yni	Nny'o	y'o	uwa
Itun	yəni	yni	ny'o	y'o	uə
Yolt	fiəni	yni	ny'o	y'o	uə
Yutn	—	yni	—	o'o	—
Sind	fiəni	yni	no'o	o'o	[atu]
Pied	fiəni	yni	ny'o	o'o	(ku) uwa
Huit	ʃəni/fiəni	yni	ny'o	y'o	uwe
Tlaz	fiəni	yni	ny'o	y'o	ua

No. Baja	25) hermano de h. man's brother	26) tres three	27) diente tooth	28) cinco five	29) amargo bitter
P-Mixtec	*yeni	*oni	*no'o	*o'o	*owe
Mont	—	yɨɨ	—	o'o	—
Nuch	ɲɨɨ	?yɨɨ	nɨ'o	?ɨ'o	?eɨa
Aten	ɲɨɨ	?ɨɨɨ	nɨ'o	?ɨ'o	?ia(-o)
Yucq	ɲɨɨ	yɨɨ	—	y'o	—
Yucñ	ɲɨɨ	?ɨɨɨ	nɨ'o	?ɨ'o	?i aa
Guad	ɲɨɨ	?yɨɨ	ny'o	?y'o	?ewa
Flor	ɲɨɨ	yɨɨ	—	u'u	—
Amat	ɲɨɨ	yɨɨ	—	y'o	—
Zap	ɲɨɨ	ɨɨ	nɨ'o	o'o	?waa
Cac	ɲɨɨ	ɨɨ	nɨ'o	o'o	owa
Ndo	ɲɨɨ	yɨɨ	—	y'o	—
Ixtp	ɲɨɨ	yɨɨ	—	y'o	—
Mic	ɲɨɨ	yɨɨ	—	yɨ	—
Tepj	ɲɨɨ	yɨɨ	ny'o	y'o	ua
Cos	ɲɨɨ	yɨɨ	ny'o	y'o	ua
Chaz	ɲɨɨ	yɨɨ	ny'o	y'o	uwa
Tot	ɲɨɨ	yɨɨ	—	u'u	—
Ton	ɲɨɨ	yɨɨ	ny'o	y'o	ua
Jer	ɲɨɨ	yɨɨ	—	y'o	—
Xay	ɲɨɨ	ɨɨ	nɨ'o	ɨ'o	ɨa
Tlal	ɲɨɨ	yɨɨ	ny'o	y'o	—
Chig	ɲɨɨ	yɨɨ	ny'o	y'o	ua

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So. Baja	25) hermano de h. man's brother	26) tres three	27) diente tooth	28) cinco five	29) amargo bitter
P-Mixtec	*yeni	*oni	*no'o	*o'o	*owe
Ayut	fiɛni	yni	ny'u	y'u	uba
Yolx	fiɛni	yni	ny'u	y'u	uwa
Alac	yɛni/fiɛni	oni/yni	no'o	o'o	yoba
Metl	—	—	—	—	—
Coi	fiɛni	yni	ny'u	y'u	uba
Per	fiɛni	yni	ny'u	y'u	oba
Cuat	fiɛni	yni	no'o	o'o	yowa
Cah	fiɛni	oni	no'o	o'o	yowa
Alco	fiɛni	yni	ny'u	y'u	(fiɛ) uwa
Cruz	fiɛni	yni	no'o	o'o	uwa
Durz	fiɛni	yni	ny'u	y'u	ua
Teco	fiɛni (-i)	yni	ny'u	y'u	oba
Juxt	fiɛni	yni	ny'u	y'u	uba
ChaP	fiɛni	yni	—	y'u	—
Yuco	xiɛni	yni	ny'u	y'u	uwa
Mix	fiɛni	yni	ny'u	y'u	uba
Tejc	—	yni	—	y'u	—
Rey	fiɛni	oni	ny'u	y'u	oba
TlaM	fiɛni	yni	—	—	oba
SilP	fiɛni	yni	—	y'u	—
IxpN	—	yni	ny'u	y'u	iba
SilM	fiɛni	oni/yni	ny'u	y'u	oba
TamS	fiɛni	yni	ny'u	y'u	oba
Ahue	fiɛni	yni	ny'u	y'u	oba
Mor	fiɛni	yni	—	y'u	—

Costa	25) hermano de h. man's brother	26) tres three	27) diente tooth	28) cinco five	29) amargo bitter
P-Mixtec	*yeni	*oni	*no'o	*o'o	*owe
Zac	ñəni	uni	ny'u/ng'o	y'u	uəa
Sayu	yəni	yñi	ny'u	y'u	uwa
Tept	ñəni	uni	ny'u	y'u	uwa
Atoy	yəni	uni	ny'u	y'u	uwa
Jicy	yəni	uni	ny'u	y'u	uəa
Jict	yəni	uni	ny'u	y'u	uəa
PinN	yəni	uni	ny'u	y'u	ua
PinL	yəni	uni	ny'u	y'u	uwa
Colo	yəni	yñi	ny'u	y'u	uəa
Nuti	—	yñi	—	o'o/y'u	—
Ixty	ñəni	yñi	ny'u	y'u	uəa
Cris	yəny/zəny	yñi	—	y'u	—
Lor	yəni	yñi	ny'u	y'u	uwa
Mech	yəni	yñi	ng'o	o'o	uwa
Huaz	yəni	yñi	ng'o	o'o	uwa
Jam	yəni	yñi	ng'o	o'o	uəa
Chay	yəni	yñi	ng'o	o'o	uwa
ChayC	yəni	yñi	ng'o	o'o	uəa
ChayD	yəni	yñi	ng'o	o'o	uwa
Tut	ñəni	yñi	ng'o	o'o	uwa
Acat	ñəni	yñi	ng'o	o'o	uwa

NE Alta	30) carne meat	31) rojo red	32) se fue (he) went	33) siete seven	34) hilo ⁵¹⁹ thread
P-Mixtec	*koyq	*k ^w eʔe	*k ^w eʔe	*uxe	*yuʔwe
Tepo	kqñq	k ^w aʔa	k ^w əʔə	usa	yuʔwa
Tida	kyfñy	k ^w eʔe	k ^w əʔə	usa	žuʔa
Til	kyfy	k ^w eʔe	k ^w əʔə/[k ^h ʔʔ]	uša	žuʔwa
Diux	kyfñy	k ^w eʔe	[ⁿ yəʔə]	uša	žuʔa
Nuxi	kyfñy	k ^w eʔe	[šəʔə]	usa	žuʔwa
Nuxa	kyfñy	k ^w eʔe	k ^w əʔə	usa	žuʔwa
TamJ	xyfñy	(t ^h)k ^w eʔe	x ^w əʔə	uša	žuʔwe
Yuta	kyfñy	(t ^h)k ^w eʔe	[ñəʔə]	uša	žuʔa
Peño	kñññ	(t ^h)k ^w eʔē	k ^w əʔə	ʔúsá	žuʔá
Este	kyfñy	k ^w eʔe	k ^w əʔə	usa	žuʔa
Cui	kqñq	k ^w aʔa	k ^w əʔə	usa	[il ^h]
Soso	—	—	—	—	—
Jalt	kqñq	k ^w aʔa	[šəʔə]	uša	žuʔa
Adeq	kyfñy	k ^w aʔa	[səʔə]/k ^w əʔə(-ʔa)	usa	žuʔa
Cant	kyfñy	k ^w aʔa	[səʔə]/k ^w əʔə(- ⁿ sa)	usa	žuʔa
Lobo	kyfñy	k ^w aʔa	k ^w əʔə(-ši)	usa	žuʔa
Ynam	—	—	k ^w əʔə	—	—
Soy	kqñq	k ^w aʔa	k ^w əʔə	usa	žuʔwa
Chic	kqyq	k ^w aʔa	k ^w əʔə	usa	žuʔwa
Ixtl	kyfñy	k ^w aʔa	k ^w əʔə	usa	žuʔwa
Apas	kyfñy/kyfy/kqñq	k ^w aʔa	k ^w əʔə	usa	žuʔwa
Apoa	kqyq	k ^w aʔa	k ^w əʔə	usa	žuʔwa
Ndua	kqñy	k ^w aʔa	[səʔə]	usa	žuʔwa
Joco	kqñq	k ^w aʔa	k ^w əʔə	usa	yuʔwa
Cuya	kyfñy	k ^w eʔe	k ^w əʔə	uše	yuʔwe
Cuau	kyfñy	k ^w eʔe	k ^w əʔə	uše	yuʔwe
Coat	kyfñy	k ^w eʔe	k ^w əʔə	uše	šuʔbe

Gen. Alta	30) carne meat *koyg	31) rojo red *k ^w eʔe	32) se fue (he) went *k ^w eʔe	33) siete seven *uxe	34) hilo thread *yuʔwe
P-Mixtec					
Ñumi	kyʔy/kyʔy	(xa)k ^w aʔa	k ^w ʔʔ	uxa	ʒuʔa
Achi	kyʔy	k ^w aʔa	k ^w ʔʔ	uxa	ʒuʔbaʔ
Yuca	kyʔy	k ^w eʔe	k ^w ʔʔ	uxa	ʒuʔwa
Peña	kyʔy	k ^w aʔa	[xʔʔ]	uxa	ʒuʔba
Tata	—	k ^w eʔe	k ^w ʔʔ	uša	ʒuʔa
Teit	kyʔy	k ^w eʔe	k ^w ʔʔ	uša	ʒuʔwa
Moli	kyʔy	k ^w aʔa	k ^w ʔʔ	uxa	—
Sinc	kyʔy	k ^w aʔa	k ^w ʔʔ	uxa	ʒuʔba
Tlac	[sʔʔ]/kyʔy	k ^w aʔa	k ^w ʔʔ	uxa	ʒuʔuba
Ndi	kyʔy	k ^w aʔa	k ^w ʔʔ	uxa	ʒuʔa
Ndac	kyʔy	k ^w aʔa	[ʃʔʔ]	uxa	yuʔ(b)a
Oco	k ^w ʔy	k ^w aʔa	k ^w ʔʔ	ʔuxa	ʒuʔa
Prog	kyʔy	k ^w aʔa	[ʃʔʔ]	ux ^v a	ʒoʔbe
Yuci	k ^w ʔy	k ^w eʔe	k ^w ʔʔ(-xʔ)	ʔuša	yuʔbe
Nuyo	k ^w ʔy	k ^w eʔe	k ^w ʔʔ	ʔuša	ʒuʔbe
Atat	k ^w ʔy	k ^w eʔe	k ^w ʔʔ	uša	ʒuʔwā
Mig	k ^w ʔy	(xā)k ^w aʔa	k ^w ʔʔ	usiā	ʒuʔā
Chal	kyʔy	k ^w aʔa	k ^w ʔʔ	uša	ʒuʔa
Verd	kyʔy	k ^w eʔe	k ^w ʔʔ	ux ^v a	yuʔba
Yoso	kyʔy	k ^w aʔa	k ^w ʔʔ	uša	ʒuʔwa
Itun	kʔʔ	k ^w eʔe	k ^w ʔʔ	ux ^v a	yuʔbe
Yolt	kyʔy	k ^w aʔa	k ^w ʔʔ	uša	ʒuʔuba
Yutn	xʔʔ	k ^w eʔe	[ʃʔʔ]	ux ^v a	yuʔbe
Sind	kʔʔ	k ^w eʔe	k ^w ʔʔ	uša/us ^v a	ʒuʔwe
Pied	kʔʔ	(i)k ^w eʔe	x ^w ʔʔ	ux ^v e	ʒuʔwe
Huit	xyʔy	(tu)k ^w eʔe	x ^w ʔʔ	ux ^v e	ʒuʔwe
Tlaz	kyʔy	k ^w eʔe	k ^w ʔʔ	usa	ʒuʔa

No. Baja	30) carne meat *koyq	31) rojo red *k ^w a [?] e	32) se fue (he) went *k ^w e [?] e	33) siete seven *uxe	34) hilo thread *yu [?] we
Mont	kyffu	k ^w a [?] a	[sq [?] q]	usa	ʒi [?] ba
Nuch	kyffu	k ^w a [?] a	k ^w ɛ [?] ɛ	?usa	ʒe [?] ba
Aten	kqj	k ^w a [?] a	k ^w ɛ [?] q	?usa	ʒa [?] a
Yucq	kyffj	k ^w a [?] a	k ^w ɛ [?] q	isa	ʒo [?] o
Yucñ	kyffu	k ^w a [?] a	k ^w ɛ [?] ɛ	?üsà	ʒa [?] a
Guad	kyffu	k ^w a [?] a	k ^w ɛ [?] q	?üsà	[ilo]
Flor	ky(fi)y	k ^w a [?] a	[sq [?] q]	usa	[ilu]
Amat	kyffu	k ^w a [?] a	[sq [?] q]	usa	ʒo [?] o
Zap	kqffq	k ^w a [?] a	x ^w ɛ [?] q	usa	yu [?] a
Cac	kqffq	k ^w a [?] a	k ^w ɛ [?] q	üsa	ʒüa([?] a)
Ndo	kyffu	k ^w a [?] a	[xq [?] q]	uxa	ʒu [?] a/ʒu [?] a
Ixtp	kyffu	k ^w a [?] a	[sq [?] q]	usa	ʒua
Mic	kyffu	k ^w aa	[sq [?] q]	usa	ʒua
Tepj	kyffu	k ^w a [?] a	k ^w ɛ [?] q	usa	yu [?] a
Cos	ky ^w ny	k ^w a [?] a	k ^w ɛ [?] q	usa	yu [?] a
Chaz	kyffu	k ^w a [?] a	k ^w ɛ [?] q	usa	yu [?] a
Tot	kyffu	k ^w a [?] a	k ^w ɛ [?] q	usa	yu [?] a
Ton	kyffu	k ^w a [?] a	k ^w ɛ [?] q	usa	yu [?] a
Jer	kyffu	k ^w a [?] a	[sq [?] q]	usa	ʒu [?] a
Xay	kyffu	k ^w ã [?] á	k ^w ɛ [?] ɛ	üsà	yù [?] à
Tlal	kyffu	k ^w a [?] a	[sq [?] q]	usa	yu [?] ba/ʒu [?] ba
Chig	kyffu	k ^w a [?] a	k ^w ɛ [?] q	uša	yu [?] wa

So. Baja	30) carne meat	31) rojo red	32) se fue (he) went	33) siete seven	34) hilo thread
P-Mixtec	*koyɔ	*k ^W eʔe	*k ^W eʔe	*uxe	*yuʔwe
Ayut	kyfɲy	k ^W aʔa	k ^W ɘʔɘ	uša	yuʔba
Yolx	kyʔy/kyfɲy	k ^W aʔa	k ^W ɘʔɘ	uša	yuʔwa
Alac	kɔfɲɔ/kɲfɲɔ/ kɔfɲy/kɲfɲy	k ^W áʔá	k ^W ɘʔɘ/[sɘʔɘ]	uša	yiʔwa/iʔwa
Metl	kyfɲy	k ^W áʔā	—	—	—
Coi	kyfɲy	k ^W áʔá	k ^W ɘʔɘ	ʔušà	yuʔbà
Per	kɔfɲɔ	k ^W aʔa	k ^W ɘʔɘ	ʔušà	ziʔba
Cuat	kyfɲy	k ^O áʔá	k ^W ɘʔɘ	uša	iʔwa
Cah	kɔfɲɔ	k ^W aʔa	k ^W ɘʔɘ	uša	yiʔwa
Alco	kyfɲy	k ^W aʔa	k ^W ɘʔɘ	uša	iʔwa
Cruz	kɔfɲɔ	k ^W aʔa	k ^W ɘʔɘ	uša	yiʔwa
Durz	kyfɲy	k ^W áʔā	k ^W ɘʔɘ	ʔisā	zūʔwè
Teco	kɲfɲɔ	k ^W aʔa	k ^W ɘʔɘ	ʔixà	yoʔba
Juxt	kyfɲy	k ^W aʔa	k ^W ɘʔɘ	uša	zūʔba
ChaP	kyfɲy	k ^W aʔa	[sɘʔɘ]	uša	zūʔba
Yuco	kɲfɲy	k ^W áʔà	k ^W ɘʔɘ(-nɘ)	ʔusʔà	zūʔbà
Mix	kyfɲy	k ^W aʔa	k ^W ɘʔɘ	uča	yuʔwa
Tejc	kyfɲy	k ^W aʔa	[sɘʔɘ]	uča	yuʔa
Rey	kyfɲy	k ^W áʔá	k ^W ɘʔɘ	ʔušà	zūʔba
TlaM	—	—	—	ʔüsa	zōʔba
SilP	kyfɲy	kuʔa	[sɘʔɘ]	usa	zāʔba
IxpN	kyfɲy	k ^W áʔá	k ^W ɘʔɘ	ʔusa	ziʔa
SiIM	kɔfɲɔ	k ^W aʔa	k ^W ɘʔɘ	usa	yeʔba
TamS	kyfɲy	k ^W aʔa	k ^W ɘʔɘ	ʔüşa	ziʔba
Ahue	kyfɲy	k ^W aʔa	k ^W ɘʔɘ	ʔüşa	ziʔba
Mor	kyfɲy	k ^W aʔa	[xɘʔɘ]	uša	ziʔba

Costa	30) carne meat	31) rojo red	32) se fue (he) went	33) siete seven	34) hilo thread
P-Mixtec	*koyɔ	*k ^w eʔe	*k ^w eʔe	*uxe	*yuʔwe
Zac	[sɔʔɔ]	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔwa
Sayu	[sɔʔɔ]/kyfɲy	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔwa
Tept	[sɔʔɔ]	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔwa
Atoy	[sɔʔɔ]/kɔfɲɔ	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔwa
Jicy	kyfɲy	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔwa
Jict	kyfɲy	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔba
PinN	kyfɲy	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔa
PinL	kyfɲy	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔwa
Colo	kyfɲy	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔba
Nuti	kyfɲy	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔba
Ixty	kyfɲy	k ^w ɔʔɔ	k ^o ɔʔɔ	uča	yuʔwa
Cris	kɔfɲɔ	k ^w aʔa	—	uča	ʒuʔba
Lor	kɔfɲɔ	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔwa
Mech	kɔfɲɔ	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔwa
Huaz	kɔfɲɔ	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔwa
Jam	kɔfɲɔ	k ^o aʔa	k ^w ɔʔɔ	uča	yuʔba
Chay	kɔfɲɔ	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔwa
ChayC	kɔfɲɔ	k ^w aʔa	k ^w ɔʔɔ	usa	yuʔba
ChayD	kɔfɲɔ/[ⁿ d ^v ayu]	k ^w aʔa	k ^w ɔʔɔ	usa	yuʔva
Tut	kɔfɲɔ	k ^w aʔa	k ^w ɔʔɔ	uča	yuʔwa
Acat	kɔfɲɔ	k ^w aʔa	k ^w ɔʔɔ	usa	yuʔwa

NE Alta	35) animal animal	36) se acaba it finishes	37) blanquillo egg	38) espuma foam	39) sangre blood	524
P-Mixtec	*kítá?	* ⁿ dí?í?	* ⁿ díwí?	*tá iyu	*náyí?	
Tepo	kete	ⁿ de?e	ⁿ dewi	ifŋ	neŋe	
Tida	kiti	ⁿ di?i	ⁿ diwi	ti iŋu	nji	
Til	kítá	[ⁿ z̄iŋŋ]	ⁿ díu	ifŋ	náŋí	
Diux	kítá	—	ⁿ díu	iŋu	náŋí	
Nuxi	ti (k ^w í?nŋ)	—	ⁿ díbi	čingŋu	nifí	
Nuxa	kiti	ⁿ di?i	ⁿ diwi	čingŋu	nifí	
TamJ	kítá (x ^w í?nŋ)	(n _i) ⁿ dí?í	ⁿ díwí	tiy/tiŋu	náŋí	
Yuta	kítá	—	ⁿ díbi	Nniy	náŋí	
Peño	kátá	ⁿ dá?á	ⁿ díú	tníŋú	náŋí	
Este	kítá	ⁿ dí?í	ⁿ díwí	tniy	náŋí	
Cui	kiti	ⁿ di?i	ⁿ díwí	tiŋu	ní	
Soso	kiti (tata)	—	ⁿ diwi	ti ?iŋu	—	
Jalt	-tá/kiti =caballo	—	ⁿ debe	ti ?iŋu	nifí	
Adeq	kiti	—	ⁿ debe	—	nji	
Cant	kiti	—	ⁿ díbi	ti ?iŋu	nifí	
Lobo	—	—	ⁿ díbi	ti ?iŋu	—	
Ynam	—	—	—	—	—	
Soy	ti (tata)	ⁿ de?e	ⁿ dewe	ti iŋu/ti iŋŋ	níŋí	
Chic	ti (tata)	ⁿ re?e	ⁿ diwi	ti iŋu	néŋé	
Ixtl	kiti (tata)	ⁿ de?e	ⁿ dii	ti iŋu	níŋí	
Apas	kiti	(sa) ⁿ de?e	ⁿ diwi	ti iŋu	nifí	
Apoa	kiti (tata)	ⁿ de?e	ⁿ díbi	ti iŋu	níŋí/nifí	
Ndua	kiti	—	ⁿ díbi	ti ?iŋu	nji	
Joco	kiti	ⁿ de?e	ⁿ diwi	iŋu	nifí	
Cuya	kítá	ⁿ dí?í	ⁿ díwí	ifŋ	náŋí	
Cuau	kítá	ⁿ dí?í	ⁿ díwí	čifŋ	náŋí	
Coat	kítá	ⁿ dí?í	ⁿ díbi	tiŋu	náŋí	

Gen. Alta	35) animal animal	36) se acaba it finishes	37) blanquillo egg	38) espuma foam	39) sangre blood
P-Mixtec	*kátá?	* ⁿ dá?á?	* ⁿ dáwá?	*tá iyu	*náyá?
Ñumi	kiti	ⁿ di?i	ⁿ dibi	ti ifny	nifni
Achi	kiti	ⁿ di?i	ⁿ dibi	ti ?ifny	nifni
Yuca	kiti	ⁿ di?i	ⁿ diwi	ti ifny	nifni
Peña	kiti	—	ⁿ dibi	ti ?ifny	nifni
Tata	kátá	—	ⁿ dáu	ti ?ifny	náfná
Teit	kiti	ⁿ di?i	ⁿ diwi	ti ifny	nifni
Moli	kiti	ⁿ di?i	ⁿ dibi	ti ?ifny	nifni
Sinc	kiti	—	ⁿ dibi	—	nifni
Tlac	kiçí	ⁿ ji?i	ⁿ dziði	ti ?ifny	nifni
Ndi	kiti	—	ⁿ dibi	ti ?ifny	nifni
Ndac	kiti	—	ⁿ dibi	tifny	nifni
Oco	kiti	ⁿ dI?I	ⁿ dibì	tifny	nifni
Prog	kiti	—	ⁿ dibi	tifny	nini
Yuci	[tíi]/kítá =horse	ⁿ á?á (-xá)	ⁿ iwá	tifny	nifni
Nuyo	kítá	ⁿ á?á	ⁿ iwá	t ^y íu	nifni
Atat	kátá	ⁿ dá?á	ⁿ dábá	tifny	náfná
Mig	kátá	ⁿ dá?á	ⁿ dábá	ti ?ifny	náfná
Chal	kátá	ⁿ dá?á	ⁿ dáu	ti ?ifny	náfná
Verd	kátá	ⁿ dá?á	ⁿ dáwá	tifny	náfná
Yoso	kátá	ⁿ dá?á	ⁿ dáwá	ti ifny	náfná
Itun	kátá	ⁿ dá?á	ⁿ dáwá	tifny	náfná
Yolt	kátá	ⁿ dá?á	ⁿ dábá	çifny	náfná
Yutn	kátá	—	ⁿ dáwá	tifny	náfná
Sind	kátá (tata)	ⁿ dá?á	ⁿ dáwá	tifny	náfná
Pied	kátá	ⁿ dá?á	ⁿ dáwá	tifny	náfná
Huit	kátá	ⁿ dá?á	ⁿ dáwá	tifny	náfná
Tlaz	kátá	ⁿ dá?á	ⁿ dáwá	táfná	náfná

No. Baja	35) animal animal	36) se acaba it finishes	37) blanquillo egg	38) espuma foam	39) sangre blood
P-Mixtec	*kítí?	* ⁿ dí'í?	* ⁿ dáwí?	*tí iyú	*náyí?
Mont	kiti	—	ⁿ díbi	ifny	nij
Nuch	kiti	ⁿ di'í	ⁿ díbi	či 'ifny	nij
Aten	kítì	ⁿ di'í	ⁿ díbi	či 'jù	nij
Yucq	kiti	—	ⁿ díbi	čifny	nij
Yucñ	kiti	ⁿ di'í	ⁿ díbi	či 'iy	nij
Guad	kíçì	ⁿ çí'í	ⁿ dzi'bi	čí 'ifny	nij
Flor	kičì	—	ⁿ díbi	[espuma]	Nñij
Amat	kičì	—	ⁿ yíbi	ifny	nij
Zap	kiçì	ⁿ si'í	ⁿ siwi	či 'ifny	nij
Cac	kiti	ⁿ di(?)i	ⁿ díbi	či iyó	nij
Ndo	kiti	—	ⁿ díbi	i·fny	nij
Ixtp	kisi	—	ⁿ síbi	či ifny	nij
Mic	kisi	—	ⁿ síbi	či 'ifny	nij
Tepj	kisi	ⁿ si'í	ⁿ siwi	či 'ifny	nij
Cos	kisi	ⁿ si'í	ⁿ siwi	či 'ifny	nij
Chaz	kiçì	ⁿ si'í	ⁿ siwi	či ifny	nij
Tot	kisi	—	ⁿ yíbi	ifny	nij
Ton	kisi	(n _j) ⁿ si'í	ⁿ siwi	či 'iy	nij
Jer	kisi	—	ⁿ síbi	či 'ifny	nij
Xay	kísì	ⁿ sí'í	ⁿ síbi	čì 'jù	nij
Tlal	kiçì	[sanu]	ⁿ zi'bi/ ⁿ jíbi	i·fny	nij
Chig	kiçì	ⁿ zi'í	ⁿ siwi	ifny	nij

So. Baja	35) animal animal	36) se acaba it finishes	37) blanquillo egg	38) espuma foam	39) sangre blood
P-Mixtec	*kítí?	* ⁿ dí?í?	* ⁿ díwí?	*tá iyu	*níyí?
Ayut	kiti?	ⁿ di?i?	ⁿ diwi?	[pele]	níi?
Yolx	kiti	ⁿ di?i	ⁿ diwi	[pele]/ ⁿ yúyú/ ^y yúyú	níi
Alac	kiti	ⁿ di?i	ⁿ díwì	—	yii
Metl	kítí	ⁿ dí?í	ⁿ díwì	[lōlō]	n(í)íí
Coi	kiti	ⁿ di?i	ⁿ díwí	šíñy	níi
Per	kiçí	ⁿ çí?i	ⁿ çíwí	çí kiñy	nííí
Cuat	kiti	ⁿ di?i	ⁿ diwi	çí kiñy	níí
Cah	kiti	ⁿ di?i	ⁿ diwi	çí kiñy	níí
Alco	kiti	ⁿ di?i	ⁿ diwi	çíñu	níí
Cruz	kiti	ⁿ di?i	ⁿ diwi	çí kiñy	nii
Durz	kíçí	ⁿ çí?e	ⁿ çíwí	çíñy	nii
Teco	kít ^y í (çí)	ⁿ dí? (báñá)	ⁿ çíwí	çíñy	nii
Juxt	kit ^y i	ⁿ d ^y i?i	ⁿ d ^y íwí	çí kiñy	nii
ChaP	kiti	—	ⁿ díwí	çí?ñy	nii
Yuco	kítí (nî)	ⁿ di?i(ç)	ⁿ díwí	çíñy	níí
Mix	kiti	ⁿ di?i	ⁿ díwí	tíñy	nii
Tejc	kiti	—	ⁿ díwí	tíñy	nii
Rey	kíçí	ⁿ çí?e	ⁿ çuí	çí ?iñy	níí
TlaM	—	—	—	—	níí
SilP	kiti	—	ⁿ díwí	çíki ?ñy	nii
IxpN	kítí	ⁿ di?i	ⁿ díwì	çí ?iñy	níí
SilM	kiti	ⁿ di?i	ⁿ díwí	çí kiñy	nii
TamS	kiti	ⁿ di?i	ⁿ díwí	ši ?iñy	níí
Ahue	kiti	ⁿ di?i	ⁿ díwí	çí ?iñy	níí
Mor	kiti	—	ⁿ díwí.	çí ?iñy	nii

Costa	35) animal animal	36) se acaba it finishes	37) blanquillo egg	38) espuma foam	39) sangre blood
P-Mixtec	*kítá?	* ⁿ dí?í?	* ⁿ díwí?	*tí iyu	*náyí?
Zac	kiti?	ⁿ dí?i	ⁿ díbi	šiki ŋyu	níi?
Sayu	kiti	ⁿ dí?i	ⁿ díwi	íñy	níí
Tept	kiti	ⁿ dí?i	ⁿ díwi	íñy	níí
Atoy	kiti	ⁿ dí?i	ⁿ díwi	íñy	níñi
Jicy	kiti	ⁿ dí?i	ⁿ díbi	íñy	níñi
Jict	kiti	ⁿ dí?i	ⁿ díbi	íñy	níñi
PinN	kiti (ku?u)	ⁿ dí?i	ⁿ díbi	íñy	níñi
PinL	kítá	ⁿ dí?í	ⁿ díwí	tyñy	níñí
Colo	kítá	ⁿ dí?í	ⁿ díbí	ti ŋyu	níñí
Nuti	kítá	—	ⁿ díbí	tíño	níñí
Ixty	kítá	(i) ⁿ dí?í	ⁿ díbi	tíñí	níñí
Cris	kítá	—	ⁿ díwí	tíñy	níñí
Lor	kítá	(ñi) ⁿ dí?í	ⁿ díwí	tíñí	níñí
Mech	kítá	ⁿ dí?í	ⁿ díwí	tíñí	níñí
Huaz	kítá	ⁿ dí?í	ⁿ díwí	tíñí	níñí
Jam	kítá	ⁿ dí?í	ⁿ díbí	tíñí	níñí
Chay	kítá	ⁿ dí?í	ⁿ díwí	tíñí	níñí
ChayC	kete	ⁿ de?e(-si)	ⁿ debe	teñe	neñe
ChayD	kítá	ⁿ dí?í	ⁿ díwí	tíñí	níñí
Tut	kítá	ⁿ dí?í	ⁿ díwí	tíñí	níñí
Acat	kítá	ⁿ dí?í	ⁿ díwí	tíñí	níñí

NE Alta	40) marido husband	41) sal salt	42) red net bag	43) jícara gourd	44) calabaza squash
P-Mixtec	*yáííʔ	*yáííʔ	*yonoʔ	*yexíʔ	*yáíkíʔ
Tepo	yee	ñeɛ	ñoŋo	yasi	yek
Tida	žii	ñij	ñyny	žasi	žikʔi
Til	—	ñííí	yyny/ñyny	žasi	žáííí
Diux	žííí	ñííí	ñyny	yasi	žáííí
Nuxi	žii	ñij	ʃyny	žasi	žii
Nuxa	žii	ñij	ñyny	žasi	žiki
TamJ	žííí	ñííí	ñyny	žasi	žáííí
Yuta	žáííí	ñííí	ñyny	žasi	žáííí
Peño	žáííí	ñííí	ñyny	žasi	žáííí
Este	žííí	ñííí	ñyny	žasi	—
Cui	ii	ii/ííí	ñony/ñono	šasi/žasi	iši/ixi
Soso	—	—	—	žasi	žiky
Jalt	žííí	ñij	ñyny	žasi	žiki
Adeq	žee	ñij	ñyny	žasi	žiky
Cant	žííí	ñij	ñyny	žasi	žiky
Lobo	žííí	ñij	ñyny	žasi	žáííí
Ynam	—	—	—	žasi	—
Soy	žee	ñij	ñono	žasi	—
Chic	šee	ñij	ñono	yasi/žasi	—
Ixtl	žee	ñij	ñyny	žasi	—
Apas	žee	ñij	ñono/ñyny	žasi	—
Apoa	—	ñeɛ	ʃyny/ñyny	yasi	žiki
Ndua	šee	ñeɛ	—	žasi	žiki
Joco	šee	ñij	ñono	yasi	yiki
Cuya	žííí	ñííí	yyny	ñaxi	ñáííí
Cuau	žííí	ñííí	žyny	ñaxi	—
Coat	šííí	ñííí	šyny	eʔsi	šáííí

Cen. Alta P-Mixtec	40) marido husband *yáííʔ	41) sal salt *yáííʔ	42) red net bag *yonoʔ	43) jícara gourd *yexíʔ	44) calabaza squash *yáííʔ
Ñumi	—	ʔíí	ʔunu	žaxí	žíkí
Achi	žii	ńii	ńunu	žaxí	—
Yuca	žii	ńii	ńunu	žaxí	žíkíʔ
Peña	žii	ńii	ńunu	ńaxí	žíkí
Tata	žáíí	ńíí	—	šaxí	žáíí
Teit	šii	ńii	ńunu	šaxí	šíkí
Moli	žii	ńii	ńunu	ńaxí	žíkí
Sinc	žii	ńii	ńunu	ńaxí	[ti ⁿ dužu]
Tlac	žii	ńii	ńunu	ńaxí	žíkí
Ndi	žii	ńii	ńunu	žaxí	žíkí
Ndac	žii	ńii	ńunu	ńaxí	ńíkí
Oco	žíí	ńíí	ńunu	ńaxí	ńíkí
Prog	žii	ńii	žunu	ńaxí	ńíkí
Yuci	yáíí (-xí)	ńíí	ńúnú	ńexí	žáíí
Nuyo	yáíí	ńíí	ńúnú	ńaxí	yáíí
Atat	žáíí	ńíí	ńunu	yaxí	yáíí
Mig	žii	ńíí	ńunu	žaxí	žáíí
Chal	žii	ńii	ńunu	žaxí	žáíí
Verd	yáíí	ńíí	ńunu/ʔunu	yaxí	yáíí
Yoso	žáíí	ńíí	ńunə	žaxí	—
Itun	yáíí	ńíí	yonə	yexí/žexí	yáíí
Yolt	žáíí	ńíí	ńunu	žasí	žáíí
Yutn	žáíí	ńíí	ńonə	[ńe ⁿ daʔa]	yuxí
Sind	žáíí	ńíí	ńonə	[ńe ⁿ daʔa]	žáíí
Pied	žáíí	ńíí	ńonə	[ńe ⁿ daʔa]	žáíí
Huit	žáíí	ńíí	ńunu	žaxí	žáíí
Tlaz	žáíí	ńíí	ńunu	žasí	žáíí

No. Baja	40) marido husband	41) sal salt	42) red net bag	43) jícara gourd	44) calabaza squash
P-Mixtec	*yáii?	*yáii?	*yono?	*yexi?	*yáiki?
Mont	žii	ñij	[red]	žasi	žiki
Nuch	žii	ñij	ñyny	žāšì	žikì
Aten	žii	ñij	(ti) ñyny	žasI	žiki
Yucq	yii	ñij	ñyny	yaxi	žiki
Yucñ	žii	ñiì	ñyny	žāši	žiki
Guad	yii	ñij	(çi) ñyny	yasi	yiki
Flor	yii	ñij	ñyny	žāši	žiki
Amat	ii	ii	[fede]	yaši	iki
Zap	ii	ii	ñonq	yašI	iki
Cac	ii	ii	—	žāšI	iki
Ndo	žii	ñij	ñyny	žaxi	žiky
Ixtp	ii	ii	ñyny	žāši	iki
Mic	ii	ii	ñyny =hamaca	žāši	iki
Tepj	ii	ii	ñyny	yaši	iki
Cos	ii	ii ⁿ	ñyny	yaši	iki
Chaz	ii	ii	—	yaši	iki
Tot	ii	ii	ñyny	yaši	iki
Ton	ii	ii	ñyny	yaši	iki
Jer	ii	ñij	ñyny	žāši	iki
Xay	ii	ii	—	yāšì	ikì
Tla1	ii	ii	ñyny	ñāšì	ikì
Chig	ii(-ko)	ii	ñyny	ñāšì	ikì

So. Baja	40) marido husband *yiii?	41) sal salt *yiii?	42) red net bag *yono?	43) jícara gourd *yexi?	44) calabaza squash *yikj?
Ayut	ii?	ii?	ñyũy?	yašj?	ikj?
Yolx	ii	ii	yũny	yašj	ikj
Alac	yii	yii	ñõõõ	yašj	yikì
Metl	—	ii.ĩ	—	yašj	—
Coi	ii	?ii	ñy`ny	yašj	ikj
Per	?iif	?iif	ñyũny	žãšj	?ikj
Cuat	yii	ñij	ñõõõ	yašj	—
Cah	žii/njii	ñij	ñõõõ	yašj	yiki
Alco	ii	ij	ñyũny	yašj	ikj
Cruz	ii	ij	ñõõõ	yašj	ikj
Durz	žii	ñij	ñyũny	žãšj	žikj
Teco	žii	ñij/ñij	ñyũny	žãšj	žikj
Juxt	žii	ñij	ñyũny	yašj/žãšj	žiki
ChaP	žii	ñij	žyũny	žãšj	žiki
Yuco	?iif(-nã)	?ii	žyũny	žãšj	?ikj (?iifny)
Mix	ii	ij	ñyũny	yači	iki
Tejc	ii	ii	[yo ndaa]	yači	iki
Rey	žii	?ii	žyũny	yãšj/žãšj	žikj
TlaM	—	ñij	—	žãšj	žiki
SilP	žii	ñij	ñyũny	žãšj	žiki
IxpN	žii	ñij	ñyũny	žãšj	žiki
SilM	žii	ñij	yõõõ	yašj	yiki/žiki
TamS	žii	ñij/ñij	ñyũny	žãšj	žikj
Ahue	žii	ñij	ñyũny	žãšj	žiki
Mor	žii	ñij	—	žãšj	žikj

Costa	40) marido husband *y _i i _i ʔ	41) sal salt *y _i i _i ʔ	42) red net bag *y _o noʔ	43) jícara gourd *y _e x _i ʔ	44) calabaza squash *y _i k _i ʔ
Zac	iiʔ	ŋ _i i _i ʔ	ŋ _u nyʔ	yač _i ʔ	ikiʔ
Sayu	ii	ŋ _i i	y _u ny	yač _i	iki
Tept	ii	ŋ _i i	ŋ _u ny	yač _i	iki
Atoy	ii	ŋ _i i	y _u ny	yač _i	iki
Jicy	ii	ŋ _i i	y _o no	yač _i	iki
Jict	ii	ŋ _i i	y _u ny	yač _i	iki
PinN	ii	ŋ _i i	y _u ny	ž _a č _i /yač _i	iki
PinL	y _i i _i	ŋ _i i _i	y _u ny	yač _i	y _i k _i
Colo	y _i i _i	ŋ _i i _i	y _u ny	yač _i	y _i k _i
Nuti	y _i i _i	ŋ _i i _i	y _u ny/y _o no	yač _i	y _i k _i
Ixty	y _i i _i	ŋ _i i _i	ŋ _u ny	yač _i	y _i k _i
Cris	ⁿ y _i i _i	ŋ _i i _i	y _o no	yač _i	y _i k _i /ž _i k _i
Lor	y _i i _i	ŋ _i i _i	y _o no	yač _i	y _i k _i
Mech	y _i i _i	ŋ _i i _i	y _o no	yač _i	—
Huaz	y _i i _i	ŋ _i i _i	y _o no	yač _i	—
Jam	y _i i _i	ŋ _i i _i	y _o no	yač _i	y _i k _i (k ^W aʔa)
Chay	y _i i _i	ŋ _i i _i	y _o no	yač _i	—
ChayC	yee	ŋ _e e	y _o no	yasi	yeke (k ^W aʔa)
ChayD	y _i i _i	ŋ _i i _i	y _o no	yasi	y _i k _i (k ^W aʔa)
Tut	y _i i _i	ŋ _i i _i	y _o no	yač _i	y _i k _i
Acat	y _i i _i	ŋ _i i _i	y _o no	yasi	y _i k _i

NE Alta	45) tejón coatí	46) comida food	47) salado salty	48) huipil blouse	49) trabajo ⁵³⁴ work
P-Mixtec	*yáiyá	* ⁿ deyu?	*o'we	*sikg	*tiyq
Tepo	te yeye	ⁿ dayu	u'wa	áiko	tniñq
Tida	žiži	=pota, je, salsa ⁿ deyu	[eəe]/u'a	=camisa —	tniy
Til	žiči	—	[eəe]	[əutny]	tniy
Diux	—	—	—	—	tniy
Nuxi	—	—	[aa]	[əy'ny mučil] (še) tiñq	
Nuxa	žiži	ⁿ dežu	[aa]	[əq'nq]	tifiy
TamJ	šiči/žiči	=mole ⁿ dežu	u'a	[əq'mq]/əixy	Nniy
Yuta	—	—	—	—	Nniy
Peño	žiči	ⁿ dežu	ú'a	əikú	čiy`
Este	žiči	=masa con frijoles ⁿ dežu	u'a	əiky	tniy
Cui	[ti mq'q]	=comida molida —	u'a	—	čifq
Soso	—	—	—	—	—
Jalt	[ñqñq]	—	—	—	niy
Adeq	—	—	—	—	Nniy
Cant	—	—	—	—	—
Lobo	[to mq'q]	—	—	—	nifiy/niy
Ynam	—	—	—	—	—
Soy	[to mq'q]	ⁿ zayu	[aəa]	[əq'nq/əy'ny]	tniq/tniy
Chic	žiži	=beans ⁿ zayu	[aəa]	[əq'nq]	čqg
Ixtl	žiži	=beans ⁿ zayu	[aa]	[əy'ny]	t ^y uy
Apas	žiži	ⁿ zayu	[aəa]	[əy'ny]	čiy
Apoa	ti žiči	ⁿ dayu	[sa fič]	[əq'nq]	čqg
Ndua	[ti mq'q]	—	—	—	č ^y qg
Joco	yiyi	ⁿ zayu	u(?)wa fič	[əq'nq]	čifq
Cuya	žiči	—	[ñq fič]/u'we	əi ^h ky	čifiy
Cuau	žiči	—	[ñq fič]/u'we	əi ^h ky	čifiy
Coat	šiči	—	=espeso [əe fič]	[əy'ny]	čifiy

Gen. Alta	45) tejón coatí *yáyí	46) comida food * ⁿ deyu?	47) salado salty *o'we	48) huipil blouse *siko	49) trabajo work *tiyo
P-Mixtec					
Ñumi	žiči =mapache	—	[aše]	[sy'ny]	tnyy
Achi	[mɔ'ɔ]	ⁿ dežu	u'wa	[sy'ny]	sa tiy
Yuca	žiči	ⁿ dežu	u'wa	=camisa šiky	(t)niŋy/(t)niŋo
Peña	[mɔ'ɔ]	—	—	—	nifŋy
Tata	šiyí	—	—	—	Nniŋo
Teit	žiči	ⁿ deyu	u'wa	—	Nniŋy
Moli	[mɔ'ɔ]	—	u'wa	[sy'ny]	tNiŋy
Sinc	[tynɔ]	—	—	—	sa tni
Tlac	[mɔ'ɔ]	ⁿ dežu	u'uwa	[šitNiŋ]?	tNiŋy
Ndi	[texon]	—	—	—	sa tiy
Ndac	[tusa]	—	—	—	tifŋy
Oco	[mɔ'ɔ]	ntěžū	?ū'uà	šikì	tifŋy
Prog	—	—	—	—	sa tifŋy
Yuci	[mɔ'ɔ]	něžū	?ū'wà	šikì	tifŋy
Nuyo	yáyí	něžū	?ū'wà	šikì	tifŋy
Atat	yáyí	ⁿ děžū	u'vā	[kamisa]	sá Nniŋy
Mig	žiči	ⁿ dežu	u'ā	[sy'ny]	tifŋy
Chal	[texon]	ⁿ dežu	u'a	=camisa, blusa [čii]	tifŋy
Verd	yáyí	ⁿ dežu	uba	[sy'ny]	tifŋy
Yoso	žiči	ⁿ dežu	u'ba	[sy'ny]	Nnyy
Itun	yáyí	ⁿ dežu	u'ba	[sq'no]	ⁿ de tifŋy
Yolt	žiči	ⁿ dežu	u'wa	—	tNiŋo
Yutn	[texo]	—	—	—	nio
Sind	žiči	ⁿ dežu	u'wa	—	nio
Pied	žiči	[ča'a]/ ⁿ dežu	[aa]/u'wa	—	ny niŋy
Huit	žiči	ⁿ dežu =comida	u'we	éixy	Niŋy
Tlaz	[tí séné]/[tí mɔ'ɔ]	ⁿ dežu	u'a	[lusa]	čiy

No. Baja	45) tejón coatī *yiyi	46) comida food * ⁿ deyu?	47) salado salty *o?we	48) huipil blouse *sikg	49) trabajo work *tiyq
Mont	—	—	—	—	či?u/či?fu
Nuch	tî žiî	ⁿ deže	?e?va	—	čyy
Aten	ti žii	[ku šę?i]/ ⁿ dei =mole	?i?ya	—	čyy
Yucq	žii	—	—	—	čyy
Yucñ	žiči	ⁿ dei	?u?va	saku	čyy
Guad	đi yii	[kusi]/ ⁿ dzei =mole	?ia?a	—	čiy
Flor	—	—	—	—	čyy
Amat	—	—	—	—	čyy
Zap	[đi mš?g]	ⁿ deyu	?wa?a	—	čyy
Cac	[texón]	[na kuhi]	owa?a	[đqng]	čqg
Ndo	—	—	—	—	tiy
Ixtp	—	—	—	—	čyy
Mic	—	—	—	—	čyy
Tepj	[si mš?g] =mapache	ⁿ dei =mole	u?a	—	čyy
Cos	[si mš?g] =mapache	ⁿ deyu =mole	u?a	điky	čijny
Chaz	[đi mš?g] =mapache	ⁿ deyu =mole	u?a	—	čijny
Tot	[ina]	—	—	—	čyy
Ton	[si mš?g] =mapache	ⁿ deyu	u?a	[đy?ny]	čiy
Jer	[si ⁿ do?o]	—	—	—	čyy
Xay	sì ?íí	—	ù?à	—	čyy
Tlal	[mš?g]	[fš?g sš? ⁿ da]	—	—	čyy
Chig	[mš?g]	[t ^y aa]/ ⁿ deyu =mole	u?wa/[ada] (neutral)	[kutuu]	čyy



So. Baja	45) tejón coatí *yáyi	46) comida food * ⁿ deyu?	47) salado salty *o?we	48) huipil blouse *siko	49) trabajo work *tiyo
Ayut	kitii	[fiŋ šaši]/ ⁿ dei?	ū?va	š ^h ky	čyy
Yolx	ii	ⁿ dayu =caldo	u?va	siky	čifŋ
Alac	yii mə to?o/ yii taka	ⁿ deyu	—	—	čifŋ
Metl	iĩ`	—	—	—	—
Coi	fi	[fiŋ kuši]	?u?va	šiky	čifŋ
Per	žii	ⁿ d ^y azu	?o?va	—	[tu ⁿ do?o]
Cuat	[ti mə?ə]	ⁿ dayi =mole	yo?wa	šiky/šiko	čqo
Cah	yii	ⁿ dayi	yo?wa	siko	čifŋ
Alco	ii	ⁿ dayu (fiŋ) u?wa =chilate	(fiŋ) u?wa	šiky	čifŋ
Cruz	yii	ⁿ dayi	u?wa	šiko	čifŋ
Durz	žii	[fiŋ ká šə?ə]	?u?wa	—	čyy
Teco	[mə?ə]	[ka šə?ny]	?u?va	šiky	čyy
Juxt	žii	—	u?ba	[sy?ny]/šiku	čyy
ChaP	žii	—	—	—	čyy
Yuco	?iĩ	ⁿ dāžú	?u?wà	šükü	t ^y yy
Mix	ii	ⁿ d ^y ayu =carne	u?wà	—	t ^y yy
Tejc	—	—	—	—	čyy
Rey	žizi	[fiŋ ka šə?ə]	?o?a	—	čifŋ
TlaM	—	—	?o?va	—	čyy
SilP	ⁿ di žii	—	—	—	čyy
IxpN	[mə?ə]	—	?i?va	—	čiy
SilM	žii	—	o?ba	[koto]	čqo
TamS	[ti mə?ə]	ⁿ dežu =mole	ži?va	θiko	čyy
Ahue	ti žii	ⁿ deiže =mole	?o?va	—	ka čyy
Mor	(ti) žii	ⁿ deye	o?ba	—	čyy

Costa	45) tejón coatī *yɨyɨ	46) comida food * ⁿ deyuʔ	47) salado salty *oʔwe	48) huipil blouse *sikɔ	49) trabajo work *tiyɔ
Zac	ii	ⁿ dayu	uʔba	šiky	ha tify/sa tify
Sayu	[te šuy]/ [ti mɔʔa]	ⁿ dayu	uʔwa	šuky	tʲify
Tept	ii	ⁿ dayu	uʔwa	šiky/[saʔmɔ nyu]	tify
Atoy	ii	ⁿ dayu =meat	uʔwa	šiku	tify
Jicy	ii	ⁿ dayu	uʔba	šiku	tify
Jict	ii	—	uʔba	šiku	tify
PinN	ii	ⁿ dayu	—	—	tify
PinL	yɨyɨ	ⁿ dayu	uʔwa	šiky	tify
Colo	yɨyɨ	ⁿ dʲayu	uʔba	šiky	tʲify
Nuti	[tɨ mɔʔa]	—	—	—	tʲify
Ixty	yɨyɨ	—	uʔba	šiky	tʲify
Cris	nʲɨjɨ	—	—	—	činy
Lor	yɨyɨ	ⁿ dayu	uʔwa	šuky	tʲify
Mech	yɨyɨ	ⁿ dʲayu	uʔwa	šuky	tʲify
Huaz	yɨyɨ	ⁿ dʲayu	uʔwa	šiky	tʲify
Jam	yɨyɨ	—	uʔba	šiky	tʲify
Chay	yɨyɨ	ⁿ dʲayu	uʔwa	[su ⁿ duʔu]	tʲify
ChayC	yeye	—	—	—	čify
ChayD	yɨyɨ	ⁿ dʲayu =carne	uʔvə	—	tʲifɔ
Tut	yɨyɨ	ⁿ dʲayu	uʔwa	šikɔ	tʲifɔ
Acat	yɨyɨ	nʲjaju	uʔwa	šiky	tʲinɔ

NE Alta P-Mixtec	50) algodón cotton *kati?	51) viento wind *tati?	52) hombre man *teye	53) redondo round *kute	54) horno oven *xity
Tepo	kači	tači	[yee]/tai	kuta	sitny
Tida	kači	tači	čee	ti kute	šitNy
Til	kači	tači	se žiž	kute	šitny
Diux	kači	tači	se yiž	kute	šitny
Nuxi	kači	tači	tee	[či re luu]	ši [?] Nny/šitNy
Nuxa	kači	tači	tee/taa	—	šit ^y y
TamJ	kači	tači	tee	[ti ⁿ duu]	iNny
Yuta	kači	tači	tee	ti kute	iNny
Peño	káči	táči	téè	tí kùtē	šitny
Este	kači	tači	tee	ti kute	šitny
Cui	kači	tači	čee	—	šiNno
Soso	—	—	čee	—	—
Jalt	kači	tači	sa žiž/se žiž	[ti ⁿ duu]	šiny/ši [?] Nny
Adeq	kači	tači	čee	—	ši [?] Nny
Cant	—	[šia]	čee/see	ti kuča	ši [?] ny
Lobo	—	—	čee/čii žiž	[ti ⁿ duu]	—
Ynam	—	—	—	—	—
Soy	kači	tači	xa žee/či žee	ti kuča	šitno/šitny
Chic	kači	tači	t ^y ee	ti kuča	šitu
Ixtl	kāčì	tači	t ^y ee	ti kuča	šitu
Apas	kači	tači	čee/t ^y ee	ti kuča	šitu =BBQ
Apoa	kači	tači	čee	ti kuča	šitu
Ndua	kači	tači	čie/t ^y ie	ti kuča	šitu
Joco	kači	tači	čie/č ^y ee	—	šitu
Cuya	kači	tači	tii	ti kute	žitu
Cuau	kači	tači	tii	ti kute	ži ^h ty
Coat	kači	tači	ña tii	—	—

Gen. Alta	50) algodón cotton	51) viento wind	52) hombre man	53) redondo, round	54) horno oven
P-Mixtec	*katiʔ	*tatiʔ	*teye	*kute	*xity
Ñumi	kači	tači	te žii	(ti) kute	xitny
Achi	kači	tači	te žii	[ti ⁿ duu]	ʔšitny
Yuca	kači	tači	tee	[ti ⁿ duu]/ti kute	xiNny/xitny
Peña	kači	tači	tee	ti kute	—
Tata	kači	tači	tee	ti kute	iʔNny
Teit	kači	tači	te šii	tj kute	iNny
Moli	kači	tači	tēe	—	xitNy
Sinc	kači	tači	tee	[ti luu]	—
Tlac	kači	tači	tee	[ti ⁿ duu]	xitNy
Ndi	kači	tači	tee	[či ti ʔoli]	xity
Ndac	kači	tači	tee	ti kute	xitu
Oco	kāčì	tāčì	tēē	tí kuté	xitù
Prog	kači	tači	tee	ti kote	[ofng]
Yuci	kāčì	tāčì	tēē	tí kuté	ʔitù
Nuyo	kāčì ʔitá	tāčì	tēē	tí kuté	ʔitù
Atat	kači	tači	tēe	[tɨ luu]	iNny
Mig	kači	tači	čāa	—	xinŷ
Chal	kači	tači	čāa	(tɨ) kuča	xiny
Verd	kači	tači	tee	tɨ kute	itny
Yoso	kači	tači	čāa	tɨ kuča	xiNny
Itun	kači	tači	tee	tɨ kute	ity
Yolt	kači	tači	tíaa	[tj luu]	šitNy
Yutn	kači	tači	tee	tɨ kute	—
Sind	kači	tači	tee	tɨ kute	iny =BBQ
Pied	kači	tači	tee	tɨ kute	iny
Huit	kači	tači	tee	[žɨʔwɨ]	iNny
Tlaz	kači	tači	tee	tɨ kute	šitny

No. Baja	50) algodón cotton *kati?	51) viento wind *tati?	52) hombre man *teye	53) redondo round *kute	54) horno oven *xity
Mont	kači	—	taa	ti kata	šito
Nuch	káčì	táčì	t ^y ãã	tì kàt ^y á	šito
Aten	káčì	táčì	t ^y aa	ti kate	šitò
Yucq	kači	tači	taa	si kata	šito
Yucñ	kači	tači	taa	ti kata	šito
Guad	kači	tači	č ^y àa	čì kači	sito
Flor	[iši ⁿ ja [?] a]	—	čaa	či kači	ši [?] tu
Amat	kači	tači	ta čaa	ti kača	šitu
Zap	kači	tači	te ii	čì kate	šito
Cac	kači	tači	te [?] ii	[ti ⁿ dūa]	šitg
Ndo	kači	tači	tee	ti kute	xitu
Ixtp	kači	tači	tee/t ^y aa	si kate	šity
Mic	kači	tači	t ^y aa	si kate	šitu
Tepj	kači	tači	t ^y aa	si kate	šitu
Cos	kači	tači	t ^y aa	si kate	šity ⁿ
Chaz	kači	tači	t ^y aa	—	šity
Tot	kači	tači	t ^y aa	si kate	šitny
Ton	kači	tači	t ^y aa	si kate	šitny
Jer	kači	tači	t ^y aa	si kate	šitny
Xay	káčì	táčì	t ^y ãã	si kate	šitny
Tlal	kači	te kači	tee	či/čì kati	[uřnu]
Chig	kači	tači	ti ii	[ⁿ duk [?]]	šitny

So. Baja	50) algodón cotton	51) viento wind	52) hombre man	53) redondo round	54) horno oven
P-Mixtec	*kati?	*tati?	*teye	*kute	*xity
Ayut	kā ^h ci?	tā ^h ci?	t ^y āa	tī k ^w i ^h t ^y ā	—
Yolx	kači	tači	taa	k ^w ita	šity
Alac	kači	tači	taa	—	—
Metl	—	—	t ^y aa	—	—
Coi	kāčí	tači	t ^y āa	[ti ⁿ duú]	šity
Per	kači	tāčí	ɸ ^y axá	[ko ⁿ do]	—
Cuat	kači	tači	taa	či k ^w ita	šitɔ
Cah	kači	tači	taa	ti k ^w ita	šitɔ
Alco	kači	tači	taa	ti kata	šity
Cruz	kači	tači	taa	či k ^w ita	šitɔ
Durz	kači	tači	čāā	[bo ^o lo]	šity
Teco	kāčì	tāčì	čāá	—	—
Juxt	kači	tači	t ^y aa	t ^y i kut ^y a	šitu
ChaP	kači	tači	t ^y aa	kut ^y a	=BBQ [o ⁿ ny]/šiti
Yuco	kāčí	tāčí	tāā	tì kùtè	čìtù
Mix	kat ^y i	tat ^y i	t ^y aa	ti kut ^y a	čitu
Tejc	[yaa]	tači	ŋa čaa	kuča	čitu
Rey	kači	tači	čāá	[či ⁿ duu]	šitɔ
TlaM	kāčì	tāčì	ɸaa	[ɸi ⁿ düü]	—
SilP	kači	tači	(ta) taa	ti kata	—
IxpN	kači	tači	čaa	[či ⁿ luu]	—
SilM	kači	tači	taa	ti kata	šito
TamS	kači	tači	tāā	[bo ^o la]	=BBQ šito
Ahue	kači	tāčí	tāā	tì kata	—
Mor	kači	—	taa	ti kata	šito

Costa	50) algodón cotton	51) viento wind	52) hombre man	53) redondo round	54) horno oven
P-Mixtec	*katiʔ	*tatiʔ	*teye	*kute	*xity
Zac	katiʔ	tatiʔ	ra iiʔ/raa	kuta	čity =BBQ
Sayu	katʲi	tatʲi	raa	kuta	čity
Tept	kati	tati	rai	kuta	čity
Atoy	kati	tati	rai	kuta	čity
Jicy	kati	tati	rai	kuta	—
Jict	kati	tati	rai	kuta	čity
PinN	kati	tati	rai	kuta	čity
PinL	kati	tati	ra yi̯i̯	kuta	čity =BBQ
Colo	katʲi	tatʲi	ra yi̯i̯	kutʲa	čity =BBQ
Nuti	katʲi	tatʲi	ra yi̯i̯	kutʲa	[uʔnɔ]
Ixty	katʲi	tatʲi	ra yi̯i̯	kutʲa	čity =BBQ
Cris	kači	tači	ra yi̯i̯	kuča	[ʔornɔ]
Lor	katʲi	tatʲi	ra yi̯i̯	kutʲa	—
Mech	katʲi	tatʲi	ra yi̯i̯	kutʲa	čity =BBQ
Huaz	katʲi	tatʲi	ra yi̯i̯	kutʲa	—
Jam	katʲi	tatʲi	ra yi̯i̯	kutʲa	—
Chay	katʲi	tatʲi	ra yi̯i̯	kutʲa	—
ChayC	kači	tači	ra yee	kuča	[ornɔ]
ChayD	katʲi	tatʲi	ra yi̯i̯	[ti ⁿ duu]	—
Tut	katʲi	tatʲi	ra yi̯i̯	kutʲa	čity
Acat	kači	tači	ra yi̯i̯	kuča	xity

NE Alta	55) cajón box *xety?	56) zancudo mosquito *tɛ k ^w eyɛ?	57) esperar wait for * ⁿ detu?	58) podrido rotten *te?yu	59) agarrar grab *tɛɛ?
Tepo	satny	ti k ^w afɛ	ⁿ datu	ta?yu	[kaa/saa]
Tida	satny	ti k ^w aj	ⁿ detu	te?yu	tnij
Til	šatny	k ^w efij	ⁿ detu	te?yu	tnij
Diux	[kaxa]	tk ^w efny	ⁿ detu	te?yu	tniɛɛ
Nuxi	še(?)Nny	[sa ⁿ kuɔ]	ⁿ detu/ ⁿ det ^v i	te?yu	tij
Nuxa	šet ^v y	[čuky]	ⁿ det ^v u	te?žy	tij
TamJ	—	tɛ x ^w efɛɛ	ⁿ detu	te?žy	Nniɛɛ
Yuta	[kaxa]	tɛ k ^w efij	ⁿ detu	te?žy	Nniɛɛ
Peño	satny	tɛ k ^w efny	kùù ⁿ dètù	té?žy	tniɛɛ
Este	šatny	ši k ^w efny	ⁿ detu	te?žy	tniɛɛ
Cui	saNny	ti x ^w ij	—	sa?žy	tnij
Soso	—	—	—	—	—
Jalt	[kaxa]	[ti u?ky]	yatu/ ⁿ datu	sa?žɛ/sa?yu	neɛ
Adeq	[kaxa]	—	ⁿ yatu	sa?i	Nnij
Cant	[kaxa]	tɛ k ^w afny	ⁿ yatu/ ⁿ satu (comp./incomp.)	sa?a	?neɛ
Lobo	—	[sankuɔ]	ⁿ satu	ɛa?žɛ	—
Ynam	—	—	—	—	—
Soy	satng	[to šo ⁿ jaa]	ⁿ zatu	ɛa?yu	tnij
Chic	satn	ti k ^w afny	ⁿ zatu	ɛa?yu	tɛɛ
Ixtl	satn	ti k ^w afny	ⁿ zatu	ɛa?yu	tɛɛ
Apas	satn	ti k ^w afny	ⁿ zatu	(sa) ɛa?yu	tɛɛ
Apoa	satn	ti k ^w gyy	ⁿ zatu	ɛa?yu	tɛɛ
Ndua	[dita]	ti k ^w afny	ⁿ zatu	ɛa?yu	tɛɛ
Joco	—	ti k ^w gyy	ⁿ zatu	ɛa?yu	tɛɛ ⁿ
Cuya	fiɛty	šu kyy	ka ⁿ deta	te?yu	tɛɛ
Cuau	žɛ ⁿ ty	tɛ k ^w efij	ⁿ detu	te?žy	tɛɛ
Coat	ety	skɛfny	ka ⁿ detu	te?u	[kur kaa]

Gen. Alta	55) cajón box	56) zancudo mosquito	57) esperar wait for	58) podrido rotten	59) agarrar ⁵⁴⁵ grab
P-Mixtec	*xetɥ?	*tɛ k ^w eyɛ?	* ⁿ detu?	*te?yu	*tɛɛ?
Ñumi	xatny	ti k ^w añj/ti k ^w ayj	ⁿ detu	te?i	tnij
Achi	—	k ^w añj	ⁿ detu	te?žu	tNij
Yuca	xatny	ti k ^w efɛg/ti k ^w efij	ⁿ detu	te?žu	tnij
Peña	[kaxa]	ti k ^w ɛfij	ⁿ detu	ⁿ de?žu	nij
Tata	[kaxa]	ti kuj(i)	ⁿ detu	—	Nnɛɛ
Teit	šeNny	ti k ^w efij	ⁿ detu	te?yu	Nnij
Moli	—	ti k ^w añj	ⁿ detu	te?žu	tNij
Sinc	[kaxa]	ti k ^w ɛfij	ⁿ detu	ⁿ de?žu	[xa fiɛ?ɛ]
Tlac	—	ti k ^w efɥ	ⁿ detu	te?žu	tNij
Ndi	[kaxa]	ti k ^w ɛfij	ⁿ detu	te?žu	tij
Ndac	[kaxa]	ti k ^w ɛfɥ	ⁿ detu	ⁿ de?yu	tij
Oco	xätɥ	tì k ^w añj	ntétū	tē?žù	tíj
Prog	[kaxo]	ti k ^w ɛfij	nətu	ta?yu	ⁿ dij
Yuci	yätɥ =coffin	tì k ^w añɛ	nētū-xū	té?yú	tɛɛ-xɛ
Nuyo	—	tì k ^w añɛ	nētū-ū	tē?yū	tɛɛ
Atat	yeNny	tɛ k ^w efij	ⁿ détu	te?yū	Nnɛɛ
Mig	xanū	tɛ k ^w añɥ (ku) ⁿ datu		té?žū	tɛɛ nī?j
Chal	xany	[čuku]	ⁿ datu	te?žu	tɛɛ
Verd	xetny	[čuku]/ti k ^w i(y)i	ⁿ detu	te?yu	tnɛɛ
Yoso	xaNny	tj k ^w añɛ	ⁿ datu	te?žu	Nnɛɛ
Itun	yetɥ	[čuku]/tu k ^w ij	ⁿ detu	te?yu	tɛɛ
Yolt	[ny ⁿ dōo]	tɛ k ^w añɛ	ⁿ d ^y atu	te ^e ?žu	tNɛɛ
Yutn	[kaxa]	[ču?xy]	ⁿ detu	te?žu	[xɛ?ɛ]
Sind	ženy	tɛ k ^w efij	ⁿ detu (fiɛ?j)	te?žu	nɛɛ
Pied	ženy	ti x ^w efij/ti x ^w ɛfij	ⁿ detu	te?žu	nɛɛ
Huit	žeNny	tɛ x ^w efɛ	ⁿ detu	te?žu	Nɛɛ
Tlaz	setny	[kɛtɛ žuku]	ⁿ detu	te?žu	nɛɛ

No. Baja	55) cajón box	56) zancudo mosquito	57) esperar wait for	58) podrido rotten	59) agarrar grab
P-Mixtec	*xety?	*t̥i k ^w ey̥?	* ⁿ detu?	*te?yu	*t̥i̥?
Mont	[kaxa]	[ti se?e]	ⁿ d ^y ati	t ^y a?zi	t̥i̥
Nuch	sātò	t̥i k ^w ̥i̥	ⁿ d ^y ati	ni te?zi	t̥i̥
Aten	sato	ti k ^w ̥i̥	ⁿ dati	te?i	t̥i̥
Yucq	satu	[tu če?e]	ⁿ datu/ ⁿ data	te?u	t̥i̥
Yucñ	sato	[t̥i šè?è]	ⁿ dati	ni te?i	t̥i̥
Guad	—	[çi lu ^m pa]	ⁿ d ^y açi	çe?e	ç̥i̥
Flor	[kaxa]	—	ⁿ detu	[kuš̥i]	č̥i̥
Amat	[kaxa]	[ti f̥yku]	ⁿ jaçi	če?i	č̥i̥
Zap	satq	—	ⁿ det ^y u	te?yu	ç̥i̥
Cac	saty	[sanguáo]	ⁿ dete	teya	t̥i̥
Ndo	[kaxa]	[ti žuky]	ⁿ detu	te?i	[kako]
Ixtp	[kaxa]	[sa ⁿ kuðu]	ⁿ d ^y atu	te?yi	t̥i̥
Mic	[kaxo ⁿ]	[k ^w isi]	ⁿ d ^y atu/ ⁿ detu	tei	t̥i̥
Tepj	satu	[si yuky]	ⁿ d ^y atu	te?i	t̥i̥
Cos	saty ⁿ	[si yuky]	ⁿ d ^y atu	te?i	t̥i̥
Chaz	saty	—	ⁿ d ^y atu	te?i	t̥i̥
Tot	—	—	ⁿ d ^y atu	te?i	tn̥i̥
Ton	satny	[si yuky]	ⁿ d ^y atu	te?yu	tn̥i̥
Jer	[si ⁿ do?o te?e]	[ç ⁿ sa = mosca]	ku ⁿ d ^y atu/sa ⁿ detu	te?i	tn̥i̥
Xay	—	s̥i k ^w ̥i̥̥ (kū)	ⁿ d ^y ātū	tè?i̥	tn̥i̥̥
Tlal	[kaxuu]	[sa ⁿ kuðu]	ⁿ ditu	te?i	tn̥i̥
Chig	—	ç ^k ̥i̥̥	ⁿ dita	te?yu	nq̥ tn̥i̥

So. Baja	55) cajón box	56) zancudo mosquito	57) esperar wait for	58) podrido rotten	59) agarrar grab
P-Mixtec	*šety?	*tš k ^w eyš?	* ⁿ detu?	*te?yu	*tšš?
Ayut	šā ^h ty?	ti k ^w ij?	n ^d y a ^h tū?	te?i	tšš?
Yolx	šatu	ti k ^w ij	n ^d datu	ta?yu	tij
Alac	—	[tškō]	n ^d dati	ta?yi	tij/tnij
Metl	—	—	—	—	—
Coi	šätú	n ^d i k ^w ij	n ^d datu	t ^y a?yu	tšš
Pera	šaty	[ⁿ da iši]	n ^d daAyu	ča?i	šij
Cuat	šato	n ^d i k ^w ij	n ^d dati	ta?yi	tij
Cah	šatnq	ti k ^w ij/ti še?e]	n ^d dati	ta?yi	tnij
Alco	šaty	ti k ^w ij	n ^d datu	ta?yu	tij
Cruz	šatnq	ti k ^w ij	n ^d datu	ta?yi	tnij
Durz	šaty	či k ^w ašš/[ⁿ či ža?a] n ^č cati		ča?i	šij
Teco	šaty	[ⁿ či ža?a]/či k ^w anj n ^č cati		ča?i	t ^y šš
Juxt	šatu	t ^y i k ^w ayš/t ^y i k ^w ašš n ^d yatu		t ^y a?i	t ^y šš
ChaP	[kaxa]	[ⁿ di ža?a]	n ^d yatu	te?i	tij
Yuco	čätú	tš k ^w ašš	n ^d átū-nà	nš tà?yù-à	tšš-nà
Mix	čatu	[t ^y uku too]/ti k ^w šš n ^d yatu		t ^y a?i	tij
Tejc	[kaxa]	[sa ⁿ kuðu]	n ^č catu	ča?i	tij
Rey	šato	či k ^w anj	n ^č cati	ča?yq	šij
TlaM	—	n ^č š k ^w ašš	n ^d zatu	či?i	šij
SilP	sato	n ^d i k ^w ašš	n ^d dati	ta?žš	tij
IxpN	sato	či k ^w ij	n ^d dači	ča?žš	šij
SilM	šaty	[ti žiko]/ti k ^w ašš n ^d dati		ta?ya	tij
TamS	šato	tš k ^w ij	n ^d yati	nš te?e	tij
Ahue	šato	tš k ^w ij	n ^d dati	nq te?e	tij
Mor	šato	ti k ^w ij	n ^d dati	nq te?e	tij

Costa	55) cajón box	56) zancudo mosquito	57) esperar wait for	58) podrido rotten	59) agarrar grab
P-Mixtec	*xety?	*t̥ k ^w ey̥?	* ⁿ detu?	*te?yu	*t̥t̥?
Zac	čaty?	ti k ^w añi?	ⁿ datu?	ta?yu	t̥t̥
Sayu	čaty	ti k ^w añi	ⁿ datu	ta?yu	t̥t̥
Tept	čaty	ti k ^w añi	ⁿ datu	ta?yu	t̥t̥
Atoy	čaty	ti k ^w añi	ⁿ datu	ta?yu	t̥t̥
Jicy	čaty	ti k ^w añi	ⁿ datu	ta?yu	t̥t̥
Jict	čaty	ti k ^w añi	ⁿ datu	ta?yu	t̥t̥
PinN	čatu	ti k ^w añi	ⁿ datu	ta?zu/ta?yu	t̥t̥
PinL	čaty	tu k ^w añi	ⁿ datu	ta?yu	t̥t̥
Colo	čaty	ti k ^w añi	ⁿ datu	t ^y a?yu	t̥t̥
Nuti	[kaxa]	[t ^y uky]	ⁿ datu	t ^y a?yu	t̥t̥
Ixty	čaty	t̥ k ^w añi/t̥ k ^w añi	ⁿ datu	t ^y a?yu	t̥t̥
Cris	[kaxa]	ti k ^w añi	čatu	ča?ju	t̥t̥
Lor	čaty	t̥ k ^w añi	ⁿ datu	t ^y a?yu	t̥t̥
Mech	čaty	t̥ k ^w añi	ⁿ datu	t ^y a?yu	t̥t̥
Huaz	čaty	t̥ k ^w añi	ⁿ d ^y atu	t ^y a?yu	t̥t̥
Jam	čaty	t̥ k ^w añi	ⁿ d ^y atu	t ^y a?yu	t̥t̥
Chay	= coffin čaty	t̥ k ^w añi	ⁿ datu	t ^y a?yu	t̥t̥
ChayC	[kaxo/kaxa]	tu k ^w añi	ⁿ datu	ča?yu	t̥t̥
ChayD	satu	ti k ^w añi	ⁿ datu	—	t̥t̥
Tut	čaty	t̥ k ^w añi	ⁿ d ^y atu	t ^y a?yu	t̥t̥
Acat	satu	t̥ k ^w añi	ⁿ jatu	ča?yu	t̥t̥

NE Alta P-Mixtec	60) tendón tendon *tuti	61) soplar blow *táwi	62) cuarta handspan *too	63) dueño owner *xi to'o	64) poner (huevo) lay (egg) *xeki
Tepo	tuči = vena	tevi	too	sto'o = señor	sake
Tida	tuči	tiwi	too = jeme	sto'o	sak ⁿ i
Til	tuči	[tu tači]	too	sto'o	—
Diux	—	táu	—	—	—
Nuxi	t ^y uči	tibi	[k ^w arta]	a sto'o	[šeni]
Nuxa	t ^y uči	tibi	too	a sto'o	[šeni]
TamJ	tuči	tibi	too	sto'o	[xani]
Yuta	—	ⁿ da tibi	—	—	—
Peño	túči	táú	too	ší tó'o	[sani]
Este	tuči	táwi	too	ši to'o	[sani]
Cui	—	tiwi	—	—	—
Soso	—	—	—	—	—
Jalt	—	tebe/tibi	—	—	—
Adeq	—	tebe	—	—	—
Cant	—	tebe	—	—	—
Lobo	—	—	—	—	—
Ynam	—	tibi	—	—	—
Soy	tuči	tewe ⁿ zaa	too	—	xaka
Chic	tuči	tibi ⁿ zaa	—	to'o	saki
Ixtl	tuči	tiwi/tii ⁿ zaa	too	es to'o	saki
Apas	tuči	tiwi ⁿ zaa	too	(s)to'o	saki
Apoa	tuči	tibi	[geme]	to'o	saki
Ndua	—	tibi	—	—	—
Joco	tuči	tiwi	—	sto'o	saki
Cuya	tuči	ka táwi	too	to'o	—
Cuau	tuči	ka táwi	too	ži to'o	[ka taxi]
Coat	tuči	tibi	too	tθo'o	—

<u>Cen. Alta</u>	60) tendón tendon	61) soplar blow	62) cuarta handspan	63) dueño owner	64) poner (huevo) lay (egg)
P-Mixtec	*tuti	*táwá	*too	*xi to'ó	*xekj
Ñumi	tuči	[t ^y u tači]	too	[lamo]	xakj
Achi	tuči	tibi	[ni kanj]	[mąg ⁿ di]	[so neę]
Yuca	tuči	tiwi (tači]	too	xi to'ó	xakj
Peña	—	tibi	—	—	—
Tata	—	tiu	—	—	—
Teit	tuči	tiwi	too	xi to'ó	šekj
Moli	tuči	tibi	—	xi to'ó	xakj
Sinc	—	tibi	—	—	—
Tlac	tuči	tibi	too	xi to'ó	[só neę]
Ndi	—	tibi	—	—	—
Ndac	—	tibi	—	—	—
Oco	tučī	tivī	tōō	xè to'ò	xákj
Prog	—	tubi	—	—	—
Yuci	tučī	tivī-xī	tōō	?i to'ò	x ^y ákj-xī
Nuyo	tučī	tivī	tōō	[nə ⁿ díj nūy-vā]	x ^y ákj
Atat	tučī	tivī	tōo	xi to'ó	xékj
Mig	tučī	tivī	too	xi to'ó	xakj-tī
Chal	tuči	táu	—	xi to'ó	[xi ⁿ]
Verd	tuči	táwá	too	i to'ó	ekj
Yoso	tuči	táwá	too	xi to'ó	—
Itun	tuči	táwá	[ši'ya]/too	yi to'ó	yekj
Yolt	tuči	táwá	—	ši to'ó	šakj
Yutn	—	—	—	—	—
Sind	tuči	táwá	too	i to'ó	[fñenj]
Pied	tuči	táwá	too	i to'ó	[fñenj]
Huit	tuči	táwá	too	i to'ó	[fñenj]
Tlaz	tuči	[da tači]/táwá	too	ši to'ó	[senj]

No. Baja	60) tendón tendon	61) soplar blow	62) cuarta handspan	63) dueño owner	64) poner (huevo) lay (egg)
P-Mixtec	*tuti	*tíwə	*too	*xi to'o	*xeki
Mont	—	tibi	—	—	—
Nuch	[tì tɨ'ɨ]	tivi	—	ši to'o	saku
Aten	tuči	tivi	—	sto'o	[kee]
Yucq	—	tiu	—	—	—
Yucñ	tuči	tívi	—	'es to'o	saku
Guad	tuči	ɬivi	too	sto'o	sako
Flor	—	—	—	—	—
Amat	—	[sq'mi]	—	—	—
Zap	tʰuči	ɬivi	—	sto'o	saki
Cac	tüči	tüü	—	is tua('a) / [ŋə'ə]	saki(ti)
Ndo	—	tibi	—	—	—
Ixtp	—	sibi	—	—	—
Mic	—	sibi	—	—	—
Tepj	tuči	siwi	—	sto'o	saki
Cos	tuči	siwi	too	sto'o	saki
Chaz	tuči	[ɬi tači]	—	[ŋə'ə]	saki
Tot	—	šibe	—	—	—
Ton	tuči	siwi	—	sto'o	sak ^{ŋi}
Jer	—	sibi	—	—	—
Xay	tüči	sivī	tōō	stō'ō	[čī nūú]
Tlal	—	[či'bi]	^{=jeme} [k ^w arta]	[tee de'e ši]	saki
Chig	tuči	[ɬi'i]	—	što'o	šaki

So. Baja	60) tendón tendon	61) soplar blow	62) cuarta handspan	63) dueño owner	64) poner (huevo) lay (egg)
P-Mixtec	*tuti	*tiwi	*too	*xi to'o	*xeki
Ayut	tu ^h ci	tīvī	too	[te š̃ji' ŋg'g]	š̃a ^h ki
Yolx	tuči	tiwi ⁿ daa	too	is to'o	š̃aki
Alac	—	tibi	—	š̃ito	[či kaa]
Metl	—	—	—	—	—
Coi	tuči	tīvi	—	[mɔ'ng]	š̃aki
Pera	[ɕi ty'y]	ɕivi	—	sto'o	š̃aki
Cuat	tuči	tiwi	too	š̃to'o	š̃aki
Cah	tuči	tiwi	too	[taši ŋg'g]	š̃aki
Alco	tuči	tiwi	—	iš to'o	š̃aki
Cruz	tuči	tiwi	—	š̃to'o	š̃aki
Durz	tuči	ɕivi	—	'es to'o	š̃aki
Teco	tūčī	c ^v iβi-rà	too	'es to'o	š̃akī-rì
Juxt	tuči	t ^v iβi	too	sto'o	š̃aki
ChaP	—	tibi	—	—	—
Yuco	tūčī	tívì-nê	tōō	'iš tō'ò-nê	s ^v ákì-ài
Mix	tut ^v i	tibi	too	sto'o	ɕaki
Tejc	—	tibi	—	—	—
Rey	tūči	čuu	too	š̃to'o	š̃aku
TlaM	[ɕi ty'y] tuci=cuerda	ɕivi	—	—	s ^v akü
SilP	—	tibi	—	—	—
IxpN	tuču	tivi tači	—	sto'o	saku
SilM	tučü	tibi	—	š̃i to'o	sakü
TamS	[ⁿ da kata]	tivi	—	'is to'o	š̃aku
Ahue	tüčü	tivi tači	too	sto'o	š̃aki
Mor	[kata ⁿ da'a-ng]	tibi	—	[^m ba'a]	saku

Costa	60) tendón tendon	61) soplar blow	62) cuarta handspan	63) dueño owner	64) poner (huevo) lay (egg)
P-Mixtec	*tuti	*táwi	*too	*xi to'o	*xekj
Zac	tuti	[ⁿ dati]/tibi	too	či to'o	[čati]
Sayu	tut ^y i	tiwi	too =forearm	či to'o	čakj
Tept	tuti	tiwi	too	či to'o	[čati]
Atoy	tuti	tiwi	too	či to'o	[čati]
Jicy	tuti	tibi	too	či to'o	[čati]
Jict	tuti	tibi	too	či to'o	[čati]
PinN	tuti	tibi	too	či to'o	[čati]
PinL	tuti	táwi	too	či to'o	[čati]
Colo	tut ^y i	táwi	too	či to'o	[čati]
Nuti	—	táwi	—	—	—
Ixy	tut ^y i	táwi	too	či to'o	[čati]
Cris	—	táwi	—	—	—
Lor	tut ^y i	táwi	too	či to'o	[čati]
Mech	tut ^y i	táwi	too	či to'o	[čati]
Huaz	tut ^y i	táwi	too	či to'o	[čati]
Jam	tut ^y i	táwi	too	či to'o	[čati]
Chay	tut ^y i	táwi	too	či to'o	[čati]
ChayC	tuči	tebe	(mj ng) too	si to'o	[sati-te]
ChayD	tut ^y i	táwi	too	si to'o	saki =colocar
Tut	tut ^y i	[tat ^y i]/táwi =winō inst.	too	[ča čii]/či to'o	[čisa kqg]
Acat	tuči	[tačil]/táwi	too =forefinger	čii sto'o	[sa kqg]

NE Alta P-Mixtec	65) grande big (sg.) *ka?nu?	66) cuello neck *suky?	67) va a venir will come *kixi	68) cuerno horn * ⁿ dikɨ?	69) culebra snake *koo?
Tepo	ka?nu	ɛuke	kesi	ⁿ deke	koo
Tida	ka?ny	ɛuk ⁿ y	kii	ⁿ diki	koo
Til	ka?ny	ɛuxy	[nɛʔɛ]	ⁿ dikɨ	koo
Diux	ka?ny	ɛuxy	[ⁿ disi]/kii	ⁿ dikɨ	—
Nuxi	ka?ny	ɛuky	kiši	ⁿ diki	koo
Nuxa	ka?ny	ɛuky	kiši	ⁿ diki	koo
TamJ	xɛ?ny	ɛuxy	kiši	ⁿ dikɨ	koo
Yuta	ka?ny	ɛu?xy	kiši	ⁿ dikɨ	—
Peño	kà?nɨ ^ˆ	ɛúkú	kiši	ⁿ dɛkɨ	kóó
Este	ka?ny	ɛuky	kiši	ⁿ dikɨ	koo
Cui	ka?nɔ	ɛixɨ	kuši	ⁿ diki	koo
Soso	—	—	—	—	—
Jalt	ka?ny	ɛuky	kii	ⁿ dikɨ/ ⁿ deke	—
Adeq	ka?ny	[k ^w ɛzu]	kiši	ⁿ deke	—
Cant	ka?ny	ɛuky	kiši	ⁿ dikɨ	—
Lobo	—	—	[nɛ xa?a-ši	—	—
Ynam	—	ɛy ⁿ gu	—	—	—
Soy	ka?nɔ/ka?ny	ɛuky	(xa-)kee-ɬa	ⁿ deke	koo
Chic	ka?ny	ɛuku	[ⁿ disa]	ⁿ reke	koo
Ixtl	ka?ny	ɛuku	kisa	ⁿ diki	koo
Apas	ka?ny	ɛuku	[ⁿ disa]	ⁿ diki	koo
Apoa	ka?ny	ɛuku	kii	ⁿ diki	koo
Ndua	ka?ny	θuku	kiši	ⁿ diki	—
Joco	ka?ny	ɛuku	kii	ⁿ deke	koo
Cuya	ka?ny	ɛuxy	kixi	ⁿ dɨkɨ	koo
Cuau	ka?ny	ɛy ⁿ ky	kixi	ⁿ dɨ ^h kɨ	koo
Coat	ka?ny	ɛuky	kiši	ⁿ dikɨ	koo

Gen. Alta	65) grande big (sg)	66) cuello neck	67) va a venir will come	68) cuerno horn	69) culebra snake
P-Mixtec	*ka?nu?	*suky?	*kixi	* ⁿ diki?	*koʔ?
Ñumi	ka?ny	suky	kii	ⁿ diki	koo
Achi	ka?ny	suky	kia	ⁿ diki	koo
Yuca	ka?ny	suky	kee/kixi	ⁿ diki	koo
Peña	ka?ny	suky	kii	ⁿ diki	—
Tata	ka?ny	ɛuky	kee	ⁿ diki	—
Teit	ka?ny	ɛuky	kii	ⁿ diki	koo
Moli	ka?ny	suky	kii	ⁿ diki	koo
Sinc	ka?ny	suky	kii	—	—
Tlac	ka?ny	suky	[ⁿ d ^y aa]	ⁿ jiki	koo
Ndi	ka?ny	—	kii	ⁿ diki	—
Ndac	ka?ny	suku	kii	ⁿ diki	—
Oco	ká?nú	sùkù	kixi	ⁿ diki	kòò
Prog	ka?ny	suku	kixi	ⁿ diki	—
Yuci	ká?nú	sùkù	kixi-xi	njki	kòò
Nuyo	ká?nú	sùkù	kixi	njki	kòò
Atat	ká?nú	sukù	kixi	ⁿ diki	koò
Mig	ká?nú	sukù	[čaa]/kii	ⁿ diki	koò
Chal	ka?ny	suku	[čaa]	ⁿ diki	koo
Verd	ka?ny	suky	kee/[ⁿ dee]	ⁿ diki	koo
Yoso	ka?ny	suky	[čaa]	ⁿ diki	koo
Itun	ka?ny	suky	kee	ⁿ diki	koo
Yolt	ka?ny	suky	kisi	ⁿ diki	koo
Yutn	xə?ny	ɛu?xy	kii/[ⁿ disu]	[kaču]	—
Sind	ka?ny	ɛy ⁿ	kii	ⁿ diki	koo
Pied	xə?ny	ɛuxy	kii	ⁿ diki	koo
Huit	xə?ny	ɛuxy	kixi	ⁿ diki	koo
Tlaz	ka?ny	ɛuky	kisi	ⁿ diki	koo

No. Baja	65) grande big (sg) *kaʔnu	66) cuello neck *sukyʔ	67) va a venir will come *kixi	68) cuerno horn * ⁿ dikiʔ	69) culebra snake *kooʔ
Mont	kaʔny	hiko	kisi	ⁿ diki	—
Nuch	kaʔny	hiko	kixi	ⁿ diki	kòò káá
Aten	kaʔny	hìkò	kisi	ⁿ diki	kòò
Yucq	kaʔny	éiko	[ʔi saʔá/ka saʔa]	—	—
Yucñ	kaʔny	hìkò	kišì	ⁿ diki	kòò
Guad	kaʔny	éiko	kisi	ⁿ dziki	kòò káa
Flor	kaʔny	éiko	kišì	ⁿ diki	—
Amat	kaʔny	éiku	kišì	ⁿ diki/nyiki	—
Zap	kaʔnq	éikq	wašì	ⁿ siki	koo
Cac	ka(ʔ)ny	éiky	wai/kisa	ⁿ diki	koo
Ndo	kaʔny	suky	kii	ⁿ diki	—
Ixtp	kaʔny	suku	kišì	ⁿ jiki	—
Mic	kaʔny	éiku	kišì	ⁿ siki	—
Tepj	kaʔny	éuku	kišì	ⁿ siki	koo
Cos	kaʔny	éuky	wašì	ⁿ siki	koo
Chaz	kaʔny	éuky	kišì	ⁿ siki	koo
Tot	kaʔny	éuky	kišì	ⁿ jiki	—
Ton	kaʔny	éuky	kišì	ⁿ siki	koo
Jer	kaʔny	éuky	kišì	ⁿ siki	—
Xay	kāʔnū	éukū	kīšī	ⁿ sikì	kòò
Tlal	kaʔny	—	[ʔaxa]	nyiki/ ⁿ jiki	koo
Chig	kaʔny	éúkʔ	waš(i)(-te)	ⁿ siki	koo

So. Baja	65) grande big (sg) *ka?nu?	66) cuello neck *suky?	67) va a venir will come *kixi	68) cuerno horn * ⁿ diki?	69) culebra snake *koo?
Ayut	ka?ny? =important	su ^h ky?	kiši	ⁿ di ^h kī?	kōo?
Yolx	ka?ny	suky	kiši	ⁿ diki	koo
Alac	ka?nq/katnq	sikq	kiši	ⁿ diki	kòò
Metl	—	—	—	—	kòò
Coi	ká?nū	sùkú	kiši	ⁿ diki	koō
Pera	ka?ny	soOkq	kiši	ⁿ çiki	kòò
Cuat	ka?nq	siky	kiši	ⁿ diki	koo
Cah	ka?nq	siky	kiši	ⁿ diki	koo
Alco	ka?ny	suky	kiši	ⁿ diki	koo
Cruz	ka?nq	siky	kiši	ⁿ diki	koo
Durz	ka?ny	suky	kiši	ⁿ çiki	koo
Teco	ká?nū	suku	kiši	ⁿ diki	kòò ká
Juxt	ka?ny	suku	kiši	ⁿ d ^y iki	koo
ChaP	ka?ny	suku	kiši	ⁿ jika	—
Yuco	ká?nū-áú	sùkú	kišī-nè	ⁿ diki-ái	kòò
Mix	ka?ny	suku	ku ⁿ giça	ⁿ diki	koo
Tejc	ka?ny	suku	ⁿ giçi	ⁿ diki	—
Rey	ka?ny	soky	kiši	ⁿ çiki	kòò
TlaM	—	—	kisi	—	—
SilP	ka?ny	hiko	kiši	ⁿ diki	—
IxpN	ka?ny	hiko	kisi	ⁿ diki	kòò káá
SilM	ka?ny	θiky	kiši	ⁿ diki	koo
TamS	ka?ny	θiko	kixi	ⁿ diki	kòò káá
Ahue	ka?ny	θiko	kiši	ⁿ diki	kòò káá
Mor	ka?ny	siko	θaxi	ⁿ diki	koo

Costa	65) grande big (sg)	66) cuello neck	67) va a venir will come	68) cuerno horn	69) culebra snake
P-Mixtec	*kaʔnuʔ	*sukyʔ	*kixi	* ⁿ dikiʔ	*kooʔ
Zac	kaʔnyʔ	sukyʔ	kiči	ⁿ dikiʔ	kooʔ
Sayu	kaʔny	suky	kiči	ⁿ diki	koo
Tept	kaʔny	suky	kiči	ⁿ diki	koo
Atoy	kaʔny	suky	kiči	ⁿ diki	koo
Jicy	kaʔny	huky	kiči	ⁿ diki	koo
Jict	kaʔny	suky	kiči	ⁿ diki	koo
PinN	kaʔny	suku	ba(ki)či	ⁿ diki	koo
PinL	kaʔny	suky	kiči	ⁿ diki	koo
Colo	kaʔny	huky	kiči	ⁿ diki	koo
Nuti	kaʔny	šuky	kiči	ⁿ diki	—
Ixty	kaʔny	suky	kiči	ⁿ diki	koo
Cris	kaʔny	čuky	kiši	ⁿ diki	—
Lor	kaʔny	suku	kiči	ⁿ diki	koo
Mech	kaʔny	sükj	kiči	ⁿ diki	koo
Huaz	kaʔny	sükj	kiči	ⁿ diki	koo
Jam	kaʔny	suky	kiči	ⁿ diki	koo
Chay	kaʔny	sükj	kiči	ⁿ diki	koo
ChayC	kaʔny	θuku/suku	ku kiši	ⁿ deke	koo
ChayD	kaʔnu	θuku	kisi	ⁿ diki	koo
Tut	kaʔny	suky	kiči	ⁿ diki	koo
Acat	kaʔny	suky	kisi	ⁿ diki	koo

NE Alta P-Mixtec	70) feo ugly *kini	71) cerro hill *yuku?	72) armadillo armadillo *yak ^w i?	73) chueco crooked *yak ^w e?	74) año year *k ^w iya
Tepo	[kɔŋɔ/ ⁿ dii]	yuku	—	yak ^w a	k ^w iya
Tida	[k ^w i'a]	žuku	žaky	žak ^w a	k ^w ia
Til	[ki'a kaa]	žuku	žaxy	=cojo [k ^w io]	k ^w ia
Diux	—	yuku	—	—	k ^w ia
Nuxi	[fi'ŋɔ kaa]	žuku	žaky	žak ^w a	k ^w ia
Nuxa	[ⁿ daði kaa]	žuku	žaky	žak ^w a	k ^w ia
TamJ	[ⁿ daði kaa]	žuku	žaxy	žak ^w a	k ^w ia
Yuta	—	[tɛ ⁿ duu]	—	—	k ^w ia
Peño	[nɛ'ɛ]	žukù	žaky	žak ^w à	k ^w íá
Este	[k ^w e'e]/kini	[čáíí]/žuku	žaky	žak ^w a	k ^w ia
Cui	—	žuku	žaki	—	k ^w ia
Soso	—	—	—	žak ^w a	k ^w ia
Jalt	—	žuku	—	—	k ^w ia
Adeq	—	žuku	—	—	k ^w ia
Cant	—	žuku	—	—	k ^w ia
Lobo	[k ^w i'a]	žuku	—	—	k ^w ia
Ynam	—	[ti ⁿ duu]/žuku	—	—	—
Soy	[k ^w i?(y)a]	žuku	žaku	žak ^w a	k ^w iya/k ^w ia
Chic	—	[ti ⁿ ruu]	žak ^w i	žak ^w a	k ^o iya
Ixtl	[k ^w i'ya]	[ti ⁿ duu]	žaki	žak ^w a	k ^w iya
Apas	kini kaa	žuku	(koo) žaku	žak ^w a	k ^w iya
Apoa	[k ^w i'ya]	žuku	yak ^w i/žak ^w i	žak ^w a	k ^w ia
Ndua	—	žuku	—	—	k ^w iya
Joco	kini	yuku	[k ^w ayí]	yak ^w a	k ^w iya
Cuya	kini	[ⁿ daxí]/yuku	[čiwí]	yak ^w a	k ^w ia
Cuau	kini kaa	[ⁿ daxí]/yuku	[čiwí]	yak ^w a	k ^w iža
Coat	kini kaa	šuku	šak ^w i	sk ^w e	k ^w ia

Gen. Alta P-Mixtec	70) feo ugly *kini	71) cerro hill *yuku?	72) armadillo armadillo *yak ^w _i ?	73) chueco crooked *yak ^w _e ?	74) año year *k ^w _{iya}
Ñumi	[ⁿ de [?] e kaa]	žuku	—	žak ^w _a	k ^w _{ia}
Achi	kinj	žuku	žaky	žak ^w _a	k ^w _{iaa}
Yuca	ka kinj	žuku	žaky	žak ^w _a	k ^w _{iža}
Peña	—	žuku	—	—	k ^w _{iya} /k ^w _{iža}
Tata	—	žuku	—	—	k ^w _{ia}
Teit	[ⁿ de [?] e]	šuku	šakj	[ti k ^w _{iyi}]/šak ^w _a	k ^w _{iya}
Moli	kinj	žuku	žakj	žak ^w _a	k ^w _{iža}
Sinc	—	[žutny]	—	—	—
Tlac	kini	žuku	žakj	žak ^w _a	k ^w _{iža}
Ndi	—	žuku	—	—	k ^w _{ia}
Ndac	—	yuku	—	—	[kusa]
Oco	kīnī	žūkū	fiqk ^w _i	t ^y ák ^w _á	k ^w _{ižā}
Prog	—	žuku	—	—	k ^w _{iža}
Yuci	kīnī/[nē [?] í]	žūkū	yak ^w _i	t ^y ák ^w _á	k ^w _{iyā}
Nuyo	=lugar =cosa kīnī	yūkū	žak ^w _i	t ^y ák ^w _á	k ^w _{iyā}
Atat	kinj	yuku	yak ^w _i	žák ^w _á	k ^w _{iyā}
Mig	kinj	žuku	žak ^w _i	žák ^w _á	k ^w _{iā}
Chal	[šga fiqka]	žuku	žak ^w _i	žak ^w _a	k ^w _{ia}
Verd	kinj	yuku	žak ^w _i	yak ^w _a	k ^w _{iya}
Yoso	[k ^w _e [?] e]	žuku	žak ^w _i	žak ^w _a	k ^w _{iža}
Itun	kinj	yuku	yak ^w _i /žak ^w _i	yak ^w _a	k ^w _{iya}
Yolt	kānj	žuku	žak ^w _i	[škaku]	k ^w _{iia}
Yutn	—	yuku	—	—	k ^w _{ia}
Sind	[loko kaa]	žuku	žam ^m _{pi}	[zo [?] o]	k ^w _{ia}
Pied	[ⁿ de [?] e kaa]	žuku	žax ^w _i	žak ^w _a	k ^w _{iža}
Huit	[nē [?] e kaa]	žuku	žax ^w _i	[diñj]/žak ^w _a	k ^w _{iža}
Tlaz	[ⁿ de [?] e]	žuku	žaky	žak ^w _a	k ^w _{ia}

No. Baja	70) feo ugly *kini	71) cerro hill *yuku?	72) armadillo armadillo *yak ^w i?	73) chueco crooked *yak ^w e?	74) año year *k ^w iya
Mont	—	žiko	—	—	k ^w ia
Nuch	kinj	[tì nḡḡ]	žaku	žak ^w a	k ^w ià
Aten	kinj	žuku	žāki	žaku	k ^w ià
Yucq	—	žükü	—	—	k ^w ia
Yucñ	kinj	žuku	te žako	žak ^w a	k ^w ià
Guad	kinj	[lo ⁿ da]	øi yakO	yaku	k ^{wy} āà
Flor	—	žüku	—	—	k ^w ia
Amat	—	žuku	—	—	k ^w ia
Zap	kinj kaa	yuku	yak ^w i/[čiyO]	yak ^w a	k ^w ia
Cac	kinj	žükü	[armadiža]	[žo'a]/žak ^w a	k ^w ia
Ndo	—	[ti ⁿ duu]	—	—	k ^w ia
Ixtp	—	žuku	—	—	k ^w ia
Mic	—	žuku	—	—	ku ⁱ āa
Tepj	[ⁿ je'e]/kinj	yuku	—	yak ^w a	k ^w ia
Cos	kinj	yuku	yak ^w i	yak ^w a	k ^w ia/k ^w iya
Chaz	[ⁿ je'e]/kinj	yuku	[toči]	yak ^w a	k ^w ia
Tot	—	yuku	—	—	k ^w ia
Ton	kinj	yuku	yak ^w i	yak ^w a	k ^w ia
Jer	—	žuku	—	—	k ^w ia
Xay	kīnī	yūkū	yak ^w i	yāk ^w ā	k ^w ià
Tlal	[biāa]	žuku	—	[žo'o]	k ^w ia
Chig	[ni'ya]	yuku	ø ^y ak ^w ā	yak ^w a	k ^w iya

So. Baja	70) feo ugly *kini	71) cerro hill *yuku?	72) armadillo armadillo *yak ^w i?	73) chueco crooked *yak ^w e?	74) affo year *k ^w iya
Ayut	kinj	i ^h kū?	yak ^w i?	yā ^h k ^w ā?	k ^w iya
Yolx	kinj	yuku	yak ^w i	[yo?o]/yak ^w a	k ^w ia
Alac	kinj	yuku	yak ^w i/ d ^y ak ^w i	yak ^w á	k ^w iya
Metl	kīnī	—	yāk ^w i	—	—
Coi	kīnj	yūkú	yāk ^w à	yāk ^w á	k ^w iya
Pera	kinj	[ko? do] yuku=bosque	žak ^w i	žak ^w a	k ^w ia
Cuat	kinj nī kaa	yuku	yak ^w i?	yak ^w a	k ^w iya
Cah	kinj kaa	yuku	yak ^w i	ⁿ d ^y ak ^w a	k ^w iya
Alco	kinj	iku	yak ^w i	ⁿ d ^y ak ^w a	k ^w iya
Cruz	kinj	yuku	yak ^w i	yak ^w a	k ^w iya
Durz	kinj	žīkī	žak ^w i	žak ^w a	k ^w ia
Teco	kīnj	žákà	žak ^w i	žak ^w a	k ^w ia
Juxt	kinj	žuku	žak ^w i/yak ^w i	žak ^w a	k ^w ia
ChaP	—	žuku	—	—	k ^w ia
Yuco	kīnī	žūkú	žāk ^w í	žāk ^w á	k ^w ià
Mix	kinj	žūkū	žak ^w i/yak ^w i	yaka	k ^w ia
Tejc	—	yuku	—	—	k ^w ia
Rey	kinj kaa	žuku =loma	žākū	žak ^w á	koia/kuia
TlaM	—	žuku	žākī	[čī kava]	—
SilP	—	žūkū	—	—	k ^w ia
IxpN	kinj	žuku	žaku	žak ^w a	k ^w ižà
Silm	kinj kaa	yukū (fiy?y)	žaku	[nə kaba]	k ^w iya
TamS	kinj	žūkū	žaku	kāvà žāk ^w á	k ^w ià
Ahue	kinj	žuku	[ta? ⁿ da]	žak ^w a	k ^w ià
Mor	kinj	yūkū	tā yakà	[yo?o]	k ^w ia

Costa	70) feo ugly	71) cerro hill	72) armadillo armadillo	73) chueco crooked	74) año year
P-Mixtec	*kifi	*yuku?	*yak ^w i?	*yak ^w e?	*k ^w iya
Zac	kinj kaa	yuku?	zak ^w i?	yak ^w a?	k ^w iya
Sayu	kifi	yuku	yak ^w i	yak ^w a	k ^w iya
Tept	kinj	yuku	yak ^w i	yak ^w a	k ^w iya
Atoy	kinj	yuku	yak ^w i	yak ^w a	k ^w iya
Jicy	kinj kaa	yuku	yak ^w i	yak ^w a	k ^w iya
Jict	kinj	yuku	yak ^w i	yak ^w a	k ^w iya
PinN	[ⁿ dasi]/kinj (behavior)	yuku/zuku	yak ^w i	yak ^w a	k ^w ia
PinL	[ⁿ dasi]/kinj	yuku	yak ^w i	yak ^w a	k ^w iya
Colo	kifi	yuku	yak ^w i	yak ^w a	k ^w iya
Nuti	—	yuku	—	—	k ^w iya
Ixty	kinj	yuku	yak ^w i	yak ^w a	k ^w iya
Cris	—	zuku/ ⁿ juku	—	—	k ^w iya
Lor	kifi kaa	yuku	yak ^w i	yak ^w a	k ^w iya
Mech	kifi	yuku	yak ^w i	yak ^w a	k ^w iya
Huaz	kifi	yuku	yak ^w i	yak ^w a	k ^w iya
Jam	kifi kaa	yuku	yak ^w i	yak ^w a	k ^w iya
Chay	kifi	yuku	yak ^w i	yak ^w a	k ^w iya
ChayC	[kuš-i-ka]/kene (lugar) =filthy	yuku	yak ^w i	yak ^w a	k ^w iya
ChayD	kifi	yuku	yak ^w i	yak ^w a	k ^w iya
Tut	kifi	yuku	yak ^w i	yak ^w a	k ^w iya
Acat	[ⁿ dasi]/kifi	yuku	yak ^w i	yak ^w a	k ^w iya

	75) ceja eyebrow	76) pus pus	77) demonio demon	78) amarillo yellow	79) coser sew	564
NE Alta	*sɨk ^W a?	*lak ^W a?	*k ^W i?na	*k ^W aʒ	*ku ɨku	
P-Mixtec						
Tepo	ɛuk ^W a	ⁿ dak ^W a	ɲu?u k ^W i(?)na	k ^W ʒʒ	kiku	
Tida	[te?u]	ⁿ dak ^W a	[ɲʒ ɛu?u]/k ^W i?nʒ	k ^W ʒʒ	kiku	
Til	[te?u]	ⁿ dak ^W a	k ^W i?nʒ	k ^W ʒʒ	kiku	
Diux	—	ⁿ dak ^W a	—	k ^W ʒʒ	ⁿ giku	
Nuxi	iɛi ɛuka	ⁿ dak ^W a	[xaka k ^W ika]	k ^W ʒʒ	kiku/tiku	
Nuxa	ɛuka	ⁿ dak ^W a	(kiti) k ^W i?nʒ	k ^W ʒʒ	kiku	
TamJ	ɛuxu/[iɛi Nnʒʒ]	ⁿ dak ^W a	i x ^W i?nʒ	x ^W ʒʒ	kiku	
Yuta	—	ⁿ dak ^W a	—	k ^W ʒʒ	tiku	
Pefio	ɛɨk ^W á	ⁿ dak ^W a	k ^W i?nʒ	k ^W ʒʒ	tɨkù	
Este	ɛik ^W a	ⁿ dak ^W a	[ɲʒ ɛu?u]/ sa k ^W i?nʒ	k ^W ʒʒ	ⁿ daa tik ^W i	
Cui	—	ⁿ dak ^W a	—	x ^W ʒʒ	kiku	
Soso	—	—	—	—	—	
Jalt	—	ⁿ dak ^W a	—	k ^W ʒʒ	kiku	
Adeq	—	ⁿ dak ^W a	—	k ^W ʒʒ	kiku	
Cant	—	ⁿ dak ^W a	—	k ^W ʒʒ	—	
Lobo	ɛuk ^W a	—	[xa?biçil]	—	tiku	
Ynam	—	—	—	—	—	
Soy	ɛuk ^W a	ⁿ dak ^W a	sa ka ki?ya	k ^W ʒʒ	nʒ keku	
Chic	ɛuk ^W a	ⁿ rak ^W a	sa ka ki?ya	k ^W ʒʒ	nʒ keku	
Ixtl	ɛuk ^W a	ⁿ dak ^W a	sa ka k ^W i?ya	k ^W ʒʒ	kiku	
Apas	ɛuk ^W a	ⁿ dak ^W a	sa ka k ^W i?ya	k ^W ʒʒ	kiku	
Apoa	ɛuk ^W a	ⁿ dak ^W a	k ^W i?ya	k ^W ʒʒ	kiku	
Ndua	—	ⁿ dak ^W a	—	k ^W ʒʒ	kiku	
Joco	ɛuk ^W a	ⁿ dak ^W a	—	k ^W ʒʒ	nʒ kiku	
Cuya	[ɛɨkɨ wi?i stuu]	ⁿ dak ^W a	k ^W i?nʒ/[ɲʒ ɛu?u]	k ^W ʒʒ	ka nʒ kuku	
Cuau	[iɛi susi?]	ⁿ dak ^W a	k ^W i?nʒ/[ɲʒ ɛu?u]	k ^W ʒʒ	ka nʒ kiku	
Coat	e ɛuk ^W a	ⁿ dak ^W a	[la ku?u]	k ^W ʒʒ	kikɨ/kiku	

Cen. Alta	75) ceja eyebrow *sɨk ^W aʔ	76) pus pus *lak ^W aʔ	77) demonio demon *k ^W iʔna	78) amarillo yellow *k ^W aʒ	79) coser ⁵⁶⁵ sew *ku iku
P-Mixtec					
Ñumi	suk ^W a	n ⁿ dak ^W a	[tač̣i]/k ^W iʔna =ladrón	(xa) k ^W aʒ	kiku
Achi	suk ^W a	lak ^W a	k ^W iʔna =ladrón	k ^W aʒ	kiku
Yuca	[iʃi skiti nyu]	n ⁿ dak ^W a	[tač̣i]/te k ^W iʔna	k ^W aʒ	(nʒ) kiku
Peña	—	n ⁿ dak ^W a	—	k ^W aʒ	kiku
Tata	—	n ⁿ dak ^W a	—	k ^W aʒ	kiku
Teit	[diki teʔwa]	n ⁿ dak ^W a	[tač̣i]/k ^W iʔna =bandit	k ^W aʒ	kiku
Moli	suk ^W a	lak ^W a	k ^W iʔna	k ^W aʒ	kiku
Sinc	—	—	—	k ^W aʒ	kiku
Tlac	suk ^W a	n ⁿ dak ^W a	[ŋiʔŋiʒ]	xa k ^W aʒ	kiku
Ndi	—	n ⁿ dak ^W a	—	k ^W aʒ	kiku
Ndac	—	n ⁿ dak ^W a	—	k ^W aʒ	kiku
Oco	suk ^W a	ntak ^W a	[táč̣i]	k ^W aʒ	kikū
Prog	—	[n ⁿ diʔi]	—	k ^W aʒ	n ⁿ g ^W iku
Yuci	suk ^W a-ō	n ⁿ g ^W a	[táč̣i]	k ^W aʒ	kikū-xū
Nuyo	suk ^W a	n ⁿ g ^W a	[táč̣i]	k ^W aʒ	kikū-ū
Atat	[ihi tɨ nuy]	lak ^W a	tač̣i k ^W iʔna	k ^W aʒ	kiku
Mig	sukā	lak ^W a	k ^W iʔna/[tač̣i ŋáá]	xa k ^W aʒ	kiku
Chal	suka	lak ^W a	k ^W iʔna	k ^W aʒ	kiku
Verd	suk ^W a	n ⁿ dak ^W a	k ^W iʔna	k ^W aʒ	iku
Yoso	suk ^W a	lak ^W a	[xa uʔu]/k ^W iʔna =ladron	k ^W aʒ	kiku
Itun	suk ^W a	lak ^W a	[ye iʔbi]/ŋa k ^W eʔyi	k ^W aʒ	iku
Yolt	suka	lak ^W a	[xaʔuʔbi]	k ^W aʒ	k ^W iki
Yutn	—	n ⁿ dak ^W a	—	[x ^W ij]	kiki
Sind	[nɛɛ]/[ayu ⁿ]	—	k ^W iʔna	k ^W aʒ	kiku(i)
Pied	[idi n ⁿ diki teʔwe]	n ⁿ dak ^W a	x ^W iʔna	x ^W aʒ	kiki
Huit	diki dɨx ^W a	n ⁿ dak ^W a	x ^W iʔna	x ^W aʒ	n ⁿ g ^W iki
Tlaz	duk ^W a	n ⁿ dak ^W a	te k ^W iʔna/[ŋa duʔu]	k ^W aʒ	tik ^W i

No. Baja	75) ceja eyebrow *sik ^w a?	76) pus pus *lak ^w a?	77) demonio demon *k ^w i'na	78) amarillo yellow *k ^w ag	79) coser sew *ku iku
Mont	—	ⁿ dak ^w a	—	k ^w ag ⁿ	kiki
Nuch	šiku nyu	ⁿ dako	tà k ^w i'ng	k ^w ag	tiki
Aten	šukai	ⁿ dak ^w a	ti k ^w i'ng	k ^w ag	'a kiko
Yucq	—	ⁿ daku	—	k ^w ag	kiki
Yucff	[?ihfi kî lo'lo]	ⁿ dako	k ^w i'na =thief	k ^w ag	kiki
Guad	[?iš lo'lo]	ⁿ dako	k ^w i'na	k ^w ag	[ng ka'mg]
Flor	—	[si pushy]	—	k ^w ag	[ka'mi]
Amat	—	ⁿ dak ^w a	—	k ^w ag	kiki
Zap	aiky	ⁿ dak ^w a	te k ^w i'ng	k ^w ag	kiku
Cac	[lekq]	ⁿ dak ^w a	k ^w ena =ladrón	k ^w ag	kikü
Ndo	—	ⁿ dak ^w a	—	k ^w ag	kiku
Ixtp	—	ⁿ dak ^w a	—	k ^w ag	kiku
Mic	—	ⁿ dak ^w a	—	k ^w ag	tiku
Tepj	ai ^w a	ⁿ dak ^w a	te k ^w i'ng	k ^w ag	kiku
Cos	ai ^w a	ⁿ dak ^w a	te k ^w i'ng	k ^w ag	kiku
Chaz	ai ^w a	ⁿ dak ^w a	te k ^w i'ng =ladrón	k ^w ag	kiku
Tot	—	ⁿ dak ^w a	—	k ^w ag	kiku
Ton	ai ^w a	ⁿ dak ^w a	te k ^w i'ng	k ^w ag	kiku
Jer	—	ⁿ dak ^w a	—	k ^w ag	kiku
Xay	ai ^w a	ⁿ dak ^w a	k ^w i'ng	k ^w ag	kiku
Tlal	[iäi nyu]	ⁿ dak ^w a	te k ^w i'ng	k ^w ag	kiku
Chig	(iäi) ai ^w a	ⁿ dak ^w a	te k ^w i'ng =ladrón	k ^w ag	kiku

So. Baja	75) ceja eyebrow	76) pus pus	77) demonio demon	78) amarillo yellow	79) coser sew
P-Mixtec	*sik ^W a?	*lak ^W a?	*k ^W i'na	*k ^W aʒ	*ku kku
Ayut	isi' šik ^h W a?	ⁿ dak ^W ā?	[te kɨnɨ kuu?]	k ^W əʒ	[nə ^h kũ]
Yolx	šik ^W ə	ⁿ dak ^W a	ta k ^W i'ne	k ^W əʒ	kiku
Alac	isi sik ^W a	—	—	k ^W əʒ	kuku
Metl	šik ^W à	—	—	k ^W əʒ	—
Coi	šik ^W á	ⁿ dāk ^W à	k ^W i'ne	k ^W əʒ	kíku
Pera	sì k ^W áá	ⁿ daAk ^W a	rà k ^W i'ne	k ^W əʒ	kuUku
Cuat	sik ^W a	lak ^W a	[timɨʒ]/k ^W i'ne	k ^W əʒ	kuku
Cah	sek ^W ə	lak ^W a	[ti neʒə]/ta k ^W i'ne =ladrón	k ^W əʒ	kuku
Alco	šik ^W a	lak ^W a	[timɨʒ]/ta k ^W i'ne =ladrón	k ^W əʒ	kiku
Cruz	sik ^W a	lak ^W a	[ne neʒə]/ne k ^W i'ne (ne) k ^W əʒ	k ^W əʒ	kuku
Durz	šik ^W a	ⁿ dak ^W a	k ^W i'ne	k ^W əʒ	kíkí
Teco	šik ^W a	ⁿ dak ^W a	k ^W i'ne	k ^W əʒ	kiki
Juxt	šik ^W a	ⁿ dak ^W a	[t ^v i meʒə]/k ^W i'ne =ladrón	k ^W əʒ	kiku
ChaP	—	[ne te'i]	—	k ^W əʒ	kiku
Yuco	šik ^W á	lāk ^W á	[tácí]/tā k ^W i'ne	k ^W əʒ	kíkū-ne
Mix	šik ^W a	ⁿ dak ^W a	ⁿ di k ^W i'ne	k ^W əʒ	kiku
Tejc	—	ⁿ dak ^W a	—	k ^W əʒ	kiku
Rey	šik ^W a	ⁿ dāk ^W à	k ^W i'ne	k ^W əʒ	kiki
TlaM	—	—	k ^W i'ne	—	—
SilP	—	ⁿ dako	—	k ^W əʒ	kükü
IxpN	šik ^W a	ⁿ dāk ^W à	[ne kɨnɨ]	k ^W əʒ	kiki
SilM	[θata neʒ]	ⁿ dak ^W a	[ta neʒə]/ta k ^W i'ne =ladron	k ^W əʒ	kükü
TamS	[ne nɨy]	ⁿ dako	k ^W i'ne	k ^W əʒ	kuku
Ahue	[?iθi nyu]	ⁿ dak ^W a	k ^W i'ne	k ^W əʒ	kiki
Mor	[iši nyu]	ⁿ dak ^W a	ta k ^W i'ne =ladrón	k ^W əʒ	kuku

Costa	75) ceja eyebrow	76) pus pus	77) demonio demon	78) amarillo yellow	79) coser sew
P-Mixtec	*sɨk ^w aʔ	*lak ^w aʔ	*k ^w iʔna	*k ^w aʒ	*ku iku
Zac	suk ^w aʔ	lak ^w aʔ	[ra suʔu]/k ^w iʔnaʒ?	k ^w ʒʒ	[na taa]/kiku =draw
Sayu	suk ^w a	ⁿ dak ^w a	k ^w iʔna	k ^w ʒʒ	[ⁿ di taa]
Tept	suk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	kiku
Atoy	sik ^w a	lak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	kiku
Jicy	suk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	kiku
Jict	suk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	kiku
PinN	(iʃi) suk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	kiku
PinL	suk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	kiku
Colo	suk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	kiku
Nuti	—	ⁿ dak ^w a	—	k ^w ʒʒ	kiku
Ixty	sɨk ^w a	lak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	kiku
Cris	—	lak ^w a	—	k ^w ʒʒ	kiku
Lor	sɨk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	kiku
Mech	suk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	kiku
Huaz	sik ^w a	ⁿ dak a	k ^w iʔnaʒ	k ^w ʒʒ	kiku
Jam	sɨk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	kiku
Chay	suk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	[ⁿ dɨk ^w ɨ]
ChayC	[iʃi nyu]	ⁿ dak ^w a	k ^w iʔnaʒ/[sɨʃi ɬaʔa]	k ^w ʒʒ	[ⁿ dek ^w e]
ChayD	θuk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	[ⁿ dɨk ^w ɨ]
Tut	suk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	[ⁿ dɨk ^w ɨ]
Acat	suk ^w a	ⁿ dak ^w a	k ^w iʔnaʒ	k ^w ʒʒ	[ⁿ dɨk ^w ɨ]

	NE Alta	80) va a cargar will carry	81) aquel that	82) abajo below	83) toda la noche all night	84) caliente hot
P-Mixtec	*ku iso	*yuku a	*nino	*niyu	*i'ni?	569
Tepo	k ^w iáo	yuk ^w a	nini	nif ^w yu/nif ^w yu- ⁿ du	i'ni	
Tida	wa áa k ^w iáo	žuk ^w a	—	nju	i'ni	
Til	k ^w iáo	ixa	[kyny]	nju	i'ni	
Diux	k ^w iáo	ixa	—	—	—	
Nuxi	k ^w iáo	yuka/žuka	[ta čiši]	n ^š ni'ny	i'ni	
Nuxa	k ^w iáo	žuka	[čiši]	nif ^w yu	i'ni	
TamJ	k ^w iáo	žaxa	[tiši]	n ^š nju	i'ni	
Yuta	k ^w iáo	-xa	—	—	—	
Peño	k ^w iáo	žaka	niny	n ^w ju	i'ni	
Este	k ^w iáo	žaka	[ⁿ ji'i]	n ^š nju	i'ni	
Cui	k ^w iáo	žux ^w a	—	—	i'ni	
Soso	—	—	—	—	i'ni	
Jalt	k ^w iáo	žuk ^w a	—	—	—	
Adeq	k ^w iáo	žuka	—	—	—	
Cant	k ^w iáo	žuk ^w a	—	—	—	
Lobo	—	—	—	ni nju	i'ni	
Ynam	—	—	—	—	—	
Soy	k ^w iáo	šga/šyu	[xa'a]	nif ^w a	i'ni	
Chic	k ^w iáo	suk ^w a	—	nif ^w yu	i'ni	
Ixtl	k ^w iáo	žuk ^w a	niny	nif ^w yu	i'ni	
Apas	k ^w iáo	suk ^w a	niny	nif ^w yu	i'ni	
Apoa	k ^w iáo	xuk ^w a	[ny'y/ti ko'o]	nif ^w yu	i'ni	
Ndua	k ^w iáo	(xu)k ^w a	—	—	—	
Joco	(áa) k ^w iáo	suk ^w a	nino	ne nif ^w yu	i'ni	
Cuya	k ^w iáo	i ^h ka	—	n ^š nif ^w yu	i'ni	
Cuau	k ^w iáo	i ^h ka	—	nif ^w yu nif ^w yu	i'ni	
Coat	k ^w iáo	ika	—	nif ^w yu	i'ni	

Gen. Alta	80) va a cargar	81) aquel	82) abajo	83) toda la noche	84) caliente
	will carry	that	below	all night	hot
P-Mixtec	*ku iso	*yuku ʒ	*nino	*niyu	*iʔniʔ
Ñumi	k ^W iso	ʒuu	[ⁿ de ʔee]	ɲyɲe	iʔni
Achi	xiso	ʒukʒ	[xaʔi]	[xa k ^W aa]	iʔni
Yuca	k ^W iso	ʒuk ^W ʒ	—	niɲy	iʔni
Peña	ku ⁿ diso	ʒukʒ	—	—	—
Tata	k ^W iðo	(i) ⁿ ga	—	—	—
Teit	ku diðo/k ^W iðo	ʒukʒ	[kʔʔni kʒaŋ]	niɲy	iʔni
Moli	ku ⁿ soo	ʒukʒ	[čii]	[xa kiʔvi] =nighttime	iʔni
Sinc	[kaʒil]	ʒaku/ʒukʒ	—	—	—
Tlac	k ^W iso	ʒukʒ	[içi ʔee]	ni niɲy	iʔni
Ndi	k ^W iso	ʒukʒ	—	—	—
Ndac	k ^W iso	ɲyukʒ	—	—	—
Oco	k ^W isõ	ɲyuk ^W ʒ	[ʔiçi véé]	niɲy	ʔiʔni
Prog	[sa ⁿ du]	ɲyuk ^W ʒ/yuk ^W ʒ/ʒuwa	—	—	—
Yuci	k ^W isõ-xõ	yuk ^W ʒ	[čixi]	[ⁿ dāká yak ^W áá]	ʔiʔni
Nuyo	k ^W isõ	yuk ^W ʒ	[čixi]	nɲ niɲy	ʔiʔni
Atat	ko ⁿ diso	yuk ^W ʒ	[(içi) veʔzi]	niɲy	xɲiʔni
Mig	ku ⁿ diso	ʒyʒ	—	niɲy	niʔni
Chal	ku ⁿ diso	myʒ	—	niɲy	niʔni
Verd	(kiʔi) ko ⁿ so	yuk ^W ʒ	[čixi]	niɲy	iʔni
Yoso	[ka kiʔi]/ku ⁿ diso	ʒukʒ	—	[ɲy kati]	niʔni
Itun	kusa	yuk ^W ʒ	[ʔeyi]	niɲy	iʔni
Yolt	ki ko ⁿ diso	ʒuk ^W ʒ	[ⁿ de ʔee]	niɲy ni	niʔni
Yutn	k ^W iðo	xʒ(ʒ)	—	—	—
Sind	k ^W iðo	ʒaa	[čii]	(ɲʒ) niy	iʔni
Pied	k ^W iðo	dexʒ	[čii]	niɲy	iʔni
Huit	k ^W iðo	ʒaxʒ	[čixi]	ⁿ ja niyu/ ⁿ ja niɲy	iʔi
Tlaz	k ^W iðo	ʒakʒ	—	niy	iʔni

No. Baja	80) va a cargar will carry	81) aquel that	82) abajo below	83) toda la noche all night	84) 'caliente hot
P-Mixtec	*ku iso	*yuku ʒ	*nino	*niyu	*i'niʔ
Mont	ko ⁿ diho	ʒika	—	—	—
Nuch	ⁿ deho	ʒiká	niny	[ⁿ dihg ni k ^w aa]	i'niʔ
Aten	[ⁿ d ^y o'o]/k ^y oho	hi ⁿ ka	niny	nij/Eniyu ʒaa]	i'niʔ
Yucq	ku ⁿ d ^y oho	(i)ka	—	—	—
Yucñ	k ^y oho	káa	čí ninyò	[fiyu ʒaka]	i'niʔ
Guad	ⁿ dziəo	káa/yiko	ninyù	nij yaa	i'niʔ
Flor	[ngʔə]	^r ka(a)	—	—	—
Amat	k ^w əʔə k ^w iəo	-xə	—	—	—
Zap	ng k ^w iəo	yik ^w ə	niny	[fiyu]	i'niʔ
Cac	(ko) ⁿ diəo	kaa	ninyo	[fiyo]	ini
Ndo	kuso	fiyə/zyə	—	—	—
Ixtp	čiəo/ku ⁿ jiəo	(žu)ka	—	—	—
Mic	ku ⁿ jiəo	-xə	—	—	—
Tepj	k ^w iəo	yukə	[tišil]	nifju	i'niʔ
Cos	ku ⁿ siəo	yuk ^w ə	[tišil]	nifju	i'niʔ
Chaz	k ^w iəo	yuk ^w ə	—	(i) nifju	i'niʔ
Tot	ku ⁿ čiəa	yukə	—	—	—
Ton	ku ⁿ siəa	yukə	[tišil]	nij yaka	i'niʔ
Jer	ku ⁿ siəa	-xə(ə)	—	—	—
Xay	k ^w iəə/kū ⁿ siəə	yuká/kāá/xəə ninyù =aquel/there/here	ninyù	[fiyù]	i'niʔ
Tlal	əa k ^w iəo	ika	[nyu fiy'yu]	[ibi fiyu]	[ng ⁿ jii-ai]
Chig	əa k ^w iəa	[šij]	—	[ij wi fiyu]	i'niʔ

So. Baja	80) va a cargar will carry	81) aquel that	82) abajo below	83) toda la noche all night	84) caliente hot
P-Mixtec	*ku iso	*yuku a	*nino	*niyu	*i'ni?
Ayut	k ^w iso	[fŋəʔ]	[ⁿ d ^y əny]	nɪfŋ	i'ni?
Yolx	k ^w iso	ikə	[ⁿ di'a fny]	[ⁿ disa fny]	ni'ni
Alac	k ^w iso	yuk ^v æ /yuku a	nɪnə	—	fɪ'ni
Metl	—	kəə	—	—	—
Coi	k ^w iso	[fŋə]/'ikə	nɪny	nɪfny yaa	'i'ni
Pera	[k ^w ij]	'ikə	nɪnə	[ⁿ ɕi fny]	'i'ni
Cuat	si k ^w iso	[fŋə]	nɪnə	nɪfŋ	fɪ'ni
Cah	[sa kaa]	kə	nɪnə	nɪfŋ	fɪ'ni
Alco	k ^w eso	ikə	nɪnə	nɪfny	i'ni
Cruz	k ^w iso	xəə	nɪnə	[fny]	i'ni
Durz	k ^w iso	čikə	či nɪny	nɪny ʒaa	'i'ni
Teco	k ^w iso	'ikən	nɪny	fɪfny ʒaa	'i'ni
Juxt	ku k ^w iso	ikə	nɪny	nɪfny	i'ni
ChaP	k ^w iso	kaa	—	—	—
Yuco	kōsō-nə	[fŋə]	[či vāá]	ⁿ dūvɪ nɪfŋ	ʒi'ni
Mix	ku ⁿ giso	ikə	nɪny	nɪfny	i'ni
Tejc	—	(i)kə	—	—	—
Rey	sa kuso	'ikə	či nɪnə	nɪfny ʒaa	nɪ'ni
TlaM	—	—	—	[čɪni sik ^w aa]	'i'ni
SilP	k ^w iko	-kə	—	—	—
IxpN	ha k ^w iho	'ikə	nɪnə	[ⁿ čivi ʒaa]	'i'ni
SilM	koθo	kəə	nɪny	[fny]	i'ni
TamS	k ^w iθo	kāā ʒikə	nɪny	[ⁿ dɪθa šik ^w aa]	'i'ni
Ahue	k ^w iθo	kāā	nɪnə	[ⁿ d ^y əni fny]	'i'ni
Mor	k ^w a k ^w iso	kaa	nɪny	[ⁿ dia šik ^w a]	i'ni

Costa	80) va a cargar will carry	81) aquel that	82) abajo below	83) toda la noche all night	84) caliente hot
P-Mixtec	*ku iso	*yuku ə	*nino	*niyu	*i'niʔ
Zac	k ^W iso	ikə	niny	nifju	niʔni
Sayu	k ^W iso	ikə	—	nifju	iʔfi
Tept	k ^W iso	ikə	—	nifju	iʔni
Atoy	k ^W iso	ikə	—	nifju	iʔni
Jicy	k ^W iso	ikə	niny	nifju	iʔni
Jict	k ^W iso	ikə	niny	nifju	iʔni
PinN	k ^W iso	ikə	niny/[ⁿ daʃu]	nifju/[ča k ^W aʔa]	iʔni
PinL	k ^W iso	ikə	niny	nifju	iʔni
Colo	k ^W iso	ikə	niny	fiʃju	iʔni
Nuti	k ^W a k ^W iso	ikə	—	—	—
Ixty	kiso	yuk ^W ə	[yɪi ʃju]/niny	[ʃju]	fiʔni
Cris	k ^W a k ^W ičo	(i)kə	—	—	—
Lor	k ^W iso	ikə	ifi nyu	fiʃju	iʔfi
Mech	k ^W iso	yuk ^W ə	nino	—	iʔfi
Huaz	k ^W iso	yuk ^W ə	[yuu]	—	iʔfi
Jam	k ^W iso	yuk ^W ə	[(it ^v i) yubi]	[ⁿ di ʃju]	iʔfi
Chay	k ^W iso	yuk ^W ə	niny	[fiʃku]	iʔni
ChayC	k ^W a k ^W iso	yuk ^W ə	[iči ʃuu]	[fiʃka k ^W ii]	iʔfi
ChayD	[ⁿ diθo]	yuk ^W ə	[ʃuu]/nino	[fi yaka]	iʔfi
Tut	k ^W iso	yuk ^W ə	[ʃuu]	—	iʔfi
Acat	k ^W iso	yuk ^W ə	[ʃuu]	—	iʔni

NE Alta P-Mixtec	85) maíz grain of *noni?	86) pared wall *nawə	87) temprano early *ne?e	88) abierto open *nune?	89) ocho eight *one
Tepo	nuni	nama	(ⁿ da na?a-ni)	nuna	una
Tida	nyni	nəwə/[sa?a]	ne?e	nynə	ynə
Til	nyni	nəmə	ne?e	nynə	ynə
Diux	nyni	[še be?e]	tnə ne?e	[ⁿ ta?u]	ynə
Nuxi	nyni	[nə ti?bi- ⁿ do]	ne?e/[ⁿ də?Nne]	[ⁿ ʃii]	ynə
Nuxa	nyni	[še?e we?e]	ne?e	[ⁿ ʃii]	ynə
TamJ	nyni	[ⁿ do?o]	ne?e	(ta) nynə	ynə
Yuta	nyni	[ⁿ dika]	[dəNne]	[ⁿ da kəə]	ynə
Peffo	nyni	[žəkə (nə?ə)be?e	nə?e	nynə	?ynə
Este	nyni	[ⁿ ʃika]	nə?e	[ⁿ ʃii]/nynə	ynə
Cui	nyni	—	nə?ə	[ⁿ dika]	ynə
Soso	—	—	—	—	—
Jalt	nyni	[ⁿ do?o]	[də?nə/də?tnə]	[kəə]	ynə
Adeq	nyni	—	[dəNne]	[kəə]	ynə
Cant	nyni	[paree]	—	[kəə]	ynə
Lobo	nyni	—	[ⁿ də?nə]	nəə	—
Ynam	nyni	—	—	—	—
Soy	nəni	[ⁿ ʃika]/[xaa]	[datnə]	nynə	əə/ynə
Chic	nyni	[ⁿ ʃika]	[əə?ə]	nynə	ynə
Ixtl	nyni	[ⁿ ʃika]	[əata]	nynə	ynə
Apas	nyni	či nəm	[əə?ə]	nynə	ynə
Apoa	nyni	[sa?a]	nə?ə	nynə	ynə
Ndua	nyni	[pared]	[əə? sa]	[kəə]	ynə
Joco	nyni	[ⁿ ʃika]	[ⁿ ze?e əə ?ə]	[ⁿ ʃii]	ynə
Guya	nyni	[ⁿ do?o]	[əete]/[te waa]	[ka ⁿ dii]	ynə
Cuau	nyni	[ⁿ do?o]	[te waa ?i]	[ⁿ dii]	ynə
Coat	nyni	[ⁿ do?o]	[te ?ə?i]	[ka ⁿ dii]	ynə

Cen. Alta P-Mixtec	85) maíz grain of corn *noni?	86) pared wall *nawə	87) temprano early *ne?e	88) abierto open *nune?	89) ocho eight *one
Numi	nyni	[ʒika]	ne?e	nynə	ynə
Achi	nyni	nəmə	ne?e	nynə	ynə
Yuca	nyni	nəmə	(ⁿ de) ne?e	nynə/[xəmə]	ynə
Peña	nyni	[ʒika]	ⁿ de ne?e	[xəmə]	ynə
Tata	nyni	nəmə	ⁿ de ne?e	[ⁿ dika]	ynə
Teit	nyni	nəmə	[ⁿ daNneʃ]/ne?e	nynə	ynə
Moli	nyni	nəmə/[ʒika]	ne?e	nynə	ynə
Sinc	nyni	[ʒika]	(ište)ne?e	[ⁿ da?u]	—
Tlac	nyni	nəmə	ne?e	nynə	ynə
Ndi	nyni	[ʒika]	ne?e	[xy?ne]	ynə
Ndac	nyfi	[čita]	te ne?e	[kyni]	ynə
Oco	nyni	nəmə	ne?e	nynə	?unə
Prog	nyni	[no?o]	ne?e (ste)	nynə	ynə
Yuci	nyni	nəmə	ne?e	nynə	?unə
Nuyo	nyni	[?ikà vè?i]	ne?e	nynə	?unə
Atat	nyni	nəmə	ne?e	nynə	ynə
Mig	nyni	nəmə/ =adobe [xikā]	(xa)fiʒ?e	nynə	ynə
Chal	nyni	[xika]	fiʒ?e	nynə	ynə
Verd	nyni	nəmə/[ika]	(xe)ne?e	nynə	ynə
Yoso	nyni	nəmə	fiʒ?e	nynə	ynə
Itun	nyni	nəmə	ne?e	nynə	ynə
Yolt	nyni	[ika]/tə =de adobe nəmə	nəmə fiʒ?e	nynə	ynə
Yutn	nyni	[ye ⁿ do?o]	[ⁿ du be?e]	[xə?ə]	ynə
Sind	nyni	[ze?e ⁿ do?o]	ne?e	nynə	ynə
Pied	nyni	[ⁿ do?o]	ne?e	[ko ⁿ jii]	ynə
Huit	nyni	[ⁿ dika]	ne?e	[ta ⁿ dii]	ynə
Tlaz	nyni	[se tuu]	ne?e	nynə	ynə

No. Baja	85) maíz grain of corn *noni?	86) pared wall *nawə	87) temprano early *ne?e	88) abierto open *nune?	89) ocho eight *one
Mont	nyni	[sa?a be?e]	ta nə?ə	[sonə]	onə
Nuch	n̥n̥i	nəmə	nə?ə	nynu(va)	?̥n̥ə
Aten	nɔni	nəmə/[ⁿ dika]	nə?ə	nynə	?̥n̥ə
Yucq	nyni	nəmə	nə?ə	[ta?u]	ynə
Yucfi	nyni	n̥mə̃	nə?ə	nynu	?̥ynə
Guad	nyni	n̥mə̃	nə?ə	nynə	?̥ynə
Flor	nyni	nəmə	nə?ə	synə	ynə
Amat	nyni	nəmə	fiə?ə	synə	ynə
Zap	nɔni	nəmə	nə?ə	nynə	onə
Cac	nɔni	nəmə	nə(?)ə	nɔnə	onə
Ndo	nyni	ʒika nəmə	xa nə?ə	[ta?u]	ynə
Ixtp	nyni	nəmə	nə?ə	nə kynə	ynə
Mic	nyni	nəmə	fiəə	nə kynə	ynə
Tepj	nyni	nəmə	fiə?ə	nynə	ynə
Cos	nyni	nəmə	fiə?ə	nynə	ynə
Chaz	nyni	nəmə	nə?ə	nynə	ynə
Tot	nyni	[ⁿ ʒika be?e]	nə?ə-ni	[ⁿ datu]	ynə
Ton	nyni	nəmə	nə?ə/[da t ^y əə]	nynə	ynə
Jer	nyni	nəmə	nə?ə	nə kynə	ynə
Xay	n̥n̥i	n̥mə̃	n̥ə?ə̃	n̥n̥ə̃	̥n̥ə̃
Tlal	nyni	—	fiə?ə	nynə	—
Chig	nyni	[n̥ʃke]	[mansk ^w a]	nyni	ynə

Sò. Baja	85) maíz grain of corn *noni?	86) pared wall *nawa	87) temprano early *ne'e	88) abierto open *nune?	89) ocho eight *one
P-Mixtec					
Ayut	nyni	nãma	n ^y ã'ã	nũn ^y ã'	yn ^y ã
Yolx	nyni	[ⁿ dika]	[istãã]	nynã	ynã
Alac	nõni	nãma	[tãã/tnãã]	nõnã	õnã/ynã
Metl	nũni	nãmã	—	—	—
Coi	nũni	nã`mã	nã'ã	nũnã	?ynã
Pera	nyUni	nãAmã	nã'ã	nynã	?õnã
Cuat	nõni	nãma	[štãã]	nynã	õnã
Cah	nõni	nãma	[šì tãã]	nõnã	õnã
Alco	nyni	nãma	[štãã]/nã'ã	nynã	ynã
Cruz	nyni	—	[štãã]	nĩnã	ynã
Durz	nũni	nãmã	nã'wã	nynã	?ynã
Teco	nũni	nãma	nã'ã	nũnã	?ynã
Juxt	nyni	nãma	nã'ã	nynã	ynã
ChaP	nyni	nãma/[ⁿ dika be'e]	nã'ã	[ⁿ daku]	ynã
Yuco	nũni	ⁿ dika nãma =adobe	nã'ã	nũnã-yã	?ũnã
Mix	nyni	nãma	nã'ã	nynã	ynã
Tejc	nyni	[paree]	nã'ã	[ⁿ çõnã]	ynã
Rey	nõni	nãma	nã'ã	nynã/nõnã	?ynã
TlaM	nũni	—	—	nynã	—
SilP	nyni	nãma	nã'ã	nã sunã	ynã
IxpN	nyni	nãma	nã'ã	nynã	?ynã
SilM	nyni	nãma	nã'ã	nynã	ynã
TamS	nyni	nãma	[šì tãã]	ⁿ dĩ kã nynã	?ynã
Ahue	nyni	nãmã	[stãã]	nynũ	?ũnã
Mor	nyni	[ša be'e]	[šì tãã]	nynã	ynã

Costa	85) maíz grain of corn	86) pared wall	87) temprano early	88) abierto open	89) ocho eight
P-Mixtec	*noniʔ	*nawə	*neʔe	*nuneʔ	*one
Zac	nyɲiʔ	nəmə/[čaʔa]	nəʔə(ni) [i koʔo]/nyɲə		ynə
Sayu	nyfi	nəmə	nəʔə(fi)	nyɲə	ynə
Tept	nyɲi	nəmə	nəʔə	nyɲə	ynə
Atoy	nyɲi	nəmə [sa təə]/nəʔə		nyɲə	ynə
Jicy	nyɲi	nəmə/[ⁿ dika]	nəʔə	nyɲə	ynə
Jict	nyɲi	nəmə	nəʔə	nyɲə	ynə
PinN	nyɲi	[ča beʔe]/nəmə	(ⁿ da)nəʔə	nyɲə	ynə
PinL	nyɲi	nəmə	nəʔə	nyɲə	ynə
Colo	nyfi	nəmə	[ha t ^v əə]/nəʔə	nyfiə	ynə
Nuti	nɟfi	[čaʔa]	nəʔə-ri	lyfiə	yfiə
Ixty	nyfi	nəmə	fiəʔə	[ta koʔo]	yfiə
Cris	nyfi	[ⁿ čika]	ti fiəʔə	[ⁿ dika]	yfiə
Lor	nyfi	nəmə/[ⁿ d ^y ika]	fiəʔə	nyfiə	yfiə
Mech	nyfi	nəmə/[čaʔa]	fiəʔə	[ta koʔo]/ta nyfiə	yfiə
Huaz	nyfi	nəmə	[yu kəʔny ka]	nyfiə	yfiə
Jam	nyfi	nəmə/[ča beʔe]	fiəʔə	ta nyfiə	yfiə
Chay	nyfi	nəmə/[ⁿ d ^y ika]	fiəʔə	nyfiə	yfiə
ChayC	nyfi	nəmə/[ⁿ jika beʔe]	fiəʔəni	[ta koʔo]/nyfiə	yfiə
ChayD	nyfi	[ⁿ d ^y ika beʔe]/nəmə	fiəʔə šəə	nyfiə	yfiə
Tut	nyfi	nəmə	fiəʔə/[sa t ^v əə]	nyfiə	yfiə
Acat	nyfi	nəmə	[sa čəə]	nyfiə	yfiə

=techo

=abrir

=pared, lado

NE Alta	90) jitomate tomato	91) ejote green bean	92) mitad half	93) caña cane	94) olla clay pot
P-Mixtec	*tá lana?	* ⁿ diti	*sawa	* ⁿ doo?	*kísi
Tepo	—	ⁿ diči	éava	ⁿ doo	keđe
Tida	ti nąṅ	ⁿ jiči	éawa	ⁿ doo	kiđi
Til	tnąṅ	ⁿ diči	éawa	ⁿ doo	kiđi
Diux	—	—	éawa	ⁿ doo	—
Nuxi	či nąṅ	ⁿ jiči	éaba	ⁿ doo	kiđi
Nuxa	či nąṅ	ⁿ jiči	éawa	ⁿ doo	kiđi
TamJ	tá nąṅ (k ^w eʔe)	ⁿ diči	éawa	ⁿ doo	kiđi
Yuta	—	—	éaba	ⁿ doo	—
Peflo	tá nąṅ	ⁿ jiči	éaba	ⁿ doo	kíđi
Este	tá nąṅ	ⁿ diči	éawa	ⁿ doo	kiđi
Cui	ti loo	—	éawa	ⁿ doo	kiđi
Soso	—	—	—	—	—
Jalt	—	—	éaba	ⁿ doo	—
Adeq	—	—	éaba	ⁿ doo	—
Cant	—	—	éaba	ⁿ doo	—
Lobo	—	—	—	—	—
Ynam	ti nąṅ	—	—	—	kii
Soy	ti nąṅ	ⁿ jiči	éawa	ⁿ doo	keđe
Chic	ti nąṅ	ⁿ jiči	éawa	ⁿ foo	keđe
Ixtl	ti nąṅ	ⁿ jiči	éawa	ⁿ doo	kiđi
Apas	ti nąṅ	ⁿ jiči	éawa	ⁿ doo	kiđi
Apoa	ti nąṅ	čiči	éawa	ⁿ doo	kiđi
Ndua	—	—	éawa	ⁿ doo	—
Joco	ti nąṅ	ⁿ jiči	éawa	ⁿ doo	—
Cuya	trąṅ	ⁿ di ^h ci	éawa	ⁿ doo	kiđi
Cuau	trąṅ	ⁿ di ^h ci	éawa	ⁿ doo	kiđi
Coat	ląṅ/trąṅ	ⁿ diči	éaba	ⁿ doo	kiđi

Cen. Alta	90) jitomate tomate *t̥i lanaʔ	91) ejote green bean * ⁿ diči	92) mitad half *sawa	93) caña cane * ⁿ dooʔ	94) olla clay pot *kisi
P-Mixtec					
Ñumi	ti n̄aŋa	ⁿ diči	sawa	ⁿ doo	kisi
Achi	ti n̄aŋa	ⁿ diči	saba	ⁿ doo	kisi
Yuca	ti n̄aŋa	ⁿ diči	sawa	ⁿ doo	kisi
Peña	—	—	saba	ⁿ doo	—
Tata	—	—	ɛaba	ⁿ doo	—
Teit	ti n̄aŋa	ⁿ diči	ɛawa	ⁿ doo	kidi
Moli	ti n̄aŋa	ⁿ diči	sawa	ⁿ doo	kisi
Sinc	—	—	—	ⁿ doo	—
Tlac	ɛi n̄aŋa	ⁿ diči	saba	ⁿ doō	kisi
Ndi	—	—	saba	ⁿ doo	—
Ndac	—	—	ɛaba	ⁿ doo	—
Oco	t̥i n̄aŋa	ntiči	sāvā	ⁿ t̥oō	kisi
Prog	—	—	saba	ⁿ doo	—
Yuci	t̥i n̄aŋa	n̄iči	sāvā	n̄oō	kisi
Nuyo	t̥i n̄aŋa	n̄iči	sāvā	n̄oō	kisi
Atat	t̥i n̄aŋa	ⁿ diči	sawa	ⁿ doō	kisi
Mig	t̥i n̄aŋa k ^w áʔá	ⁿ diči	sawa	ⁿ doō stilá	kisi
Chal	t̥i n̄aŋa	ⁿ diči	saba	ⁿ doo	kisi
Verd	t̥i n̄aŋa	ⁿ diči	saba	ⁿ doo	kisi
Yoso	t̥i n̄aŋa	ⁿ diči	saba	ⁿ doo	kisi
Itun	t̥i n̄aŋa	ⁿ diči	saba	ⁿ doo	kisi
Yolt	t̥i n̄aŋa	ⁿ diči	saba	ⁿ doo	kisi
Yutn	—	—	ɛaba	ⁿ doo	—
Sind	t̥i ɛaŋa	ⁿ jiči	ɛawa	ⁿ doo	kidi
Pied	t̥i ɛaŋa	ⁿ jiči	ɛawa	ⁿ doo	kidi
Huit	ti n̄aŋa	ⁿ diči	ɛawa	ⁿ doo	kidi
Tlaz	t̥i n̄aŋa	ⁿ jiči	ɛawa	ⁿ doo	kidi

No. Baja	90) jitomate tomato *tɛ́ lanaʔ	91) ejote green bean * ⁿ diti	92) mitad half *sawa	93) caña cane * ⁿ dooʔ	94) olla clay pot *kɛ́sɛ́
Mont	—	—	hába	ⁿ doo	—
Nuch	tì nɔ́nɔ́ nɔ́ʔny	ⁿ diči	[nɔ́ʔny]/hába	ⁿ dòò	kìhì
Aten	ti nɔ́nɔ́ nɔ́ʔnɔ́	ⁿ diči	háva	ⁿ dòò	kìhì
Yucq	—	—	—	ⁿ doo	—
Yucñ	ti nɔ́nɔ́ k ^w aʔa	ⁿ diči	háwa	ⁿ dòò	kihi
Guad	ɛ́i nɔ́nɔ́ nɔ́ʔny	ⁿ diči	ɛ́awa	ⁿ dòò	kìɛ́i
Flor	—	—	ɛ́aba	ⁿ doo	—
Amat	—	—	ɛ́aba	ⁿ doo	—
Zap	ɛ́i nɔ́nɔ́	ⁿ siči	ɛ́awa	ⁿ doo	kìɛ́i
Cac	ti nɔ́nɔ́ (nɔ́ʔny)	ⁿ diči	ɛ́aba	ⁿ doo	kìɛ́i
Ndo	—	—	saba	ⁿ doo	—
Ixtp	—	—	ɛ́aba	ⁿ doo	—
Mic	—	—	ɛ́aba	ⁿ doo	—
Tepj	si nɔ́nɔ́	ⁿ diči	ɛ́awa/[la taʔwi]	ⁿ dòò	kìɛ́i
Cos	si nɔ́nɔ́	ⁿ jiči	ɛ́awa/[ɛ́a tiʔwi]	ⁿ doo	kìɛ́i
Chaz	ɛ́i nɔ́nɔ́	ⁿ jiči	ɛ́awa/[i taʔwi]	ⁿ doo	kìɛ́i
Tot	—	—	ɛ́aba	ⁿ doo	—
Ton	si nɔ́nɔ́	ⁿ jiči	[ɛ́a taʔwi]/ɛ́awa	ⁿ doo	kìɛ́i
Jer	—	—	ɛ́aba	ⁿ doo	—
Xay	sì nɔ́nɔ́	ⁿ jiči	ɛ́ɛ́vā	ⁿ dòò	kìɛ́i
Tlal	—	—	ɛ́aba	ⁿ doo	—
Chig	ɛ́i nɔ́nɔ́	[ⁿ duči yute]	ɛ́awa	ⁿ doo	kìɛ́i

So. Baja	90) jitomate tomato *tì lana?	91) ejote green bean * ⁿ diti	92) mitad half *sawa	93) caña cane * ⁿ doo?	94) olla clay pot *kìsì
Ayut	ti nãṅ?	ⁿ diči	tã [?] vi? sava	ⁿ doo?	kisi
Yolx	ti nãṅ	ⁿ diči	sawa	ⁿ doo	kisi
Alac	ti nãṅ	ⁿ diči	—	ⁿ doo	kìsì
Metl	—	ⁿ diči	—	—	kìsì
Coi	tì nãṅ	ⁿ diči	sava	ⁿ dòó	kìsì
Pera	çi nãṅ	ⁿ ciči	sava	ⁿ dòò	kìsì
Cuat	ti nãṅ çã ⁿ gi	ⁿ diči	sawa	ⁿ dòò	kisi
Cah	ti nãṅ k ^w a'a	ⁿ diči	sawa	ⁿ dòò	kisi
Alco	ti nãṅ (ⁿ dèè)	ⁿ diči	sawa	ⁿ doo	kisi
Cruz	ti nãṅ	ⁿ diči	sawa	ⁿ dòò	kisi
Durz	çi nãṅ	ⁿ ciči	sava/[fãṅ [?] ny]	ⁿ doo	kisi
Teco	çi nãṅ	ⁿ ciči	[fãṅ [?] ny]	ⁿ doo	kìsì
Juxt	t ^y i nãṅ	ⁿ diči	sawa	ⁿ doo	kisi
ChaP	—	—	saba	ⁿ doo	—
Yuco	tì nãṅ ⁿ dá'yá	ⁿ dì'çi	sāvā ⁿ dàà	ⁿ dòó	kìsì
Mix	ti nãṅ	ⁿ d ^y it ^y i	saba	ⁿ doo	kisi
Tejc	—	—	saba	ⁿ doo	—
Rey	çi nãṅ ⁿ ci'e	ⁿ ciči	sava	ⁿ dòò	kìsì
TlaM	—	—	sava	—	kìsì
SilP	—	—	θaba	ⁿ doo	—
IxpN	çi nãṅ (ⁿ ca'za)	ⁿ diči	hava/[fãṅ [?] nj]	ⁿ dòò	kìhì
SilM	ti nãṅ	ⁿ diči	θaba	ⁿ doo	kiθi
TamS	ti nãṅ ṅ [?] ny	ⁿ diči	θava	ⁿ dòò	kìθì
Ahue	tì nãṅ k ^w a'a	ⁿ diči	θava	ⁿ doo	kìθì
Mor	ti nãṅ k ^w a'a	ⁿ diči	haba	ⁿ doo	kisi

Costa P-Mixtec	90) jitomate tomato *t̄i n̄aŋ?	91) ejote green bean * ⁿ diti	92) mitad half *sawa	93) cana cane * ⁿ doo?	94) olla clay pot *k̄is̄i
Zac	ti n̄aŋ?	[ⁿ duti? yuta]	saba	ⁿ doo?	kisi
Sayu	ti n̄aŋ	[ⁿ dut ^y i yuta]	sawa	ⁿ doo	kisi
Tept	ti n̄aŋ	[ⁿ duti yuta)	sawa	ⁿ doo	kisi
Atoy	ti n̄aŋ	[ⁿ duti]	sawa	ⁿ doo	kisi
Jicy	ti n̄aŋ	[ⁿ duti]	saba	ⁿ doo	kisi
Jict	ti n̄aŋ	ⁿ diti	saba	ⁿ doo	kisi
PinN	ti n̄aŋ	ⁿ diti	saba	ⁿ doo	kisi
PinL	t̄i n̄aŋ	ⁿ diti	saba	ⁿ doo	k̄is̄i
Colo	t̄i n̄aŋ	ⁿ d ^y it ^y i	saba	ⁿ doo	k̄is̄i
Nuti	—	—	saba	ⁿ doo	—
Ixty	t̄i n̄aŋ	ⁿ d ^y it ^y i	saba	ⁿ doo	k̄is̄i
Cris	—	—	čaba	ⁿ doo	—
Lor	t̄i n̄aŋ	ⁿ d ^y it ^y i	sawa	ⁿ doo	k̄is̄i
Mech	t̄i n̄aŋ	ⁿ d ^y it ^y i	sawa	ⁿ doo	k̄is̄i
Huaz	t̄i n̄aŋ	ⁿ d ^y it ^y i	sawa	ⁿ doo	k̄is̄i
Jam	t̄i n̄aŋ	ⁿ d ^y it ^y i	saba	ⁿ doo	k̄is̄i
Chay	t̄i n̄aŋ	ⁿ d ^y it ^y i	sawa	ⁿ doo	[k̄iȳi]/k̄is̄i =casita:
ChayC	te n̄aŋ/t̄i n̄aŋ	ⁿ d ^y ič̄i	—	ⁿ dòò	kese
ChayD	ti n̄aŋ	ⁿ d ^y it ^y i	aba	ⁿ doo	k̄iθ̄i
Tut	t̄i n̄aŋ	ⁿ d ^y it ^y i	sawa	ⁿ doo	k̄is̄i
Acat	t̄i n̄aŋ	ⁿ j̄ič̄i	sawa	ⁿ doo	k̄is̄i

NE Alta	95) aguardiente liquor	96) miel honey	97) sobaco armpit	98) espiga tassel	99) gente people
P-Mixtec	* ⁿ dīsi	* ⁿ dusi	*leʔyiʔ	*yokoʔ	*yę yiwáʔ
Tepo	ⁿ dēdi =bebida	ⁿ dūdi	daʔi	yoko	ñę yevi
Tida	ⁿ dīdi	ⁿ dūdi	ci deʔe =miel, leche	žoko	ñę žiwi
Til	ⁿ dīdi	ⁿ dūdi	čīs deʔe	žoko	ñę žiu
Diux	[ag ^w ard ^y ente]	ⁿ dūdi	deʔe	—	ñę žiu
Nuxi	ⁿ dīdi	ⁿ jūdi/ ⁿ d ^y ūdi	leʔe	žoko	a žibi
Nuxa	ⁿ dīdi	ⁿ d ^y ūdi	leʔe	žoko	a žiwi
TamJ	ⁿ dīdi	ⁿ dūdi	leʔe	žoko	ñę žiwá
Yuta	ⁿ dīdi	ⁿ dūdi	či leʔe	—	ñę žibi
Pefio	ⁿ dīāi	ⁿ dūāi	číí lēʔē	[žetè]/žòkò	ñę žīu
Este	ⁿ dīdi	ⁿ dūdi	či leʔe	žoko	ñę žiwá
Cui	ⁿ dīdi =tepache	ⁿ dūdi	či leʔe	—	njiwi
Soso	—	—	—	žoko	—
Jalt	[ag ^w ard ^y ente]	ⁿ dūdi	ti deʔye	—	ñę žibi
Adeq	[ag ^w ard ^y ente]	ⁿ dūdi	ti deʔe	—	ñę žii
Cant	—	ⁿ dūdi	ti deʔñy	—	ñę žibi
Lobo	—	ⁿ dūdi	ti deʔe	žoko	ñę žebi
Ynam	—	ⁿ dūdi	—	—	—
Soy	ⁿ dēde kīsi	ⁿ dūdi	ti deʔe	žókó	ñę žewe
Chic	ⁿ rēde kīsi =pulque	ⁿ rūdi	tika deʔe	žoko	ñę žiwi
Ixtl	ⁿ dīdi =pulque	ⁿ dūdi	ti deʔe	žókó	ñę žii
Apas	ⁿ dīdi =pulque	ⁿ dūdi	tika daʔwi	žoko	ñę žii
Apoa	ⁿ dīdi =pulque	ⁿ dūdi	tika daʔbi	žoko	ñę žii
Ndua	[awardyente]	ⁿ dūdi	stika da	—	ñę žii
Joco	—	ⁿ dūdi	tiki deʔe	yoko	ñę yii
Cuya	ⁿ dīdi	ⁿ dūdi	mę diʔi	yoko	ñęʔę
Cuau	ⁿ dīdi =tepache	ⁿ dūdi	mę diʔi	yoko	ñęʔę
Coat	ⁿ dīdi	ⁿ dūdi	mę diʔi	[šoʔo]	ñęʔę

	Cen. Alta 95) aguardiente liquor P-Mixtec * ⁿ diši	96) miel honey * ⁿ duši	97) sobaco armpit *le'yi'	98) espiga tassel *yoko'	99) gente people *yę y'wı'	585
Ñumi	[te še'e]/ ⁿ diši =pulque	ⁿ duši	či še'e	žoko	ñę žiu	
Achi	ⁿ diši	ⁿ duši	—	žoko	ñę žibi	
Yuca	ⁿ diši =pulque	ⁿ duši	či še'e	žoko	ñę žibi/ñę žiwi	
Peña	ⁿ diši	ⁿ duši	či še'e	—	ñę žibi	
Tata	[ag ^w ard ^y ente]	ⁿ duđi	či de'e	—	ñę žiu	
Teit	ⁿ diđi	ⁿ duđi	či de'e	šoko	ñę šiwi	
Moli	ⁿ diši =tepache	ⁿ duši ñyñy	—	žoko	ñę živi	
Sinc	ⁿ diši	ⁿ duši	či še'e	—	ñę žibi/žiu	
Tlac	ⁿ jiši	ⁿ duši	či še'e	žoko	ñę žibi	
Ndi	[žute šęę]	ⁿ duši	či še'e	—	ñę žibi	
Ndac	[ag ^w ard ^y ente]	ⁿ duši	či še'e	—	ñę yibi	
Oco	ⁿ diši	ntuši	čixi še'e	žoko	ne ivi	
Prog	[g ^w ard ^y ente]	nyši	či še'e	—	ñibi	
Yuci	[ⁿ dute šęę]/ ⁿ diši	nyši	či se'e	yokō	nyvı'	
Nuyo	ⁿ diši	nyši	či se'i	žokō	ñıwı'	
Atat	ⁿ diši	ⁿ duši	či se'ye	žoko	ñę yuu	
Mig	ⁿ diši	ⁿ duši	či se'e	žoko	ñę živi	
Chal	[ⁿ duča šęę]/ ⁿ diši	ⁿ duši	či se'e	žoko	ñę žiu	
Verd	[te k ^w ixi]/ ⁿ diši =trago	ⁿ duši	či sei	yoko	ñę yibi	
Yoso	ⁿ diši	ⁿ duši	či se'e	žoko	žıwı'	
Itun	ⁿ diši	ⁿ duši	čixi se'ye	yoko/žoko	ñę yıwı'	
Yolt	ⁿ diši	ⁿ duši	či se'e	žoko	ñę žibi	
Yutn	[g ^w ard ^y ente]	ⁿ duđi	či de'i	—	ñę žiu	
Sind	ⁿ diđi	ⁿ duđi	či de'e	žoko	ñę žiu	
Pied	ⁿ diđi =mezcal	ⁿ duđi	či de'e	žoko	ñę žıwı'	
Huit	ⁿ diđi	ⁿ duđi	či de'e	žoko	žıwı'	
Tlaz	ⁿ diđi	ⁿ duđi	či le'e	žoko	ñę žıwı'	

No. Baja	95) aguardiente liquor * ⁿ diši	96) miel honey * ⁿ dusi	97) sobaco armpit *le?yi?	98) espiga tassel *yoko?	99) gente people *yę y <i>ı</i> wı?
Mont	[ⁿ dut ^y a]	[<i>ɲyɲy</i>]	se?e	—	ɲę žibi
Nuch	[ⁿ d ^y üt ^y a]	[<i>ɲyɲy</i>]	tiši le?e	ti žoko (?iti)	nę živi
Aten	ⁿ diši	[<i>ɲyɲy</i>]	še?e	tīð yókō	?a živi
Yucq	[g ^w a ^ɲ ie ⁿ ti] =pulque	ⁿ duhi	ti še?e	—	ɲę žibi
Yucñ	—	[<i>ɲyɲy</i>]	tiši he?e	žōkō	ɲę živi
Guad	[ⁿ dzut ^y a]	[<i>ɲyɲy</i>]	le?li	điki yoko	?a yivi
Flor	[ⁿ jiča/ ⁿ düča]	[<i>ɲyɲy</i>]	le?la	—	a žibi/a yibi
Amat	[ⁿ ji ^y uča]	[<i>ɲyɲy</i>]	le?e	—	nę ?ibi
Zap	[ⁿ d ^y ute]/ ⁿ sidi	[<i>ɲyɲy</i>]/ ⁿ d ^y uđi	čiko le?e	yoko	nę ?iwi
Cac	[ⁿ dute ini]/ ⁿ diđi =pulque	—	(či) de?e (ti) žoko	—	ɲę ibi
Ndo	diši =pulque	ⁿ duši	či le?e	—	ɲę žii
Ixtp	[ⁿ dute i?ni]	[<i>ɲyni</i>]	čika lee	—	nę ?ibi
Mic	[ⁿ dute i _ı ni]	[<i>ɲyɲy</i>]	čika le?e	—	nę ?ibi
Tepj	[ⁿ dute]/ ⁿ siđi	[<i>ɲyɲy</i>]/ ⁿ duđi	čika le?e	yoko	nę ?iwi
Cos	ⁿ siđi =tepache	ⁿ duđi	čika le?e	yoko	nę ?iwi
Chaz	—	ⁿ duđi	čika le?e	yoko	ni iwi
Tot	[ⁿ dute i?ni]	ⁿ duđi	čika le?e	—	nę ?ibi
Ton	[ⁿ dute i?ni]/ ⁿ siđi	ⁿ duđi/[<i>ɲyɲy</i>]	či(ka) le?e	yoko	nę ?iwi
Jer	[ⁿ dute i?ni]	ⁿ duđi	či le?e	—	nę ?ibi
Xay	[ⁿ dütè i?ni]/ ⁿ siđi	[<i>ɲyɲy</i>]	čikà lé?è	—	nę i _ı vı
Tlal	ⁿ duđi =tepache	[biđi]	sa?a	—	ni?bi
Chig	ⁿ duđi	ⁿ duđi	čiši de?e	yókó	ni?wi

So. Baja	95) aguardiente liquor	96) miel honey	97) sobaco armpit	98) espiga tassel	99) gente people
P-Mixtec	* ⁿ dīsi	* ⁿ dūsi	*leʔyiʔ	*yokoʔ	*yɛ yáwiʔ
Ayut	ⁿ dīsi	[ɲyɲyʔ]	šeʔe	yō ^h koʔ	nɲa yiviʔ/ nɲ yiviʔ
Yolx	[ⁿ duteʔnī]/ ⁿ dīsi	[ɲyɲy]/ ⁿ dūsi	šeʔe	yoko	nɲi
Alac	ⁿ dīsi	[ɲɔɲɔ]	—	yoko	nɲi
Metl	—	—	—	—	yūúbi
Coi	ⁿ dīsi	[ɲyɲy]	šeʔle	yōkó	ɲɛ yūví
Pera	ⁿ cīsi	[ɲyUɲy]	cīsi šeʔe	žokō	ɲɛ žíviʔ
Cuat	ta ⁿ dīsi	[ɲyɲy]	šeʔe	yoko	[nɲʔɛ]
Cah	ⁿ dīsi	[nɔnɔ]	seʔe	yokɔ	nɲi
Alco	ⁿ dīsi	[ɲyɲy]	tīsi šeʔe	yoko	yuwi
Cruz	[ⁿ dutiʔnī]/ ⁿ dīsi =pulque	[ɲɔɲɔ]	—	yoko	yivi
Durz	ⁿ cīsi	ⁿ dūsi	šúʔù	žoko	nɲ živi
Teco	ⁿ d ^y īsi	ⁿ dūší	šēʔè	žoko	nɲ žíbi
Juxt	ⁿ dīsi =pulque	ⁿ dūsi	t ^y i šeʔe	žoko	nɲ žibi
ChaP	ⁿ dīsi =pulque	ⁿ dūsi	heʔe	—	ɲɛ žubi
Yuco	[vāré ⁿ dè]/ ⁿ dīsi =pulque	ⁿ dūšì	tīsi šēʔè	žokó	[nɲʔɛ]
Mix	[bare ⁿ je]/ ⁿ dīsi =pulque	ⁿ dūsi	ti šeʔe	yoko	nɲi
Tejc	[bare ⁿ ce]	ⁿ dūsi	ti šeʔe	—	nɲi
Rey	[baʔe ⁿ ce]	ⁿ dūsu	cīsi šeʔe	žokò	ɲɛ žuu
TlaM	—	ⁿ dūšì	tīsi šeʔe	žoko	nɲ žívi
SilP	[(ba)rie ⁿ di]	[ɲyni]	tisi leʔe	—	ɲɛ žibi
IxpN	—	[ɲyɲy]	cīsi šeʔe	žoko	živi
SilM	[bare ⁿ de]/ ⁿ dīθi =pulque	[ɲyɲy]	tīsi leʔe	tiki yoko	ɲɛ žibi
TamS	ⁿ dīθi	[ɲyɲy]	tixi θeʔe	t ^y a žoko	ɲɛ živi
Ahue	ⁿ dīθi	[ɲyɲy]	tīsi θeʔe	tiko žoko	nɲ živi
Mor	ⁿ dīsi	[ɲyɲy]	ti(xi) deʔe	tia yoko	ɲɛ yibi

Costa	95) aguardiente liquor	96) miel honey	97) sobaco armpit	98) espiga tassel	99) gente people
P-Mixtec	* ⁿ diši	* ⁿ duši	*leʔyiʔ	*yokoʔ	*yę yíwíʔ
Zac	ⁿ diši =tepache	ⁿ duši	ti šeʔe	yokoʔ	fiʃiʔ
Sayu	ⁿ diši	ⁿ duši	šeʔe	yókó	fiʃwi
Tept	ⁿ diši	ⁿ duši	tiči šeʔe	yòkò	fiʃmi/fiʃwi
Atoy	ⁿ diši	ⁿ duši	či šeʔe	yoko	fiʃwi
Jicy	ⁿ diši	ⁿ duši	či šeʔe	yoko	fiʃbi
Jict	ⁿ diši	ⁿ duši	šeʔe	yoko	fiʃbi
PinN	ⁿ diši	[fiʃfiʃ]	ti šeʔe	yoko	fiʃbi
PinL	ⁿ diši	[fiʃfiʃ]/ ⁿ duši	šeʔe	yoko	fiʃ yíbi
Colo	ⁿ diši	ⁿ duši	tʲi šeʔe	yoko	fiʃ yíbi
Nuti	ⁿ dʲiši	ⁿ duši	tʲiči šeʔe	—	fiʃwi/fiʃfi
Ixty	ⁿ diši	ⁿ duši	ča šeʔe	yoko	fiʃ yíbi
Cris	ⁿ dišči	ⁿ duši	šeʔe	—	fiʃ jíwí
Lor	ⁿ diši	ⁿ duši	čaʔa šeʔe	yoko	fiʃ yíwí
Mech	ⁿ diši	[fiʃfiʃ]/ ⁿ duši	šeʔe	yókó	fiʃ yívi
Huaz	ⁿ diši	[ⁿ dutʲa fiʃfiʃ]	tʲiči šeʔe	yoko	fiʃ yíwí
Jam	ⁿ diši	[tʲa fiʃfiʃ]/ ⁿ dušu	šeʔe	yoko	fiʃ yíbi
Chay	ⁿ diši	ⁿ duši =de caffa	čaʔa šeʔe	yoko	fiʃ yíwí
ChayC	ⁿ diši	[čiʔi fiʃfiʃ]/[ⁿ duši] = ⁿ duši=melado	sa šeʔe	yoko	fiʃ yebe
ChayD	ⁿ diši	[tʲaʔi fiʃfiʃ]/ ⁿ duši = ⁿ duši=melado	saʔa šeʔe	yoko	fiʃ yíbi
Tut	ⁿ diši	[fiʃfiʃ]	šeʔe	yoko	fiʃ yíwí
Acat	ⁿ diši	[fiʃfiʃ]	ti šeʔe	yoko	fiʃ yíwí

NE Alta	100) pueblo town	101) humo smoke	102) comer eat	103) gavilán hawk	104) verdad truth
P-Mixtec	*yuy	*yu'wə	*xexi'	*tasu'	* ⁿ dixe
Tepo	fiyu	fiy'mə	sasi	[əj'fɨ]	ⁿ disa
Tida	fiyu	fiy'ə	saa	taəy/[ti əj'ə]/[ⁿ daa]/ ⁿ jisa	
Til	fiyu	fiy'ə	šaši	[əj'ə]/taəy	ⁿ diša
Diux	fiyu	fiy'ə	šasi	=águila	—
Nuxi	fiyu	fiy'mə	šesi/s ^v esi	[əj'ə]/[fɨmi]	[xa ⁿ daa]
Nuxa	fiyu	fiy'mə	šəsi	taəy/[yami]	[xa ⁿ daa]/ ⁿ jise
TamJ	fiyu	fiy'mə	žasi	[əj'fɨ]/[ža'a]	[ⁿ daa]/ ⁿ diše
Yuta	fiyu	fiy'mə	šəsi	—	—
Peflo	fiyū	fiy'mə	šəšī`	[əj'ə]/taəy	[ⁿ dáa]/ ⁿ dīsà
Este	fiyu	fiy'mə	saši	[ža'a]/[əj'ə]/taəy	ⁿ disa
Cui	fiqo	fiy'mə	šasa	águila/gavilán/gavilucha	—
Soso	—	—	—	—	—
Jalt	fiyu	fiy'ə/yu'mə	[šəj]/saši	—	—
Adeq	fiyu	fiy'y	sa(xi)	—	—
Cant	fiyu	fiy'ə	sa(sa)	—	—
Lobo	fiyu	fiy'y	xaši	—	—
Ynam	—	—	—	—	—
Soy	fiqo	fiq'mə	xaa	[əj'fɨ]/taəy	[ⁿ daa]/ ⁿ jisa
Chic	fiyu	fiy'mə	saa	[əj'fɨ]/taəy	[ⁿ faa]/ ⁿ jisa
Ixtl	fiyu/fiyu	fiy'mə	saa	[əj'fɨ]/taəy	[sa ⁿ daa]/ ⁿ jisa
Apas	fiyu	fiy'mə	sa(ča)	[əj'fɨ]/taəy	ⁿ jisa/[sa ⁿ daa]
Apoa	fiyu	fiy'mə/fiy'mə	šasi	[əj'ə]/[ža'a]/taəy	ⁿ zisa
Ndua	fiyu	fiy'mə/fiy'mə	sas/saši	—	—
Joco	fiyu	fiy'mə	saši	[əj'fɨ]/taəy	ⁿ jisa
Cuya	fiyu	fiy'mə	ka yexi	taəy	[ⁿ daa]/ ⁿ dixe
Cuau	fiyu	žy'mə	ka žexi	taəy	[ⁿ daa]/ ⁿ dix ^v e
Coat	fiyu	y'mə	kaši	taəy	[ⁿ daa]

Gen. Alta	100) pueblo town	101) humo smoke	102) comer eat	103) gavilán hawk	104) verdad truth
P-Mixtec	*yuu	*yu'we	*xexi'	*tasu'	* ⁿ dixe
Ñumi	ñuu/ŷuu	ŷu'ə	xaa	[šj'ə]/tasu	ⁿ dixa
Achi	ñuu	ñu'mə	xaa	[šj'ŋə]/[ŋəmj]	[ka ⁿ daā]
Yuca	ñuu	ñu'mə	xaxi	[ŋəmj]/[šj'ŋə]/tasu	ⁿ dixa
Peña	ñuu	ñu'mə	xaa(ti)	—	—
Tata	ñuu	ñu'mə	šei/šai	—	—
Teit	ñuu	ñu'mə	žexi	[əj'ŋə]/taəy/ [za'a]	[ⁿ daa]/ ⁿ dix ^v a
Moli	ñuu	ñu'mə	xaa	tasu	ⁿ dixa
Sinc	—	ñu'mə	xaši	—	—
Tlac	ñuu	ñu'mə	xaa	[šj'ŋə]/[čioko]	ⁿ dixa
Ndi	ñuu	ñu'mə	xaa(ti)	—	—
Ndac	ñuu	ñu'mə	[ⁿ ʃati]	—	—
Oco	ñuū	ñu'mə	žaxi	[žā'a]/tāsū =halcón	ntixa
Prog	ñuu	žə'mə	ŋaxi	—	—
Yuci	ñuū`	ñu'mə	yāxi-xi	[šj'ŋə]/tāsū/ čii žā'a=zopilote grande	[nəš nəš]
Nuyo	ñuū	ñu'mə	yāxi	[šj'ŋə]/tāsū	[yənəw]
Atat	ñuu	ñu'mə	yéxi	[šj'ŋə]	[ⁿ daa]
Mig	ñuū	ñu'mə	yee/kaxi	[šj'ə]/tasu =halcón	[ⁿ daa]
Chal	ñuu	ñu'mə	žee	[šj'ə]/tasu	ⁿ dia/ ⁿ dixa
Verd	ñuu	ñu'mə/ŷu'mə	exi	[šj'ŋə]/tasu =halcón	[xe ⁿ daa]/ ⁿ dixe
Yoso	ñuu	ñu'mə	žaxi	[šj'yə]/tasu =halcón	[xa ⁿ daa]/ ⁿ diša
Itun	ñuu	ñu'mə	yexi	[šj'ŋə]/tasu =águila	[tu ⁿ daa]/ ⁿ dix ^v e
Yolt	ñuu	ñu'mə	žasi/yaši	[šj'ŋə]/[ž'a'a] =gavilán =águila	ⁿ dišə ^ŋ
Yutn	ñuu	ñu'mə	yee/žee	—	—
Sind	ñuu	ñu'mə	žee(i)	[əj'ə]/[ž'a'a]/taəy	[ⁿ daa]
Pied	ñuu	ñu'mə	ko žexi	[əj'ŋə]/[ž'a'a]/taəy =águila	[ⁿ daa]
Huit	ñuu	ñu'mə	ŋexi	[əj'ŋə]/[ž'a'a]/taəy =águila	ⁿ dix ^v e
Tlaz	ñuu	ñu'mə	šəsi	[ž'a'a]/[əj'ə]/taəy	ⁿ dise

No. Baja	100) pueblo town	101) humo smoke	102) comer eat	103) gavilán hawk	104) verdad truth
P-Mixtec	*yuy	*yu'wə	*xexi'	*tasu'	* ⁿ dixe
Mont	ñuy	ñi'mə	[si s ^y ə'ə]	—	—
Nuch	ñuy	ñi'mə	šiši [ʰdì šə'ə/tí žə'ə]	[ñə ⁿ dàə]	
Aten	ñuy	ni'mə	[si s ^y ə'ə]	[šə'ə/kiri ža'a]	[ñə ⁿ daa]
Yucq	ñuy	ñi'mə	saxi/səsi	—	—
Yucñ	ñuy	ñy'mə	[səə/sa sə'ə]	tahi ya'a	[ñə ⁿ dàə]
Guad	ñuy	ñi'mə	sisi/sasi	[ša'a]	[ñə ⁿ daa]
Flor	ñuy	—	sasi	—	—
Amat	ñuy	ño'mə	saši	--	—
Zap	ñoo	ño'mə	šiši [çi əi'ə]/çi taəi	[ⁿ daa]/ ⁿ s ^y isa	
Cac	ñoo	ni' ⁱ mə	šiša	[ža(ʔ)a]	ⁿ disa
Ndo	ñuy	ñy'ə	xaa	—	—
Ixtp	ñuy	ñy(ʔ)mə	saši	—	—
Mic	ñuy	ñymə	saši	—	—
Tepj	ñuy	ñy'mə	šiši	[si əi'ə]	[ⁿ daa]/ ⁿ disa
Cos	ñuy	ñy'mə	šiši	taəu	[ⁿ daa]/ ⁿ disa
Chaz	ñuy	ñy'mə	xixi	[çi əi'ə]/taəy	[ⁿ daa]/ ⁿ disa
Tot	ñuy	ny'mə	saši	—	—
Ton	ñuy	ñy'mə	saši	[si čilu]/taəy	[ⁿ daa]
Jer	ñuu	ñu'ma	—	—	—
Xay	ñȳ	ñy'mə	saxi/xixi (fruit, meat/beans, tortillas)	taəu	ⁿ disá
Tlal	ñuy	ñy'mə	šigi	taəu	—
Chig	ñuy	ñy'mə	šiši	taəy	[ⁿ daa]

So. Baja	100) pueblo town	101) humo smoke	102) comer eat	103) gavilán hawk	104) verdad truth
P-Mixtec	*yuy	*yu'wɛ	*xexi'	*tasu'	* ⁿ dixe
Ayut	ɲuy	ɲy'mɛ	šiši'/?šəsi' (tortillas/not)	tāsu'	ⁿ diša
Yolx	ɲuy	yu'mɛ	ɲə sisi	tasu	ⁿ diša
Alac	ɲoɔ	yɪ'mɛ/ɲi'mɛ	šəsi	tasi ya'a	ⁿ diša
Metl	—	ɲy'mɛ	šəsi	—	—
Coi	ɲuy	ɲy'mɛ	šiši	tāsɥ/[šɪ'ɪɔ]	ⁿ diša
Pera	ɲuy	'ɪ'mɛ	šiši	tasi/[šɪ'ɲɔ]	[ⁿ daa]
Cuat	ɲoɔ	ɲi'mɛ	šiši	[šɪ'ɲɔ]	ⁿ diša
Cah	ɲoɔ	ɲi'mɛ	šiši	[šɪ'ɲɔ]/tasi('ɪ) (/ya'a)	[ɲɔ ⁿ daa]/ ⁿ diša
Alco	ɲuy	ɪ'mɛ	šiši	tasu/[šɪ'ɲɔ]	ⁿ diša
Cruz	ɲoɔ	ɪ'mɛ	šiši	[šɪ'ɲɔ]/tasu	[ⁿ daa]/ ⁿ diša
Durz	ɲuy	ɲy'mɛ	[šɪ sɔ'ɔ]	tasi/[šɔ'ɔ]	ⁿ cisa
Teco	ɲyɥ	ɲy'mɛ	[šɪ sá'a-ɾa]	[šɔ'ɔ]/[ɲɔɔ]	ⁿ cisa
Juxt	ɲuy	ɲy'mɛ	[šiša]	[šɪ'ɔ]	[miɔ ⁿ daa]
ChaP	ɲuy	ɲy'mɛ	[šɪ sɔ'ɔ]/kaši	—	—
Yuco	ɲyɥ	ɲy'mɛ	[ʔí syá'a-dà]	[šɪ'ɲɔ]/ [žɛ'á]	[ⁿ dàà]/ ⁿ dišyá
Mix	ɲuy	ɲy'mɛ	[tʲi tʲa'a/ ku sɔ'ɪ]	[šɪ'ɔ]	[ⁿ daa]
Tejc	ɲuy	ɲy'mɛ	ⁿ daɕi/kaɕi	—	—
Rey	ɲuy	ɲi'mɛ	[šɪ ša'a]	[čɪ žá'a]	ⁿ diša
TlaM	—	ɲy'mɛ	—	—	[ⁿ dàà]
SilP	ɲuy	ɲi'mɛ	saši	—	—
IxpN	ɲuy	ɲi'mɛ	[si sʲɔ'ɔ]	[šɪ'ɔ]	ⁿ dišà
SilM	ɲoɔ/ɲuy	ɲi'mɛ	[šɪ sɔ'ɔ]	[ⁿ di θɪ'ɔ/ ɲy]	[ⁿ daa]
TamS	ɲuy	ɲi'mɛ	šixi	[ⁿ di θʲɔ'ɔ]	[ɲɔ ⁿ daa]
Ahue	ɲuy	ɲi'mɛ	šiši	[la θʲɔ'ɔ/ ɲɔɔ]	[ⁿ dàà]
Mor	ɲuy	ɲi'mɛ	šiši	[ⁿ di si'ɔ]	—

Costa P-Mixtec	100) pueblo town *yuy	101) humo smoke *yu'wɛ	102) comer eat *xexi'	103) gavilan hawk *tasu'	104) verdad truth * ⁿ dixa
Zac	ñuy	yɥ'mɛ/ñuy'mɛ	čăci'	tasu'	ⁿ dixa
Sayu	ñuy	ñuy'mɛ	čăci	tasu	ⁿ dixa
Tept	ñuy	ñuy'mɛ	čăci	tasu	ⁿ dixa
Atoy	ñuy	yɥ'mɛ	čăci	tasu	[ⁿ daa]/ ⁿ dixa
Jicy	ñuy	yɥ'mɛ	čăci	tasu	ⁿ dixa
Jict	ñuy	yɥ'mɛ	čăci	tasu	ⁿ dixa
PinN	ñuy	yɥ'mɛ/ ⁿ zuy'mɛ	čăci	tasu	ⁿ dixa
PinL	ñuy	yɥ'mɛ	čăci	tasu	ⁿ dixa
Colo	ñuy	yɥ'mɛ	čăci	tasu	ⁿ d ^y ixa
Nuti	ñuy	ñuy'mɛ	čăci	—	—
Ixtɥ	ñuy	ñuy'mɛ	čăci	tasu	ⁿ dixa/[ⁿ daa]
Cris	ñuy	ñuy'mɛ	čăci	—	—
Lor	ñuy	yɥ'mɛ	čăci	tasɨ	ⁿ d ^y ixa
Mech	ñuy	ñuy'mɛ	čăci	tasu	ⁿ dixa
Huaz	ñuy	yɥ'mɛ	čăci	tasu	ⁿ dixa
Jam	ñuy	ñuy'mɛ	čăci	tasu	ⁿ dixa
Chay	ñuy	ñuy'mɛ	čăci	tasu	ⁿ dixa
ChayC	ñuy	ñuy'mɛ	săsi	tasu	(sa) ⁿ disa
ChayD	ñuy	ñuy'mɛ	sasi	taθu	sa ⁿ disa
Tut	ñuy	ñuy'mɛ	čăci	tasu	ⁿ dixa
Acat	ñuy	ñuy'mɛ	sasi	tasu	ⁿ disa

NE Alta P-Mixtec	105) lumbre fire *yu'y	106) seis six *iyo	107) uña fingernail *tiyi'	108) rastrojo cornstalk *yawa'	109) masa cornmeal *yuxe'
Tepo	ñy'y	ifio	tnɛɛ/tnij	ñɛmɛ	yusɛ
Tida	ñy'y	ifñy	ti tnij	ñɛwɛ	žusɛ
Til	ñy'y	i(y)y	tnɛññi	ñɛmɛ	žusɛ
Diux	ñy'y	ifñy	tnɛññi	—	yusɛ
Nuxi	ñy'y	ifñy	tifñi	ñɛmɛ	žusɛ
Nuxa	ñy'y	ifñy	tifñi	ñɛmɛ	žusɛ
TamJ	ñy'y	ifñy	Nnɛññi	ny ñɛmɛ	žusɛ
Yuta	ñy'y	ifñy	Nnɛññi	—	žusɛ
Peño	ñy'y	ifñy	čii`	ñɛmɛ	žusɛ
Este	ñy'y	ifñy	tnɛñny	ñɛmɛ	žusɛ
Cui	ño'o	ifio	ii	—	yasa
Soso	—	—	—	—	—
Jalt	ñy'y	ifñy	tini/ti niññi	—	žusɛ
Adeq	ñy'y	iy	čii	—	yusɛ
Cant	ñy'y	ifñy	čii	—	žusɛ
Lobo	ñy'y	ifñy	čii ⁿ	—	žusɛ
Ynam	—	—	—	—	—
Soy	ño'o	ifio	čii	—	žusɛ
Chic	ñy'y	ifñy/ifñy	ku čii	ñɛmɛ =cañuela	žusɛ
Ixtl	ñy'y	ifñy	čii	ñɛmɛ =cañuela	žusɛ
Apas	ñy'y	ifñy	čii	ñɛmɛ =cañuela	žusɛ
Apoa	ñy'y	ifñy/ifñy	čii	ñɛmɛ/ñɛmɛ	žusɛ
Ndua	ñy'y	ifñy	čii	—	yusa/žusɛ
Joco	ñy'y	ifñy	čii	ñɛmɛ	yusa
Cuya	ñy'y	ifñy	tɛ čii	ñɛmɛ	ñyññɛ
Cuau	ñy'y	ifñy	tɛ čii	žɛmɛ	ñyññɛ
Coat	ñy'y	ifñy	čii	sɛmɛ	usɛ

Gen. Alta	105) lumbre fire *yu'y	106) seis six *iyō	107) uña fingernail *tiyij'	108) rastrojo cornstalk *yawə?	109) masa cornmeal *yuxə?
P-Mixtec					
Ñumi	ñy'y/ŷy'y	ijy/iñy	tnini	ŷamə	žuxə
Achi	ny'y	ijy	tNij	ñamə	žuxə
Yuca	ñy'y	ijy	tnijij	žaka/ñamə	žuxə
Peña	ñy'y	ijy	tnij	—	ñyxə
Tata	ñy'y	ijy	Nnij	—	žuse
Teit	ñy'y	ijy	Nnijñi	ñamə	šunñə
Moli	—	ijy	tNijñi	—	ñyxə
Sinc	ñy'y	ijy	tnij	—	žuxə
Tlac	ñy'y	ijy	tNij	ñamə	žuxə
Ndi	ñy'y	ijy	tij	—	žuxə
Ndac	ñy'y	ijy	tijñi	—	ñyxə
Oco	ñy'y	ijñy	tij	lōkō ñamə	ñyxə
Prog	ñy'y	ijy	tijny	—	ñyñə
Yuci	ñy'y	ijñy	yākē tij	ñamə	ñyxə
Nuyo	ñy'y	ijñy	yākē tij	ñamə	ñyxə
Atat	ñy'y	ijy	Nnij	[ⁿ da yo'o]	ñyxə
Mig	ñy'y	ijy	tijny	[tē ku'lu/ñamə =totomoxtle	yuxə
Chal	ñy'y	ijy	tij	[ⁿ da yo'o/ñamə =hoja	žusə
Verd	ñy'y	ijy	tnij	nu ŷamə/ny ñamə =cañizo	yuxə
Yoso	ñy'y	ijy	Nnyy	[ⁿ da zo'o/ñamə =hojas	žunñə
Itun	ñy'y	ijy	tij	[ⁿ do yo'o/ñamə =hojas	žuxə
Yolt	ñy'y	ijy	tNijñō	ñamə	žusə
Yutn	ñy'y	ijy	ñij	—	ñyñi
Sind	ñy'y	ijy	ñijñij	ñō ñamə	ñyñi
Pied	ñy'y	ijy	ñijñij	ñamə	ñyñi
Huit	ñy'y	ijy	Nijny	ñamə	žux ^y e
Tlaz	ñy'y	ijy	ñij	žaka/ñamə	žuse

No. Baja	105) lumbre fire *ny'u	106) seis six *iyɔ	107) uña fingernail *tiyɨ'	108) rastrojo cornstalk *yawɔ'	109) masa cornmeal *yuxɛ'
Mont	ny'u	iny	čij	—	žusɔ
Nuch	ny'u	?iny	čij	nɛmɛ	žusa
Aten	ny'u	?iy	čij	nɛmɛ	žusa
Yucq	ny'u	iny (bi)	čij	—	yusa
Yucñ	ny'u	?iy	čij	nɛmɛ	žusa
Guad	ny'u	?iny	čij	nɛmɛ	yusa
Flor	ny'u	eny	čij	—	yusa
Amat	ny'u	iny	čij	—	yusɔ
Zap	ny'o	inyo	čij	tu nɛmɛ	yusa
Cac	ny'o(?)	inyo	čij	nɨ nɛmɛ =corn in ear	žusa
Ndo	ny'u	iny	tij	—	žuxɔ
Ixtp	ny'u	iny	čij	—	žusa
Mic	ny'u	iny	čij	—	žusɔ
Tepj	ny'u	iny	čij	tu nɛmɛ	yusa
Cos	ny'u	iny	čij	tu nɛmɛ	yusɔ
Chaz	ny'u	iny	čɛɛ	nɛmɛ	yusɔ
Tot	ny'u	iny	čɛɛ	—	yusɔ
Ten	ny'u	iy/in	čij	tu nɛmɛ	yusɔ
Jer	ny'u	iny	čij ⁿ	—	žusɔ
Xay	ny'u	iny	čij	nɛmɛ	yusɔ
Tlal	ny'u	iny	čiu	[nɛstruxu]	nyusɔ
Chig	ny'u	iny	ci čij	nɛmɛ	nyusɔ

So. Baja	105) lumbr fire	106) seis six	107) una fingernail	108) rastrojo cornstalk	109) masa cornmeal
P-Mixtec	*yu'y	*iyo	*tiyi?	*yawa?	*yuxē?
Ayut	ñū'y	ĩñy	čii?	ñāmq?	iša?
Yolx	ñy'y	ĩñy	čii	yāmq	yusq
Alac	ỹo'o/ño'o	ĩño	čii	ñāmq/ỹāmq	yūša
Metl	—	—	čii	—	—
Coi	ñū'y	?ĩñū	čii	t ^y āmq	yūšq
Pera	ñy'y	?iIñy	čii	ñāAmā	?išq
Cuat	ño'o	ĩño	čii	ñāmq	yūšq
Cah	ño'o	ñiño	čii	ñāmq	yūšq
Alco	ñy'y	ĩñy	čii	ñāmq	išq
Cruz	ño'o	ĩño	čii	ñāmq	yūšq
Durz	ñy'y	?iñy	čii	—	žišq
Teco	ñū'y	?iñū	čii	ñāmq	žūs ^y a
Juxt	ñy'y	ĩñy	čii	ñāmq	žūsa
ChaP	ñy'y	ĩñy	čii	—	žūs ^y a
Yuco	ñū'y	?iñū	tii	tī āmq	?iſyq
Mix	ñy'y	ĩñy	t ^y ii	ñāmq	yuča
Tejc	ñy'y	ĩñy	čii	—	yuča
Rey	ñy'y	?iñy	čii	to ñāmq	žūša
TlaM	—	—	čii	—	žūs ^y a
SilP	ñy'y	ĩñy	čii	—	žūsa
IxpN	ñy'y	?iñū	čii	ñāmq	žūsa
SilM	ño'o	ĩño	čii	ñāmq	yūsa
TamS	ñy'y	?iñy	čii	ñāmq	žūša
Ahue	ñy'y	?iñy	čii	ñāmq	žūša
Mor	ñy'y	ĩño	čii	ñāmq	yūša

Costa	105) lumbr fire	106) seis six	107) uña fingernail	108) rastrojo cornstalk	109) masa cornmeal
P-Mixtec	*yu'y	*iyɔ	*tiyɨ'	*yawɔ'	*yuxɛ'
Zac	ñy'y	ɨñy	tɨi'	ñamɔ'	yučɔ'
Sayu	ñy'y	ɨñy	tʲɨi	ñamɔ	yučɔ
Tept	ñy'y	ɨñy	tɨñi	ñamɔ	yučɔ
Atoy	ñy'y	ɨñy	tɨñi	yamɔ	yučɔ
Jicy	ñy'y	ɨñy	tɨñi	yamɔ	yučɔ
Jict	ñy'y	ɨñy	tɨñy	yamɔ	yučɔ
PinN	ñy'y	ɨñy	tɨñi	če'e/yamɔ =hoja	yuča/žuča
PinL	ñy'y	ɨñy	tɨñy	yamɔ	yuča
Colo	ñy'y	ɨñy	tʲɨñy	yamɔ	yučɔ
Nuti	ñy'y	ɨñy	tʲɨñy	—	yučɔ
Ixty	ñy'y	ɨñy	tʲɨi	ñamɔ	yučɔ
Cris	ñy'y	ɨñy	čɨi	—	žučɔ/ ⁿ jučɔ
Lor	ñy'y	ɨñy	tʲɨi	yamɔ	yuča
Mech	ñy'y	ɨñy	tʲɨi	ñamɔ	yučɔ
Huaz	ñy'y	ɨñy	tʲɨi	yamɔ	yučɔ
Jam	ñy'y	ɨñy	tʲɨi	ñamɔ	yučɔ
Chay	ñy'y	ɨñy	tʲɨi	ñamɔ	yuča
ChayC	ñy'y	ɨñy	čɨi	ñamɔ	yusa
ChayD	ñy'y	ɨñy	tʲɨi	ñamɔ	yusa
Tut	ñy'y	ɨñy	tʲɨi	ñamɔ	yuča
Acat	ñy'ɨ	ɨñy	čɨi/tʲɨi	ñamɔ	yusɔ

NE Alta	110) hijo child	111) catarro cold, phlegm	112) bueno good	113) porque because	114) este mismo this one
P-Mixtec	*sa'yi	*sayu	*wa'a	*wati	*weye
Tepo	da'ya	dayu =moco	wa'a	[lika sa'a]	maj
Tida	da'a	(k ^w e'e) dayu	wa'a	—	wee
Til	θa'ya	(k ^w e'e) dayu	ba'a	—	mee
Diux	da'ya	—	—	ci	mee
Nuxi	da'a	k ^w e dayu	ba'a	ci	mee/bee
Nuxa	da'za	dayu	(io) ba'a	—	—
TamJ	da'za	dažu =tos	wa'a	ci	mee
Yuta	da'za	—	—	ci	mee
Pefio	de'e	[k ^w e ditnɨ] dayu=flema	ba'a	ci	mee
Este	da'za	dayu	wa'a	ci	—
Cui	de'e	—	wa'a	—	mee
Soso	—	—	—	—	—
Jalt	da'a	—	—	—	mee
Adeq	da'a	—	—	—	bee/bii/mij
Cant	da'a	—	—	[sa k ^w aa]	dii/bii/ee
Lobo	—	k ^w e dažu	—	—	mij
Ynam	—	—	—	—	—
Soy	da'a	k ^w e dayu/k ^w e dažu	wa'a/ba'a	[ⁿ caxu]	mij
Chic	da'a	k ^w e dayu	wa'a	—	mee
Ixtl	da'a	k ^w e dai	wa'a	—	mij
Apas	da'a	k ^w e dayu	wa'a	ci	mee
Apoa	da'a	dayu =tos	wa'a	ti	mee
Ndua	sa'a/da'a (male/female speaking)	—	—	—	mee
Joco	da'a	k ^w e'e dayu	wa'a	—	mee
Cuya	i'ya	dayu	wa'a	—	—
Cuau	i'za	k ^w i dayu	wa'a	—	—
Coat	i'i	(k ^w i) dau	ba'a	ci	mij

Cen. Alta	110) hijo child *sa'yi	111) catarro cold, phlegm *sayu	112) bueno good *wa'a	113) porque because *wati	114) este mismo this one *weye
Ñumi	se'e	k ^w e'e kažu	ba'a	či	məə
Achi	se'e	sažu	ba'a	[nə kuu]	məə
Yuca	se'e	sažu	wa'a	či	məə
Peña	se'e	—	—	či	məə
Tata	da'i	—	—	či	məə
Teit	de'e	dayu	wa'a	—	məə
Moli	se'e	sažu	ba'a	či	—
Sinc	se'e/se'e	—	—	či	məə/bəe
Tlac	sa'a	sažu	ba'a	—	məə
Ndi	se'e	—	—	či	məə
Ndac	—	—	—	—	—
Oco	sə'e	sāžū	bə'a	či	məə
Prog	ši'a	—	—	—	məə
Yuci	sə'ya	sāyū tosferina	bə'a	(či)məə	məə
Nuyo	sə'ya	sāyū tosferina	bə'a	[n]i]	məə
Atat	sə'e	sayu	bə'a	či	məə
Mig	se'e	sažu	bə'a	—	məə
Chal	se'e	sažu	ba'a	či	məə
Verd	se'e	k ^w e sayu	ba'a	—	məə
Yoso	se'e	k ^w e kažu	ba'a	či	məə
Itun	se'e	sayu	ba'a	—	məə
Yolt	se'e	sažu	ba'a/bə'o	—	məə
Yutn	da'a	—	—	—	—
Sind	da'za	[k ^w e dɨni]	wa'a	—	mɛi
Pied	da'za	k ^w e kaži	wa'a	—	—
Huit	da'a	k ^w e kažu	wa'a	či	mɛɛ
Tlaz	da'za	dažu	wa'a	—	—

No. Baja	110) hijo child *sa'yi	111) catarro cold, phlegm *sayu	112) bueno good *wa'a	113) porque because *wati	114) este mismo this one *weye
Mont	ha'ya	—	—	či	męę
Nuch	ha'ži	haži	ba'a	bači	męę
Aten	ha'yi	hai	ba'a	(ba)či	męę
Yucq	de'i/se'e of male/of female	—	—	(ⁿ di?)	mij
Yucñ	hè'e	hei	bà'a	či/si ?	mij
Guad	dè'e	daya	ba'a	ča/si ?	męę
Flor	de'i	—	—	či	męę
Amat	de'e	—	—	[a(wa)]	(rare) mij/męę
Zap	de'e	—	wa'a	či	=niño mij/męę
Cac	dee	dai	(o) ba(?)a	na/čii/načo	—
Ndo	se'e	—	—	či	męę
Ixtp	de'i/dee	—	—	—	mij/męę niño
Mic	dee	—	—	—	mij (rare)
Tepj	de'e	—	wa'a	bači	mij
Cos	de'e	dayu	wa'a	ti	mij
Chaz	de'e	—	wa'a	či	—
Tot	de'e	—	—	—	mij (rare)
Ton	de'e	—	wa'a	či	mij/męę
Jer	de'e	—	—	bači	mij/męę niño
Xay	dè'e	—	bà'a	(bà)či	mij/męę niño
Tlal	de'e (in compounds)	(ⁿ dei)	—	ta'da'xi	—
Chig	de'e/i'a	dayu (tos)	wa'a	[sa'a]	męę

So. Baja P-Mixtec	110) hijo child *sa'yí	111) catarro cold, phlegm *sayu	112) bueno good *wa'a	113) porque because *wati	114) este mismo this one *weyε
Ayut	s ^y ē'ε → sī'ε	sei	va'a	sa ^h ka' ña/ sā'a a ña	—
Yolx	se'e	sayu	wa'a	—	—
Alac	sa'ya	sayi	wà'a/bà'a	či	—
Metl	sé'ē	—	bá'a	—	—
Coi	sè'e	sayu	ba'a	ny kubi/či	mij
Pera	se'e	saži	ba'a	či	mij
Cuat	sè'e	sayu	ba'a	ny kubi/či	mij
Cah	se'e	sayi	wa'a	—	—
Alco	se'e	sayu	wa'a	—	mij
Cruz	se'e	sayi	wa'a	—	mij
Durz	se'e	sai	bà'a	ži/si	mij
Teco	se'e	sēf	ba'a	ní bà'a	mij
Juxt	se'e	sai	ba'a	—	mij
ChaP	se'e/si'z	—	—	či	mij
Yuco	sè'ē	kasi sàžù	bà'a	či	—
Mix	se'e	sai	ba'a	(ba)ří	mεε
Tejc	si'i/se'e	—	—	bari	mεε
Rey	se'e	saži	ba'a	bači	mεε
TlaM	—	saži	—	—	mij
SilP	ha'ži	—	—	hači	—
IxpN	ha'ži	haži	và'a	nā bà'a/či	mεε
SilM	θa'ži	θaži	ba'a	ⁿ dihá	mεε
TamS	θe'i	θàží	ba'a	(ba)či	mεε
Ahue	θe'e	θàží	ba'a	čii	mεε
Mor	he'e	hayi	^m ba'a	—	mεε

Costa	110) hijo child	111) catarro cold, phlegm	112) bueno good	113) porque because	114) este this	mismo one
P-Mixtec	*sa'yi	*sayu	*wa'a	*wati	*weye	
Zac	se'e	sayu	ba'a	ti	mga	
Sayu	se'e	sayu	wa'a	—	mga	
Tept	se'e	sayu	wa'a	ča	mga	
Atoy	se'e	sayu	wa'a	ti	mga	
Jicy	se'e	sayu	ba'a	—	mga	
Jict	se'e	sayu	ba'a	bati	mga	
PinN	se'e	sayu	ba'a	(ba)ti	mga	
PinL	se'e	sayu	ba'a	ti	mga	
Colo	se'e	sayu	wa'a	bati	mga	
Nuti	se'e	—	—	či	mga	
Ixty	se'e	sayu	ba'a	či	mga	
Cris	se'e	—	—	či	mga	
Lor	se'e	sayu	wa'a	—	mga	
Mech	se'e	θayu/sayu	wa'a	či	mga	
Huaz	se'e	sayu	wa'a	—	—	
Jam	se'e	sayu	ba'a	bat ^y i/či	mga	
Chay	se'e	sayu	wa'a	—	mga	
ChayC	se'e	θayu	ba'a	bači	mga	
ChayD	θe'e	θayu	va'a	vat ^y i	mga	
Tut	se'e	sayu	wa'a	—	mga	
Acat	se'e	sayu	wa'a	—	mga	



NE Alta P-Mixtec	115) ya viene is coming *wexi	116) basura trash *wiʔiʔ	117) gato cat *wiluʔ	118) nopal prickly pear *wiʔ ⁿ deʔ	119) pie foot *xeʔe
Tepo	wasi	miʔi	[kete kau]/ [misto]/[ŋema]	wiʔ ⁿ da	saʔa
Tida	waa	ʔiʔi	wilu	wiʔ ⁿ de	saʔa
Til	baši	miʔi	—	biʔ ⁿ de	šeʔe
Diux	baši	—	bilu	—	šeʔe
Nuxi	ba(i)	žaka biʔi	bilu	biʔ ⁿ de	šeʔe
Nuxa	[kiši]	[žaka]	wilu	wiʔ ⁿ de	šeʔe
TamJ	waši	miʔi	wilu	wiʔ ⁿ de	žeʔe
Yuta	baši	—	bilu	—	žeʔe
Peflo	běši	miʔi	[miči]	biʔ ⁿ dé	sáʔá
Este	weši	miʔi	[miči]	wiʔ ⁿ de	saʔa
Cui	baši	—	[mici]	wiʔ ⁿ za	saʔa
Soso	—	—	—	—	—
Jalt	baši	—	bilu	—	šaʔa
Adeq	baši	—	bilu	—	saʔa
Cant	ba(ši)	—	bilu	—	saʔa
Lobo	—	miʔi	—	—	—
Ynam	baši	—	—	—	šaʔa
Soy	(ǰa) waši/baši	miʔi	wilu/bilu	wiʔ ⁿ za/biʔ ⁿ za	saʔa
Chic	waši	miʔi	wilu	miʔ ⁿ za	saʔa
Ixtl	[ⁿ disa]/waa	miʔi	wilu	miʔ ⁿ za	saʔa
Apas	[ⁿ diši]	miʔi	wilu	miʔ ⁿ za	saʔa
Apoa	waši	miʔi	bilu	miʔ ⁿ ǰa	saʔa
Ndua	baši	—	bilu	—	saʔa
Joco	waši	miʔi	bilu/[wiči]	miʔ ⁿ za	saʔa
Cuya	[kixi]	[žaka]	[wi ^h ci]	miʔ ⁿ de	žeʔe
Cuau	[kixi]	[žaka]	[wi ^h ǰi]	miʔ ⁿ de	žeʔe
Coat	[kiši]	[šaka]/[ŋeʔe]	[mistu]	miʔ ⁿ de	[ǰiʔi]

Gen. Alta	115) ya viene is coming	116) basura trash	117) gato cat	118) nopal prickly pear	119) pie foot
P-Mixtec	*wexi	*wi'ʔiʔ	*wiluʔ	*wiʔ ⁿ deʔ	*xeʔe
Ñumi	waxi	mj'ʔi	ʔilu	ʔj'ʔ ⁿ de	xaʔa
Achi	ʔaxi	mj'ʔi	ʔilu	ʔj'ʔ ⁿ de	[sʔi'ʔi]
Yuca	ʔaxi/waxi	mj'ʔi	ʔilu/wilu	wj'ʔ ⁿ de	xaʔa
Peña	ʔe(e)	—	ʔilu	—	xaʔa
Tata	ʔai	—	ʔilu	—	ʃeʔe
Teit	wexi	mj'ʔi	wilu	wj'ʔ ⁿ de	ʃeʔe
Moli	ʔexi	—	ʔilú	ʔj'ʔ ⁿ de	xaʔa
Sinc	ʔe(e)	—	ʔilu	—	xaʔa
Tlac	xa ʔē ⁿ dii	mj'ʔi	ʔilu	ʔj'ʔ ⁿ da	xaʔa
Ndi	ʔaxi	—	ʔilu	—	[sʔi'ʔi]
Ndac	saxi	—	ʔilu	—	[sʔi'ʔi]
Oco	ʔaxī	[ʔākā]	čīlū/ʔīlū	mj'ʔ ⁿ de	xēʔē
Prog	ʔaxi	—	ʔilu	—	ʔaʔa
Yuci	ʔa ʔaxī	[yākā]	čīlú	mj'ʔ ⁿ ē	x ^y ēʔē
Nuyo	ʔaxī	[yākā]	ʔīlū	mj'ʔ ⁿ ē	x ^y ēʔē
Atat	ʔēxi	[yāka]	ʔīlū	ʔj'ʔ ⁿ de	xeʔē
Mig	ʔāi/ʔāxi	mj'ʔi/k ^w āzo	ʔīlū	ʔj'ʔ ⁿ jā	xaʔā
Chal	ʔei	mj'ʔi	ʔilu	ʔj'ʔ ⁿ ja	xaʔa
Verd	[kee]	[k ^w eyol]	ʔilu	ʔj'ʔ ⁿ de	xeʔe
Yoso	ʔaxi	[xa yaka]	ʔilu	ʔj'ʔ ⁿ ja	[sʔi'ʔi]
Itun	[kee]	[saʔwā]	ʔilu	mj'ʔ ⁿ de	yeʔe
Yolt	ʔaši-ni	mj'ʔi	ʔilu	ʔj'ʔ ⁿ d ^y a	ʃaʔa
Yutn	ʔee	—	ʔilu	—	ʃeʔe
Sind	[kii]	mj'ʔi	wilu	wj'ʔ ⁿ de	ʔeʔe
Pied	[kime]	mj'ʔi	wilu	ny wj'ʔ ⁿ de	ʔeʔe
Huit	wexi	mj'ʔi	čilu	ny wj'ʔ ⁿ de	ʔeʔe
Tlaz	wēši	mj'ʔi	[mj'čil]	wj'ʔ ⁿ de	seʔe

No. Baja	115) ya viene is coming	116) basura trash	117) gato cat	118) nopal prickly pear	119) pie foot
P-Mixtec	*wexi	*wiʔiʔ	*wiluʔ	*wiʔ ⁿ deʔ	*xeʔe
Mont	ɓaxi	—	(ⁿ di čito)	—	saʔa
Nuch	waši	(šeʔe)	(mīto)	tò ɓiʔ ⁿ d ^y a	saʔa
Aten	ɓasi	(seʔe)	(čito)	tu ɓiʔ ⁿ dá	saʔa
Yucq	wa	—	(čito)	—	saʔa
Yucfi	ɓaši	(šeʔe)	(čito)	ɓiʔ ⁿ da	sàʔà
Guad	ɓasi	(šeʔe)	(čitu)	tu ɓiʔ ⁿ dza	saʔa
Flor	ɓaši	—	(ⁿ di miči)	—	saʔa
Amat	ɓaši	—	(čutu)	—	saʔa
Zap	waši	mīʔi	(šit ^y u)	wiʔ ⁿ de	saʔa
Cac	wai/waši	(še)/mīʔi	(ti čütü)	(to) ɓeʔ ⁿ de	saʔa
Ndo	ɓaxi	—	ɓilu	—	xaʔa
Ixtp	ɓaši	—	(čitu)	—	sa(?)a
Mic	ɓaši	—	(čitu)	—	sa(?)a
Tepj	waši	mīʔi	(čitu)	wiʔ ⁿ d ^y a	saʔa
Cos	waši	mīʔi	(šitu)	wiʔ ⁿ d ^y a	saʔa
Chaz	waši	mīʔi	(šitu)	wiʔ ⁿ d ^y a	saʔa
Tot	ɓaši	—	(čitu)	—	saʔa
Ton	waši	mīʔi	(čitu)	wiʔ ⁿ d ^y a	saʔa
Jer	ɓaši	—	(čitu)	—	saʔa
Xay	ɓaši	mīʔi	(čitü)	ɓiʔ ⁿ d ^y à	sàʔà
Tlal	ɓaxa	mīʔi	(mītu)	—	—
Chig	waš-ta	mīʔi	(mītu)	tny wɛʔ ⁿ de	šaʔa

So. Baja	115) ya viene is coming	116) basura trash	117) gato cat	118) nopal prickly pear	119) pie foot
F-Mixtec	*wexi	*wiʔiʔ	*wiluʔ	*wiʔ ⁿ deʔ	*xeʔe
Ayut	ša k ^w aši	miʔiʔ	(mīšty)	vīʔ ⁿ d ^y aʔ	šaʔa
Yolx	waši	miʔi	(mīstu)	wiʔ ⁿ da	saʔa
Alac	waši	miʔi	(mīstō)/ (čitō/čity/čitnō)	—	šaʔà
Metl	—	—	bīlú	—	šaʔā
Coi	baši	(k ^w ayua)	(čitu)	biʔ ⁿ dia	šaʔá
Pera	baši	(šeʔe)	(čitu)	biʔ ⁿ d ^y a	šaʔà
Cuat	(ša) waši	miʔi	(mīsty)	wiʔ ⁿ da	šaʔa
Cah	waši	miʔi	(mīčō)	tnō wiʔ ⁿ da	šaʔa
Alco	waši	(taka)/miʔi	wilu/(mīsty)	wiʔ ⁿ da	šaʔa
Cruz	(ša) waši	miʔi	(mīstnō)	wiʔ ⁿ da	šaʔa
Durz	baši	(čeʔe)	(čiti)	tu biʔ ⁿ ča	šaʔà
Teco	baši(-rá)	miʔi	(čiti)	tu biʔ ⁿ ča	šaʔa
Juxt	baši/bai	miʔi	(čitu)	biʔ ⁿ d ^y a	šaʔa
ChaP	baši	—	bīl ^y u	—	s ^y aʔa/šaʔa
Yuco	bāsi-nā	(žākā/čēʔè) polvo	bīlú	māʔ ⁿ dé	s ^y àʔá
Mix	bat ^y i	miʔi	bīlú	miʔ ⁿ d ^y a	čaʔa
Tejc	bači	—	bīlu	—	saʔa
Ray	baši	(šiʔe)	mīli	biʔ ⁿ ča	šaʔa
TlaM	baši	(s ^y èʔè)	—	—	—
SilP	baši	—	(čito)	—	saʔa
IxpN	basi	(seʔe)	(čitō)	biʔ ⁿ d ^y a	šaʔà
SilM	baši	(šeʔe)	(čito/čitu)	biʔ ⁿ da	saʔa
TamS	baxi	(šeʔe)	(čito)	to biʔ ⁿ da	šaʔa
Ahue	bāxī	(šeʔe)	(mīto)	tū biʔ ⁿ da	šaʔa
Mor	xi-baxi-nā	(šeʔe)	(čito)	biʔ ⁿ da	čaʔa

Costa	115) ya viene is coming	116) basura trash	117) gato cat	118) nopal prickly pear	119) pie foot
P-Mixtec	*wexi	*wiʔiʔ	*wiluʔ	*wiʔ ⁿ deʔ	*xeʔe
Zac	bači	(čəʔə) biʔbiʔ=cuita	mīluʔ	biʔ ⁿ daʔ	čaʔa(?)
Sayu	wači	mīʔi	(mīču)	wiʔ ⁿ da	čaʔa
Tept	wači	(čəʔə)	mīlu	wiʔ ⁿ da	čaʔa
Atoy	wači	mīʔi	(mīču)/mīlu/ (čūmī)	wiʔ ⁿ da	čaʔa
Jicy	bači	(čəʔə)	(mītu)	biʔ ⁿ da	čaʔa
Jict	bači	mīʔi	(mīstu)	biʔ ⁿ da	čaʔa
PinN	bači	mīʔi	(mīču)	biʔ ⁿ da	čaʔa
PinL	(kiči)	(čəʔə)	(mīhta)	biʔ ⁿ da	čaʔa
Colo	bači	(čəʔə)	(mīstu)	biʔ ⁿ da	čaʔa
Nuti	bači	—	(mīštu)	—	čaʔa
Ixty	bači	mīʔi	biilu	biʔ ⁿ d ^y a	čaʔa
Cris	bači	—	mīlu/ ^m bilu	—	saʔa
Lor	wači	mīʔi	mīlu	wiʔ ⁿ d ^y a	čaʔa
Mech	wači	mīʔi	(čūmī)	wiʔ ⁿ d ^y a	čaʔa
Huaz	wači	mīʔi	(čūmī)	wiʔ ⁿ d ^y a	čaʔa
Jam	bači	mīʔi	(čūmī)	biʔ ⁿ d ^y a	čaʔa
Chay	wači	mīʔi	mīlu	mīʔ ⁿ d ^y a	čaʔa
ChayC	baši	mīʔi	mīlu	mīʔ ⁿ ja	saʔa
ChayD	vasi	mīʔi	mīlu	mīʔ ⁿ d ^y a	saʔa
Tut	wači	mīʔi	(čūmī)	mīʔ ⁿ d ^y a	čaʔa
Acat	wasi	mīʔi	(sumī)	mīʔ ⁿ ja	saʔa

NE Alta	120) cortar cut	121) quince fifteen	122) tripas guts	123) diez ten	124) frío cold	609
P-Mixtec	*xeʔ ⁿ de	*xeʔy<*uxi oʔo	*xáti	*uxi	wixi	
Tepo	saʔ ⁿ da	saʔo	site	usi	wisi	
Tida	seʔ ⁿ de	saʔy	šiti	uši	wiši	
Til	šsaʔ ⁿ de	šsaʔy	šiti	uši	biši	
Diux	ⁿ ygaʔ ⁿ de	šsaʔy	šiti	uši	biši	
Nuxi	šseʔ ⁿ de/šseʔ ⁿ di	saʔy	šiti	uši	biši/biše	
Nuxa	šseʔ ⁿ de	saʔy	šiti	uši	wiši	
TamJ	žseʔ ⁿ de	šsaʔy	šiti	uši	wiši	
Yuta	žseʔ ⁿ de	šsaʔy	[tiši]	uši	biši	
Peño	šseʔ ⁿ dē	saʔy	šiti	uši	biši	
Este	xseʔ ⁿ dē/sseʔ ⁿ dē	saʔy	šiti	uši	wiši	
Cui	saʔ ⁿ za	saʔy	šiti	uši/šiti	wiši	
Soso	—	—	—	—	—	
Jalt	šsaʔ ⁿ sa	saʔy	šiti	uši	biši	
Adeq	saʔ ⁿ sa	saʔy	šiti	uši	biši	
Cant	saʔ ⁿ sa	saʔy	siti/šiti	uši	biši	
Lobo	—	saʔy	šiti k ^w ači	uši	—	
Ynam	—	—	šiti	—	—	
Soy	(sa) xsaʔ ⁿ sa	saʔy	šiti k ^w ači	uši	(xa) wiši/biši	
Chic	saʔ ⁿ za	saʔy	k ^w iti k ^w ači	uši	wiši	
Ixtl	saʔ ⁿ za	saʔy	šiti k ^w ači	uši	wiši	
Apas	saʔ ⁿ za	saʔy	šiti	uši	wiši	
Apoa	saʔ ⁿ za	saʔy	šiti	uši	biši	
Ndua	saʔ ⁿ da/saʔ ⁿ sa	saʔy	šiti	uši	biši	
Joco	male/female speaker saʔ ⁿ za	saʔy	šiti	uši	wiši	
Cuya	ka žseʔ ⁿ de	šseʔy	žiti	uši	wixi	
Cuau	ka žseʔ ⁿ de	šseʔy	žiti	uši	wixi	
Coat	keʔ ⁿ de	šseʔy	iti	uši	biši	

Gen. Alta	120) cortar cut	121) quince fifteen	122) tripas guts	123) diez ten	124) frío cold
P-Mixtec	*xeʔ ⁿ de	*xeʔy < *uxi oʔo	*xátá	*uxi	*wixj
Ñumi	xəʔ ⁿ de	šəʔy	xiti	uši	ɸixj
Achi	xəʔ ⁿ de	xaʔy	xiti	uši	ɸixj
Yuca	xəʔ ⁿ de	xəʔy	xátá	uxi	wixj/ɸišj
Peña	xəʔ ⁿ de	syʔy	[čii]	uši	ɸixi
Tata	kəʔ ⁿ de	šəʔy	—	uši	ɸixj
Teit	žəʔ ⁿ de	šəʔy	iti	uši	wixj
Moli	xəʔ ⁿ de	šjəʔy	xiti	uši	ɸixj
Sinc	šəʔ ⁿ de	səʔy	—	uši	ɸii
Tlac	xəʔ ⁿ de	xəʔy	xiti	uši	ɸixj
Ndi	xəʔ ⁿ di	šeʔo	[čiti]	uši	ɸixj
Ndac	nəʔ ⁿ da	šoʔo	[čixi]	uši	[ⁿ diko]
Oco	xəʔ ⁿ dè	šəʔə	xítì	ʔùšì	ɸixì
Prog	žəni/yəni	šəʔy	iti	uši	mixj
Yuci	x ^v əʔ ⁿ é-xē	šəʔy	ʔitā`	ʔùšì	ɸixì
Nuyo	[k ^w áčì]	šəʔy	ʔitá	ʔùxì	ɸixì
Atat	xəʔ ⁿ de	xaʔy	žátá	uxi	mixj
Mig	xəʔ ⁿ jā	x ^v əʔy	xátá	uxi	ɸixj
Chal	xəʔ ⁿ ə/xəʔya	šəʔy	xátá	uši	ɸixj
Verd	xəʔ ⁿ de	x ^v əʔy	yátá	uxi	ɸixj
Yoso	xəʔ ⁿ ja	šəʔy	x ^v átá	uši	ɸixj
Itun	yəʔ ⁿ de	x ^v əʔy	yátá	uxi	ɸixj
Yolt	šəʔ ⁿ d ^v a	ši oʔo	šítá	uši	ɸišj
Yutn	žəʔ ^{an} de	nyʔy/nioʔo	[čii]	uši	mij
Sind	žəʔ ⁿ de	nyʔy	itá	uši	ku mij
Pied	žəʔ ⁿ de	nyʔy	itá(tà)	uši	mij
Huit	nyʔ ⁿ de	nyʔy	žátá x ^w jfi	uši	wixi
Tlaz	səʔ ⁿ de	səʔy	šítá	uši	wišj/[kašj]

No. Baja	120) cortar cut *xe ⁿ de	121) quince fifteen *xe ⁿ y	122) tripas guts *xítɬ	123) diez ten *uxi	124) frio cold *wixɨ
Mont	sa ⁿ d ^y a	sə ⁿ y	süti kə ⁿ ny	usi	ɸisi (o)
Nuch	sa ⁿ da	šə ⁿ y	šiti	ʔušu	ɸiši
Aten	sa ⁿ di	sə ⁿ ɨ	siti	ʔüşi	ɸisì
Yucq	(čati)	sə ⁿ y (k ^w i)	sti/šiti	isi(ɸi)	ɸiši
Yučñ	sa ⁿ di	sə ⁿ y	šiti	ʔuš	ɸiši
Guad	sa ⁿ dzi	sə ⁿ ɨ	siɸi	ʔüşi	ɸisi
Flor	sa ⁿ ji	sə ⁿ y	siti	uš	ɸiši
Amat	sa ⁿ d ^y a	sə ⁿ y	(tiši)	uš	ɸiši
Zap	sa ⁿ de	sə ⁿ y	estómago šiči	uš	[kašɨ]/wišɨ
Cac	še ⁿ de	sə ⁿ y(ʔu)	šiti	üş	ɸišɨ
Ndo	xe ⁿ de	šə ⁿ y	[ini]	uš	ɸixɨ
Ixtp	sa ⁿ de	sə ⁿ y	dentro (tiši)	uš	ɸiši
Mic	sa(ʔ) ⁿ de	sə ⁿ y	estómago (tiši)	uš	ɸiši
Tepj	sa ⁿ de	sə ⁿ y	estómago sisi	uš	wiši
Cos	sa ⁿ de	sə ⁿ y	sisi	uš	[kašɨ]/wišɨ
Chaz	sa ⁿ de	sə ⁿ y	ɸiči	uš	[kasi]/wiši
Tot	sa ⁿ de	sə ⁿ y	[əniɲə/ini]	uš	ɸiši
Ton	(sa) sa ⁿ de	sə ⁿ y	estómago/dentro sisi	uš	wišɨ
Jer	sa ⁿ a ⁿ de	sa ⁿ u	(tiši)	uš	ɸiši
Xay	sā ⁿ dé	sə ⁿ ɨ	sisi	uš	ɸišɨ
Tlal	sa ⁿ di-te	uš	či lipa	uš	ɸisi
Chig	ša ⁿ di	šə ⁿ y	in compounds šiči	üş	wišɨ

So. Baja P-Mixtec	120) corta cuts *xe ⁿ de	121) quince fifteen *xe ⁿ y	122) tripas guts *xiti	123) diez ten *uxi	124) frío cold *wixi
Ayut	šā ⁿ d ^y ā	šə ⁿ y	ših ^h ti	ūši	višj
Yolx	sa ⁿ da	sə ⁿ y	siti	uši	wišj
Alac	šā ⁿ da	ša ⁿ y	—	ušu	biši
Metl	kā ⁿ d ^y ā	—	siti	—	—
Coi	va a cortar ša ⁿ de	šā ⁿ y	tīšī=estómago siti	?ušì	bišj
Pera	ša ⁿ d ^y a	šə ⁿ y	šiči	?ušì	bišj
Cuat	ša ⁿ da	šə ⁿ y	šiti	uši	wišj
Cah	ša ⁿ da	šə ⁿ y	šiti	ušu	wišj
Alco	ša ⁿ da	šə ⁿ y	siti	uši	wišj
Cruz	ša ⁿ da	šə ⁿ y	šiti	uši	wišj
Durz	ša ⁿ de	ša ⁿ y	šiči	?išì	bišj
Teco	ša ⁿ de	šə ⁿ y	siti	?išì	biš ^y i
Juxt	ša ⁿ d ^y a	sə ⁿ y	sit ^y i	uši	biši
ChaP	šə ⁿ ja	šə ⁿ y	(tiši)	uši	biši
Yuco	s ^y ā ⁿ dè-nə	s ^y ə ⁿ y	čiti	?usi	bišj
Mix	ča ⁿ d ^y a	čə ⁿ y	čiti	uči	biči
Tejc	ku kə ⁿ ca	čə ⁿ y	(tiči)	uči	biči
Rey	ša ⁿ ca	ša ⁿ y	šiči	?ixi	bišj
TlaM	—	s ^y ā ⁿ y	siti	?ušì	biši
SilP	na sə ⁿ da	sə ⁿ y	šiti ka ⁿ ny	uši	biši
IxpN	sa ⁿ de	sə ⁿ y	siti	?ušu	biši
SilM	sa ⁿ da	sa ⁿ y	šiti	ušü	bišj
TamS	xa ⁿ da	šə ⁿ y	šiti	?ušu	biši
Ahue	ša ⁿ da	šə ⁿ y	šiti	?ušü	biši
Mor	k ^w ə ka ⁿ a-nə	ša ⁿ y	šiti	ušü	biši

Costa	120) corta cuts	121) quince fifteen	122) tripas guts	123) diez ten	124) frio cold
P-Mixtec	*xe ⁿ de	*xe ⁿ y	*xiti	*uxi	*wixi
Zac	ča ⁿ da	čə ⁿ y	čiti	uči	biči
Sayu	ča ⁿ da	čə ⁿ y	čiti	uči	wiči
Tept	ča ⁿ da	čə ⁿ y	čiti	uči	wiči
Atoy	ča ⁿ da	čə ⁿ y	čiti	uči	wiči
Jicy	ča ⁿ da	čə ⁿ y	čiti	uči	biči
Jict	ča ⁿ da	čə ⁿ y	čiti	uči	biči
PinN	ča ⁿ da	čə ⁿ y	čiti	uči	biči
PinL	ča ⁿ da	čə ⁿ y	čiti	uči	biči
Colo	ča ⁿ d ^y a	čə ⁿ y	čiti	uči	biči
Nuti	ča ⁿ dya	čə ⁿ y	čiti ^y	uči	biči
Ixty	ča ⁿ d ^y a	čə ⁿ y	čiti	uči	biči
Cris	sa ⁿ ya	čə ⁿ y	(sisi)	uči	^m biči
Lor	ča ⁿ d ^y a	čə ⁿ y	čiti	uči	wiči
Mech	ča ⁿ d ^y a	čə ⁿ y	čiti	uči	wiči
Huaz	ča ⁿ d ^y a	čə ⁿ y	čiti	uči	wiči
Jam	ča ⁿ d ^y a	čə ⁿ y	čiti	uči	biči
Chay	ča ⁿ d ^y a	čə ⁿ y	čiti	uči	wiči
ChayC	sa ⁿ ja	sa ⁿ y	sete	usi	bisi
ChayD	sa ⁿ d ^y a	sa ⁿ y	siti (n ^y i'i)	usi	visi
Tut	ča ⁿ d ^y a	čə ⁿ y	čiti	uči	wiči
Acat	sa ⁿ ja	sa ⁿ y	siti	usi	wisj

NE Alta	125) huarache sandal	126) horcón housepost	127) nombre name	128) cacao cacao	129) oreja ear
P-Mixtec	* ⁿ dixɛʔ	*sɪʔɛ	*sɪwɪʔ	*sɪʔwa	*loʔo
Tepo	ⁿ disɔ	[sako]/deʔe	dewi/[deke]/	deʔwa	doʔo
Tida	ⁿ jisɔ	=pierna diʔi	[kevi] diwi	diʔwa	doʔo
Til	ⁿ diʃɔ	tiʔi	diu	θuʔa	doʔo
Diux	ⁿ diʃa	—	diu	[kakao]	doʔo
Nuxi	ⁿ jiʃe/ ⁿ diʃa	diʔi	[ngni]	diʔba	doʔo
Nuxa	ⁿ jiʃe	diʔi	ziwi	diʔwa	doʔo
TamJ	ⁿ diʃe	Nny diʔɛ	diwi	duʔa	doʔo
Yuta	[cau]	—	dibi	[kakau]	doʔo
Pefio	[ⁿ diʃá]/cãu =horseshoes	diʔfi	diu	[kakaũ]	loʔo
Este	[cau]	(ny) diʔɛ	diwi	diʔwa =cacahuate	doʔo
Cui	ⁿ disɔ =cacle	ti diʔi	[ngni]	diʔwa	doʔo
Soso	—	—	—	—	—
Jalt	ⁿ jisa	—	[ngni]	deʔba	doʔo
Adeq	ⁿ cisa	—	—	deʔba	doʔo
Cant	ⁿ cisa	—	[ngni]	diʔba	doʔo
Lobo	—	—	[ngny]	—	—
Ynam	—	—	—	—	—
Soy	ⁿ jisɔ	diʔi	dewe	deʔwa	doʔo
Chic	ⁿ jisa	ti deʔe	—	θeʔwa =chocolate	doʔo
Ixtl	ⁿ jisa	deʔe	diwi	deʔwe	doʔo
Apas	ⁿ jisa	ti deʔe	—	θeʔwa =chocolate	doʔo
Apoa	ⁿ zisa	deʔe	dibi	deʔba	doʔo
Ndua	ⁿ cisa/ ⁿ jisa	—	θibi	[kakau]	soʔo/doʔo
Joco	ⁿ jisa	ti deʔe	—	—	doʔo
Cuya	ⁿ difi	ʃeʔe	diwi	diʔwa	[tutu]
Cuau	ⁿ diNfi	ʃeʔe	diwi	diʔwa	[tu ^h tu]
Coat	ⁿ diʃe	ʃeʔe	dibi	θiʔba	loʔo

Gen. Alta	125) huarache sandal	126) horcón housepost	127) nombre name	128) cacao cacao	129) oreja ear
P-Mixtec	* ⁿ dixɛʔ	*sɨʔɨ	*sɨwɨʔ	*sɨʔwa	*loʔo
Ñumi	ⁿ dixɛ	sɨʔɨ	sɨbi	—	soʔo
Achi	ⁿ dixɛ	ti sɨʔɨ	[ngɨɨ]	—	soʔo
Yuca	ⁿ dixɛ	sɨʔɨ	—	[kakao]	soʔo
Peña	ⁿ dixa	—	sɨbi	[kakao]	soʔo
Tata	ⁿ diʔxi	—	ɗiu	ɗuʔa	ɗoʔo
Teit	ⁿ diNfɛ	ɗɨʔɨ	ɗiwi	—	ɗoʔo
Moli	ⁿ dixɛ	sɨʔɨ	sivi	—	soʔo
Sinc	ⁿ dixɛ-i	—	[ngɨɨ]	tɨʔmɛ	soʔo
Tlac	ⁿ dixɛ	sɨʔɨ	sɨbi	—	soʔo
Ndi	ⁿ dixɛ	—	sɨbi	[kakao]	soʔo
Ndac	—	—	sɨbi	[kakau]	soʔo
Oco	nɨxɛ	—	sɨví	—	sòʔò
Prog	nɨx ^y ɛ	—	subi	[kakao]	soʔo
Yuci	nɨx ^y ɛ	sɨʔɨ	sɨví	—	sòʔò
Nuyo	nɨx ^y ɛ	sɨʔɨ	súví	—	sòʔò
Atat	ⁿ dixɛ̄	sɨʔɨ =leg	sɨʔvɨ	suʔbɛ	soʔo
Mig	ⁿ dixɛ̄	sɨʔɨ	sɨʔvɨ	suʔɛ	sòʔo
Chal	ⁿ dixa	sɨʔɨ =leg	sɨʔu	suʔba	soʔo
Verd	ⁿ dixɨ	sɨʔɨ	sɨwɨ	—	soʔo
Yoso	ⁿ diNfɛ	sɨʔɨ	sɨwɨ	suʔba	soʔo
Itun	ⁿ dix ^y ɛ	sɨʔɨ	sɨwɨ	—	soʔo
Yolt	ⁿ dišɛ	sɨʔɨ	sɨwɨ	—	soʔo
Yutn	ⁿ jiɨ ^ŋ	—	[nɛ nɛny ⁿ]	[kakau]	ɗoʔo
Sind	ⁿ jiɨ ^ŋ	ɗɨʔɨ ^ŋ	ɗiwi	ɗuʔwa	ɗoʔo
Pied	ⁿ jiŋɛ	ɗɨʔɨ	ɗiwi	—	ɗoʔo
Huit	[čiwɨ]	ny ɗɨʔɨ	ɗiwi	—	ɗoʔo
Tlaz	[čau]	ny ɗɨʔɨ	ɗiwi	—	ɗoʔo

No. Baja	125) huarache sandal	126) horcon housepost	127) nombre name	128) cacao cacao	129) oreja ear
P-Mixtec	* ⁿ dixɛʔ	*sɛʔɛ̃	*sɛ̃wiʔ	*sɛʔwa	*loʔo
Mont	ⁿ disa	—	kibi	[kakau]	hoʔo
Nuch	ⁿ disa	hɛʔi	kivì	ti heʔba	hoʔo
Aten	ⁿ dusa	hɛʔi	kivi	h ^y aʔa	hoʔo
Yucq	ⁿ disa	—	küü	(tiʔa žiʔi)?	soʔo
Yucñ	ⁿ dìsà	hɛʔi	kùù	h ^y aʔa	hoʔo
Guad	ⁿ disa	ɛ̃i ɛ̃iʔi	kivi	ɛ̃iʔa	ɛ̃oʔo
Flor	ⁿ disa	—	kibi	siʔba	ɛ̃oʔo
Amat	ⁿ yjisa	—	kibi	či ɛ̃iʔwa/či ɛ̃iʔwo	ɛ̃oʔo
Zap	ⁿ s ^y isɛ/ ⁿ d ^y isɛ	ɛ̃iʔi	—	ɛ̃uʔa	ɛ̃oʔo
Cac	ⁿ disɛ	ɛ̃i	kibi	θüʔa	loo
Ndo	ⁿ dixɛ	—	kii	siʔba	soʔo
Ixtp	ⁿ disa	—	kii	ɛ̃iʔba	[tutu]
Mic	ⁿ disa	—	kii	fruta de cacao ɛ̃iba	[tutu]
Tepj	ⁿ disɛ	ɛ̃iʔi	kii	ɛ̃iʔwa	[tutu]
Cos	ⁿ disɛ	ɛ̃iʔi	kii	ɛ̃iʔwa	[tutu]/ɛ̃oʔo
Chaz	ⁿ disa	(tu) ɛ̃iʔi	kii	ɛ̃iʔwa	loʔo
Tot	ⁿ disɛ	—	[nɛ̃sa nɛ̃ny]	[kakayu]	[tutni]
Ton	ⁿ disɛ	ɛ̃iʔi	kiwi	ɛ̃iʔwa	[tutny]
Jer	ⁿ disɛ	—	[nɛ̃ni]	si ɛ̃iʔba	[tutny]
Xay	ⁿ dìsà	ɛ̃iʔi	kivì	ɛ̃iʔbà	ɛ̃òʔò
Tlal	ⁿ caa	[a ^r ku]	[nɛ̃ni]	[čukula]	[tutny]
Chig	ⁿ jaa	ɛ̃iʔi	[nɛ̃s nɛ̃ny]	—	[tutny]

So. Baja	125) huarache sandal	126) horcón housepost	127) nombre name	128) cacao cacao	129) oreja ear
P-Mixtec	* ⁿ dixəʔ	*sɨʔɨ	*sɨwɨʔ	*sɨʔwa	*loʔo
Ayut	ⁿ dɨʃəʔ	sɨʔɨ	kiviʔ	siʔva	soʔo
Yolx	ⁿ dɨʃa	tu sɨʔɨ	kiwi	siʔwa	soʔo
Alac	ⁿ duʃə	—	kibi	—	sòʔo
Metl	—	—	kìbì	—	—
Coi	ⁿ dɨʃə	siʔɨ	kìvɨ	—	sòʔó
Pera	ⁿ çɨʃa	siʔɨ	kìvɨ	siʔba	sòʔó
Cuat	ⁿ duʃə	siʔɨ	kiwi	siʔwa	soʔo
Cah	ⁿ duʃə	siʔɨ	kiwi	semilla, chocolate siʔwa	soʔo
Alco	ⁿ duʃə	siʔɨ	kiwi	siʔwa	soʔo
Cruz	ⁿ duʃə	siʔɨ	kiwu	suʔwa	soʔo
Durz	ⁿ çɨʃə	siʔɨ	kìvì	sùʔbà	suʔu
Teco	ⁿ çɨʃa	sɨʔɨ	kìì	soʔba	soʔo
Juxt	ⁿ dɨsa	siʔɨ	kibi	siʔba	soʔo
ChaP	ⁿ dɨʃa	—	kibi	siʔba	soʔo
Yuco	ʔɨ ⁿ dɨsʲə	sɨʔɨ	sɨvɨ-áf	sìʔbà	sòʔò
Mix	ⁿ dʲɨça	siʔɨ	sibi	siʔba	soʔo
Tejc	ⁿ dɨça/ ⁿ dɨçə	—	šibi	[çokolati]	soʔo
Rey	ⁿ çɨʃa	siʔɨ	kivi	soʔba	sòʔò
TlaM	—	—	kìì	—	sòʔó
SilP	ⁿ dusa	—	kibi	hʲaʔba	hoʔo
IxpN	ⁿ dùsà	siʔɨ	kiwi	semilla kiti hiʔba	hoʔo
SilM	ⁿ düsa	θɨʔɨ	kibi	θeʔba	θoʔo
TamS	ⁿ duʃa	θɨʔɨ	—	θiʔba	θoʔo
Ahue	ⁿ dɨʃá	ti θɨʔɨ	kìvɨ	ti θiʔba	θòʔó
Mor	ⁿ düʃa	siʔɨ	kibi/kibu ⁿ	—	soʔo

Costa	125) huarache sandal	126) horcon housepost	127) nombre name	128) cacao cacao	129) oreja ear
P-Mixtec	*ndixɛʔ	*sɪʔɪ	*sɪwɪʔ	*sɪʔwa	*loʔo
Zac	ⁿ dičɛʔ	sɪʔɪ	sɪbɪʔ	siʔba (coffee)	soʔo
Sayu	ⁿ dičɛʔ	sɪʔɪ	siwi	siʔwa	soʔo
Tept	ⁿ dičɛʔ	—	siwi	siʔwa	soʔo
Atoy	ⁿ dičɛʔ	sɪʔɪ	siwi	siʔwa	soʔo
Jicy	ⁿ dičɛʔ	sɪʔɪ	sɪbɪ	čikula/siʔba	soʔo
Jict	ⁿ dičɛʔ	sɪʔɪ	sɪbɪ	siʔba/čikula	soʔo
PinN	ⁿ diča	sɪʔɪ	sɪbɪ	siʔba	soʔo
PinL	ⁿ dičɛʔ	sɪʔɪ	siwɪ	čikula/suʔba fruit of cacao	soʔo
Colo	ⁿ d ^y ičɛ	sɪʔɪ	siwi	[čikula]	soʔo
Nuti	ⁿ d ^y iča	—	sɪbɪ	siʔba	soʔo
Ixty	ⁿ dičɛʔ	sɪʔɪ	sɪbɪ	suʔba	soʔo
Cris	ⁿ dišča	—	sɪwɪ/sɪbɪ	[kakao~]	soʔo
Lor	ⁿ d ^y ičɛ	sɪʔɪ	siwɪ	suʔwa	soʔo
Mech	ⁿ dičɛ	sɪʔɪ	siwɪ	suʔwa	soʔo
Huaz	ⁿ dičɛ	[tu čaʔa]	siwɪ	suʔwa	soʔo
Jam	ⁿ dičɛ	sɪʔɪ	sɪbɪ	siʔba	soʔo
Chay	ⁿ diča	sɪʔɪ	siwɪ	suʔwa	soʔo
ChayC	ⁿ disa	seʔe ⁿ je	θebe	θuʔba	θoʔo/soʔo
ChayD	ⁿ disa	—	θivi	θuʔva	θoʔo
Tut	ⁿ dičɛ	[tu čaʔa]	siwɪ	siʔwa	soʔo
Acat	ⁿ disɛ	[tu saʔa]	siwɪ	siʔwa	soʔo

NE Alta	130) sabroso tasty	131) cerrado closed	132) pasado mañana day after tomorrow	133) dulce sweet	134) ahora now
P-Mixtec	*asɨʔ	* ⁿ desɨ	*isa	*wisɨ	*witɨj
Tepo	aɨj	ⁿ daɨi/[kaɨe]	ia	wiɨi	witɨŋ
Tida	aɨi	[ⁿ ʝiʔwi]	ia	wiɨi	witɨŋ
Til	aɨi	—	ia	wiɨj	[ʒaɨi]
Diux	—	[kaɨe]	—	biɨi	—
Nuxi	aɨi	ⁿ deɨi/[kaɨi]	ia	biɨi	biʔŋa
Nuxa	aɨi	ⁿ deɨi	ia	(xa) wiɨi	witɨ
TamJ	[Nŋŋmi]/aɨi =frondoso	[kaɨi]	ia	wiɨi	wiŋŋ
Yuta	—	[kaɨi]	—	biɨi	—
Pefio	[waʔa ʒeʒi] [ⁿ duɨu]	ⁿ deɨi	ia	biɨi	[ʒaɨi]/ biŋŋ
Este	—	ⁿ deɨi	ia	wiɨi	ta wii/ witɨŋ=hoy
Cui	—	ⁿ zaɨi	[ʒuɨa]	wiɨi	wiɨa
Soso	—	—	—	—	—
Jalt	—	[kaɨi]	—	biɨi	—
Adeq	—	[kaɨi]	—	biɨi	—
Cant	—	[kaɨi]	—	biɨi	—
Lobo	—	—	—	—	biʔŋ
Ynam	—	—	—	biyi	—
Soy	aɨi	ⁿ ʝaɨi/ ⁿ zaɨi	ia	(xa) wiɨi	witɨŋ
Chic	aɨi	ⁿ zaɨi	—	(so) wiɨi	wita
Ixtl	aɨi	ⁿ zaɨi	[ɛ ⁿ ga kii]	wiɨi	wita
Apas	aɨi	ⁿ zaɨi	yua ia	wiɨi	wita
Apoa	aɨi	—	[ɛ ⁿ ga kii]/ia	wiɨi	bita
Ndua	—	[kaɨi]	—	biɨi	—
Joco	aɨi	ⁿ zaɨi	[ɛ ⁿ ga kii]	wiɨi	witɨ
Cuya	aɨi	ka ⁿ daɨi	ia	wiɨi	wi yaʔa
Cuau	aɨj	ⁿ daɨi	ia	wiɨi	wi yaʔa
Coat	[beʒi]	—	ia/iaʔŋ	biɨj	[eʒi]

	130) sabroso tasty *asɨ?	131) cerrado closed * ⁿ desɨ	132) pasado mañana day after tomorrow *isa	133) dulce sweet *wisɨ	134) ahora now *witɨ
P-Mixtec					
Ñumi	asɨ	—	(ⁿ de) isa	bišɨ	bitnɔ
Achi	asi	ⁿ desi	isa	xa biši	bitNɔ
Yuca	asɨ	ⁿ desi	isa	bišɨ/wišɨ/wisɨ	witnɔ
Peña	—	[kasi]	—	biši	—
Tata	—	[kaɗi]	—	biɗi	—
Teit	aɗi	[ⁿ di?yu]	(ⁿ de) iɗa	wiɗi	wiNɔ
Moli	āsɨ	ⁿ desi	isa	biši	[žaci]
Sinc	—	[kasi]	—	bišɨ	—
Tlac	asi	ⁿ desi	isa	xa biši	bitNɔ
Ndi	—	[kasi]	—	biši	—
Ndac	—	[kasi]	—	biši	—
Oco	?əsɨ	ⁿ dasi	?isá	bišɨ	nɨtɔ
Prog	—	[kasi]	—	biši	—
Yuci	[nɨ?ɨ]	nɨsɨ	?isá	bišɨ	bitɔ
Nuyo	[nɨ?ɨ]	nɨsɨ	?isá	bišɨ	bitɔ
Atat	asɨ	[kasi/xésɨ]	isá	biši	[žaci]
Mig	asɨ	[kasɨ]/ ⁿ dasɨ =fence	isá	biši	bitɔ/bitnɔ
Chal	asu	—	isa	bišɨ	biNɔ
Verd	[ⁿ du?ɨ]	[ⁿ di?yu]	[yata itnɔ]/isa	biši	bitnɔ
Yoso	asɨ	[ⁿ di?žu]/[kasi]	isa	biši	biNɔ
Itun	asɨ	[ⁿ di?yu]/[kasi]	isa	biši	bitɔ
Yolt	asɨ	[ⁿ di?žu]	isa	xa biši	bitNɔ
Yutn	—	[kaɗi]	—	biɗi	—
Sind	[že wa?a]/aɗi	ⁿ dedɨ	iɗa	wiɗi	wiNɔ
Pied	aɗi	ⁿ dedɨ	iɗa	wiɗi	wiNɔ
Huit	—	ⁿ dadɨ	iɗa	wiɗi	wiN(n)ɔ
Tlaz	—	ⁿ dedɨ	iɗa	—	witnɔ/[žaci]

No. Baja	130) sabroso tasty	131) cerrado closed	132) pasado mañana day after tomorrow	133) dulce sweet	134) ahora now
P-Mixtec	*asɬʔ	*ndesɬ	*isa	*wisj	*witj
Mont	—	kahe	—	biši	—
Nuch	ʔahi	ⁿ dahi	ʔ ^y aha	biši	biti
Aten	ʔahj	ⁿ dehi	ʔ ^y aha	biši	biti
Yucq	—	kaʔhi	—	bihi	—
Yucñ	ʔahi	ⁿ dahi	[ʔiŋga tɬɬ]	biha	biti
Guad	ʔadi	ⁿ dadi	ʔida	biši	biti
Flor	—	kaði	—	biši	—
Amat	—	kaði	—	biði	—
Zap	adi	ⁿ dedi	ida	widi	wiči
Cac	adi	—	ida	widi	bičj/zaci
Ndo	—	(kasi)	—	bišf	—
Ixtp	—	kaði	—	^m biði	—
Mic	—	či kaði	—	biði	—
Tepj	adi	ⁿ _d ^y adi	ida	widi	wiči (today)
Cos	adi	ⁿ _d ^y adi	ida	widi	wiči
Chaz	adi	ⁿ _d ^y adi	[iŋga t ^y ɬɬ]/ida after lunchtime	widi	wiči
Tot	—	kaði	—	biði	—
Ton	adi	ⁿ _d ^y adi	ida	widi	wiči/witnj
Jer	—	kaði	—	biði	—
Xay	ãd̥	n̥ɬ kãd̥	tɬɬ̥ idá	biđ̥	vitn̥j
Tlal	[tɬɬʔɬ bi]	ⁿ deðe	—	tɬɬ biði	[ãitwi]?
Chig	adi	ⁿ deðe	[iŋga i tɬɬɬ̥]	widi	witnj

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So. Baja	130) sabroso tasty *asɨʔ	131) cerrado closed *ndesɨ	132) pasado day after *isa	mañana tomorrow sweet *wisɨ	133) dulce sweet	134) ahora now *witɨ
Ayut	āsɨʔ	ⁿ dāsɨ	isā	višɨ	vi ^h tɨ	
Yolx	asɨ	ⁿ dasi	isa	wišɨ	witɨ	
Alac	yāsɨ	ⁿ dasi	yisa	bisi	bitɨj/biti	
Metl	yāsɨ	—	isá	bışɨ	—	
Coi	yāsɨ	ⁿ dasi	[yaʔa itɨɨ]/ʔisá	bışɨ	bicɨj	
Pera	ʔasi	ⁿ dasi	ʔisá	bışɨ	biçɨj	
Cuat	yasɨ	ⁿ dasi	isa	wišɨ	witɨ	
Cah	yasɨ	ⁿ dasi	žisa/ ⁿ jisa	wisi	witɨj	
Alco	yasɨ	ⁿ dasi	isa	wišɨ	witɨ	
Cruz	ya asɨ	ⁿ dasi	isa	wišɨ	witɨj	
Durz	ʔasi	ⁿ dasi	ʔisá	bışɨ	bicɨ	
Teco	ʔasi	ⁿ dásɨ	ʔisa	ñɨ bışɨ	bicɨ	
Juxt	asi	[kai]	isa	bışɨ	bit ^v i	
ChaP	—	[kasi]	—	bışɨ	—	
Yuco	žásɨ	ⁿ dásɨ	ʔisā	ñɨ bışɨ	bítɨj	
Mix	asi	—	isa	bışɨ	bit ^v i	
Tejc	—	[ⁿ gasi]	—	bışɨ	—	
Rey	ʔasi	ⁿ dásɨ	ʔisa	busu	bicɨj	
TlaM	—	ⁿ dasi	—	bışɨ	bicɨj	
SilP	—	kahi	—	[k ^w iʔi]	—	
IxpN	ʔahɨ	ⁿ dahi	ʔiha	ñɨ bışɨ	bicɨj	
SilM	aθi	ⁿ daθi	iθa	biθi	bit ^v i	
TamS	[hǣǣ]	ⁿ daθi	[ʔik ^y uy]	biθi	biti	
Ahue	ʔaθi	ⁿ daθi	ʔiθá	panela biθi	biti	
Mor	ašɨ-ñɨ	ⁿ dahi (yii-ñɨ)	iea	ñɨ bışɨ	biti	

Costa	130) sabroso tasty	131) cerrado closed	132) pasado mañana day after tomorrow	133) dulce sweet	134) ahora now
P-Mixtec	*asɨʔ	* ⁿ desɨ	*isa	*wiʃɨ	*witɨ
Zac	asɨʔ	ⁿ dasi	isa	biʃi	bitɨ
Sayu	asɨ	ⁿ dasi	isa	wiʃi	wit ^y ɨ
Tept	asɨ	ⁿ dasi	isa	wiʃɨ	witɨ
Atoy	asɨ	—	isa	waʃɨ	witɨ
Jicy	asi	ⁿ daki	isa	biʃɨ	bitɨ
Jict	asɨ	ⁿ dasi	isa	biʃi	[yatɨ]
PinN	asi	ⁿ dasi	isa	biʃi	biti
PinL	asɨ	ⁿ dasi	isa	biʃi	bitɨ
Colo	asɨ	ⁿ dasi	isa	biʃi	bit ^y ɨ
Nuti	—	(kasi)	—	biʃi	—
Ixty	asɨ	ⁿ dasi	isa	biʃɨ	bit ^y ɨ
Cris	—	(kaçi)	—	biʃi	—
Lor	asɨ	ⁿ dasi	isa	wiʃi	wit ^y ɨ
Mech	asɨ	ⁿ dasi	isa	wiʃi	wit ^y ɨ
Huaz	asɨ	ⁿ dasi	isa	wiʃi	wit ^y ɨ
Jam	asɨ	yasi	isa	biʃɨ	bit ^y ɨ
Chay	asi	ⁿ dasi	isa	wiʃi	wit ^y ɨ
ChayC	asi/aθi	ⁿ dasi/ ⁿ daθi	iθa	biʃi	biçi
ChayD	aθi	[nə kaθi]	iθa	sa wiʃi	vit ^y ɨ
Tut	asɨ	ⁿ dasi	isa	wiʃi	wit ^y ɨ
Acat	asɨ	ⁿ dasi	isa	wiʃi	wit ^y ɨ

NE Alta	135) agujero	136) tiene miedo	137) pobre	138) dos	139) alacrán
P-Mixtec	hole	afraid	poor	two	scorpion
	*yawī	*yuʔwi	* ⁿ daʔwi	*uwi	*tɬ luʔweʔ
Tepo	yawī	yuʔwi	ⁿ daʔwi	uvi	te ɛuʔmɛ
Tida	žawi	žuʔu	ⁿ daʔwi	uu	ti ɛyʔɛ
Til	žau	žuʔu	ⁿ daʔu	uu	tyʔɛ
Diux	—	žuʔu	ⁿ daʔu	uu	—
Nuxi	žabi	žuʔu	ⁿ daʔbi	uu	[lak ^w a]
Nuxa	žawi	žuʔu	ⁿ daʔwi	uu	[ⁿ jak ^w a]
TamJ	žawi	žɛʔwɛ	ⁿ daʔwi	uu	[ⁿ d ^y ak ^w a]
Yuta	—	žuʔu	ⁿ daʔu	uu	—
Peflo	žāū	žùʔū	ⁿ dàʔū	ʔúú	[ⁿ jàk ^w à]
Este	žau	žuʔu	ⁿ daʔu	uu	ⁿ dɛ lyʔmɛ
Cui	—	žuʔwi	ⁿ daʔbi	ubi	—
Soso	—	—	—	—	—
Jalt	—	žuʔu	ⁿ daʔbi	uu	—
Adeq	—	žuʔu	ⁿ daʔi	uu	—
Cant	—	žuʔu	ⁿ daʔbi	uu	—
Lobo	—	žuʔu	—	—	—
Ynam	—	—	—	uu	—
Soy	žawi	žuʔu	ⁿ daʔwi	uu	ⁿ di ɛyʔmɛ
Chic	žawi	žuʔu	ⁿ faʔwi	uwi	či fyʔmɛ
Ixtl	žai	ẓ̌uʔu	ⁿ daʔi	uu	či fyʔmɛ
Apas	žawi	žuʔu	ⁿ daʔwi	uwi	ⁿ di ɛyʔmɛ
Apoa	yabi	žuʔu	ⁿ daʔbi	ubi	ⁿ di ɛyʔmɛ
Ndua	—	žuʔu	ⁿ daʔbi	uu	—
Joco	yawi	yuʔu	ⁿ daʔwi	uwi/uu	ⁿ di ɛyʔmɛ
Cuya	yawi	ka yuʔwi	ⁿ daʔwi	uwi	tyʔmɛ
Cuau	yawi	yuʔwi	ⁿ daʔwi	uwi	θyʔmɛ
Coat	šabi	ka uʔbi	ⁿ daʔbi	ubi	t θyʔmɛ

Cen. Alta	135) agujero hole	136) tiene miedo afraid	137) pobre poor	138) dos two	139) alacrán scorpion
P-Mixtec	*yawī	*yu?wi	*da?wi	*uwi	*tɛ lu?wɛ?
Ñumi	žau	žu?u	ⁿ da?u	uu	ti sy?ɟ
Achi	—	žu?u	ⁿ da?bi	uu	—
Yuca	žawi	žu?u	ⁿ da?wi	uu	ti sy?mɟ
Peña	—	žu?u	ⁿ da?bi	uu	—
Tata	—	—	ⁿ da?u	uu	—
Teit	šawi	šu?u	ⁿ da?wi	uu	ti ɛy?mɟ
Moli	žawi	žu?u	ⁿ da?vi	uu	ti sy?mɟ
Sinc	—	žu?u	ⁿ da?bi	uu	—
Tlac	—	žu?u	ⁿ da?bi	uu	ɟi sy?mɟ
Ndi	—	žu?u	—	uu	—
Ndac	—	yu?u	ⁿ da?bi	uu	—
Oco	—	žu?u	ⁿ da?vi	uū	tì sū?mɛ̀
Prog	—	žu(?)bi	na?bi	u?bi	—
Yuci	—	žú?ví-xī	nɟ?ví	?ùvì	tì sū?mɛ̀
Nuyo	—	žú?ví-ī	nɟ?ví-	?ùwì	ti sū?mɛ̀
Atat	žau/žavu	yú?ú	ⁿ da?ú	uu	tɛ sy?mɟ
Mig	žau	žú?ú	ⁿ da?ú	uū	tɛ/li sy?mɟ
Chal	žau	žu?u	ⁿ da?u	uu	ti sy?mɟ
Verd	žau	yu?u	(ku) ⁿ da?u	uu	la sy?mɟ
Yoso	žau	žu?u	ⁿ da?u	uu	la sy?mɟ
Itun	yawɛ/žawɛ	yu?u	ⁿ da?wɛ	ɛwɛ	tɛ sy?mɟ
Yolt	—	žu?u	ⁿ da?bi	uu	tɛ sy?mɟ
Yutn	—	yuu	ⁿ da?u	uu	—
Sind	žau	žu?u	ⁿ da?wi	uwi	koo ɛy?mɟ
Pied	žawi	žu?u	ⁿ da?wi	uu	tɛ ly?mɟ
Huit	žawi	ɲy?y	ⁿ da?wi	uu	ti ly?mɟ
Tlaz	žau	žu?u	ⁿ da?u	uu	ⁿ ji ly?mɟ

No. Baja	135) hole	136) afraid	137) pobre	138) two	139) alacrán
P-Mixtec	*yawī	*yu'wi	*nda'wi	*uwi	*tɛ lu'wɛʔ
Mont	—	ʒi'bi (o)	n ⁿ da'bi	iβi	—
Nuch	—	ʒi'vi	n ⁿ da'vi	ʔi'vi	tɪ hi'mɛ
Aten	—	ka ʒi'vi	n ⁿ da'vi	ʔi'vi	(ti h ^y ɛ'ɛ)
Yucq	—	ʒü'ü	n ⁿ da'u	iβi	—
Yucñ	—	ʒu'u	ku n ⁿ da'vi	ʔi'vi	ti hɔ'mɛ
Guad	—	yi'vi	n ⁿ da'vi	ʔi'vi	ɕi di'mɛ
Flor	—	ʒi'bi	n ⁿ da'bi	iβi	—
Amat	—	ʒu'u	—	uβi	—
Zap	yawi	yu'i	n ⁿ da'wi	uu	ɕi ɛɔ'mɛ
Cac	ʒawi	ʒüi	n ⁿ dabi	üü	ti di'mɛ
Ndo	—	ʒu'u	n ⁿ da'wɛ	uu	—
Ixtp	—	ʒui	n ⁿ da'bi	ui	—
Mic	—	ʒui	n ⁿ da'bi	ui	—
Tepj	yawi	yu'i	n ⁿ da'wi	uwi	si ɛy'mɛ
Cos	yawi	yu'i	n ⁿ da'wi	uwi	si ɛy'mɛ
Chaz	yawi	yu'u	n ⁿ da'wi	uwi	ɕi ɛy'mɛ
Tot	—	yu'i	n ⁿ da'bi	ui	—
Ton	[či ko'o]/yawi	yu'i	n ⁿ da'wi	ui	si ɛy'mɛ
Jer	—	ʒu'i	n ⁿ da'bi	ui	—
Xay	[čî kō'ō]	yú'í	n ⁿ dâ'ví	ûî	sî ɛy'mɛ
Tlal	[ⁿ jii]	ʒu'u-ʒi	n ⁿ da'bi	uβi	—
Chig	yawi	yu'u	n ⁿ da'wi	uwi	ɕi ɛy'mɛ

So. Baja	135) agujero hole	136) tiene miedo afraid	137) pobre poor	138) dos two	139) alacrán scorpion
P-Mixtec	*yawí	*yu'wí	* ⁿ da'wí	*uwi	*tɛ lu'wɛʔ
Ayut	yāvi	yí'vī	ⁿ dā'vī	ūvi	ti sū'mə
Yolx	yawi	žu'u	ⁿ da'wi	uwi	ti su'mə
Alac	—	yi'bi	ⁿ dá'bí	obi	—
Metl	—	—	—	—	ti sū'mə
Coi	—	yu'vi	ⁿ da'vi	ʔūvî	ti su'mə
Pera	—	ʔí ži'vi	ⁿ da'vi	ʔivi	sq'mə
Cuat	—	yi'wi	ⁿ da'wi	owi	ti sɨ'mə
Cah	—	yi'wi	ⁿ da'wi	owi	ti sɨ'mə
Alco	—	yu'wi	ⁿ da'wi	uwi	ti sq'mə
Cruz	—	yi'wi	ⁿ da'wi	owi	ti su'mə
Durz	—	žu'vi	ⁿ da'vi	ʔivî	či su'mə
Teco	—	ní ži'bíî	ⁿ dá'bí	ʔibî/ʔibî	či su'mə
Juxt	žabi	žu'u	ⁿ da'bi	ubi	ti su'mə
ChaP	—	žu'u	ⁿ da'bi	ubi	—
Yuco	—	yú'ū-yū	ⁿ dá'bi	ʔūvî	tì sū'mə
Mix	yabi	yu'u	ⁿ da'bi	ubi	ti su'mə
Tejc	—	yu'u	ⁿ da'bi	ubi	—
Rey	—	žu'u	ku ⁿ da'vi	ʔuvi	či sū'mə
TlaM	—	kú ži'ví	ku ⁿ da'vi	ʔivi	—
SilP	—	ži'bi	ⁿ da'bi	ʔibi	—
IxpN	—	ku ži'vi	ku ⁿ da'vi	ʔeve	ti hí'mə
SilM	yabi	yi'bi	ⁿ da'bi	ibi	ti i'mə
TamS	—	kí ži'ví	ⁿ da'vi	ʔivi	ti i'mə
Ahue	—	ži'vi	ki ⁿ da'vi	ʔivî	ti hí'mə
Mor	yabi	a ki yi'bu	ⁿ da'bi	ibi	ti sɨ'mə

Costa	135) agujero	136) tiene miedo	137) pobre	138) dos	139) alacrán
P-Mixtec	hole	afraid	poor	two	scorpion
	*yawí	*yu'wi	* ⁿ da'wi	*uwi	*t̩ lu'wɛʔ
Zac	yabi	[ⁿ dasi]/yu'bi	ⁿ da'bi	ubi	ti su'mɛʔ
Sayu	yawi	[ⁿ dasi]/yu'wi	ⁿ da'wi	uwi	ti su'mɛ
Tept	yawi	yu'wi	ⁿ da'wi	uwi	ti su'mɛ
Atoy	yawi	yu'wi	ⁿ da'wi	uwi	ti su'mɛ
Jicy	yabi	yu'bi	ⁿ da'bi	ubi	ti su'mɛ
Jict	yabi	yu'bi	ⁿ da'bi	ubi	ti su'mɛ
PinN	yabi	ʒu'u/yu'i	ⁿ da'bi	ui	ti su'mɛ
PinL	yabi	yu'bi	ⁿ da'bi	ubi	t̩ su'mɛ
Colo	yabi	yu'wi	ⁿ da'bi	ubi	tu hu'mɛ
Nuti	—	yu'bi	ⁿ da'bi	ubi	—
Ixty	yabi	yu'bi	ⁿ da'bi	ubi	tu su'mɛ
Cris	—	ⁿ ʃu'u	ⁿ da'bi	ubi	—
Lor	yawi	yu'u/yu'wi	ⁿ da'wi	uwi/uu	t̩ su'mɛ
Mech	yawi	yu'u/yu'wi	ⁿ da'wi	uu/uwi	t̩ su'mɛ
Huaz	yawi	yu'u	ⁿ da'wi	uu/uwi	t̩ su'mɛ
Jam	yabi	yu'bi	ⁿ da'bi	ubi	t̩ su'mɛ
Chay	yawi	yu'u/yu'wi	ⁿ da'wi	uwi/uu	ti su'mɛ
ChayC	yabi	yu'u	ⁿ da'bi	uu	ti su'mɛ/ ti θu'mɛ
ChayD	yāv̀	yu'u	ⁿ da'vi	uu	ti θu'mɛ
Tut	yawi	yu'wi	ⁿ da'wi	uwi	t̩ su'mɛ
Acat	yawi	yu'u	ⁿ da'wi	uwi	t̩ su'mɛ

NE Alta	140) salir go out	141) pintar paint	142) rata rat	143) hinchazón swelling	144) grano pimple
P-Mixtec	*keyi?	*ka?yu	*táiyꞥ?	*k ^w íyꞥ	* ⁿ di?yꞥ
Tepo	kai	ka?yu =tefir	tneñe	te k ^w eye =ampolla	[ⁿ deke]
Tida	kee	ka?i	tnij	k ^w iy	ⁿ di?i
Til	ᶯgee	ka?yu	tꞥ tnijꞥ	k ^w ijꞥ	ⁿ di?yꞥ
Diux	—	—	tꞥ tꞥijꞥ	—	ⁿ di?yꞥ
Nuxi	ba kee	ng ka?yu	[čoto]	k ^w ijny	ⁿ di?i
Nuxa	ta kee	ka?zu	[čoto]	k ^w ijny	ⁿ di?i
TamJ	kee	ka?zꞥ	či Nnijꞥ/[t ^v oto]	x ^w iyu	ⁿ di?zꞥ
Yuta	—	—	[čoto]	—	ⁿ di?zꞥ
Peño	kēē`	ká?zú	tnijꞥ	[čú?ú]/k ^w ijny	ⁿ di?zꞥ
Este	kee	ka?zu	tnijꞥ/[čoto]	[neñy]	ⁿ di?zꞥ
Cui	kee	—	—	—	ⁿ di?i
Soso	—	—	—	—	—
Jalt	—	—	ti nijꞥ	—	[ti y?y]
Adeq	—	—	ti Nni(i)	—	[ti y?y]
Cant	—	—	ti ?nijꞥ	—	[ti y?y]
Lobo	—	—	nijꞥ	—	[či y?y]
Ynam	[kəŋə]	—	—	—	—
Soy	ti kee	da ka?yu	tnijꞥ/tneñe	k ^w ijno	t ^v y ⁿ de?ye
Chic	ti kee	da ka?yu	teñe	k ^w ijny	ⁿ fi?i
Ixtl	ti kee	da ka?i	ti tijꞥ	k ^w ijny	ⁿ di?i
Apas	kee	da ka?yu	tijꞥ	k ^w ijny	ⁿ di?i
Apoa	kee	(da) ka?yu	tijꞥ	[šiq]/k ^w ijno	ⁿ di?i =viruela
Ndua	—	—	tij	—	[čq?q]
Joco	kee	—	[t ^v oto]/tijꞥ	šijny/k ^w ijny	—
Cuya	[ka ⁿ di?i]	kaða ka?yu	tijꞥ	[či ^h tu]	ⁿ di?yꞥ
Cuau	kai	—	tijꞥ	[ka či ^h tu]	ⁿ di?zꞥ
Coat	[ki?i]/[ŋə de?e]	ka ka?u	štijꞥ	k ^w ijny	ⁿ dišꞥ

Cen. Alta	140) salir go out	141) pintar paint	142) rata rat	143) hinchazón swelling	144) grano pimple
P-Mixtec	*keyi?	*ka?yu	*tɨyɨ?	*k ^w ɨyɨ	*n ^d ɨ?yɨ
Ñumi	kee	ka?i	tniñi	(ka) k ^w iñɔ/[xaa]	n ^d i?i
Achi	ke koo	—	tniñi	k ^w iñy	—
Yuca	kee	(ng) ka?zu	tniñi	[we nɛñy]	n ^d i?zi
Peña	—	—	[li]gi	—	n ^d i?i
Tata	—	—	sNniñi	—	n ^d ɨ?yɨ
Teit	kee	da ka?yu	Nniñi	k ^w iñy	n ^d i?i
Moli	[kɛ ⁿ ta]	[ⁿ da si xa?a]	[ri]gi	k ^w iñi	n ^d i?zi
Sinc	—	—	tñi	—	n ^d i?i
Tlac	[k ^w a kNngɛ-ngɛ]	ka ^a zu	[leko]	k ^w ɛñɔ	n ^d i?zi
Ndi	—	—	tñi	—	n ^d i?i
Ndac	—	—	tñi	—	n ^d i?yi
Oco	kee	ká?zū	tñi	k ^w iñy	n ^t i?zi
Prog	—	—	ti ñi	—	ni?i
Yuci	[kɛñɛ-xɛ]	ká?yū-xū	tñi/[tɛ?yá]	k ^w iñi	ni?zi
Nuyo	[k ^v ɛñɛ]	ká?zū	tñi/[tɛ?yá]	k ^w iñi/[nɛñy]	ni?yɨ
Atat	[kɛ ⁿ da]	ka?yu	Nniñi	k ^w iñi	n ^d ɨ?yɨ
Mig	[kɛ ⁿ da]	ng ka?i	tñi	k ^w iñi	n ^d ɨ?zi
Chal	[kɛ ⁿ da]	ka?zu	tñi	k ^w iñi	n ^d ɨ?zi
Verd	kii	ka?yu	tniñi	k ^w iñi	n ^d i?yɨ
Yoso	[kɛngɛ]	ka?yu	[lusu]/tñi	k ^w iñi	n ^d ɨ?zi
Itun	keyi/[kɛngɛ]	ka?yu	tñi	k ^w i	n ^d ɨ?yɨ
Yolt	[kɛ ⁿ ta]/[kɛngɛ]	ka?u	nñi	k ^w iñi	n ^d ɨ?zi
Yutn	—	—	[çoto]	—	n ^d ɨ?zi
Sind	kee/[kɛñi]	ⁿ da ka?zu	çi nñi	k ^w iɔ	n ^d ɨ?zi
Pied	kee	ⁿ da ka?i	[çoto]/çi nñi	x ^w iñy	n ^d ɨ?zi
Huit	kee/ñgee	ⁿ da ka?zu	çi nñi	[nɛñy]/x ^w iñi	n ^d ɨ?zi
Tlaz	kee	ka?yu	nñi	k ^w iñi =inflamed	n ^d ɨ?zi

No. Baja	140) salir go out	141) pintar paint	142) rata rat	143) hinchazon swelling	144) grano pimple
P-Mixtec	*keyiʔ	*kaʔyu	*tiyʔ	*k ^w iyʔ	*ndiʔyʔ
Mont	—	—	[ti ʒoto]	—	ⁿ diʔi
Nuch	kee	ŋa kaʔʒi	ti ʒoto/tiʔi	[ŋəŋy]	ⁿ diʔi
Aten	[kəŋə]	ŋa kaʔi	ti ʒoto/tiʔi	[ŋəi]/k ^w iy	ⁿ diʔi
Yucq	—	—	[ti yoto]	—	ⁿ diʔi
Yucñ	kee	ⁿ da keʔi	tì tiʔi/ti yòtò	[ŋəʒ]	ⁿ diʔi
Guad	[kəŋə]	kaʔya	ʔi yoto/ʔi tiʔi	[ŋəi]	ⁿ dziʔi
Flor	—	—	čiči (či čii ?)	—	ⁿ jiʔi
Amat	—	—	či čii	—	ⁿ jiʔi
Zap	kee	—	ʔi tiʔi	[ŋəŋy]	ⁿ siʔi
Cac	kee	kai	[ti ʒoto]	[kū əʒ]	ⁿ dii
Ndo	—	—	[ti ʒoto]/ti tñi	—	ⁿ jiʔi
Ixtp	—	—	si tiʔi	—	ⁿ jiʔi
Mic	—	—	si tiʔi	—	ⁿ tii
Tepj	kee	—	[ti yoto]/sitij	k ^w iñy/ [ni ŋəi]	ⁿ siʔi
Cos	kee	kaʔi product of nopal	[si yoto]/sitij	k ^w iñy	ⁿ siʔi
Chaz	kee	kaʔi	ʔi tiʔi	[ŋəŋy]	ii (?)
Tot	—	—	si tñi	—	ⁿ siʔi
Ton	kee	kaʔyu	[si yoto]/ si tñi	k ^w iy	ⁿ siʔi
Jer	—	—	si tñi	—	ⁿ siʔi
Xay	kēé	—	[sì yòtò]/ si tñi	k ^w iñy	ⁿ siʔi
Tlal	—	[əa tekú-si]	či tñi	—	ⁿ jiʔi
Chig	ⁿ gee	kaʔyu	stñi	[ŋə ʒiñy]	[yu čiʒi]

So. Baja	140) salir go out	141) pintar paint	142) rata rat	143) hinchazon swelling	144) grano pimple
P-Mixtec	*kəyiʔ	*kaʔyu	*təyʔʔ	*kʷəyʔ	*ndəʔyʔ
Ayut	[kē ⁿ tāʔ]/kīeʔ	kēʔi	tijʔ	kʷijñy	n ⁿ diʔi
Yolx	[kete]	kaʔyu	tij	kʷijñy	n ⁿ diʔi
Alac	keè/[kêta]	kaʔi/kaʔyi	tnij/tij old/young	—	n ⁿ diʔi
Metl	kēē	—	tij	kʷijñy	—
Coi	[kəŋə]	kaʔyu	tij	kʷijñy	n ⁿ diʔi
Pera	kee	nə kaʔi	çij	kʷijñy	n ⁿ çiʔi
Cuat	kee	kaʔyi	tij/ti yoto	kʷijñy	n ⁿ diʔi
Cah	kee	nə kaʔyi	tnij	kʷiño	n ⁿ diʔi
Alco	kee	kaʔyi	tij	kʷijñy	n ⁿ diʔi
Cruz	kee	kaʔyi	tnij	kʷijñy	n ⁿ diʔi
Durz	[i kəŋə]	ⁿ da kaʔvi	çij/[çoko]	kʷijñy	n ⁿ çiʔi
Teco	[kəŋə]	ⁿ da kavi	t ^y ij	kʷijñy	n ⁿ jiʔi
Juxt	[keta]	kaʔi	t ^y ij	kʷijñy	n ⁿ d ^y iʔi
ChaP	—	—	tij	—	n ⁿ diʔi
Yuco	[kəŋə-dá]	káʔyū(da)	tij/ ⁿ dē tēʔé	kʷijñy	n ⁿ diʔi
Mix	k ^w a kee	ⁿ da kaʔi	tiʔi	kʷijñy	n ⁿ diʔi
Tejc	—	—	tij	—	n ⁿ diʔ
Rey	[kəŋə]	nə kaʔvi	çij	kʷijñy	n ⁿ çiʔi
TlaM	—	kaʔvi	çij	—	—
SilP	—	—	tij	—	n ⁿ diʔi
IxpN	[súcà]	kaʔi	çij	[ŋəñy]	n ⁿ çiʔi
SilM	kee	kaʔi	ti yoto/tij	kʷijñy	n ⁿ diʔi
TamS	kee	kaʔzi	tì tij	kà kʷijñy	n ⁿ diʔi
Ahue	kee	kaʔzi	ti zoto/ti tij	kʷijñy	n ⁿ diʔi
Mor	[kəŋə-ñə]	nə kaʔyi	ti tij	kʷijñy	n ⁿ diʔi

Costa	140) salir go out	141) pintar paint	142) rata rat	143) hinchazon swelling	144) grano pimple
P-Mixtec	*keyiʔ	*kaʔyu	*tɬiyɬʔ	*kʷɬiyɬ	*ndiʔyɬ
Zac	kee	kaʔyu	tʃiʃʔ	kʷjɲy	ⁿ diʔi
Sayu	kee	kaʔyu	tʃiʃ	kʷjɲy	ⁿ diʔi
Tept	kee	kaʔyu	tʃiɲi	kʷjɲy	ⁿ diʔi
Atoy	[keta]	kaʔyu	tʃiɲi	[ⁿ daa]/kʷjɲy	ⁿ diʔi
Jicy	kee	kaʔyu	tʃiɲi	kʷjɲy	ⁿ diʔi
Jict	kee	kaʔyu	tʃiɲi	kʷjɲy	ⁿ diʔi
PinN	(ča) kee	kaʔyu	tʃiɲi	[ⁿ daa]	ⁿ diʔi
PinL	[keta]	kaʔyu	tʃiɲɬ	kʷjɲy	ⁿ diʔyɬ
Colo	[keta]	kaʔyu	tʃiɲɬ	kʷjɲy	ⁿ diʔyɬ
Nuti	—	—	tʃiɲɬ	—	[ⁿ diki]
Ixty	[keta]	kaʔyu	tʃiɲɬ	kʷjɲy	ⁿ diʔyɬ
Cris	—	—	tʃiɲɬ	—	ⁿ diʔyɬ
Lor	[kita]	(nɔ) kaʔyu	tʃiɲɬ	—	ⁿ diʔyɬ
Mech	[kita]	nɔ kaʔyu	tʃiɲɬ	[ⁿ daa]	ⁿ diʔyɬ
Huaz	[kita]	kaʔyu	tʃiɲɬ	kʷjɲɔ/kʷaɲɔʔ	ⁿ diʔyɬ
Jam	[kita]	kaʔyu	tʃiɲɬ	[kʷa ɲyʔy]	ⁿ diʔyɬ
Chay	[kita]	kaʔyu	tʃiɲɬ	kʷjɲy	ⁿ diʔyɬ
ChayC	[kita]	kaʔyu	tɕɲɕ	[ⁿ daa]	ⁿ deʔye
ChayD	[kita]	nɔ kaʔyu	tʃiɲɬ	kʷiɲo/[ⁿ daa-sil (verb)]	ⁿ diʔyɬ
Tut	[keta]	kaʔyu	tʃiɲɬ	kʷiɲɔ	ⁿ diʔyɬ
Acat	[keta]	[tʷaa]/kaʔyu	tʃiɲɬ	kʷiɲɔ	ⁿ diʔyɬ

NE Alta	145) truenas it thunders	146) arco iris rainbow	147) pájaro bird	148) rana frog	149) ombligo navel
P-Mixtec	*kaʔ ⁿ dɨ	*koo yeʔ ⁿ diʔ	*tɨ laa	*laʔwa	*le ⁿ du
Tepo	kəʔ ⁿ de	te koo ya ⁿ di	ɛaa	ɛaʔva	sə ⁿ du =linaje
Tida	kəʔ ⁿ di	ti koo ʒəʔ ⁿ ji	ti ɛaa	—	[ʃiti koʔo]
Til	[ɛa karo]	ko ʒəʔ ⁿ ji	taa	[ⁿ dɛku]/ɛaʔwa	[ʃiti koʔo]
Diux	ŋgəʔ ⁿ dɨ	—	čili ɛaa	[ⁿ raka]	—
Nuxi	kəʔ ⁿ di	koo ʒaʔ ⁿ ji	či ɛaa	laʔba/laʔwa	le ⁿ d ^v u
Nuxa	ɛa kəʔ ⁿ di	ko yaʔ ⁿ ji	či ɛaa	laʔwa	le ⁿ d ^v u
TamJ	ɛa kəʔ ⁿ dɨ	ko ʒəʔ ⁿ ji	či ɛaa	[laʔ ⁿ du]	le ⁿ du
Yuta	kəʔ ⁿ di	—	tɨ ɛaa	laʔba	—
Pefio	kəʔ ⁿ dɨ	koo ʒəʔ ⁿ ji	tɨ laa	laʔba	le ⁿ du
Este	kəʔ ⁿ dɨ	koo ʒəʔ ⁿ ji	ti ɛaa	laʔwa	le ⁿ du
Cui	kəʔ ⁿ ni	—	ti ɛaa	t ^v aʔwa	ɛə ⁿ du
Soso	—	—	—	—	—
Jalt	kəʔ ⁿ di	—	ti ɛaa	[či lek ^w e]	—
Adeq	[ⁿ daʔba]	—	ti ɛaa	[sapu]	—
Cant	[kato]	—	ti ɛaa	—	—
Lobo	[katu]	—	ɛaa	—	—
Ynam	—	—	—	—	—
Soy	[katu]/kəʔ ⁿ di	ti koo riəʔ ⁿ ji	ɛaa	[ⁿ di dek ^w e]	[t ^v aʔbi]
Chic	[kato]/kəʔ ⁿ di	ti koo ŋəʔ ⁿ ɛ	ɛaa	ⁿ di laʔwa	[ti kuyu]
Ixtl	[katu]/kəʔ ⁿ di	koo ʒəʔ ⁿ ju	ti ɛaa	[ⁿ di dek ^w e]	ti leʔa
Apas	[katu]/kəʔ ⁿ di	koo yəʔ ⁿ ji	ti ɛaa	ⁿ di laʔwa	[ti kuyu]
Apoa	[katu]	koo biəʔ ⁿ ci	ti ɛaa	(lika)laʔwa	[ti kuyu]
Ndua	[katu]/kaʔ ⁿ di	—	ti ɛaa	laʔwa	—
Joco	[kato]/kəʔ ⁿ di	koo ŋəʔ ⁿ ji	ɛaa	ka ɛaʔwa	[ti kuyu]
Cuya	[ka yitel]/kəʔ ⁿ dɨ	ʒəʔ ⁿ di	laa	saʔwa	ɛə ⁿ du
Cuau	[yitel]/kəʔ ⁿ dɨ	ɛəʔ ⁿ di	laa	luu ɛaʔwa	ɛə ⁿ du
Coat	[ka itɨ]	rk ^w əʔ ⁿ di	laa	ɛaʔba	le ⁿ du

Cen. Alta	145) truenas	146) arco iris	147) pájaro	148) rana	149) ombligo
P-Mixtec	it thunders	rainbow	bird	frog	navel
	*kaʔ ⁿ dá	*koo yeʔ ⁿ diʔ	*tá laa	*laʔwa	*le ⁿ du
Ñumi	kaʔ ⁿ di	ti ko žəʔ ⁿ de	ti saa	saʔba/[lik ^w ii]	šə ⁿ du
Achi	kaʔ ⁿ di	xəʔ ⁿ de žoo	ti saa	—	—
Yuca	kaʔ ⁿ di	ti ko žəʔ ⁿ di	ti saa	saʔba/saʔwa	[xiti koʔo]
Peña	ŋgaʔ ⁿ di	—	saa	[sapu]	—
Tata	kaʔ ⁿ dá	—	daa	daʔwa	—
Teit	kaʔ ⁿ di	ti ko šəʔ ⁿ di	ti daa	daʔwa	se ⁿ du
Moli	kaʔ ⁿ di	tī ko žəʔ ⁿ dé	saa	saʔva	šə ⁿ ta
Sinc	[skaðu]	—	saa	=tadpole saʔba	—
Tlac	kaʔ ⁿ di	ti ko žəʔ ⁿ de	ⁿ di saa	[la šik ^w i]	šə ⁿ du
Ndi	kaʔ ^{an} di	—	ti saa	saʔba	—
Ndac	ŋgaʔ ⁿ di	—	saa	[sapu]	—
Oco	kəʔ ⁿ tī	tī kò žəʔ ⁿ dè	sāā	[ⁿ tī šik ^w i]	šə ⁿ tū
Prog	ŋgaʔ ⁿ ji	—	saa	saʔwa	—
Yuci	kəʔ ⁿ ŋ	kò yèʔlé	sā`ā`	[kúʔlé]	šə ⁿ dū
Nuyo	kəʔ ⁿ ŋ	kò yèʔlé	sā`ā`	saʔwā/[kuʔle]	šə ⁿ du
Atat	kaʔ ⁿ dā	tí ko žəʔ ⁿ de	saa	saʔva	šə ⁿ du
Mig	kaʔ ⁿ dá	tí kō žəʔ ⁿ dé	(tí) saā	saʔvā	[xiti kōʔo]/ šə ⁿ du
Chal	kaʔ ⁿ dá	koo ro žəʔ ⁿ da	saa	saʔba	[xiti koʔo]
Verd	kaʔ ⁿ dá	[koo yəŋ]	saa	[rək ^w e]/saʔba	šəlu
Yoso	kaʔ ⁿ dá	[koo kixi]	saa	saʔba	[xiti koʔo]
Itun	kaʔ ⁿ dá	ti ko həʔ ⁿ de	saa	saʔba	čəlu/šə ⁿ du
Yolt	kaʔ ^{an} dá	[ku kážá]	ti saa	saʔba	[šiti koʔli]
Yutn	kaʔ ⁿ dá	—	či daa	[řəŋ]	—
Sind (nj)	kaʔ ⁿ dá	koo žəʔ ⁿ ji	či daa	laʔwa	[tí koʔo]
Pied	kaʔ ⁿ dá	koo žəʔ ⁿ ji	či daa	[laʔ ⁿ du]/daʔwa	[tí koʔo]
Huit	ŋgaʔ ⁿ dá	k ^w əʔ ⁿ ji	—	laʔwa	le ⁿ du
Tlaz	kaʔ ⁿ dá	ko žəʔ ⁿ ji	ti daa	čaʔwa	le ⁿ du

No. Baja	145) truena it thunders *kaʔndi	146) arco iris rainbow *koo yeʔndiʔ	147) pájaro bird *tɬi laa	148) rana frog *laʔwa	149) ombligo navel *leʔndu
Mont	kaʔ ⁿ di	—	ⁿ di laa	ⁿ di laʔba	—
Nuch	xa kaʔ ⁿ di	tixi žaʔ ⁿ dʲa	laa	—	la ⁿ di
Aten	kaʔ ⁿ di	[tikù šǵny]	laa	laʔo	šǵ ⁿ di
Yucq	kaʔ ⁿ do	—	laa	laʔba	—
Yucñ	xa kaʔ ⁿ di	čuku žaʔ ⁿ di	laa	[sapo]	lǵ ⁿ di
Guad	kaʔ ⁿ di	kò yá ⁿ ki	laa	laʔwa	lǵ ⁿ ti
Flor	kaʔ ⁿ ji	—	ⁿ di laa/ ti laa	laʔwa	—
Amat	kaʔ ⁿ ji	—	laa	[ti rana]	—
Zap	kaʔ ⁿ si	či ya ⁿ ji	či laa	či laʔwa	lǵ ⁿ dʲu
Cac	kaʔ(?) ⁿ di	ti koo ži ⁿ ci	ti laa	[loko ⁿ de]	lǵ ⁿ de
Ndo	kaʔ ⁿ di	—	ti saa	laʔ ba	—
Ixtp	[kati]	—	laa	[rana]	—
Mic	[kati]	—	(si)laa	laba	—
Tepj	[kati]	si koo yaʔ ⁿ ji	laa	laʔwa	lǵ ⁿ du
Cos	[kati]/ kaʔ ⁿ si	si koo yaʔ ⁿ ji	laa	laʔwa	lǵ ⁿ du
Chaz	[kati]/ kaʔ ⁿ si	čiko yaʔ ⁿ ji	laa	—	lǵ ⁿ du
Tot	[katnia]	—	laa	[rana]	—
Ton	[katni]/ kaʔ ⁿ si	si koo yaʔ ⁿ ji	laa	[lik ^w i]	lǵ ⁿ du
Jer	ka ⁿ ji	—	si laa	[si dik ^w i]	—
Xay	[kātñi]	kò yáʔ ⁿ jì	lāā`	[sì dik ^w i]	lǵ ⁿ dù
Tlal	[katni]	či ža ⁿ ci	či daa	[sabu]	či la ⁿ ku
Chig	[katni]	čki ya ⁿ ji	č(i)daa	č(i)daʔwa	da ⁿ du

So. Baja	145) truena	146) arco iris	147) pajaro	148) rana	149) ombligo
P-Mixtec	it thunders	rainbow	bird	frog	navel
	*kaʔndi	*koo yeʔndiʔ	*tʃi laa	*laʔwa	*leʔdu
Ayut	kəʔ ⁿ dī	kōo(?) yə ⁿ gīʔ/ kōo(?) yə ⁿ kīʔ	saa	saʔwa	ʃalu
Yolx	kəʔ ⁿ di	kwəŋgi	saa	saʔwa	ʃə ⁿ du
Alac	kaʔyi (?)	—	saa	saʔwa	—
Metl	—	—	sāā	—	—
Coi	kəʔ ⁿ dī	—	saa	[kə ⁿ do]/[lek ^w e]	la ⁿ tu
Pera	kəʔ ⁿ ci	—	saa	saʔva/[sik ^w i]	ʃə ⁿ du
Cuat	kəʔ ⁿ di	koo yəʔ ⁿ gi	saa	saʔwa	ʃə ⁿ di
Cah	kəʔ ⁿ di	k ^w əŋgu	saa	saʔwa	sə ⁿ di
Alco	kəʔ ⁿ di	—	saa	saʔwa	ʃə ⁿ du
Cruz	si kəʔ ⁿ di	koo yəʔ ⁿ gi	saa	saʔwa	ʃə ⁿ du
Durz	kəʔ ⁿ ci	ko ʒəʔ ⁿ da	laa	[ky ⁿ du]/laʔwa	ʃə ⁿ ti
Teco	sá kəʔ ⁿ ji-rā	ko zəʔ ⁿ da	laa	lava/[kə ⁿ do]	lə ⁿ tu
Juxt	kəʔ ⁿ dya	t ^y i ku ʒaʔ ⁿ da	laa	laʔba	ʃə ⁿ du
ChaP	kaʔ ⁿ ji	—	laa	laʔwa	—
Yuco	kəʔ ⁿ di-āu	[ⁿ dīkó ⁿ dīí]	sāā	[ⁿ dīšik ^w í]/ [lī kóʔ ⁿ dó]	ʃə ⁿ du
Mix	kəʔ ⁿ di	ʃkoo ⁿ dyaʔ ⁿ dya	saa	saʔba	ʃə ⁿ du
Tejc	kaʔ ⁿ dia	—	saa	[ⁿ di koʔ ⁿ do]	—
Rey	skəʔ ⁿ ci	čuku ʒəʔ ⁿ ci	laa	lava (ʔisu/kini)	ʃə ⁿ ti
TlaM	kəʔ ⁿ dzi	—	—	—	—
SilP	kaʔ ⁿ di	—	laa	laʔba	—
IxpN	kəʔ ⁿ ci	t ^y uku ʒəʔ ⁿ di	laa	haʔva	ʃə ⁿ di
SilM	kəʔ ⁿ di	koo ʒa ⁿ gi	laa	[ⁿ di ko ⁿ do]/ laʔba	lə ⁿ di
TamS	kəʔ ⁿ di	čiki yəʔ ⁿ gi	ⁿ di laa	—	θə ⁿ di
Ahue	kəʔ ⁿ di	tiku ʒə ⁿ gi	laa	laʔwa/ [la kə ⁿ do]	lə ⁿ di
Mor	kəʔ ⁿ di	—	ⁿ di laa	ⁿ di laba	hə ⁿ di





Costa	145) truena it thunders	146) arco iris rainbow	147) pajaro bird	148) rana frog	149) ombligo navel
P-Mixtec	*kaʔndi	*koo yeʔndiʔ	*ti laa	*laʔwa	*leʔndu
Zac	kəʔndi	ko ləʔndi	saa	[lek ^w e]	ʃəʔndu
Sayu	kəʔndi	k ^w əʔndi	saa	[lek ^w e]	ʃəʔndu
Tept	kəʔndi	ku yoʔndi	saa	saʔwa	ʃəʔndu
Atoy	[ʃii]	ku yoʔndi	saa	saʔwa	ʃəʔndu
Jicy	kəʔndi	[ko ⁿ dəʔyo]	saa	saʔba	ʃəʔndu
Jict	kəʔndi	ko yoʔndi	saa	saʔba	ʃəʔndu
PinN	kəʔndi	kuu yoʔndi	saa	saʔba	ʃəʔndu
PinL	kəʔndi	koo yəʔndi	saa	saʔba	[čiti koʔo]
Colo	kəʔndi	[koo k ^w iya]	saa	saʔba	[čiti koʔo]
Nuti	kəʔndi	—	saa	saʔba	—
Ixty	kəʔndi	koo ŋəʔndi	saa	saʔba	[čoʔle]/ ʃəʔndu
Cris	kəʔndi	—	čaa	čaʔba/saʔba	—
Lor	kəʔndi	koo yəʔnə	saa	saʔwa	[čiti kəʔny]
Mech	kəʔndi	koo yəʔnd ^y i	saa	saʔwa	[čiti kəʔny]
Huaz	kəʔndi	ko yəʔnd ^y i	saa	[lek ^w e]/ saʔwa	[čiti koʔo]
Jam	kəʔndi	koo yəʔnd ^y i	saa	saʔba	[čiti koʔo]
Chay	kəʔndi	ko yəʔnd ^y i	saa	saʔwa	[čiti koʔo]
ChayC	kaʔndi	koo yaʔn ^y ji	θaa	θaʔba	[sete koʔo]
ChayD	kaʔndi	koo yaʔnd ^y i	θaa	θaʔva	—
Tut	kəʔndi	—	saa	saʔwa	[čiti koʔo]
Acat	kəʔndi	ko yəʔn ^y ji	saa	saʔwa	[šiti koʔo]



NE Alta	150) orina urine *lele	151) chachalaca chachalaca *laxɛʔ	152) liso smooth *lɛʔwɛʔ	153) chico little *luʔu	154) dfa day *kɛwɛʔ
Tepo	ⁿ dute əɑɑ	—	ⁿ deʔvi	[k ^w ɑci]	kevi/[ⁿ devi]
Tida	əeə	t ^y u ⁿ daʂ	[ⁿ dii]/ ⁿ diʔwi	luči	kiwi
Til	ⁿ dute əeə	čy ⁿ daʂ	[ⁿ dɛɛ]	luči	kɛu
Diux	—	—	—	luči	kɛu
Nuxi	—	ču ⁿ des	ⁿ diʔbi	luʔlu/liʔli	[ⁿ dɪu]
Nuxa	[ⁿ daa čii]	—	ⁿ diʔwi	luʔlu	[ⁿ d ^y uu]
TamJ	əeə	t ^y u ⁿ daʂ	ⁿ dɛʔwɛ/[ⁿ dɛɛ]	luči	[ⁿ duu]
Yuta	—	—	—	luči	[ⁿ duu]
Peño	lɛlɛ	ⁿ dəs	ⁿ dɛʔu	liʔli	[ⁿ duu]
Este	lele	ⁿ dəs	ⁿ dɛʔwɛ	liʔli	[ⁿ duu]
Cui	—	—	—	lɛʔlɛ	[ⁿ dubi/ ⁿ duu]
Soso	—	—	—	—	—
Jalt	—	—	—	luči	kii/kibi
Adeq	—	—	—	luči	kii
Cant	—	—	—	luči	kibi
Lobo	—	—	—	xa luči	—
Ynam	—	—	—	luči	—
Soy	(ɑci) əɑɑ	čiy ⁿ dasa	ⁿ deʔwe	xa/či luči	kewe
Chic	(ɑci) əɑɑ	—	ⁿ diʔwi	luči	kiwi
Ixtl	ⁿ duʂa əɑɑ	—	ⁿ diʔi	(sa) luči	kii
Apas	ⁿ duʂa əɑɑ	—	[ⁿ deɛ]/ ⁿ diʔwi	luči	kiwi
Apoa	[ⁿ duʂa tata]	leka	—	[ʒiki]/luči	kii
Ndua	—	—	—	luči	[ⁿ duu]
Joco	əɑɑ	ⁿ dasa	ⁿ diʔwi	luči	kii/[ⁿ duu]
Cuya	ⁿ dute əeə	—	[ⁿ dɛɛ]/ ⁿ dɛʔwɛ	lj ⁿ di	[ⁿ duwi]
Cuau	[tete]/ ⁿ dute əeə	—	[ⁿ dɛɛ]/ ⁿ dɛʔwɛ	lj ⁿ di	[ⁿ duwi]
Coat	[tete]	—	[ⁿ dɛɛ]	ly ⁿ di	[ⁿ dubi]

Cen. Alta	150) orina urine *lele	151) chachalaca chachalaca *laxɣʔ	152) liso smooth *liʔwiʔ	153) chico little *luʔu	154) día ⁶⁴⁰ day *kiwiʔ
P-Mixtec					
Ñumi	—	(čiy) ⁿ daxɣ	[liso]	lulu	kiu
Achi	—	—	—	luli	kibi
Yuca	[čii]	[či koro]	[ⁿ dii]/ ⁿ diʔwi	luli	kiwi/kibi
Peña	—	—	—	luli	kibi
Tata	—	—	—	luli	[ⁿ duu]
Teit	deɛ	či ⁿ dgNnɣ	ⁿ diʔwi/[ⁿ dii]	luli	kiwi
Moli	—	—	[ⁿ dii]	luli	kivi
Sinc	—	—	—	čule	[ⁿ duu]
Tlac	—	laxɣ	ⁿ jiʔi	luli	kii
Ndi	—	—	—	lule	kibi
Ndac	—	—	—	luli	kibi
Oco	—	—	ⁿ tɪʔvi	lúli	kivì
Prog	—	—	—	luli	kubi
Yuci	—	lax ^v ɣ	[liʔwiʔ]/liʔwiʔ	lúli	kivè
Nuyo	—	lax ^v ɣ	[liʔwiʔ]/liʔwiʔ =resbaloso	lúli	kivè
Atat	—	—	liʔwiʔ/[liʔwiʔ] =resbaloso	lúli	kivì
Mig	ti šeše	laxɣ	[liʔwiʔ]/liʔwiʔ	lúli	kivè
Chal	ti šeše	[čacalaka]	[liʔwiʔ]/liʔu	luli	kiu
Verd	[tete]	laxɣ	[ⁿ dii]/ ⁿ diʔwiʔ	[čala]/ liʔ	kiwi
Yoso	ti šeše	laxɣ	[liʔwiʔ]/liʔu	lulu	kiwi
Itun	te šeše	lax ^v ɣ	[ⁿ dii]/ ⁿ diʔwiʔ	[čala]/lulu	kiwi
Yolt	—	laša	[ⁿ dii]	lulu	kibi
Yutn	—	—	—	luči	[ⁿ duu]
Sind	te deɛ	či ⁿ dgj	[ⁿ dii]/ ⁿ diʔwiʔ	(ⁿ diči)luči	[ⁿ duu]/ kiwi
Pied	te deɛ	či ⁿ dase	ⁿ diʔwiʔ/[ⁿ dii]	luʔci	[ⁿ duu]
Huit	[əa čii]/deɛ	ⁿ di ⁿ dese	ⁿ diʔwiʔ	[či wii]	[ⁿ duu]
Tlaz	lele	ⁿ dasɣ	ⁿ diʔwiʔ/[ⁿ dii]	liʔli	[ⁿ duu]

No. Baja	150) orina urine *lele	151) chachaiaca chachalaca *laxɛʔ	152) liso smooth *liʔwiʔ	153) chico little *luʔu	154) dfa day *kiwiʔ
Mont	—	—	—	loʔo	kibi
Nuch	—	ⁿ di ⁿ dasa	[teʔʒe]	l ^y oo	kivì
Aten	—	ⁿ dasa	[vii]	loʔo	kivì
Yucq	—	—	—	loʔyo/loʔo	küü
Yucñ	—	ⁿ dasa	ⁿ diʔa	lɔʔð	kuu
Guad	—	ɸi ⁿ dasa	[vii]	loʔo	kivì
Flor	—	—	—	loʔyo/loʔo	kibi
Amat	—	—	—	loʔo	kibi
Zap	te əeəe	ɸi ⁿ dasa	ⁿ siʔwi	[ɸii]	kii
Cac	te əeəe	[čačalaka]	[čia]	lilü	kii
Ndo	—	—	—	lu(ʔ)lu	kii
Ixtp	—	—	—	[ti k ^w ati]	kii
Mic	—	—	—	[tii(k ^w ati)]	kii
Tepj	te əaəa	—	ⁿ siʔwi/ ⁿ jii	[ti tii]	kii
Cos	te əaəa	[kolo yuku]/ si ⁿ dasa	ⁿ jii/ ⁿ siʔwi	[ti ti(i)]	kiwi
Chaz	te əaəa	syu ⁿ drasa	ⁿ siʔwi	[titi]	[ⁿ duwi]/ kiwi
Tot	—	—	—	[k ^w ači]	[ⁿ dui]
Ton	te əaəa	[kolo yuku]	ⁿ jiʔi/ ⁿ siʔwi	[tii]	kiwi
Jer	—	—	—	[tii/čii/ k ^w ati]	kibi
Xay	[čii] verde	sɨɨ ⁿ dāsə	ⁿ čiʔi	[tīi]	kivì
Tlal	—	—	[əaa]	[teʔe]	[ⁿ dubi]
Chig	te əoəo	ⁿ dašə	ⁿ jiʔi/ ⁿ siʔwi	[peʔe]	kiwi

So. Baja	150) orina urine *lele	151) chachalaca chachalaca *laxɛʔ	152) liso smooth *liʔwiʔ	153) chico little *luʔu	154) dfa day *kiwiʔ
Ayut	—	ⁿ dašɣʔ	ⁿ diiʔ	lülū	kiviʔ
Yolx	[tʰaša]	ⁿ daɣɣ	ⁿ diʔwi	luu	kiví (cf. 'name')
Alac	—	—	—	loʔo/[válí]	kibì
Metl	—	—	—	[bálí/kʰaci]	—
Coi	—	[ti ⁿ daka]	ⁿ diʔvi	loʔo	kiví
Pera	—	—	ⁿ ciʔi	loʔo	kiví
Cuat	—	ⁿ daɣɣ	ⁿ diʔwi	loʔo	kiwi
Cah	—	ⁿ daɣɣ	ⁿ diʔwi	loʔo	kiwi
Alco	—	laša/ [tʰyuu iku]	[ⁿ dii]	loʔo	kiwi
Cruz	—	—	ⁿ diʔwi	loʔo	kiwi
Durz	—	[taka]	ⁿ ciʔi	loʔo	kivì
Teco	—	ⁿ ci lasʰa	ⁿ ciʔi	loʔo	kibì
Juxt	lala	ⁿ dʰi ⁿ daša	ⁿ diʔbi	luu	kibi
ChaP	—	—	—	luu	kibi
Yuco	—	[žú kʰáʔà]	[ⁿ díí]	lūū-čī	kif
Mix	tʰatʰa šaša	—	ⁿ dii/ ⁿ diʔbi resbala	(ñɣ) luu	kii
Tejc	—	—	—	lulu/luu	kii
Rey	—	ⁿ daša	[ⁿ cuʔu]	luu	kivì
TlaM	—	ⁿ ciʰsʰa	—	loʔo	kii
SilP	—	—	—	loʔo	kibi
IxpN	—	ⁿ dasa	—	loʔo	kivi
SilM	lala	ⁿ dasa	ⁿ diʔbi/[kəni]	loʔo	kibi
TamS	—	[tì bāsá]	ⁿ diʔvi	loʔo	kivi
Ahue	—	ⁿ di lāsá	ⁿ diʔvi	loʔo	kivì
Mor	—	ⁿ di laša	bii ⁿ diba [nɣ kʰali]		kibi

Costa	150) orina urine	151) chachalaca	152) liso	153) chico	154) dia
P-Mixtec	*lele	*laxɛ?	*lɛ?wɛ?	*lu?u	*kiwɛ?
Zac	[tata]	lačɛ?	ⁿ di?bi?	[bali?]	kibi?
Sayu	[tak ^w ii]	ⁿ dačɛ	ⁿ di?wi	lu?u	kiwi
Tept	časa	ⁿ dačɛ	ⁿ di?wi/ ⁿ dii	lu?u	kiwi
Atoy	ⁿ duta časa	ⁿ dačɛ	ⁿ di?wi/ ⁿ dii	lu?u	kiwi
Jicy	časa (tata)	ⁿ dačɛ	ⁿ di?bi/ ⁿ dii	lu?u	kibi
Jict	časa	ⁿ dačɛ	ⁿ dii/ ⁿ di?bi	lu?u	kibi
PinN	časa/tata (noun/verb)	ⁿ dačɛ	ⁿ di?bi	lu?u	kibi
PinL	(tata) časa	ⁿ dačɛ	ⁿ dii/ ⁿ di?bi	lu?u	kiwi
Colo	t ^y at ^y a časa/ lasa	ⁿ dačɛ	ⁿ di?bi/ ⁿ dii	lu?u	kibi
Nuti	—	—	—	lu?lu	kibi
Ixty	[ⁿ dut ^y a _y yu?u]/ šasa	lačɛ	ⁿ di?bi/li?bi/ ⁿ dii	lo?o	kibi
Cris	—	—	—	lu?lu	kibi
Lor	[t ^y at ^y a]	ⁿ dačɛ	ⁿ di?wi/ ⁿ dii	lu?lu	kiwi
Mech	[t ^y at ^y a]/časa	ⁿ dačɛ	ⁿ di?wi	lu?lu	kiwi
Huaz	[t ^y at ^y a]/časa	ⁿ dačɛ	ⁿ di?wi	lu?lu/[t ^y u waa]	kiwi
Jam	časa	ⁿ dačɛ	ⁿ di?bi/ ⁿ dii	lu?lu	kibi
Chay	časa	ⁿ dača	ⁿ di?wi/ ⁿ dii	lu?lu	kiwi
ChayC	časa	ⁿ dasa	ⁿ de?be	lu?lu	kebe
ChayD	—	ⁿ dasa	ⁿ di?vi	lu?lu	kivi
Tut	šasa	ⁿ dačɛ	ⁿ di?wi	[t ^y i waa]	kiwi/ ⁿ duwi
Acat	ča šasa	ⁿ dasa	ⁿ dii/ ⁿ di?wi	[či waa]/ lu?lu	kiwi

NE Alta	155) cuándo	156) llano	157) cómo	158) cargar	159) cucaracha
P-Mixtec	when	plain	how	carry	cockroach
	*awą	*yoso?	* ⁿ dese	* ⁿ diso?	*tá te?ya?
Tepo	gmg-ng	yođo/[ⁿ daa]	ng/[mg ⁿ diđa]	ⁿ diđo	—
Tida	[ngg kiu]	žođo	[ng ⁿ ji(đo)]	ⁿ jiđo	[ti đita]
Til	[ngg]	[ⁿ daa]/yođo	[ngg]	k ^w iđo	[tita]
Diux	[ng kiu]	žođo	[ngg]	k ^w iđo	—
Nuxi	[ng ore]/[ng ore]	žođo	[ngxa]	šido/ ⁿ jiđo	[či đita]
Nuxa	[ngg oře]	žođo	[ngg ⁿ]	ⁿ jiđo	[či đita]
TamJ	gmg	žođo	[ngg]	ⁿ diđo	[tá đita]
Yuta	[ng ⁿ duu]	[ny ⁿ daa]	ng ⁿ de	k ^w iđo	—
Peffo	ng?gmg/ngmg	[ⁿ daa]/žođo	[ng sđđ]	k ^w iđo	[tá kóđ]
Este	gmg	žođo	[ngg]	ⁿ jiđo	[tá đita]
Cui	ngmg	—	ng ⁿ disa	ⁿ jiđo	—
Soso	—	—	—	—	—
Jalt	[ng kii]	žođo	[ngča]/ng ⁿ ja	k ^w iđo	—
Adeq	[ng kii]	žođo	—	k ^w iđo	—
Cant	[ng kii]	žođo	ng ⁿ sa	k ^w iđo	—
Lobo	—	žođo	—	čiđo	—
Ynam	—	žođo	—	—	—
Soy	(g)ng	žođo	ⁿ jaa	(đa) ⁿ jiđo	[ⁿ d ^y u đifg]
Chic	gmg	žođo	[ngg mođo]	žiđo	[ⁿ di đifny]
Ixtl	gmg	žođo	ⁿ jaa	ⁿ jiđo	[ⁿ di đifny]
Apas	gmg/[ngg kii]	žođo	ngsa	ⁿ jiđo	[ⁿ di đifny]
Apoa	gmg	žođo/yođo	[ng myđu-ku]	ⁿ ziđo	[ⁿ di đifny]
Ndua	[ng kii]	žođo	[ng mđo]	k ^w iđo	—
Joco	[ng đaa]	yođo	ng đo	ⁿ jiđo	[ⁿ di đifny]
Cuya	gmg	yođo/[ⁿ daa]	[ⁿ di kati]	kađa k ^w iđo	ste?ye
Cuau	gmg	yođo	[ⁿ de kaa]	ⁿ diđo	ste?ža
Coat	gmg	žođo	—	k ^w iđo	šte?a

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Cen. Alta	155) cuándo when	156) llano plain	157) cómo how	158) cargar carry	159) cucaracha cockroach
P-Mixtec	*awə	*yoso?	* ⁿ dese	* ⁿ diso?	*t̩ te'ya?
Ñumi	[nə kiʉ]/nəʔmə	ʒoso	nəʂa(a)	xiso	[ⁿ di te'a]
Achi	nə ʔəmə	ʒoso	nəʂa	ⁿ diso	—
Yuca	nə əmə	ʒoso	nəsa/nəʂa (kaa)	ⁿ diso	ti te'ya
Peña	[ⁿ de kiβi]	[ⁿ du'βa]	nəsa	ⁿ diso	—
Tata	nə əmə	ʒoəo	—	—	—
Teit	nə əmə	ʒoəo	ⁿ dee (əeko)	ⁿ diəo	ti te'ya
Moli	nəʔmə	[ⁿ ʔu'βa]	nəsa	ⁿ soo	ti te'e
Sinc	[ⁿ de kiβi]	[ⁿ du'βa]	nəsa	—	—
Tlac	nə ʔəmə	[ⁿ du'βa]	nəʂi	ⁿ diso	[ʔaki]
Ndi	[nə kiβi]	[ʒəny]	nə(tu)	ka xiso	—
Ndac	[nə kiβi]	yoso	—	xu kiso	—
Oco	nəmə/[nə t ^v empo]	ʒoəo	nəsa	xiso	t̩ t̩'e
Prog	[ti'ʔi]	ʒoso	—	k ^w a k ^w iso	—
Yuci	[nə kiβi]	[nū'vē]	nəsa	xiso	t̩ t̩'ya
Nuyo	[n̩ kiw̩]	[nū'vē]	nəsa	niso	t̩ t̩'ya
Atat	nəmə/[ⁿ de kiβi]	[ⁿ du'va]	ⁿ dese	ⁿ diso	t̩ t̩'e
Mig	əmə/[ⁿ de kiβi]	[ⁿ du'ā]	[su ə]	ⁿ diso	t̩ t̩'e
Chal	[ⁿ d̩ kiβi]	[ⁿ du'a]	ta sa ka	ⁿ diso	ti te'e
Verd	nəmə	[ny ⁿ daa]/[ⁿ du'βa]	ⁿ dese	ⁿ diso	tu te'ya
Yoso	[nəsa]	[ⁿ du'βa]/[katu ⁿ daa]	nə sa ka	ⁿ diso	ti te'e
Itun	nəmə	[ⁿ du'βe]	ⁿ d̩si	iso	t̩ te'ya
Yolt	nəʔəmə	[ⁿ du'βa]	nəʂa	ⁿ diso	t̩ te'e
Yutn	[nə ore]	yoəo	[j ⁿ ji]	k ^w iəo	—
Sind	nəʔəmə	[ny ⁿ daa]/ʒoəo	[nə ⁿ jee]	iəo	[č'o'o kaa]
Pied	nəʂə n̩əmə	ʒoəo/[ny ⁿ daa]	[nə ⁿ jiko]	ku ⁿ jiəo	[či kaa]
Huit	əmə/[ⁿ de əawa]	[ny ⁿ daa]	[nə kaa]	ⁿ diəo	[ti əita?]
Tlaz	[nə oʔe]	ʒoəo	nə see	ⁿ jiəo	[ta koo]

No. Baja	155) cuándo when *awa	156) llano plain *yoso?	157) cómo how *ndese	158) cargar carry *ndiso?	159) cucaracha cockroach *tá te?ya?
Mont	amə	žoho	ⁿ diša	ko ⁿ diho	—
Nuch	?amə	žoho	ⁿ d ^y aha	ⁿ deho	ⁿ dì te?že
Aten	ⁿ d ^y amə/[tá]	žoho	ⁿ dici	ⁿ dího	te?i
Yucq	ⁿ de amə	yoho	ⁿ diko	ku ⁿ d ^y oho	—
Yucñ	[ⁿ dá]	žoho	ⁿ de	[^s y ^o ho/ ha k ^y oho]	[čì čarra]
Guad	[tá]	yodo	ⁿ jiši	ⁿ dišo	[čiy]
Flor	[nə kii]	yodo	ⁿ disi	[nə?ə]	—
Amat	[ⁿ da kii]	yoo	[ⁿ ja kaša]	ku ⁿ jišo	—
Zap	[ⁿ de kii]	yodo	[ⁿ de ⁿ d ^y üa]	ⁿ dišo	[čìši waa]
Cac	[nə (kii)]	[ⁿ daa]/ yodo	a ⁿ d ^y aa	[dəkio]	[kukarača]
Ndo	[ⁿ de kii]	zoso	nəša	k ^w iso	—
Ixtp	amə	žodo	nəsa	ku ⁿ jišo	—
Mic	amə	žodo	nəsa	ku ⁿ jišo	—
Tepj	amə	yodo	nə ⁿ sa	ⁿ sida	[šì waa]
Cos	nəmə	yodo	nə ⁿ sa	da k ^w ida	[šì waa]
Chaz	nəmə	yodo	nə ⁿ sa	ⁿ sida	—
Tot	nə a	yodo	—	ku ⁿ ciša	—
Ton	—	yodo	nə ⁿ sa	ⁿ sida	[šì waa]
Jer	amə	žodo	ə ⁿ sa	ⁿ ciša	—
Xay	[nə]/amə	yōdō	(n)ə ⁿ sá	k ^w išā	[šì šìšì]
Tlal	[ii əba]	[ⁿ daa]	ənəda	šida-te	—
Chig	amə	yodo	ənəda	[ⁿ əaa]	[čì ditā]

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So. Baja	155) cuándo when	156) llano plain	157) cómo how	158) cargar carry	159) cucaracha cockroach
P-Mixtec	*awaꞤ	*yoso?	*ndese	*ndiso?	*tí te?ya?
Ayut	[kii?]	yoso?/ [ny?y? ndaa]	saa	ⁿ dísō?	ti ti?é?
Yolx	ꞤmꞤ	yoso	sa kee	ⁿ diso	ti te?e
Alac	ꞤmꞤ	yoso	nda saa	ⁿ díso	—
Metl	—	—	—	—	—
Coi	?ꞤmꞤ	yōsō	nꞤ saa	ⁿ díso	ti te?e
Pera	?ꞤmꞤ	žōsō	nꞤha(?a)	ⁿ čiso	či če?e
Cuat	ꞤmꞤ	yoso	nꞤsa	ⁿ diso	[t ^y yu]
Cah	ꞤmꞤ	yoso	ⁿ deke	[sa k ^w iso]	ti te?e
Alco	ꞤmꞤ	yoso	ⁿ da	[si k ^w eso]	te te?e
Cruz	ꞤmꞤ	yoso	ⁿ daa	ⁿ diso	[t ^y yu]
Durz	nꞤmꞤ	žoso	nꞤṣ̌i	ⁿ diso	č ^y e?e
Teco	nꞤmꞤ	žoso/ [ⁿ dō?bà]	ⁿ diṣ̌i	sísō	ⁿ di č ^y e?e
Juxt	nꞤmꞤ	[ny ⁿ daa]	nꞤṣ̌i	ⁿ d ^y iso	ⁿ d ^y i t ^y e?e
ChaP	nꞤmꞤ	[ⁿ du?ba]/ žoso	nꞤṣ̌i	[k ^w iso]	—
Yuco	[ⁿ dâ kii]	yōsō	ⁿ ji	ⁿ díso-nꞤ	ⁿ dī té?e
Mix	[ⁿ d ^y i kii]/ ꞤmꞤ	[ny ⁿ daa]	nꞤṣ̌i	ⁿ d ^y iso	ⁿ di t ^y e?e
Tejc	[ⁿ ci kii]	yoso	nꞤṣ̌i	[k ^w ika]	—
Rey	nꞤ nꞤmꞤ	žōsō	nꞤ ba?a	ⁿ diso	či če?e
TlaM	—	žoso	nꞤhi	ⁿ čiso	—
SilP	ⁿ dꞤ (?Ꞥ)mꞤ	yoho	ⁿ daha	[k ^w iko]	—
IxpN	nꞤmꞤ	žoho	ⁿ diṣ̌i	ⁿ diho	[ča?ča]
SilM	ⁿ da?Ꞥ nꞤ	yoθo	ⁿ daθa	ⁿ diθo	ⁿ di ta?yi
TamS	—	žōθō	ⁿ daha	ⁿ díθō	[tī ⁿ dívà]
Ahue	?ꞤmꞤ	žōθo.	ⁿ d ^y aha	ⁿ diθo	[lā káá]
Mor	[ⁿ da kibi]	yōsō	ⁿ daha	ⁿ diso-nꞤ	[ti ⁿ dibā]

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Costa	155) cuando when	156) llano plain	157) como how	158) cargar carry	159) cucaracha cockroach
P-Mixtec	*awə	*yosoʔ	* ⁿ dese	* ⁿ disoʔ	*tɨ teʔyaʔ
Zac	əmə/ nda kibiʔ	[ⁿ duʔba]	nəsa/nəha:	ⁿ diso/ k ^w isəʔ (imp.)	ti taʔya
Sayu	əmə	[ⁿ duʔwa]	nə saa	ⁿ diso	ti t ^y eʔe
Tept	əmə	yoso	nasa/naha	ⁿ diso	ti taʔya
Atoy	əmə	[ⁿ duʔwa]	nohə	ⁿ diso	[ti kuka]
Jicy	əmə	[ⁿ duʔba]	nəə	ⁿ diso	ti taʔya
Jict	əmə	[ⁿ duʔba]	nəə	ⁿ diso	ti teʔe
PinN	əmə	[ⁿ duʔa]	[yoso]	ⁿ diso	ti teʔe
PinL	əmə	[ⁿ duʔba]	nəə ʃa	ⁿ diso	[tu koso]
Colo	(h)əmə	[ⁿ duʔba]	nəə	ⁿ diso	[tu koso]
Nuti	əmə	[ny ⁿ daa]	nasa/naka	[k ^w a k ^w iso]	—
Ixty	əmə	[ⁿ duʔba]	iso	ⁿ diso	ti t ^y eʔe
Cris	əmə	[ⁿ daa]	n ^y osa	[k ^w a k ^w içol]	—
Lor	əmə	[çiki]	[yoso]	ⁿ d ^y iso	[ti k ^w əə]
Mech	əmə	[ⁿ duʔwa]	ⁿ d ^y iso	ⁿ d ^y iso	[ti ʃiko]/ ti t ^y eʔe
Huaz	əmə	[ⁿ duʔwa]	nəso kaa	ⁿ d ^y iso	[ti ʃiko]/ ti t ^y eʔe
Jam	əmə	[ⁿ duʔba]	yoso	ⁿ d ^y iso	ti t ^y aʔya
Chay	əmə	[ⁿ duʔwa]	yoso	ⁿ d ^y iso	ti t ^y eʔe
ChayC	əmə	[ⁿ duʔba]	yoso ka/ ʒoso ka	n ^y jiso	—
ChayD	əmə	[ⁿ duʔva]	[yoθo]	ⁿ d ^y iθo	ti t ^y eʔe
Tut	əmə	[ⁿ duʔwa]	yoso kaa	ⁿ d ^y iso	ti t ^y eʔe
Acat	əmə	[ⁿ duʔwa]	nəə kaa	n ^y jiso	ti çeʔe

NE Alta 160) pegamento 161) enfermedad 162) ver 163) despacio 164) casa ⁶⁴⁹

P-Mixtec	* ⁿ glue deka	sickness *k ^w e?yi	see * ⁿ de?ya	slow *k ^w eye	house *we?yi
Tepo	te ⁿ daka	k ^w a?i	[yo-sito- ⁿ di]	k ^w ai	wa?i
Tida	ti ⁿ deka =goma	k ^w e?e	[fiy?y]	k ^w ee	we?e
Til	ⁿ deka	k ^w e?e	ⁿ de?a	k ^w ee	we?e
Diux	—	k ^w e?e	ⁿ de?e	k ^w ee-nj	be?e
Nuxi	[kiái]	k ^w e?e	ⁿ de?a	k ^w ee	be?e
Nuxa	ⁿ deka	k ^w e?e	ⁿ d ^y a?a	k ^w ee(nj)	we?e
TamJ	—	k ^w e?e	ⁿ di?a	k ^w ee	we?e
Yuta	—	k ^w e?e	[niñi]	k ^w ee	be?e
Peño	[kòlā]/ ⁿ déká	k ^w é?é	kùù ⁿ dè?è	k ^w èè	bè?è
Este	—	k ^w e?e	ⁿ di?a	k ^w ee	we?e
Cui	—	k ^w e?e	ⁿ je?i	k ^w ee-nj	we?e
Soso	—	—	ⁿ jaa?/ ⁿ zaa?	—	we?e
Jalt	—	k ^w e?e	ⁿ zaa- ⁿ do	k ^w ee	be?e
Adeq	—	k ^w e?e	—	k ^w ee	be?e
Cant	—	k ^w e?e	—	k ^w ee	be?e
Lobo	--	—	ng ^š si ⁿ sa?a	—	—
Ynam	—	—	—	—	—
Soy	[xa tñij-áa]	k ^w e?e	ⁿ za?a	k ^w ee	we?e
Chic	ti ⁿ zaka	k ^w e?e	ⁿ za?a	k ^w ee	we?e
Ixtl	ti ⁿ zaka	k ^w e?e	ⁿ za?a	k ^w ee	we?e
Apas	—	k ^w e?e	ⁿ za?a	k ^w ee(nj)	we?e
Apoa	—	k ^w e?e	ⁿ za?a	k ^w ee	we?e
Ndua	—	k ^w e?e	—	k ^w ee	be?e
Joco	ⁿ daka	k ^w e?e	ⁿ za?a	k ^w ee	we?e
Cuya	— =goma	k ^w i?i	[ka yñi]	k ^w ii	wi?i
Cuau	[ka tñi]	k ^w i?i	[ka žiñi]	k ^w ii	wi?i
Coat	ⁿ daku	k ^w i?i	[ka xñi]	ku k ^w ii	bi?i

Gen. Alta	160) pegamento	161) enfermedad	162) ver	163) despacio	164) casa
P-Mixtec	* ⁿ deka glue	*k ^w e?yi sickness	* ⁿ de?ya see	*k ^w eye slow	*we?yi house
Ñumi	[pegamento]	k ^w e?e	ⁿ d ^y a?a	k ^w ee	we?e
Achi	[kiš <i>ĩ</i>]	k ^w e?e	xito ⁿ dee	k ^w ee	be?e
Yuca	ⁿ deka	k ^w e?e	xito ⁿ dee	k ^w ee-ni	we?e
Peña	—	k ^w e?e	—	k ^w ee	be?e
Tata	—	k ^w e?i	ⁿ de?e	k ^w ee	be?e
Teit	ⁿ deka	k ^w e?e	ⁿ dee	k ^w ee(ni)	we?e
Moli	—	k ^w e?e	[k ^w ini]	k ^w ee	ve?e
Sinc	—	ku?žo	ⁿ de?yo	k ^w ee	be?e
Tlac	[kiš <i>ĩ</i>]	k ^w e?e	[xito]	k ^w ee	be?e
Ndi	—	k ^w e?e	ku ⁿ de?o	k ^w ee	be?e
Ndac	—	k ^w e?e	ku ⁿ de?e	k ^w ee	be?e
Oco	ntēkà	k ^w e?è	n ^t e?e	k ^w éé	vē?ē
Prog	—	k ^w e?e	[nini]	k ^w ee	be?e
Yuci	[kiš <i>ĩ</i>]/ ⁿ dēkà (bought) (de monte)	k ^w e?i	né?yá-xā	k ^w éé	vē?ī
Nuyo	nēkà	k ^w e?i	né?yā	k ^w éé	vē?ī
Atat	ⁿ deka	k ^w e?yī	ⁿ de?e	k ^w éé	ve?e
Mig	ⁿ cakā/[xā st <i>ĩ</i>]	k ^w e?ē	[kyni]/ ⁿ dē?é =saber	k ^w éé	ve?e
Chal	ⁿ zaka	k ^w e?e/[ku?u]	ⁿ de?e	k ^w ee	be?e
Verd	[tni?i]/ ⁿ deka	k ^w e?i	[lito]	k ^w ee	be?i
Yoso	[sn <i>ĩ</i>]	k ^w e?e	ⁿ de?e	k ^w ee(ni)	be?e
Itun	ⁿ deka	k ^w e?yi	[lito]	k ^w ee	bi?i
Yolt	[aš <i>ĩ</i>]	k ^w e?e	ⁿ de?e	k ^w ee	be?e
Yutn	—	k ^w e?e	—	k ^w ee-ni	be?e
Sind	—	k ^w i?i	ⁿ de?e koto	k ^w ee	we?e
Pied	ⁿ deka/[kola]	k ^w e?e	ko ⁿ dē?e	k ^w ee(ni)	we?e
Huit	ⁿ deka	k ^w e?e	[ⁿ dito]/ ⁿ de?e	k ^w ee(ni)	we?e
Tlaz	—	k ^w e?e	ⁿ di?a	k ^w ee	we?e

No. Baja	160) pegamento glue	161) enfermedad sickness	162) ver see	163) despacio slow	164) casa house
P-Mixtec	* ⁿ deka	* ^k wē?yi	* ⁿ de?ya	* ^k wēye	*wē?yi
Mont	—	^k wē?e	ⁿ de?e	^k wēe-o	be?e
Nuch	—	^k wē?e	?í ⁿ dé?e	^k wēe	ve?e
Aten	ⁿ d ^y aka	^k wē?e	sá ⁿ dè?ē	^k wēe	ve?e
Yucq	—	^k wē?e	[ni sin-g]	^k wēe	ve?e
Yucñ	—	^k wē?e	ⁿ de?e	^k wēe	ve?e
Guad	ⁿ dzaka	^k wē?e	ⁿ yē?e/ ⁿ dze?e	^k wēe	ve?e
Flor	—	^k wē?e	[šini]	^k wēe-o	be?e
Amat	—	^k wē?e	ⁿ de?e	^k wēe-ni	be?e
Zap	ⁿ deka	^k wē?e	ⁿ de?e	^k wēe	we?e
Cac	[na tiji]	^k üee	ⁿ dee	^k üee	wee
Ndo	—	^k wē?e	na ku ⁿ de?-o	^k wēe-ni	be?e
Ixtp	—	^k wē?e	[ni šini]	^k wēe	be?e
Mic	—	^k wēe	ⁿ dee	^k wēe-ni	bee
Tepj	—	^k wē?e	ⁿ de?e	^k wēe	we?e
Cos	ⁿ d ^y aka	^k wē?e	ⁿ de?e	^k wēe	we?e
Chaz	[dusg]	^k wē?e	ⁿ de?e	^k wēe	we?e
Tot	—	^k wē?e	ⁿ de?e	^k wēe-ni	be?e
Ton	—	^k wē?e	ⁿ de?e	^k wēe(ni)	we?e
Jer	—	^k wē?e	ⁿ de?e	^k wēe-ga	be?e
Xay	ⁿ d ^y ākā	^k wē?è	ⁿ de?e	^k wēē	vē?ē
Tlal	—	^k wē?e	ⁿ de?e-š	^k wēe-ni	be?e
Chig	[kiāi]	^k wē?e	ⁿ de?e	^k wēe	we?e

	So. Baja P-Mixtec	160) pegamento glue *ndeka	161) enfermedad sickness *k ^w e?yi	162) ver see *n ^d e?ya	163) despacio slow *k ^w eye	164) casa house *we?yi
Ayut	[ti k ^w iĩ kĩsĩ?]		k ^w i?e	[šĩni/šĩ ^h tõ?]	k ^w iε	vi ^o ε/v ^y e ^o ε
Yolx	ⁿ daka		k ^w e?e	[sito]	k ^w ee	we?e
Alac	ⁿ daka		k ^w e?e	ⁿ da?ya (visit)	k ^w ee	be?e
Metl	—		—	—	—	bé?ē
Coi	ⁿ d ^y aka		k ^w e?e	[šĩtu?ni]	k ^w ee	ve?e
Pera	ⁿ čākà		k ^w e?e	šĩ ⁿ če?e	k ^w ee	ve?e
Cuat	ⁿ daka		k ^w e?e	[šito]	k ^w ee	we?e
Cah	ⁿ daka		k ^w e?e	[šito]	k ^w ee	we?e
Alco	—		k ^w e?e	[šito]	k ^w ee	we?e
Cruz	ⁿ daka		k ^w e?e	[šito]	k ^w ee	we?e
Durz	ⁿ čaka		k ^w e?e	šĩ ⁿ či	k ^w ee	ve?e
Teco	ⁿ čaka		k ^w e?e	šĩ ⁿ jĩ?í	k ^w ee	ve?e
Juxt	ⁿ d ^y aka		k ^w e?e	ku ⁿ de?e	k ^w ee	we?e
ChaP	—		k ^w e?e	[ii šini]	k ^w ee	be?e
Yuco	[n̄k̄ k̄išĩ]/ ndākà		k ^w ē?ē	ⁿ dé?é-n̄k̄	k ^w éè	vē?ē
Mix	ⁿ d ^y aka		k ^w e?e	ⁿ d ^y e?e	k ^w ee	be?e
Tejc	—		k ^w e?e	[ni čini]	k ^w ee	be?e
Rey	ⁿ čaka		k ^w ē?e	ⁿ če?e	k ^w ee	--
TlaM	—		—	ⁿ če?e	—	—
SilP	—		k ^w ē?ē	sá ⁿ de?e	k ^w ee	be?e
IxpN	ⁿ daka		k ^w ē?ē	sí ⁿ de?e	k ^w ee	ve?e
SilM	—		k ^w e?e	ⁿ de?e	k ^w ee	be?e
TamS	—		k ^w e?e	ⁿ de?e	k ^w ee	ve?e
Ahue	ⁿ daka		k ^w e?e	ⁿ de?e	k ^w ee	ve?e
Mor	ⁿ deka		k ^w e?e	ku ⁿ de?e/ a xi ⁿ di?i-na	k ^w ee	be?e

Costa	160) pegamento glue	161) enfermedad sickness	162) ver see	163) despacio slow	164) casa house
P-Mixtec	*ndeka	*k ^w we?yi	*nde?ya	*k ^w eye	*we?yi
Zac	ⁿ daka	k ^w e?e/ [ti ⁿ doo]	[kuni]	k ^w ee	be?e
Sayu	ⁿ daka	k ^w e?e	ⁿ d ^y e?e	k ^w ee	we?e
Tept	ⁿ daka	k ^w e?e	ⁿ de?e	k ^w ee	we?e
Atoy	ⁿ daka	k ^w e?e	ⁿ de?e	k ^w ee	we?e
Jicy	ⁿ daka	k ^w e?e	ⁿ de?e	k ^w ee	be?e
Jict	ⁿ daka	k ^w e?e	ⁿ de?e	k ^w ee	be?e
PinN	[kiš ^h i/suč ^h a]	k ^w e?e	ⁿ de?e	k ^w ee-ni	be?e
PinL	ⁿ daka	k ^w e?e	ⁿ de?e	k ^w ee	be?e
Colo	[kiš ^h i] ⁿ daka	k ^w e?e	ⁿ d ^y e?e	be?e	
Nuti	—	k ^w e?e	ⁿ d ^y e?e	k ^w ee	be?e
Ixty	ⁿ d ^y aka	k ^w e?e	ⁿ d ^y e?e	k ^w ee(ñi)	be?e
Cris	—	k ^w e?e	ni če?e	k ^w ee	be?e
Lor	—	k ^w e?e	ⁿ d ^y e?e	k ^w ee	we?e
Mech	—	k ^w e?e	ⁿ d ^y e?e	k ^w ee	we?e
Huaz	[č ^h a kiš ^h i]	k ^w e?e	ⁿ d ^y e?e	k ^w ee	we?e
Jam	[suč ^h ɔ]	k ^w e?e	ⁿ d ^y e?e	k ^w ee	be?e
Chay	[suč ^h a]	k ^w e?e	ⁿ d ^y e?e	k ^w ee	we?e
ChayC	—	—	—	—	—
ChayD	[susa]	k ^w e?e	ⁿ d ^y e?e	k ^w ee	ve?e
Tut	—	k ^w e?e	ⁿ d ^y e?e	k ^w ee	we?e
Acat	ⁿ daka	k ^w e?e	ⁿ j ^h e?e	k ^w ee	we?e

NE Alta	165) mamey	166) moler	167) ala	168) banquito	169) milpa
P-Mixtec	mamey * ⁿ dika?	grind * ⁿ diko?	wing * ⁿ dixi	stool *teyu	cornfield *itu
Tepo	te ⁿ dika =zapote,	ⁿ diko fruta	ⁿ disi	tayu =altar	itu/[wiyu]
Tida	ⁿ jika	ⁿ jiko	ⁿ jiš _i	(ti)teyu	[wi(y)u]
Til	ⁿ dika	ⁿ diko	ⁿ diš _i	[šila]	itu
Diux	—	—	—	teyu	itu
Nuxi	ⁿ jika	ⁿ jiko-š _i	ⁿ jiš _i -ti	č _i teyu	i?t ^v u
Nuxa	ⁿ jika	ⁿ jiko	ⁿ jiš _i	(č _i)tež _u	it ^v u
TamJ	ⁿ dika (ⁿ dažš _i)	ⁿ diko	ⁿ diš _i	[šile]/tež _u =banco	itu
Yuta	—	—	—	tež _u	itu
Peño	ⁿ jikà	ⁿ jikō`	ⁿ díš _i	[šilā]/tēž _ū =banco	itū
Este	ⁿ jika	ⁿ jiko	ⁿ diš _i	tež _u	itu
Cui	ⁿ jika	ⁿ jiko	—	čaž _i	itu/itš _i
Soso	—	—	—	—	—
Jalt	—	—	—	[banku]	itu
Adeq	—	—	—	[banku]	itu
Cant	—	—	—	[banku]	itu
Lobo	—	—	—	[banku]	itu
Ynam	—	—	—	—	—
Soy	—	ⁿ jiko	ⁿ jiš _i	(ti) č _{ay} u	itu
Chic	—	ⁿ jiko	ⁿ jiš _i	č _{ay} u	itu
Ixtl	ⁿ jika	ⁿ jiko	ⁿ jiš _i	(ti) č _{ay} u	itu
Apas	ⁿ jika	ⁿ jiko	ⁿ jiš _i	č _{ay} u	itu/[wiž _u] =planted field
Apoa	[mamey]	ⁿ žiko	ⁿ ziš _i	č _{ay} u =banco	[biyu]/itu
Ndua	—	—	—	[banku]	itu
Joco	ⁿ jika k ^w a?a	ⁿ jiko	ⁿ jiš _i	ti č _{ay} u	itu
Cuya	ⁿ dika k ^w e?e	ka ⁿ diko	ⁿ dixi	teyu	itu
Cuau	ⁿ dika k ^w e?e	ka ⁿ diko	ⁿ dixi	teyu	itu
Coat	ⁿ dika k ^w e?e	ⁿ diko	ⁿ diš _i	teu	itu

Cen. Alta	165) mamey mamey * ⁿ dika?	166) moler grind * ⁿ diko?	167) ala wing * ⁿ dixi	168) banquito stool *teyu	169) milpa cornfield *itu
P-Mixtec					
Ñumi	[mamey]	ⁿ diko	ⁿ dixi	tei	itu
Achi	—	ⁿ diko	ⁿ dixi	—	itu
Yuca	ⁿ dika ⁿ daži	ⁿ diko	ⁿ dixi	težu	[wižu]
Peña	—	—	—	[b ^ɲ gu]	—
Tata	—	—	—	teyu	—
Teit	ⁿ dika	ⁿ diko	ⁿ dixi	ti teyu	[wiyu]
Moli	—	—	ⁿ dixi	težu	itu
Sinc	—	—	—	[b ^ɲ gu]	—
Tlac	—	—	ⁿ dixi	težu	[b ⁱ žu]/itu
Ndi	—	—	—	[banku]	—
Ndac	—	—	—	[banku]	—
Oco	ntikā xé?è	ntikō	nixi	tēžū	?itū
Frog	—	—	—	[banka]	—
Yuci	nīkā x ^y é?é	nīkō-xō	[čiyō]	tēyū`	?itū`/[b ⁱ žu]
Nuyo	nīkā xé?é	nīkō	[čiyō]	tēyū? (lúli)	?itū
Atat	ⁿ dika k ^w é?é	ⁿ diko	ⁿ disi	[siya]	itu
Mig	ⁿ dika xá?ā	ⁿ diko	ⁿ dixi-tš	težū	itū
Chal	[mamey]	ⁿ diko	ⁿ dixi	[sia]/težu	itu
Verd	ⁿ dika xe?e	ⁿ diko	ⁿ dixi	teyu	itu
Yoso	ⁿ dika xa?a	ⁿ diko	ⁿ dixi	tažu =banco	itu
Itun	ⁿ dika ye?e	ⁿ diko	tš ⁿ dix ^y e	teyu	itu
Yolt	—	ⁿ diko	ⁿ dišj	težu	itu
Yutn	—	—	—	[šile]	[biyu]
Sind	ⁿ jika ⁿ daa	ⁿ jiko	ⁿ ji ^ɲ	težu	[wižu]
Pied	ⁿ jika	ⁿ jiko	ⁿ ji ⁱ	[šile]/težu	[wiži]
Huit	ⁿ dika	ⁿ diko	ⁿ dixi	težu	itu
Tlaz	ⁿ jika	ⁿ jiko	ⁿ dišj	težu	itu

No. Baja	165) mamey mamey * ⁿ dika?	166) moler grind * ⁿ diko?	167) ala wing * ⁿ dixj	168) banquito stool *teyu	169) milpa cornfield *itu
Mont	—	—	—	[banka]	iti
Nuch	[ⁿ doxo k ^w a?a]	ⁿ diko	ⁿ diši	teži	?iti
Aten	ⁿ dika sa?a	ⁿ diko	ⁿ dîsî	tei	?iti
Yucq	—	—	—	[banku]	iti
Yucñ	[ⁿ doko sa?a]	ⁿ diko	ⁿ dîsî	tēi k ^w à?á (saddle)	?iti
Guad	[ⁿ doko k ^w a?a]	ⁿ dziko	ⁿ dzîsî	ɣeye	?iɣi
Flor	—	—	—	tei	iči
Amat	—	—	—	[banku]	iči/iti
Zap	ⁿ jika	ⁿ čiko	ⁿ d ^y iši/ ⁿ s ^y iši	teyu	it ^y u
Cac	čika sa?a	čiko	ⁿ dišj	tei	iti
Ndo	—	—	—	tei	itu
Ixtp	—	—	—	[banku]	itu
Mic	—	—	—	[banku]	itu
Tepj	ⁿ čika	ⁿ jiko	ⁿ dišj	tei	itu
Cos	ⁿ jika	ⁿ jiko	ⁿ dišj	tei	itu
Chaz	ⁿ jika	ⁿ jiko	ⁿ dišj	teyu	itu
Tot	—	—	—	[siyeta]	itu
Ton	ⁿ jika	ⁿ jiko	ⁿ dišj	teyu	itu
Jer	—	—	—	tei	čitu
Xay	ⁿ čika	ⁿ čikō	—	tēi (saddle)	itū
Tlal	—	[ⁿ da kuči-ši]	ⁿ jii	tai te?e	[ⁿ di?o]
Chig	[ⁿ doko]/ ⁿ jika	ⁿ jiko/ ⁿ skoo	ⁿ jii	teyu	[biyu]

So. Baja	165) mamey mamey * ⁿ dika?	166) moler grind * ⁿ diko?	167) ala wing * ⁿ diš _i	168) banquito stool *teyu	169) milpa cornfield *itu
P-Mixtec					
Ayut	ⁿ dī ^h kā?	ⁿ dī ^h kō?	ⁿ diš _i	[i ^h tū? n ^h dū?u?]	i ^h tu
Yolx	ⁿ dika	ⁿ diko	ⁿ diš _i	tayur	itu
Alac	—	ⁿ diko	ⁿ diš _i	tayì	yutu
Metl	—	—	—	t ^y āyù	itū
Coi	ⁿ dika k ^w a?a	ⁿ dīkō	ⁿ diš _i	t ^y ayu	?itu
Pera	—	ⁿ čiko	ⁿ ciš _i	čazi	?uUtu
Cuat	ⁿ dika	ⁿ diko	ⁿ duš _i	tayi	yutu
Cah	ⁿ dika	ⁿ diko	ⁿ diš _i	tayi	yutu
Alco	ⁿ dika k ^w a?a	ⁿ deko	ⁿ diš _i	tayu	itu
Cruz	ⁿ dika	ⁿ diko	ⁿ diš _i	tayi	utu
Durz	ⁿ čika	ⁿ čiko	ⁿ ciš _i	čei	?iti
Teco	ⁿ čika	ⁿ čiko	ⁿ diš _i	čei	?iti
Juxt	ⁿ dika s ^y a?a	ⁿ d ^y iko	ⁿ d ^y is ^y i	[šila]/t ^{yh} ai	itu
ChaP	—	—	—	tei	itu
Yuco	ⁿ dīká s ^y ā?à	ⁿ dīkō-nà	ⁿ dīš _i	tažu	?itū
Mix	ⁿ d ^y ika ča?a	ⁿ d ^y iko	ⁿ d ^y ič _i	t ^y ai	itu
Tejc	—	—	—	čai	—
Rey	ⁿ čīká ⁿ dūù	ⁿ čiko	ⁿ ciš _i	č ^y ei	?utu
TlaM	—	—	ⁿ d ^y isi	č ^y ee	?ütü
SilP	—	—	—	taži	ütü
IxpN	ⁿ dīká sà?à	ⁿ diko	ⁿ disi	čazi	?iči
SilM	[mamey]	ⁿ diko	ⁿ diš _i	taži	utü
TamS	[ⁿ doko k ^w a?a]	ⁿ diko	ⁿ diš _i	teže	?utu
Ahue	[ⁿ doko k ^w a?a]	ⁿ diko	ⁿ diš _i	teže	?utu
Mor	[ⁿ doko k ^w a?a]	ⁿ diko-nā	ⁿ diš _i	[banko]	ütü

Costa	165) mamey mamey	166) moler grind	167) ala wing	168) banquito stool	169) milpa cornfield
P-Mixtec	* ⁿ dika?	* ⁿ diko?	* ⁿ dixj	*teyu	*itu
Zac	ⁿ dika ča?a/ ⁿ dika k ^w a?a	ⁿ diko	ⁿ dičj	tayu	itu
Sayu	ⁿ d ^y ika ča?a	ⁿ d ^y iko	ⁿ dičj	tayu	itu
Tept	ⁿ dika ča?a	ⁿ diko	ⁿ dičj	tayu	itu
Atoy	ⁿ dika ča?a	ⁿ diko	ⁿ dičj/[soko]	tayu	itu
Jicy	ⁿ dika ča?a	ⁿ diko	ⁿ dičj	tayu	itu
Jict	—	ⁿ diko	ⁿ dičj	tayu	itu
PinN	ⁿ dika k ^w a?a	ⁿ diko	ⁿ diči	tayu	itu
PinL	ⁿ dika ča?a	ⁿ diko	ⁿ dičj	tayu	itu
Colo	ⁿ d ^y ika	ⁿ d ^y iko	ⁿ d ^y ičj	t ^y ayu	itu
Nuti	—	—	—	[banka]	itu
Ixty	ⁿ d ^y ika	ⁿ d ^y iko	ⁿ dičj	[sil ^y a]/t ^y ayu	itu
Cris	—	—	—	čažu	it ^y u
Lor	ⁿ d ^y ika	ⁿ d ^y iko	ⁿ d ^y ičj	t ^y ayu	itu
Mech	ⁿ d ^y ika	ⁿ d ^y iko	ⁿ dičj	t ^y ayu	itu
Juaz	ⁿ d ^y ika n ^g ?n ^g	ⁿ d ^y iko	ⁿ dičj	t ^y ayu	itu
Jam	ⁿ d ^y ika	ⁿ d ^y iko	ⁿ diči	t ^y ayu	itu
Chay	ⁿ d ^y ika	ⁿ d ^y iko	ⁿ diči	t ^y ayu	itu
ChayC	—	—	—	—	—
ChayD	ⁿ d ^y ika	ⁿ d ^y i ^{kō}	ⁿ disi	t ^y ayu	itu
Tut	[tit ^y i]	ⁿ d ^y iko	ⁿ diči	t ^y ayu	itu
Acat	ⁿ jika k ^w a?a	ⁿ jiko	ⁿ disj	čayu	itu

NE Alta	170) ayer yesterday	171) otro other	172) peine comb	173) se nació be born	174) sabio smart	659
P-Mixtec	*iku	*tuku	*kuka	*ni kaku	*tu?we	
Tepo	iku	tuku	kuk ^W a	kaku	tu(?)wi ini =pensar	
Tida	iku	tuku	kuka	ni kaku	—	
Til	iku	—	kuku	ŋgaku	[fɣmɔ]/[ʒačj]	
Diux	iku	[ɟŋga bɛwelta]	—	—	—	
Nuxi	iku	[jŋga]	kuka	ni kaku-ši	—	
Nuxa	iku	t ^y uku	kuku	kaku	—	
TamJ	iku	tuku	kuka	kaku	—	
Yuta	iku	[ɟŋga]	—	—	—	
Peflo	ikù	tùkù	kúká	kàku	tú?à	
Este	iku	tuku	kuka	kaku	tu?a	
Cui	iku	—	k ^W ika	kaku	—	
Soso	—	—	—	—	—	
Jalt	iku	[ɟŋga bɛwelta]	—	—	—	
Adeq	iku	—	—	—	—	
Cant	iku	tuku	—	—	—	
Lobo	—	—	kuk ^W a	—	—	
Ynam	—	—	—	—	—	
Soy	iku	tuku	kuk ^W a	kaku	—	
Chic	iku	[ɟŋga]	kuk ^W a	kaku	—	
Ixtl	iku	tuku	kuk ^W a	kaku	—	
Apas	iku	[ɟŋga]	kuka	kaku	—	
Apoa	iku	—	kuk ^W a	kaku	—	
Ndua	iku	tuku	—	—	—	
Joco	iku	[ɟŋga]	kuk ^W a	kaku	—	
Cuya	iku	tuku	kuka	kaku	tu?we	
Cuau	iku	tuku	kuka	kaku	tu?we	
Coat	iku	e tuky	kuka	kaku	—	

Cen. Alta P-Mixtec	170) ayer yesterday *iku	171) otro other *tuku	172) peine comb *kuka	173) se nació be born *ni kaku	174) sabio smart *tu?we
Ñumi	iku	—	k ^w ika	kaku	[ʃgmg]
Achi	iku	tuku	kuk ^w a	kaku	[ʃgmg]
Yuca	iku	tuku	kuk ^w a	kaku	—
Peña	iku	[i ^ŋ ga buelta]	—	—	—
Tata	iku	—	—	—	—
Teit	iku	tuku	kuka	kaku	—
Moli	iku	tuku	kuka	kaku	tu?ba
Sinc	iku	[i ^ŋ ga buelta]	—	—	—
Tlac	iku	tuku	kuka	ŋgaku	[ʃgmg]
Ndi	iku	[i ^ŋ ga vuelta]	—	—	—
Ndac	iku	tuku	—	—	—
Oco	?ikū	[?i ^ŋ kā]	k ^w ikā	kākū	[ʃgmg]
Prog	iku	[i ^ŋ ga]	—	—	—
Yuci	?ikū	[?i ^ŋ kā]	kūkā	nkākū	—
Nuyo	?ikū	[?i ^ŋ ga]	kūkā	ŋgaku	[ni tōyō]
Atat	iku	[i ^ŋ ga]	kukā	kaku	tū?ba
Mig	iku	tuku	kukā	kaku	(xā íó) tū?a/ [xa ʃgmg]
Chal	iku	—	kuka	kaku	—
Verd	iku	tuku	kuka	kaku	—
Yoso	iku	tuku	kuka	kaku	tu?ba
Itun	iku	tuku	kuka	kaku	[ⁿ dax ^y g]
Yolt	iku	—	kuka	kaku	—
Yutn	iku	[bene ^ŋ ka]	—	—	—
Sind	iku	tuku	kuka	kaku	—
Pied	iku	tuku	kuka	kaku	—
Huit	iku	tuku	kuka	ŋgaku/kaku	—
Tlaz	iku	tuku	kuka	kaku	tu?a

No. Baja	170) ayer yesterday	171) otro other	172) peine comb	173) se nació be born	174) sabio smart
P-Mixtec	*iku	*tuku	*kuka	*ni kaku	*tu?we
Mont	[koni]	tuko	—	—	—
Nuch	[koni]	tuku	k ^w ika	kaku	—
Aten	[koni]	tiki	k ^w ikâ	na kaki	—
Yucq	[koni]	tiku	—	—	—
Yucñ	[kuni]	tuku	k ^w ikâ	nî kako	—
Guad	[koni]	tuku	k ^w ikâ	nî kake	—
Flor	[kuni]	[inga]	—	—	—
Amat	[kuni]	—	—	—	—
Zap	iku	t ^y uku	k ^w ika	kaku	t ^y u?wa
Cac	[koni]	—	kuka	kaku	[kama]
Ndo	iku	[inga xiči]	—	—	—
Ixtp	iku	tuku	—	—	—
Mic	iku	[inga buelta]	—	—	—
Tepj	iku	tuku	k ^w ika	kaku	tu?wa
Cos	iku	tuku	k ^w ika	kaku	tu?wa
Chaz	iku	tuku	k ^w ika	kaku	—
Tot	iku	[inga bwelta]	—	—	—
Ton	iku	tuki	k ^w ika	kaku	ni ku tu?a
Jer	iku	[inga tuul]	—	—	—
Xay	ikū	[jī gā]/ (tuku = different)	k ^w ikâ	kākū	tū?ā
Tlal	iku	—	na k ^w ika	ⁿ ga ku-te	—
Chig	iku	tuku	k ^w ika	ŋgaku	tu?wa

So. Baja P-Mixtec	170) ayer yesterday *iku	171) otro other *tuku	172) peine comb *kuka	173) se nació be born *ni kaku	174) sabio smart *tu'we
Ayut	i ^h ku (different class)	tu ^h ku/i ⁿ ga (same class)	vi ^h ka	ka ^h ku	—
Yolx	iku	tuku	wika	kaku	—
Alac	[kuni]	[ingâ]	k ^w ikâ	—	—
Metl	—	—	—	—	—
Coi	[kuni]	tuku	k ^w ika	kaku	[kama]
Pera	[koni]	tuku	k ^w ika	kaAkui	—
Cuat	[kuni]	tiki	k ^w ika	kaku	—
Cah	[koni]	tuku	k ^w ika	kaku	—
Alco	[kuni]	tuku	wika	kaku	—
Cruz	[kuni]	tuku	k ^w ika	kaku	—
Durz	[kuni]	tuku/[inga]	k ^w ika	kaki	—
Teco	[kuni]	tiki	k ^w ikâ	kaki	[kama]
Juxt	iku	tuku	k ^w ikâ	kaku	[sa ba?a]
ChaP	iku	tuku	—	—	—
Yuco	[kuni]	[?inkâ-nâ]	[âikâ]	nî kākū-nâ	[tíí]
Mix	[ta kuni]	tuku	ku ika	kaku	—
Tejc	[kuni]	inga tuku	—	—	—
Rey	[koni]	[?inga]	kuka	?i kaku	[kama]
TlaM	—	—	k ^w ikâ	—	—
SilP	[kuni]	inga tiku	—	—	—
IxpN	[koni]	[?inga]	k ^w ika	nî kakui	[kama]
SilM	[kuni]	tuku	k ^w ika	kakü	—
TamS	[kuni]	tiki	k ^w ikâ	kākū	—
Ahue	[kuni]	tiki	k ^w ikâ	kâki	—
Mor	[kuni]	tiki	—	—	—

Costa	170) ayer yesterday	171) otro other	172) peine comb	173) se nació be born	174) sabio smart	663
P-Mixtec	*iku	*tuku	*kuka	*ni kaku	*tu?wa	
Zac	iku	tuku	k ^w ika	kaku	[yati]	
Sayu	iku	tuku	wika	kaku	tu?wa (learned)	
Tept	iku	tuku	kuka	kaku	tu?wa	
Atoy	iku	tuku	kuka	kaku	ku tu?wa	
Jicy	iku	tuku	kuka	kaku	tu?ba	
Jict	iku	tuku	kuka	kaku	tu?ba	
PinN	iku	tuku/[iŋga] times	kuka	kaku/[ni tui] appear	[čini tuni]	
PinL	iku	tuku	kuka	kaku	[kɨyɨ]	
Colo	iku	tuku	kuka	kaku	ku tu?ba	
Nuti	iku	[iŋga čiki]	—	—	—	
Ixty	iku	tuku	kuka	[i tubi]/i kaku	ku tu?ba	
Cris	iku	[iŋga ča?a]	—	—	—	
Lor	iku	tuku	kukas	(ŋi) kaku	—	
Mech	iku	tuku	kuka	kaku	ku tu?wa	
Huaz	iku	tuku	kuka	kaku	ku tu?wa	
Jam	iku	tuku	kuka	kaku	[yat ^y i]	
Chay	iku	tuku	kuka	kaku	ku tu?wa	
ChayC	—	—	—	—	—	
ChayD	iku	tuku	kuka	kaku	tu?ba	
Tut	iku	tuku	kuka	i kaku	i ku tu?wa	
Acat	iku	tuku	kuka	i kaku/i kana	i ku tu?wa	

NE Alta	175) piedra stone	176) boca mouth	177) yo I	178) rocío dew	179) hierba brush
P-Mixtec	*yuu?	*yu?u?	*yu?u	*yuyu?	*yuku
Tepo	yuu	yu?u	ⁿ du?u/yu?u	yuyu	yuku
Tida	žuu	žu?u	[wɛɛ-ɕu]	(old form) gota žužu	žuku/[ku?u]
Til	žuu	žu?u	[mɛɛʃ]	žužu	žuku/[ku?u] campo
Diux	žuu	—	[-řu]	—	—
Nuxi	žuu	žu?u	[- ⁿ du]	žužu	[šiči]
Nuxa	žuu	žu?u	ⁿ ju?u	žužu	žuku
TamJ	žuu	žu?u	ⁿ ju?u	žužu	[iči kaa]
Yuta	žuu	—	žu?u	—	—
Pefío	žúú	žu?u	žú?ú/-í	žùžù	[kú?ú]
Este	žuu	žu?u	žu?u	žužu	[ku?u]
Cui	žuu	žu?u	ču?u	žužu	[ku?u/kí?í]
Soso	žuu	—	[wɪj ⁿ su]	—	—
Jalt	žuu	—	žu?u/[mɛsu]	—	—
Adeq	žuu	—	[bɪjncu]	—	—
Cant	žuu	—	[mɛɛ-ɕa]	—	—
Lobo	žuu	žu?u	[mɪnsü]	—	žuku
Ynam	žuu	žu?u	—	—	—
Soy	žuu	žu?u	[- ⁿ zu]/[mɪj ⁿ ɕi]	žužu	žuku
Chic	žuu	žu?u	[mɛɛ-ɕa]	žužu	[ku?u]/žuku
Ixtl	žuu	žu?u	[- ⁿ zu]	žužu	žuku
Apas	žuu	žu?u	[- ⁿ zu]/[-ɕa]	žužu	žuku
Apoa	žuu	žu?u	(familiar)/(polite) ⁿ zu?u	žužu	[ku?u]/žuku
Ndua	žuu	—	ⁿ ju?u/ ⁿ zu?u (female speaker)	—	—
Joco	yuu	yu?u	[- ⁿ ju]	yuyu	yuku
Cuya	yuu	yu?u	ⁿ du?u/yu?u	žužu	[ku?u]/yuku
Cuau	žuu	yu?u	[ⁿ dí?í]	žužu	yuku/[ku?u]
Coat	šuu	šo?o	šu?u/[- ⁿ dí]	šušu	[šu?u ku?u]

Gen. Alta	175) piedra stone	176) boca mouth	177) yo I	178) rocío dew	179) hierba brush
P-Mixtec	*yuu?	*yu?u?	*yu?u	*yuyu	*yuku
Ñumi	žuu	žu?u	[mæɟ-ni]	žužu	žuku
Achi	žuu	žu?u	[mæɟ- ⁿ di]	žužu	žuku
Yuca	žuu	žu?u	[mæɟta]/[mæɟsa] (fam.) (polite)	žužu	[ku?u]
Peña	žuu	žu?u	lu?u/[mæɟli]	—	—
Tata	yuu	—	[mæɟ ⁿ di]	—	—
Teit	šuu	šu?u	—	žužu	[ku?u]
Moli	žuu	žu?u	[sæŋɟ(?ɟ)]	žužu	žuku
Sinc	žuu	—	[mæɟda]	—	—
Tlac	žuu	žu?u	[sæŋɟ]/[mæɟsæŋ]	žužu	[ži?i]/žuku
Ndi	žuu	—	[mæɟari]	—	—
Ndac	yuu	—	[ⁿ duči]	—	—
Oco	žùù	žù?ù	[sæŋɟ]/ ⁿ tù?ù (polite)/(familiar)	žúžú	žùkù
Prog	yuu	—	[ⁿ do]	—	—
Yuci	yùù	yù?ù	[mæŋɟnɟ]	yúyú	yùkù
Nuyo	žùù	žù?ù	[mæŋɟnɟ]	yúyú	žùkù
Atat	yuū	žu?u	ru?u	yuyu	yuku
Mig	žuū	žu?u	ruū/[nɟɟ]	žužu	žuku
Chal	žuu	žu?u	ru?u	žužu	žuku
Verd	yuu	yu?u	[mæɟari]	yuyu	yuku?
Yoso	žuu	žu?u	ru?u	žužu	žuku
Itun	yuu	yu?u	ry?y	yuyu	yuku
Yolt	žuu	žu?u	[nɟs ^v ɟ]	žužu	žuku
Yutn	žuu	—	so?o	—	—
Sind	žuu	žu?u	su?u	žužu	[ku?u]
Pied	žuu	žu?u	su?u	žužu	[ku?u]
Huit	žuu	žu?u	ⁿ di?u	žužu	žuku
Tiaz	žuu/[kawa]	yu?u	žu?u	žužu	žuku

No. Baja	175) piedra stone	176) boca mouth	177) yo I	178) rocío dew	179) hierba brush
P-Mixtec	*yuu?	*yu?yu?	*yu?u	*yuyu?	*yuku
Mont	žuu	—	žu?u	—	—
Nuch	žüü	žu?u	že?e	žüžü	žuku
Aten	žuu	žu?u	ži?i	žuu	žuku
Yucq	žüü	—	žo?o	—	—
Yucfi	žuu	žu?u	žo?o	žužu	žükü
Guad	yüü	yü?ü	yu?u	yuyu	yuku
Flor	yuu	—	ži?i	—	—
Amat	žuu	—	žu?u	—	—
Zap	yuu	yu?u	yu?u	[kašil]/yuyu	yuku
Cac	žüü	žüü	žü?ü	[na kati]	žükü
Ndo	žuu	—	—	—	—
Ixtp	žuu	—	žuu	—	—
Mic	[kaba]	—	žuu	—	—
Tepj	yuu	yu?u	yu?u	yuyu	yuku
Cos	yuu	yu?u	yu?u	yuyu	yuku
Chaz	yuu/[kawa]	yu?u	yu?u	yuyu	yuku
Tot	yuu	—	[miini]	—	—
Ton	yuu	yu?u	yu?u	yuyu	yuku
Jer	žuu	—	žu?u	—	—
Xay	yüü	yü?ü	yü?ü	yüyü	yükü
Tlal	žuu	žu?u	[mej]	—	[ku?šei]
Chig	yuu	yu?u	yu	yuyu	[ku?u]

So. Baja	175) piedra stone	176) boca mouth	177) yo I	178) rocío dew	179) hierba brush
P-Mixtec	*yuu?	*yu?u?	*yu?u	*yuyu?	*yuku
Ayut:	yūu?	yū?ú?	yū?u/-i	yūyū?	[yuba.]
Yolx	yu?u	yu?u	yuyu	yuku/[ku?u]	yuky
Alac	yùù	—	yì?ì	—	—
Metl	yùù	yù?ù	yù?ù	—	—
Coi	yùú	yu?u	[mii]/yu?u	yuyu	yuku
Pera	žùkú	žù?u	žù?u	žùžù	žuku
Cuat	yuu	yu?u	yi?i	yuyu	yuku
Cah	yuu	yu?u	yi?i	yuyu	yuku
Alco	yuu	yu?u	e?e	yuyu	iku
Cruz	yuu	yu?u	yi?i	yuyu	yuku
Durz	žii	žù?ù	žì?ì	žìžì	žùkù
Teco	žìì	yì?ì	[ⁿ džìká]	žùžù	žuku
Juxt	žuu	žù?u	žù?u	žùžù	žuku
ChaP	žuu	—	žù?u	—	—
Yuco	žùú	žù?ú	[míí-ì]	žùžù	žùkù
Mix	yuu	yu?u	yu?u	yuyu	yuku
Tejc	yuu	—	[meeku]/-yo	—	—
Rey	žùù	žù?u	[míí]	žìžì	žùkù
TlaM	žùù	žù?ù	žì?i	žùžù	žùkù
SilP	žuu	—	že?e	—	—
IxpN	žuu	žù?u	žù?u	žùžù	žùku
SilM	yüü	yu?u	[meji]/ye?e	[kašj]	yukü
TamS	žùú	žù?ù	žì?i	žùžù	žùkù
Ahue	žùù	žù?ù	žì?i	žùžù	žùkù
Mor	žii	yü?ü	[meji]	yüyü	—

nosotros

Costa	175) piedra stone	176) boca mouth	177) yo I	178) rocío dew	179) hierba brush	668
P-Mixtec	*yuu?	*yu?u?	*yu?u	*yuyu?	*yuku	
Zac	yuu	yu?u	yu?u	yuyu?	[yuba.]/yuku	
Sayu	yuu	yu?u	yu?u	[kač̣i]	monte [ku?u]	
Tept	yuu	yu?u	yu?u	[kač̣i]	[ku?u]/[yüwa]	
Atoy	yuu	yu?u	yu?u	—	yuku	
Jicy	yuu	yu?u	yu?u	[kač̣i]	yuku	
Jict	yuu	yu?u	yu?u	[kač̣i]	yuku	
PinN	yuu	yu?u	yu?u	[kači]	yuku	
PinL	yuu	yu?u	yu?u	[kač̣i]	[ku?u]/yuku	
Colo	yuu	yu?u	yu?u	[kač̣i]	yuku/[yuba]	
Nuti	yuu	--	[m̄i]	—	—	
Ixty	yuu	yu?u	[m̄i]/yu?u	yuyu	yuba]	
Cris	žuu	—	[ⁿ č̣u?bi]	—	—	
Lor	yuu	yu?u	yu?u	yuyu	yuku	
Mech	yuu	yu?u	yu?u	yuyu	[ku?u]	
Huaz	yuu	yu?u	yu?u	[kač̣i]	[ku?u]	
Jam	yuu	yu?u	yu?u	[kač̣i]	[ku?u]	
Chay	yuu	yu?u	yu?u	[kač̣i]	yuku	
ChayC	—	—	—	—	—	
ChayD	yüü	yu?u	yu?bi (emphatic)	yuyu	yükü	
Tut	yuu	yu?u	yu?u	[kač̣i]	yuku	
Acat	yuu	yu?u	yu?u	[kaṣi]	yuku	

NE Alta	180) surco furrow	181) calzón trousers	182) sacerdote priest	183) fierro brand	184) sabrá will know
P-Mixtec	*yuky	*xetu	*sutu	*tuni	*kuni
Tepo	[siči]	satu	ətu	tnuni	[nəʔə]/keni
Tida	žuky	satu	=cura, padre, jefe ətu	=insignia, marca tnyni	[nəʔə]
Til	[šiči]	šatu	ətu	[žeru]	[kiʔi ⁿ deʔa]
Diux	—	—	—	—	[xini-n]
Nuxi	[šiči]	šet ^y u	ətu ^y u	[kaa]	kinj-nə
Nuxa	[siči]	šet ^y u	ətu ^y u	(te) t ^y yni	te kinj
TamJ	[iči kaa]	žatu	ətu	Nnyni	[zəʔaku ⁿ diʔa]
Yuta	—	—	—	—	kinj
Peño	[šiči]	[kərsənī]	ətu	tyni	kinj
Este	žuky	—	ətu	[xəfu]/tnyni	kinj
Cui	—	—	—	—	kyni
Soso	—	—	—	—	šinj
Jalt	—	—	—	—	kyni
Adeq	—	—	—	—	kyny
Cant	—	—	—	—	[šinj fiəsi]
Lobo	[surku]	[kalsəni]	—	[kaa]	[kyʔni nyni-ši]
Ynam	—	—	—	—	—
Soy	[šiči]	[kalsəni]	ətu	—	sa kuu kyni
Chic	[šiči]	caños [əʔnə k ^w iši]	ətu	[f ^y əfu]	šinj
Ixtl	[šiči]	satu	ətu	[ma ⁿ ca]	šinj
Apas	[šiči]	—	ətu	—	əjni kinj
Apoa	[šiči]	[əʔnə k ^w iši]	ətu	[fiefu]	kinj
Ndua	—	—	—	—	kinj
Joco	—	—	—	[fiefu]	kinj- ⁿ zo
Cuya	—	[tiʔi]	ətu	[yefu]	[tuʔwe]
Cuau	—	[əiʔi]	ətu ^h	[žefu]	ka žinj
Coat	šuk ^w i	—	ətu	—	[koto ⁿ dee]

	180) surco furrow	181) calzón trousers	182) sacerdote priest	183) fierro brand	184) sabrá will know
P-Mixtec	*yuky	*xetu	*sutu	*tuni	*kuni
Ñumi	žuky	[kalsɔn]	sutu	tnynj	[ko ⁿ d ^v a'a]
Achi	—	—	sutu	[kaa]	—
Yuca	žuky	xatu	sutu	[kaa]/[žefu]	kynɛ
Peña	—	—	—	—	kuʔinj
Tata	—	—	—	—	[čjɛɛ]
Teit	šuky	šetu	əutu	[šefu]	nj inj
Moli	—	—	sūtū	—	k ^w inj
Sinc	—	—	—	—	kynj
Tlac	[xa xiko čaba]	[itNj]	sutu	[kaa]	k ^w inj
Ndi	—	—	—	—	kynj
Ndac	—	—	—	—	—
Oco	n̄ykj	xātū	sūtū	tj̄nj	kj̄nj
Prog	—	—	—	—	kynj
Yuci	yūkj`	yātū	sūtū`	tj̄nj`	kj̄nj-hj̄
Nuyo	čūkj	žātū	sūtū	—	kj̄nɛʔyā
Atat	žukj	—	sūtū	Nnynj	kynj
Mig	yukj	—	sūtū	tynj	kynj
Chal	žuku	[kalsɔnj]	sutu	[fiefu]	kynj
Verd	yuky	[syny ka]	sutu	tnynj	[koto]/kynj
Yoso	žuky	[kalsɔn]	sutu	Nnynj	ⁿ deʔe ti kynj
Itun	yuky	[sɔnɔ kaʔa]	sutu	tynj	kynj
Yolt	—	—	sutu	[kaa]	ko ka šinj/ [koto]
Yutn	—	—	—	—	xinj
Sind	žuu	žetu	əutu	[fiefu]	inj
Pied	žuxy	žetu	əutu	[žefu]	[nɛʔɛ]
Huit	[iči kaa]/žuxy	[kasynj]	əutu	[žefu]	ifj
Tlaz	žuky	—	əutu	[xefu]	[kɛ ⁿ diʔa]

No. Baja	180) surco furrow	181) calzón trousers	182) sacerdote priest	183) fierro brand	184) sabrá will know
P-Mixtec	*yuky	*xetu	*sutu	*tuni	*kuni
Mont	—	—	—	—	[koto]
Nuch	[čiči]	sati	hütü	tyni	[ka ⁿ de?e]
Aten	ⁿ ciko	sati	huti	tjñi	[ku tyni ?ini]
Yucq	—	—	—	—	[ⁿ daa iny]
Yucñ	žiko	sati	huti/h ^w iti	[kaã]	[ku tyni ?ini]
Guad	[čiči]	saçi	đuti	tyni	[ku tyni ?ini]
Flor	—	—	—	—	[ku tyni ini]
Amat	—	—	—	—	[ni ty?y]
Zap	yuky	sat ^y u	đut ^y u	tñi	[kotñi]
Cac	žiky	sati	đütü	[marka]	[ko ⁿ dee]
Ndo	—	—	—	—	kyni
Ixtp	—	—	—	—	kyni
Mic	—	—	—	—	[kači tyu-i]
Tepj	yuku	satu	đutu	—	[ku ⁿ de?e]
Cos	yuky	satu	đutu	tyni	[ku ⁿ daa ini]
Chaz	yuku	satu	đutu	tyni	kyni
Tot	—	—	—	—	kyni
Ton	yuky	satu	đutu	tyni	[kiñg?g/ ku n?g?g]
Jer	—	—	—	—	[kači tny?i-ši]
Xay	yuky	sātū	đütü	tnjñi	[kū n?g?g]
Tlal	[koo]	satu m?g	i đutu	[kaa]	[ⁿ di?an]
Chig	[koo]	šata	đutu	tnyni	[ⁿ de?e]

So. Baja	180) surco furrow	181) calzón trousers	182) sacerdote priest	183) fierro brand	184) sabrá will know
P-Mixtec	*yuku	*xetu	*sutu	*tuni	*kuni
Ayut	yūky	ša ^h tu	sū ^h tu	[kaa]	kunĭ
Yolx	yuku	satu	sutu	[kaa]/tunĭ	kunĭ
Alac	—	—	sütü	—	—
Metl	—	—	—	—	—
Coi	[čiči]	šatu	sütü	tunĭ	[ku ⁿ daa ini]
Pera	[čiči]	šaAtu	sutu	tōnĭ	(bigĭ) kuŋy (now)
Cuat	[čiči]	šati	sutu	(kaa) tōnĭ	kunĭ
Cah	[čiči]	šati	sutu	—	kunĭ
Alco	[čiči]	šatu	sutu	tunĭ	kunĭ
Cruz	[čiči]	šatu	sutu	—	kunĭ
Durz	žikŭ	šati	siti	tunĭ	[ku ⁿ ci?i]
Teco	yikŭ	šati	siti	tunĭ	[ku ⁿ dži?i]
Juxt	žuku	satu	sutu	tunĭ	[k ^w a ⁿ de?e]
Chap	—	—	—	—	[kutu]
Yuco	žukŭ	čātü	sütü	tunĭ	čā kunĭ-yó
Mix	yuku/[t ^y iki]	čatu	sutu	tunĭ	[ku ⁿ gu ⁿ d ^y e?e]
Tejc	—	—	—	—	kunŭ
Rey	žiku	šatu	sutu	tōnĭ	[ku ⁿ daa ?ini]
TlaM	žiku	s ^y atü	—	—	[ku ⁿ daà ?ini]
SilP	—	—	—	—	[ka ⁿ daa ini]
IxpN	žiko	sači	xütü	tōnĭ	ku tunĭ ?ini
SilM	[čiči]	sati	θütü	tōnĭ	[kə?ə kōŋə]
TamS	—	šati	θütü	tunĭ	kunĭ tunĭ
Ahue	[čiči]	šati	θütü	tunĭ	kunŭ
Mor	[čiči]	šati	—	—	[kitunĭ inŭ]

Costa	180) surco furrow	181) calzón trousers	182) sacerdote priest	183) fierro brand	184) sabrá will know
P-Mixtec	*yuky	*xetu	*sutu	*tyni	*kuni
Zac	[surku]	čatu	sutu	tyni	[koto]
Sayu	yuky	čatu	sutu	tyñi	[koto]
Tept	yuky	čatu	sutu	tyni	[koto/ ⁿ de?e]
Atoy	yuky	čatu	sutu	tyni	[koto]
Jicy	yuky	čatu	sutu	tyni	[ⁿ de?e]
Jict	yuku	čatu	sutu	tyni	[koto]
PinN	yuku	čatu	sutu	tyni	[koto]/kyni
PinL	yuky	čatu	sutu	tyni	quiere [koto]
Colo	yuky	[ti ča?a]	hutu	tyñi	[ku ⁿ d ^v e?e]
Nuti	—	—	—	—	[koto]
Ixy	yuky	čatu	sutu	tyñi	[koto/ku ⁿ d ^v e?e]
Cris	—	—	—	—	[koto/koty]
Lor	yuky	[ti ča?a]	sutu	tyñi	[koto]
Mech	yuky	[ti ča?a]	sutu	tyñi	[koto]
Huaz	yuky	[kutu ča?a]	sutu	tyñi	[koto]
Jam	yuky	[kutu ča?a]	sutu	tyñi	[koto]
Chay	yuky	[čoto ča?a]	sutu	tyñi	[čito/koto]
ChayC	—	—	—	—	—
ChayD	yūkù	[koto sa?a]	áutu	tyñi	—
Tut	yuky	[k ^v utu ča?a]	sutu	tyñi	[koto]
Acat	yuky	[kutu sa?a]	sutu	tyñi	[koto]

	NE Alta	185) ardilla squirrel	186) floja (la silla) loose	187) pesado heavy	188) tobacco tobacco	674
P-Mixtec		*k ^w eyu?	*taya	*weyi	*ino	
Tepo	—	—	taya	wai	ino	
Tida	ti k ^w əi	—	taža	wee	ino (=piciete, tobacco)	
Til	k ^w əñu	—	taža	bee	inu =cigarro	
Diux	k ^w əñu	—	—	bee	inu =cigarro	
Nuxi	k ^w əñe/k ^w əñi	ni taya-ši	—	bee	inu =cigarro	
Nuxa	k ^w əñi	taža	—	wee	inu	
TamJ	x ^w əñi	ng taža	—	wee	inu =cigarro	
Yuta	k ^w əñi	—	—	bee	—	
Peño	k ^w əñu	tāžā	—	bee	inu	
Este	k ^w əñu	ⁿ da taža	—	wee	inu	
Cui	[ardiya]	—	—	wee	—	
Soso	—	—	—	—	—	
Jalt	[labiči]	—	—	bee	—	
Adeq	k ^w əñu	—	—	bee	—	
Cant	či k ^w əñu	—	—	bee	—	
Lobo	—	—	—	—	—	
Ynam	—	—	—	—	—	
Soy	k ^w əñu	taya	—	wee	inu =cigarro	
Chic	k ^w əñu	taya	—	wee	inu =cigarro	
Ixtl	k ^w əñu	taya	—	wee	inu =cigarro	
Apas	la k ^w əñu	taya	—	wee	inu =cigarro	
Apoa	k ^w əñu	taya	—	bee	inu	
Ndua	k ^w əñu	—	—	bee	—	
Joco	k ^w əñi	taya	—	wee	inu =cigarro	
Cuya	k ^w əñu	ng taya	—	wii	inu	
Cuau	k ^w əñu	taya	—	wii	inu	
Coat	k ^w əñu	taša	—	bee	inu	

Gen. Alta	185) ardilla squirrel	186) floja loose	187) pesado heavy	188) tobacco tobacco
P-Mixtec	*k ^w eyu?	*taya	*weyi	*ino
Ñumi	k ^w əfy	taža	bee	iny =cigarro
Achi	k ^w əfy	ni taža	bee	iny
Yuca	k ^w əfɛ	—	wee	(ⁿ da?a) iny
Peña	k ^w əfi	taža	bee	—
Tata	k ^w əfi	—	bee	—
Teit	k ^w əfi	na taya	wee	iny
Moli	k ^w əfy	—	vee	iny (iŋɔ=cigarro)
Sinc	k ^w əfy	—	bee	—
Tlac	k ^w əfi	taža	bee	(žuku) iny
Ndi	ti k ^w əfy	—	bee	—
Ndac	[ardiya]	—	bee	—
Oco	šk ^w əñy	taža	vèè	žùkù ?iñy (sēnū=cigarro)
Prog	k ^w əfy	—	bee	—
Yuci	k ^w əñy	[ⁿ ɔny]	vèi	yùkù ?iñy (sānū=cigarro)
Nuyo	k ^w əñy	tāžā	vèi	yùkù iñy (sānū=cigarro)
Atat	k ^w əfy	ta?ya	vēyi	iny
Mig	k ^w əñy	ta?ža	vēe	iny
Chal	k ^w əñy	ta?ža	bee	iny
Verd	k ^w əfy	taya	bei	iny (iŋɔ=cigarro)
Yoso	k ^w əfy	ta?ža	bee	iny =cigarro
Itun	k ^w əfy	taya	beyi	iŋɔ
Yolt	k ^w əfy	—	bee	iŋɔ
Yutn	[ardiya]	—	bee	—
Sind	k ^w əfy	ka taža	wee	iŋɔ =cigarro
Pied	či x ^w əfi	taža	wee	iny =cigarro
Huit	x ^w əfy	da taža	wee	iny
Tlaz	k ^w elu	na taža	wee	—

No. Baja	185) ardilla squirrel *kweyu?	186) floja loose *taya	187) pesado heavy *weyi	188) tobacco tobacco *ino
Mont	ⁿ di k ^w əñi	—	—	—
Nuch	ti k ^w əñi	taži	vee	ña k ^w iny səny = cigarro
Aten	ⁿ d̄i k ^w əji	tai	vee	zuku ?iny səny = cigarro
Yucq	ⁿ di k ^w īi	—	bee	—
Yucn	či k ^w īi	taža	vee	žúú k ^w īny
Guad	[mytu]	tai	vee	?iny/?ino = cigarro
Flor	[mytu]	—	bee	—
Amat	[mytu]	—	bee	—
Zap	[ti ardiya]	[daya]	wee	nino ino = cigarro
Cac	[ardiya]	nə tei	bee	ino = cigarro
Ndo	ⁿ di k ^w əji/ ⁿ di k ^w əñy	—	bee	—
Ixtp	[si ardiya]	—	bee	—
Mic	[ardiya]	—	bee	—
Tepj	[ardiya]	[daya]	wee	iny = cigarro
Cos	si k ^w əñi	[daya]	wee	iny = cigarro
Chaz	—	[daya]	wee	iny = cigarro
Tot	[si ardiya]	—	bee	—
Ton	[si mytu]	[daya]	wee	iny = cigarro
Jer	[si mytu]	—	bee	—
Xay	[sī mütü]	[daya]	vèé	īny
Tlal	—	[nə tñani]	bee	iny = cigarro
Chig	[ⁿ do ardia?]	[nə daya]	wee	iny = cigarro

So. Baja P-Mixtec	185) ardilla squirrel *k ^w eyu?	186) floja loose *taya	187) pesado heavy *weyi	188) tobacco tobacco *ino
Ayut	ⁿ di k ^w ēi?	taya	vīē	kūny?
Yolx	ⁿ di k ^w əñu	taya	wee	ⁿ di kuny
Alac	—	—	—	—
Metl	—	—	—	—
Coi	ⁿ di k ^w əñu	[tašil]	vèē	yuku nu šəny = cigarro
Pera	ⁿ či k ^w əñu	taža	vèEé	k ^w iIny šəny = cigarro
Cuat	ⁿ di k ^w əñu	taya	wee	n ^{da} ?a k ^w inɔ
Cah	ⁿ di k ^w əñu	taya	wee	k ^w inɔ/k ^w inɔ = cigarro yuču k ^w inɔ
Alco	ⁿ di k ^w əñu	taya	wee	kuny
Cruz	ⁿ di k ^w əñu	taya	g ^w ee	k ^w inɔ
Durz	či k ^w əñi	taža	vee	žiku inɔ šəny = cigarro
Teco	la k ^w əñi	taža	vee	zuki inɔ
Juxt	ⁿ d ^y i k ^w əi	taža	bee	yuku k ^w inɔ sanu = cigarro
ChaP	ⁿ di k ^w əi	—	bee	—
Yuco	ⁿ dī k ^w əñu	tāyā	vèē	žukū nɔ šəny = cigarro
Mix	ⁿ d ^y i k ^w əi	taya	bee	n ^g w ⁱⁿ ɔ šəny = cigarro
Tejc	[ardiya-ča]	—	bee	—
Rey	ⁿ či k ^w əñi	taža	vèē	žuku ?inɔ šəny = cigarro
TlaM	—	taža	—	—
SilP	ⁿ di k ^w əñi	—	bee	—
IxpN	ⁿ di k ^w əñi	taža	vèē	žuku ?inɔ šəny = cigarro
SilM	ⁿ di k ^w əñi	nə taya	bee	nə ku inɔ θəny = cigarro
TamS	ⁿ di k ^w əñi	taža	vee	žuk ^w inɔ θəny = cigarro
Ahue	ⁿ di k ^w əñi	nə taži	vee	žuk ^w inɔ θəny = cigarro
Mor	—	na yaya-tu	—	yuku k ^w inɔ həny = cigarro

Costa	185) ardilla squirrel *k ^w əñy?	186) floja loose *taya	187) pesado heavy *weyi	188) tobacco tobacco *ino
P-Mixtec				
Zac	k ^w əñy	taya	bee	yuku nyu šəny = cigarro
Sayu	k ^w əñy	taya	wee	yuu kyny šəny = cigarro
Tept	k ^w əñy	ⁿ du taya	wee	iny šəny = cigarro
Atoy	k ^w əñy	taya	wee	iny šəny = cigarro
Jicy	la k ^w əñy	taya	bee	iny šəny = cigarro
Jict	k ^w əñy	taya	bee	iny šəny = cigarro
PinN	k ^w əñy	—	bee	—
PinL	k ^w əñy	taya	bee	iny šəny = cigarro
Colo	k ^w əñy	taya	bee	iny šəny = cigarro
Nuti	k ^w əñy	—	bee	—
Ixty	[bišil]	taya/[ya?la]	bee	iny
Cris	k ^w əñy	—	bee	—
Lor	k ^w əñy	taya	wee	ino
Mech	k ^w əñy	taya	wee	ino
Huaz	k ^w əñy	taya	wee	ino
Jam	k ^w əñy	taya	bee	ino
Chay	k ^w əñy	taya	wee	ino
ChayC	—	—	—	—
ChayD	k ^w əño	taya	vee	ino ino viši = cigarro
Tut	k ^w əñy	taya	wee	ino
Acat	k ^w əñy	taya	wee	ⁿ da ino

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