

**THE PHONOLOGY
AND
MORPHOLOGY
OF AXININCA CAMPA**

David L. Payne

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 **SIL** SUMMER
INSTITUTE OF
LINGUISTICS

UNIVERSITY
OF TEXAS AT
ARLINGTON



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TABLE OF CONTENTS

Preface		ix
Chapter I	Introduction	1
	Ethnography	1
	Classification and dialect comparison	3
	Literature	7
	Survey of Axininca grammar	9
	Purpose and procedure	15
Chapter II	Morphology	17
	Parts of speech	18
	Qualifiers	26
	Non/finite	29
	Auxiliary	30
	Modals	38
	Postposition	47
	Genitive	48
	Kinship	49
	Other morphological phenomena	54
Chapter III	Phonological structure	55
	Underlying clusters	55
	Phonological features	58
	Syllable, word and morpheme structure	63
Chapter IV	Prefix morphophonemics	77
	Deletion	77
	Spirantization	83
	Weakening	87

	Labial assimilation	93
	Formulating the deletion rule	94
	Genitive alternations	101
Chapter V	Epenthesis and related processes	107
	Epenthesis	107
	Velar glide morphophonemics	115
	Geminate reduction	119
	Affrication	121
Chapter VI	Palatalization and related processes	128
	Palatalization	128
	Lengthening	135
	Backing	139
Chapter VII	Additional phonological rules	141
	Cluster simplification	141
	Reduplication	143
	Subjunctive lengthening	149
	Contraction	150
Chapter VIII	Rule order	153
Chapter IX	Surface representation	159
	Phonetic processes	159
	Psychological reality and orthography	161
	Previous phonemic statements of Axininca	169
Chapter X	Summary and concluding remarks	172
Appendix A	Texts	176
	Phonemic representation	177
	Underlying representation	185
	Morpheme gloss	198
	English translation	220
Appendix B	Paradigms	231
	Auxiliary paradigm	233
	Verb paradigm	238
	Genitive paradigm	244
	Kinship paradigm	250

Table of Contents		vii
Appendix C	Derivations	259
Appendix D	Sample lexicon	262
	Major class words	262
	Inflectional affixes	264
	Word list	266
Bibliography		281

PREFACE

Field research for this study was done under the auspices of the Summer Institute of Linguistics in the Axininca (Campa) village of Puerto Davis on the Apurucayali River and the center of operations of the Summer Institute of Linguistics in Yarinacocha, Peru, during the months of February to September, 1978. Jorge Sánchez was the primary source of information in the linguistic analysis and elicitation. Initial travel arrangements to Peru were partially funded by an International Pre-Dissertation Fellowship awarded by the International Programs and Studies Committee of The University of Texas at Austin.

I wish to express my gratitude in acknowledgement of assistance from various sources: to my wife, Judy, for collaboration in linguistic analysis and preparation and typing of the manuscript; to Jorge Sánchez, for the months of labor in the elicitation and analysis; to Dr. Robert D. King, my supervising professor, for advice, help and encouragement during the last few years; to Andrés Sánchez and Simón Santos and the people of Puerto Davis for their hospitality and cooperation; to my colleagues working in the related Campa dialects, especially to Mary Ruth Wise, for valuable comments on an earlier draft of the manuscript, and to Allene Heitzman, Dottie Shaler, Judy Carlson, Ron and Janice Anderson, Richard and Jackie Rutter, and Ken and Joy Swift; to Dorothy Behnke and Nancy Sanders for typing of an earlier draft; and to my parents for help and encouragement during the final preparation of the manuscript.

CHAPTER I INTRODUCTION

One of the largest indigenous language groups inhabiting the Amazon jungle is called "Campa" by Spanish-speaking Peruvians. The people refer to themselves as "Ashaninca" [aʃáɲɪŋka], "Asheninca" [aʃéɲɪŋka], "Axininca" [aɕɪɲɪŋka], "Nomatsiguenga" [nomɑɟɪɡéŋɑ], "Machiguenga" [mɑɟɪɡéŋɑ] or "Caquinte" [kɑkɪntɛ]. As the different pronunciations indicate, there are various dialects of what has been called the Campa language, with varying and as yet undetermined degrees of mutual intelligibility. This presentation is a generative description of the phonology and morphology of the dialect spoken on the Apurucayali River and its tributaries, henceforth referred to by the name "Axininca".

ETHNOGRAPHY

The Axininca and related groups have a basically agrarian society. The primary concern of the man is hunting, fishing and slash-and-burn agriculture. The woman typically concerns herself with the harvesting and preparation of sweet manioc, the staple diet, as well as preparation of other vegetables and game. She also weaves the cushma, a kaftan-like garment worn by both men and women.

There is a surprisingly high degree of mobility and interaction among the different dialect areas. It is not uncommon for a man to take a wife from a completely distinct and distant dialect area, although the usual practice is for cross-cousins to marry. In the past the people lived in extremely dispersed family units with two or three adult males. The tendency now,

however, in most areas is toward communities of twenty to a hundred persons, most likely the result of contact with missionaries and mestizos.

The kinship system of Axininca and related dialects has bilateral descent. The only major difference I have noticed between the kinship terminology of Axininca and the other Campa dialects is that, in Axininca of the Apurucayali, the same terms for grandparent and grandchild are used only when the speaker and hearer are of the same sex. Thus whereas Machiguenga (W. Snell 1972:281), Nomatsiguenga (Wise 1971:123-5) and Ashaninca (W. Kindberg 1975c) have two to four basic terms (male and female) for grandparent/grandchild, Axininca utilizes six terms. The morphology of the terms is discussed in the KINSHIP section of Chapter II and in the KINSHIP PARADIGM of Appendix B, where terms are given and a schematic diagram of kinship relationships is presented.

Today, Axininca culture is rapidly changing as there is increasing contact with the predominant Latin American culture of Peru. Although contact began in the seventeenth century with Franciscan missionaries, increased contact with the dominant culture appears to have begun with the rubber boom near the end of the nineteenth century. The patrón system of Indian indebtedness begun then is still predominant in many areas with the patrones requiring cheap Indian labor for lumber, coffee, and livestock in exchange for goods of the predominant culture given in advance.

Among the Axininca there are varying degrees of access to the materials of the more technologically advanced society, the extreme lack of contact perhaps represented in the village of Miraflores on the upper Apurucayali, where the only materials from the dominant culture I have observed were a few pieces of occidental clothing, a dozen or so aluminum pots, spoons and tin

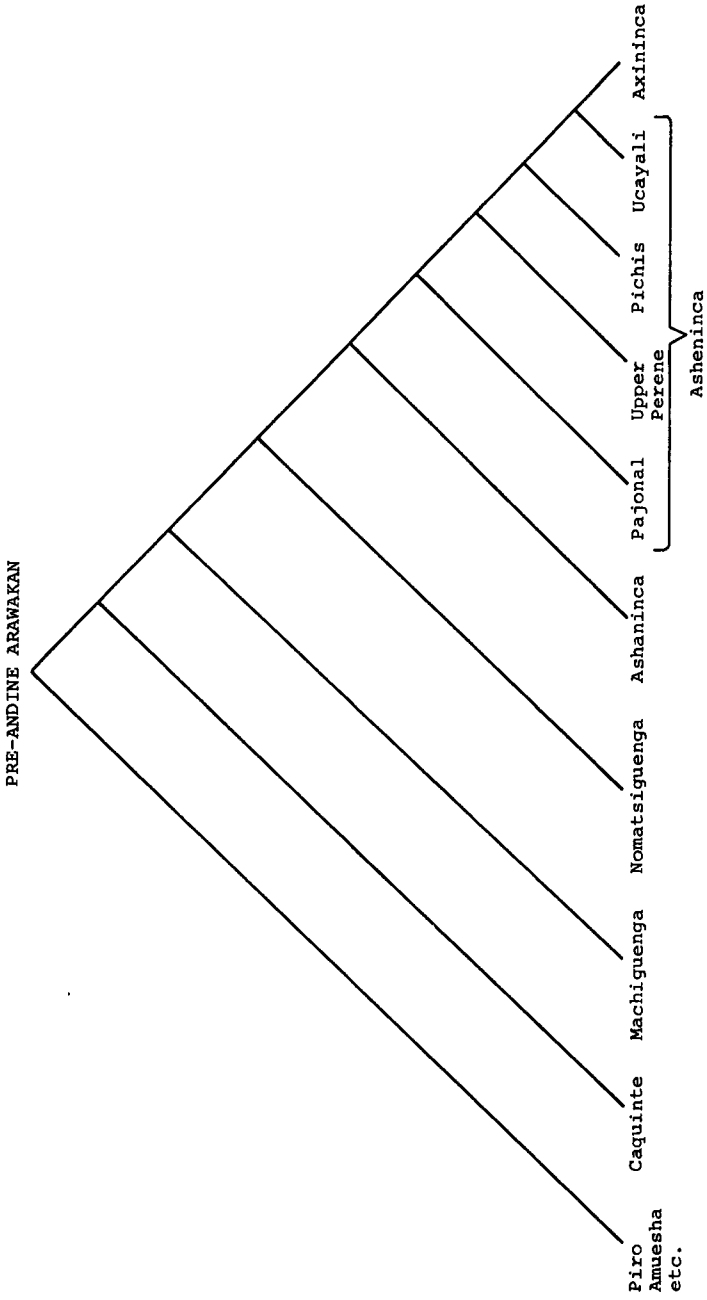
plates, machetes, several glass bottles, a box full of papers, and some mosquito netting. Only one out of the approximately forty inhabitants of Miraflores speaks Spanish. Among the entire Apurucayali Axininca population, I estimate forty to fifty percent are bilingual. In many Campa communities Spanish or bilingual schools have been established.

CLASSIFICATION AND DIALECT COMPARISON

The genetic classification of Campa is uncontroversially Arawakan. All major classifications from Rivet (1924) to Greenberg (1956) and Voegelin (1965) have considered Campa to be of the Pre-Andine branch of Arawakan. Two studies of Proto-Arawakan which include Campa have been published (Noble 1965 and Matteson 1972).

A family-tree diagram indicating how the Campa languages and dialects closely related to Axininca might be represented is given in (1). This representation is primarily intended to show probable relative distance of each dialect from Axininca and not the relation between the other dialects.

(1)



The Ashaninca, Asheninca and Axininca are located in the eastern montaña of Peru, extending eastward into Brazil. Much still remains unknown in understanding the dialect situation within this subgrouping of Campa. The distinctions are somewhat problematic because of the mobility and intermingling of the people from the various dialect areas. The following dialects have been distinguished to date; however, there are definitely some further dialectal differences within those listed here:

Ashaninca: spoken on the Apurimac, Ene, Mantaro, Tambo, lower Urubamba, and lower Perené rivers and tributaries of these.

Pajonal Asheninca: spoken in the Gran Pajonal region.

Perené Asheninca: spoken on the upper Perené river and tributaries.

Pichis Asheninca: spoken on the Pichis river and tributaries, except the Apurucayali.

Ucayali Asheninca: spoken on the headwaters of the tributaries of the Ucayali from the Abujao River southward, possibly except the Arruya River. This also includes the headwaters of the Yurua River extending into Brazil. Intermixed in this large area are also the Piro, Shipibo, Yaminahua and Amahuaca.

Axininca: spoken on the Apurucayali River and tributaries and possibly on the Arruya River.

The Axininca dialect can be distinguished from the other five phonologically as well as grammatically and lexically. Although there are various differences, a single manner of distinguishing Axininca from each of the other dialects is given here:

Ashaninca: Axininca contrasts voiced onset timing, transcribed below as aspirated versus unaspirated, for a series of coronal consonants, whereas Kindberg's analysis of Ashaninca does not (Pike and Kindberg 1956, and Lee Kindberg [to appear]).

(2)	Axininca ¹	Asheninca	
	tapitha	tapeʒa	<i>vine</i>
	thamiri	ʒamiri	<i>bird (paujil)</i>
	ʒiwi	tiwi	<i>salt</i>
	ʒhipi	ʒipi	<i>small monkey</i>
	čowiri	tiowiritaki	<i>insect</i>
	čhamaNto	čamaNto	<i>woodpecker</i>

Pajonal Asheninca: Axininca utilizes an alveolar sibilant where Pajonal Asheninca has a glottal fricative (Pajonal data from Heitzman 1972, and my own field notes):

(3)	Axininca	Pajonal Asheninca	
	sani	hani	<i>wasp</i>
	saNko	haNko	<i>sugar cane</i>
	paso	paho	<i>gourd</i>

Perené Asheninca: Normally possessed nouns are exceptions to a weakening rule in Axininca but are not in Perené Asheninca (Perené data from Judy Carlson, personal communication). Note the following weakening processes in both dialects:

(4)	Axininca	Perené Asheninca	
	pito	pito	<i>monkey (musmuqui)</i>
	noṽitoni	nowitoni	<i>my monkey (musmuqui)</i>
	paso	paso	<i>gourd</i>
	noṽasoni	nowasoni	<i>my gourd</i>

The following illustrate the normally possessed exceptions in Axininca:

¹The transcriptions on this and the following pages are low-level phonological representations, not detailed phonetic ones.

(5)	Axininca	Perené Asheninca	
	paNkoʒi	paNkoʒi	<i>house</i>
	nopaNko	nowaNko	<i>my house</i>
	poriɣhi	poriɣhi	<i>thigh, meat</i>
	nopori	nowori	<i>my thigh, meat</i>

Pichis Asheninca: Axininca substitutes a labial semi-vowel for the alveolar flap when it follows a back vowel and precedes a rounded vowel, whereas Pichis Asheninca has the flap in that position. (Pichis data from Richard Rutter, personal communication):

(6)	Axininca	Pichis Asheninca	
	aNtari	aNtari	<i>large (animate)</i>
	aNtaŋo	aNtaro	<i>large (inanimate)</i>

Ucayali Asheninca: Axininca lacks the contrast between a high and mid front vowel which exists in Ucayali Asheninca (data from Allene Heitzman and Ronald Anderson, personal communication):

(7)	Axininca	Ucayali Asheninca	
	iNpoki	iNpoke	<i>he will come</i>
	ipoki	ipoki	<i>he came</i>
	ramiki	ramike	<i>he will sharpen</i>
	ramiki	ramiki	<i>he sharpened</i>

LITERATURE

To my knowledge, only two previous works make mention of the Axininca language or the Apurucayali dialect of Campa. Anderson's (1976.2) three-page summary of a week's survey trip on the Apurucayali River has the following "linguistic impressions":

I think "s" only occurs before "a" and "o", and the "sh" only occurs before "i" and "e". "ts" only occurs before "i"; and "th", "ch", "ch" (palatalized or voiced), and probably "t" never occur before "i". I have some reservations about the "t" before "i". It is often very difficult to tell the difference between "i" and "e". The fricative "g" seems to only occur between two "a"s and my guess is that it is generated when "aa" and "a" come together. "r" between "a" and "o" changes to "v".

Morphology and Morphophonemics seem to be a lot closer to the Pajonal Dialect than to the Ashaninca.

A few things I noticed are that (1) the 3rd pers. past asp. subject prefix before a vowel is always j-, (2) incompletive aspect prefix n- before a stop or affricate is present, (3) after the suffix -ak the e/i vowel can be either e or i, and (4) wherever one would expect /tea/, we find a palatalized voiced "ch" followed by "a".

Heitzman's (1973 and 1975) work on Proto-Campa takes into account data from Puerto Davis on the Apurucayali River. The data consisted of a word list collected by her. Her analysis and conclusions are considered in the section on PREVIOUS PHONEMIC STATEMENTS in Chapter IX.

Of the abundance of linguistic materials on the Campa language, the major portion pertain to Ashaninca, Machiguenga, Nomatsiguenga and Asheninca. Published materials most pertinent to the present study are: Dirk's (1953) phonemic statement of a variant of the Ashaninca dialect; Pike and Kindberg's (1956) analysis of multiple stress and segmental phonology for Ashaninca; L. Kindberg's (1961) study of Ashaninca syntax; W. Kindberg's (1961) morphological description of Ashaninca; Snell and Wise's (1963) syntax of Machiguenga; Wise's (1971) discourse study with appended phonological summary of Nomatsiguenga; Solis' (1973) generative phonology of Machiguenga; B. Snell's (1974) low-level phonology of Machiguenga; W. Kindberg's (1975a) treatment of epenthesis in Ashaninca and his (1975b) description of verbal morphemes; H. Shaver's (1975) works on modifiers and verb tenses

in Nomatsiguenga; B. Snell's (1976) noun morphology of Machiguenga; and Heitzman's (to appear) study on Pajonal Asheninca morphology. In addition to these published materials, there are also available on microfiche through the Instituto Nacional de Investigación y Desarrollo de la Educación "Augusto Salazar Bondy" (INIDE) of Peru the field notes and unpublished papers of the Summer Institute of Linguistics of Peru.

SURVEY OF AXININCA GRAMMAR

In a representative text in Axininca, such as the BEETLE legend in Appendix A, out of the first 180 words, a full two-thirds of those words are verbs. Thus Axininca could be described as a highly verbal language. The discourse relies heavily on pronominalization, in which the pronouns are affixed to the verb. Furthermore, many concepts expressed as adverbs or conjunctions in other languages are expressed by verbs in Axininca. For example, oNpoŋaača from the verb "to happen" is translatable as English "then" and kimitaka from the verb "to seem, to pass" is equivalent to English "so probably".

To briefly characterize Axininca grammar, I have chosen a typological approach rather than a formal generative one, since my aim is to describe phonology and morphology and not higher levels of syntax. The grammar is thus roughly discussed in terms of typological universals of the sort developed by Greenberg (1963) and Lehmann (1973) among others.

The normal order of the basic elements of sentence structure in Axininca appears to be S(ubject) V(erb) O(bject). As might be expected accompanying this VO type, a relative construction or adjective usually follows the noun it modifies, and sentential qualifiers such as negative and interrogative precede the verb. The following examples illustrate these orders:

(Noun Postposition)	kaniri osaiki kaŋdiriki manioc is basket-in
(Verb Interrogative)	ɕhika oɕhikika where is she cutting-interrogative

Furthermore, Axininca is a highly agglutinative language with (C)V(V)(N) syllable structure, also typical of OV languages. The high degree of derivational and inflectional suffixation may be observed in the following examples.²

- (10) ir + N + piy + aŋt + an + ag + ia + ri
 3PM + FUTURE + return + REASON + DEPARTURE + RESOLVED +
 REFLEXIVE/FUTURE + RELATIVE
*that he will return (upon departure, returning to previous
 location) (from CANOE text, sentence 18, Appendix A)*
- ir + N + pakag + ak + i + ro + ri + ka
 3PM + FUTURE + complete + PERFECT + FUTURE + 3PF +
 RELATIVE + INDEFINITE
*when he will have finished it (to be resumed again)
 (CANOE 19)*
- no + ook + asi + an + ak + ia + ro
 1P + left + PURPOSE + DEPARTURE + PERFECT + REFLEXIVE/
 FUTURE + 3PF
*I will have abandoned it (departing) for some reason.
 (HOUSE 26)*
- ir + kiy + ako + ap + ag + ak + i + ri
 3PM + dig + DATIVE + ARRIVAL + RESOLVED + PERFECT + NON/
 FUTURE + 3PM
He had dug for them on arrival. (BEETLE 18)

²Abbreviations are utilized for the person markers in the examples throughout the remainder of the dissertation as follows: 1P for 1/PERSON, 2P for 2/PERSON, 3PM for 3/PERSON/MASCULINE, 3PF for 3/PERSON/FEMININE, 1PI for 1/PERSON/INCLUSIVE.

ir + kaNt + a \bar{w} + ak + aiy + an + ak + a + ni

3PM + say + RECIPROCAL + CAUSATIVE + PLURAL + DEPARTURE +
PERFECT + REFLEXIVE/NON/FUTURE + PLURAL

They had said to each other, on departing....(BEETLE 57)

Since some aspects of the surface syntax suggest a VO type, while other aspects are strongly suggestive of OV type, I suspect that the language is currently undergoing a change from one type to the other. The absence of written records and extensive comparative data makes it difficult to surmise which direction it is going and by what influence.

Greenberg's (1963) typology of language, Universal 26 and following specify relationships between various aspects of morphology. Axininca illustrates many of these as described and exemplified in Chapter II. Discontinuous affixes occur, and correspondingly Axininca has both suffixes and affixes (Universal 26). Axininca has both derivation and inflection following the root, and correspondingly has the former precede the latter (Universals 28 and 29).

The verb in Axininca has categories of person, number and gender and correspondingly has tense-mode categories (Universal 30). Furthermore, subject and object agree with the verb in gender (masculine versus feminine, as well as animate versus inanimate expressed respectively by the same affixes) (Universal 31). Exemplifying these categories and the noun-verb agreement are the following:

- (11) siraNpari i \check{c} hikakiro \emptyset hinani
 man cut woman *The man cut the woman.*
- \emptyset hinani o \check{c} hikakiri siraNpari
 woman cut man *The woman cut the man.*
- Juan i \check{c} hikakiro iN \check{c} hato
 John cut tree *John cut the tree.*

Olga očhikakiri kitairiki
Olga cut wild boar Olga cut the wild boar.

Also since Axininca has gender, it also has number (Universal 36), although the suffixes specifying plural are ambiguous (except for context) as to plural subject or plural object.

(12) ir + čhik + aiy + ak + i + ro + ni
 3PM + cut + PLURAL + PERFECT + NON/FUTURE + 3PF + PLURAL
He cut them (inanimate or feminine).
They cut it/her (inanimate or feminine).
They cut them (inanimate or feminine).

Another characteristic of Axininca is the sparsity of non-finite verbs or conversely the frequent stringing together of finite verbs. An example is the following string of four finite verbs.

(13) oNpoŋaača noniNti niyaati noNčipačaari apa
It will have I will I will I will ac- father.
happened, want, go, company

These verbs say what in English we would express with an adverb, a single finite verb, an infinitive and a prepositional phrase: *Then I will want to go with my father.* A striking example of verb stringing may be found in the BEETLE text of Appendix A, where in lines 60 through 69, sixteen finite verbs are strung together, interrupted only twice by a noun and once by an onomatopoeic sequence.

Subordinate verbs do occur, however, and are normally marked by the suffix -ri (which I have glossed, RELATIVE, one of its functions.) This marker also occurs on pronouns and adverbs when they precede the verb in the clause. Among other things the function of the subordinate verbs is to mark condition, purpose, and relativization.

(14) CONDITION

oNpokakirika noina oNpoñaacha niyaati
if she comes my wife then I will go
If (when) my wife comes I'll go.

PURPOSE

iroomačhi opokaNtari aNtaŵaiti
it is thus that she came she will work
She came in order to work.

RELATIVIZATION

ipokaki siraNpari saikačhiri mirafloriki
he had come man who lives in Miraflores
The man who lives in Miraflores came.

One other characteristic of Axinca worth mentioning here is a partial ergative system. I call it partial because every intransitive verb which takes the person suffix normally marking object of a transitive verb, also has a form with similar meaning (but perhaps a different discourse function) which parallels the subject of a transitive verb. It thus appears that the language is in the process of moving towards or away from an ergative system. This phenomenon is illustrated by the following examples:

- (15) no-pok-a-i *I* came (returning).
pi-pok-a-i *You* came (returning).
 pok-a-a-na *I* came (returning).
 pok-a-i-mi *You* came (returning).
no-čhik-a-i-ri *I* cut him (returning).
pi-čhik-a-i-ro *You* cut her (returning).
i-čhik-a-a-na *He* cut me (returning).
o-čhik-a-i-mi *She* cut you (returning).

PURPOSE AND PROCEDURE

The present study makes no claim to be a complete and formal generative grammar of Axininca. It is my aim, however, to formally specify an underlying representation of the Axininca sound system which accurately reflects the morphological structure of the language, and to specify its surface representation by a set of phonological rules.

The level of underlying representation is one at which each morpheme is given a single phonological representation from which its phonologically predictable alternations are derived. This corresponds to Chomsky and Halle's (1968) "systematic phonemic" level. The level of surface representation more closely parallels the phonetic stream of speech while not representing all the phonetic variation of the language. The surface level is not necessarily characterized by biuniqueness as a taxonomic phonemic level would be, but corresponds loosely to Chomsky and Halle's "systematic phonetic" level. The system relating the underlying and surface levels are the phonological rules (called morphophonemic rules by some). Phonetic processes then relate the surface level to the observable phonetic reality.

The focus of the presentation that follows is on the underlying and surface levels and the phonological rules generating the latter from the former. First a preliminary account of much of the word formation of Axininca is given in Chapter II, MORPHOLOGY, primarily as background and justification for the underlying morphemes posited in subsequent chapters. This is followed by a description of the phonology, in which phonological alternations are presented as justification for a set of phonological rules and as justification for the underlying representations posited. Chapter III is a general presentation of the phonological structure of Axininca. The subsequent discussion is divided into various topics associated with the more important

phonological processes. Chapter IV deals with prefix morphophonemics. Chapter V deals with the formulation of the epenthesis rule and related processes. Palatalization and related processes comprise Chapter VI and some additional phonological rules are formulated in Chapter VII. Chapter VIII is a brief discussion and presentation of rule order. A discussion of the surface representation proposed for Axininca is given in Chapter IX. Following this is a summary of the morphological and phonological rules and concluding remarks, Chapter X.

To exemplify and offer further justification for the present analysis, a set of appendices follows Chapter X. In these are presented representative texts from the Axininca language (Appendix A), illustrative paradigms (Appendix B), sample derivations, (Appendix C), and a sample lexicon (Appendix D).

CHAPTER II

MORPHOLOGY

The purpose of the following discussion of morphology is to give a grammatical background for the underlying forms posited in the following chapters, where phonological rules are formulated. In that sense it is a justification of the underlying representation from the opposite direction as phonology, that is, from the syntax. The generalizations about morphology made here are quite preliminary and are based on a rather superficial study of Axininca syntax and discourse. Because of this, and since the distinction between morphology and syntax is not always a convenient one, the following presentation of morphology is not entirely formal. The phonological component, on the other hand, is formally specified as presented in the subsequent chapters.

While the morphology is not intended to be a formal generative grammar, certain rules resembling phrase structure rules are formulated to indicate the structure of the constituents underlying the morphemes. These constituents, however, would not always correspond to those specified by a formal generative grammar because of the nature of the present study, which breaks into the syntactic component in the middle. Thus what follows is little more than a highly organized and somewhat generative presentation of the inflectional morphology of Axininca.

The morphology presented is primarily that which is necessary to account for the words of twenty-five minutes of recorded representative texts in Axininca. These texts are included as Appendix A. The description also accounts for a large corpus of data outside of these texts, which includes other texts, elicited nouns and verbs as well as a body of elicited

information and paradigms explicating various texts. Selected portions of this data are presented in the paradigms (Appendix B) and sample lexicon (Appendix D), as well as in exemplary form throughout the discussion. The style of speech in the texts of Appendix A is written style. Most of the texts were first recorded, then transcribed, then worked through with a native Axininca speaker to remove the obvious performance errors.

Thus the morphological description should be regarded as an initial approximation. There are doubtless many morphemes of the language which are not dealt with here, or morphemes which have functions or meanings besides the ones I have noted. This is especially true of the derivational morphology or for morphemes which have a higher syntactic or discourse function as their primary one. On the other hand, the morphemes herein described do account for a very high percentage of the forms which I newly encountered in Axininca texts.

Wherever possible I have attempted to utilize a conventional or classical term for a given morpheme in Axininca which resembles the common notion. Since languages differ radically from one another in structure, many of these terms do not give a precise picture of the function and meaning of the specific Axininca morpheme. This is overcome to some degree in the following section by informal discussion and examples.

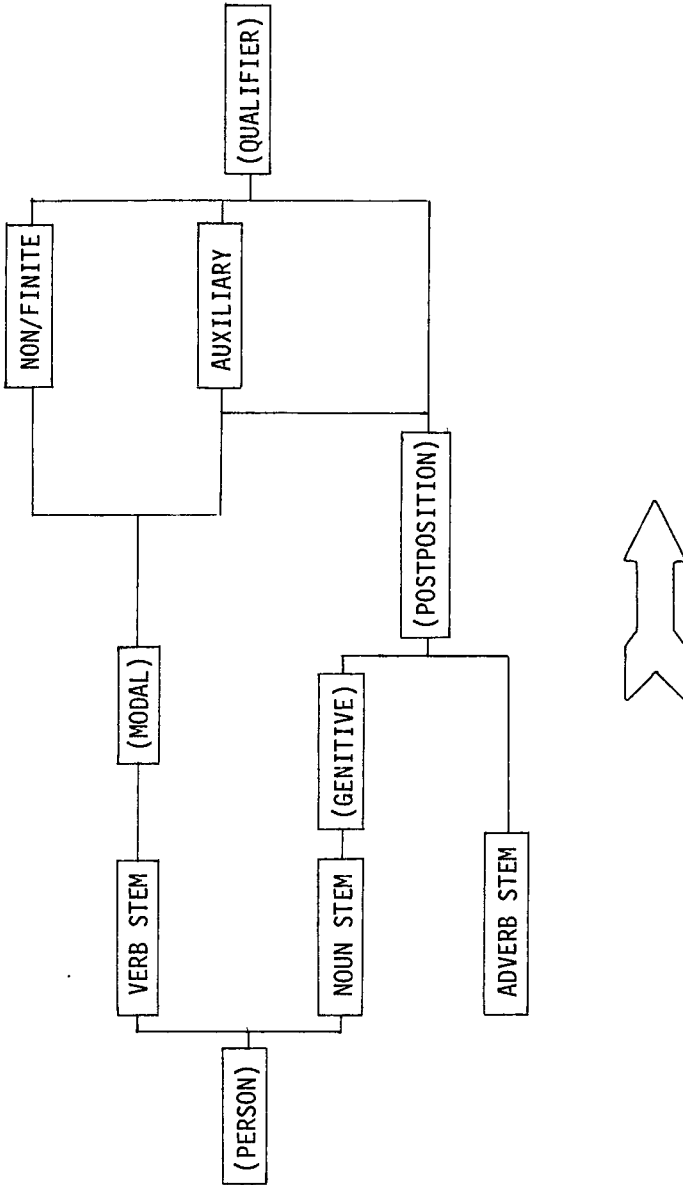
PARTS OF SPEECH

Three classes of words may be distinguished in Axininca on the basis of morphology alone: verbs, nouns, and adverbs. Syntactically other distinctive classes will emerge, such as adjectives and pronouns. However, since adjectives are not distinguished morphologically from nouns they are here grouped with them. Pronouns and adverbs are not morphologically distinguished and are likewise grouped together in the following presentation.

The distinguishing feature of verbs is that the stems may not occur in isolation. The distinguishing feature of nouns and adjectives is that they may take suffixes indicating possession. Adverbs and pronouns are then distinguished as opposite with regard to the features mentioned for nouns and verbs, i.e. they may occur in isolation but do not take possessive affixation.

There are, however, affixes which are common to all parts of speech and others common to only nouns and verbs, or nouns and adverbs. To capture these distributional phenomena, a flow chart may be used to represent the make-up of the word in Axininca. This may be seen as a schematic diagram loosely representing the formal rules from which the word is generated. Such a flow chart is given as follows:

(16) THE WORD:



The above flow chart is indicative only of inflectional morphology. Derivational morphology is entirely within the constituents noun stem, verb stem, and adverb stem. It is assumed that derivational morphological structure is specified by rules distinct from the rules generating the inflectional morphology. Furthermore, it is assumed that all stems that are morphologically complex by means of derivational affixes, are specified with that complexity in the lexicon, since the limited productivity of the affixes, as well as the inconsistent semantic interpretation must be accounted for there.

Aside from the three classes mentioned above, there are a few particles that are incapable of morphological complexity. For example, the conjunction o meaning *or* (probably borrowed from Spanish) may take no prefixes or suffixes. Some particles are listed in the WORD LIST of Appendix D, but are not dealt with further in the discussion of morphology.

The lexicon assumed for the present study thus specifies stems of the major word classes as either verb, noun, adverb, or particle. Within these major classes there are, of course, subcategorizations which govern the distribution of the stem in relation to affixes. These specifications in a formal generative grammar which included syntax above the word would govern the co-occurrence of certain stems with other stems as well; but since the scope of the present study is limited by the word boundary, this will not be dealt with further.

In addition to specifying derivational morphology and subcategorization, another function we may assume for the lexicon is a specification of suppletive forms and some alternations which are often handled under readjustment. Examples of each type of lexical specification are given below.

Consider first a case of derivational complexity within the verb stem. The first verb in almost every text,

noNkiNki hatakotiri | *I will tell about him*, has a suffix -tha which is found on other verbs involving verbal action, e.g. *greet, sing, contradict*. The suffix is not productive, however, and is therefore specified in the lexicon as part of the stem. Furthermore, another form of the same root, kiN h |waitapai *told for a while on arrival*, occurs without the string -ki. A native speaker of Axininca associates these two words, but the presence versus the absence of the -ki is not a productive phenomenon. Because of this, that sequence is specified in the lexicon apart from the verb root kiN as well. For the stem of the verb noNkiNki hatakotiri |, the lexicon specifies the three morphemes, kiN + ki + tha, which are glossed *tell + derivation + spoken*. We may thus conceive of a lexical entry such as the following:

- (17) kiN + ki + th *tell a story*
 VERB
 < kiN- *tell*
 -ki *derivation*
 -th *spoken*

The sample lexicon of Appendix D illustrates some other derivationally complex stems in the above manner.

Derivational complexity exists in the noun stem as well, in forms such as koma^woN^ghi *paddle* and tasiriN^ghi *roasted manioc*. When compared with the verbs komataaN^ghi *to paddle* and tasitaaN^ghi *to roast*, the derivational suffixes -ro (see phonological rule of LABIAL ASSIMILATION in Chapter IV) and -ri are isolable. The former is used to derive feminine or inanimate nouns from verbs, while the latter derives masculine or animate nouns. Since the derivational process is not productive, the noun stems formed with these suffixes are listed in the lexicon as in the example that follows:

- (18) koma + ro *paddle*
 NOUN
 < koma- *to paddle*
 -ro *nominalizer/feminine*

Adverbs demonstrate the same type of complexity as seen by the following words: apaani *one*; apaniroini *only* or *alone*; kigiroidni *first*; niŋhikiroidni *slowly, alone*. We may isolate an adverbial suffix -roidni but this is by no means productive. The lexical entry would specify this type of formation as follows:

- (19) kiŋi + roini *first*
 ADVERB
 < kiŋi *first*
 -roidni *only*

Subcategorizations are needed for verb stems to specify co-occurrence between the stem and the suffixes marking direct and indirect objects as well as those suffixes marking reflexive action. Transitive verb stems may take a suffix indicating the person of the object. Other stems may take two person suffixes, functioning as direct and indirect objects. Intransitive verb stems may take a person prefix marking subject or the person suffix in an ergative construction as described in (15), but not both. Thus, from morphological considerations alone, we must subcategorize the verb stems with regard to transitivity as follows:

- (20) [0 TRANSITIVE] e.g. pok *come*
 [1 TRANSITIVE] e.g. čhik *cut*
 [2 TRANSITIVE] e.g. pina *sell*

Any verbs marked [1 TRANSITIVE] or [2 TRANSITIVE] may take the suffixes reflexivizing the action, thus nočhikiri *I cut him*, but nočhika *I cut myself*. But some verb stems must always take the reflexive suffixes. A verb like nočhipatari *I accompanied him*, must have a subcategorization in the lexicon indicating its

obligatory occurrence with -a, the suffix indicating reflexive action. Perhaps the English gloss could read *I had myself go with him* to indicate the intrinsic reflexivity of the formation more closely. We may therefore specify a subcategorization [___[+REFLEXIVE]] for verb stems such as these.

Noun stems are subcategorized in several ways. Most nouns may be possessed by adding a prefix marking person, and a suffix marking possession. Thus mapi *rock* may be possessed as nomapini *my rock*. A certain class of nouns, composed primarily of body parts, certain kinship terms, or items normally being owned, take either a person prefix, e.g. nopaNko *my house*, or a suffix which indicates that no owner is specified, e.g. paNkoŋhi *house*. These stems may not occur in isolation, *paNko. Thus nouns must be specified in the lexicon as to whether they are intrinsically possessed items or not. The above nouns would be marked in the lexicon as follows:

(21)	<u>mapi</u>	<i>rock</i>	<u>paNko</u>	<i>house</i>
	NOUN		NOUN	
	[-POSSESSED]		[+POSSESSED]	

The suffix marking possession for [-POSSESSED] nouns, -ni, has some suppletive allomorphs. For example, iNčhaki *pole*, has the form niNčhakiri *my pole*, when possessed, taking a suffix -ri. It is therefore marked [___[RI POSSESSIVE]] in the lexicon. Other forms which occur in isolation, e.g. kaniri *manioc*, take no suffix to mark possession or non/possession, e.g. noyaniri *my manioc*. Forms such as these are marked [___[∅ POSSESSIVE]] in the lexicon.

The terminology used for kinship likewise constitutes a subclass of nouns for two types of constructions. Kinship terms may take VOCATIVE forms, which for part of this class are regular, but for another part are suppletive. Also, a suffix -thori CLASSIFICATORY, is used productively with the kinship terminology

but never elsewhere. Thus notomi *my son* is made to notomithori *my nephew* (i.e. *my distant son*) by adding the CLASSIFICATORY suffix. In order to specify the nouns which may have VOCATIVE forms or take the CLASSIFICATORY suffix, they are marked [+KINSHIP] in the lexicon.

The lexicon is also the place where suppletive allomorphs are indicated. For example, the irregular verb ha *to go* has that form when it takes no prefixes, has the form aa when it occurs with the 1/PERSON/INCLUSIVE prefix, and has the form iyaa when it occurs with any of the other PERSON prefixes. We may thus represent this verb in the lexicon as follows:

- (22) ha *go*
 VERB
 [0 TRANSITIVE]
 → { aa / 1/PERSON/INCLUSIVE _____ }
 { iyaa / PERSON _____ }
 { ha / ## _____ }

As stated above, many of the nouns marked [+KINSHIP] have suppletive VOCATIVE forms. Normally the VOCATIVE forms of a kinship term are the free forms listed in the lexicon. Thus paapa *father* or *father/VOCATIVE* is nowaapati *my father* when possessed. But a [+POSSESSED] kinship term such as tomighi *son*, which when possessed is notomi *my son*, has a suppletive VOCATIVE form nočomi *son/VOCATIVE*. We may thus specify this noun in the lexicon as follows:

- (23) tomi *son*
 NOUN
 [+POSSESSED]
 [+KINSHIP]
 → nočomi/VOCATIVE

Axininca has two types of words borrowed from Spanish. Some loan words are completely assimilated into the native phonological patterns. These need not be marked in the lexicon as they

regularly undergo all rules. Unassimilated loans, on the other hand, do not undergo the phonological processes that the native vocabulary does. These are marked in the lexicon, and it is an overriding principle that the phonological rules do not apply to morphemes marked [+SPANISH/LOAN]. These words are, however, parts of speech of the language, patterning like the native vocabulary with regard to suffixation.

Axininca speakers who are more bilingual unsurprisingly have different lexical items than monolinguals for the same loan word, e.g. eskuera versus isikoirá *school*. Thus for a relatively bilingual Axininca speaker, the form eskuera will be marked [+SPANISH/LOAN], but isikoirá of the monolingual will be thoroughly assimilated and not necessarily marked. All entries marked [+SPANISH/LOAN] are specified by general rule as [-SURFACE CONSTRAINTS].

Consult the sample lexicon in Appendix D for further examples of derivation, subcategorization and suppletion.

QUALIFIERS

The node titled QUALIFIER in the flow chart specifying the inflectional morphology of the word may occur with any of the parts of speech that may be morphologically complex. A word-structure rule specifying the constituents of this node is as follows:

(24) QUALIFIER → (PLURAL) + (SUBORDINATE) + (MOOD)

It is obvious that these constituents are one which would normally be expected only on verbs. That is indeed where they are commonly found. However, when other elements in the sentence precede the verb these qualifiers are suffixed to that element rather than the verb. Thus when a form such as noNt^hoNkirorika *if I finish it* is negated, iirorika noNt^hoNkiro *if I don't finish it*, the suffixes -ri and -ki are preposed to

the negative adverb iro. In this manner, any part of speech except particles may take the sentential QUALIFIERS.

The PLURAL suffix -ni obligatorily co-occurs on verbs with a suffix of the MODAL -aiy and a suffix on nouns of the POSTPOSITION -pai. The following examples illustrate this:

- | | | | | |
|------|----------------|----------------|---------------------|------------------|
| (25) | <u>ghimiri</u> | <i>bird</i> | <u>ghimiripaini</u> | <i>birds</i> |
| | <u>mapi</u> | <i>rock</i> | <u>mapipaini</u> | <i>rocks</i> |
| | <u>içhiki</u> | <i>he cut</i> | <u>içhikaiyini</u> | <i>they cut</i> |
| | <u>ipoki</u> | <i>he came</i> | <u>ipokaiyini</u> | <i>they came</i> |

We may therefore formulate a constraint specifying this co-occurrence as follows:

(26) PLURAL CONSTRAINT

IF:	{ VERB }	{ MODAL }	X	PLURAL
	{ NOUN }	{ POSTPOSITION }		
		↓		
THEN:		PLURAL		

i.e. The PLURAL of MODAL or POSTPOSITION co-occurs with PLURAL of QUALIFIER.

The SUBORDINATE constituent specified in the QUALIFIER primarily marks a subordinate clause, though it might be better understood as a demonstrative in some constructions. Two suffixes, -ri and -ra, occur in this position. The former, RELATIVE, is widely used in relative clause constructions, as the following examples illustrate.

- | | | | |
|------|-------------------------|--------------------------------|-------------------------|
| (27) | <u>noNpasikirori</u> | <i>which I will tie</i> | (HOUSE 17) ³ |
| | <u>iNpiyaNtanaiyari</u> | <i>what he will return for</i> | (CANOE 18) |
| | <u>hiwiçhikaiçiri</u> | <i>which is made from</i> | (PADDLE 2) |

³The name and number following the gloss indicate the text and sentence number from Appendix A where the example may be found in context.

The DUBITATIVE suffix -ma indicates doubt, as in the form isironČaama *maybe he would laugh* which is found in BEETLE 124.

The SUBJUNCTIVE suffix -ta is used to indicate a contingent or hypothetical action. It is illustrated below:

- (33) noŋaaŋakiriita *I might see him coming* (BEETLE 85)
osagaaNtapirotanakiita *let's really stick for them before departing* (BEETLE 154)

The EXCLAMATORY suffix -wi is used with greetings, pronouncements or to get attention. The examples below illustrate its occurrence:

- (34) oNpohakinawi *yes, I bumped my head (exclaiming)* (BEETLE 181)
kaniriwi *manioe (announcing)* (CONVERSATION 50)

The QUALIFIERS may also be preposed to precede the verbs, as indicated in earlier discussion, to be suffixed to adverbs or nouns. When the verb is the first constituent of the sentence, and the QUALIFIERS are preposed, there is an empty morph a- inserted to take the QUALIFIERS as suffixes. This a-support is illustrated by the following forms:

- (35) ari \emptyset + RELATIVE (BEETLE 9)
arika \emptyset + RELATIVE + INDEFINITE (PADDLE 8)
arima \emptyset + RELATIVE + DUBITATIVE (CONVERSATION 25)
ariča \emptyset + RELATIVE + EMPHATIC (CONVERSATION 32)
ata \emptyset + SUBJUNCTIVE (CONVERSATION 14)
ariwi \emptyset + RELATIVE + EXCLAMATORY (CONVERSATION 17)

NON/FINITE

The NON/FINITE node of the word-flow chart includes forms that are not specified for person or tense. Two suffixes mark these forms, the INFINITIVE -aaNčhi and the STATIVE -čhi. The word-structure rule specifying these is as follows:

Examples are given below:⁴

- (41) hiyaatanaki *he has gone (departing)* (CANOE 11)
 iNkaNtanakiri *he will have said to him* (CANOE 20)
 (departing)
 owaka *we have eaten* (CONVERSATION 60)

The PROGRESSIVE suffix -ač indicates an action in progress or, if in the future, viewed as being in progress. The examples below illustrate the suffix:

- (42) hotitača *he is/was getting in*
 howačiina *it will be eating me*
 ighikačaana *he is cutting me*

The constituent TENSE dominates suffixes indicating the time of action (whether begun or not) and reflexivity (whether the actor performed the action on or with himself or not). The following chart illustrates the intersection of these two axes:

(43)

	FUTURE	NON/FUTURE
(UNMARKED)	-i	-i
REFLEXIVE	-ia	-a

In most environments, the nonreflexive FUTURE and NON/FUTURE are not phonetically contrastive. Following /t/ and the PROGRESSIVE ASPECT -ač, the NON/FUTURE -i triggers an affrication of the preceding consonant as described in the discussion of epenthesis (Chapter V).

The necessary word-structure rule to specify the suffixes of TENSE is as follows:

- (44) TENSE → [±FUTURE
 [±REFLEXIVE]

⁴See also the AUXILIARY PARADIGM of Appendix B for additional examples of ASPECT, TENSE, and OBJECT co-occurrence.

As stated in the previous discussion of the lexicon, certain verbs occur only with the [+REFLEXIVE] set of suffixes. These verbs are marked as such in the lexicon. Verbs categorized as [1 TRANSITIVE] or [2 TRANSITIVE] may take the REFLEXIVE suffixes, but [0 TRANSITIVE] verbs may not, unless subcategorized. Certain suffixes of the MODAL constituent require a [+REFLEXIVE] TENSE as well, as will be discussed later. The constraint specifying these co-occurrence restrictions is as follows:

(45) REFLEXIVE CONSTRAINT

IF:	VERB	X	[+REFLEXIVE]
	↓		
THEN:	$\left\{ \begin{array}{l} [1 \text{ TRANSITIVE}] \\ [2 \text{ TRANSITIVE}] \\ [___ [+REFLEXIVE]] \end{array} \right\}$		

i.e. [+REFLEXIVE] suffixes occur only with transitive verbs or those marked in the lexicon as taking REFLEXIVE.

Examples of each of the TENSE suffixes are given below:

(46) FUTURE

aNpoka <u>i</u>	<i>we will come back</i>	(CONVERSATION 6)
iNčhikaat <u>iro</u>	<i>he will cut it again</i>	(CANOE 4)
iNthoNkak <u>iro</u>	<i>he will not have finished it</i>	(CANOE 13)

NON/FUTURE

hiya <u>a</u> ǰi	<i>he went</i>	(CONVERSATION 9)
nopok <u>i</u>	<i>I came</i>	(CONVERSATION 15)
hiyaata <u>ǰi</u>	<i>he is going</i>	(CANOE 3)

REFLEXIVE/FUTURE

hariitaN <u>ča</u>	<i>he will arrive for a reason (visit)</i>	(CONVERSATION 2)
iNpiyaNtanaiya <u>ri</u>	<i>so that he will return</i>	(CANOE 18)
oNpoña <u>aa</u> ča	<i>it will have happened (i.e. then)</i>	(HOUSE 22)

REFLEXIVE/NON/FUTURE

ariitaka	<i>have arrived</i>	(CONVERSATION 10)
ičhikawita \bar{w} o	<i>he cut it in vain</i>	(CANOE 7)
opofaaka	<i>it had happened</i>	(BEETLE 54)

The phonological alternations of the REFLEXIVE/FUTURE are dealt with in Chapter VI, in the discussion of PALATALIZATION.

The suffix titled CLIMAX is an unusual one to have within the verb AUXILIARY. Its function appears to be almost entirely a discourse function, to mark the climax of a story, a turning point, or a revelation to one of the characters. Examples of this suffix, which has the shape *-ɕi*, follow:

- (47) iŋaa \bar{w} aki $\bar{ɕ}$ iiri *he saw him coming* (BEETLE 89)
 ikimanaki $\bar{ɕ}$ iiri *he heard him as he left* (BEETLE 97)
 ikaNtanaki $\bar{ɕ}$ i *he said, leaving* (BEETLE 170)

The constituent labeled OBJECT may be further specified by the following word-structure rule:

- (48) OBJECT \rightarrow PERSON PERSON
 [3/PERSON]

The suffixal pronouns specified by the above agree with the object of the sentence. Two PERSON suffixes indicate direct and indirect object. Observe that the second can only be 3/PERSON/MASCULINE or 3/PERSON/FEMININE. Note also that the flow chart generating the word indicates a PERSON prefix on nouns and verbs. The same set of pronouns are governed by the PERSON constituent as a prefix or a suffix, though allomorphy is suppletive. The following word-structure rules give the various pronominal affixes:

- (49) PERSON \rightarrow $\left. \begin{array}{l} 1/PERSON \\ 2/PERSON \\ 3/PERSON \\ 1/PERSON/INCLUSIVE \end{array} \right\}$

3/PERSON \rightarrow [\pm MASCULINE]

A notable phenomenon of Axininca PERSON pronominals is that they are generally unspecific for number. The PLURAL suffixes on verbs are ambiguous, except for context, as to plural subject or plural object. Furthermore, the PERSON affixes often occur without the PLURAL suffixes to indicate plural subjects or objects when it has been earlier specified in the discourse. The 1/PERSON/INCLUSIVE is inconsistently used to include both speaker and hearer.

The gender distinction for 3/PERSON is straightforward for human nouns. Otherwise, animate nouns are generally masculine and inanimate nouns are generally feminine. I say generally, because there are many exceptions, most of which seem to be flora, which according to Axininca legend were human at one time.

The following chart gives the phonological shape of the PERSON prefixes and suffixes showing the allomorphy:

(50)	Prefix	Suffix	
	no-	-na	1/PERSON
	pi-	-mi	2/PERSON
	ir-	-ri	3/PERSON/MASCULINE
	o-	-ro	3/PERSON/FEMININE
	a-	-ai	1/PERSON/INCLUSIVE

The allomorphy is considered here to be specified by the lexicon. Observe then the following verbs with 1/PERSON:

(51)	noNpoki	<i>I will come</i>	pokaaN ^{hi}	<i>to come</i>
	iN ^{hi} kina	<i>he will cut me</i>	ɕhikaaN ^{hi}	<i>to cut</i>
	nimayi	<i>I will sleep</i>	magaaN ^{hi}	<i>to sleep</i>

While the first two examples behave as expected, a third illustrates another suppletive form, which to date I have encountered only with the verb mag *to sleep*. This allomorphy may be specified in the lexicon as well. The following would therefore approximate the lexical entry for 1/PERSON:

(52) 1/PERSON

$$\rightarrow \left\{ \begin{array}{l} \text{ni- /## ___ mag sleep} \\ \text{no- /## ___} \\ \text{-na / TENSE X ___} \end{array} \right\}$$

Other PERSON affixes may be specified similarly.

The word-structure rule specifying OBJECT specifies that when two PERSON suffixes occur, the second must be 3/PERSON. Consider the following examples exemplifying these and other phenomena where two PERSON suffixes occur:

(53) *iŋʰikakinaŋo* *he will cut it for me*
iŋʰikakimiro *he will cut it for you*
iŋʰikakiniri *he will cut it for him*
iŋʰikakiniro *he will cut it for her*

**iŋʰikakirona* **iŋʰikakirimi* **iŋʰikakiro*
 **iŋʰikakiriri* **iŋʰikakirori* **iŋʰikakirini*

iǰʰipatanari *he accompanied him for me*
 or he accompanied me for him
 or he accompanied her for him
 or he accompanied him for him

iǰʰipatanaŋo *he accompanied her for me*
 or he accompanied me for her
 or he accompanied him for her
 or he accompanied her for her

The above forms illustrate that when two 3/PERSON suffixes occur, the first takes the shape -nV with the vowel agreeing with the vowel of TENSE. When the TENSE is -i, NON/FUTURE as in *iŋʰikakiniri* *he will cut it for him*, the form of the initial 3/PERSON is -ni. When the TENSE is -a, REFLEXIVE/NON/FUTURE as in *iǰʰipatanari* *he accompanied him for me*, etc., then the form of the initial 3/PERSON is -na. In this latter

case, this 3/PERSON -na merges with the 1/PERSON -na and there is a four way ambiguity for each of the forms.

The following formulation is therefore given to represent 3/PERSON in the lexicon:

(54) 3/PERSON

$$\rightarrow \left\{ \begin{array}{l} -na / a \quad \underline{\quad} \quad 3/PERSON \\ -ni / i \quad \underline{\quad} \quad 3/PERSON \\ ir- / \#\# \\ \quad \quad \quad [+MASCULINE] \\ o- / \#\# \\ \quad \quad \quad [-MASCULINE] \\ -ri / TENSE \times \\ \quad \quad \quad [+MASCULINE] \\ -ro / TENSE \times \\ \quad \quad \quad [-MASCULINE] \end{array} \right\}$$

Before the PERSON suffixes, the TENSE suffixes exhibit some suppletive alternations. The forms in the AUXILIARY PARADIGM of Appendix B illustrate these alternations completely. In effect, the changes are the following. The NON/FUTURE -i is -a before 1/PERSON following any morpheme except PERFECT, -ak. The REFLEXIVE/NON/FUTURE -a before 2/PERSON becomes -i. It also is -i when following the PERFECT, -ak before 1/PERSON. Finally, the REFLEXIVE/FUTURE -ia, is -i before 1/PERSON or 2/PERSON.

The following formulation approximates the lexical entries for the various configurations of TENSE:

(55) $\left[\begin{array}{l} +FUTURE \\ -REFLEXIVE \end{array} \right]$ (FUTURE)

$\rightarrow -i$

$\left[\begin{array}{l} -FUTURE \\ -REFLEXIVE \end{array} \right]$ (NON/FUTURE)

$\rightarrow \left\{ \begin{array}{l} -a / X \text{ (PROGRESSIVE)} \quad \underline{\quad} \quad 1/PERSON \\ -i / X \text{ (PERFECT)} \quad \underline{\quad} \end{array} \right\}$

$\left[\begin{array}{l} +\text{FUTURE} \\ +\text{REFLEXIVE} \end{array} \right]$	(REFLEXIVE/FUTURE)
$\rightarrow \left\{ \begin{array}{l} -i / \text{---} \left\{ \begin{array}{l} 1/\text{PERSON} \\ 2/\text{PERSON} \end{array} \right\} \\ -ia / \text{---} \end{array} \right\}$	
$\left[\begin{array}{l} -\text{FUTURE} \\ +\text{REFLEXIVE} \end{array} \right] \quad (\text{REFLEXIVE/NON/FUTURE})$	
$\rightarrow \left\{ \begin{array}{l} -i / \langle \text{PERFECT} \rangle \text{---} \left\{ \begin{array}{l} \langle 1/\text{PERSON} \rangle \\ 2/\text{PERSON} \end{array} \right\} \\ -a / \text{---} \end{array} \right\}$	

We may further note that when the 1/PERSON/INCLUSIVE suffix -ai occurs, there is no TENSE suffix occurring. The following examples illustrate this:

- (56) ičhikakai *he has cut us*
 iNčhikakai *he will have cut us*
 ičhikai *he cut us*
 iNčhikai *he will cut us*

To rule out a sequence of TENSE and 1/PERSON/INCLUSIVE, the following constraint is formulated:

- (57) 1/PERSON/INCLUSIVE CONSTRAINT
- IF: TENSE X 1/PERSON/INCLUSIVE
- ↓
- THEN: ∅
- i.e. TENSE suffixes do not occur with the 1/PERSON/INCLUSIVE suffix.

I stated earlier that verbs are subcategorized for transitivity. The distributional limitations stated were between the verbs marked for transitivity and the PERSON prefixes and suffixes. The following constraint is formulated to specify the co-occurrence:

(58) TRANSITIVE CONSTRAINT

IF:	PERSON	X	VERB $\left\{ \begin{array}{l} \langle [0 \text{ TRANSITIVE}] \rangle \\ [1 \text{ TRANSITIVE}] \end{array} \right\}$	X	PERSON	PERSON
	↓					↓
THEN:	$\langle \emptyset \rangle$					\emptyset

i.e. An intransitive verb may not take a PERSON prefix if it has a PERSON suffix. Verbs subcategorized [0 TRANSITIVE] or [1 TRANSITIVE] may only take one PERSON suffix.

MODALS

The node labelled MODAL in the flow chart representing the word is the most problematic of the constituents of Axininca inflectional morphology. Of the twenty-five suffixes which I have observed to date that may occur in this position, there appears to be a constraint that more than five of these suffixes may not occur in a single verb. Furthermore, of the twenty-five only four seem to be mutually exclusive. Those four are the DIRECTIONALS discussed below, which never have more than one other MODAL (i.e. the RESOLVED suffix) occurring between them and the AUXILIARY or NON/FINITE.

Semantically, the MODALS may be grouped into five distinct classes, correspondingly answering the relative questions who or what, when, why, how and where. The order of MODALS, when more than one occurs with a verb, corresponds quite loosely to the order of the question words above. A further support for making the classes along these lines rather than in positional order, is that the morphemes of certain of the classes affect verb subcategorization in distinctive ways. For example, those MODALS which primarily concern participants (i.e. answer questions of who or what) affect the transitivity of the verb. Likewise, some of the MODALS which deal with the manner or purpose of

the action (i.e. answer questions of why or how) affect the verb subcategorization for reflexivity, as they appear to reflect the emotional effect of the action upon the subject (e.g. frustration, reason, interruption).

It furthermore appears that no reality is represented by stringing together twenty-one optional suffixal slots as the output to a structure rule. Besides the fact that there are never more than five of the MODALS strung together in any word, the order of a particular pair of MODALS may vary depending on the constellation of MODALS used in a given word. Thus whereas the RESOLVED MODAL usually follows ARRIVAL, it may precede it if a CAUSATIVE is used.

To capture these generalizations, we may formulate the following word-structure rule to account for the five classes of MODALS:

$$(59) \quad \text{MODAL} \rightarrow \left\{ \begin{array}{l} \text{PARTICIPANT} \\ \text{TIME} \\ \text{PURPOSIVE} \\ \text{MANNER} \\ \text{DIRECTION} \end{array} \right\}$$

Each of these MODAL classes is then specified by a structure rule giving the suffixes of that class. The rules are given in the following discussion together with examples of each and the effect of the particular MODALS on verb subcategorization.

$$(60) \quad \text{PARTICIPANT} \rightarrow \left\{ \begin{array}{l} \text{DATIVE} \\ \text{REFERENTIAL} \\ \text{PASSIVE} \\ \text{RECIPROCAL} \\ \text{CAUSATIVE} \\ \text{PLURAL} \\ \text{BENEFACTIVE} \end{array} \right\}$$

The DATIVE suffix -ako indicates an additional object for the verb, which may or may not be animate. The following examples illustrate its usage:

examples follow:

- (65) ikaNtawakaiyanakani *they said to one another,* (BEETLE 57)
departing
- ariitawakaiya *have arrived to each* (CONVERSATION 15)
other (i.e. visited)
- ikaimawakaaka *they called to each other* (CONVERSATION 49)

The CAUSATIVE suffix -ak indicates the agent acting upon another, making him an agent. The suffix most often occurs with the RESOLVED MODAL, but may occur without it as well:

- (66) hiwithatawakaiyani *greeted one an-* (CONVERSATION 36)
other (causing each
other to greet)
- ɕhikakagaanɕhi *to cause to cut*

The PLURAL suffix of the MODAL -aiy has been discussed previously as co-occurring with the PLURAL of the QUALIFIER (see PLURAL CONSTRAINT (26)).

The BENEFACTIVE suffix -wint indicates an action done for another participant. Though no examples occur in the texts of Appendix A, the form okirikawintakiri *she has spun (thread) for him* illustrates its occurrence.

Of the various PARTICIPANT MODALS, four affect the transitivity subcategorizations of the verb by adding another possible object. In effect, they result in an increase of transitivity by one place for the verbs marked [0 TRANSITIVE] and [1 TRANSITIVE]. The RECIPROCAL suffix as well as the [+REFLEXIVE] TENSE suffix results in a loss of transitivity by one place value for verbs marked [1 TRANSITIVE] or [2 TRANSITIVE]. Since verbs may never be less than [0 TRANSITIVE] or more than [2 TRANSITIVE], we may formulate the following rule adjusting the basic transitivity of verbs from the occurrence of certain suffixes.

(67) TRANSITIVITY ADJUSTMENT

$$\text{VERB} \left[\begin{array}{c} \alpha \text{ TRANSITIVE} \end{array} \right] \rightarrow \left\{ \begin{array}{l} \langle \langle [\alpha-1 \text{ TRANSITIVE}] \rangle \rangle \\ \langle \langle [\alpha+1 \text{ TRANSITIVE}] \rangle \rangle \end{array} \right\} / \text{---} \times \left\{ \begin{array}{l} \langle \langle \text{RECIPROCAL} \\ \text{[+REFLEXIVE]} \rangle \rangle \\ \text{DATIVE} \\ \text{REFERENTIAL} \\ \text{CAUSATIVE} \\ \text{BENEFACTIVE} \end{array} \right\}$$

i.e. A verb decreases by one place in transitivity before RECIPROCAL or [+REFLEXIVE] and increases by one place before DATIVE, REFERENTIAL, CAUSATIVE, BENEFACTIVE.

The above rule depends upon right to left iterative application. Thus for a form which has both RECIPROCAL and CAUSATIVE there is no net gain or loss after a decrease and an increase. Observe that, including the PASSIVE CONSTRAINT and PLURAL CONSTRAINT, all PARTICIPANT MODALS are affected or affect constituents outside the MODAL.

The TIME MODALS are further specified by the following word-structure rule:

$$(68) \quad \text{TIME} \rightarrow \left\{ \begin{array}{l} \text{EARLY} \\ \text{HABITUAL} \\ \text{REPETITIVE} \\ \text{CONTINUATIVE} \end{array} \right\}$$

The labels applied to the suffixes of TIME indicate their function in a relatively straightforward manner. EARLY -aman is an action performed early in the morning. HABITUAL -piñt is a customary or habitual action. REPETITIVE -aa indicates a resumed or repeated action. CONTINUATIVE -wai, indicates action continuing unduly. Examples of each of the TIME MODALS from the texts of Appendix A are as follows:

- (69) oñaatamani *it dawned (early)* (CONVERSATION 6)
hiñpoitañtapiñtari *the reason that he always follows along behind* (BEETLE 53)
hosagaantapiññira *where he always stuck for* (BEETLE 63)

iN ^h ika <u>ati</u> ro	he will cut it <u>again</u>	(CANOE 4)
poka <u>afi</u>	came <u>again</u>	(HOUSE 28)
iNkiNkitha <u>wai</u> ti	he will tell <u>a while</u>	(CANOE 19)
hiNpoi <u>wai</u> fi	he <u>still</u> followed behind	(BEETLE 40)

The PURPOSE MODALS are further specified by the following word-structure rule:

$$(70) \quad \text{PURPOSIVE} \rightarrow \left\{ \begin{array}{l} \text{REASON} \\ \text{PURPOSE} \end{array} \right\}$$

The REASON suffix -aNt normally indicates a justification whereas the PURPOSE suffix -asi usually indicates intent. The former may also express instrument. Both suffixes occur exclusively with a [+REFLEXIVE] TENSE as the following examples indicate:

(71)	nosirika <u>N</u> ča <u>wori</u>	<u>with which (so that)</u> I may tie it	(HOUSE 5)
	wi <u>hata</u> N <u>tapa</u> aka	<u>therefore</u> he greeted on arrival	(BEETLE 4)
	isiro <u>Nta</u> N <u>ta</u>	<u>why</u> he laughed	(BEETLE 116)
	hooka <u>sitan</u> aka <u>wō</u>	he left it (with <u>intent</u> to go back)	(CANOE 9)
	ika <u>Ntasita</u>	he said (<u>trying very much</u>)	(BEETLE 126)
	noya <u>atasit</u> ari	I followed (<u>for the purpose of visiting</u>)	(CONVERSATION 22)

The class of MANNER MODALS is the largest and most varied of the classes. It is specified by the following word-structure rule:

$$(72) \quad \text{MANNER} \rightarrow \left\{ \begin{array}{l} \text{REDUPLICATION} \\ \text{VERITY} \\ \text{DISTRIBUTIVE} \\ \text{FRUSTRATIVE} \\ \text{INTERRUPTIVE} \\ \text{AFFECTIONATE} \\ \text{RAPID} \\ \text{RESOLVED} \end{array} \right\}$$

The MODAL titled REDUPLICATION triggers a copy rule (228) described in Chapter VII. Numerous examples are given in that discussion (225). From the BEETLE text of Appendix A, sentence 9, is taken the example ko^wako^wawaitaki *has wanted/searched more and more*. The function of this MODAL is thus to augment the action of the verb. The REDUPLICATION constituent always occurs immediately following the verb stem to trigger the copying rule from that position.

The suffix labeled VERITY -piro may actually occur on any part of speech as an emphasis of the authenticity of the action, thing or attribute. In a surface grammar such as this, the suffix is thus redundantly introduced by two different word structure rules (see POSTPOSITION structure rule). A more abstract analysis would probably insert it into the MODAL by transformation. Examples of the suffix with the three different parts of speech follow:

- (73) osagaaNtapirotanakiita *let's really stick* (BEETLE 147)
on departing
- mapipiro *a real rock*
- imapiro *really true* (BEETLE 105)

Two of the MANNER suffixes always occur with a [+REFLEXIVE] TENSE: the DISTRIBUTIVE -ig^hi which indicates a segmented action in addition to a previous instance of the same action; and the FRUSTRATIVE -wi which indicates an action which did not achieve the desired results. Examples of these two follow:

- (74) nothoNkighitawō *I finished it also, in* (HOUSE 25)
addition
- hiNpoighitanaka *he followed along behind* (BEETLE 161)
in addition, departing
- i^hikawitawō *he cut it without finishing* (CANOE 7)
- okaNtawitawaari *she said to him (with no* (BEETLE 112)
response)

Given the obligatory occurrence of the above suffixes and the PURPOSIVE suffixes with [+REFLEXIVE] TENSE, a rule is formulated below to assure that a verb occurring with these suffixes is subcategorized:

(75) REFLEXIVITY ADJUSTMENT

$$\text{VERB} \rightarrow [_ _ [+REFLEXIVE]] / _ _ \times \left\{ \begin{array}{l} \text{REASON} \\ \text{PURPOSE} \\ \text{DISTRIBUTIVE} \\ \text{FRUSTRATIVE} \end{array} \right\}$$

i.e. Verb stems are subcategorized to occur with a [+REFLEXIVE] TENSE when preceding REASON, PURPOSE, DISTRIBUTIVE or FRUSTRATIVE suffixes.

The DISTRIBUTIVE suffix has suppletive allomorphs -i ϕ hi/- ϕ hi which are not predictable by any of the syllable structure processes described in the subsequent chapters on phonology. Since no other morpheme behaves similarly, the suppletive forms are specified in the lexicon as follows:

$$(76) \quad \text{DISTRIBUTIVE} \rightarrow \left\{ \begin{array}{l} -i\phi hi / C _ _ \\ -\phi hi / V _ _ \end{array} \right\}$$

The following examples illustrate its occurrence:

(77)	ROOT	DISTRIBUTIVE	
	piyo	ipiyog ϕ hitaka \bar{w} o	<i>he has gathered it, <u>in addition</u></i>
	pina	ipinag ϕ hitaka \bar{w} o	<i>he has paid her, <u>in addition</u></i>
	tasi	itasi ϕ hitaka \bar{w} o	<i>he has roasted it, <u>in addition</u></i>
	ϕ hik	i ϕ hiki ϕ hitaka \bar{w} o	<i>he has cut it, <u>in addition</u></i>
	thoNk	ithoNki ϕ hitaka \bar{w} o	<i>he has finished it, <u>in addition</u></i>

The remaining four MANNER MODALS have no complexities of co-occurrence or suppletion. INTERRUPTIVE -ima indicates that the action is interrupting another or that one of the participants is not ready for it. AFFECTIONATE -ma ϕ hi is used primarily when talking to children in a "baby talk" intonation.

RAPID -apaiNt indicates urgency or rapid action.

RESOLVED -ag is a frequently occurring morpheme whose function and meaning are difficult to pin down. It is often used with CAUSATIVE or the DIRECTION MODALS, ARRIVAL and RECEIVING. When used without these it often indicates a return to original position, as in iNpokai *he came back*. I have suggested the term RESOLVED to indicate that the action is almost always closing or resolving an implied unfinished action or sequence.

Examples of the above four MANNER MODALS are as follows:

- | | | |
|------|-------------------------|---|
| (78) | piyaa <u>imati</u> | <i>are you going <u>already</u>?</i> |
| | pokama <u>hitakimi</u> | <i>come here (<u>lovingly</u> to a child)</i> |
| | haapai <u>Ntiro</u> | <i>he will take it <u>quickly</u></i> |
| | čhikaka <u>gaan</u> ŋhi | <i>to cause someone to cut</i> |
| | aatai | <i>he will go <u>back</u></i> |
| | sito <u>wapai</u> | <i>went <u>back</u> out, on arrival</i> |

The DIRECTION MODALS are apparently the only MODALS which are mutually exclusive. The rule specifying the suffixes is as follows:

- | | | | | |
|------|-------------|---|----------------|---|
| (79) | DIRECTION → | { | ARRIVAL | } |
| | | { | DEPARTURE | } |
| | | { | THERE/AND/BACK | } |
| | | { | RECEIVING | } |

ARRIVAL -ap indicates the subject newly arrived at the location of the action. DEPARTURE -an is used when the subject has just left or is about to leave. THERE/AND/BACK -aki indicates the subject is going away to do the action with the idea of returning. RECEIVING -a \bar{w} indicates the object arriving at the location of the subject. The following examples from the texts of Appendix A illustrate the DIRECTION MODALS:

- | | | | |
|------|----------------------|---|-------------|
| (80) | pirapai | <i>drink it on your <u>arrival</u></i> | (BEETLE 45) |
| | isito <u>wapaaki</u> | <i>he had gone out, on <u>arrival</u></i> | (BEETLE 89) |
| | hatai <u>yanaini</u> | <i>they went back, <u>departing</u></i> | (BEETLE 37) |

ikaNtanaki	<i>he said, <u>departing</u></i>	(BEETLE 104)
osagaaNtakiti	<i>we will <u>go</u> stick for (insects) <u>and come back</u></i>	(BEETLE 13)
ariitaNtakiča	<i>we will <u>go</u> visit <u>and</u> <u>come back</u></i>	(CONVERSATION 4)
ikaNtawītawāari	<i>he said <u>to the one arriving</u></i>	(BEETLE 44)
noŋaaWakiriita	<i>let's see him <u>as he arrives</u></i>	(BEETLE 85)

POSTPOSITION

The node POSTPOSITION in the flow chart representing the word has five constituents as the following word-structure rule specifies:

- (81) POSTPOSITION →
(VERITY)(COMPARATIVE)(DIMINUTIVE)(LOCATION)(PLURAL)

The suffix VERITY -piro is discussed and exemplified earlier in the section on MANNER MODALS. The PLURAL suffix -pai co-occurs with the PLURAL of QUALIFIERS as governed by the PLURAL CONSTRAINT (26) earlier formulated.

Of the other three constituents of the POSTPOSITION, all are straightforward, without suppletion or co-occurrence restrictions and are productive. COMPARATIVE -taki is used to indicate a resemblance or likeness to the stem. Thus miNkoŋhi is a *platform*, while miNkoŋhitaki is *like a platform*, i.e. a *raised palm bark floor*. Likewise, paWiŋhi is a *ladder*, while paWiŋhitaki is *anything like a ladder*.

The pluralizing DIMINUTIVE -iriki is a derivationally related suffixal form of the free noun (adjective) iiriki *green, unripe* referring usually to clusters of fruit, thus the pluralizing element. The suffix occurs in a form such as thoNkiiriki *small ants* from thoNki *ant* (LAND BIRD 6).

The LOCATION POSTPOSITION -ki indicates almost any locative postpositional function, such as *in, on, at, to, from*, etc., even extended to temporal functions. The following examples

illustrate some of its functions:

(82)	aNtamiki	<i>in the jungle</i>	(LAND BIRD 2)
	kipa h iki	<i>on the ground</i>	(LAND BIRD 3)
	tomiNkoki	<i>on Sunday</i>	(CANOE 14)
	ipaNkoki	<i>at his house</i>	(CANOE 2)

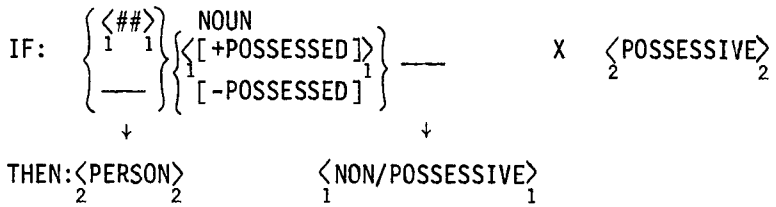
GENITIVE

The GENITIVE node represented in the flow chart of the word occurs solely with nouns. Its constituents, which are each governed by co-occurrence constraints, are specified by the following word-structure rule:

- (83) GENITIVE →
 (NON/POSSESSIVE)(CLASSIFICATORY)(VOCATIVE)(POSSESSIVE)

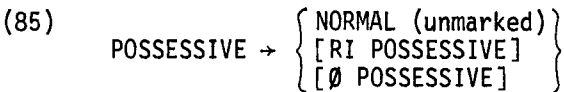
The NON/POSSESSIVE *-~~h~~i* and POSSESSIVE *-ni* occur respectively with the nouns subcategorized [+POSSESSED] and [-POSSESSED]. In other words, intrinsically possessed nouns must be marked by a suffix when not possessed, while intrinsically unpossessed nouns are marked when they are possessed. The GENITIVE PARADIGM of Appendix B gives numerous examples of each kind of GENITIVE construction. Whenever the NON/POSSESSIVE suffix occurs, no PERSON prefix occurs. Whenever a POSSESSIVE suffix occurs, a PERSON prefix must likewise occur. A constraint specifying the relationship between the prefixes, the subcategorization for noun stems and the GENITIVE constituents is as follows:

(84) GENITIVE CONSTRAINT



i.e. A [+POSSESSED] noun with no PERSON prefix must have a NON/POSSESSIVE suffix. A [-POSSESSED] noun with a POSSESSIVE suffix must have a PERSON prefix.

As indicated in the earlier discussion of noun subcategorization, some [-POSSESSED] nouns take irregular POSSESSIVE suffixes. Thus the following subcategorization of POSSESSIVE suffixes is in order:



KINSHIP

Kinship terminology necessitates a further subcategorization for nouns which intersects the [\pm POSSESSED] category. These are specified as a subcategory because as a class they demonstrate productivity with the CLASSIFICATORY suffix -thori which indicates *distant kin (second or third cousin, great uncle, aunt or grandparent, etc.)*. They demonstrate unity as well in having suppletive VOCATIVE forms which are marked in the lexicon. The KINSHIP PARADIGM in Appendix B gives the range of kinship terminology including VOCATIVE, possessed and unpossessed forms, as well as a tree diagram of the kinship system and expansions of English equivalents.

A few of the KINSHIP nouns behave regularly with regard to possession, and the VOCATIVE forms are merely the free stems listed in the lexicon. Those KINSHIP nouns following this pattern

are the following:

(86)	VOCATIVE	1/PERSON POSSESSED
	paapa <i>father</i>	noŋaapati <i>my father</i>
	naana <i>mother</i>	nonaanati <i>my mother</i>
	čiiča <i>grandmother</i> <i>(male ego)</i>	nočiičati <i>my grandmother</i> <i>(male ego)</i>
	amini <i>grandmother,</i> <i>granddaughter</i> <i>(female ego)</i>	naminiti <i>my grandmother,</i> <i>granddaughter</i> <i>(female ego)</i>
	aapi <i>grandfather</i> <i>(female ego)</i>	naapiti <i>my grandfather</i> <i>(female ego)</i>
	čoočo <i>sister (male ego)</i>	nočoočoti <i>my sister (male</i> <i>ego)</i>

Other KINSHIP nouns are also classified as [+POSSESSED] since they take the NON/POSSESSIVE *-tʰi* suffix when not possessed. For most of these, the VOCATIVE is a suppletive form which is specified in the lexicon as well.

(87)	1/PERSON	2/PERSON	NON/POSSESSIVE	VOCATIVE
	notomi	pitomi	tomitʰi	nočomi <i>son</i>
	nisiNto	pisinTo	siNtoŋtʰi	nisiNčo <i>daughter</i>
	nosari	pisari	sariŋtʰi	noçari <i>grandson</i> <i>(female ego)</i>
	naniro	paniro	aniroNŋtʰi	aniryo <i>daughter-in-</i> <i>law (male ego)</i>

From the above examples it might appear that the VOCATIVE form is derivable by a rule of palatalization of alveolars in the root. This is indeed a pattern, but an irregular one, and not a synchronic rule of the language. The following examples demonstrate that there is little predictable in the VOCATIVES:

(88)	1/PERSON	VOCATIVE	
	niyoti	iyoini	<i>mother-in-law (male ego)</i>
	no ϕ hiro	čhoini	<i>sister (male ego)</i>
	niriNto	iiNčo	<i>sister (female ego)</i>
	noimi	noimi	<i>husband</i>
	noriN ϕ hi/	iyi/	
	noyiyiti	yiyi	<i>brother (male ego)</i>

Therefore, in the grammar, the VOCATIVE is specified as the root unless otherwise specified for individual entries in the lexicon.

The terms for various male affinal relationships take an irregular POSSESSIVE suffix -ri. For this reason, and as described earlier for other [-KINSHIP] nouns, these are referred to as [RI POSSESSIVE] class, and all nouns taking this suffix instead of the regular -ni are marked [___[RI POSSESSIVE]] in the lexicon.

(89)	VOCATIVE and STEM	1/PERSON	
	koNki	nokoNkiri	<i>father-in-law (male ego)</i>
	ani	naniri	<i>brother-in-law (male ego)</i>

Among KINSHIP terms there is also a derivational morpheme -ini which except for one example occurs only in the VOCATIVE. Consider the following forms:

(90)	VOCATIVE	1/PERSON	
	<u>iimini</u>	noimithori	<i>brother-in-law (female ego)</i> < <u>iimiNϕhi</u> <i>husband</i>
	<u>iifaini</u>	noinathori	<i>sister-in-law (male ego)</i> < <u>iinaNϕhi</u> <i>wife</i>
	<u>naanaini</u>	nonaanainiti	<i>aunt</i> < <u>naana</u> <i>mother</i>
	<u>kokoini</u>	nokoNkiri	<i>father-in-law (female ego)</i>
	<u>čhoini</u>	no ϕ hiro	<i>sister (male ego)</i>

<u>iyoini</u>	niyoti	<i>mother-in-law (male ego)</i>
<u>čharini</u>	<u>nočharini</u>	<i>grandfather, grandson (male ego)</i>

The occurrence of the morpheme gives the impression at first sight of indicating some kinship relation. Six of the eight examples are used with female ego. And five of the eight forms are of the "marriageable" family (i.e. the family of a parent's sibling of the opposite sex). But the fact that the other terms for members of the "marriageable" family do not take the suffix, as well as its lack of consistent distribution morphologically, indicates an analysis which specifies the derivational suffix with the stem in the lexicon.

The CLASSIFICATORY suffix -thori occurs with any noun marked [+KINSHIP] in the lexicon, with either the VOCATIVE or regular form preceding the POSSESSIVE suffixes.

(91)	nočomi	<i>son</i> VOCATIVE	nočomithori	<i>nephew</i> VOCATIVE
	nokoNkiri	<i>my father- in-law</i>	nokoNkithoriri	<i>my distant uncle</i>
	čhoini	<i>sister</i> (male ego) VOCATIVE	čhoinithori	<i>female cousin</i> (male ego) VOCATIVE
	noina	<i>wife</i>	noinathori	<i>female cousin</i> (eligible to be wife)

The kinship relationship representing an uncle (father's brother or mother's sister's husband) utilizes this morpheme in frozen constructions.

(92)	nirithori	<i>my uncle</i>
	pirithori	<i>your uncle</i>
	iririthori	<i>his uncle</i>
	irithori	<i>her uncle</i>

* niri	<i>my father</i>
* piri	<i>your father</i>
pa \bar{w} ač \bar{h} ori	<i>uncle (male ego)</i>
no \bar{w} a \bar{w} ač \bar{h} oriti	<i>my uncle (male ego)</i>
pa \bar{w} aini	<i>uncle (female ego) VOCATIVE</i>
pa \bar{w} a	<i>god, sun, *father</i>

The -č \bar{h} ori in the above parallels the palatalization previously noted in VOCATIVES. And in related dialects, pa \bar{w} a and niri are acceptable forms for *father*, so the diachronic derivation of the above forms is understandable. However, the fact that those two are not such in this dialect suggests that pa \bar{w} a + č \bar{h} ori and niri + t \bar{h} ori are to be marked in the lexicon as stems. If they were marked as normal [+KINSHIP] nouns, then the impossible pa \bar{w} a + č \bar{h} ori + t \bar{h} ori and niri + t \bar{h} ori + t \bar{h} ori would be generated. If they were not marked [+KINSHIP] the normal VOCATIVE forms would not be generated. The solution opted for here is to consider pa \bar{w} a-, iri-, and -č \bar{h} ori as suppletive forms as the following approximate lexical entries indicate:

- (93) paapa *father*
 NOUN
 [-POSSESSED]
 [+KINSHIP]
 → { {iri} / ____ CLASSIFICATORY }
 { pa \bar{w} a } / ____ }
 { paapa / ____ }
 CLASSIFICATORY
 → { č \bar{h} ori / paapa ____ }
 { t \bar{h} ori / ____ }

Furthermore, the fact that the CLASSIFICATORY suffix only occurs with [+KINSHIP] nouns calls for the following constraint:

(94) KINSHIP CONSTRAINT

IF: NOUN X CLASSIFICATORY

↓

THEN: [+KINSHIP]

i.e. The CLASSIFICATORY suffix occurs only with
[+KINSHIP] nouns.

OTHER MORPHOLOGICAL PHENOMENA

In texts or casual speech, ELLIPSIS of certain suffixes may occur, as indicated in the BEETLE text, sentences 163 and 174. The only suffixes I have observed affected in this manner are PROGRESSIVE and NON/FUTURE. When they follow a verb, in some cases both morphemes may be elided with only an a remaining.

As stated in the previous section on subcategorization, those stems marked [+SPANISH/LOAN] do not always adhere to the same phonological constraints as the native vocabulary as specified in the following chapter. The following constraint is therefore needed:

(95) SPANISH/LOAN CONSTRAINT

[+SPANISH/LOAN] → [-SYLLABLE STRUCTURE CONSTRAINTS]

Finally, the derivational morphology is not herein generated by a set of rules. It is instead considered to be specified in the lexicon. Examples may be found indicating morpheme divisions within the stems in the texts of Appendix A and the sample derivations and lexicon (Appendices C and D).

CHAPTER III
PHONOLOGICAL STRUCTURE

UNDERLYING CLUSTERS

A brief look at verb morphology in Axininca reveals a dilemma in determining morpheme boundaries and therefore in formulating phonological rules. Consider the following verb inflections:

(96)	ʒhikaaŋɕhi	to cut	iNɕhiki	he will cut
	kimaaŋɕhi	to hear	iNkimi	he will hear
	ɕhitokaaŋɕhi	to hit	iNɕhitoki	he will hit
	pisitaaŋɕhi	to sweep	iNpisiti	he will sweep
	piyotaaŋɕhi	to heap	iNpiyoti	he will heap
	komataaŋɕhi	to paddle	iNkomati	he will paddle
	iNɕhikapiroti	he will really cut		
	iNkimapiroti	he will really hear		
	iNɕhitokapiroti	he will really hit		
	iNpisipiroti	he will really sweep		
	iNpiyopiroti	he will really heap		
	iNkomapiroti	he will really paddle		

The problematic forms are the final three of the paradigm glossed *he will really* _____. A /t/ present in the first two paradigms is missing in the third. The data suggest at least three possible analyses. One analysis might propose the following underlying morphemes:

(97)	ʒhika	cut	pisit	sweep
	kima	hear	piyot	heap
	ɕhitoka	hit	komat	paddle

aaŋɕhi	INFINITIVE	pirot	VERITY
i	FUTURE	iN	3PM

A deletion rule would be necessary for this analysis. The rule would delete the first of two vowels or consonants coming together at morpheme boundaries, e.g. ɕhika + aaŋɕhi to *cut*.

A second analysis might propose a different set of underlying forms such as the following:

(98)	ɕhik	<i>cut</i>	pisi	<i>sweep</i>
	kim	<i>hear</i>	piyo	<i>heap</i>
	ɕhitok	<i>hit</i>	koma	<i>paddle</i>
	taaŋɕhi	INFINITIVE	apiro	VERITY
	ti	FUTURE	iN	3PM

Again a rule would be necessary to delete the second of two vowels or consonants coming together at morpheme boundaries, e.g.

ɕhik + taaŋɕhi to *cut* and iN + pisi + apiro + ti *he will really sleep*.

It is entirely arbitrary which of the two preceding analyses is more adequate. And further Axininca data does not give any additional indication of the preferability of one over the other. A third possible analysis would utilize an epenthesis rule instead of deletion and would specify the following underlying forms:

(99)	ɕhik	<i>cut</i>	pisi	<i>sweep</i>
	kim	<i>hear</i>	piyo	<i>heap</i>
	ɕhitok	<i>hit</i>	koma	<i>paddle</i>
	aaŋɕhi	INFINITIVE	piro	VERITY
	i	FUTURE	iN	3PM

The rule would then epenthesize a /t/ between two vowels and an /a/ between two consonants coming together at morpheme boundaries.

The epenthesis solution seems to be the more adequate for two reasons. First, it avoids the arbitrariness of

evaluating between the two deletion solutions. Second, and more important, it explanatorily accounts for the nature of the segments that must be either epenthesized or deleted by rule. Observe that it is always an /a/ or /t/ in question as deleted or epenthesized. Either of the deletion solutions would delete an /a/ contiguous to a vowel and a /t/ contiguous to a consonant; but for generality and simplicity the rules would probably be formulated, as previously suggested, as C (consonant) and V (vowel) deletions, rather than /t/ or /a/ deletions. Furthermore, there seems to me to be no natural reason why a /t/ and an /a/ would be deleted rather than any other consonant or vowel.

On the other hand, the epenthesis solution adequately accounts for the articulatory nature of those two specific segments. If a vowel is epenthesized to break up a consonant cluster, it would be natural for that vowel to be the unmarked vowel /a/. The universal unmarkedness of this vowel, as discussed by Chomsky and Halle (1968.409), is evidenced by child language acquisition and language universal typologies.

Likewise, if a consonant is epenthesized to break up a vowel cluster, it is quite natural that the consonant would be a highly unmarked consonant such as /t/. While Chomsky and Halle (1968.412) classify /t/ among five equally unmarked consonants, others (e.g. Schane 1973.113) assign it alone unmarked status among stops. That /t/, instead of /p, k, s or n/, is the unmarked consonant in Axininca, might be deduced from the fact that apicals constitute the most common class for place of articulation and plosives constitute the most common class for manner of articulation. Thus /t/ stands at the intersection of these two axes in Axininca and is therefore preferred for epenthesis. The epenthesis process is formally specified in the section on EPENTHESIS in Chapter V.

The preferability of an epenthesis solution has also been noted for the Ashaninca dialect by W. Kindberg (1961 and 1975a). Because of some additional complexities which are discussed later, Kindberg specifies a system of valences to predict the epenthesis, whereby each verb root is given a final diacritic "plus" or "minus" valence, and each morpheme of the verb inflection is given such a diacritic preceding and following. Kindberg mentions that similar epenthetic processes are found in Nomatsiguenga and Machiguenga and even in languages as distantly related as Amuesha and Piro.

The well motivated epenthesis rule is formulated in Axininca to break up underlying clusters of vowels or consonants which are not allowed on the surface. A glance at the examples presented previously or at the surface phonological transcriptions of the texts of Appendix A reveals a simple syllable and word structure containing extremely restricted consonant and vowel clusters. The epenthesis solution and indeed either of the deletion analyses represent underlying morpheme structures with final consonants yielding underlying clusters not allowable on the surface.

PHONOLOGICAL FEATURES

Most of the morphophonemic processes of Axininca (epenthesis, palatalization and prefix morphophonemics) have similar functions, i.e. to break up or change unacceptable underlying clusters into acceptable surface structures. The structure of the underlying and surface representations as well as the formulation of the phonological rules is the focus of subsequent chapters. But before this may be done formally, I present the set of phonological elements and the distinctive features needed to specify lexical entries and interact in phonological rules. The segments are displayed first in a traditional articulatory chart (100), then in a distinctive feature matrix (101).

(100) ARTICULATORY CHART

<u>Consonants:</u>	BiLabial	Apical	(Alveo)palatal	Velar	Glottal
Stop	p	t		k	
Aspirated Stop		t ^h			
Affricate		tʃ	ç		
Aspirated Affricate		tʃ ^h	ç ^h		
Fricative		s	ç		h
Nasal	m	n	ɲ		
Liquid		r	ry		
Glide	w		y	g	

Unspecified Nasal:

<u>Vowels:</u>	Front	Back
High	i	ɯ
Mid		o
Low		a

PHONOLOGICAL FEATURE CHART

(101)

	p	t	k	ʔ	č	th	ʈh	s	ç	m	n	ñ	r	ry	h	N	w	y	g	i	a	o	
[consonantal]	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-
[syllabic]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+
[sonorant]	-	-	-	-	-	-	-	-	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+
[nasal]	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	+	-	-	-	-	-	-	-
[aspirated]	-	-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
[continuant]	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
[delayed (release)]	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
[high]	-	-	+	-	+	-	+	-	+	-	-	+	-	+	-	-	-	+	+	+	-	-	-
[low]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
[back]	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+
[labial]	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-	-	-	+

The phonetic nature of the segments represented here is discussed in detail in Payne and Payne (to appear). Some discussion of this is also given in the section on SURFACE REPRESENTATION in Chapter IX. Most of the segments and features are straightforward with conventional symbolization such as those utilized by Chomsky and Halle (1968), Schane (1973) or Hyman (1975). The segments /t̥, č, t̥^h, č^h/ are affricates [ts, tʃ, ts^h, tʃ^h] written as such to represent their interpretation as single segments rather than sequences. The symbol /g/ represents a velar approximant forming a natural class in Axininca with /w̄/ and /y/. The symbol /w̄/ represents a bilabial approximant which has no simultaneous velar [back] articulation as [w] would.

The features [anterior] and [coronal] proposed by Chomsky and Halle (1968) and widely used in phonological descriptions are noticeably absent from the preceding matrix. Furthermore the feature [labial] is used here, but not found in Chomsky and Halle. Some explanation is perhaps warranted.

The need for a feature such as [labial] to relate the labial consonants, the labial glide and rounded vowels was recognized as an inadequacy of Chomsky and Halle's feature system (see Hyman 1975.53-4 for a discussion of the feature [labial] with references). In Axininca certain rules require features relating /p/ to /w̄/ and /w̄/ to /o/. Without the feature [labial] these rules would be excessively overloaded with features and still fail to show the phonetic basis for the process.

Utilizing the feature [labial] for Axininca segments, the features [anterior] and [coronal] are no longer necessary to distinguish the phonological elements from each other. Furthermore for a natural class such as the one labelled "(alveo)-palatal" in the preceding ARTICULATORY CHART (100), the latter two features actually get in the way of a rule which palatalizes apicals to this class, since /č/ and /č^h/ would be marked differently

for the feature [coronal] from the remainder of the segments of this class. For these reasons the two features are dispensed with in the present analysis in favor of the feature [labial] and other place features [high], [low] and [back] which are already utilized for the vowels.

The obvious incongruity in the matrix is the nasal /N/ which is not fully specified for the place of articulation features. This segment is phonetically distinct from the fully specified nasal consonants in that it only occurs following a vowel and homorganically assimilates to a following obstruent. It further lacks the full consonantal quality and length of the syllable initial nasals. Instead, it phonetically approximates prenasalization of the following obstruent. It is thus marked [-consonantal] to distinguish it from /m, n, ñ/.

This nasal is left unmarked for the place of articulation features primarily because it is completely arbitrary how it would be specified for these features. To illustrate this, observe how the segment in question occurs as a FUTURE prefix preceding verb roots which begin with obstruents but does not occur in forms beginning with other consonants or vowels.

(102)	noNčhiki	<i>I will cut</i>	čhikaančhi	<i>to cut</i>
	noNkimi	<i>I will hear</i>	kimaančhi	<i>to hear</i>
	noNpisiti	<i>I will sweep</i>	pisitaančhi	<i>to sweep</i>
	nonaati	<i>I will chew</i>	naataančhi	<i>to chew</i>
	nosiriki	<i>I will tie</i>	sirikaančhi	<i>to tie</i>
	niri	<i>I will drink</i>	iraañčhi	<i>to drink</i>
	nasiti	<i>I will cover</i>	asitaančhi	<i>to cover</i>
	nooki	<i>I will abandon</i>	ookaañčhi	<i>to abandon</i>

Thus there is no unmarked phonological alternation to indicate what the underlying specification would be. Some psycholinguistic evidence for leaving it unspecified is presented in the section on PSYCHOLOGICAL REALITY AND ORTHOGRAPHY, Chapter IX.

This use of such an archiphoneme is not unprecedented. Schachter and Fromkin (1968), for example, propose the same unspecified nasal /N/ to account for an aspect marker in Akan. See also Hooper's (1975) arguments for leaving some feature specifications blank (her "Archi-segment") to avoid arbitrary choices of a feature value.

SYLLABLE, WORD AND MORPHEME STRUCTURE

Now that the features employed in the phonology have been specified, we may return to the formulation of surface structure constraints. The positive structure constraint formulated to specify the surface phonological word is the following:

(103) WORD-STRUCTURE CONSTRAINT

$$\# \ \$_{1}^{25} \ \#$$

i.e. A word is composed of one to twenty-five syllables.

It will be observed from the generative description of Axininca morphology in Chapter II that a word may theoretically have more than twenty-five syllables given the possible combinations of suffixes. As discussed in Chapter II, there appears to be a surface constraint that disallows more than five suffixes of the MODAL. So the longest conceivable surface expansion of the word would be twenty-five syllables: two syllables for the PERSON prefix, five syllables for the stem and ten syllables for the MODAL suffixes (taking possible orders and epenthesis segments into account), and eight syllables for the AUXILIARY and QUALIFIER. To date I have not found any such word and additional research will likely result in modification of the above statements.

The Axininca syllable may also be formally specified by a positive structure constraint. This constraint must primarily capture the generalization that a syllable consists of an obligatory vowel preceded by an optional consonant and followed by an

optional vowel and final optional unspecified nasal, i.e. (C)V(V)(N) where henceforth C = [-syllabic], V = [+syllabic] and N = /N/. It would be possible to formulate only this as the positive constraint, and then to specify a further set of if-then constraints to capture such generalizations as the fact that two vowels of a syllable are either geminate or the second is an /i/. Since the contiguous vowels would already be specified in the positive structure constraint, generality is gained by utilizing angled brackets within that constraint to specify sub-constraints within the syllable. The if-then constraints would then be needed only to specify constraints arising from combinations of syllables within the word. These are discussed shortly.

The syllable structure rule may now be formulated with distinctive features, utilizing angled bracket notation to represent constraints within the syllable as follows:

(104)

$$\$ \left([-\text{syllabic}] \left[\begin{array}{c} +\text{syllabic} \\ \langle \alpha \text{back} \rangle \\ \langle \text{ground} \rangle \end{array} \right] \left(\left(\left[\begin{array}{c} +\text{syllabic} \\ +\text{high} \\ \langle \alpha \text{back} \rangle \\ \langle \text{ground} \rangle \end{array} \right] \right) \left([-\text{consonantal}] \right) \right) \right) \$$$

The feature specifications of the [+syllabic] segments designate the allowable surface vowel clusters /ii, aa, oo, oi, ai/. There is a further restriction, however, on the initial consonant of a syllable, i.e. that it cannot be an unspecified nasal. We may capture the set of consonants except /N/ by means of brace notation. Thus the initial optional segment of the above constraint may be specified as follows:

(105)

$$\left\{ \begin{array}{l} [+ \text{consonantal}] \\ [- \text{consonantal}] \\ [- \text{syllabic}] \\ [- \text{nasal}] \end{array} \right\}$$

An additional surface constraint operating within the syllable specifies that following apical affricates the only

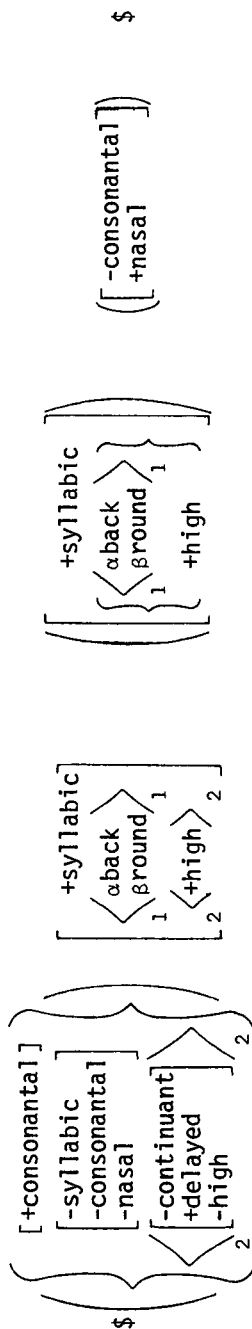
vowel that may occur is /i/. Thus /ɛi, ɛ^{hi}/ are allowable, but /ɛa, ɛo, ɛ^{ha}, ɛ^{ho}/ are not. This fact may be captured formally by again using the angled bracket notation, this time further specifying the initial CV sequence of the syllable structure constraint. This would be formulated as follows:

$$(106) \quad \$ \left(\left[\begin{array}{l} -\text{syllabic} \\ \langle -\text{continuant} \\ +\text{delayed} \\ -\text{high} \rangle \end{array} \right] \right) \left[\begin{array}{l} +\text{syllabic} \\ \langle +\text{high} \rangle \end{array} \right]$$

Combining all of the above subspecifications for the syllable, it may now be formally specified by the following positive surface structure constraint:⁵

⁵Henceforth, the final formulation of any rule or constraint is given a title, which is in upper case, and a restatement in prose immediately following. The rule may then be referred to by its title in subsequent text. Initial approximations of rules are not given titles or restatements and are referred to in lower case in the text.

(107) SYLLABLE-STRUCTURE CONSTRAINT



i.e. A syllable is composed of vowel optionally preceded by a consonant (other than /N/) and optionally followed by a vowel and an optional syllable final /N/. Furthermore, a vowel following the obligatory vowel is either geminate to the first vowel (angled bracket $\langle \rangle_1$) or /i/. Also (angled bracket $\langle \rangle_2$), if the consonant is an apical affricate /tʃ, tʃʰ/, the vowel is /i/.

The above constraint therefore specifies that the only allowable surface vowel clusters are either geminate or /ai, oi/, and the only allowable consonant clusters are /N\$C/. But the latter is somewhat restricted in that a fricative, nasal or glide may not follow the syllable-final nasal. Further restrictions also apply to account for the syllable within the word. These restrictions could be formalized as if-then constraints or as negative constraints, as set forth by Shibatani (1973).

Schachter and Fromkin (1968) have suggested that since negative constraints are always expressible in terms of if-then constraints, only one type is needed in a grammar. The following surface structure constraints from Axininca suggest the same and in fact indicate that in no cases are negative constraints simpler than a corresponding if-then condition, and in several cases they are in fact more complex.

Note the distribution of the velar approximant in the following forms:

(108)	tagaaŋ ^h i	<i>to burn</i>
	itaag ^h iro	<i>he is burning it</i>
	itaakiro	<i>he has burned it</i>
	iNtagaiyironi	<i>they will burn it</i>
	oyaagaaŋ ^h i	<i>to insert</i>
	hoyaagag ^h iro	<i>he is inserting it</i>
	hoyaagakiro	<i>he has inserted it</i>
	hoyaagaiyironi	<i>they will insert it</i>
	mitagaaŋ ^h i	<i>to jump</i>
	imitaag ^h i	<i>he is jumping</i>
	imitaaki	<i>he has jumped</i>
	imitagaiyini	<i>they will jump</i>

açaaga \bar{w} oN ζ hi	
(or) açaagagoN ζ hi	<i>things</i>
naçaaga \bar{w} o	
(or) naçaagago	<i>my things</i>
riraga	<i>he cried</i>
kaagasi	<i>rough leaf</i>
sagaari	<i>fox</i>
*-igi-	*-ogi-
*-ogo-	*-agi-
*-igo-	*##g-

The data demonstrate that the velar glide must be either preceded or followed by a vowel cluster, or followed by a vowel plus word boundary. Furthermore, the only segment which may precede /g/ is the low vowel /a/, and the front vowel /i/ may not follow it. Also /g/ may not occur word initially. The alternations, of course, suggest a phonological rule, which will be formulated later. The concern here is the optimal manner of expressing the surface structure constraint.

The alternation between /g/ and / \bar{w} / found in the word açaaga \bar{w} oN ζ hi or açaagagoN ζ hi *things* is a hapax legomenon as far as I can discern. I have found no other occurrence of /go/, nor further evidence of the /g/-/ \bar{w} / alternation. Furthermore, the principle informant had difficulty with the form and pronounced it haltingly every time it was elicited. Because of these difficulties, I am presently considering /go/ to be a deviant pronunciation and the following constraints will rule it out as well.

Let us consider first how a negative constraint or constraints might account for the distribution. First, a negative constraint must rule out a */CagaC/ sequence, and it must rule out any of the following: */##g/, */ig/, */og/, */go/ and */gi/.

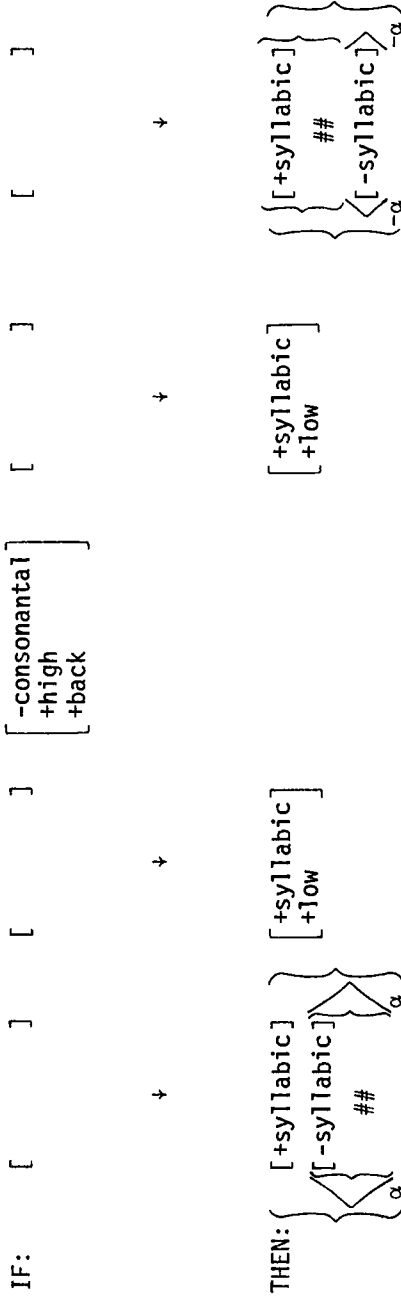
The latter five restrictions are formally collapsible as a negative constraint.

$$(109) \quad \sim \left(\left\{ \begin{array}{c} \#\# \\ [+syllabic] \\ [-low] \end{array} \right\} \right) \left[\begin{array}{l} [-consonantal] \\ +high \\ +back \end{array} \right] \left(\left[\begin{array}{l} +syllabic \\ -low \end{array} \right] \right)$$

But the */CagaC/ sequential constraint is not collapsible with the above, because, while the above collapsed negative constraint crucially depends on parentheses on the segments to either side of the velar approximant (so that for example it will rule out */##ga/ as well as */##gi/), a */CagaC/ negative constraint would crucially depend on not having parentheses in those positions, since a long vowel on either side of the velar glide would be an acceptable surface structure.

A single if-then constraint utilizing angled brackets will express the distributional limitations as follows:

(110) VELAR GLIDE CONSTRAINT



i.e. The velar glide /g/ is preceded by /a/ and followed by /a/. Furthermore the /ag/ may be preceded by another vowel or by consonant or word boundary; /ga/ may be followed by a vowel or word boundary or consonant. But the sequence /aga/ may not be both preceded by consonant or word boundary and followed by consonant.

That the first [+syllabic] in the above rule is /a/ is predicted by the SYLLABLE STRUCTURE CONSTRAINT (107), and VOWEL CO-OCCURRENCE CONSTRAINT (112).

The phonetic rationale for the constraint follows from the fact that the velar glide is the weakest of the consonants in Axininca. Its articulation involves very little tongue movement from the neutral /a/. It occurs only between [+low] vowels (as the glide corresponding to the low vowel) and, furthermore, only occurs contiguous to a long vocalic sequence or preceding /a##/. Being weak it is lost in any other environment which can afford to lose it, i.e. where it will not yield an unacceptable vowel cluster. This is precisely what would happen if it was lost before or after a vowel cluster as the constraint prescribes. Thus the phonetic rationale is that, given its weakness, it takes a strong environment to keep it.

Other constraints on surface structure may be formalized as if-then conditions as well. Consider for example the phenomenon that /N/ only precedes obstruents. The constraint is as follows:

(111) UNSPECIFIED NASAL CONSTRAINT

IF: $\left[\begin{array}{l} -\text{consonantal} \\ +\text{nasal} \end{array} \right]$ []

+

THEN: [-continuant]

i.e. /N/ precedes obstruents.

The corresponding negative constraint is again more cumbersome in that it requires an additional feature. It must specify that /N/ neither occurs before [+continuant] or word boundary.

The present formulation of the syllable and word structure constraints would allow any two vowels from contiguous syllables to come together in a word (i.e. V\$V). Unacceptable sequences of vowels from contiguous syllables must therefore be

ruled out as well, by a surface constraint. A negative constraint capturing this would be simply $\sim V\$V$. If we limit ourselves to if-then constraints, this is likewise formalized simply as the following:

(112) VOWEL CO-OCCURRENCE CONSTRAINT

IF: [] \$ [+syllabic]

↓

THEN: ##

i.e. A syllable-initial vowel occurs word initially.

This formulation effectively blocks any vowel cluster from contiguous syllables by stating that syllable-initial vowels are always word initial. It might be objected that this if-then formulation is arbitrarily formulated, and that the "IF:" structure could just as well read "[+syllabic] \$ []". Thus the argument might be made that the negative constraint is preferable since it avoids the arbitrariness of the possible if-then formulation. However, if the "IF:" structure is formulated as "[+syllable] \$ []", the "THEN:" structure must specify either "[-syllabic]" or "##", since a syllable-final vowel may occur before a consonant or word boundary, whereas a syllable-initial vowel occurs only following word boundary. The choice is not arbitrary after all. The if-then constraint has the same number of features as the negative constraint, so if-then formulations remain preferable to negative constraints.

An additional surface constraint is that the palatalized flap /rʏ/ is never found word initially. Its apical counterpart /r/ is infrequently found in that position and then only in borrowed words or in variation with a preceding /i/ where it indicates a 3/PERSON/MASCULINE morpheme as the following forms show:

- (113) rapisi *pencil* (from Spanish *lapis*)
 raaṵanati (or) iraaṵanati *his mahogany*

Since the /r/ is found word-initially, the constraint will only apply to /rʸ/. The if-then constraint may be formulated as follows:

(114) WORD-INITIAL CONSTRAINT

IF: ## $\left[\begin{array}{l} +\text{consonantal} \\ +\text{sonorant} \\ -\text{nasal} \end{array} \right]$

↓

THEN: [-high]

i.e. /rʸ/ does not occur word-initially.

A negative constraint to capture this distributional limitation would need the same number of features as the if-then constraint and is therefore again not preferable.

Another constraint involving the liquids takes into account a distributional limitation of the apical, namely that, in native vocabulary, sequences of */aro/ and */oro/ are never found on the surface. Since the negative and if-then constraints again utilize the same number of features, preference is given to the latter, which follows:

(115) INTERVOCALIC CONSTRAINT

IF: $\left[\begin{array}{l} +\text{syllabic} \\ -\text{high} \end{array} \right]$ $\left[\begin{array}{l} +\text{consonantal} \\ +\text{sonorant} \\ -\text{nasal} \end{array} \right]$ $\left[\begin{array}{l} +\text{syllabic} \\ +\text{labial} \end{array} \right]$

↓

THEN: [+high]

i.e. /r/ never occurs between a__o or o__o.

One final constraint concerns the occurrences of vowels in word-final position. We find that there are no length contrasts preceding word boundary except in monosyllabic forms such

as *caa anteater* or *mii otter*. Thus while no geminates occur in that position, diphthongs may (e.g. *iNpokai he will come back*). The negative constraint capturing the generalization would be:

$$(116) \quad \sim [-\text{consonantal}] [-\text{syllabic}] \begin{bmatrix} +\text{syllabic} \\ \alpha_{\text{high}} \\ \beta_{\text{labial}} \end{bmatrix} \begin{bmatrix} +\text{syllabic} \\ \alpha_{\text{high}} \\ \beta_{\text{labial}} \end{bmatrix} \quad \#\#$$

Again we find that the if-then constraint is less bulky and therefore preferable. It is as follows:

(117) WORD-FINAL CONSTRAINT

$$\begin{array}{l} \text{IF: } [-\text{consonantal}] [-\text{syllabic}] [+ \text{syllabic}] [+ \text{syllabic}] \#\# \\ \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad \downarrow \qquad \qquad \qquad \downarrow \\ \text{THEN:} \qquad \qquad \qquad \qquad \qquad \qquad [-\text{high}] \qquad \qquad [+ \text{high}] \end{array}$$

i.e. The only vowel clusters allowed word finally in polysyllabic words are nongeminate.

The surface constraints specifying the Axininca data, then, support a theory which specifies only positive constraints and if-then conditions. Negative constraints are unnecessary and furthermore are usually bulkier than the corresponding if-then formulations.

The place of morpheme structure conditions in generative phonology is currently contested. Clayton (1976) points out that they specify phenomena made explicit elsewhere in the grammar either by phonological rules, surface constraints, or directly in the lexicon. She further states that there is no evidence to indicate that they represent any psychological reality. While this may be true, it is possible to make generalizations about the shapes of morphemes which are distinct from the generalizations about the shapes of words and syllables. Even if the generalizations are only a linguistic game, they do give insight as to the function of certain phonological processes. For example, in Axininca the fact that the underlying forms of

verb roots may end in consonants, and thereby cluster with a suffix-initial consonant, gives insight into the origin of the structural description of the epenthesis rule.

Since these generalizations about morpheme structure are noteworthy, but not necessarily a part of the formal grammar, they are not herein specified formally. Instead I will briefly and informally describe the possible shapes of underlying morphemes.

Noun stems and adverb stems, as well as the prefixal and suffixal morphology outside of the verb MODAL and AUXILIARY, have morpheme structure almost identical to the specified WORD and SYLLABLE STRUCTURE CONSTRAINT. The only difference I have observed is that whereas words may not end in a geminate vowel cluster, noun, verb and adverb stems sometimes do. Verb roots and suffixes of the MODAL and AUXILIARY constituents proposed in Chapter II make a more radical departure from surface constraints, however. That a verb root may end in a consonant has already been demonstrated. Furthermore the following data demonstrate that a verb root in some cases may be a single consonant:

(118)	noNpiro	<i>I will give her (food)</i>
	nopakiro	<i>I have given her (food)</i>
	noNčiro	<i>I will carry it (with tump line)</i>
	nočaakiro	<i>I have carried it (with tump line)</i>
	noŋiio	<i>I will see it</i>
	noŋaakiro	<i>I have seen it</i>

These data indicate the following verb roots: p give (food), č carry (with tump line), and ŋ see, which are all single consonants. The PERFECT morpheme -ak demonstrates the fact that a morpheme may end in a consonant. (This morpheme is affected by a lengthening rule (211) which is discussed in Chapter VI). The paradigm further demonstrates a prefix of the shape N- to

indicate FUTURE. And although the above data does not illustrate it, the discussion of epenthesis (Chapter V) and palatalization (Chapter VI) shows the REFLEXIVE/FUTURE morpheme must be of the shape -ia, which violates the surface constraint on the possible vowel clusters. We may also observe (again not from the above data) that the aspirated consonants never occur morpheme finally.

Within the verb stem, MODAL and AUXILIARY are morphemes which violate the surface constraints. The combinations of these morphemes yield the consonant clusters to which such rules as epenthesis must apply. Furthermore, in any part of speech, morphemes which end in vowels may precede morphemes beginning in vowels thereby yielding some unallowable vowel sequences. These are also broken up by epenthesis and other rules.

We thus observe that as the various morphemes specified by the lexicon are strung together as determined by the rules of inflectional morphology, many sequences which are not allowable on the surface occur. Practically the entire scope of the phonological rules is related to making these unallowed sequences conform to the surface constraints herein formalized.

CHAPTER IV
PREFIX MORPHOPHONEMICS

DELETION

The epenthesis process, as briefly introduced, inserts a /t/ between vowels coming together at morpheme boundaries and an /a/ between contiguous consonants at morpheme boundaries. Consider the following alternations among prefixes which do not attest an epenthesis process:⁶

(119)	NOUN	<i>my</i> ____	<i>your</i> ____	
	mapi	nomapini	pimapini	<i>rock</i>
	saNko	nosaNkoni	pisaNkoni	<i>sugar cane</i>
	thoNki	nothoNkini	pithoNkini	<i>small ant</i>
	iNki	niNkini	piNkini	<i>peanut</i>
	ana	nanani	panani	<i>black dye</i>
	oNko	noNkoni	poNkoni	<i>edible plant</i>
	airi	nairiti	pairiti	<i>bee</i>
	iirisi	niirisiti	piirisiti	<i>new leaf</i>

These data are suggestive of a process which deletes the vowel of a CV- prefix when it precedes a stem beginning with a vowel. The rule could be formulated as follows:

$$(120) \quad V \rightarrow \emptyset / C \text{ ____ } + V$$

For additional data requiring some modification of the rule, consider the following 3/PERSON and 1/PERSON/INCLUSIVE possessive forms of the above words, which are representative of the language:

⁶See also the GENITIVE PARADIGM in Appendix B for further examples of processes discussed throughout this section.

(121)	<i>his</i> ____	<i>her</i> ____	<i>our</i> ____	
	imapini	omapini	amapini	<i>rock</i>
	isaNkoni	osaNkoni	asaNkoni	<i>sugar cane</i>
	ithoNkini	othoNkini	athoNkini	<i>small ant</i>
	iriNkini	inNkini	aNkini	<i>peanut</i>
	iranani	anani	anani	<i>black dye</i>
	ironkoni	onkoni	onkoni	<i>edible plant</i>
	irairiti	airiti	airiti	<i>bee</i>
	iriirisiti	oirisiti	airisiti	<i>new leaf</i>

Consider also the following alternations of the PERSON prefixes before verbs, which illustrate, for the most part, the same alternations as above:

(122)	INFINITIVE	<i>I will</i> ____	<i>You will</i> ____	
	saikaaNghi	nosaiki	pisaiki	<i>sit</i>
	iraaNghi	niri	piri	<i>drink</i>
	otikaaNghi	notiki	potiki	<i>shake</i>
	akaaNghi	naki	paki	<i>answer</i>
	oirikaaNghi	noiriki	poiriki	<i>grab</i>
	iithoNkitaaNghi	niithoNkiti	piithoNkiti	<i>climb</i>
	ookaaNghi	nooki	pooki	<i>abandon</i>
	aaɣikaaNghi	naaɣiki	paaɣiki	<i>step</i>
	<i>He will</i> ____	<i>She will</i> ____	<i>We will</i> ____	
	isaiki	osaiki	asaiki	<i>sit</i>
	iriri	iri	ari	<i>drink</i>
	iroтики	otiki	otiki	<i>shake</i>
	iraki	aki	aki	<i>answer</i>
	iroiriki	oiriki	oiriki	<i>grab</i>
	iriithoNkiti	oithoNkiti	aithoNkiti	<i>climb</i>
	irooki	ooki	ooki	<i>abandon</i>
	iraagiki	aaɣiki	aaɣiki	<i>step</i>

If we posit no-, pi-, ir-, o-, and a- as the underlying forms for the PERSON prefixes, the following ordered processes may be observed:

- (123)
$$\begin{array}{l} V \\ [+high] \rightarrow \emptyset / \#\#[+low] + \text{---} \left\{ \begin{array}{l} C \\ V \end{array} \right\} \\ \\ V \rightarrow \emptyset / \#\# (C) \text{---} + V \\ \\ C \rightarrow \emptyset / \#\# V \text{---} + C \end{array}$$

These processes are collapsible into a single rule. But before that rule is formulated, consider the following verb forms which apparently also meet the structural description of the above formulations:

- (124)
- | | |
|--------------------------|-------------------------------|
| iraaŋ ^{hi} | <i>to drink</i> |
| nirapiro ^{tiro} | <i>I will drink it well.</i> |
| niriro | <i>I will drink it.</i> |
| piriro | <i>You will drink it.</i> |
| iririro | <i>He will drink it.</i> |
| iriro | <i>She will drink it.</i> |
| ariro | <i>We will drink it.</i> |
| | |
| nataaŋ ^{hi} | <i>to carry (on shoulder)</i> |
| nonapiro ^{tiro} | <i>I will carry it well.</i> |
| nonatiro | <i>I will carry it.</i> |
| pinatiro | <i>You will carry it.</i> |
| inatiro | <i>He will carry it.</i> |
| onatiro | <i>She will carry it.</i> |
| anatiro | <i>We will carry it.</i> |

These data illustrate two verbs of the shape VC and CV: ir *to drink* (homophonous with the 3/PERSON/MASCULINE prefix) and na *to carry (on shoulder)*. Furthermore these stems may occur word-initially as in the two infinitive forms given above. Given

the epenthesis process discussed in Chapter III, we also recognize, among others, the morphemes -aaNɣhi INFINITIVE and -piro VERITY, which as inflectional suffixes follow the verb stem. Thus some of these forms meet the structural descriptions of the approximations of the prefix rules formulated, and would yield ungrammatical derivations if they applied, as the following illustrates:

(125)	ir + piro + aaNɣhi	drink + VERITY + INFINITIVE
	*ipirotaaNɣhi	<i>to drink well</i>
	na + aaNɣhi	carry + INFINITIVE
	*naaNɣhi	<i>to carry</i>

Somehow we must assure that the epenthesis rule will apply to the verbs and the deletion rule to the prefixes.

Before a solution to these difficulties can be reached, I must make explicit the general manner in which I intend the rules to apply in relation to each other in the present phonology of Axininca. The model of phonology presented in Chomsky and Halle (1968) specifies a set of rules, such that an explicit statement of the order of application of rules was as crucial to the grammar as the formulation of the rules themselves. More recently, phonologists have suggested that this may be a device too powerful to represent psychological reality. Accordingly, other principles of rule application have been advocated. Among these are simultaneous application and random sequential ordering (i.e. that a rule will apply whenever its structural description is met). To qualify the latter, further principles have been advocated, such as maximal utilization of rules, minimization of opacity, and minimization of allomorphic variation. Despite the plethora of current literature on the topic no intrinsic ordering principle seems to have gained general acceptance. Furthermore, arguments such as those made by King (1976) in defending the notion of

extrinsic order seem to indicate that certain of the proposed principles (e.g. maximal utilization of rules and minimization of opacity) make incorrect claims with regard to phonological change.

In the absence of any generally accepted intrinsic principles as an alternative to extrinsic ordering, for the present I propose to present the phonological rules of Axininca using extrinsic ordering. Accordingly, I will make explicit statements of order with regard to pairs of rules where a derivation depends on a certain order to yield the correct surface form or to not derive an incorrect one. Finally, after all of the rules have been formulated, the extrinsic ordering statements for the rules will be compared to give a final partially ordered set of rules.

Returning to the issue at hand (i.e. the relationship between epenthesis and the deletion processes applying to prefixes) we have observed that certain identical strings behave distinctly with regard to the processes. The verb root *ir to drink* followed by a consonant undergoes the epenthesis process while the 3/PERSON/MASCULINE prefix *ir-* undergoes deletion. Either both the rules will have to include some kind of grammatical environment, or an extrinsic ordering statement will need to be made, with only one of the rules including grammatical brackets.

Until we undertake a more thorough discussion of the epenthesis process and the formulation of its rule, let us adopt the solution utilizing brackets for the deletion rule. The question of the formulation of the rule and its ordered relationship to the epenthesis rule will then be taken up again following the formulation of the epenthesis rule in Chapter V.

For the grammatical environment in the deletion rule we might utilize the stem formatives which indicate the initial bracketing of NOUN and VERB, i.e.

(126) $\left. \begin{array}{l} \{ \text{NOUN} \} \\ \{ \text{VERB} \} \end{array} \right\}$

Alternatively, we might bracket and label the PERSON prefix, i.e.

(127)]PERSON

While the former specifies more general classes, the latter represents in a more straightforward manner the nature of the prefixes and is a single feature (as opposed to the former two in the braces). Furthermore, using the latter makes it unnecessary to specify word boundaries in the rule as the stem formatives would necessitate. Utilizing the category PERSON, the rule which collapses the various aspects of deletion in the person prefixes is formulated as follows:

(128)

$$\left[\begin{array}{c} \alpha\text{syllabic} \\ \langle +\text{high} \rangle_1 \end{array} \right] \rightarrow \emptyset / \left\{ \begin{array}{l} \left(\begin{array}{l} \left[\begin{array}{c} \alpha\text{syllabic} \\ \langle +\text{low} \rangle_2 \end{array} \right]]_{\text{PERSON}} \left\{ \begin{array}{l} \langle -\text{syllabic} \rangle_2 \\ \langle +\text{syllabic} \rangle_2 \end{array} \right\} \right)_1 \\ \text{---}]_{\text{PERSON}} \quad [\alpha\text{syllabic}] \end{array} \right. \right. \left. \right\} \begin{array}{l} \text{(a)} \\ \text{(b)} \end{array}$$

Part (a) specifies that a [+high] segment is deleted if it is the stem-initial segment and the preceding prefix is a single segment, specified the same for syllabicity. By $\langle \rangle_2$, /i/ is deleted following a PERSON prefix consisting of /a/ and preceding a consonant. By the remainder of part (a) a stem-initial /i/ preceding another vowel and following a PERSON prefix consisting of a single vowel is deleted. Part (b) deletes a segment preceding a stem when the stem-initial segment is identically specified for syllabicity. That is, the /r/ of 3/PERSON/MASCULINE is deleted before consonants and the vowels of the remaining PERSON prefixes are deleted before vowels. Thus the deletion rule correctly yields the following derivations:

(129) <u>Underlying form</u>	<u>Surface form</u>
no + iNki + ni 1P + peanut + POSSESSIVE	← niNkini <i>my peanut</i>
pi + oNko + ni 2P + edible plant + POSSESSIVE	← poNkoni <i>your edible plant</i>
ir + mapi + ni 3PM + rock + POSSESSIVE	← imapini <i>your rock</i>
o + ana + ni 3PF + black dye + POSSESSIVE	← anani <i>her black dye</i>
a + oNko + ni 1PI + edible plant + POSSESSIVE	← oNkoni <i>our edible plant</i>
a + iNki + ni 1PI + peanut + POSSESSIVE	← aNkini <i>our peanut</i>
o + iirisi + ni 3PF + new leaf + POSSESSIVE	← oirisiti <i>her new leaf</i>
o + iNki + ni 3PF + peanut + POSSESSIVE	← iNkini <i>her peanut</i>

SPIRANTIZATION

We may observe, however, two optional processes related to the 3/PERSON/MASCULINE prefix which are not handled by the rule. First, any noun or verb beginning with a vowel exhibits the following types of variation when preceded by this prefix:

(130)	iriNkini	(or)	riNkini	(or)	hiNkini	<i>his peanut</i>
	iranani	(or)	ranani	(or)	hanani	<i>his black dye</i>
	iriri	(or)	riri	(or)	hiri	<i>he will drink</i>
	irooki	(or)	rooki	(or)	hooki	<i>he will abandon</i>
	iraaɟiki	(or)	raaɟiki	(or)	haaɟiki	<i>he will step</i>

The same speaker uses some of the variable forms for the same word. Though there might be some conditioning based on discourse or sociolinguistic considerations, we may formulate the following as an optional rule to account for the variation:

(131) ## [+syllabic] [-syllabic] # [+syllabic]
 12 3 4 5 6

OPTIONAL

→ 1 2 ∅ 4 5 6

OPTIONAL

→ 1 2 ∅ [-consonantal]
 [+aspirated] 5 6

Since the 3/PERSON/MASCULINE prefix *ir-* is the only prefix of the shape VC-, we need not specify any additional features in the structural description of the rule.

The second optional process involving the 3/PERSON/MASCULINE prefix applies exclusively to verbs. Note the following variable pronunciations of verbs which begin with [+continuant] consonants:

(132)

<i>misitaan</i> ɸhi				<i>to dream</i>	
<i>imisiti</i>	(or)	<i>himisiti</i>	(or)	<i>rimisiti</i>	<i>he will</i> _____
<i>imisitaki</i>	(or)	<i>himisitaki</i>	(or)	<i>rimisitaki</i>	<i>he has</i> _____
<i>niNtaan</i> ɸhi				<i>to want</i>	
<i>iniNti</i>	(or)	<i>hiniNti</i>	(or)	<i>riniNti</i>	<i>he will</i> _____
<i>iniNtaki</i>	(or)	<i>hiniNtaki</i>	(or)	<i>riniNtaki</i>	<i>he has</i> _____
<i>sirikaan</i> ɸhi				<i>to sew</i>	
<i>isiriki</i>	(or)	<i>hisiriki</i>	(or)	<i>risiriki</i>	<i>he will</i> _____
<i>isirikaki</i>	(or)	<i>hisirikaki</i>	(or)	<i>risirikaki</i>	<i>he has</i> _____
<i>wiɸhikaan</i> ɸhi				<i>to construct</i>	
<i>iwiɸhiki</i>	(or)	<i>hiwiɸhiki</i>	(or)	<i>riwiɸhiki</i>	<i>he will</i> _____
<i>iwiɸhikaki</i>	(or)	<i>hiwiɸhikaki</i>	(or)	<i>riwiɸhikaki</i>	<i>he has</i> _____

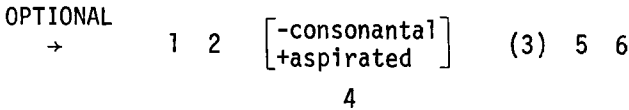
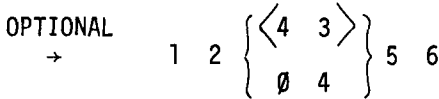
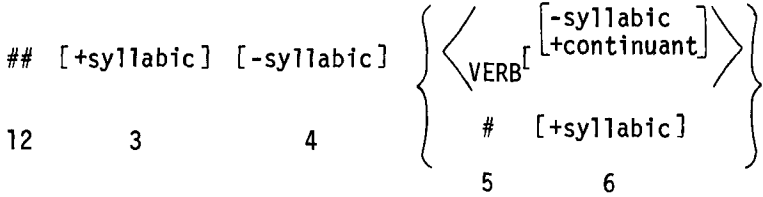
But no such variation is observed on verbs beginning with obstruents or on nouns:

(133)	čhikaančhi			<i>to cut</i>
	inčhiki	*hinčhiki	*rinčhiki	<i>he will cut</i>
	ičhikaki	*hičhikaki	*ričhikaki	<i>he has cut</i>
	mapi			<i>rock</i>
	imapini	*himapini	*rimapini	<i>his rock</i>

The data in (132) and (133) are suggestive of several possible analyses. At first glance it might appear advantageous to collapse whatever rule will generate these forms with the main prefix deletion rule (128). The optionality of these forms in comparison to the regularity of the deletion rule would, however, present formidable problems in collapsing the two.

We might formulate a separate rule to account for the data in (132) and (133), optionally inserting the /r/ or /h/ before the 3/PERSON/MASCULINE prefix when it precedes a verb stem beginning with a continuant consonant. However, the optionality of both this process and (131), the structural similarity of the two formulations, and the fact that the morpheme involved is the 3/PERSON/MASCULINE in both cases, all argue for collapsing the two into a single rule. With the use of angled brackets and braces the two processes may be collapsed by the following optional rule which metathesizes the segments of the prefix in the appropriate environment:

(134) OPTIONAL PREFIX SPIRANTIZATION



i.e. The prefix ir- may optionally lose its vowel preceding a stem-initial vowel or, preceding an initial continuant consonant of a verb stem, may metathesize the segments of the prefix. The /r/ may then become /h/.

The above rule correctly derives the following surface structures:

- | | | | |
|-------|---------------|---|--------------------------------|
| (135) | ir + niNt + i | } | 3PM + want + FUTURE |
| | | | <i>he will want</i> |
| | riniNti | } | OPTIONAL PREFIX SPIRANTIZATION |
| | (or) | | |
| | hiniNti | | |
| | (or) | | |
| | iniNti | | PREFIX SEGMENT DELETION |
| | | | |
| | ir + ak + i | } | 3PM + answer + FUTURE |
| | | | <i>he will answer</i> |
| | iraki | } | OPTIONAL PREFIX SPIRANTIZATION |
| | (or) | | |
| | raki | | |
| | (or) | | |
| | haki | | |

WEAKENING

Also among the processes which occur from prefixation is a weakening rule involving [-POSSESSED] nouns and the causative prefix of the verb derivation. Consider the following alternations among nouns, contrasting the normally possessed items (i.e. those marked [+POSSESSED] in the lexicon) with those not normally possessed. Nouns which are not normally possessed (those marked [-POSSESSED] in the lexicon) change an initial /p/ to /w/ in GENITIVE constructions, while normally possessed nouns show no such alternation.

(136)	[-POSSESSED]		[+POSSESSED]	
	pačhaka	<i>gourd</i>	paNkočhi	<i>house</i>
	noŵačhakati	<i>my</i> _____	nopaNko	<i>my</i> _____
	piŵačhakati	<i>your</i> _____	pipaNko	<i>your</i> _____
	iŵačhakati	<i>his</i> _____	ipaNko	<i>his</i> _____
	oŵačhakati	<i>her</i> _____	opaNko	<i>her</i> _____
	aŵačhakati	<i>our</i> _____	apaNko	<i>our</i> _____
	porita	<i>small hen</i>	poriçhi	<i>thigh</i>
	noŵoritati	<i>my</i> _____	nopori	<i>my</i> _____
	piŵoritati	<i>your</i> _____	pipori	<i>your</i> _____
	iŵoritati	<i>his</i> _____	ipori	<i>his</i> _____
	oŵoritati	<i>her</i> _____	opori	<i>her</i> _____
	aŵoritati	<i>our</i> _____	apori	<i>our</i> _____
	pito	<i>monkey (muəmuqui)</i>	pitoçhi	<i>canoe</i>
	noŵitoni	<i>my</i> _____	nopito	<i>my</i> _____
	piŵitoni	<i>your</i> _____	pipito	<i>your</i> _____
	iŵitoni	<i>his</i> _____	ipito	<i>his</i> _____
	oŵitoni	<i>her</i> _____	opito	<i>her</i> _____
	aŵitoni	<i>our</i> _____	apito	<i>our</i> _____

Likewise, normally unpossessed nouns beginning with /k/ have alternations beginning with /y/ in genitive constructions:

(137)	[-POSSESSED]		[+POSSESSED]
	kanari	wild turkey	kiN ^h i ^h i neck
	noyanariti	my _____	nokiN ^h i my _____
	piyanariti	your _____	pikiN ^h i your _____
	iyandariti	his _____	ikiN ^h i his _____
	oyandariti	her _____	okiN ^h i her _____
	ayanariti	our _____	akiN ^h i our _____
	kosiri	white monkey	ko ^h i ^h i walking cane
	noyosiriti	my _____	noko ^h i my _____
	piyosiriti	your _____	piko ^h i your _____
	iyosiriti	his _____	iko ^h i his _____
	oyosiriti	her _____	oko ^h i her _____
	ayosiriti	our _____	ako ^h i our _____
	kimi	squash	ki ^h i ^h i intestinal worm
	noyimini	my _____	nokini my _____
	piyimini	your _____	pikini your _____
	iyimini	his _____	ikini his _____
	oyimini	her _____	okini her _____
	ayimini	our _____	akini our _____
	kiNtiro	large armadillo	kiNpitaN ^h i ear
	noyiNtiroti	my _____	nokiNpita my _____
	piyiNtiroti	your _____	pikiNpita your _____
	iyiNtiroti	his _____	ikiNpita his _____
	oyiNtiroti	her _____	okiNpita her _____
	ayiNtiroti	our _____	akiNpita our _____

Finally, observe that for those normally unpossessed forms beginning with the sequence /ki/ plus non-nasal consonants the stem-initial consonant is lost entirely:

(138)	[-POSSESSED]		[+POSSESSED]	
	kithapi	<i>needle</i>	kithokiŋhi	<i>seed</i>
	noithapiti	<i>my</i> _____	nokithoki	<i>my</i> _____
	piithapiti	<i>your</i> _____	pikithoki	<i>your</i> _____
	iithapiti	<i>his</i> _____	ikithoki	<i>his</i> _____
	oithapiti	<i>her</i> _____	okithoki	<i>her</i> _____
	athapiti	<i>our</i> _____	akithoki	<i>our</i> _____
	kiri	<i>palm (pifayo)</i>	kiriŋhi	<i>nose</i>
	noirini	<i>my</i> _____	nokiri	<i>my</i> _____
	piirini	<i>your</i> _____	pikiri	<i>your</i> _____
	iirini	<i>his</i> _____	ikiri	<i>his</i> _____
	oirini	<i>her</i> _____	okiri	<i>her</i> _____
	airini	<i>our</i> _____	akiri	<i>our</i> _____

The above examples clearly illustrate that the weakening process applies to the regular nouns beginning with /p/ or /k/, but not to those nouns marked [+POSSESSED]. Note that no other initial consonants demonstrate this weakening among the regular [-POSSESSED] nouns:

(139)	[-POSSESSED]	<i>my</i> _____	
	toniro	notoniroti	<i>palm (aguaje)</i>
	ɣiri	noɣirini	<i>tar</i>
	čokori	nočokoriti	<i>armadillo</i>
	thoNki	nothoNkini	<i>small ant</i>
	ɣhiri	noɣhirini	<i>water snake</i>
	čhoNpi	nočhoNpini	<i>white bird</i>
	saNko	nosaNkoni	<i>sugar cane</i>
	çiya	noçiyani	<i>palm (ungurahui)</i>
	mapi	nomapini	<i>rock</i>
	niroNto	noniroNtoti	<i>bee</i>
	hito	nohitoni	<i>small spider</i>

We may further observe that the process must be considered weakening and not strengthening. That is, the underlying forms in question must begin with /p/ and /k/, and not /w/ and /y/, evidenced by the existence of nouns beginning with the glides. For example, yaarato *black bee* maintains the glide in isolation as well as in the genitival forms:

- (140) noyaaratoti *my black bee*
 piyaaratoti *your black bee*
 iyaaratoti *his black bee*
 oyaaratoti *her black bee*
 ayaaratoti *our black bee*

Observe also the following alternations demonstrating the same weakening process following the derivational causative prefix o- of the verb stem:

- (141) piinKaaŋhi *to submerge*
 owiinKaaŋhi *to dunk (cause to submerge)*

 parʔaaŋhi *to fall*
 owarʔaaŋhi *to drop (cause to fall)*

Contrast this with PERSON prefixes instead of the causative, directly preceding verb roots beginning with /p/ or /k/. Here no such weakening process occurs:

- (142) parʔaaŋhi *to fall* noparʔaaki *I have fallen*
 pinataaŋhi *to pay* nopinatakiri *I have paid him*
 kaimaaŋhi *to call* nokaimakiri *I have called him*
 kitataaŋhi *to bury* nokitatakiri *I have buried it*

We must thus formulate the weakening rule using bracketing with reference to the causative and [-POSSESSED] noun. Before the rule is formulated, however, consider a final set of examples which have bearing on its domain.

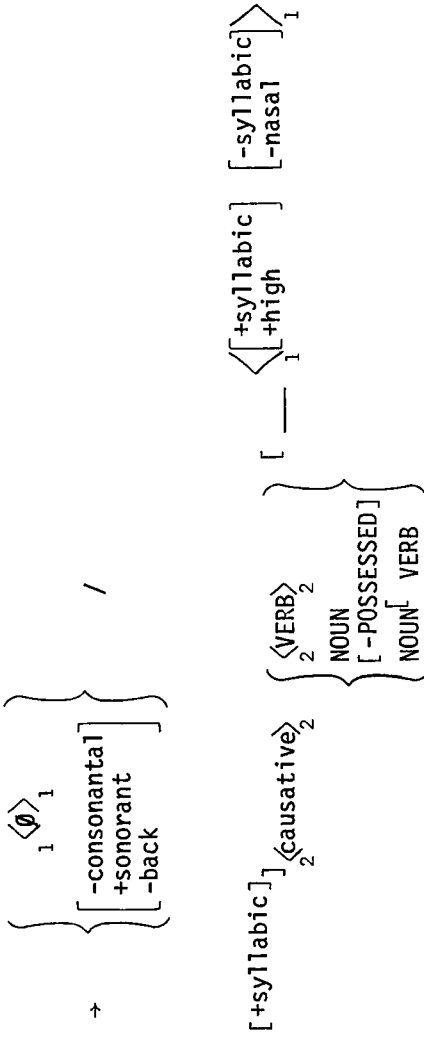
(143)	komataaNḡhi	<i>to paddle</i>
	nokomatakiro	<i>I have paddled it</i>
	komaŵoNḡhi	<i>paddle (noun)</i>
	noyomaŵo	<i>my paddle</i>
	kimitaaNḡhi	<i>scrape</i>
	nokimitakiro	<i>I have scraped it</i>
	kimiriNḡhi	<i>scraped manioc</i>
	noyimiri	<i>my scraped manioc</i>

As noted in Chapter II, when a verb is nominalized by the derivational suffix -ŵo (underlying /-ro/) or -ri, the resultant derived noun stem is marked [+POSSESSED]. The bracketing of such a derived noun would be:

(144) NOUN_[VERB_[kimi_]VERB_{ri]}NOUN

However, these derived nouns behave like the [-POSSESSED] nouns, undergoing the weakening process, as the above examples show. We are thus compelled to specify in the weakening rule, in addition to causatives and [-POSSESSED] nouns, a bracketing representing the above derived nouns. The rule encompassing all of this is formulated as follows:

(145) WEAKENING



i.e. /p/ and /k/ are weakened to /w/ and /y/ respectively, following a vowel, when they (/p/ and /k/) are stem-initial on [-POSSESSED] nouns and nominalized verbs or on verbs when preceded by the causative (according to $\langle \rangle_2$). Furthermore, preceding a sequence of vowel plus non-nasal consonant, a stem initial /k/ is deleted following a vowel when in the same grammatical environments (according to $\langle \rangle_1$).

LABIAL ASSIMILATION

I briefly mentioned above the derivational suffix -w̄o in koma^{w̄o}N^ɕhi *paddle* as having the underlying form /-ro/ but gave no further explanation. Compare the form of the derivational suffix following /a/ in the above example to ɕhikomiroN^ɕhi *hook for picking fruit*, where it follows /i/. The latter example is derived from the verb ɕhiko + mi *hook fruit*. Other examples exhibiting this alternation follow:

(146)	ɕhikaaN ^ɕ hi	<i>to cut</i>
	noN ^ɕ hikiri	<i>I will cut him</i>
	noN ^ɕ hikiro	<i>I will cut her</i>
	ɕhipataaN ^ɕ hi	<i>to accompany</i>
	noɕhipatari	<i>I accompanied him</i>
	noɕhipataw̄o	<i>I accompanied her</i>

The underlying form of the 3/PERSON/FEMININE suffix is -ro rather than -w̄o since a rule weakening /r/ intervocalically and assimilating it in labiality to /o/ is more phonetically plausible than a rule such as $w̄ \rightarrow r / i \underline{\quad}$. The rule is thus formulated for labial assimilation as follows:

(147) LABIAL ASSIMILATION

$$\left[\begin{array}{l} +\text{consonantal} \\ +\text{sonorant} \\ -\text{nasal} \\ -\text{high} \end{array} \right] \rightarrow \left[\begin{array}{l} -\text{consonantal} \\ +\text{labial} \end{array} \right] / \left[\begin{array}{l} +\text{syllabic} \\ -\text{high} \end{array} \right] \text{ — } \left[\begin{array}{l} +\text{syllabic} \\ +\text{labial} \end{array} \right]$$

i.e. /r/ becomes /w̄/ following a non-high vowel and preceding /o/.

Observe that the formulation of the rule using the feature [-high] in the structural description to specify /a/ makes predictions concerning /o/ as well. Though there are no alternations demonstrating the latter as a conditioning factor, the INTERVOCALIC CONSTRAINT (115) of syllable structure earlier

formulated, specifies no occurrence of /oro/. So that the rule also represents this distributional limitation, the feature [-high] is preferred over [+low].

FORMULATING THE DELETION RULE

The class of [+POSSESSED] nouns forms one other exception to the regularities of prefix morphophonemics heretofore described. Consider the following normally possessed nouns compared to similar [-POSSESSED] nouns.

(148)	[+POSSESSED]		[-POSSESSED]	
	iigiN ^{hi}	foot	iirisi	new leaf
	noigi	my _____	niirisiti	my _____
	piigi	your _____	piirisiti	your _____
	iigi	his _____	iriirisiti	his _____
	oigi	her _____	oirisiti	her _____
	aigi	our _____	airisiti	our _____
	iithokiN ^{hi}	egg	iiriki	green, unripe
	noithoki	my _____	niirikiti	my _____
	piithoki	your _____	piirikiti	your _____
	iithoki	his _____	iriirikiti	his _____
	oithoki	her _____	oirikiti	her _____
	aithoki	our _____	airikiti	our _____

We may observe in the above data that the 1/PERSON and 3/PERSON/MASCULINE forms of a [+POSSESSED] noun do not adhere to the previously formulated deletion rule, while the 2/PERSON, 3/PERSON/FEMININE and 1/PERSON/INCLUSIVE behave as expected. Thus for those [+POSSESSED] nouns beginning with /ii/ we may write rules deriving the irregular 1/PERSON and 3/PERSON/MASCULINE GENITIVE forms. An approximation of the rule deriving the 1/PERSON GENITIVE forms may be expressed as follows:

$$(149) \quad \begin{array}{c} \text{V} \\ [+high] \end{array} \rightarrow \emptyset / \text{V}]_1/\text{PERSON} \quad \text{NOUN} \begin{array}{c} \text{V} \\ \text{---} [+high] \\ [+POSSESSED] \end{array}$$

The rule deriving the 3/PERSON/MASCULINE GENITIVE forms might be approximated informally as follows:

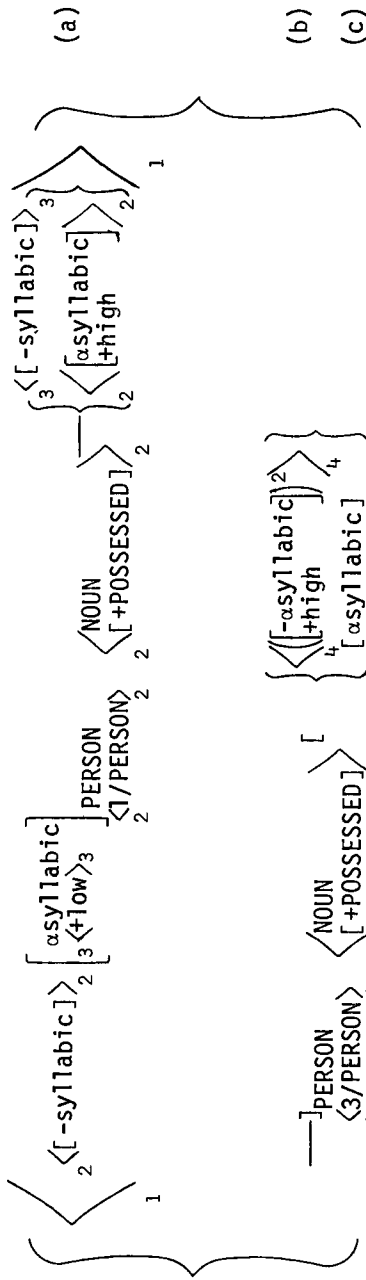
$$(150) \quad \text{C} \rightarrow \emptyset / \text{---}]_3/\text{PERSON} \quad \text{NOUN} \begin{array}{c} \text{V} \quad \text{V} \\ [+high] \quad [+high] \\ [+POSSESSED] \end{array}$$

Note that the latter rule only intermediately derives the surface structure of a form such as iiǰi *his foot*. The rule as stated will give the following derivation: ir + iiǰi → i + iiǰi. But we might allow this to be the input of the main deletion rule (128), by which the first /i/ of the stem would be deleted to give the correct surface form iiǰi.

Comparing these two rules with the main deletion previously discussed, we find that the structural descriptions and structural change are similar due to the fact that they are capturing a similar process, thus compelling us to collapse the rules. The collapsing could be achieved utilizing angled brackets to insure a disjunctive ordering by which those irregular grammatically specified environments must precede the corresponding simpler and more regular ones. We might thus attempt a formulation of a general deletion rule for the PERSON prefixes collapsing the above with the main deletion rule. An approximation follows:

(151)

$\left[\begin{matrix} \alpha\text{syllabic} \\ 1 \langle +\text{high} \rangle_1 \end{matrix} \right] \rightarrow \emptyset /$



Part (a) of the above formulation (expansion including ${}_2\langle \rangle_2$) specifies that the first of geminate /ii/s is deleted in a [+POSSESSED] noun following the 1/PERSON prefix. The expansion not including ${}_2\langle \rangle_2$ provides that an initial /i/ of a root is deleted following a PERSON prefix consisting of a [-high] vowel (i.e. /a/ or /o/) when the /i/ is geminate. The expansion including ${}_3\langle \rangle_3$ specifies that a stem-initial /i/ is deleted following a PERSON prefix /a/ and preceding a consonant. By part (b) the /r/ of the 3/PERSON/MASCULINE prefix is deleted preceding a [+POSSESSED] noun which begins with /ii/. In part (c), a final segment of the PERSON prefix is deleted when the initial segment of the stem has identical specification for syllabicity. The /r/ of the 3/PERSON/MASCULINE is deleted preceding consonants, and the vowels of the other PERSON prefixes are deleted preceding vowels.

The collapsing of the rules into the above formulation presents a dilemma in manner of rule application. According to generally accepted theory of rule notation, when subparts of a rule are ordered disjunctively (i.e. with angled brackets or parentheses), the second part of a disjunctive set may not apply to a given string if the first part has. Consider, then, how the rule will apply to a form such as ir + iigi (3/PERSON/MASCULINE + foot/[+POSSESSED]). The underlying representation first meets the structural description of part (b) of the rule and will yield an intermediate form, i + iigi. Since (b) of the disjunctively ordered section (b) and (c) has applied, then (c) may not apply in the present application of the rule. But the intermediate derivation, above, is now left stranded. To continue its derivation we might try adopting a convention such as left-to-right iterative rule application. This would insure that since the next segment in the string meets the structural description of part (a), it would apply to derive the correct surface form, i + iigi *his foot*.

The dilemma arises in that in such a left-to-right iterative application, part (a) will want to apply to that form again since the next segment also fits the structural description. Thus the incorrect output would be *igi.

The problem with right-to-left iterative application of part (a) is also evident in a derivation such as the following:

(152)	a + iirisi + ni	1PI + new leaf + POSSESSIVE
	∅	by part (a) of the deletion rule
	∅	by part (a) of the deletion rule
	*arisiti ⁷	<i>our new leaf</i>

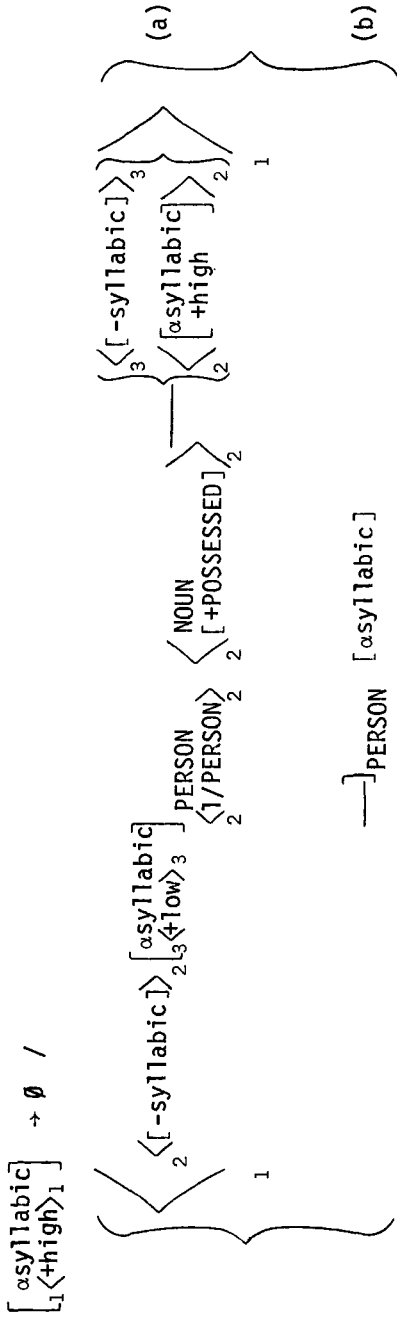
Contrast the above derivation with a derivation such as a + inki + ni(1/PERSON/INCLUSIVE) + peanut + GENITIVE → aNkini *our peanut*, in which part (a) must apply. The pair shows that our proposed iterative scheme will not work here.

We must then retreat from the notion of iterative application to the commonly employed convention of simultaneous application of a given rule to a given string. But this requires removing part (b) from the deletion rule, and stating it as a separate rule deleting both segments of the 3/PERSON/MASCULINE prefix in a single application.

With the delinquent part (b) removed we may now finally formulate the main deletion rule involving segments of the prefixes, as follows:

⁷The derivation of the POSSESSIVE suffix is discussed in the section on GENITIVE ALTERNATIONS later in this chapter. See GENITIVE STRENGTHENING (163).

(153) PREFIX SEGMENT DELETION:



i.e. (a) (expansion including $\langle \rangle_3$): a stem-initial /i/ is deleted following the PERSON prefix /a/ and preceding a consonant. (expansion including $\langle \rangle_2$): the first of geminate /ii/s is deleted in a [+POSSESSED] noun following the 1/PERSON prefix. (expansion not including $\langle \rangle_2$): an initial /i/ of a root is deleted following a PERSON prefix consisting of a single vowel. (b) A final segment of the person prefix is deleted when the initial segment of the stem has identical specification for syllabicity. The /r/ of 3/PERSON/MASCULINE is deleted preceding consonants, and the vowel of other PERSON prefixes is deleted preceding vowels.

With the above rule formulated, we may observe its interaction with WEAKENING. The following derivation illustrates how PREFIX SEGMENT DELETION necessarily feeds WEAKENING:

- (154) *ir + kanari + ni* 3PM + wild turkey + POSSESSIVE
 \emptyset PREFIX SEGMENT DELETION
 y WEAKENING
 iyana~~r~~i~~n~~i *his wild turkey*

Since a reverse order would incorrectly block the application of WEAKENING, the following ordering statement is called for:

- (155) PREFIX SEGMENT DELETION
 +
 WEAKENING

Part (b) removed from the main deletion rule may now have the following formulation:

- (156) IRREGULAR PREFIX DELETION
- [+syllabic] [-syllabic]]_{PERSON} NOUN_[+POSSESSED] [$\left(\begin{array}{l} [+syllabic] \\ [+high] \end{array} \right)^2$]
- 1 2 3 4 5
- \emptyset 3 4 5
- i.e. ir- (3/PERSON/MASCULINE) is deleted preceding a [+POSSESSED] noun beginning with /ii/.

The input or output of IRREGULAR PREFIX DELETION such as the form ir + iigi *his foot* → iigi will not now meet the structural description of PREFIX SEGMENT DELETION, so no ordering relationship exists between these rules. The input of IRREGULAR PREFIX DELETION does, however, meet the structural description of OPTIONAL PREFIX SPIRANTIZATION and with the latter applying first would yield the following ungrammatical derivation: ir + iigi (3/PERSON/MASCULINE + foot) → *riigi or *hiigi. An ordering

statement is therefore necessary to insure that IRREGULAR PREFIX DELETION applies before OPTIONAL PREFIX SPIRANTIZATION. The statement ordering the two rules is as follows:

- (157) IRREGULAR PREFIX DELETION
 ↓
 OPTIONAL PREFIX SPIRANTIZATION

GENITIVE ALTERNATIONS

The PERSON prefixes exhibit co-occurrence restrictions with the GENITIVE suffixes as described in Chapter II. Throughout the previous discussion, the alternations of these suffixes have been appearing unexplained in the data. The following examples illustrate the distribution of the alternations of the POSSESSIVE suffix:

- (158) NOUN *my* _____
- | | | |
|--------|------------|-----------------------|
| mii | nomini | <i>otter</i> |
| soo | nooŋi | <i>sloth</i> |
| itho | nithoni | <i>swallow (bird)</i> |
| mapi | nomapini | <i>rock</i> |
| ɣhɪŋki | noɣhɪŋkɪni | <i>eel</i> |
| korya | noyorvani | <i>manioc worm</i> |

Noun stems with two vowels occur with -ni as shown above. Those noun stems with more than two vowels productively take the alternation -ti, as illustrated below:

- (159) NOUN *my* _____
- | | | |
|-----------|---------------|--------------------|
| maini | nomainiti | <i>bear</i> |
| thoŋkiri | nothoŋkiriti | <i>hummingbird</i> |
| manaasaŋo | nomanaasaŋoti | <i>turtle</i> |
| ɕhiriŋito | noɕhiriŋitoti | <i>kingfisher</i> |

An initial approximation of the rule capturing this grammatically and phonologically conditioned process is the following:

(160)

$$\begin{bmatrix} +\text{consonantal} \\ -\text{nasal} \end{bmatrix} \rightarrow [+nasal] / [(C)V((N)C)V]_{\text{NOUN}} \text{ POSSESSIVE} \text{ [______]}$$

The phonetic rationale for such a rule is somewhat difficult to ascertain. However, the productivity of the -ti alternation (e.g. it is consistently used with borrowed words consisting of more than two vowels) together with the absolute regularity with which -ni is found on nouns with two vowels or less, compels us to formulate such.

The NON/POSSESSIVE suffix, which denotes a thing usually possessed but without reference to a possessor, demonstrates a similar alternation that distinguishes between number of vowels in the root. The following examples illustrate its occurrence:

(161) NON/POSSESSIVE *my* _____

nig ^h i	noni	<i>lice</i>
poog ^h i	nopo	<i>face</i>
toNki ^h i	notoNki	<i>bone</i>
čhira ^h i	nočhira	<i>lip</i>
çiitoN ^h i	noçiito	<i>intestines</i>
wairoN ^h i	nowairo	<i>name</i>
simoriN ^h i	nosimori	<i>saliva</i>
irapanaN ^h i	nirapana	<i>liver</i>

The only time the two suffixes co-occur is to denote possession of a normally possessed object that is apart from its original owner. Thus nociiito^hiti *my intestines* refers to *the intestines from a butchered animal now in my possession*. Whereas the -N^hi alternation occurred with the three vowel roots in the simple unpossessed form, when it occurs in the

"repossessed" formation preceding the POSSESSIVE suffix, the -ɸhi alternation occurs.

It has been demonstrated that derived nouns such as komawNɸhi *paddle* from koma *to paddle* are marked [+POSSESSED]. These take the -Nɸhi alternation as expected for stems longer than two vowels. A less frequent noun derivation employing the nominalizer -miNto behaves irregularly with regard to the alternation in question. For example, maamiNtoɸhi *mosquito net* and toNkamiNtoɸhi *gun* are marked [+POSSESSED] as the other derivational nouns are but unexpectedly occur with the -ɸhi alternation.

We may roughly characterize the two types of derived nouns as distinguishing between items obtained from outside the culture (e.g. mosquito nets and guns, those taking -miNto nominalizer) and those things native to the culture (e.g. paddles, hooked poles for picking fruits, hunting blinds, etc.; i.e. those taking the -ro). Correspondingly we might consider a constituent as having two categories: [+NATIVE] to designate -ro, and [-NATIVE] to designate -miNto. The rule deriving the -ɸhi/-Nɸhi alternations of NON/POSSESSIVE would then include the grammatical bracket designating the [-NATIVE] nominalizer.

An approximation of the rule capturing the alternations follows:⁸

⁸Abbreviating devices are utilized to indicate syllable structure where place and manner features are not needed. Thus C = [-syllabic], V = [+syllabic] and N = [-consonantal, +nasal]. The symbol X denotes any segment which may occur in the given string, unless restricted by an explicit condition.

(162) $\left[\begin{array}{l} \text{-consonantal} \\ \text{+nasal} \end{array} \right] \rightarrow \emptyset /$

$\left\{ \begin{array}{l} \text{]nominalizer} \\ \text{[+NATIVE]} \\ \text{[((C)V((N)C))V]_{NOUN}} \\ \text{<X>} \end{array} \right\} \text{NON/POSSESSIVE[___X] } < \text{POSSESSIVE} >$

Again, the phonetic motivation of the process captured by the above rule is rather difficult to imagine. That is, why should the syllable structure affect segments in such a way as these rules specify?

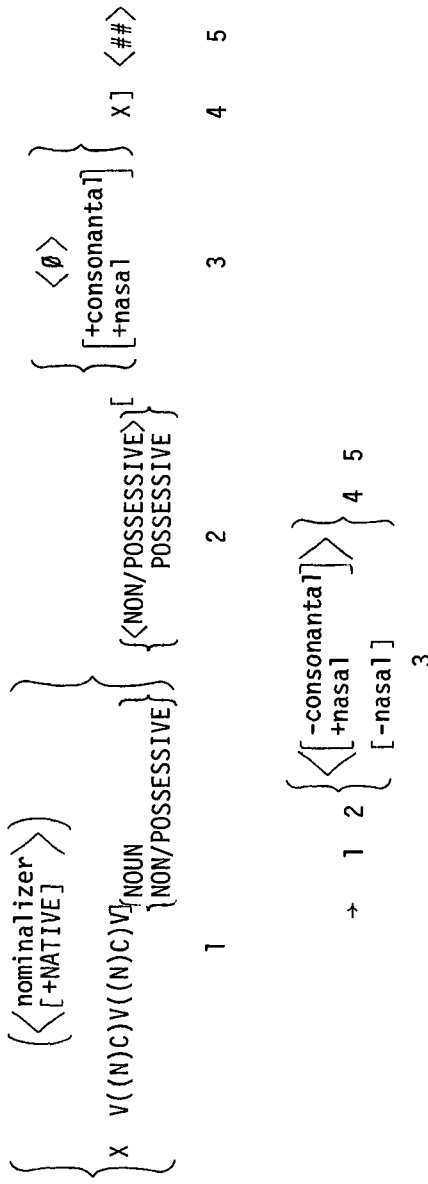
The placement of stress in Axininca, as described in Payne and Payne (to appear), may give some indication of the phonetic motivation of the rules (though at this state they have become almost exclusively grammatical).

Payne and Payne demonstrate that stress placement is a low level phonetic phenomenon in Axininca based on a strength scale of syllables, without any reference to grammatical brackets or a cycle. Accordingly, CVN and CVV syllables are generally strong and have some degree of stress, while CV syllables are generally weak and correspondingly unstressed. The normal stress pattern for words with only CV syllables is for every alternate syllable to be stressed beginning with the second syllable. The strong syllables perturb this pattern by taking stress when not in these patterns. Thus if a grammatical category such as GENITIVE required stress on the preceding syllable, inserting an /N/ to make that syllable strong would be a way to insure that it was stressed. The -ni/-ti POSSESSIVE alternation cannot likewise be related to syllable strength (in fact, this alternation is reportedly suppletive in the Ashaninca dialect). The -ni/-ti alternation appears to have analogized to the

distribution of NON/POSSESSIVES in Axininca. This is understandable since the two constituents have such similar functions and distribution. Given this probability and the structural similarity between the two approximations, the rules governing the POSSESSIVE and NON/POSSESSIVE alternations ought to be collapsed.

For our initial approximations, we considered -ti and -N^hi, respectively, as the underlying forms because doing so makes for rules with fewer features. Since we are to collapse the two rules, and since the probable phonetic motivation historically was syllable strengthening, the collapsed formulation will invert our initial approximations, thus considering -ni and -^hi as the underlying forms. The rule formulated as follows has no ordered relation to the other rules of Axininca phonology:

(163) GENITIVE STRENGTHENING



i.e. A word-final NON/POSSESSIVE suffix -ghi inserts an /N/ to precede it when it is preceded by the [+NATIVE] nominalizer (-ro) or when preceded by a noun consisting of more than two vowels. Likewise, the nasal consonant of the POSSESSIVE suffix becomes /t/ when following a noun consisting of more than two vowels or when following the NON/POSSESSIVE suffix.

CHAPTER V
EPENTHESIS AND RELATED PROCESSES

EPENTHESIS

Having specified the rules which deal with morphophonemic interaction related to the PERSON prefixes, let us turn to the more general epenthetic processes introduced at the beginning of Chapter III. To correctly derive komataaN^{hi} *to paddle* from koma + aaN^{hi} (paddle + INFINITIVE), we need a rule inserting /t/ between two vowels coming together at morpheme boundaries. To correctly derive čhikapirotaaN^{hi} *to cut it well* from čhik + piro + aaN^{hi} (cut + VERITY + INFINITIVE), an additional rule is needed to epenthesize /a/ between two consonants.⁹ A first approximation at formulating a rule combining the two similar processes follows:

$$(164) \quad \emptyset \rightarrow \left\{ \begin{array}{l} [\alpha\text{syllabic}] \\ +\text{low} \\ [\alpha\text{syllabic}] \\ -\text{aspirated} \\ -\text{delayed} \\ -\text{high} \\ -\text{back} \\ -\text{labial} \end{array} \right\} / [-\alpha\text{syllabic}] + ___ + [-\alpha\text{syllabic}]$$

Consider the application of this proposed rule to the following forms involving suffixes of the verb MODAL:

⁹Numerous examples of these and other processes discussed in the remainder of the chapter may be found in the AUXILIARY PARADIGM and VERB PARADIGM in Appendix B.

(165)

iNkomati	← i + N + koma + i
<i>he will paddle</i>	3PM + FUTURE + paddle + FUTURE
iNkomataati	← i + N + koma + aa + i
<i>he will paddle again</i>	3PM + FUTURE + paddle + REPETITIVE + FUTURE
iNkomatakoti	← i + N + koma + ako + i
<i>he will paddle for</i>	3PM + FUTURE + paddle + DATIVE + FUTURE + 3PF
iNkomatakotaatiro	← i + N + koma + ako + aa + i + ro
<i>he will paddle for it again</i>	3PM + FUTURE + paddle + DATIVE + REPETITIVE + FUTURE
iNčhiki	← i + N + čhik + i
<i>he will cut</i>	3PM + FUTURE + cut + FUTURE
iNčhikaati	← i + N + čhik + aa + i
<i>he will cut again</i>	3PM + FUTURE + cut + REPETITIVE + FUTURE
iNčhikakoti	← i + N + čhik + ako + i
<i>he will cut for</i>	3PM + FUTURE + cut + DATIVE + FUTURE
iNčhikakotaatiro	← i + N + čhik + ako + aa + i + ro
<i>he will cut for it again</i>	3PM + FUTURE + cut + DATIVE + REPETITIVE + FUTURE + 3PF

The epenthesis rule applies to a string such as i + N + koma + ako + aa + i (3/PERSON/MASCULINE + FUTURE + paddle + DATIVE + REPETITIVE + FUTURE) at three places in the string. This multiple application to the same string could be considered as iterative or simultaneous. Since we have observed the incorrect effects of a left-to-right iterative application of the PREFIX SEGMENT DELETION to a form such as the previously discussed a + iirisi + ni (1/PERSON/INCLUSIVE + new leaf +

POSSESSIVE)(152), we are assuming a simultaneous application principle for the phonology of Axininca.

Consider now the inclusion of morpheme boundaries (+) in the structural description of the epenthesis rule. The features of the rule that epenthesizes an /a/ between two consonants, such as i + N + čhik + piro + i (3/PERSON/MASCULINE + FUTURE + cut + VERITY + FUTURE) → inčhikapiroti *he will cut it well*, might just as well be specified without the morpheme boundaries since two such consonants will only come together at morpheme boundaries.

However, the collapsing of consonant epenthesis with vowel epenthesis necessitates the inclusion of morpheme boundaries, since there are numerous vowel sequences where consonant epenthesis occurs which are identical, except for the placement of morpheme boundaries, to vowel sequences which do not epenthesize (i.e. which are acceptable surface structures). For example, no + naa + piro + i + ro (1/PERSON + chew + VERITY + FUTURE + 3/PERSON/FEMININE) will not epenthesize a /t/ between the two /a/s, while no + na + ak + i + ro (1/PERSON + carry + PERFECT + NON/FUTURE + 3/PERSON/FEMININE) will epenthesize a /t/ between the two /a/s. Thus the surface forms of the two are nonaatiro *I will chew it well* and nonatakiro *I have carried it*, respectively, the crucial difference being the placement of a morpheme boundary in the underlying form. For these reasons the boundaries must be represented in the rule.

The epenthesis rule as now formulated has some peculiar ordering interactions with PREFIX SEGMENT DELETION as noted in the previous discussion of this rule. For a form such as the familiar a + iirisi + ni (1/PERSON/INCLUSIVE + new leaf + POSSESSIVE) (152), if epenthesis were allowed to apply before PREFIX SEGMENT DELETION, the incorrect *atiirisiti would be derived. We might thus consider extrinsically ordering epenthesis to follow the deletion rule. But for this form epenthesis

would even apply to the output of PREFIX SEGMENT DELETION as the following derivation illustrates:

(166)	a + iirisi + ni	1PI + new leaf + POSSESSIVE
	∅	PREFIX SEGMENT DELETION
	+t+	epenthesis (as now formulated)
	*atirisiti	<i>our new leaf</i>

Since either ordering yields an incorrect derivation we are compelled to reformulate the epenthesis rule. The most obvious modification would be to introduce grammatical bracketing into the rule, since it appears that epenthesis is the preferred manner of breaking up unacceptable clusters following the root, while deletion is the preferred manner of breaking up unacceptable clusters preceding the root. We may thus introduce a bracketing of the following sort into the structural description as follows:

(167)	/] _{VERB} X [αsyllabic] ____ [αsyllabic]
-------	--

where X contains no ##

Simply stated with the category VERB, the rule would specify that the epenthesis process would not apply to strings constituting the suffixal morphology of nouns and adverbs, nor could it apply with prefixes. This indeed appears to be the case, as the following examples utilizing a productive pluralizing DIMINUTIVE from the noun inflection illustrate:

(168)	hitoiriki	hito + iriki
	<i>small spiders</i>	spider + DIMINUTIVE
	mapiiriki	mapi + iriki
	<i>small rocks</i>	rock + DIMINUTIVE
	anairiki	ana + iriki
	<i>small black dye plants</i>	black dye plant + DIMINUTIVE

Furthermore, the following nouns derived from verbs behave like the nouns rather than verbs with regard to epenthesis:

- (169) no + NOUN[VERB[koma]VERB + ro]NOUN + iriki
 noyoma^woiriki
 1P + paddle + nominalizer + DIMINUTIVE
my little paddle
- no + NOUN[VERB[kimi]VERB + ri]NOUN + iriki
 noyimiriiriki
 1P + scrape + nominalizer + DIMINUTIVE
my small scraped manioes

The above examples thus demonstrate that the "X" which is specified in the structural description of the epenthesis rule may contain no major class-changing bracketing (i.e.]NOUN) as well as no word boundary, ##.

The epenthesis rule may then be formulated to include bracketing as follows:

(170) EPENTHESIS

$$\emptyset \rightarrow \left\{ \begin{array}{l} [\alpha\text{syllabic}] \\ [+low] \\ [\alpha\text{syllabic}] \\ [-aspirated] \\ [-delayed] \\ [-back] \\ [-labial] \end{array} \right\} /]_{\text{VERB}} X [-\alpha\text{syllabic}] + _ + [-\alpha\text{syllabic}]$$

where X contains no ## or]NOUN

i.e. in verb suffixation an /a/ is epenthésized between consonant clusters at morpheme boundaries and a /t/ is epenthésized between vowel clusters at morpheme boundaries.

The rule as formulated does not reflect in any way the unmarked nature of the epenthesis segments. For this reason the structural change is quite bulky in terms of number of features. An adequate theory of markedness should allow us to get by with one feature to the right of the arrow (i.e. something resembling [$U\alpha$ syllabic]) since it has been claimed that the /t/ and /a/ are the unmarked members of their respective syllabicity classes. As there does not appear to be any comprehensive, unified and generally accepted theory of markedness at the present, I will leave the rule in the formulation given above.

Consider again the relationship between PREFIX SEGMENT DELETION (153) and EPENTHESIS (170) with the specified grammatical bracketing. The latter as now specified will not apply to the output of the deletion rule to give the incorrect **atirisiti* from a + iirisi + ni (1/PERSON/INCLUSIVE + new leaf + POSSESSIVE). But the crucial question now is whether both rules need to include the bracketing. We have illustrated that the epenthesis rule requires such, but since it must now be specified with bracketing, does our previous argument about PREFIX SEGMENT DELETION still hold? What would be the effects of not specifying the deletion rule with bracketing?

For a form such as ir + piro + aaNghi (drink + VERITY + INFINITIVE) the deletion rule would delete the /r/ of the prefix and derive the incorrect **ipirotaaNghi* if it contained no grammatical boundary and were ordered first. If, however, we extrinsically order the epenthesis rule preceding the deletion rule, this would block the unwanted application of the latter to the output of the former. For example, the output of the EPENTHESIS rule for the preceding form would be ir + a + piro + t + aaNghi *to drink well*, which no longer meets the structural description of the deletion rule. If the bracketing remained in the PREFIX SEGMENT DELETION, of course, no explicit statement of order needs to be made.

Thus the grammar of Axininca must choose between extrinsically ordering a pair of rules or including grammatical bracketing in one of them. For the data at hand, however, we have observed that even if no bracketing is used in PREFIX SEGMENT DELETION in favor of an extrinsic ordering statement, the rule must still contain word and morpheme boundaries. It thus appears that the small step from this to the bracketing solution is justified if it rids us of the ordering statement.

The FUTURE suffix, since it is of the shape *-i*, will cause /t/ epenthesis when it follows a verb ending in a vowel but will not when the verb ends in a consonant. The following examples illustrate this clearly:

(171)	iNpiyotiro	<i>he will gather it</i>
	iNpinatiro	<i>he will pay her</i>
	iNtasitiro	<i>he will roast it</i>
	iNĉhikiro	<i>he will cut it</i>
	iNthoNkiro	<i>he will finish it</i>
	iNkaNtiro	<i>he will say to her</i>

It might be contestable, however, in the final example of the above whether the /t/ is a part of the verb kaNt *to say* or whether the EPENTHESIS rule should be expanded to generate a /t/ in the environment N__V as well. This would employ an underlying form kaN- for the verb. The occurrence of the FUTURE prefix in the shape N- in the underlying form is a precedent to the latter alternative. We may observe, however, that when the verb in question precedes a consonant-initial suffix, an /a/ is epenthesized (e.g. kaNtapirotaaNg^{hi} *to say well*). The correct underlying form in such cases therefore includes the /t/ (i.e. kaNt).

As previously mentioned, Kindberg (1961:521 and 1975a) posited a system of diacritics for the related Ashaninca dialect, by which each verb and each suffix of the verb inflection is

marked to predict the epenthesis. Let us consider the Axininca cognates of some of the forms which caused him to suggest such a cumbersome mechanism.

(172)	nasiyiro	<i>I will suck it</i>
	asiyaaN ^{hi}	<i>to suck</i>
	nasitiro	<i>I will own it</i>
	asitaaN ^{hi}	<i>to own</i>

We would thus posit asiy as the underlying form of the verb *to suck* and asi as the underlying form of the verb *to own*. As expected /t/ is epenthesized following asi but not following asiy when either of these is followed by a vowel.

Kindberg (1975:54) presents the following Ashaninca forms for the verbs given above in Axininca:¹⁰

(173)	nashiiro	<i>yo lo chupo (I suck it)</i>
	nashitiro	<i>yo lo poseo (I own it)</i>

He then posits identical roots for the two verbs but has to mark them with differing diacritics to predict the /t/ epenthesis in the second example, but not the first. Thus what is a purely phonological process in Axininca is given a non-phonological analysis for Ashaninca by Kindberg.

Consider further Axininca examples of the same phenomenon:

(174)	čhikaan ^{hi}	<i>to cut</i>
	iN ^{hi} iki	<i>he will cut</i>
	ič ^{hi} kaki	<i>he has cut</i>
	sito ^w aaN ^{hi}	<i>to leave</i>
	isito ^w i	<i>he will leave</i>
	isito ^w aki	<i>he has left</i>

¹⁰Kindberg's transcriptions here are orthographic rather than phonological.

otiyaaŋ ^{hi}	<i>to hold on</i>
hotiyi	<i>he will hold on</i>
hotiyaki	<i>he has held on</i>
mitagaaŋ ^{hi}	<i>to jump</i>
imitai	<i>he will jump</i>
imitaaki	<i>he has jumped</i>

Wherever Kindberg would posit a verb-final diacritic keeping epenthesis from applying in Ashaninca (e.g. on cognates of the final three sets above), we find that in Axininca the underlying forms of the verbs have final consonants, thus precluding the normal epenthesis of /t/.

VELAR GLIDE MORPHOPHONEMICS

The final set of examples above also demonstrates that when the final consonant of a verb is the velar glide, certain environments call for the deletion of the glide. The process is the phonological rule paralleling the if-then VELAR GLIDE CONSTRAINT (110) specifying possible syllable and word structure. The following forms further elaborate the complicated nature of the alternations:

(175)

I	II	III	IV	V	
INFINITIVE	NON/FUTURE	PERFECT	REASON	PLURAL	
to _____	he _____ (it) _____-ED	he has _____ -ED (it)	that he _____ -ED (it)	they _____ (it) _____-ED	
ʒhikaaŋ ^{hi}	iʒhikiro	iʒhikakiro	iʒhikaŋtaʋori	iʒhikaiyironi	cut
agaan ^{hi}	hayiro	haakiro	haan ^{taʋori}	hagaiyironi	take
tagaaŋ ^{hi}	itayiro	itaakiro	itaan ^{taʋori}	itagaiyironi	burn
iragaaŋ ^{hi}	hirayiro	hiraakiro	hiraan ^{taʋori}	hiragaiyironi	mourn
mitagaaŋ ^{hi}	imitai	imitaaki	imitaan ^{tari}	imitagaiyini	jump
ʒhinagaaŋ ^{hi}	iʒhinairo	iʒhinaakiro	iʒhinaan ^{taʋori}	iʒhinagaiyironi	raise
oyaaŋ ^{hi}	hoyayiro	hoyaaakiro	hoyaaŋtaʋori	hoyaaagaiyironi	insert
oʋamagaaŋ ^{hi}	hoʋamairo	hoʋamaakiro	hoʋamaan ^{taʋori}	hoʋamagaiyironi	kill
paŋpithagaaŋ ^{hi}	ipaŋpithai	ipaŋpithaaki	ipaŋpithaan ^{tari}	ipaŋpithagaiyini	sing
tagaaŋ ^{hi}	itaga	itaaka	itaan ^{tari}	itagaiyani	burn oneself
iragaaŋ ^{hi}	hiraga	hiraaka	hiraan ^{tari}	hiragaiyani	any for oneself
oʋamagaaŋ ^{hi}	hoʋama	hoʋamaaka	hoʋamaan ^{tari}	hoʋamagaiyani	kill oneself
ʒhinagaaŋ ^{hi}	iʒhina	iʒhinaaka	iʒhinaan ^{tari}	iʒhinagaiyani	lift one's body part

That we must posit /g/ instead of /y/ as the final segment of the underlying forms for the above verbs is confirmed by the following pair:

(176)	INFINITIVE	NON/FUTURE	PERFECT	
	kagaaN ^{hi}	nokayi	nokaaki	<i>bring water</i>
	kayaaN ^{hi}	nokayi	nokayaki	<i>hull</i>

If /y/ is posited there would be no regular manner of predicting the alternations containing /g/.

The data in (175) illustrate two processes affecting the surface manifestation of the velar glide. By one process /g/ is fronted to /y/ and by another it is deleted entirely. Columns I and V show that the glide may not be deleted preceding a vowel cluster. The various alternations (or relative lack of them) of the verb *oyaa_g insert* indicate that following a vowel cluster the /g/ will not be deleted. Columns III (preceding the PERFECT *-ak*) and IV (preceding the REASON *-a_{Nt}*) demonstrate the deletion of /g/ in the environment of CV__VC. Thus our approximation of part of the general rule would be the following:

(177) $g \rightarrow \emptyset / CV_VC$

The alternations preceding the NON/FUTURE suffix give the remaining range of deletion and palatalization possibilities. Note that except for *oyaa_g insert* the /g/ is never deleted when it begins a word-final syllable and only one or two syllables precede it, but is deleted when preceded by more than two syllables. We find that this particular distinction between two short syllables (i.e. a vowel) or less, versus more than two short syllables is not an isolated phenomenon in Axininca. Allomorphs of the GENITIVE suffixes are similarly conditioned by number of syllables in the stem, as was seen in the discussion of GENITIVE ALTERNATIONS in Chapter IV.

The rule must delete the /g/ when it occurs more than two vowels (not necessarily contiguous) away from the beginning of the word and is followed by a single vowel plus word boundary, unless, as we observe with o_yaag *insert*, it is immediately preceded by a long vowel. Such a rule may be approximated by the following formulation:

$$(178) \quad g \rightarrow \emptyset / \left\{ \begin{array}{c} V \\ C \end{array} \right\} V(N)CV \text{ ___ } V \#\#$$

We may then collapse the two deletion rules by the use of angled brackets. The rule thus specified formally is as follows:

(179) VELAR GLIDE DELETION

$$\left[\begin{array}{l} \text{-consonantal} \\ \text{+high} \\ \text{+back} \end{array} \right] \rightarrow \emptyset / \left\{ \begin{array}{c} \langle CV \rangle \\ \left\{ \begin{array}{c} C \\ V \end{array} \right\} V(N)CV \end{array} \right\} \text{ ___ } V \left\{ \begin{array}{c} \langle C \rangle \\ \#\# \end{array} \right\}$$

i.e. /g/ is deleted in the environment CV__VC or following a sequence V(N)CV which is not word-initial and preceding V##.

The other process illustrated by the data, changes /g/ to /y/ preceding /i/. The rule may be formulated as follows:

(180) GLIDE FRONTING

$$\left[\begin{array}{l} \text{-consonantal} \\ \text{+high} \\ \text{+back} \end{array} \right] \rightarrow [-\text{back}] / \text{ ___ } [-\text{back}]$$

i.e. The velar glide becomes palatal preceding the front vowel.

Stated as economically as this, the rule requires an ordering statement with regard to VELAR GLIDE DELETION. GLIDE FRONTING applying first to a form such as ir + mitag + i (3/PERSON/MASCULINE + jump + NON/FUTURE) would yield *ir + mitay + i to which

VELAR GLIDE DELETION could not apply, thus resulting in the incorrect surface form **imitayi* instead of *imitai* *he jumped*. The rules are thus extrinsically ordered by the following statement:

(181) VELAR GLIDE DELETION

↓

GLIDE FRONTING

Consider also the derivation of a form such as *hoŵama* *he killed himself* according to the rule of VELAR GLIDE DELETION:

(182) *ir + oŵamag + a* 3PM + kill + REFLEXIVE/NON/FUTURE
 { \emptyset r
 \emptyset h} OPTIONAL PREFIX SPIRANTIZATION
 \emptyset VELAR GLIDE DELETION

GEMINATE REDUCTION

To the intermediate state of derivation in (182) we might expect EPENTHESIS (170) to apply. But this would derive the incorrect **hoŵamata*. Instead we find loss of the vowel of a geminate cluster word finally yielding *hoŵama* *he killed himself*. Consider further examples of the same process:

(183) *saNpa* *balsa* *nosaNpaati* *my balsa*
 saŵo *cane* *nosaŵooti* *my cane*
 ϕ^h imi *ant (puacura)* *no ϕ^h imiiti* *my ant (puacura)*

Contrast the above with the following:

(184) *çaa* *anteater* *noçaani* *my anteater*
 sima *fish* *nosimani* *my fish*
 paŵo *night bird* *noŵawoni* *my night bird*
 ϕ^h imi *water hole* *no ϕ^h imini* *my water hole*
 çokori *armadillo* *noçokoriti* *my armadillo*

The alternation between *-ni* and *-ti* as POSSESSIVE previously discussed (GENITIVE ALTERNATIONS in Chapter IV) distinguishes

distinct syllable structures of the noun stems. Nouns with one or two vowels take the -ni alternate, while those with three or more vowels take -ti. We are compelled to posit as the underlying forms the alternates of the noun roots which occur in the possessed construction. Thus when a polysyllabic noun which ends in a geminate cluster (such as saNpaa *baɬsa*) occurs in isolation, the final vowel is lost (saNpa) This rule corresponds to the WORD FINAL CONSTRAINT (117) formulated in the discussion of syllable structure. The rule is formulated as follows:

(185) GEMINATE REDUCTION

$$\left[\begin{array}{c} +\text{syllabic} \\ \alpha \text{high} \\ \beta \text{labial} \end{array} \right] \rightarrow \emptyset / [-\text{consonantal}] [+ \text{syllabic}] \left[\begin{array}{c} +\text{syllabic} \\ \alpha \text{high} \\ \beta \text{labial} \end{array} \right] \text{---} \#\#$$

i.e. The second of geminate vowels is deleted word finally when the word has more than two vowels.

An ordering statement will be necessary to derive the correct surface structure of hōwama *he killed himself* (182), since that form, as the output of VELAR GLIDE DELETION, (i.e. the intermediate derivation h + ōwama + a) meets the structural description of both GEMINATE REDUCTION and EPENTHESIS. Since EPENTHESIS would derive the incorrect *hōwamata as previously stated, we might be inclined to extrinsically order GEMINATE REDUCTION before it, to yield the correct hōwama to which EPENTHESIS could not then apply.

Note however, that forms do exist ending with /...a + a ##/ to which EPENTHESIS must apply to yield the correct derivation, e.g. ir + kiNki + t̄ha + a (3/PERSON/MASCULINE + tell + spoken + NON/FUTURE/REFLEXIVE) → ikiNkithata *he told himself*. This is compelling evidence to order EPENTHESIS before VELAR GLIDE DELETION, but it is not the only evidence of that. All of the verbs ending in /g/, (except those where the /g/ is preceded by /aa/ such as ōyaaɟ *insert*) undergo VELAR GLIDE DELETION

preceding the PERFECT suffix -ak. The following derivation exemplifies this:

- | | | |
|-------|-----------------------|---|
| (186) | ir + ag + ak + i + ro | 3PM + take + PERFECT + NON/
FUTURE + 3PF |
| | ∅h | OPTIONAL PREFIX SPIRANTIZATION |
| | ∅ | VELAR GLIDE DELETION |

The output of VELAR GLIDE DELETION now meets the structural description of EPENTHESIS. But if the latter were to apply, the incorrect *hatakiro would be derived. An extrinsic ordering statement must specify the rules in question as follows:

- | | |
|-------|----------------------|
| (187) | EPENTHESIS |
| | ↓ |
| | VELAR GLIDE DELETION |

Note also that the derivation of a form such as ir + o^wamag + a (3/PERSON/MASCULINE + kill + REFLEXIVE/NON/FUTURE) → ho^wama *he killed himself* is evidence that VELAR GLIDE DELETION feeds GEMINATE REDUCTION. The following statement is therefore in order:

- | | |
|-------|----------------------|
| (188) | VELAR GLIDE DELETION |
| | ↓ |
| | GEMINATE REDUCTION |

AFFRICATION

Another phonological process in Axininca which follows from the discussion of EPENTHESIS may be observed by comparing the following FUTURE and NON/FUTURE verb forms and the alternations of the epenthesized /t/:

(189)	FUTURE		NON/FUTURE	
	noNpisiti	<i>I will sweep</i>	nopisiɕi	<i>I swept</i>
	noNpiyoti	<i>I will heap</i>	nopiyotɕi	<i>I heaped</i>
	noNkomati	<i>I will paddle</i>	nokomaɕi	<i>I paddled</i>
	noNɕhiki	<i>I will cut</i>	noɕhiki	<i>I cut</i>
	noNkimi	<i>I will hear</i>	nokimi	<i>I heard</i>
	noNɕhitoki	<i>I will hit</i>	noɕhitoki	<i>I hit</i>

We note that for the first three verbs of (189), two features serve to distinguish the FUTURE and NON/FUTURE, i.e. the FUTURE prefix N-, and the affricate preceding the /i/ of NON/FUTURE. The FUTURE prefix occurs only before obstruents. The following examples then illustrate forms in which the distinction between TENSE is lost altogether:

(190)	FUTURE		NON/FUTURE	
	nomisiti	<i>I will dream</i>	nomisiɕi	<i>I dreamed</i>
	notiti	<i>I will insert</i>	notiɕi	<i>I inserted</i>
	noosoti	<i>I will tie</i>	noosoɕi	<i>I tied</i>
	niri	<i>I will drink</i>	niri	<i>I drank</i>
	namiki	<i>I will file</i>	namiki	<i>I filed</i>
	nomoki	<i>I will per- forate</i>	nomoki	<i>I perforated</i>

The INFINITIVE forms of the verbs in (190) indicate clearly what the underlying forms of the stem are:

(191)	misitaaNɕhi	<i>to dream</i>
	otitaaNɕhi	<i>to insert</i>
	oosotaaNɕhi	<i>to tie</i>
	iraaNɕhi	<i>to drink</i>
	amikaaNɕhi	<i>to file</i>
	mokaaNɕhi	<i>to perforate</i>

Consider then what the underlying forms of the TENSE suffixes might be. The FUTURE suffix is unequivocally /i/ as it has no other alternations and behaves as expected with regard to EPENTHESIS. The NON/FUTURE suffix is more problematic. If we posit /i/ as the underlying form, it appears as expected following consonants but has an unexplainable form after verbs ending in vowels. If we posit /ɕi/ as the underlying form, it behaves as expected following vowels but does not result in epenthesis of an /a/ as would be expected following consonant-final verbs. Note from further examples that the problematic affricate occurs not only where the epenthésized /t/ is expected, but also on roots ending /...Nt/:

(192)	FUTURE		NON/FUTURE	
	noNkaNti	<i>I will say</i>	nokaNɕi	<i>I said</i>
	naNti	<i>I will do</i>	naNɕi	<i>I did</i>
	noniNti	<i>I will want</i>	noniNɕi	<i>I wanted</i>

Furthermore, we may note that this problem with the affricate is not peculiar to the NON/FUTURE, but occurs as well with a suffix of the MODAL (-ima/-ɕima) which I have labelled INTERRUPTIVE. Consider some of its occurrences as follows:

(193)	iro piNɕhikimati	<i>You are ready to cut?</i>
	iro piNkomaɕimati	<i>You are ready to paddle?</i>

The comparative data shed some light on the origin of the problematic /ɕi/. In the Ashaninca dialect the FUTURE suffix is /e/ and the NON/FUTURE is /i/ (Kindberg 1961:535-6). In the Asheninca and Axininca dialects a sound change likely to have been t > ɕ / ___i occurred, as exemplified by the following:

(194)	<u>Ashaninca</u>	<u>Asheninca</u>	
	tiri	ɕiri	<i>tar</i>
	tiso	ɕiso	<i>buzzard</i>
	tiwi	ɕiwi	<i>salt</i>

The affricatization did not occur before /e/ as witnessed by a form such as notene *my breast* in both Ashaninca and Asheninca dialects. Thus the Asheninca dialects maintain the /e/ versus /i/ distinction between FUTURE and NON/FUTURE as well as the stop versus affricate distinction of a preceding stop. This is illustrated by the following from some Asheninca dialects (data from Ron Anderson, personal communication):

(195)	FUTURE		NON/FUTURE
	noNkomate	<i>I will paddle</i>	nokomaɸi <i>I paddled</i>
	noNčheke	<i>I will cut</i>	nočheki <i>I cut</i>
	nosaNpite	<i>I will ask</i>	nosaNpiɸi <i>I asked</i>
	nire	<i>I will drink</i>	niri <i>I drank</i>

Axininca has lost the contrast between /i/ and /e/, while preserving the morphophonemic effects of the contrast in the apical consonant. Thus the FUTURE and NON/FUTURE suffixes have merged in all environments except following the apical.

To account for the synchronic data from Axininca alone, several solutions to the problem might be suggested. The most abstract of these would be to posit an underlying /e/ as the FUTURE suffix (and also anywhere that a surface -ti- exists) since we know that this is what occurred historically. We could then formulate a rule of affrication of the apical preceding /i/, and finally an absolute neutralization rule, e → i.

Another solution would be to posit alternating forms of the NON/FUTURE and INTERRUPTIVE suffixes, since these apparently are the only two morphemes affecting the alternations. Accordingly, we might suggest the forms -ɸi and -ɸima respectively for those suffixes and specify a specific readjustment rule deleting the /ɸ/ following consonants. But an additional rule must also be formulated to account for the affrication of forms such as nokaNɸi *I said* from no + kaNt + ɸi (1/PERSON + say + NON/FUTURE).

Still another solution would be a phonological rule or readjustment rule of affrication with the grammatical bracketing specifying conjunctively INTERRUPTIVE and NON/FUTURE.

Finally, we might propose a diacritic feature [+D] for the /i/ of the two morphemes NON/FUTURE and INTERRUPTIVE and incorporate it into the structural description of the rule.

Which of the solutions is preferable? The "absolute neutralization" solution would derive the correct surface derivation with two rules, but at the cost of a highly abstract analysis, which is very unlikely to capture psychological reality. It would force us to posit an underlying /e/ in numerous forms (e.g. no + teni *my breast* for the surface notini) where no alternations exist surfacing the contrast. This solution is thus undesirable even though it does approximate the diachronic development of the forms.

The "readjustment" solution requires not only a readjustment rule but a phonological rule with bracketing as well. It is thus too bulky, deriving by two rules what appears to be one process.

The "bracketing" solution and the "diacritic" solution are thus the simplest and appear to more accurately reflect synchronically the nature of the process in question. That is, they affirm that the conditioning is no longer phonological, and rightly so since native reaction indicates no contrast between /i/ and /e/ such as the "absolute neutralization" solution requires.¹¹

The two solutions that remain are similar in complexity. While "bracketing" requires a rule with a conjunctive structural description,

¹¹ Some aspects of native reaction to proposed orthography as evidence of psychological reality are discussed in Chapter IX, SURFACE REPRESENTATION.

(196) $\left. \begin{array}{l} \{ \text{NON/FUTURE} \\ \text{INTERRUPTIVE} \} \right\lbracket$

the "diacritic" solution utilizes a similar rule at the expense of an extra feature in the inventory, (i.e. the diacritic ([+D]) on the vowel.) Since the "bracketing" solution represents some kind of observable reality (i.e. the distribution and meaning of the morphemes involved), while the "diacritic" solution is not necessarily related to any reality but is more an arbitrary linguistic contraption, I therefore advocate the "bracketing" solution for the Axininca data.

The PROGRESSIVE aspect which optionally precedes the TENSE marker exhibits a similar grammatically conditioned alternation before NON/FUTURE, which is analogical to the affrication of /t/. The following examples illustrate its alternations:

(197)

inčhiki	<i>he will cut</i>	inčhikači	<i>he will be cutting</i>
ičhika	<i>he cut himself</i>	ičhikača	<i>he is cutting himself</i>
ičhiki	<i>he cut</i>	ičhikačɨ	<i>he is cutting</i>
hotiti	<i>he will put in</i>	hotitači	<i>he will be putting in</i>
hotita	<i>he got in</i>	hotitača	<i>he is getting in</i>
hotiɨ	<i>he put in</i>	hotitaɨ	<i>he is putting in</i>

The above examples indicate that the PROGRESSIVE suffix has two alternations: -ač preceding the FUTURE -i and the REFLEXIVE/NON/FUTURE -a; and -aɨ preceding the problematic NON/FUTURE. If we posit -aɨ as the underlying form, a rule palatalizing it to -ač before the FUTURE -i would make sense phonetically; but the palatalization before -a of the REFLEXIVE/NON/FUTURE would present difficulty, especially since the unpalatalized affricate is found before an -i in the FUTURE.

No purely phonological rule is possible to derive the alternations of PROGRESSIVE. What appears likely is that the

PROGRESSIVE had undergone an analogical change, patterning the affrication of apicals before NON/FUTURE. Since the affricate resulting from this rule has become the sole distinction between FUTURE and NON/FUTURE following any verb or suffix which is vowel final, we might expect this sort of restructuring of other morphemes in this environment to preserve the grammatical distinction. This analysis accordingly predicts an eventual restructuring of NON/FUTURE to an underlying form of -tʃi instead of -i.

By positing -ač as the underlying form for PROGRESSIVE, I will formulate the affrication rule to derive the -ač alternation by the same process which affricates the epenthesis and morpheme-final /t/ before NON/FUTURE. Note that we cannot generalize a "č → tʃ / ___[NON/FUTURE]" rule because of verbs like moNčaaNčhi *to cross* whose form preceding FUTURE and NON/FUTURE is identical; thus imoNči *he will cross* or *he crossed* and not *imoNči.

The affrication rule is then formulated to affricate /t/ before the NON/FUTURE and to derive an -ač alternation of PROGRESSIVE in the same environment. The rule follows:

(198) AFFRICATION

$$\left\{ \begin{array}{l} \left[\begin{array}{l} \text{-delayed} \\ \text{-high} \\ \text{-labial} \end{array} \right] \\ \left[\text{-syllabic} \right]_{\text{PROGRESSIVE}} \end{array} \right\} \rightarrow \left[\begin{array}{l} \text{+delayed} \\ \text{-high} \end{array} \right] / \text{---} \left\{ \begin{array}{l} \text{NON/FUTURE} \\ \text{INTERRUPTIVE} \end{array} \right\}^{\lceil}$$

i.e. /t/ and the /č/ of PROGRESSIVE become /tʃ/ preceding NON/FUTURE or INTERRUPTIVE.

Observe that the rule as stated is general enough in its feature specification to apply to the aspirated apical obstruents as well. However, as noted in the discussion of morpheme structure in Chapter III, no morphemes ever end in the aspirated obstruents; and since none are ever derived by EPENTHESIS, we may formulate it as above and allow it to apply vacuously.

CHAPTER VI
PALATALIZATION AND RELATED PROCESSES

PALATALIZATION

I have demonstrated that two kinds of processes are at work in Axininca phonology to insure that certain underlying consonant and vowel clusters do not surface. Of these two processes, epenthesis is common to the verb suffixal morphology and deletion is common to the prefix morphology. The following data demonstrates that in addition to these two processes, a third type of rule is needed to account for the absence of certain vowel clusters in the surface representation which are found in underlying representations:

(199)	kimi	<i>squash</i>	kimiya	<i>squash drink</i>
	parvaŋɕi	<i>plantain</i>	parvaŋɕa	<i>plantain drink</i>
	siŋki	<i>corn</i>	siŋɕa	<i>corn drink</i>
	kiri	<i>palm fruit</i> <i>(pifayo)</i>	kirva	<i>palm fruit drink</i>

This fairly unproductive derivational suffix *-a drink* made from _____ illustrates that Axininca has two ways of disposing of a vowel cluster consisting of a high vowel plus low vowel. If the consonant preceding the cluster is apical or velar then that consonant and the high vowel coalesce to the palatalized counterpart of the consonant. Where the preceding consonant has no palatalized counterpart in the inventory (e.g. *mɥ) the glide /y/ is inserted to break up the vowel cluster.

These processes are illustrated in the inflectional verb morphology as well. Consider the following occurrences of the REFLEXIVE/FUTURE suffix, in contrast to the regular FUTURE and

REFLEXIVE/NON/FUTURE:

(200)	FUTURE	REFLEXIVE/ NON/FUTURE	REFLEXIVE/ FUTURE	
	<i>he</i> <i>will</i> ___	<i>he</i> ___-ED <i>himself</i>	<i>he will</i> ___ <i>himself</i>	
	iNčhiki	ičhika	iNčhiča	<i>cut</i>
	iNkaNti	ikaNta	iNkaNča	<i>say</i>
	iNkimi	ikima	iNkimiya	<i>hear</i>
	iNkiwi	ikiwa	iNkiwiya	<i>wash</i>
	iŋi	iŋa	iŋiia	<i>see</i>
	imiçi	imiça	imiçiia	<i>peel</i>
	iNpiyoti	ipiyota	iNpiyoča	<i>gather</i>
	hotiti	hotita	hotiča	<i>put in</i>
	iNkisiti	ikisita	iNkisiča	<i>comb</i>
	iNponati	iponata	iNponača	<i>wrap</i>

The above examples illustrate the -i of FUTURE and the -a of REFLEXIVE/NON/FUTURE behaving as expected with regard to EPENTHESIS. From the alternations involving REFLEXIVE/FUTURE there appears to be a palatalization process occurring which is similar to the one noted for the derivational nouns in (199). The remaining question concerns the underlying form of the REFLEXIVE/FUTURE suffix. From the above alternations the possibilities would be -ča (as following vowel-final verb roots), -iya or -iia (as following labial- and (alveo)palatal-final verbs), or -a plus some palatalizing agent (as following the apical- and velar-final verbs). An additional alternation of this morpheme, -ya, is evidenced by the following examples of roots ending in glides:

(201)	ooŋaaNčhi	<i>sun</i>
	hooŋa	<i>he sunned himself</i>
	hooŋiya	<i>he will sun himself</i>

piyaaŋ ^{hi}	<i>lose</i>
ipiya	<i>he lost himself</i>
iŋpiya	<i>he will lose himself</i>
oŋiyaan ^{hi}	<i>pole a canoe</i>
hoŋiya	<i>he poled himself (in a canoe)</i>
hoŋiya	<i>he will pole himself (in a canoe)</i>
tagaan ^{hi}	<i>burn</i>
itaga	<i>he burned himself</i>
iŋtaiya	<i>he will burn himself</i>
iragaan ^{hi}	<i>mourn</i>
hiraga	<i>he mourned himself (cried)</i>
hiraiya	<i>he will mourn himself (cry)</i>
ŋhinagaan ^{hi}	<i>lift</i>
iŋhina	<i>he lifted his body part</i>
iŋhinaiya	<i>he will lift his body part</i>
oŋamagaan ^{hi}	<i>kill</i>
hoŋama	<i>he killed himself</i>
hoŋamaiya	<i>he will kill himself</i>

The above examples show the velar glides becoming a high vowel and a palatal glide being lost before the REFLEXIVE/FUTURE suffix, while the labial glide behaves like the other consonants.

Consider the effects of positing *-ia* as the underlying form of this suffix. For verbs ending in apicals or velars such as iŋ^{hi}ča *he will cut himself*, the underlying representation ir + N + čhik + ia would require a glide epenthesis rule, equal to that required for the derivational noun forms. For verbs ending in vowels, where epenthesis would normally occur, an underlying representation such as ir + N + kisi + ia *he will comb himself* will correctly derive the surface iŋkisiča by PREFIX SEGMENT DELETION, EPENTHESIS of /t/ and the palatalization rule needed above. Finally, for verbs ending in the glides,

an additional rule palatalizing /g/ and metathesizing the syllabicity of /g/ and /i/ would be needed. The rule should also delete /y/ before /ia/.

Positing -ia as the underlying form of the REFLEXIVE/FUTURE takes advantage of already necessary rules, except in the case of the syllabicity metathesis referred to, where an additional rule would be needed for some alternate, regardless of the underlying form.

Consider also positing -ya as the underlying form. Following consonants such as with the verb root č^hik *to cut*, it would cause epenthesis of an /a/ and yield the incorrect *iNč^hikaya unless some exceptional rule to EPENTHESIS was formulated for it. Further rules would be needed to derive the -ča, -a and -iya alternations as well if -ya were the underlying form. Likewise, positing -a, -iya or -ča as the underlying form would require rules in addition to those needed for the noun examples illustrating similar processes.

It thus appears that -ia is the preferable solution for the underlying form of the REFLEXIVE/FUTURE. Objection might be raised to this on the grounds that the proposed morpheme violates surface syllable constraints. But the necessity of positing underlying verb roots and suffixes which violate those constraints has already been demonstrated. Furthermore, the form posited involves a very small step of abstraction, since both /i/ and /a/ are found on the surface in some of the existing alternations, and the sequence /ia/ does indeed exist where /i/ and /a/ occur contiguously at morpheme boundaries in underlying forms.

We have noted three processes with regard to the nouns derived from the suffix -a *drink made from* _____. The three processes are palatalization and subsequent deletion of the palatalizing element, epenthesis of /y/, and metathesis or "feature

switching" for the feature syllabicity together with deletion of /y/. The function of each of these rules is to break up a cluster of /ia/. The differences between the processes involve only the element preceding the unacceptable sequence. In transformational rule format, the similarities of the processes are evident, as seen in the following:

(202)

(palatalization):

$$\begin{array}{ccccccc} \left[\begin{array}{l} +\text{consonantal} \\ \alpha\text{high} \\ \alpha\text{back} \\ -\text{labial} \end{array} \right] & \left[\begin{array}{l} +\text{syllabic} \\ +\text{high} \end{array} \right] & \left[\begin{array}{l} +\text{syllabic} \\ -\text{high} \end{array} \right] & \rightarrow & \left[\begin{array}{l} +\text{high} \\ -\text{back} \end{array} \right] & \emptyset & 3 \\ 1 & 2 & 3 & & 1 & & \end{array}$$

(glide epenthesis):

$$\begin{array}{ccccccc} \left[\begin{array}{l} -\text{syllabic} \\ \alpha\text{high} \\ -\text{back} \\ -\alpha\text{labial} \end{array} \right] & \left[\begin{array}{l} +\text{syllabic} \\ +\text{high} \end{array} \right] & \left[\begin{array}{l} +\text{syllabic} \\ -\text{high} \end{array} \right] & \rightarrow & 1 & 2 & \left[\begin{array}{l} -\text{consonantal} \\ -\text{syllabic} \\ +\text{high} \\ -\text{back} \end{array} \right] & 3 \\ 1 & 2 & 3 & & & & & \end{array}$$

(syllabicity metathesis):

$$\begin{array}{ccccccc} \left[\begin{array}{l} -\text{consonantal} \\ -\text{syllabic} \\ +\text{sonorant} \\ \langle -\text{back} \rangle \\ -\text{labial} \end{array} \right] & \left[\begin{array}{l} +\text{syllabic} \\ +\text{high} \end{array} \right] & \left[\begin{array}{l} +\text{syllabic} \\ -\text{high} \end{array} \right] & \rightarrow & \left\{ \begin{array}{l} \langle \emptyset \rangle \\ +\text{syllabic} \\ -\text{back} \end{array} \right\} & [-\text{syllabic}] & 3 \\ 1 & 2 & 3 & & 1 & 2 & \end{array}$$

Some intricacies of order of application involve the above processes. Consider first the relationship between the syllabicity metathesis and GLIDE FRONTING (180). Given the present formulation of the two rules an underlying form such as ir + N + tag + ia (3/PERSON/MASCULINE + FUTURE + burn + REFLEXIVE/FUTURE) *he will burn himself* meets the structural description of both rules. If GLIDE FRONTING applied first, it would even correctly change /g/ to /i/ in the above form. In that case, the

syllabicity metathesis rule could be simplified somewhat by removing the feature [back] from both the structural description and the structural change. This of course implies an extrinsic ordering statement for the two rules.

The rule of syllabicity metathesis, if it were ordered before GLIDE FRONTING, would of course be left as it is formulated above to derive the correct surface forms. However, in choosing between two solutions, both of which demand an ordering statement, the one with the fewest features would undoubtedly be preferred. I would thus be inclined to order GLIDE FRONTING first.

Consider, however, the possibility of collapsing the three rules formulated above. It would be possible with the liberal use of angled brackets to collapse these rules, though at first glance the structural similarity is not such compelling evidence for their collapse, since the value for the features are so different. The functional unity of the rules (i.e. conspiring to break up the /ia/ cluster) does, however, argue for their collapse. And indeed, by the disjunctive ordering necessitated by collapsing the rules we can simplify the rules somewhat (from 36 to 23 features, total) and dispense with any extrinsic ordering statements between the rules as first formulated.

Disjunctively ordering the palatalizing part of a newly collapsed rule before the glide epenthesis, we may dispense with the features [high], [back] and [labial] for the glide epenthesizing part, because the specifications indicated in the previous glide epenthesis rule, i.e.

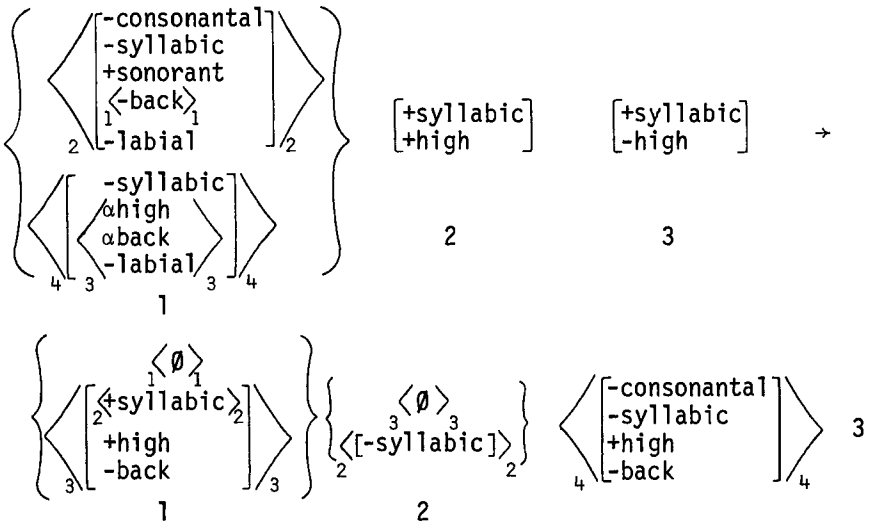
(203) $\left[\begin{array}{l} \alpha\text{high} \\ -\text{back} \\ -\alpha\text{labial} \end{array} \right]$

would be the only possible remaining ones for [-syllabic] segments after the palatalizing part has been specified. Collapsing the rule of syllabicity metathesis with these would also necessitate some internal disjunctive ordering since the glides /y/

and /g/ behave differently than /w/ with regard to breaking up a following /ia/ cluster. Thus to save features, the part of the rule dealing with [-labial] glides should be disjunctively ordered first, by angled brackets.

It might be argued that a rule which utilizes disjunctive ordering so extensively is not well motivated. On the contrary, I believe such a rule in this case captures the true generalization, i.e. that a specific cluster is broken up in different ways depending on what the preceding segment is. Having three separate rules written utterly fails to capture the generalization. We may formulate the general rule as follows:

(204) PALATALIZATION



i.e. /gia/ becomes /iya/ as per $1 \langle \rangle_1$. /yia/ becomes /ya/ as per $2 \langle \rangle_2$. Any other velar or apical consonant before /ia/ becomes the palatal counterpart, with subsequent deletion of /i/ as per $3 \langle \rangle_3$. All other consonants (palatals and labials) preceding /ia/, result in a /y/ inserted between the two vowels as per $4 \langle \rangle_4$.

As I previously stated, since the syllabicity metathesis process is now collapsed in the above rule, it must be ordered before GLIDE FRONTING. Thus the following statement of extrinsic ordering:

- (205) PALATALIZATION
 ↓
 GLIDE FRONTING

Alternatively we could include more features in the structural description of GLIDE FRONTING and avoid any ordering statements. That is, we could make the GLIDE FRONTING rule $g \rightarrow y / __ iC$, thereby blocking its application to a form like ir + N + tag + ia *he will burn himself*. Again, since I know of no generally accepted metric that dictates which is more costly (i.e. an extrinsic ordering statement versus added features in a rule), I leave the extrinsic ordering statement as it stands.

PALATALIZATION as now formulated must apply following EPENTHESIS. The following derivation illustrates the necessary feeding order:

- | | | |
|-------|---------------|---------------------------------|
| (206) | ir + oti + ia | 3PM + put in + REFLEXIVE/FUTURE |
| | ∅h | OPTIONAL PREFIX SPIRANTIZATION |
| | ++ | EPENTHESIS |
| | ɛ ∅ | PALATALIZATION |
| | hotiča | <i>he will get in</i> |

We must make a statement ordering these rules as well, as follows:

- (207) EPENTHESIS
 ↓
 PALATALIZATION

LENGTHENING

Two of the examples of REFLEXIVE/FUTURE given earlier occur with an unexplained geminate /ii/ cluster: inīiya *he will*

see himself and imiçiiya *he will peel himself*. In fact, in many cases following the palatal consonants we find geminate clusters, except, of course, in word-final position where they are never found. The following examples illustrate some of these derived geminate clusters following palatals:

(208)	no + č + ak + i	1P + enter + PERFECT + NON/FUTURE
	↓	
	nočaaki	<i>I have entered</i>
	no + miç + i + ro	1P + peel + FUTURE + 3PF
	↓	
	nomiçiiro	<i>I will peel it</i>
	no + ñ + i + ri	1P + see + NON/FUTURE + 3PM
	↓	
	noñiiri	<i>I saw him</i>
	no + parv + ak + i	1P + fall + PERFECT + NON/FUTURE
	↓	
	noparvaaki	<i>I have fallen</i>
	no + piy + ak + i + ro	1P + lose + PERFECT + NON/ FUTURE + 3PF
	↓	
	nopiyakiro	<i>I have lost it</i>

Note, however, that this lengthening applies only following the [+consonantal] segments, (i.e. not following /y/) as the final example in (208) illustrates.

We may further observe that the lengthening process may apply following segments derived by EPENTHESIS as seen in the following derivations:

(209)	no + N + t^{h} hipa + ia + ro	1P + FUTURE + accompany + REFLEXIVE/FUTURE + 3PF
	++	EPENTHESIS
	č ø	PALATALIZATION
		̄
		LABIALIZATION
	noN t^{h} hipačaāo	

no + N + č + piro + i	1P + FUTURE + enter + VERITY + FUTURE
+a+	EPENTHESIS
noŇčapiroti	<i>I really will enter (go all the way in)</i>

Note, however, that lengthening does not occur following every occurrence of a palatal, as demonstrated by the following:

(210) kačokaaŇhi	<i>to mix</i>
čiya	<i>palm (<u>ungurahui</u>)</i>
koŇapi	<i>poison root (<u>barbasco</u>)</i>
noyorvani	<i>my manioc worm</i>

The crucial difference between the forms where lengthening takes place and the others is the presence versus absence of a morpheme boundary. We must therefore formulate the rule of lengthening to include the morpheme boundary following the palatal. It is given as follows as a copy rule in transformational format for economy of features:

(211) LENGTHENING

$$\begin{array}{|l}
 +\text{consonantal} \\
 +\text{high} \\
 -\text{back}
 \end{array}
 + \begin{array}{cccc}
 [+syllabic] & [-syllabic] & + & 1 & 2 & 3 & 3 & 4 \\
 & & & 1 & & & & 4
 \end{array}$$

i.e. A vowel becomes a geminate cluster following a morpheme-final palatal consonant (except /y/) and preceding a consonant.

As demonstrated in (209) for forms such as noŇhipačaaŇo *I will accompany her*, LENGTHENING must apply to the output of EPENTHESIS and PALATALIZATION. Since the latter two have already been specified with an ordering statement, we specify as follows the ordering relationship PALATALIZATION and LENGTHENING exhibit:

(212) PALATALIZATION

↓

LENGTHENING

Another type of derivation also illustrates the necessity of the above feeding order. Consider the following REFLEXIVE/FUTURE forms which initiated our discussion of lengthening:

(213)	ir + miç + ia	3PM + peel + REFLEXIVE/FUTURE
	∅	PREFIX SEGMENT DELETION
	y	PALATALIZATION
	i	LENGTHENING
	imiçiiya	<i>he will peel himself</i>

An ordered relationship also exists between LENGTHENING and AFFRICATION. The following forms, which include the PROGRESSIVE aspect, undergo LENGTHENING whether or not the final consonant of PROGRESSIVE is /č/ or has been changed to /tʃ/ by AFFRICATION:

(214)	hotitačiiimi	<i>he will be putting you in</i>
	hotitačiiimi	<i>he is putting you in</i>
	hotitačiiiri	<i>he will be putting him in</i>
	hotitačiiiri	<i>he is putting him in</i>
	hotitačiiiro	<i>he will be putting her in</i>
	hotitačiiiro	<i>he is putting her in</i>

But a /tʃ/ derived by the rule of AFFRICATION from /t/, either underlying or epenthesized, does not affect the length of a following vowel, as the following forms indicate:

(215)	hotitšimi	<i>he put you in</i>
	hotitšimi	<i>he will put you in</i>
	hotitširi	<i>he put him in</i>
	hotitširi	<i>he will put him in</i>

hotiçiro	<i>he put her in</i>
hotitiro	<i>he will put her in</i>

If the structural description of LENGTHENING were generalized to include /ç/ as well, the above forms without PROGRESSIVE would be incorrectly geminated. Thus the means of lengthening the forms following the /ç/ of PROGRESSIVE without the /ç/ derived from /t/ is to order LENGTHENING before AFFRICATION, as follows:

(216) LENGTHENING
 ↓
 AFFRICATION

This assures the correct derivation illustrated below:

(217)	ir + oti + ač + i + mi	3PM + put in + PROGRESSIVE + NON/FUTURE + 2P
	øh	OPTIONAL PREFIX SPIRANTIZATION
	+t+	EPENTHESIS
	i	LENGTHENING
	ç	AFFRICATION
	hotitaçiiimi	<i>he was putting you in</i>

BACKING

The following alternations exhibit a derived morpheme-final palatal which does not cause lengthening of the following vowel:

(218)	kisaaNçhi	<i>to be angry</i>
	miçaaNçhi	<i>to peel fruit</i>
	nokisakiro	<i>I have been angry at her</i>
	nomiçaakiro	<i>I have peeled it</i>
	noNkiçiro	<i>I will be angry at her</i>
	nomiçiro	<i>I will peel it</i>

Since no cases of /s/ preceding /i/ at morpheme boundary occur, a rule is needed palatalizing it in that environment. Notice,

however, that the rule must follow LENGTHENING so that the vowel is not lengthened to derive the incorrect *noNkiçiro
I will be angry with her.

The only forms which undergo this process are verbs which have morpheme-final /s/. When these precede a vowel other than /i/, there is free variation with the glottal fricative as illustrated below:

- (219) pisaançhi (or) pihaançhi *clear brush*
 kisaançhi (or) kihaançhi *be angry*
 awisaaNçhi (or) awihaançhi *pass*

Forms such as paso *gourd* and iposi *fish (carachama)* confirm that the backing and palatalization occur only at morpheme boundary. The rule deriving the palatal and glottal fricatives from /s/ is formulated as follows:

(220) BACKING

$$\left[\begin{array}{l} \text{-consonantal} \\ \text{-sonorant} \\ \text{+continuant} \\ \text{-high} \end{array} \right] \text{OPTIONAL } \left\{ \begin{array}{l} \text{[+high]} \\ \text{<[-consonantal]>} \end{array} \right\} / \text{---} + \left\{ \begin{array}{l} \text{[+syllabic]} \\ \text{[+high]} \\ \text{[+syllabic]} \\ \text{[-high]} \end{array} \right\}$$

i.e. /s/ becomes /ç/ before morpheme boundary and /i/.
 /s/ optionally becomes /h/ before morpheme boundary and other vowels.

As previously stated, the rule is ordered following LENGTHENING as indicated by the following:

(221) LENGTHENING

↓

BACKING

CHAPTER VII
ADDITIONAL PHONOLOGICAL RULES

CLUSTER SIMPLIFICATION

It has been demonstrated that PREFIX SEGMENT DELETION (153) and related rules break up unacceptable consonant and vowel clusters preceding the stems. EPENTHESIS (170) and related processes break up unacceptable clusters in the verb suffixation. And PALATALIZATION (204) applies to the unacceptable sequence /ia/ whenever it is found, to break it up. However, outside of the scope of these processes there are still possible vowel clusters coming together at morpheme boundaries in the non-verb suffixation, which do not meet the surface structure constraints. Consider, for example, some nouns which have final underlying vowel clusters, occurring with the pluralizing DIMINUTIVE suffix -iriki which begins with a vowel:

(222)	saNpaa + iriki	→	saNpairiki
	balsa + DIMINUTIVE		<i>little balsas</i>
	ɸhiŋoo + iriki	→	ɸhiŋoiriki
	cane box + DIMINUTIVE		<i>little cane boxes</i>
	manii + iriki	→	maniiiriki
	ant (<u>izula</u>) + DIMINUTIVE		<i>little ants (<u>izula</u>)</i>
	no + pai + iriki	→	nopairiki
	1P + grey hair + DIMINUTIVE		<i>my little grey hairs</i>

To date, I have encountered no non-verb suffixes beginning with /a/ or /o/. And the suffixes in (222) do not pose any difficulty of analysis. A rule is simply needed deleting the second vowel of a cluster when an /i/ follows the cluster. Suffixes beginning

with /a/ or /o/ would necessarily behave differently since no surface clusters have this as a second vowel unless the cluster is geminate. Perhaps because of this surface constraint, no suffixes of the non-verb morphology ever begin with a back vowel. At any rate, we may formulate the present rule quite simply as follows:

(223) CLUSTER SIMPLIFICATION

[+syllabic] → ∅ / [+syllabic] ___ $\left[\begin{array}{l} +\text{syllabic} \\ +\text{high} \end{array} \right]$

i.e. The second vowel of a cluster is deleted before a high vowel.

Unless we considerably increase the complexity of the above rule with additional features and grammatical bracketing, it must be extrinsically ordered in relation to the other rules that break up clusters. So, for example, a verb such as ir + naa + i (3/PERSON/MASCULINE + chew + FUTURE) meets the structural description of CLUSTER SIMPLIFICATION. But the application of this would derive the incorrect surface form *inai. Instead, EPENTHESIS should apply first to give inaati *he will chew*. We must thus extrinsically order EPENTHESIS to precede CLUSTER SIMPLIFICATION.

Likewise, a form such as no + airi + ni (1/PERSON + 'bee + POSSESSIVE) would meet the structural description of CLUSTER SIMPLIFICATION to derive the incorrect *noiriti instead of nairiti *my bee* if it is applied before PREFIX SEGMENT DELETION. Again, it is possible to increase the complexity of CLUSTER SIMPLIFICATION so that it would not apply to the above form. The alternative is to extrinsically order PREFIX SEGMENT DELETION before it.

We may thus specify the following statement of rule order:

(224) { EPENTHESIS ,
 PREFIX SEGMENT DELETION }

↓

CLUSTER SIMPLIFICATION

REDUPLICATION

There is another process which interacts with the rules changing syllable structure, such as EPENTHESIS and PREFIX SEGMENT DELETION. By this productive process, verb stems are reduplicated to indicate some type of excessive action which may be roughly translated *more and more*.

Before formulating the rule, some discussion of the morphological derivation might be warranted. Since the reduplication appears to be triggered from the right bracket of the verb stem (i.e.]_{VERB}), a REDUPLICATION morpheme is generated by the MODAL as its initial constituent, i.e. occurring immediately following the verb stem (see MODALS in Chapter II). The rewrite rules translating purely grammatical functions such as REDUPLICATION into the phonological structure (to which readjustment rules and the phonological rules apply) assign it no underlying phonological structure (i.e. \emptyset). Thus the phonological rules dealing with REDUPLICATION have to make reference to its bracketing since there is no surface manifestation other than the actual results of the phonological rule itself.

There are actually two processes needed to derive the correct surface forms in (225). Consider first forms such as natanataWai *he has continued to carry more and more*. Comparing the INFINITIVE nataaNg *to carry*, we find a CV verb root. Since the reduplication rule likes to reduplicate CVCV verb roots, it adds an extra /ta/ syllable to a root like na.

Consider then the following examples of the reduplication process (where I = *I will continue to* ____, II = *I will continue to* __ *more and more*, III = *has continued to* __ *more and more*):

(225)

INFINITIVE	I	II	III	
čhikaanŋ ^{hi}	noNčhikawaiti	noNčhikačhikawaiti	čhikačhikawaitaki	<i>cut</i>
koŋaaŋ ^{hi}	noNkoŋawaiti	noNkoŋawoŋawaiti	koŋawoŋawaitaki	<i>search</i>
osaNpitaanŋ ^{hi}	nosaNpiŋawaiti	nosaNpisaNpiŋawaiti	osaNpisaNpiŋawaitaki	<i>ask</i>
oiriNkaaŋ ^{hi}	noiriNkawaiti	noiriNkarinKawaiti	oiriNkarinKawaitaki	<i>lower</i>
osaNkinataanŋ ^{hi}	nosaNkinawaiti	nosaNkinasaNkinawaiti	osaNkinasaNkinawaitaki	<i>write</i>
kaŋositaanŋ ^{hi}	noNkaŋosiŋaiča	noNkaŋosikaŋosiŋaiča	kaŋosikaŋosiŋaitaka	<i>bathe</i>
aminaaŋ ^{hi}	naminawaiti	naminaminawaiti	aminaminawaitaki	<i>look</i>
tasonkaaŋ ^{hi}	noNtasonkawaiti	noNtasonkatasoNkawaiti	tasonkatasoNkawaitaki	<i>fan</i>
apiitaanŋ ^{hi}	napiiŋawaiti	napiinapiiŋawaiti	apiiŋawaitaki	<i>repeat</i>
aasitaanŋ ^{hi}	naasiŋawaiti	naasinnaasiŋawaiti	aasi aasiŋawaitaki	<i>meet</i>
komataanŋ ^{hi}	noNkomawaiti	noNkomakomawaiti	komakomawaitaki	<i>paddle</i>
asitaanŋ ^{hi}	nasiŋawaiti	nasinasiwaiti	asi asiŋawaitaki	<i>cover</i>
ookaaŋ ^{hi}	nookawaiti	nookanookawaiti	ooka ookawaitaki	<i>abandon</i>
naataanŋ ^{hi}	nonaawaiti	nonaanonawaiti	naanaawaitaki	<i>chew</i>
nataanŋ ^{hi}	nonawaiti	nonanonawaiti	natanaatawaitaki	<i>carry</i>
akaaŋ ^{hi}	nakawaiti	nakanakawaiti	aka akawaitaki	<i>answer</i>
kiNtataanŋ ^{hi}	noNkiNtawaiti	noNkiNt'hakint'hawaiti	kiNt'hakint'hawaitaki	<i>tell</i>
agaaŋ ^{hi}	naawaiti	naanaawaiti	aa aawaitaki	<i>take</i>
aafikaanŋ ^{hi}	naafikawaiti	naafikaafikawaiti	aafikaafikawaitaki	<i>stop</i>
thaaNkitaanŋ ^{hi}	noNthaaNkiŋawaiti	noNthaaNki'haaNkiŋawaiti	thaaNki'haaNkiŋawaitaki	<i>hurry</i>
thotaanŋ ^{hi}	noNthowaiti	noNthonoNthowaiti	thotathotawaitaki	<i>kiss</i>

As the examples of reduplication indicate, the preferred form of reduplication utilizes the suffix -wai CONTINUATIVE for obvious semantic reasons. The reduplication can occur without this suffix, however (e.g. noNko^wako^watiro *I will look for more and more*).

We may observe that the process which adds a syllable to CV verbs is actually more productive than just for reduplication. Consider further inflectional forms of the verb na to carry:

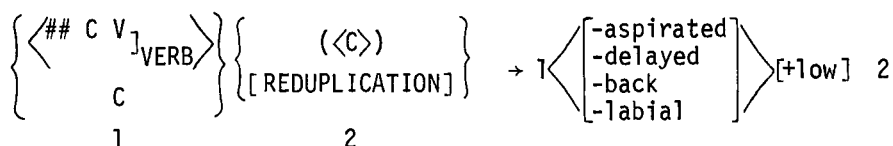
(226)	nonawaiti	<i>I will continue to carry</i>
	nonapiroti	<i>I will carry it well</i>
	natawaitaana ^h i	<i>to carry continually</i>
	natapirotaana ^h i	<i>to carry well</i>

It thus appears that any time a CV verb is preceded by word boundary and followed by a consonant-initial suffix, there is addition of a syllable /ta/ consisting of the unmarked consonant and unmarked vowel, appearing somewhat like a "double epenthesis." That this process cannot be collapsed into EPENTHESIS is demonstrated later.

A further function of this process in relation to reduplication is that it adds an /a/ to CVC verbs like ɕ^hik to cut, to give the preferred shape. In fact, all consonant-final verbs are given a final /a/ so that they meet the structural description of the main reduplication rule. This preliminary process to reduplication is formulated as follows:¹²

¹²For the rules of SYLLABLE ADDITION and REDUPLICATION, the common feature abbreviation C, V and N are used since no place or manner of articulation features are needed for the structural description of either rule.

(227) SYLLABLE ADDITION



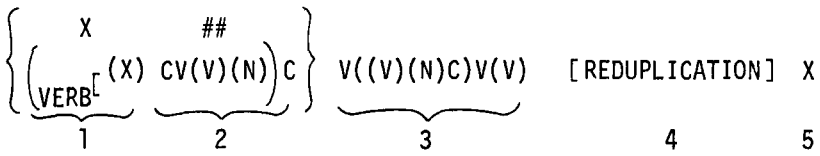
i.e. Preceding [REDUPLICATION] or a consonant, /ta/ is epenthesized if only a word initial CV is present. Otherwise, /a/ is inserted between C and [REDUPLICATION].

Now consider the formation of the rule which actually performs the reduplication. One of the most striking elements of Axininca reduplication is that it reduplicates a word boundary into some forms, but not into others. Preferring two-syllable verbs with initial consonants to reduplicate, it appears that in the absence of the initial consonant in VCV-type verb roots, the rule actually copies the word boundary.

For roots longer than two syllables, the rule reduplicates the antepenultimate syllable only if it has an initial consonant (e.g. as with kawosi *bathe* but not with osaNpi *ask*). Furthermore, while three-syllable roots may have all three syllables reduplicated (as with kawosi *bathe*), the rule will not reduplicate a PERSON prefix on a verb longer than two syllables (as with koma *paddle*). However, any PERSON prefix which, after PREFIX SEGMENT DELETION has applied, results in a two-syllable string with the verb root, may also be reduplicated with the verb. Thus the rule must specify that all segments to be reduplicated in a three-syllable string preceding [REDUPLICATION] are within the verb stem, so the rule in this expansion will have bracketing for the verb.

The reduplication process is formulated by the following rule:

(228) REDUPLICATION



→ 1 2 3 2 3 ∅ 5

i.e. Preceding [REDUPLICATION], a sequence of word boundary plus two syllables or two vowels is repeated. A three-syllable verb root (or longer) is repeated preceding [REDUPLICATION] if it has an initial consonant on its antepenult. Two syllables (or two vowels) preceded by a consonant are repeated when they precede [REDUPLICATION].

Consider the implications of the following derivations for the ordering relationships between REDUPLICATION and various other rules:

(229)

na + [REDUPLICATION] + wai + ak + i	carry + REDUPLICATION + CONTINUATIVE + PERFECT + NON/FUTURE
ta	SYLLABLE ADDITION
nata	REDUPLICATION
+t+	EPENTHESIS
natanatawaitaki	<i>he has continued to carry more and more</i>

no + N + ko \bar{w} + [REDUPLICATION] + i + ro	1P + FUTURE + search + REDUPLICATION + FUTURE + 3PF
a	SYLLABLE ADDITION
ko \bar{w} a	REDUPLICATION
+t+	EPENTHESIS
noNko \bar{w} ako \bar{w} atiro	<i>I will search for it more and more</i>
no + api + [REDUPLICATION] + \bar{w} ai + i	1P + repeat + REDUPLICATION + CONTINUATIVE + FUTURE
∅	PREFIX SEGMENT DELETION
n + api	REDUPLICATION
+t+	EPENTHESIS
napiinapi \bar{w} aiti	<i>I will continue to repeat more and more</i>

SYLLABLE ADDITION is obviously ordered before REDUPLICATION to derive the correct surface forms, as illustrated by the first example in (229) and the discussion preceding the formulation of SYLLABLE ADDITION. Therefore an ordering statement of the following sort is needed:

(230) SYLLABLE ADDITION

↓

REDUPLICATION

Though the first derivation in (229) utilizes the rule of EPENTHESIS, it does not illustrate the crucial ordering between that rule and REDUPLICATION or SYLLABLE ADDITION. The derivation of the second example does (i.e. *I will search for it more and more*). This form illustrates that at least SYLLABLE ADDITION must precede EPENTHESIS as it crucially feeds it. The derivation also dispels any thoughts we might have entertained about collapsing SYLLABLE ADDITION with EPENTHESIS, since this derivation demands SYLLABLE ADDITION preceding REDUPLICATION and

EPENTHESIS to yield the correct surface structure. So another ordering statement is therefore needed:

(231) SYLLABLE ADDITION

↓

EPENTHESIS

Finally, the third derivation in (229) (*I will continue to repeat more and more*) demonstrates a relationship between REDUPLICATION and PREFIX SEGMENT DELETION. We are thus compelled to order the latter rule before the former as indicated in the following statement:

(232) PREFIX SEGMENT DELETION

↓

REDUPLICATION

SUBJUNCTIVE LENGTHENING

In addition to the LENGTHENING rule which applies following the palatals, the SUBJUNCTIVE suffix, *-ta*, appears to geminate a single vowel preceding it. Consider the following alternations:

(233)	iNčaa ^w aitiita	<i>He might continue entering?</i>
	iNpa ^w aitiroota	<i>He might continue feeding her?</i>
	iNtho ^w aitiriita	<i>He might continue kissing him?</i>

The lengthening property is peculiar to the SUBJUNCTIVE. The same morphemes preceding the PLURAL suffix, *-ni*, exhibit no geminate vowels:

(234)	iNčaiyini	<i>They will enter.</i>
	iNpaiyironi	<i>They will feed her.</i>
	iNthotaiyirini	<i>They will kiss him.</i>

We are thus compelled to formulate a rule in which the structural description includes the bracketing for the SUBJUNCTIVE. It is

as follows:

(235) SUBJUNCTIVE LENGTHENING

$$[-\text{syllabic}] \left[\begin{array}{l} +\text{syllabic} \\ \alpha\text{back} \\ \beta\text{labial} \end{array} \right] \text{SUBJUNCTIVE} \rightarrow 1 \quad 2 \quad 2 \quad 3$$

1 2 3

i.e. A vowel becomes a geminate cluster following a consonant, when preceding SUBJUNCTIVE.

For a form such as iNĉaaŵaitiita *he might continue entering?* EPENTHESIS feeds SUBJUNCTIVE LENGTHENING, since the epenthesized /t/ is the [-syllabic] of the structural description of SUBJUNCTIVE LENGTHENING in the derivation of that form. We thus have the following ordering statement:

(236) EPENTHESIS

↓

SUBJUNCTIVE LENGTHENING

CONTRACTION

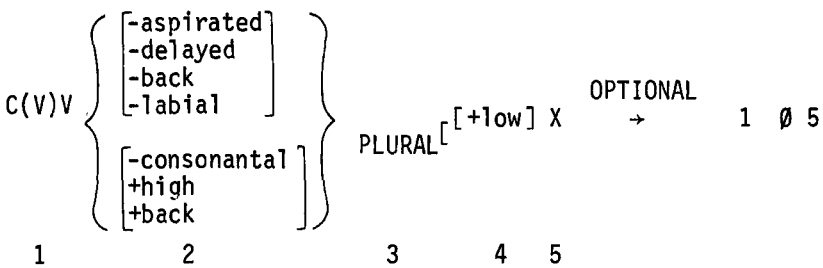
Concluding the set of phonological rules of Axininca is an optional contraction process which alters the syllable shapes of the PLURAL suffix, -aiy, in certain environments. Consider the following examples of the variation:

- | | | | |
|-------|----------------|-------------------|-----------------------------|
| (237) | iNpiyotaiyani | (or) iNpiyoiyani | <i>They will gather.</i> |
| | iNpisitaiyini | (or) iNpisiiyini | <i>They will sweep.</i> |
| | iNkomataiyini | (or) iNkomaiyini | <i>They will paddle.</i> |
| | hapiitaiyini | (or) hapiiyini | <i>They will repeat.</i> |
| | iNthamataiyini | (or) iNthamaiyini | <i>They will cultivate.</i> |
| | himagaiyini | (or) himaiyini | <i>They will sleep.</i> |
| | iNpakagaiyini | (or) iNpakaiyini | <i>They will finish.</i> |
| | himitagaiyini | (or) imitaiyini | <i>They will jump.</i> |
| | iNĉhikaiyini | but *iNĉhiiyini | <i>They will cut.</i> |

The first three examples in (237) illustrate that an epenthesized /t/ and the /a/ of the PLURAL suffix may optionally be deleted when the /t/ follows a single vowel. The following two show that when the epenthesized /t/ plus PLURAL follow a vowel cluster, the second vowel of the cluster may also be deleted. The next three examples similarly show that a verb-final /g/ and the /a/ of PLURAL optionally delete. But other verb-final consonants in the same environment may not be deleted as the final example illustrates.

Observe also that the PASSIVE suffix, -ai, has a similar phonological form to the PLURAL, but does not undergo a similar contraction: iNpisitaitiro *someone swept it* or *it was swept*, but not *iNpisiitiro. The rule will therefore either have to make reference to the final /y/ of the PLURAL suffix or to the bracketing. Since PLURAL is the only suffix exhibiting this phenomenon, and since a rule employing its bracketing would utilize less features than specifying the /iy/ of the suffix, bracketing will be utilized for the rule, which is formulated as follows:

(238) OPTIONAL PLURAL CONTRACTION



i.e. /t + a/ and /g + a/ are optionally deleted following C(V)V and preceding /iy/ of PLURAL.

OPTIONAL PLURAL CONTRACTION is fed by EPENTHESIS, since the /t/ in the structural description of the rule can only be derived by EPENTHESIS. That implies that the only root-final

/t/ which occurs follows /N/. Furthermore, an ordering of OPTIONAL PLURAL CONTRACTION before EPENTHESIS would yield incorrect derivations for the forms with verb stems ending in /g/. The following illustrates the incorrect derivation:

(239)	ir + mag + aiy + i + ni	3PM + sleep + PLURAL + FUTURE + PLURAL
	∅ ∅	OPTIONAL PLURAL CONTRACTION
	+t+	EPENTHESIS
	hi	OPTIONAL PREFIX SPIRANTIZATION
	*himatiyini	<i>they will sleep</i>

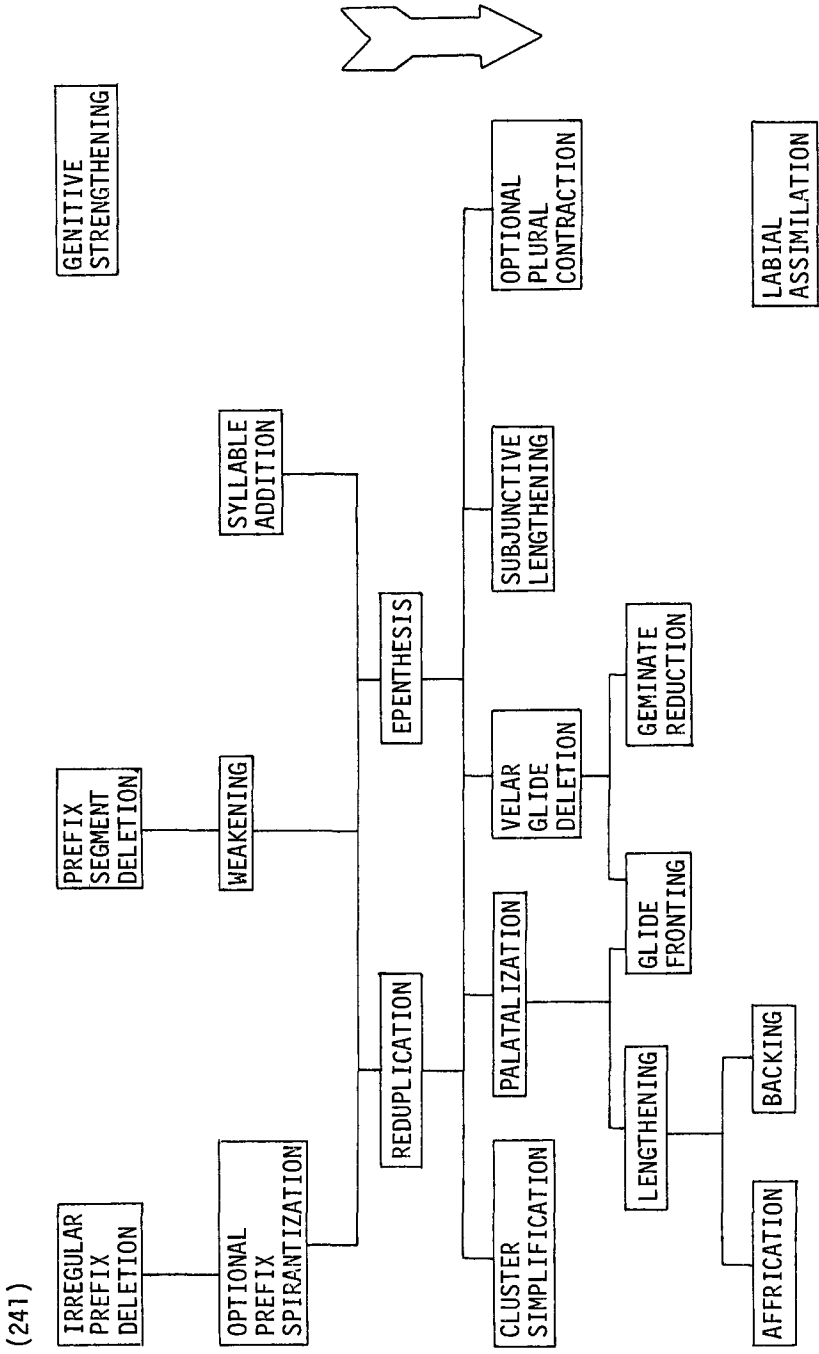
A correct ordering of the above would derive the true surface form himaiyini *they will sleep*. We must therefore specify the following order:

(240)	EPENTHESIS
	↓
	OPTIONAL PLURAL CONTRACTION

CHAPTER VIII
RULE ORDER

Nineteen phonological rules are needed to derive the surface representations of Axininca from the underlying representations posited. In addition to these rules, certain explicit statements of order of application of rules have been made, such that if these orders were reversed, incorrect derivations would occur with the rules formulated as they presently are. As previously noted, other systems of rule application have recently been advocated to replace the principle of extrinsic ordering. Accordingly we could adopt a principle such as simultaneous application (i.e. that rules apply only to underlying forms and that there are no intermediate stages of derivation) at the cost of greatly increasing the complexity of the rules. Alternatively we might observe that many of the ordering statements heretofore presented reflect feeding and counter-bleeding orders, suggestive of an intrinsic principle of maximal utilization of rules. Or we might note that many of the orders minimize opacity. There are, however, certain necessary orderings of rules which violate either of these generalizations. Since this is the case, and since none of the theories of intrinsic ordering has gained general acceptance, I present the rules of Axininca as a partially ordered set.

This does not imply that the native Axininca speaker has nineteen layers of phonological representation and derivation stored in his head. Many of the rules may apply in relation to each other without any order restrictions. Furthermore, when we compare the ordered relationships among the rules, the greatest degree of layering is six rules as the following chart indicates:



The six layers of ordering may be further illustrated in the following derivations where crucial orderings are indicated with arrows relating the rule titles:¹³

- (242) ir + piriNto + ni 3PM + pond/frog + POSSESSIVE
 Ø PREFIX SEGMENT DELETION
 w̄ ↓
 WEAKENING
 t GENITIVE STRENGTHENING
 iwiriNtoti *his pond frog*
- (243) ir + na + ač + i + ro 1P + carry + PROGRESSIVE +
 NON/FUTURE + 3PM
 Ø PREFIX SEGMENT DELETION
 +tt+ EPENTHESIS
 i LENGTHENING
 ↓
 č AFFRICATION
 inatačiro *he is carrying it*
- (244) no + N + kis + i + ro 1P + FUTURE + be/angry +
 FUTURE + 3PF
 ç LENGTHENING
 ↓
 BACKING
 noNkiçiro *I will be angry at her*
- (245)
 no + N + kaNt + [REDUPLICATION] + i + ro 1P + FUTURE + say +
 REDUPLICATION +
 FUTURE + 3PF
 a SYLLABLE ADDITION
 kaNta ↓
 (REDUPLICATION
) EPENTHESIS
 noNkaNtakaNtatiro *I will say to her
 more and more*

¹³Further examples of the application of each of the phonological rules and their ordered interaction may be found in Appendix C, SAMPLE DERIVATIONS.

- (246) o + o + p + [REDUPLICATION] + wai + ia + ro + ta
 Ø
 w̄
 a
 # # o + w̄a
 +t+
 č Ø
 a
 w̄
 o
 owa owa^{w̄}ai^čaa^{w̄}oota
- (247) no + o + piinka + [REDUPLICATION] + wai + i + ro
 Ø
 w̄
 wiinka
 +t+
 nowiinka^{w̄}iinka^{w̄}aitiro
- 3PF + causative + feed + REDUPLICATION + CONTINUATIVE + REFLEXIVE/FUTURE + 3PF + SUBJUNCTIVE
 PREFIX SEGMENT DELETION
 WEAKENING
 SYLLABLE ADDITION
 ↓
 REDUPLICATION
 EPENTHESIS
 ↓
 PALATALIZATION
 ↓
 LENGTHENING
 LABIAL ASSIMILATION
 SUBJUNCTIVE LENGTHENING
that she might feed her continually more and more
- 1P + causative + submerge + REDUPLICATION + CONTINUATIVE + FUTURE + 3PF
 PREFIX SEGMENT DELETION
 WEAKENING
 ↓
 REDUPLICATION
 EPENTHESIS
I will continually submerge it more and more

While the derivations illustrate the six layers by orderings needed in various individual derivations, no single derivation ever utilizes six ordered rules in a series. Thus in proposing the extrinsic ordering of Axininca phonological rules we are seemingly not committing too much of a load to the native speaker's competence. Furthermore, I do not intend to imply that the flow chart itself, as given in (241), necessarily represents a psychological reality. Even if extrinsic ordering has some kind of correlate in the mind of the speaker, the different tiers shown in the flow chart do not necessarily correspond to that reality, but are only suggestive of which rules are not crucially ordered with reference to one another, and which rules are.

Two observations (among many) might be made about the ordering of the rules. First, the preceding derivations bring out an interesting (and perhaps implicational) aspect of the particular order of rules in Axininca, namely that the necessary extrinsic ordering affects segment changes in a string almost always in a left to right order. That this is so is a result of the order of the rules applying to prefixes (e.g. PREFIX SEGMENT DELETION) before a rule applying to the initial segments of roots (e.g. WEAKENING), and the latter before a rule applying from the end of a stem (e.g. REDUPLICATION), and that before a rule applying after a root (e.g. EPENTHESIS), etc. This phenomenon is somewhat suggestive of a "selectric" principle such as that proposed by Cearley (1974). But, whereas Cearley proposed this sequencing of rules to apply to a string left-to-right, to account for phonetic rules (his "phonological" rules), in Axininca the rules suggesting this type of application are "deeper" than phonetic rules (i.e. his "morphological" rules). Moreover, if we rigorously try to apply such a principle to the rules herein proposed for Axininca (even with certain modifications) the principle fails to account for a counterfeeding

or opaque ordering such as EPENTHESIS to VELAR GLIDE DELETION in such derivations as ir + ag + ak + i + ro (3/PERSON/MASCULINE + take + PERFECT + NON/FUTURE + 3/PERSON/FEMININE), where the ordering prohibits EPENTHESIS from applying after /g/ is deleted. But it is precisely this type of derivation that constitutes the exceptional or problematic orderings of the proposed intrinsic ordering principles such as maximal utilization of rules or minimization of opacity as well.

The second observation is related to these immediately preceding comments. The mere extrinsic ordering of rules in this phonology has failed to distinguish among the different reasons why certain rules are ordered with relation to each other. It fails to capture the generalization that a large percentage of the rule-ordering statements would not be necessary in a random sequential or a minimization of opacity principled phonology. One wonders, however, if those distinctions are ever real ones in the competence of the native speaker. With the issue currently unresolved in the theory of phonology, we may leave it now in favor of more tangible aspects of the Axininca sound system.

CHAPTER IX
SURFACE REPRESENTATION

PHONETIC PROCESSES

If we compare a close phonetic transcription of one of the texts in Appendix A with the surface representation of the same, numerous discrepancies between the two are observable. Perhaps the most obvious ones could be characterized by the following approximations of a few of the phonetic rules of Axininca:¹⁴

- (248) $s \rightarrow \xi / _ i$
 $N \rightarrow m / _ p$
 $n / _ t, th, \phi, \phi^h, \xi, \xi^h$
 $\eta / _ k$
 $i \rightarrow \emptyset / \left\{ \begin{array}{l} \phi^h \\ s \end{array} \right\} _ C$
 $\bar{w} \rightarrow \beta / \left\{ \begin{array}{l} \# \\ i \end{array} \right\} _ i$

Furthermore, levels of stress and pitch would be recorded in a close phonetic transcription, but are not derived by any of the phonological rules herein proposed for Axininca. The question then arises as to why the phonological rules do not continue on to specify the observable phonetic variation of the language. What is our reason for stopping at this stage of derivation, or what is the significance of this proposed level of representation as distinct from a close phonetic transcription?

¹⁴The actual formulations of these and other phonetic rules, as well as stress placement in Axininca, are elaborated in Payne and Payne (to appear).

One of the major tenets of the theory of generative phonology from its nascent stages was that only two relevant or psychologically real levels of phonological representation exist, termed "systematic phonetic" and "systematic phonemic" in the standard theory as exemplified by Chomsky and Halle (1968). According to them, the phonetic representation is the output of the set of phonological rules and theoretically for the phonology of any language is related to a universal phonetics expressed in terms of distinctive features. The underlying or "systematic phonemic" representation is a level at which each morpheme of the language has a single representation, and the string of these as specified by the syntactic component is the input to the set of phonological rules. That there was no intermediate level of phonological representation such as the autonomous or taxonomic phonemic, characterized by the constraint of biuniqueness, was advocated in the early development of the theory; and few phonologists advocate a return to this constraint.

Nonetheless, as Schane (1971:519-20) pointedly observed, most generative descriptions of languages derived a "systematic phonetic" representation which looked more like an autonomous phonemic level than one that could be plugged in to universal phonetics. Schane thus questions whether the surface contrast of a language does play a more significant role in the theory than generative theory previously assumed. He cites a number of examples of phonological changes which are problematic without the notion of surface contrast but advocates no actual intermediate level of representation corresponding to this. More recently, Anderson (1974) has argued that, even though we may distinguish between phonetic rules, morphophonemic rules and morpholexical rules (i.e. those phonological changes making reference to specific morphemes or classes), the mixing of these in phonology precludes any intermediate stage of derivation.

On the other hand, Wang (1968:707) argues that there must be some intermediate level recognizing the surface contrasts which has psychological reality. An intermediate "natural phonemic level" of representation has also been advocated by Stampe (1969 and 1973), particularly as characterized by Rhodes (1974), based on studies of child language acquisition.

Thus within the field of phonology, there is no consensus as to whether any intermediate level of phonological representation exists. Several kinds of objective evidence may be invoked to resolve the question. Accordingly we find Schane (1971) using evidence from language change as an indication of the reality of surface contrast and Stampe's (1969 and 1973) use of child language acquisition. While these kinds of evidence may be useful in demonstrating a psychologically real distinction between morphophonemic and phonetic rules, it is uncertain whether they actually attest a real intermediate level of representation. And given the kinds of rule interaction discussed by Anderson (1974), we might consider this as evidence against such a level, though his evidence is internal (i.e. based on the formulation and interaction of the rules themselves, together with the observable phonetics and alternations) and as such not as pointed as the external evidence from child language acquisition and diachronic phonology.

PSYCHOLOGICAL REALITY AND ORTHOGRAPHY

One different type of external evidence is the reaction of native speakers to an actual written representation of their language. Sapir's (1933) observations on the reaction of informants from various North American Indian languages to a written form of their language are precisely evidence of this sort. Along the same lines is the native reaction to orthography attested in Gudschinsky (1958), Gudschinsky and Popovitch (1970), and Shand (1972).

Alongside these, observe the claims of Pike (1947:57) regarding the autonomous phonemic level of representation.

...a practical orthography is phonemic. It has one and only one symbol for each sound unit. These the native soon learns to recognize. He needs no "extra" symbols which correspond to sub-units in his language.

In contrast to this is the following claim from Chomsky and Halle (1968:49): "Except for unpredictable variants (e.g. man - men, buy - bought), an optimal orthography would have one representation for each lexical entry."

Though the claim that a phonemic level (i.e. one characterized by biuniqueness) is a psychologically real level of representation was flatly rejected by most generative phonologists, it is safe to say that this is a valid observation about the least degree of abstraction that might characterize such a level. For example, for a language with no phonological alternations and no surface neutralizations of contrast in any environment, but one which did have some allophonic rules, a claim that the phonemic level characterized by biuniqueness is a psychologically real level of phonological representation would be generally accepted. Furthermore, that an optimal practical orthography of the language would parallel this level of representation should be equally obvious. We may thus conclude that an autonomous phonemic level would be the least abstract of the conceivable psychologically real phonological representations which are more abstract than the phonetic.

The well-known Russian voicing and German devoicing examples have often been given as evidence that the "real" level is not the autonomous phonemic level, since the convention of biuniqueness results in a loss of generality in these cases. But this again is internal evidence. Furthermore, the claim that the orthographies of Russian and German may be used as external evidence of the nature of this level is unsound, since these conventional orthographies, based on older stages of the

languages, are not synchronic. Moreover, the native reaction of a literate speaker given as evidence for a level of phonological representation is immediately suspect. There would be no way of knowing whether the speaker was reacting naively or based on his acquired knowledge of his alphabet.

The material presented by Sapir (1933), Gudschinsky (1958), Shand (1972), and Gudschinsky and Popovitch (1970) gives better cases of external evidence of the sort I have been discussing. Unsurprisingly, we find that in each case except the last an orthography corresponding to a level of phonological representation somewhat more abstract than the autonomous phonemic is necessitated by previously illiterate native speakers' reaction. In the last case, Gudschinsky and Popovitch stretch the theory of autonomous phonemics to the point of making vowels allophones of consonants. What appears to be happening in the Maxakalí data is a simple case of deletion. Since neutralizing deletion is not normally allowed by the autonomous phonemic theory, we thus find the unusual allophonic rule proposed by Gudschinsky and Popovitch.

Chomsky and Halle's claims about the relationship between the systematic phonemic level and English orthography are likewise incapable of being proven. Literate speakers of English would undoubtedly be influenced by their knowledge of English orthography in any kind of native reaction to a level of representation similar to that which Sapir and the others noted. And I know of no external evidence of this sort demonstrating that an optimal orthography parallels a systematic phonemic representation. The examples from Sapir and the others only show that the level of this sort is more abstract than the autonomous phonemic, and not that it is the systematic phonemic.

For the Axininca data presented here, we have some external evidence similar to the kind given by Sapir and the others discussed above. For a previously unwritten language such as this, there is no influence from knowledge of a conventional

orthography that would interfere with native reaction to a level of phonological representation. I may thus consider the naive reactions of my principle informant, Jorge Sánchez, to a written representation of his language as valuable external evidence to the nature of a phonological representation.

There are unfortunately some complicating factors such as interference from Jorge's literacy in Spanish. Also, the conditions under which a possible written representation of Axininca was presented to Jorge were not of the "controlled" quality that good experimental phonology demands. Nevertheless, his reactions, and in particular his spelling errors or lack of them in the early stages of learning to write his language are quite valuable as such external evidence for phonological representation.

Consider for example, Jorge's writing of /N/, the unspecified nasal consonant proposed for the underlying representation. Jorge was first taught to write "n" before "t" wherever it occurred, as in "pirinto" *pond frog*.¹⁵ He was also taught to write "m" and "n" as in "mapi" *rock* and "ana" *black dye*. Whenever Jorge wrote the /N/ before /p/, he wrote it with an "n" instead of with an "m", e.g. "inpoqui" *he will come* for [i^mpoki]. When he was later taught to write "m" before "p" (as it would be in Spanish) he changed to consistently writing "m" before "t" as well, as in "pirimto" for *pond frog*. We may thus take this as evidence that at some underlying level these syllable-final nasals are a single segment, not derived from the syllable-initial nasals which are specified for place of articulation. The fact that he wrote this consonant with "n" and then later with equal facility wrote the same letter as "m" in all environments I take to be

¹⁵ Hereafter an orthographic representation or spelling convention is placed in quotes to distinguish it from a phonological representation.

compelling evidence that this nasal should be unspecified for place of articulation.

Another example is Jorge's inconsistency in writing "i" and "e". From his knowledge of Spanish orthography, he would be perfectly set up to write two contrasting front vowels in Axininca if they were both needed. Related dialects of Campa do have the contrast; and as presented in the earlier discussion of AFFRICATION (198), a possible, though highly abstract, solution for the alternations preceding the NON/FUTURE and INTERRUPTIVE suffixes would be to posit an underlying contrast between /i/ and /e/ which later undergoes absolute neutralization. In addition, there are phonetic occurrences of [ɨ] which are quite close to the Spanish vowel "e" in certain environments. Jorge was taught to orthographically distinguish "i" and "e" in words where the phonetic [i] and [ɨ] occur ([pito] as "pito" *monkey* (*musumuqui*) and [hiro] as "jero" *monkey* (*huapo*)) to pattern after Spanish orthography wherever possible.

In writing, however, he soon became inconsistent, with regard to the two vowels, writing the same word with "i" on one occasion and a few minutes later with "e" and sometimes writing "i" where [ɨ] occurs and "e" where [i] occurs. When I suggested that he write only "i", he readily accepted the suggestion and has had no difficulty reading the vowel or writing it consistently since that time. Not only do I take this as evidence against an abstract absolute neutralization solution to the affrication problem, it is evidence that the several phonetic front vowels are the same segment at an underlying level.

These two cases of native reaction to orthography give us some insight into the nature of a psychologically real level of representation for Axininca. But taken by themselves they certainly do not point to an intermediate level of representation distinct from the underlying level. Consider, however, the evidence related to different types of vowel deletion in Axininca.

The alternations of PERSON prefixes show a process of vowel deletion as formulated by the rule PREFIX SEGMENT DELETION (153). In addition to this there are underlying vowel clusters arising from noun suffixation which undergo a deletion as the rule of CLUSTER SIMPLIFICATION (223) specifies. And finally, we have observed that in word-final position a geminate cluster is reduced to a single vowel, also a kind of deletion (see the rule of GEMINATE REDUCTION (185)).

Aside from these phonological processes, there is a rule which deletes the vowel /i/ when it follows /ɸh/ or /s/ preceding another consonant in words longer than two syllables as the following examples illustrate:¹⁶

- | | | | |
|-------|----------|-----------|-----------------------------|
| (249) | [pišro] | /pisiro/ | <i>small toucan</i> |
| | [ɸhraka] | /ɸhiraka/ | <i>yellow-breasted bird</i> |
| | [iɸhki] | /iɸhiki/ | <i>wild fruit</i> |
| | [škiri] | /sikiri/ | <i>gnat</i> |

Even in slow speech or pronounced in isolation, the vowels are deleted as the above transcriptions indicate. In fact the only time the vowels are ever pronounced is when I have Jorge say the words syllable-by-syllable with a break between each syllable, a process I had taught him to do with unequivocal CVCVCV nouns. Furthermore, often in these exaggerated syllable-by-syllable articulations the vowels would still be absent. Thus the deletion process in question is not merely a fast speech rule.

Jorge's spellings of words undergoing each of these deletion processes is quite significant. Most of his initial drilling in spelling words were with unequivocal CV patterns such as [mapi] /mapi/ *rock* which by any rational phonological analysis imaginable would have the same underlying representation as its surface representation.

¹⁶The phonetic rule $s \rightarrow \text{ʃ} / ___ i$ is not particularly relevant here though the transcriptions indicate its application.

Words which undergo PREFIX SEGMENT DELETION Jorge consistently spells without the deleted vowel. For example, for no + mapi + ni *my rock* he writes "nomapini" but for no + ana + ni *my black dye* he writes "nanani". His preferred orthography thus resembles a surface representation for these forms.

He also consistently spells words which undergo CLUSTER SIMPLIFICATION and GEMINATE REDUCTION without the deleted vowels. For example, for no + pai *my grey hair* he writes "nopai", but for no + pai + iriki *my little grey hair* he writes "nopairiki". Also for no + mapaa + ni *my tree (zapote)* he writes "nomapaati", but for mapaa *tree (zapote)* he writes "mapa". Thus for these deletion processes as well, his preferred orthography resembles a surface representation rather than an underlying one.

However, for the forms which undergo the deletion of a vowel between /ç^h/ or /s/ and a consonant, Jorge always writes the deleted vowel in his spellings. Thus for [ç^hraka] *yellow-breasted bird* he writes "tsiraca" and for [iç^hki] *wild fruit* he writes "itsiki", and similarly for all the forms of the language which undergo this deletion. I have never observed him spelling one of these forms without the /i/. So in contrast to the other types of deletion, Jorge's preferred orthography in this case more closely parallels an underlying form.

Within a theory which allows only an underlying level of representation and a phonetic level, I know of no way of explaining this phenomenon. If, on the other hand, we allow for a psychologically real level of representation between the underlying level and a close phonetic transcription (or whatever will plug in to a universal phonetics), the phenomenon makes perfect sense. Accordingly, phonological (or morphophonemic) rules apply to the underlying representation to derive the intermediate level which is the one optimally suited for orthography. This representation then serves as the input to the phonetic (or allophonic) rules which derive the phonetic representation.

Thus of the rules of Axininca I am positing two classes: the phonological (or morphophonemic) rules and the phonetic (or allophonic) ones. In Jorge's preferred orthography is represented the output of all the phonological rules formulated in Chapters IV to VII. For example, as derived by the WEAKENING rule (145), Jorge consistently writes "novasoni" for no + paso + ni *my gourd* ("v" being the closest Spanish symbol to Axininca /w/); and he writes "noyimini" for no + kimi + ni *my squash*. Likewise, corresponding to the rule of LABIAL ASSIMILATION (147), Jorge consistently writes "antavo" for aNta + ro *large (feminine or inanimate)* as the output of this rule would derive.

Conversely, for a rule which lowers /i/ between /h/ and /r/, Jorge's preferred orthography represents the "i" and not an "e". Thus he consistently writes "jiro" *monkey (huapo)* corresponding to hiro as the input to the phonetic lowering rule. Likewise he writes the vowels of the postsibilant deletion rule corresponding to their presence in the proposed intermediate level of representation, and similarly for each of the phonetic rules formulated in Payne and Payne (to appear).

Thus, for Axininca the surface contrasts are those segments which are necessary to distinguish lexical and grammatical items at the surface level. Those segments are the same as the underlying segments as represented in the articulatory chart (100) and distinctive feature matrix (101). The phonological rules either delete, epenthesize, or convert one underlying segment to another underlying one. Phonetic rules, on the other hand, derive a number of allophones not specified in the charts.

It is also worth mentioning here that the suprasegmental phenomena of stress and pitch (as described by Payne and Payne) are phonetic rather than phonological rules in Axininca. Accordingly, Jorge has no inclination to represent any stress in the orthography though the precedent from Spanish would certainly make such a representation available if it were contrastive at a

lexical or grammatical level. Nor is stress introduced by a cycle or rules with grammatical environments. Instead the stress phenomena are predictable based on surface syllable and word shape and a scale of syllable strength versus weakness.

Throughout this study I have referred to the intermediate level as a surface representation, and in contrast to the underlying morphophonemic representation that is what it is. But the term thus used is somewhat of a misnomer since it has been used by others to refer to a phonetic representation (though as Schane (1971) observed, it has usually been less abstract than that in most generative descriptions). In this description I have always used the term "phonetic transcription" or "phonetic level" to refer to this level.

Perhaps a more appropriate term for what I have called the surface level is the more traditional "phonemic", as long as it is clear that this does not imply a biuniqueness criterion. The evidence from Sapir, Gudschinsky and Shand clearly indicates that biuniqueness is not the true generalization about this level. But I suspect that the level will rarely be a great deal more abstract than that. In Axininca the surface or phonemic level happens to be biunique, although I certainly was not aiming for that when I began the analysis. Furthermore, I suspect that most autonomous phonemic analyses utilizing a biuniqueness criterion would make the syllable-final nasals in Axininca to be allophones of the corresponding syllable-initial nasals in that they are phonetically homorganic to the following obstruent.

PREVIOUS PHONEMIC STATEMENTS OF AXININCA

That is exactly what Heitzman's (1973 and 1975) preliminary analysis of the Campa of Puerto Davis (i.e. Axininca) did. Accordingly, she posits the following phonemes for the language (1973.7): /p, t, k, t^h, č, b, s, š, h, m, n, r, y, i, e,

a, o/. That an initial approximation of an autonomous phonemic analysis of this dialect, based on a word list of 262 entries, should miss a few subtle contrasts is quite understandable. Heitzman's purpose was not a thorough analysis of Axininca phonology, but rather a broad comparative sketch incorporating many dialects of Campa. Subsequent to her (1975) studies (which were actually done much earlier, and presented at the 1970 International Congress of Americanists), she discovered the aspiration contrast involving the affricates in Pichis Asheninca (Allene Heitzman, personal communication) which, even after eight months of field work in Axininca, I often have difficulty hearing.

Also missing from the above inventory is /g/. The /b/ (i.e. [β]) in the above list is an allophone of /w/, treated in my description as a glide because of its relationship to the labial vowel in the rule of LABIAL ASSIMILATION (147) and its patterning with /y/ in WEAKENING (145).

The absence of /ñ/ and /rʲ/ from Heitzman's inventory reflects a differing segmentation. That the above are interpreted as single segments rather than a sequence in Axininca follows from three kinds of evidence: distributional phonetic, morphophonemic patterning, and morphological.

The distributional evidence is found in forms such as iNparYaati *he will fall again* which if the /rʲ/ were interpreted as /ri/ (CV), would yield the only three vowel clusters in the language; likewise for the /ñ/ as /ni/.

The morphophonemic evidence is seen from such rules as PALATALIZATION (204) and EPENTHESIS (170). That kiri + a *palm fruit drink* becomes kirya involves a general rule deriving palatals from apicals. This pattern would be broken only in these two cases if the consonants were segmented as /ri/ and /ni/. Furthermore, a form such as ir + parʲ + ak + i *he has fallen* is regular with regard to EPENTHESIS. If the verb root were pari as a CV segmentation would dictate, we would have difficulty

explaining why EPENTHESIS of a /t/ does not occur between the /i/ of the root and the /a/ of PERFECT.

The morphological evidence is that a form like korva *manioc worm* behaves like a two-vowel root by taking the -ni alternation of POSSESSIVE (i.e. noyoryani *my manioc worm*). Again a CV interpretation in this case (i.e. korja) would be the single type of exception to the otherwise regular alternation of POSSESSIVE as derived by the rule of GENITIVE STRENGTHENING (163).

The /s/ and /ʃ/ contrast actually involved a palatal fricative /ç/ for the latter. [ʃ] is then the allophone of the /s/ before the high front /i/, and both phonemes have complete distribution before the vowels.

Anderson's (1976.2) "linguistic impressions" of Axininca cited in Chapter I are also intended to be very tentative. He was, however, extremely close to recognizing the loss of the contrast between /i/ and /e/ in this dialect. His comments on /g/'s limited distribution and the morphophonemic derivation of /r/ are also quite near the point. The distributional limitation of the apical and alveopalatal obstruents, he notes, hinge on the front vowel contrast. Since there is none, all four of those consonants do, in reality, occur before /i/. His statement "Wherever one would expect /tea/, we find a palatalized voiced 'ch' followed by 'a'" is of course the more general PALATALIZATION rule (204).

CHAPTER X
SUMMARY AND CONCLUDING REMARKS

In this chapter I restate the rules specifying the structure of the word, which were scattered throughout Chapter II. This is followed by a list of the various constraints on the inflectional morphology. After this the list of phonological rules is given, followed by the surface structure constraints on phonology. In presenting the entire scope of the study in one section, the phonological and grammatical structure of the Axininca word is more readily apparent.

WORD-STRUCTURE RULES:

Flow chart of major constituents of the word (16)

QUALIFIER	→	(PLURAL) (SUBORDINATE) (MOOD)	(24)
AUXILIARY	→	(ASPECT) TENSE (CLIMAX) (OBJECT)	(39)
NON/FINITE	→	{ STATIVE INFINITIVE }	(36)
POSTPOSITION	→	(VERITY) (COMPARATIVE) (DIMINUTIVE) (LOCATION) (PLURAL)	(81)
GENITIVE	→	(NON/POSSESSIVE) (CLASSIFICATORY) (VOCATIVE) (POSSESSIVE)	(83)
SUBORDINATE	→	{ RELATIVE ADVERBIAL }	(29)
MOOD	→	{ INDEFINITE SUBJUNCTIVE EMPHATIC EXCLAMATORY DUBITATIVE }	(30)

- MODAL → { PARTICIPANT
TIME
PURPOSIVE
MANNER
DIRECTION } (59)
- PARTICIPANT → { DATIVE
REFERENTIAL
PASSIVE
RECIPROCAL
CAUSATIVE
PLURAL
BENEFACTIVE } (60)
- TIME → { EARLY
HABITUAL
REPETITIVE
CONTINUATIVE } (68)
- PURPOSIVE → { REASON
PURPOSE } (70)
- MANNER → { REDUPLICATION
VERITY
DISTRIBUTIVE
FRUSTRATIVE
INTERRUPTIVE
AFFECTIONATE
RAPID
RESOLVED } (72)
- DIRECTION → { ARRIVAL
DEPARTURE
THERE/AND/BACK
RECEIVING } (79)
- ASPECT → { PERFECT
PROGRESSIVE } (40)
- TENSE → [± FUTURE
± REFLEXIVE] (44)
- OBJECT → PERSON PERSON
[3/PERSON] (48)
- POSSESSIVE → { NORMAL (unmarked)
[RI POSSESSIVE]
[∅ POSSESSIVE] } (85)
- PERSON → { 1/PERSON
2/PERSON
3/PERSON
1/PERSON/INCLUSIVE } (49)

- 3/PERSON → [±MASCULINE] (49)
 VERB → [0, 1, 2 TRANSITIVE] (20)
 [±SPANISH LOAN]
 NOUN → [±POSSESSED] (21, 23)
 [±KINSHIP]
 [±SPANISH LOAN]

MORPHOLOGICAL CONSTRAINTS:

- PLURAL CONSTRAINT (26)
 REFLEXIVE CONSTRAINT (45)
 1/PERSON/INCLUSIVE CONSTRAINT (57)
 TRANSITIVE CONSTRAINT (58)
 PASSIVE CONSTRAINT (64)
 TRANSITIVITY ADJUSTMENT (67)
 REFLEXIVITY ADJUSTMENT (75)
 GENITIVE CONSTRAINT (84)
 KINSHIP CONSTRAINT (94)
 SPANISH/LOAN CONSTRAINT (95)

PHONOLOGICAL RULES:

- IRREGULAR PREFIX DELETION (156)
 PREFIX SEGMENT DELETION (153)
 OPTIONAL PREFIX SPIRANTIZATION (134)
 WEAKENING (145)
 GENITIVE STRENGTHENING (163)
 SYLLABLE ADDITION (227)
 REDUPLICATION (228)
 EPENTHESIS (170)
 PALATALIZATION (204)
 VELAR GLIDE DELETION (179)
 CLUSTER SIMPLIFICATION (223)
 SUBJUNCTIVE LENGTHENING (235)
 OPTIONAL PLURAL CONTRACTION (238)

LENGTHENING (211)
GLIDE FRONTING (180)
GEMINATE REDUCTION (185)
AFFRICATION (198)
BACKING (220)
LABIAL ASSIMILATION (147)

SURFACE PHONOLOGICAL CONSTRAINTS:

WORD-STRUCTURE CONSTRAINT (103)
SYLLABLE-STRUCTURE CONSTRAINT (107)
VELAR GLIDE CONSTRAINT (110)
UNSPECIFIED NASAL CONSTRAINT (111)
VOWEL CO-OCCURRENCE CONSTRAINT (112)
WORD-INITIAL CONSTRAINT (114)
INTERVOCALIC CONSTRAINT (115)
WORD-FINAL CONSTRAINT (117)

Two components are missing from the above outline, which are necessary to generate Axininca structures from the word level to the surface (phonemic) representation. One is a specification of the order of application of the phonological rules. Though the above order is one of many possible arrangements which would derive the correct surface structures, the flow chart (241) presented in Chapter VIII is a more accurate (though not exhaustive) representation of ordered relationships among rules.

The other missing component is the lexicon, which would specify the input to the phonological rules by giving a phonological substance to the output of the word-structure rules and constraints. An informal sampling of lexical items is given in Appendix D in three parts: first, a brief illustrative sample of some words of the major classes; second, the affixes of the inflectional morphology; and finally, a word list.

APPENDIX A

TEXTS

For the purpose of exemplifying the preceding morphology and phonology of Axininca, nine texts composed by Jorge Sanchez are included here. Each text is given an underlying representation and a surface (phonemic) representation. In addition there are morpheme by morpheme glosses and free English translations for each.

In the morpheme by morpheme gloss, affixes of the inflectional morphology are written in all capital letters as in the preceding chapters. Words of the major classes (NOUNS, VERBS, and ADVERBS) are written in lower case as are derivational affixes. Three spaces separate words, pluses separate morphemes, and slashes separate several English words used as a gloss for a single morpheme. Abbreviations are utilized for the person markers in the texts as follows: 1P for 1/PERSON, 2P for 2/PERSON, 3PM for 3/PERSON/MASCULINE, 3PF for 3/PERSON/FEMININE, 1PI for 1/PERSON/INCLUSIVE.

The nine texts were selected to include as varied morphological and phonological data as possible. The first text, CANOE, is a third person narrative encompassing past, present, and future. The second, HOUSE, is a first person future narrative and procedural discourse. The third, BEETLE, is a legend. The fourth, CONVERSATION, is primarily dialogue between four characters. The fifth text, PADDLE, is a first person plural inclusive procedural discourse. The final four texts, WILD BOAR, MONKEY, LAND BIRD, and RED BIRD, are brief descriptions.

PHONEMIC REPRESENTATION

CANOE

(1) naaka noNkiNkithatakotiri apa (2) apa ti
 isaiki ipaNkoki (3) hiyaatagi boWinsanaki (4) haminaatiro
 ipito iNChikaatiro (5) hiyaataiyanakini paWacChori igimanaki
 irirori opoŋaanaka naana (6) ari himaiyini aNtamiki (7)
 pairani iChikaWitaWō haNtaWaitaNtari aaWana (8) ti ithoN-
 kiro ositoWanaki iraaWanati (9) hookasitanakaWō ipito (10)
 iroŋaakarika haminaatiro iNChikaatiro (11) iroŋaaka hiyaa-
 tanaki (12) oŋaatamani iNChikapakiro (13) pasini oŋaata-
 mani arika iNthoNkakiro ghiriniitiini iNpokai (14) tomiN-
 koki raasiti sision (15) ari iNpiyoiyačaanani maaWoni (16)
 arika raasitaki sision (17) oitarika inkiNkithatakotiri
 (18) iroohaagi iNpiyaNtanaiyari (19) iNpakaakirorika iNkiN-
 kithaWaiti (20) iNkaNtanakiri pasinipaini (21) thami pino-
 sikakotina nopito (22) arika pinosikakotakitina (23) noN-
 pokapaačirika haka (24) ti ayootakoğiri apa (25) oita-
 rika haNtiri o haNtači eskuera (26) kimitaka eskuera
 iroŋaaka ti opaNtaWō (27) ari okaagi iroŋaaka

HOUSE

(1) iroŋaaka noNkiNkithatakotiro naakotiro nopaNko
 (2) noniNgi noWiğhiki nopaNko (3) kimitaka veintiseiski
 naminiro noWiğhiki nopaNko (4) naakiti kiğhiroini iNChā-
 paNki omirikipaNki (5) oNpoŋaača naakiti ghironpitha
 nosirikaNčaaWori (6) namairika ghironpitha nosirikapairo
 (7) oNpoŋaača noNğisiWirai kaNpona (8) nohotaNčaaWori
 moğikirosi (9) noNthoNkakiroirika noNğisiWirairo maaWoni
 (10) namairorika nohotapairo (11) oNpoŋaača nayi moğiki-
 rosi (12) naakirika moğikirosi namairo (13) noNkağhiya-
 paio (14) noNthoNkakiroirika maaWoni noNkağhiyiro oNpoŋaača
 nosirikanaki (15) nosirikakirika arika noNthoNkakiro nosi-
 rikiro maaWoni (16) oNpoŋaača naakiti koNpirosi (17)

noNpasikirori hinoki otaNtāwasiki (18) noNthoNkakhirorika
 noNpasikiro (19) oNpoñāača nōwapiNti mapiki kaNđiriki (20)
 đhikarika oNkaati nōwapiNtakiri (21) kimitaka treinta kaN-
 điriki iirorika kapičhiini (22) oNpoñāača noNthoNkakhirorika
 maāwoni (23) naakiti kaNpona (24) noNpoNkakiro nayiri
 nomiNkotaki (25) nothoNkakhirorika o iirorika nothoNkiđhi-
 tāwō thaaNkiini (26) ariitapaačaarika kasiri niyaataNčaari
 yarinaaki nookasitanačāāwō (27) napiitapairo paata (28)
 naakarika pokāđi yarinaaki (29) noNpiyapaakirika kimitaka
 ari noNthoNkapiro (30) ari okāđi noNkiNkithāwaiđi

BEETLE (MAGGOT FLY)

(1) noNkiNkithatakotiri đīwiito (2) ikaNta pairani
 đīwiito hiyaati haasiNtotaNti (3) hađi hiyāđi hiyāđi
 sitōwapaaki paNkođhiki (sopirik) (4) w̄ithataNtapaaka kitai-
 tirīwi koNki (5) kitaitirīwi iyoini (6) kitaitirīwi ani
 (7) opoñāaaka đīwiito ikaNđi koNki (8) nopoki nosiritāwō
 pisiNto (9) ari đimađhi kōwakōwāwaitaki oNđhipača (10)
 opoñāaaka đīwiito iniNtapaaki apaani đhinani (11) ikamitaN-
 takiro haakiro đimapaaki iina (12) opoñāaaka iraniripaini
 ikaNđiri (13) ani thamiča osagaaNtakiti maaNkoyi (14)
 thami (15) hataiyanakini (16) hiyāđi hiyāđi (17) arii-
 taaka isaikira maaNkoyi (18) ikiyakotapaakiri (đhik đhik
 đhik) (19) iñaakiro imo (20) hosagaaNtakiri (21) hosa-
 gaaNđiri hosagaaNđiri (22) ađhikaki (23) hōwāwaitaiyani
 hōwāwaitaiyani (24) ipakaakiri hōwāwaitaiyani (25) ikaN-
 takiri iraniri (26) ani thami osagaaNti (27) aanairi
 paNkođhiki (28) opoñāaaka haaki đhipana (29) ikađhikōīwā-
 natakiro hotitaNčaariri imaaNkoyiti (30) hosagaaNđi hosa-
 gaaNđi (31) hosapir̄yāđi hosapir̄yāđi (32) hotitađi
 hotitađi (33) đhiriničaanaki (34) ikaNtakiri iraniri (35)
 ani thamira aatai (36) hi thami (37) hataiyanaini (38)
 hiyāđi hiyāđi (39) ariita paNkođhiki iraniri (40) iki

hiNpoiwaigi ziwiito (41) hoḡawaitana ziyazhi sitoḡapai
 paNkoḡhiki (42) hariita (43) ḡhirinipirotanaki (44) ikaN-
 taḡitaḡaari iraniri (45) ani pirapai paḡhaka (46) haki
 hmm ataki kimaniNtakina (47) ari isaiki imairigi (48)
 ti isiroNtaḡaita (49) ikaNziḡa iraniri ḡhika ikaNtakaḡa
 aniri (50) kaari isiroNtaḡaitaNta (51) iihazi kaari
 ipokaNta akaimawitari (52) iroḡaakaḡa aNḡimasitiri (53)
 ḡhikarika hiNpoitaNtapiNtari apaniroini (54) opoḡaaka
 oḡaatamani ikaNziiri iraniri (55) ani thami apitaatiri
 osagaaNtaati maaNkoyi (56) hi thami (57) ikaNtaḡakaiya-
 nakani iririNziipaini (58) iroḡaaka piḡi noNḡimasitiri (59)
 aniri ḡhikarika hiNpoitaNtapiNtari apathakiroini (60)
 hi iNzha piNḡimasitiri (61) opoḡaaka hataiyanakini (62)
 hiyaaḡi hiyaaḡi (63) ariitaka hosagaaNtapiNziira imaaNkoyiti
 (64) ikiyakotapaakiri (ḡhik ḡhik ḡhik) (65) iḡaakiro imo
 (66) hosagaaNziiri hosagaaNziiri azhihiki (67) hoḡawaitai-
 yani hoḡawaitaiyani (68) ipakaakiri hoḡaiyani (69) ikaN-
 takiri iraniri (70) thami osagaaNtanai ani (71) aanaari
 paNkoḡhiki (72) hosagaaNzi hosagaaNzi (73) haaki oḡiki
 maaNkoyi haipatanairi (74) hiwiyaka oryazhiri ḡhiriniitiini
 (75) ikaNtakiri iraniri (76) ani thamira aatai ḡhirinii-
 ḡaaki (77) hi thami piḡaaḡo (78) niNzhihiroini niNpoiti
 naaka (79) hi aati hataiyanakini iraniri (80) hiyaaḡi
 hiyaaḡi (81) ari haNto (82) ikaNziiri iririNzi (83) ari
 nosaiki haka (84) nomanapithaḡaari aniri (85) noḡaaḡa-
 kiriita iitarika hiNpoitaNtapiNtari apaniroini (86) hi
 aati (87) haḡi iririNzi (88) isaiki isaiki (89) iḡaa-
 wakiḡiiri isitoḡapaaki (sopirik) (90) aḡihanaki (tik tik
 tik) (91) iNpoitanaki irirori (92) hiNpoiḡiri hiNpoiḡiri
 (93) ari haNto itiNpaanaki (94) isitanakara iririNzi
 kiḡiroini (95) haminakotapaakiri iḡa hoḡawaita ziyazhi
 (96) haḡihapithatanakiri (97) ikimanakiḡiiri hoḡawaita
 ziyazhi (aaḡo aaḡo) (98) iḡhikoḡiḡiro iḡamokotiki (99)

iwamokotitari oçitomoko iito (100) iriitaki hayiri (101)
 hiyaafi hiyaafi sitowapai ipankoki (102) ikantapairi
 iririnçipaini (103) noñaakirira aniri howaçaawora çiyazhi
 (104) ikantanaki iririnçi haa inçarYohanTi hoyawo aniri
 çiyazhi (105) imaapiro ti nothiya (106) irootakira kaari
 hakanTapiNta apathakiroini ankaimawičaaririka (107) iiro
 akimaiNkantaTari (108) ti ikamaNçiro iriçhiro (109) ithaa-
 wakari iiro owañiri (110) ihaçi inaanati ti ikamaNçiro
 (111) opoñaaka sitowapai ciwilito (sopirik) (112) okanta-
 witawari iina (113) powapaiya kaniri (114) hmm ataki
 kimaniNtakina (115) okaNçiroča iriNto (116) çhika ikanta-
 kača kaari isiroNtaNta (117) piñi noNkairokiri nosiroNta-
 kaiyari (118) okairokakiri (tok tok tok) (119) ti isi-
 roNta (120) okaimakiro iriNto (121) pinpoki iinčo (122)
 pimoNtitiri pinkairokiri (123) omonTiwitaapaakari okairokiri
 ti isiroNta (124) ikowi isiroNçaama inaaWita (125) ti
 okançi isiroNča (126) ikantasita khmm (127) opakaasitari
 ti isiroNta (128) opoñaaka oñaatamani ikantakiri iraniri
 (129) ani thami osagaanTaati maankoyi (130) hi thami
 hataiyanakini (131) hiyaafi hiyaafi (132) aritaka hosaga-
 antapinçira (133) imaanKoyiti (134) ikiyakotapaakiri
 (çhik çhik çhik) (135) iñaakiro imo (136) hosagaançiri
 hosagaançiri oçhikaki (137) howawaitaiyani howawaitaiyani
 ipakaakiri howawaita (138) ikançiri iraniri (139) ani
 thami osagaanTanai aaniri panKozhiki (140) hi hosagaançi
 hosagaançi (141) hosapirYaafi iyazhikoīwanatiki (142)
 hiwiyaka oryazhiri içaawitiini (143) irootainçhi onçhi-
 riniti (144) ikantaWitakari iraniri (145) ani thamira
 aatai (146) irootainçhi onçhiriniti (147) apaaha ani
 osagaanTapirotanakiita (148) ti aaka pirota (149) hi
 ariwi ani (150) kimakina pikanTazhira ti aaka pirota
 (151) hosagaançi hosagaançi (152) ikantanaki iraniri (153)
 ani thamira aatai (154) apaaha ani osagaanTapirotanakiita

(155) ti aaka pirota (156) hi ariwī ani (157) pikaN-
 taḡiira ti aaka pirota (158) piNpoki aatira (159) hatai-
 yanakini iraniri (160) hootaiyanakani (moriki moriki
 moriki) (161) hiNpoiḡhitanaka ḡiwiito (162) ikaimawitanaka
 anin anin apaaha pookana anin poyaWakinaata (163)
 thoNka hosokawaitanakiri imaaNkoyiti aagḡhiki (164) arii-
 taiyaani iraniri paNkoḡhiki (165) kiNtḡawaitapai (166)
 nookanakiri ani (167) nokaNtawitakari (168) thami aatai
 ani (169) irootaiNḡhi oNḡhiriniti (170) ikaNtanakiḡi
 apaaha ani (171) ti aaka pirota (172) ipoña ḡiwiito
 ipokaira (173) ḡhirinipaiti aagḡhiki (174) thoNka hoNpoha-
 waitaka itoki (175) ponaaḡiimooki (176) ariiwiita paN-
 koḡhiki (177) hariita niyaNkiitipaiti ḡhiriniri sitoWapai
 paNkoḡhiki oñaawaḡiiri ina (178) hootakiri iraniri
 (moriki) (179) iña iponaapoNpoito itoki (180) ikaNḡi
 iraniri oNpohaka ḡiwiito (181) ikaNtanaki ḡiwiito oNpoha-
 kinawi pironḡiiti ḡhimiriiti (182) ipairyaakirira iWairo
 piyanaka pironḡi (183) aanaki (184) iihagḡi ḡhimiripaini
 piyanaka ḡhimiri (185) agaiyanakini (186) iihagḡi irirori
 piyanaka ḡiwiito (187) aanaki (188) ari ikaNtaiyani (189)
 pairani ḡhimiriita iroohagḡi haḡiriyawitani (190) ima
 ikaaniwiNtaiyironi iwairoitipaini (191) iNpairYaawakaiyarika
 awairoki (192) ari iNpiyawakaača (193) ari okaaci nokiN-
 kithatakḡiri ḡiwiito

CONVERSATION

(1) noNkiNkithatakotiri apaani siraNpari iḡhipatawo
 ina (2) hiyaataiyini hariitaNča naNpiḡhiki (3) ikaNḡiro
 ina (4) thamiča ariitaNtakiča (5) thami ḡhika paitika
 aNpokaika (6) taaniča kimitaka oñaatamani ari aNpokai (7)
 hi ariwī (8) opoñaaka hataiyanakini (9) hiyaagḡi hiyaagḡi
 (10) aaritaka naNpiḡhiki sitoWapaaki (sopirik) paNkoḡhiki

(11) hiwīthataNtapaaka (12) kitaitiriwī aḡiniNka (13) kitaitiriwī ari pipoki (14) hi ata nopoki (15) nopoki ariitawākaiya (16) hi piNpokawāiti pimakorYaapai miNkoḡhitaki (17) hi ariwī (18) opoñaaka iina iihāḡi owithataNtapaaka iroori (19) kitaitiriwī aḡiniNka (20) kitaitiriwī ari pipoki (21) hi ari nopoki (22) noyaatasitari noḡhipatari ikaNḡi (23) thami ariitaNtakiča (24) iro nopokaNtari (25) ha arima pariwāiča (26) patiitiča hinoki (27) pimakorYaapai miNkoḡhitaki (28) opoñaaka siraNpari ikiNkithawāitaiyini (29) (ok ok ok) (30) opoñaaka ḡhirinitakoiyanakini (31) opoñaaka ikaNtanaki (32) ariča okaḡi akiNkithawāitaki amayiča (33) hi amayi (34) opoñaaka magaiyanakini (35) himayi himayi kitiḡitakotai (36) opoñaaka piriNtaiyakani hiwīthatawākaiyani (37) kitaitiriwī (38) kitaitiriwī (39) iitaka pimisitakiri (40) tikaḡhi nomiḡiri (41) opoñaaka ikaNtakiro iina (42) piNtasitikaniri (43) opoñaaka iina otasiwāiḡi kaniri (44) otasiwāiḡi otasiwāiḡi pohataki (45) opoñaaka okaNtakiri oimi (46) pohataki kaniri haha hiroka (47) haawākiro oimi kaniri (ḡirop) (48) howākiro miNkoḡhitakiki (49) opoñaaka ikaimawākaaka (50) poya kaniriwī (51) ariwī (52) pokaiyapaakini hoyā kaniri (53) howāiyani howāiyani (54) ipakaakiro hoyā kaniri (55) ari owāka (56) hi ariwī (57) opoñaaka ḡhinanipaini iihāḡi okaimawākini oya kaniri (58) owāiyani owāiyani (59) opakaiyakironi owa (60) ari owāka (61) hi ariča owāka maaḡoni (62) opoñaaka ikaNtanakiro iina (63) thami aatai (64) thami (65) oñaatamani naNtawāitapaači naNtapai nowāani (66) opoñaaka hiwīthataNtana (67) hataana aciniNka (68) hataana maaḡoni (69) hi pimaḡairo (70) ḡhika paitika piNpokaatika (71) ti niyooḡi kimitaka arika noNthoNkakiro nowāani (72) aripaiti noNpoḡkaati haka (73) hi kimakina (74) opoñaaka iina owithataN-

tanaka (75) hataana açiniNka (76) hi pimatairo (77)
 opoñaaka piya (78) ipokai ipokai (79) ariita ipaNkoki
 saikapai (80) ari okaađi nokiNkithađi

PADDLE

(1) noNkiNkithatakotiro naaka komawoNđhi (2)
 hiitaiđiri komawoNđhi inĉhato hiwiđhikađiri omiNta (3)
 irootaki hiwiđhikađiri komawoNđhi (4) aniNtirika awiđhiki
 ayomaŵo (5) amiNtarvi inĉhato omiNta (6) arika amiNtarYaa-
 kiro omiNta (7) oNpoñača aNpiriNkiro saŵiriki (8) arika
 aNthoNkakiro aNpiriNkiro maaŵoni (9) oNpoñača añaaNĉaaŵo
 hiñaaki (10) aNkomataNĉaaŵo pitogđhiki (11) đhikarika aati
 (12) ari okaađi akiNkithatakogiro komawoNđhi

WILD BOAR

(1) noNkiNkithatakotiri kitairiki (2) hiitaiđiri
 kitairiki isaiki aNtamiki (3) kitairiki hoŵaitari ima
 iposiniđi (4) kitairiki hoŵaŵo điroogđiki irootaki hoŵari
 (5) iihagđi ithogđhitawo đhimi (6) irootaki hiriri ipiyari
 hoŵiro irirori (7) kitairiki đimagđhi ito itona iĉhokita
 ipori iđi ikiNpita ođimanaki irooki (8) tikađhi iđiNko
 (9) kitairiki maaŵoni ipokaiyini ipokaiyini ithaiyaiyani
 (10) hoĉaari ŵaakapaini (11) ari ikaNta irirori kitairiki
 (12) ti haniđi apaani apaani (13) haniitaiyini maaŵoni
 (14) ari okaađi nokiNkithatakogiri kitairiki

MONKEY

(1) noNkiNkithatakotiri oĉito (2) hiitaiđiri oĉito
 ikini hinoki inĉhatomasiki (3) ari ikini (4) oĉito
 ikisaaniNtađi (5) oĉito đimagđhi irako ipori ito irooki
 ikiri ikiNpita ođimanaki iđiNko (6) maaŵoni ođimi (7)
 oĉito ithogđiro ĉhoĉhoki saikađhiri aNtamiki (8) irootaki
 ithogđiri irirori (9) iniNtirika inđimi iryani (10)

iđimakirika iryani inčiiiri itaapiiki (11) ari ičiiiri
iryani itaapiiki (12) ari okaađi nokiNkithatakođiri oçito

RED BIRD

(1) noNkiNkithatakotiri đhiya (2) hiitaiđiri đhiya
isaiki aNtamiki (3) ikini hinoki inčhatomasiki (4) ari
ikini đhiya (5) đhiya ikičoNkaniNtađi (6) ti haNtariđi
iryaniini (7) hoŵari čhapiđi (8) iđimanaki đhiđhiri (9)
iritaki hoŵari đhiya (10) đhiya ari hakakai añaawaiti-
rika inThaiNkai (đhiikan) (11) ari ikaNta đhiya (12)
inThaiNkakairika amaNđhiyatači (13) o iirorika hiyootađihiro
maNđhiyariNđhi (14) đhiya iniNtirika hoithoki imiNkosiča
hiňookiini inčhamaaisiki (15) ari hoŵiri iithoki (16)
oNpoňaača hosaaŵaNtiri (17) đhiya iđimi iithoki apiti ti
iđimi oçiki (18) iniNtirika hiraaya inkaNti (ŵi ŵi
koryahan ŵi ŵi koryahan) (19) ari ikaNđi đhiya hiraga
(20) ari okaađi nokiNkithatakođiri đhiya

LAND BIRD

(1) noNkiNkithatakotiri pooŵoNto (2) hiitaiđiri
pooŵoNto isaiki aNtamiki (3) haniđi isaaŵiki kipađhiki
(4) đimađhi isiŵaNki iŵiđi ikiNđhi iito irooki (5) ođi-
manaki ithoŵa (6) pooŵoNto hoŵari thoNkiiriki (7) ođima-
naki oŵairiNđhikipaini (8) pooŵoNto iniNtirika hiňaiyini
inkaNti (9) (poyapokoro poyapokoro) (10) ari ikaNđi hiňai-
yini pooŵoNto (11) isaikirika apaniroini (12) iniNtirika
inKaimiri içiniNka (13) inkaNti (porak porak çoçoço çoçoço)
(14) siraNpari ikaNđi (15) hiňi (pokorok pokorok çoçoço
çoçoço) (16) ari ikaNđi (17) hiňi siraNpari pooŵoNto (18)
iniNtirika himaiyini (19) himayi inčhačoNkiki (20) ari
himaiyini inTaamaiyani (21) ari okaađi nokiNkithatakođiri
pooŵoNto

UNDERLYING REPRESENTATION

CANOE

(1) naaka no + N + kiN + ki + tha + ako + i + ri
 apa (2) apa ti ir + saik + i ir + paNko + ki (3)
 ir + iyaa + ač + i boWinsana + ki (4) ir + amin + aa +
 i + ro ir + pito ir + N + čhik + aa + i + ro (5) ir +
 iyaa + aiy + an + ak + i + ni paWā + čhori ir + ġim +
 an + ak + i irirori o + poñ + an + ak + a naana (6)
 a + ri ir + mag + aiy + i + ni aNtami + ki (7) pairani
 ir + čhik + wi + a + ro ir + aNt + wai + aNt + a + ri
 aaWana (8) ti ir + thoNk + i + ro o + sitow + an +
 ak + i ir + aaWana + ni (9) ir + ook + asi + an + ak +
 a + ro ir + pito (10) iroñaaka + ri + ka ir + amin +
 aa + i + ro ir + N + čhik + aa + i + ro (11) iroñaaka
 ir + iyaa + an + ak + i (12) o + ñaa + aman + i ir +
 N + čhik + ap + ag + ak + i + ro (13) pasini o + ñaa +
 aman + i a + ri + ka ir + N + thoNk + ak + i + ro
 ġhirinii + iti + ini ir + N + pok + ag + i (14) tomiNko
 + ki ir + aasi + i sision (15) a + ri ir + N + piyo +
 aiy + ak + ia + ni maaWoni (16) a + ri + ka ir +
 aasi + ak + i sision (17) o + ii + a + ri + ka ir +
 N + kiN + ki + tha + ako + i + ri (18) iroo + ha + i
 ir + N + piy + aNt + an + ag + ia + ri (19) ir + N +
 pakag + ak + i + ro + ri + ka ir + N + kiN + ki + tha +
 wai + i (20) ir + N + kaNt + an + ak + i + ri pasini +
 pai + ni (21) thami pi + nosik + ako + i + na no +
 pito (22) a + ri + ka pi + nosik + ako + aki + i + na
 (23) no + N + pok + ap + ag + ač + i + ri + ka haka (24)
 ti a + iyoo + ako + i + ri apa (25) o + ii + a + ri +
 ka ir + aNt + i + ri o ir + aNt + ač + i eskuera
 (26) kimi + ak + a eskuera iroñaaka ti o + paNta +
 ro (27) a + ri o + kaa + i iroñaaka

HOUSE

- (1) iroñaaka no + N + kiN + ki + tha + ako + i + ro no + ag + ako + i + ro no + paNko (2) no + niNt + i no + wiɣhik + i no + paNko (3) kimi + ak + a veintiseis + ki no + amin + i + ro no + wiɣhik + i no + paNko (4) no + ag + aki + i kiɣhi + roini iNɕha + paNki o + miriki + paNki (5) o + N + poñ + ak + ia no + ag + aki + i ɣhiroNpi + tha no + sirik + aNt + ia + ro + ri (6) no + am + ag + i + ri + ka ɣhiroNpi + tha no + sirik + ap + ag + i + ro (7) o + N + poñ + ak + ia no + N + ɣisiwir + ag + i kaNpona (8) no + oho + aNt + ia + ro + ri moɣikiro + si (9) no + N + thoNk + ak + i + ro + ri + ka no + N + ɣisiwir + ag + i + ro maaḡoni (10) no + am + ag + i + ro + ri + ka no + oho + ap + ag + i + ro (11) o + N + poñ + ak + ia no + ag + i moɣikiro + si (12) no + ag + ak + i + ri + ka moɣikiro + si no + am + ag + i + ro (13) no + N + kaɣhiy + ap + ag + i + ro (14) no + N + thoNk + ak + i + ro + ri + ka maaḡoni no + N + kaɣhiy + i + ro o + N + poñ + ak + ia no + sirik + an + ak + i (15) no + sirik + ak + i + ri + ka a + ri + ka no + N + thoNk + ak + i + ro no + sirik + i + ro maaḡoni (16) o + N + poñ + ak + ia no + ag + aki + i koNpiro + si (17) no + N + pasik + i + ro + ri hino + ki otaNtaḡa + si + ki (18) no + N + thoNk + ak + i + ro + ri + ka no + N + pasik + i + ro (19) o + N + poñ + ak + ia no + oḡ + piNt + i mapi + ki kaNɣiri + ki (20) ɣhika + ri + ka o + N + kaa + i no + oḡ + piNt + ak + i + ri (21) kimi + ak + a treinta kaNɣiri + ki iiro + ri + ka kapiɕhiini (22) o + N + poñ + ak + ia no + N + thoNk + ak + i + ro + ri + ka maaḡoni (23) no + ag + aki + i kaNpona (24) no + N + poNk + ak + i + ro no + ag + i + ri no + miNko + taki (25) no + thoNk + ak + i + ro + ri + ka o iiro +

ri + ka no + thoNk + iǰhi + a + ro thaaNki + ini (26)
 arii + ap + ag + ak + ia + ri + ka kasiri no + iyaa +
 aNt + ia + ri yarinaa + ki no + ook + asi + an + ak + ia +
 ro (27) no + apii + ap + ag + i + ro paata (28) naaka +
 ri + ka pok + aa + i yarinaa + ki (29) no + N + piy +
 ap + ag + ak + i + ri + ka kimi + ak + a a + ri no +
 N + thoNk + ap + ag + i + ro (30) a + ri o + kaa + i
 no + N + kiN + ki + tha + wai + i

BEETLE (MAGGOT FLY)

(1) no + N + kiN + ki + tha + ako + i + ri ǰiwiito
 (2) ir + kaNt + a pairani ǰiwiito ir + iyaa + i ir +
 a + siNto + aNt + i (3) ha + i ir + iyaa + i ir + iyaa +
 i sitoW + ap + ag + ak + i paNko + ǰhi + ki (sopirik)
 (4) wai + tha + aNt + ap + ag + ak + a kit + aiti + ri +
 wai konki (5) kit + aiti + ri + wai iyoini (6) kit +
 aiti + ri + wai ani (7) o + poñ + ak + a ǰiwiito ir +
 kaNt + i konki (8) no + pok + i no + siri + a + ro
 pi + siNto (9) a + ri ǰim + aǰhi koW + REDUPLICATION +
 wai + ak + i o + N + ǰhipa + ia (10) o + poñ + ak + a
 ǰiwiito ir + niNt + ap + ag + ak + i apaani ǰhinani (11)
 ir + kami + aNt + ak + i + ro ir + ag + ak + i + ro ǰim +
 ap + ag + ak + i ir + iina (12) o + poñ + ak + a ir +
 ani + ri + pai + ni ir + kaNt + i + ri (13) ani thami +
 ča a + osagaaNt + aki + i maaNkoyi (14) thami (15)
 ha + aiy + an + ak + i + ni (16) ir + iyaa + i ir + iyaa +
 i (17) arii + ak + a ir + saik + i + ra maaNkoyi (18)
 ir + kiy + ako + ap + ag + ak + i + ri (čhik čhik čhik)
 (19) ir + ŋ + ak + i + ro ir + moo (20) ir + osagaaNt +
 ak + i + ri (21) ir + osagaaNt + i + ri ir + osagaaNt +
 i + ri (22) aǰhik + ak + i (23) ir + o + p + wai + aiy +
 a + ni ir + o + p + wai + aiy + a + ni (24) ir + pakag +
 ak + i + ri ir + o + p + wai + aiy + a + ni (25) ir +

kaNt + ak + i + ri ir + ani + ri (26) ani thami
 a + osagaaNt + i (27) a + ag + an + ag + i + ri paNko +
 phi + ki (28) o + poñ + ak + a ir + ag + ak + i phi pana
 (29) ir + ka phi k + oi wana + ak + i + ro ir + oti + aNt +
 ia + ri + ri ir + maaNkoyi + ni (30) ir + osagaaNt + i
 ir + osagaaNt + i (31) ir + osapiry + ač + i ir +
 osapiry + ač + i (32) ir + oti + ač + i ir + oti +
 ač + i (33) phi rinii + č + an + ak + i (34) ir + kaNt +
 ak + i + ri ir + ani + ri (35) ani thami + ra a +
 aa + ag + i (36) hi thami (37) ha + aiy + an + ag +
 i + ni (38) ir + iyaa + i ir + iyaa + i (39) arii +
 a paNko + phi + ki ir + ani + ri (40) iiki ir +
 iNpoi + wai + i phi wiito (41) ir + o + p + wai + an + a
 phi ya + phi sitow + ap + ag + i paNko + phi + ki (42)
 ir + arii + a (43) phi rini + piro + an + ak + i (44)
 ir + kaNt + wi + aw + ag + a + ri ir + ani + ri (45) ani
 pi + ir + ap + ag + i pačhaka (46) ir + ak + i hmm
 ataki kim + niNt + ak + i + na (47) a + ri ir + saik +
 i ir + mairi + i (48) ti ir + sironT + wai + a (49)
 ir + kaNt + i + ča ir + ani + ri phi ka ir + kaNt +
 ak + a + ča a + ani + ri (50) kaari ir + sironT + wai +
 aNt + a (51) ii + ha + i kaari ir + pok + aNt + a
 a + N + kaim + wi + a + ri (52) iroñaaka + ča a + N +
 phi masi + i + ri (53) phi ka + ri + ka ir + iNpoi + aNt +
 piNt + a + ri apani + roini (54) o + poñ + ak + a o +
 ñaa + aman + i ir + kaNt + i + ri ir + ani + ri (55) ani
 thami a + apii + aa + i + ri a + osagaaNt + aa + i
 maaNkoyi (56) hi thami (57) ir + kaNt + aw + ak +
 ag + aiy + an + ak + a + ni ir + iriNphi + pai + ni (58)
 iroñaaka pi + ñ + i no + N + phi masi + i + ri (59) a +
 ani + ri phi ka + ri + ka ir + iNpoi + aNt + piNt + a + ri
 a pathaki + roini (60) hi iNčha pi + N + phi masi + i +

ri (61) o + poñ + ak + a ha + aiy + an + ak + i + ni
 (62) ir + iyaa + i ir + iyaa + i (63) arii + ak + a
 ir + osagaaNt + piNt + i + ra ir + maaNkoyi + ni (64)
 ir + kiy + ako + ap + ag + ak + i + ri (čhik čhik čhik)
 (65) ir + ñ + ak + i + ro ir + moo (66) ir + osagaaNt +
 i + ri ir + osagaaNt + i + ri ačhik + ak + i (67) ir +
 o + p + wai + aiy + a + ni ir + o + p + wai + aiy + a + ni
 (68) ir + pakag + ak + i + ri ir + o + p + aiy + a + ni
 (69) ir + kaNt + ak + i + ri ir + ani + ri (70) thami
 a + osagaaNt + an + ag + i ani (71) a + ag + an + ag +
 i + ri paNko + čhi + ki (72) ir + osagaaNt + i ir +
 osagaaNt + i (73) ir + ag + ak + i oçiki maaNkoyi ir +
 aipa + an + ag + i + ri (74) ir + iwiy + ak + a orya +
 čhiri čhirinii + iti + ini (75) ir + kaNt + ak + i + ri
 ir + ani + ri (76) ani thami + ra a + aa + ag + i
 čhirinii + č + ak + i (77) hi thami pi + i + ia + ro
 (78) niNčhiki + roini no + iNpoi + i naaka (79) hi
 a + aa + i ha + aiy + an + ak + i + ni ir + ani + ri (80)
 ir + iyaa + i ir + iyaa + i (81) a + ri haNto (82)
 ir + kaNt + i + ri ir + iriNči (83) a + ri no + saik +
 i haka (84) 'no + man + pitha + ia + ri a + ani + ri
 (85) no + ñ + aḡ + ak + i + ri + ta ir + ii + a + ri + ka
 ir + iNpoi + aNt + piNt + a + ri apani + roini (86) hi
 a + aa + i (87) ha + i ir + iriNči (88) ir + saik +
 i ir + saik + i (89) ir + ñ + aḡ + ak + i + čii + ri
 ir + sitow + ap + ag + ak + i (sopirik) (90) aḡis +
 an + ak + i (tik tik tik) (91) iNpoi + an + ak + i
 irirori (92) ir + iNpoi + i + ri ir + iNpoi + i + ri
 (93) a + ri haNto ir + tiNpag + an + ak + i (94)
 ir + si + an + ak + a + ra ir + iriNči kiči + roini
 (95) ir + amin + ako + ap + ag + ak + i + ri ir + ñ + a
 ir + o + p + wai + a čiya + čhi (96) ir + aḡis + pitha +
 an + ak + i + ri (97) ir + kim + an + ak + i + čii + ri

ir + o + p + wai + a ɟiya + ɟhi (aaŋo aaŋo) (98) ir +
 ɟhiko + ɟi + i + ro ir + pa + moko + ni + ki (99) ir +
 pa + moko + ni + a + ri oɟito + moko ir + iito (100)
 iri + ak + i ir + ag + i + ri (101) ir + iyaa + i ir +
 iyaa + i sitow̄ + ap + ag + i ir + paŋko + ki (102) ir +
 kaŋt + ap + ag + i + ri ir + iriŋɟi + pai + ni (103) no +
 ñ + ak + i + ri + ra a + ani + ri ir + o + p + ač + a +
 ro + ra ɟiya + ɟhi (104) ir + kaŋt + an + ak + i ir +
 iriŋɟi haa inčarYohaŋti ir + o + p + ia + ro a + ani +
 ri ɟiya + ɟhi (105) imaa + piro ti no + thiy + a
 (106) iroo + ak + i + ra kaari ir + ak + aŋt + piŋt + a
 apathaki + roini a + N + kaim + w̄i + ia + ri + ri + ka
 (107) iiro a + kim + aiŋka + aŋt + a + ri (108) ti
 ir + kamaŋt + i + ro ir + iɟhiro (109) ir + thaaw̄ + ak +
 a + ri iiro oŋañ + i + ri (110) ii + ha + i ir +
 naana + ni ti ir + kamaŋt + i + ro (111) o + poñ + ak +
 a sitow̄ + ap + ag + i ɟiŋiito (sopirik) (112) o +
 kaŋt + w̄i + aw̄ + ag + a + ri ir + iina (113) pi + o +
 p + ap + ag + ia kaniri (114) hmm ataki kim + niŋt +
 ak + i + na (115) o + kaŋt + i + ro + ča o + iriŋto
 (116) ɟhika ir + kaŋt + ak + a + ča kaari ir + siroŋt +
 aŋt + a (117) pi + ñ + i no + N + kairok + i + ri no +
 siroŋt + ak + ag + ia + ri (118) o + kairok + ak + i + ri
 (tok tok tok) (119) ti ir + siroŋt + a (120) o +
 kaim + ak + i + ro o + iriŋto (121) pi + N + pok + i
 iinčo (122) pi + moŋti + i + ri pi + N + kairok + i + ri
 (123) o + moŋti + w̄i + ap + ag + ak + a + ri o + kairok +
 i + ri ti ir + siroŋt + a (124) ir + koŋ + i ir +
 siroŋt + ia + ma ir + naa + w̄i + a (125) ti o + kaŋt +
 i ir + siroŋt + ia (126) ir + kaŋt + asi + a khmm
 (127) o + pakag + asi + a + ri ti ir + siroŋt + a (128)
 o + poñ + ak + a o + ŋaa + aman + i ir + kaŋt + ak + i +
 ri ir + ani + ri (129) ani thami a + osagaŋt + aa +

i maaNkoyi (130) hi thami ha + aiy + an + ak + i +
 ni (131) ir + iyaa + i ir + iyaa + i (132) arii + ak +
 a ir + osagaaNt + apiNt + i + ra (133) ir + maaNkoyi + ni
 (134) ir + kiy + ako + ap + ag + ak + i + ri (čhik čhik
 čhik) (135) ir + ñ + ak + i + ro ir + moo (136) ir +
 osagaaNt + i + ri ir + osagaaNt + i + ri ačhik + ak + i
 (137) ir + o + p + wai + aiy + a + ni ir + o + p + wai +
 aiy + a + ni ir + pakag + ak + i + ri ir + o + p + wai + a
 (138) ir + kaNt + i + ri ir + ani + ri (139) ani thami
 a + osagaaNt + an + ag + i a + ag + an + ag + i + ri paNko +
 čhi + ki (140) hi ir + osagaaNt + i ir + osagaaNt + i
 (141) ir + osapiry + ač + i ir + kačhik + oiwana + ni + ki
 (142) ir + iwiy + ak + a orya + čhiri ičaaWi + iti + ini
 (143) iroo + aiNčhi o + N + čhirini + i (144) ir + kaNt +
 wi + ak + a + ri ir + ani + ri (145) ani thami + ra
 a + aa + ag + i (146) iroo + aiNčhi o + N + čhirini + i
 (147) apaaha ani a + osagaaNt + piro + an + ak + i + ta
 (148) ti aaka pirota (149) hi a + ri + wi ani
 (150) kim + ak + i + na pi + kaNt + ač + i + ra ti aaka
 pirota (151) ir + osagaaNt + i ir + osagaaNt + i (152)
 ir + kaNt + an + ak + i ir + ani + ri (153) ani thami +
 ra a + aa + ag + i (154) apaaha ani a + osagaaNt +
 piro + an + ak + i + ta (155) ti aaka pirota (156)
 hi a + ri + wi ani (157) pi + kaNt + ač + i + ra ti
 aaka pirota (158) pi + N + pok + i a + aa + i + ra
 (159) ha + aiy + an + ak + i + ni ir + ani + ri (160)
 ir + oo + aiy + an + ak + a + ni (moriki moriki moriki)
 (161) ir + iNpoi + čhi + an + ak + a čiwiiito (162) ir +
 kaim + wi + an + ak + a aniin aniin apaaha pi + ook +
 a + na aniin pi + oy + aw + ak + i + na + ta (163)
 thoNk + a ir + osok + wai + an + ak + i + ri ir + maaNkoyi +
 ni aačhi + ki (164) arii + aiy + ag + a + ni ir + ani +

ri paNko + ğhi + ki (165) kiN + tha + wai + ap + ag +
 i (166) no + ook + an + ak + i + ri ani (167) no +
 kaNt + wi + ak + a + ri (168) thami a + aa + ag + i ani
 (169) iroo + aiNğhi o + N + ğhirini + i (170) ir + kaNt +
 an + ak + i + ğii apaaha ani (171) ti aaka pirota
 (172) ir + poñ + a ğiwiito ir + pok + ag + i + ra (173)
 ğhirini + paiti aaghi + ki (174) thoNk + a ir +
 oNpoh + wai + ak + a ir + iito + ki (175) ponaa + ğiimoo +
 ki (176) arii + wi + a paNko + ğhi + ki (177) ir +
 arii + a niyaNki + iti + paiti ğhirini + ri sitow + ap +
 ag + i paNko + ğhi + ki o + ñ + aw + a + ğii + ri ir +
 iina (178) ir + oo + ak + i + ri ir + ani + ri (moriki)
 (179) ir + ñ + a ir + ponaa + poNpoito ir + iito + ki
 (180) ir + kaNt + i ir + ani + ri oNpoh + ak + a ğiwiito
 (181) ir + kaNt + an + ak + i ğiwiito oNpoh + ak + i +
 na + wi piroNği + iti ğhimiri + iti (182) ir + pairv +
 ak + i + ri + ra ir + wai + ro piy + an + ak + a piroNği
 (183) ag + an + ak + i (184) ii + ha + i ğhimiri + pai +
 ni piy + an + ak + a ğhimiri (185) ag + aiy + an +
 ak + i + ni (186) ii + ha + i irirori piy + an + ak +
 a ğiwiito (187) ag + an + ak + i (188) a + ri ir +
 kaNt + aiy + a + ni (189) pairani ğhimiri + iti iroo +
 ha + i ir + ağiri + aiy + wi + a + ni (190) imaa ir +
 kaani + wiNt + aiy + i + ro + ni ir + pai + ro + iti + pai +
 ni (191) ir + N + pairv + aw + ak + ag + ia + ri + ka a +
 pai + ro + ki (192) a + ri ir + N + piy + aw + ak + ag +
 ak + ia (193) a + ri o + kaa + i no + kiN + ki + tha +
 ako + i + ri ğiwiito

CONVERSATION

(1) no + N + kiN + ki + tha + ako + i + ri apaani
 siraNpari ir + ğhipa + a + ro ir + iina (2) ir + iyaa +

aiy + i + ni ir + arii + aNt + ia naNpi + ɣhi + ki (3)
 ir + kaNt + i + ro ir + ina (4) thami + ča a + arii +
 aNt + aki + ia (5) thami ɣhika paiti + ka a + N +
 pok + ag + i + ka (6) taaniča kimi + ak + a o + ŋaa +
 aman + i a + ri a + N + pok + ag + i (7) hi a + ri +
 w̄i (8) o + poñ + ak + a ha + aiy + an + ak + i + ni (9)
 ir + iyaa + i ir + iyaa + i (10) arii + ak + a naNpi +
 ɣhi + ki sitōw + ap + ag + ak + i (sopirik) paNko +
 ɣhi + ki (11) ir + w̄i + t^ha + aNt + ap + ag + ak + a (12)
 kit + aiti + ri + w̄i a + çiniNka (13) kit + aiti + ri +
 w̄i a + ri pi + pok + i (14) hi ata no + pok + i
 (15) no + pok + i arii + āw + ak + ag + ia (16) hi pi +
 N + pok + w̄ai + i pi + makor^y + ap + ag + i miNko + ɣhi +
 taki (17) hi a + ri + w̄i (18) o + poñ + ak + a ir +
 ina ii + ha + i o + w̄i + t^ha + aNt + ap + ag + ak + a
 iroori (19) kit + aiti + ri + w̄i a + çiniNka (20) kit +
 aiti + ri + w̄i a + ri pi + pok + i (21) hi a + ri
 no + pok + i (22) no + oyaa + asi + a + ri no + ɣhipa +
 a + ri i + kaNt + i (23) thami a + arii + aNt + aki +
 ia (24) iroo no + pok + aNt + a + ri (25) ha a +
 ri + ma pi + arii + w̄ai + ia (26) pi + atii + i + ča
 hino + ki (27) pi + makor^y + ap + ag + i miNko + ɣhi +
 taki (28) o + poñ + ak + a siraNpari ir + kiN + ki +
 t^ha + w̄ai + aiy + i + ni (29) (ok ok ok) (30) o +
 poñ + ak + a ɣhirini + ako + aiy + an + ak + i + ni (31)
 o + poñ + ak + a ir + kaNt + an + ak + i (32) a + ri + ča
 o + kaa + i a + kiN + ki + t^ha + w̄ai + ak + i a + mag +
 i + ča (33) hi a + mag + i (34) o + poñ + ak + a
 mag + aiy + an + ak + i + ni (35) ir + mag + i ir + mag +
 i kit + içi + ako + ag + i (36) o + poñ + ak + a
 piriNt + aiy + ak + a + ni ir + w̄i + t^ha + āw + ak + ag
 aiy + a + ni (37) kit + aiti + ri + w̄i (38) kit + aiti +
 ri + w̄i (39) ii + ak + a pi + misi + ak + i + ri (40)

ti + k + a^hi no + misi + i + ri (41) o + poñ + ak + a
 ir + kaNt + ak + i + ro ir + iina (42) pi + N + tasi + i
 kaniri (43) o + poñ + ak + a ir + iina o + tasi + wai +
 i kaniri (44) o + tasi + wai + i o + tasi + wai + i
 poha + ak + i (45) o + poñ + ak + a o + kaNt + ak + i +
 ri o + iimi (46) poha + ak + i kaniri haha hiroka
 (47) ir + ag + a^w + ak + i + ro o + iimi kaniri (çirok)
 (48) ir + o^w + ak + i + ro miNko + ^hi + taki + ki (49)
 o + poñ + ak + a ir + ka^m + a^w + ak + ag + ak + a (50)
 pi + o + p + ia kaniri + wai (51) a + ri + wai (52)
 pok + aiy + ap + ag + ak + i + ni ir + o + p + ia kaniri
 (53) ir + o + p + aiy + a + ni ir + o + p + aiy + a + ni
 (54) ir + pakag + ak + i + ro ir + o + p + ia kaniri (55)
 a + ri o + p + ak + a (56) hi a + ri + wai (57) o +
 poñ + ak + a ^hinani + pai + ni ii + ha + i o + ka^m +
 a^w + ak + i + ni o + o + p + ia kaniri (58) o + o + p +
 aiy + a + ni o + o + p + aiy + a + ni (59) o + pakag +
 aiy + ak + i + ro + ni o + o + p + a (60) a + ri o +
 o + p + ak + a (61) hi a + ri + ča a + o + p + ak + a
 maawoni (62) o + poñ + ak + a ir + kaNt + an + ak + i + ro
 ir + iina (63) t^hami a + aa + ag + i (64) t^hami (65)
 o + ñaa + aman + i no + aNt + wai + ap + ag + ač + i no +
 aNt + ap + ag + i no + o^waa + ni (66) o + poñ + ak + a
 ir + wai + t^ha + aNt + an + a (67) ha + ag + a + na a +
 çiniNka (68) ha + ag + a + na maawoni (69) hi
 pimatairo (70) ^hika paiti + ka pi + N + pok + aa +
 i + ka (71) ti no + iyoo + i kimi + ak + a a + ri +
 ka no + N + t^hoNk + ak + i + ro no + o^waa + ni (72) a +
 ri + paiti no + N + pok + aa + i haka (73) hi kim +
 ak + i + na (74) o + poñ + ak + a ir + iina o + wai +
 t^ha + aNt + an + ak + a (75) ha + ag + a + na a + çiniNka
 (76) hi pimatairo (77) o + poñ + ak + a piy + a (78)

ir + pok + ag + i ir + pok + ag + i (79) arii + a ir +
 paNko + ki saik + ap + ag + i (80) a + ri o + kaa + i
 no + kiN + ki + tha + i

PADDLE

(1) no + N + kiN + ki + tha + ako + i + ro naaka
 koma + ro + øhi (2) ir + ii + ai + i + ri koma + ro +
 øhi iNČha + to ir + wīøhik + ai + i + ri o + miNta (3)
 iroo + ak + i ir + wīøhik + ai + i + ri koma + ro + øhi
 (4) a + niNt + i + ri + ka a + wīøhik + i a + koma + ro
 (5) a + miNtarv + i iNČha + to o + miNta (6) a + ri +
 ka a + miNtarv + ak + i + ro o + miNta (7) o + N +
 poŋ + ak + ia a + N + piriNk + i + ro sawīri + ki (8)
 a + ri + ka a + N + thoNk + ak + i + ro a + N + piriNk +
 i + ro maaWoni (9) o + N + poŋ + ak + ia a + ŋaaNt +
 ia + ro hiŋaa + ki (10) a + N + koma + aNt + ia + ro
 pito + øhi + ki (11) øhika + ri + ka a + aa + i (12)
 a + ri o + kaa + i a + kiN + ki + tha + ako + i + ro
 koma + ro + øhi

WILD BOAR

(1) no + N + kiN + ki + tha + ako + i + ri kitairiki
 (2) ir + ii + ai + i + ri kitairiki ir + saik + i
 aNtami + ki (3) kitairiki ir + o + p + ai + a + ri imaa
 ir + posini + i (4) kitairiki ir + o + p + a + ro
 øirooŋi + ki iroo + ak + i ir + o + p + a + ri (5) ii +
 ha + i ir + tho + øhi + a + ro øhimi (6) iroo + ak +
 i ir + ir + i + ri ir + piyari ir + oW + i + ro irirori
 (7) kitairiki øim + aŋhi ir + iito ir + tona ir +
 øhokita ir + pori ir + iŋi ir + kiNpita o + øim + an +
 ak + i ir + ooki (8) ti + k + aŋhi ir + øiNko (9)
 kitairiki maaWoni ir + pok + aiy + i + ni ir + pok + aiy +
 i + ni ir + thaŋi + aiy + a + ni (10) ir + oç + a + ri

Waaka + pai + ni (11) a + ri ir + kaNt + a irirori
 kitairiki (12) ti ir + anii + i apaani apaani (13)
 ir + anii + aiy + i + ni maaḡoni (14) a + ri o + kaa +
 i no + kiN + ki + tḡa + ako + i + ri kitairiki

MONKEY

(1) no + N + kiN + ki + tḡa + ako + i + ri oçito
 (2) ir + ii + ai + i + ri oçito ir + kin + i hino +
 ki iNçḡa + to + masi + ki (3) a + ri ir + kin + i (4)
 oçito ir + kisaa + niNt + ač + i (5) oçito ḡim +
 aḡhi ir + ako ir + pori ir + iito ir + ooki ir +
 kiri ir + kiNpita o + ḡim + an + ak + i ir + ḡiNko (6)
 maaḡoni o + ḡim + i (7) oçito ir + tho + i + ro
 çhoçho + ki saik + aḡhi + ri aNtami + ki (8) iroo +
 ak + i ir + tho + i + ri irirori (9) ir + niNt + i +
 ri + ka ir + N + ḡim + i iryani (10) ir + ḡim + ak +
 i + ri + ka iryani ir + N + č + i + ri ir + taapii +
 ki (11) a + ri ir + č + i + ri iryani ir + taapii +
 ki (12) a + ri o + kaa + i no + kiN + ki + tḡa + ako +
 i + ri oçito

RED BIRD

(1) no + N + kiN + ki + tḡa + ako + i + ri ḡhiya
 (2) ir + ii + ai + i + ri ḡhiya ir + saik + i aNtami +
 ki (3) ir + kin + i hino + ki iNçḡa + to + masi + ki
 (4) a + ri ir + kin + i ḡhiya (5) ḡhiya ir +
 kičonka + niNt + ač + i (6) ti ir + aNta + ri + i
 iryani + ini (7) ir + o + p + a + ri çhapiḡi (8) ir +
 ḡim + an + ak + i ḡhiḡhiri (9) irii + ak + i ir + o +
 p + a + ri ḡhiya (10) ḡhiya a + ri ir + ak + ak + ai
 a + n + Wai + i + ri + ka ir + N + thaiNK + ai (ḡhiikan)
 (11) a + ri ir + kaNt + a ḡhiya (12) ir + N + thaiNK +

ak + ai + ri + ka a + maN^hhiya + ač + i (13) o iiro +
 ri + ka ir + iyoo + ač + i + ro maN^hhiya + ri + ġhi (14)
 ġhiya ir + niNt + i + ri + ka ir + oithok + i ir +
 miNko + si + ia hiŋoo + ki + ini iNčha + maisi + ki (15)
 a + ri ir + o^w + i + ri ir + iithoki (16) o + N + poŋ +
 ak + ia ir + osaa^want + i + ri (17) ġhiya ir + ġim + i
 ir + iithoki apiti ti ir + ġim + i oçiki (18) ir +
 niNt + i + ri + ka ir + irag + ia ir + N + kaNt + i (wī
 wī korvahan wī wī korvahan) (19) a + ri ir +
 kaNt + i ġhiya ir + irag + a (20) a + ri o + kaa + i
 no + kiN + ki + tha + ako + i + ri ġhiya

LAND BIRD

(1) no + N + kiN + ki + tha + ako + i + ri poo^woNto
 (2) ir + ii + ai + i + ri poo^woNto ir + saik + i aNtami +
 ki (3) ir + anii + i isaa^wi + ki kipa^ghi + ki (4)
 ġim + a^ghi ir + si^wanki ir + wī^gi ir + kiN^ghi ir +
 iito ir + ooki (5) o + ġim + an + ak + i ir + tho^wa
 (6) poo^woNto ir + o + p + a + ri thoNki + iriki (7)
 o + ġim + an + ak + i o + p + ai + ri + ġhi + ki + pai + ni
 (8) poo^woNto ir + niNt + i + ri + ka ir + ŋ + aiy + i +
 ni ir + N + kaNt + i (9) (poyapokoro poyapokoro) (10)
 a + ri ir + kaNt + i ir + ŋ + aiy + i + ni poo^woNto (11)
 ir + saik + i + ri + ka apani + roini (12) ir + niNt + i +
 ri + ka ir + N + kaim + i + ri ir + çiniNka (13) ir +
 N + kaNt + i (porak porak çoçoço çoçoço) (14)
 siraNpari ir + kaNt + i (15) ir + ñ + i (pokorok
 pokorok çoçoço çoçoço) (16) a + ri ir + kaNt + i
 (17) ir + ñ + i siraNpari poo^woNto (18) ir + niNt +
 i + ri + ka ir + mag + aiy + i + ni (19) ir + mag + i
 iNčha + čonki + ki (20) a + ri ir + mag + aiy + i + ni
 ir + N + taam + aiy + a + ni (21) a + ri o + kaa + i
 no + kiN + ki + tha + ako + i + ri poo^woNto

MORPHEME GLOSS

CANOE

(1) I 1P + FUTURE + tell + derivation + spoken + DATIVE + FUTURE + 3PM father (2) father no 3PM + be + NON/FUTURE 3PM + house + LOCATION (3) 3PM + go + PROGRESSIVE + NON/FUTURE bovinsana + LOCATION (4) 3PM + look + REPETITIVE + FUTURE + 3PF 3PM + canoe 3PM + FUTURE + cut + REPETITIVE + FUTURE + 3PF (5) 3PM + go + PLURAL + DEPARTURE + PERFECT + NON/FUTURE + PLURAL uncle + CLASSIFICATORY 3PM + have + DEPARTURE + PERFECT + NON/FUTURE he 3PF + happen + DEPARTURE + PERFECT + REFLEXIVE/NON/FUTURE mother (6) \emptyset + RELATIVE 3PM + sleep + PLURAL + FUTURE + PLURAL jungle + LOCATION (7) long/ago 3PM + cut + FRUSTRATIVE + REFLEXIVE/NON/FUTURE + 3PF 3PM + do + CONTINUATIVE + REASON + REFLEXIVE/NON/FUTURE + RELATIVE mahogany (8) no 3PM + complete + NON/FUTURE + 3PF 3PF + leave + DEPARTURE + PERFECT + NON/FUTURE 3PM + mahogany + POSSESSIVE (9) 3PM + abandon + PURPOSE + DEPARTURE + PERFECT + REFLEXIVE/NON/FUTURE + 3PF 3PM + canoe (10) now + RELATIVE + INDEFINITE 3PM + look + REPETITIVE + FUTURE + 3PF 3PM + FUTURE + cut + REPETITIVE + FUTURE + 3PF (11) now 3PM + go + DEPARTURE + PERFECT + NON/FUTURE (12) 3PF + dawn + EARLY + FUTURE 3PM + FUTURE + cut + ARRIVAL + RESOLVED + PERFECT + FUTURE + 3PF (13) other 3PF + dawn + EARLY + FUTURE \emptyset + RELATIVE + INDEFINITE 3PM + FUTURE + complete + PERFECT + FUTURE + 3PF be/night + recently + adverbializer 3PM + FUTURE + come + RESOLVED + FUTURE (14) sunday + LOCATION 3PM + call/meeting + FUTURE session (15) \emptyset + RELATIVE 3PM + FUTURE + gather + PLURAL + PERFECT + REFLEXIVE/FUTURE + PLURAL all (16) \emptyset + RELATIVE + INDEFINITE 3PM + call/meeting + PERFECT + FUTURE session (17) 3PF + name + REFLEXIVE/NON/FUTURE + RELATIVE + INDEFINITE 3PM + FUTURE + tell + derivation + spoken + DATIVE + FUTURE + RELATIVE (18) it/feminine + also + NON/FUTURE 3PM + FUTURE +

return + REASON + DEPARTURE + RESOLVED + REFLEXIVE/FUTURE +
 RELATIVE (19) 3PM + FUTURE + quit + PERFECT + FUTURE + 3PF +
 RELATIVE + INDEFINITE 3PM + FUTURE + tell + derivation +
 spoken + CONTINUAL + FUTURE (20) 3PM + FUTURE + say + DEPAR-
 TURE + PERFECT + FUTURE + 3PM other + PLURAL + PLURAL (21)
 let's/go 2P + pull + DATIVE + FUTURE + 1P 1P + canoe (22)
 ∅ + RELATIVE + INDEFINITE 2P + pull + DATIVE + THERE/AND/BACK +
 FUTURE + 1P (23) 1P + FUTURE + come + ARRIVAL + RESOLVED +
 PROGRESSIVE + FUTURE + RELATIVE + INDEFINITE here (24) no
 1PI + know + DATIVE + NON/FUTURE + 3PM father (25) 3PF +
 name + REFLEXIVE/NON/FUTURE + RELATIVE + INDEFINITE 3PM + do +
 FUTURE + RELATIVE or 3PM + do + PROGRESSIVE + FUTURE
 school (26) seem + PERFECT + REFLEXIVE/NON/FUTURE school
 now no feminine + valuable + feminine (27) ∅ + RELATIVE
 3PF + be/thus + NON/FUTURE now

HOUSE

(1) now 1P + FUTURE + tell + derivation + spoken +
 DATIVE + FUTURE + 3PF 1P + own + DATIVE + FUTURE + 3PF 1P +
 house (2) 1P + want + FUTURE 1P + build + FUTURE 1P +
 house (3) seem + PERFECT + REFLEXIVE/NON/FUTURE twenty/six +
 LOCATION 1P + look + FUTURE + 3PF 1P + build + FUTURE 1P +
 house (4) 1P + take + THERE/AND/BACK + FUTURE first + only
 plant + pole 3PF + rib + pole (5) 3PF + FUTURE + happen +
 PERFECT + REFLEXIVE/FUTURE 1P + take + THERE/AND/BACK +
 FUTURE vine + rope 1P + tie + REASON + REFLEXIVE/FUTURE +
 3PF + RELATIVE (6) 1P + bring + RESOLVED + FUTURE + RELATIVE +
 INDEFINITE vine + rope 1P + tie + ARRIVAL + RESOLVED +
 FUTURE + 3PF (7) 3PF + FUTURE + happen + PERFECT + REFLEXIVE/
 FUTURE 1P + FUTURE + split + RESOLVED + FUTURE pona/palm
 (8) 1P + tie/thatch + REASON + REFLEXIVE/FUTURE + 3PF +
 RELATIVE thatch + leaf (9) 1P + FUTURE + complete +

PERFECT + FUTURE + 3PF + RELATIVE + INDEFINITE 1P + FUTURE +
 split + RESOLVED + FUTURE + 3PF all (10) 1P + bring +
 RESOLVED + FUTURE + 3PF + RELATIVE + INDEFINITE 1P + tie/
 thatch + ARRIVAL + RESOLVED + FUTURE + 3PF (11) 3PF + FUTURE +
 happen + PERFECT + REFLEXIVE/FUTURE 1P + take + FUTURE
 thatch + leaf (12) 1P + take + PERFECT + FUTURE + RELATIVE +
 INDEFINITE thatch + leaf 1P + bring + RESOLVED + FUTURE +
 3PF (13) 1P + FUTURE + fold/leaf + ARRIVAL + RESOLVED +
 FUTURE + 3PF (14) 1P + FUTURE + complete + PERFECT + FUTURE +
 3PF + RELATIVE + INDEFINITE all 1P + FUTURE + fold/leaf +
 FUTURE + 3PF 3PF + FUTURE + happen + PERFECT + REFLEXIVE/
 FUTURE 1P + tie + DEPARTURE + PERFECT + FUTURE (15) 1P +
 tie + PERFECT + FUTURE + RELATIVE + INDEFINITE \emptyset + RELATIVE +
 INDEFINITE 1P + FUTURE + complete + PERFECT + FUTURE + 3PF
 1P + tie + FUTURE + 3PF all (16) 3PF + FUTURE + happen +
 PERFECT + REFLEXIVE/FUTURE 1P + take + THERE/AND/BACK + FUTURE
 yarina/palm + leaf (17) 1P + FUTURE + cover + FUTURE + 3PF +
 RELATIVE above + LOCATION ridge/pole + leaf + LOCATION (18)
 1P + FUTURE + complete + PERFECT + FUTURE + 3PF + RELATIVE +
 INDEFINITE 1P + FUTURE + cover + FUTURE + 3PF (19) 3PF +
 FUTURE + happen + PERFECT + REFLEXIVE/FUTURE 1P + carry +
 HABITUAL + FUTURE rock + small basket + LOCATION (20)
 what + RELATIVE + INDEFINITE 3PF + FUTURE + be/thus + FUTURE
 1P + carry + HABITUAL + PERFECT + FUTURE + RELATIVE (21)
 seem + PERFECT + REFLEXIVE/NON/FUTURE thirty basket +
 LOCATION no + RELATIVE + INDEFINITE few (22) 3PF +
 FUTURE + happen + PERFECT + REFLEXIVE/FUTURE 1P + FUTURE +
 complete + PERFECT + FUTURE + 3PF + RELATIVE + INDEFINITE all
 (23) 1P + take + THERE/AND/BACK + FUTURE pona/palm (24)
 1P + FUTURE + split/palm/bark + PERFECT + FUTURE + 3PF 1P +
 take + FUTURE + RELATIVE 1P + platform + RESEMBLANCE (25)
 1P + complete + PERFECT + FUTURE + 3PF + RELATIVE + INDEFINITE
 or no + RELATIVE + INDEFINITE 1P + complete + DISTRIBUTIVE +

REFLEXIVE/FUTURE + 3PF hurry + adverbializer (26) arrive + ARRIVAL + RESOLVED + PERFECT + REFLEXIVE/FUTURE + RELATIVE + INDEFINITE moon 1P + go + REASON + REFLEXIVE/FUTURE + RELATIVE yarina + LOCATION 1P + abandon + PURPOSE + DEPARTURE + PERFECT + REFLEXIVE/FUTURE + 3PF (27) 1P + repeat + ARRIVAL + RESOLVED + FUTURE + 3PF some (28) 1P + RELATIVE + INDEFINITE come + REPETITIVE + NON/FUTURE yarina + LOCATION (29) 1P + FUTURE + return + ARRIVAL + RESOLVED + PERFECT + FUTURE + RELATIVE + INDEFINITE seem + PERFECT + REFLEXIVE/NON/FUTURE ∅ + RELATIVE 1P + FUTURE + complete + ARRIVAL + RESOLVED + FUTURE + 3PF (30) ∅ + RELATIVE 3PF + be/thus + NON/FUTURE 1P + FUTURE + tell + derivation + spoken + CONTINUATIVE + NON/FUTURE

BEETLE (MAGGOT FLY)

(1) 1P + FUTURE + tell + derivation + spoken + DATIVE + FUTURE + 3PM beetle (2) 3PM + be + REFLEXIVE/NON/FUTURE long/ago beetle 3PM + go + FUTURE 3PM + take + daughter + REASON + FUTURE (3) go + NON/FUTURE 3PM + go + NON/FUTURE 3PM + go + NON/FUTURE go/out + ARRIVAL + RESOLVED + PERFECT + NON/FUTURE house + NON/POSSESSIVE + LOCATION (onomatopoeia) (4) greet + spoken + REASON + ARRIVAL + RESOLVED + PERFECT + REFLEXIVE/NON/FUTURE be/day + derivation + RELATIVE + EXCLAMATORY uncle/VOCATIVE (5) be/day + derivation + RELATIVE + EXCLAMATORY aunt/VOCATIVE (6) be/day + derivation + RELATIVE + EXCLAMATORY cousin/VOCATIVE (7) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE beetle 3PM + say + NON/FUTURE uncle/VOCATIVE (8) 1P + come + NON/FUTURE 1P + look/for + REFLEXIVE/NON/FUTURE + 3PF 2P + daughter (9) ∅ + RELATIVE have + STATIVE search + REDUPLICATION + CONTINUATIVE + PERFECT + NON/FUTURE 3PF + FUTURE + accompany + REFLEXIVE/FUTURE (10) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE beetle .

3PM + want + ARRIVAL + RESOLVED + PERFECT + NON/FUTURE one
 woman (11) 3PM + ask/for + REASON + PERFECT + NON/FUTURE +
 3PF 3PM + take + PERFECT + NON/FUTURE + 3PF have + ARRIVAL +
 RESOLVED + PERFECT + NON/FUTURE 3PM + wife (12) 3PF +
 happen + PERFECT + REFLEXIVE/NON/FUTURE 3PM + brother/in/law +
 POSSESSIVE + PLURAL + PLURAL 3PM + say + NON/FUTURE +
 RELATIVE (13) brother/in/law/VOCATIVE let's/go + EMPHATIC
 1PI + stick/for + THERE/AND/BACK + FUTURE corbinsha/insect
 (14) let's/go (15) go + PLURAL + DEPARTURE + PERFECT + NON/
 FUTURE + PLURAL (16) 3PM + go + NON/FUTURE 3PM + go + NON/
 FUTURE (17) arrive + PERFECT + REFLEXIVE/NON/FUTURE 3PM +
 be + NON/FUTURE + ADVERBIAL corbinsha/insect (18) 3PM +
 dig + DATIVE + ARRIVAL + RESOLVED + PERFECT + NON/FUTURE + 3PM
 (onomatopoeia) (19) 3PM + see + PERFECT + NON/FUTURE + 3PF
 3PM + hole (20) 3PM + stick/for + PERFECT + NON/FUTURE + 3PM
 (21) 3PM + stick/for + NON/FUTURE + 3PM 3PM + stick/for +
 NON/FUTURE + 3PM (22) bite + PERFECT + NON/FUTURE (23) 3PM +
 causative + feed + CONTINUATIVE + PLURAL + REFLEXIVE/NON/FUTURE +
 PLURAL 3PM + causative + feed + CONTINUATIVE + PLURAL +
 REFLEXIVE/NON/FUTURE + PLURAL (24) 3PM + finish + PERFECT +
 NON/FUTURE + 3PM 3PM + causative + feed + CONTINUATIVE +
 PLURAL + REFLEXIVE/NON/FUTURE + PLURAL (25) 3PM + say + NON/
 FUTURE + 3PM 3PM + brother/in/law + POSSESSIVE (26) brother/
 in/law/VOCATIVE let's/go 1PI + stick/for + FUTURE (27)
 1PI + take + DEPARTURE + RESOLVED + FUTURE + 3PM house + NON/
 POSSESSIVE + LOCATION (28) 3PF + happen + PERFECT + REFLEXIVE/
 NON/FUTURE 3PM + take + PERFECT + NON/FUTURE leaf (29)
 3PM + foId + leaf/for/food + PERFECT + NON/FUTURE + 3PF 3PM +
 put/in + REASON + REFLEXIVE/FUTURE + 3PM + RELATIVE 3PM +
corbinsha/insect + POSSESSIVE (30) 3PM + stick/for + NON/
 FUTURE 3PM + stick/for + NON/FUTURE (31) 3PM + brush/off +
 PROGRESSIVE + NON/FUTURE 3PM + brush/off + PROGRESSIVE +

NON/FUTURE (32) 3PM + put/in + PROGRESSIVE + NON/FUTURE
 3PM + put/in + PROGRESSIVE + NON/FUTURE (33) be/night +
 imminent + DEPARTURE + PERFECT + NON/FUTURE (34) 3PM + say +
 PERFECT + NON/FUTURE + 3PM 3PM + brother/in/law + POSSESSIVE
 (35) brother/in/law/VOCATIVE let's/go + ADVERBIAL 1PI +
 go + RESOLVED + FUTURE (36) yes let's/go (37) go +
 PLURAL + DEPARTURE + RESOLVED + NON/FUTURE + PLURAL (38)
 3PM + go + NON/FUTURE 3PM + go + NON/FUTURE (39) arrive +
 REFLEXIVE/NON/FUTURE house + NON/POSSESSIVE + LOCATION 3PM +
 brother/in/law + POSSESSIVE (40) still 3PM + follow +
 CONTINUATIVE + NON/FUTURE beetle (41) 3PM + causative +
 feed + CONTINUATIVE + DEPARTURE + REFLEXIVE/NON/FUTURE waste +
 NON/POSSESSIVE go/out + ARRIVAL + RESOLVED + NON/FUTURE
 house + NON/POSSESSIVE + LOCATION (42) 3PM + arrive +
 REFLEXIVE/NON/FUTURE (43) be/night + VERITY + DEPARTURE +
 PERFECT + NON/FUTURE (44) 3PM + say + FRUSTRATIVE + RECEIV-
 ING + RESOLVED + REFLEXIVE/NON/FUTURE + 3PM 3PM + brother/in/
 law + POSSESSIVE (45) brother/in/law/VOCATIVE 2P + drink +
 ARRIVAL + RESOLVED + FUTURE gourd (46) 3PM + answer + NON/
 FUTURE yes enough feel + want + PERFECT + NON/FUTURE + 1P
 (47) ∅ + RELATIVE 3PM + be + NON/FUTURE 3PM + be/serious +
 NON/FUTURE (48) no 3PM + laugh + CONTINUATIVE + REFLEXIVE/
 NON/FUTURE (49) 3PM + say + NON/FUTURE + EMPHATIC 3PM +
 brother/in/law + POSSESSIVE what 3PM + say + PERFECT +
 REFLEXIVE/NON/FUTURE + EMPHATIC 1PI + brother/in/law +
 POSSESSIVE (50) why/not 3PM + laugh + CONTINUATIVE +
 REASON + REFLEXIVE/NON/FUTURE (51) name + also + NON/FUTURE
 why/not 3PM + come + REASON + REFLEXIVE/NON/FUTURE 1PI +
 FUTURE + call + FRUSTRATIVE + REFLEXIVE/NON/FUTURE + 3PM (52)
 now + EMPHATIC 1PI + FUTURE + spy + FUTURE + 3PM (53)
 what + RELATIVE + INDEFINITE 3PM + follow + REASON + HABITUAL +
 REFLEXIVE/NON/FUTURE + RELATIVE one + only (54) 3PF +

happen + PERFECT + REFLEXIVE/NON/FUTURE 3PM + dawn + EARLY +
 NON/FUTURE 3PM + say + NON/FUTURE + 3PM 3PM + brother/in/
 law + POSSESSIVE (55) brother/in/law/VOCATIVE let's/go
 1PI + repeat + REPETITIVE + FUTURE + 3PM 1PI + stick/for +
 REPETITIVE + FUTURE corbinsha/insect (56) yes let's/go
 (57) 3PM + say + RECIPROCAL + CAUSATIVE + RESOLVED + PLURAL +
 DEPARTURE + PERFECT + REFLEXIVE/NON/FUTURE + PLURAL 3PM +
 brother + PLURAL + PLURAL (58) now 2P + see + FUTURE 1P +
 FUTURE + spy + FUTURE + 3PM (59) 1PI + brother/in/law +
 POSSESSIVE what + RELATIVE + INDEFINITE 3PM + follow +
 REASON + HABITUAL + REFLEXIVE/NON/FUTURE + RELATIVE always +
 only (60) yes go/on 2P + FUTURE + spy + FUTURE + 3PM
 (61) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE go +
 PLURAL + DEPARTURE + PERFECT + NON/FUTURE + PLURAL (62)
 3PM + go + NON/FUTURE 3PM + go + NON/FUTURE (63) arrive +
 PERFECT + NON/FUTURE 3PM + stick/for + HABITUAL + NON/FUTURE +
 ADVERBIAL 3PM + corbinsha/insect + POSSESSIVE (64) 3PM +
 dig + DATIVE + ARRIVAL + RESOLVED + PERFECT + NON/FUTURE + 3PM
 (onomatopoeia) (65) 3PM + see + PERFECT + NON/FUTURE + 3PF
 3PM + hole (66) 3PM + stick/for + NON/FUTURE + 3PM 3PM +
 stick/for + NON/FUTURE + 3PM bite + PERFECT + NON/FUTURE
 (67) 3PM + causative + feed + CONTINUATIVE + PLURAL + REFLEXIVE/
 NON/FUTURE + PLURAL 3PM + causative + feed + CONTINUATIVE +
 PLURAL + REFLEXIVE/NON/FUTURE + PLURAL (68) 3PM + finish +
 PERFECT + NON/FUTURE + 3PM 3PM + causative + feed + PLURAL +
 REFLEXIVE/NON/FUTURE + PLURAL (69) 3PM + say + PERFECT +
 NON/FUTURE + 3PM 3PM + brother/in/law/VOCATIVE + POSSESSIVE
 (70) let's/go 1PI + stick/for + DEPARTURE + RESOLVED +
 FUTURE brother/in/law (71) 1PI + take + DEPARTURE +
 RESOLVED + FUTURE + 3PM house + NON/POSSESSIVE + LOCATION
 (72) 3PM + stick/for + NON/FUTURE 3PM + stick/for + NON/
 FUTURE (73) 3PM + take + PERFECT + NON/FUTURE many

corbinsha/insect 3PM + wrap/up + DEPARTURE + RESOLVED + NON/
 FUTURE + 3PM (74) 3PM + locate + PERFECT + REFLEXIVE/NON/
 FUTURE sun + derivation be/night + recently + adverbializer
 (75) 3PM + say + PERFECT + NON/FUTURE + 3PM 3PM + brother/in/
 law + POSSESSIVE (76) brother/in/law/VOCATIVE let's/go +
 ADVERBIAL 1PI + go + RESOLVED + FUTURE be/night + imminent +
 PERFECT + FUTURE (77) yes let's/go 2P + precede +
 REFLEXIVE/FUTURE + 3PF (78) slow + only 1P + follow +
 FUTURE I (79) yes 1PI + go + FUTURE go + PLURAL +
 DEPARTURE + PERFECT + NON/FUTURE + PLURAL 3PM + brother/in/
 law + POSSESSIVE (80) 3PM + go + NON/FUTURE 3PM + go + NON/
 FUTURE (81) ∅ + RELATIVE there (82) 3PM + say + NON/
 FUTURE + 3PM 3PM + brother (83) ∅ + RELATIVE 1P + be +
 NON/FUTURE here (84) 1P + hide + REFERENTIAL + REFLEXIVE/
 FUTURE + 3PM 1PI + brother/in/law + POSSESSIVE (85) 1P +
 see + RECEIVING + PERFECT + FUTURE + 3PM + SUBJUNCTIVE 3PM +
 name + REFLEXIVE/NON/FUTURE + RELATIVE + INDEFINITE 3PM +
 follow + REASON + HABITUAL + REFLEXIVE/NON/FUTURE + RELATIVE
 one + only (86) yes 1PI + go + FUTURE (87) go + NON/
 FUTURE 3PM + brother (88) 3PM + be + NON/FUTURE 3PM +
 be + NON/FUTURE (89) 3PM + see + RECEIVING + PERFECT + NON/
 FUTURE + CLIMAX + 3PM 3PM + go/out + ARRIVING + RESOLVED +
 PERFECT + NON/FUTURE (onomatopoeia) (90) pass + DEPARTURE +
 PERFECT + NON/FUTURE (onomatopoeia) (91) follow +
 DEPARTURE + PERFECT + NON/FUTURE he (92) 3PM + follow +
 NON/FUTURE + 3PM 3PM + follow + NON/FUTURE + 3PM (93) ∅ +
 RELATIVE there 3PM + get/off/trail + DEPARTURE + PERFECT +
 NON/FUTURE (94) 3PM + defecate + DEPARTURE + PERFECT +
 REFLEXIVE/NON/FUTURE + ADVERBIAL 3PM + brother first + only
 (95) 3PM + look + DATIVE + ARRIVAL + RESOLVED + PERFECT + NON/
 FUTURE + 3PM 3PM + see + PROGRESSIVE/ELLIPSIS + NON/FUTURE/
 ELLIPSIS 3PM + causative + feed + CONTINUATIVE + REFLEXIVE/

NON/FUTURE waste + NON/POSSESSIVE (96) 3PM + pass +
 REFERENTIAL + DEPARTURE + PERFECT + NON/FUTURE + 3PM (97)
 3PM + hear + DEPARTURE + PERFECT + NON/FUTURE + CLIMAX + 3PM
 3PM + causative + feed + CONTINUATIVE + REFLEXIVE/NON/FUTURE
 waste + NON/POSSESSIVE (onomatopoeia) (98) 3PM + take +
 scoop + NON/FUTURE + 3PF 3PM + gourd + box + POSSESSIVE +
 LOCATION (99) 3PM + gourd + box + POSSESSIVE + REFLEXIVE/NON/
 FUTURE + RELATIVE monkey + box 3PM + head (100) it/
 masculine + PERFECT + NON/FUTURE 3PM + take + NON/FUTURE + 3PM
 (101) 3PM + go + NON/FUTURE 3PM + go + NON/FUTURE go/out +
 ARRIVAL + RESOLVED + NON/FUTURE 3PM + house + LOCATION (102)
 3PM + say + ARRIVAL + RESOLVED + NON/FUTURE + 3PM 3PM +
 brother + PLURAL + PLURAL (103) 1P + see + PERFECT + NON/
 FUTURE + 3PM + ADVERBIAL 1PI + brother/in/law + POSSESSIVE
 3PM + causative + feed + PROGRESSIVE + REFLEXIVE/NON/FUTURE +
 3PF + ADVERBIAL waste + NON/POSSESSIVE (104) 3PM + say +
 DEPARTURE + PERFECT + NON/FUTURE 3PM + brother surprise
 exclamation 3PM + causative + feed + REFLEXIVE/FUTURE + 3PF
 1PI + brother/in/law + POSSESSIVE waste + NON/POSSESSIVE
 (105) very + VERITY no 1P + lie + REFLEXIVE/NON/FUTURE
 (106) it/feminine + PERFECT + NON/FUTURE + ADVERBIAL why/not
 3PM + answer + REASON + HABITUAL + REFLEXIVE/NON/FUTURE
 always + only 1PI + FUTURE + call + FRUSTRATIVE + REFLEXIVE/
 FUTURE + 3PM + RELATIVE + INDEFINITE (107) no 1PI + feel +
 olfactory + REASON + REFLEXIVE/NON/FUTURE + RELATIVE (108)
 no 3PM + notify + NON/FUTURE + 3PF 3PM + sister (109)
 3PM + fear + PERFECT + REFLEXIVE/NON/FUTURE + RELATIVE no
 shame + NON/FUTURE + 3PM (110) name + also + NON/FUTURE
 3PM + mother + POSSESSIVE no 3PM + notify + NON/FUTURE +
 3PF (111) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE go/
 out + ARRIVAL + RESOLVED + NON/FUTURE beetle (onomatopoeia)
 (112) 3PF + say + FRUSTRATIVE + RECEIVING + RESOLVED +

REFLEXIVE/NON/FUTURE + 3PM 3PM + wife (113) 2P + causative +
 feed + ARRIVAL + RESOLVED + REFLEXIVE/FUTURE manioc (114)
 yes enough feel + want + PERFECT + NON/FUTURE + 1P (115)
 3PF + say + NON/FUTURE + 3PF + EMPHATIC 3PF + sister (116)
 what 3PM + say + PERFECT + PROGRESSIVE + REFLEXIVE/NON/FUTURE
 why/not 3PM + laugh + REASON + REFLEXIVE/NON/FUTURE (117)
 2P + see + FUTURE 1P + FUTURE + tickle + FUTURE + 3PM 1P +
 laugh + CAUSATIVE + RESOLVED + REFLEXIVE/FUTURE + 3PM (118)
 3PF + tickle + PERFECT + NON/FUTURE + 3PM (onomatopoeia) (119)
 no 3PM + laugh + REFLEXIVE/NON/FUTURE (120) 3PF + call +
 PERFECT + NON/FUTURE + 3PF 3PF + sister (121) 2P + FUTURE +
 come + FUTURE sister/VOCATIVE (122) 2P + surround +
 FUTURE + 3PM 2P + FUTURE + tickle + FUTURE + 3PM (123) 3PF +
 surround + FRUSTRATIVE + ARRIVAL + RESOLVED + PERFECT +
 REFLEXIVE/NON/FUTURE + 3PM 3PF + tickle + NON/FUTURE + 3PM no
 3PM + laugh + REFLEXIVE/NON/FUTURE (124) 3PM + want + NON/
 FUTURE 3PM + laugh + REFLEXIVE + DUBITATIVE 3PM + chew +
 FRUSTRATIVE + REFLEXIVE/NON/FUTURE (125) no 3PF + say +
 NON/FUTURE 3PM + laugh + REFLEXIVE/FUTURE (126) 3PM +
 say + PURPOSE + REFLEXIVE/NON/FUTURE (onomatopoeia) (127)
 3PF + finish + PURPOSE + REFLEXIVE/NON/FUTURE + 3PM no 3PM +
 laugh + REFLEXIVE/NON/FUTURE (128) 3PF + happen + PERFECT +
 REFLEXIVE/NON/FUTURE 3PF + dawn + EARLY + NON/FUTURE 3PM +
 say + PERFECT + NON/FUTURE + 3PM 3PM + brother/in/law +
 POSSESSIVE (129) brother/in/law/VOCATIVE let's/go 1PI +
 stick/for + REPETITIVE + FUTURE corbinsha/insect (130) yes
 let's/go go + PLURAL + DEPARTURE + PERFECT + NON/FUTURE +
 PLURAL (131) 3PM + go + NON/FUTURE 3PM + go + NON/FUTURE
 (132) arrive + PERFECT + REFLEXIVE/NON/FUTURE 3PM + stick/
 for + HABITUAL + NON/FUTURE + ADVERBIAL (133) 3PM +
corbinsha/insect + POSSESSIVE (134) 3PM + dig + DATIVE +
 ARRIVAL + RESOLVED + PERFECT + NON/FUTURE + 3PM (onomatopoeia)
 (135) 3PM + see + PERFECT + NON/FUTURE + 3PF 3PM + hole

(136) 3PM + stick/for + NON/FUTURE + 3PM 3PM + stick/for +
NON/FUTURE + 3PM bite + PERFECT + NON/FUTURE (137) 3PM +
causative + feed + CONTINUATIVE + PLURAL + REFLEXIVE/NON/FUTURE +
PLURAL 3PM + causative + feed + CONTINUATIVE + PLURAL +
REFLEXIVE/NON/FUTURE + PLURAL 3PM + finish + PERFECT + NON/
FUTURE + 3PM 3PM + causative + feed + CONTINUATIVE + REFLEXIVE/
NON/FUTURE (138) 3PM + say + NON/FUTURE + 3PM 3PM + brother/
in/law + POSSESSIVE (139) brother/in/law/VOCATIVE let's/go
1PI + stick/for + DEPARTURE + RESOLVED + FUTURE 1PI + take +
DEPARTURE + RESOLVED + FUTURE + 3PM house + NON/POSSESSIVE +
LOCATION (140) yes 3PM + stick/for + NON/FUTURE 3PM +
stick/for + NON/FUTURE (141) 3PM + brush/off + PROGRESSIVE +
NON/FUTURE 3PM + fold + leaf/for/food + POSSESSIVE + LOCATION
(142) 3PM + locate + PERFECT + REFLEXIVE/NON/FUTURE sun +
derivation be/afternoon + recently + adverbializer (143)
it/feminine + almost 3PM + FUTURE + be/night + FUTURE (144)
3PM + say + FRUSTRATIVE + PERFECT + REFLEXIVE/NON/FUTURE + 3PM
3PM + brother/in/law + POSSESSIVE (145) brother/in/law/
VOCATIVE let's/go + ADVERBIAL 1PI + go + RESOLVED + FUTURE
(146) it/feminine + almost 3PF + FUTURE + be/night + FUTURE
(147) wait brother/in/law/VOCATIVE 1PI + stick/for +
VERITY + DEPARTURE + PERFECT + FUTURE + SUBJUNCTIVE (148) no
we lightning/bug/deviant (149) yes \emptyset + RELATIVE +
EXCLAMATORY brother/in/law/VOCATIVE (150) hear + PERFECT +
NON/FUTURE + 1P 2P + say + PROGRESSIVE + NON/FUTURE +
ADVERBIAL no we lightning/bug/deviant (151) 3PM + stick/
for + NON/FUTURE 3PM + stick/for + NON/FUTURE (152) 3PM +
say + DEPARTURE + PERFECT + NON/FUTURE 3PM + brother/in/law +
POSSESSIVE (153) brother/in/law/VOCATIVE let's/go +
ADVERBIAL 1PI + go + RESOLVED + FUTURE (154) wait brother/
in/law/VOCATIVE 1PI + stick/for + VERITY + DEPARTURE +
PERFECT + FUTURE + SUBJUNCTIVE (155) no we lightning/bug/

deviant (156) yes \emptyset + RELATIVE + EXCLAMATORY brother/in/
 law (157) 2P + say + PROGRESSIVE + NON/FUTURE + ADVERBIAL no
 we lightning/bug/deviant (158) 2P + FUTURE + come + FUTURE
 1PI + go + FUTURE + ADVERBIAL (159) go + PLURAL + DEPARTURE +
 PERFECT + NON/FUTURE + PLURAL 3PM + brother/in/law + POSSESSIVE
 (160) 3PM + shine + PLURAL + DEPARTURE + PERFECT + REFLEXIVE/
 NON/FUTURE + PLURAL (onomatopoeia) (161) 3PM + follow +
 DISTRIBUTIVE + DEPARTURE + PERFECT + REFLEXIVE/NON/FUTURE
 beetle (162) 3PM + call + FRUSTRATIVE + DEPARTURE + PERFECT +
 REFLEXIVE/NON/FUTURE brother/in/law/calling/VOCATIVE brother/
 in/law/calling/VOCATIVE wait 2P + abandon + REFLEXIVE + 1P
 brother/in/law/calling/VOCATIVE 2P + wait + RECEIVING +
 PERFECT + FUTURE + 1P + SUBJUNCTIVE (163) complete +
 PROGRESSIVE/ELLIPSIS + NON/FUTURE/ELLIPSIS 3PM + spill +
 CONTINUATIVE + DEPARTURE + PERFECT + NON/FUTURE + 3PM 3PM +
corbinsha/insect + POSSESSIVE trail + LOCATION (164)
 arrive + PLURAL + RESOLVED + REFLEXIVE/NON/FUTURE + PLURAL
 3PM + brother/in/law + POSSESSIVE house + NON/POSSESSIVE +
 LOCATION (165) tell + spoken + CONTINUATIVE + ARRIVAL +
 RESOLVED + NON/FUTURE (166) 1P + abandon + DEPARTURE +
 PERFECT + NON/FUTURE + 3PM brother/in/law/VOCATIVE (167)
 1P + say + FRUSTRATIVE + PERFECT + REFLEXIVE/NON/FUTURE + 3PM
 (168) let's/go 1PI + go + RESOLVED + FUTURE brother/in/
 law/VOCATIVE (169) it/feminine + almost 3PF + FUTURE +
 be/night + FUTURE (170) 3PM + say + DEPARTURE + PERFECT +
 NON/FUTURE + CLIMAX wait brother/in/law/VOCATIVE (171)
 no we lightning/bug/deviant (172) 3PM + happen +
 REFLEXIVE/NON/FUTURE beetle 3PM + come + RESOLVED + NON/
 FUTURE + ADVERBIAL (173) be/night + TEMPORAL trail +
 LOCATION (174) complete + PROGRESSIVE/ELLIPSIS + NON/FUTURE/
 ELLIPSIS 3PM + bump/head + CONTINUATIVE + PERFECT + REFLEXIVE/
 NON/FUTURE 3PM + head + LOCATION (175) hit + head/black/
 ridicule + LOCATION (176) arrive + FRUSTRATIVE + REFLEXIVE/

NON/FUTURE house + NON/POSSESSIVE + LOCATION (177) 3PM +
 arrive + REFLEXIVE/NON/FUTURE half + recently + TEMPORAL be/
 night + RELATIVE go/out + ARRIVAL + RESOLVED + NON/FUTURE
 house + NON/POSSESSIVE + LOCATION 3PF + see + RECEIVING +
 REFLEXIVE/NON/FUTURE + CLIMAX + 3PM 3PM + wife (178) 3PM +
 shine + PERFECT + NON/FUTURE + 3PM 3PM + brother/in/law +
 POSSESSIVE (onomatopoeia) (179) 3PM + see + PROGRESSIVE/
 ELLIPSIS + NON/FUTURE/ELLIPSIS 3PM + hit + head/black/ridicule
 3PM + head + LOCATION (180) 3PM + say + NON/FUTURE 3PM +
 brother/in/law + POSSESSIVE bump/head + PERFECT + REFLEXIVE/
 NON/FUTURE beetle (181) 3PM + say + DEPARTURE + PERFECT +
 NON/FUTURE beetle bump/head + PERFECT + NON/FUTURE + 1P +
 EXCLAMATORY lightning/bug + PLURAL/ANIMATE bird + PLURAL/
 ANIMATE (182) 3PM + say/name + PERFECT + NON/FUTURE + 3PM +
 ADVERBIAL 3PM + name + nominalizer/feminine disappear +
 DEPARTURE + PERFECT + REFLEXIVE/NON/FUTURE lightning/bug
 (183) fly + DEPARTURE + PERFECT + NON/FUTURE (184) name +
 also + NON/FUTURE bird + PLURAL + PLURAL disappear +
 DEPARTURE + PERFECT + REFLEXIVE/NON/FUTURE bird (185) fly +
 PLURAL + DEPARTURE + PERFECT + NON/FUTURE + PLURAL (186)
 name + also + NON/FUTURE he disappear + DEPARTURE + PERFECT +
 REFLEXIVE/NON/FUTURE beetle (187) fly + DEPARTURE +
 PERFECT + NON/FUTURE (188) ∅ + RELATIVE 3PM + say + PLURAL +
 REFLEXIVE/NON/FUTURE + PLURAL (189) long/ago bird + PLURAL/
 ANIMATE it/feminine + also + NON/FUTURE 3PM + people +
 PLURAL + FRUSTRATIVE + REFLEXIVE/NON/FUTURE + PLURAL (190)
 very 3PM + shame + BENEFACTIVE + PLURAL + NON/FUTURE + 3PF +
 PLURAL 3PM + name + nominalizer/feminine + PLURAL/ANIMATE +
 PLURAL + PLURAL (191) 3PM + FUTURE + say/name + RECIPROCAL +
 CAUSATIVE + RESOLVED + REFLEXIVE/FUTURE + RELATIVE + INDEFINITE
 1PI + name + nominalizer/feminine + LOCATION (192) ∅ +
 RELATIVE 3PM + FUTURE + disappear + RECIPROCAL + CAUSATIVE +

RESOLVED + PERFECT + REFLEXIVE/FUTURE (193) \emptyset + RELATIVE
 3PF + be/thus + NON/FUTURE 1P + tell + derivation + spoken +
 DATIVE + NON/FUTURE + 3PM beetle

CONVERSATION

(1) 1P + FUTURE + tell + derivation + spoken +
 DATIVE + FUTURE + 3PM one man 3PM + accompany + REFLEXIVE/
 NON/FUTURE + 3PF 3PM + wife (2) 3PM + go + PLURAL + NON/
 FUTURE + PLURAL 3PM + arrive + REASON + REFLEXIVE/FUTURE
 village + NON/POSSESSIVE + LOCATION (3) 3PM + say + NON/
 FUTURE + 3PF 3PM + wife (4) let's/go + EMPHATIC 1PI +
 arrive + REASON + THERE/AND/BACK + REFLEXIVE/FUTURE (5)
 let's/go what time + INDEFINITE 1PI + FUTURE + come +
 RESOLVED + FUTURE + INDEFINITE (6) I/don't/know seem +
 PERFECT + NON/FUTURE 3PF + dawn + EARLY + FUTURE \emptyset +
 RELATIVE 1PI + FUTURE + come + RESOLVED + FUTURE (7) yes
 \emptyset + RELATIVE + EXCLAMATORY (8) 3PF + happen + PERFECT +
 REFLEXIVE/NON/FUTURE go + PLURAL + DEPARTURE + PERFECT +
 NON/FUTURE + PLURAL (9) 3PM + go + NON/FUTURE 3PM + go +
 NON/FUTURE (10) arrive + PERFECT + REFLEXIVE/NON/FUTURE
 village + NON/POSSESSIVE + LOCATION go/out + ARRIVAL +
 RESOLVED + PERFECT + NON/FUTURE (onomatopoeia) house +
 NON/POSSESSIVE + LOCATION (11) 3PM + greet + spoken + REASON +
 ARRIVAL + RESOLVED + PERFECT + REFLEXIVE/NON/FUTURE (12) be/
 day + derivation + adverbial + EXCLAMATORY 1PI + fellow/
 countryman (13) be/day + derivation + adverbial + EXCLAMATORY
 \emptyset + RELATIVE 2P + come + NON/FUTURE (14) yes \emptyset + SUBJUNC-
 TIVE 1P + come + NON/FUTURE (15) 1P + come + NON/FUTURE
 arrive + RECIPROCAL + CAUSATIVE + RESOLVED + REFLEXIVE/FUTURE
 (16) yes 2P + FUTURE + come + CONTINUATIVE + FUTURE 2P +
 rest + ARRIVAL + RESOLVED + FUTURE platform + NON/POSSESSIVE +
 RESEMBLANCE (17) yes \emptyset + RELATIVE + EXCLAMATORY (18)
 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE 3PM + wife

name + also + NON/FUTURE 3PF + greet + spoken + REASON +
 ARRIVAL + RESOLVED + PERFECT + REFLEXIVE/NON/FUTURE she (19)
 be/day + derivation + adverbial + EXCLAMATORY 1PI + fellow/
 countryman (20) be/day + derivation + adverbial + EXCLAMATORY
 ∅ + RELATIVE 2P + come + NON/FUTURE (21) yes ∅ + RELATIVE
 1P + come + NON/FUTURE (22) 1P + follow + PURPOSE + REFLEXIVE/
 NON/FUTURE + 3PM 1P + accompany + REFLEXIVE/NON/FUTURE + 3PM
 3PM + say + NON/FUTURE (23) let's/go 1PI + arrive + REASON +
 THERE/AND/BACK + REFLEXIVE/FUTURE (24) it/feminine 1P +
 come + REASON + REFLEXIVE/NON/FUTURE + RELATIVE (25) oh ∅ +
 RELATIVE + DUBITATIVE 2P + arrive + CONTINUATIVE + REFLEXIVE/
 FUTURE (26) 2P + climb + FUTURE + EMPHATIC above + LOCATION
 (27) 2P + rest + ARRIVAL + RESOLVED + FUTURE platform +
 NON/POSSESSED + RESEMBLANCE (28) 3PF + happen + PERFECT +
 REFLEXIVE/NON/FUTURE man 3PM + tell + derivation + spoken +
 CONTINUATIVE + PLURAL + NON/FUTURE + PLURAL (29) (onomato-
 poeia) (30) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE
 be/night + DATIVE + PLURAL + DEPARTURE + PERFECT + NON/FUTURE +
 PLURAL (31) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE
 3PM + say + DEPARTURE + PERFECT + NON/FUTURE (32) ∅ +
 RELATIVE + EMPHATIC 3PF + be/thus + NON/FUTURE 1PI + tell +
 derivation + spoken + CONTINUATIVE + PERFECT + NON/FUTURE 1PI +
 sleep + FUTURE + EMPHATIC (33) yes 1PI + sleep + FUTURE
 (34) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE sleep +
 PLURAL + DEPARTURE + PERFECT + NON/FUTURE + PLURAL (35) 3PM +
 sleep + NON/FUTURE 3PM + sleep + NON/FUTURE be/day +
 derivation + DATIVE + RESOLVED + NON/FUTURE (36) 3PF +
 happen + PERFECT + REFLEXIVE/NON/FUTURE get/up + PLURAL +
 PERFECT + REFLEXIVE/NON/FUTURE + PLURAL 3PM + greet + spoken +
 RECIPROCAL + CAUSATIVE + RESOLVED + PLURAL + REFLEXIVE/NON/
 FUTURE + PLURAL (37) be/day + derivation + adverbial +
 EXCLAMATORY (38) be/day + derivation + adverbial + EXCLAMATORY

(39) be/what + PERFECT + REFLEXIVE/NON/FUTURE 2P + dream + PERFECT + NON/FUTURE + 3PM (40) no + derivation + STATIVE 1P + dream + NON/FUTURE + RELATIVE (41) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE 3PM + say + PERFECT + NON/FUTURE + 3PF 3PM + wife (42) 2P + FUTURE + roast + FUTURE manioc (43) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE 3PM + wife 3PF + roast + CONTINUATIVE + NON/FUTURE manioc (44) 3PF + roast + CONTINUATIVE + NON/FUTURE 3PF + roast + CONTINUATIVE + NON/FUTURE roast + PERFECT + NON/FUTURE (45) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE 3PF + say + PERFECT + NON/FUTURE + 3PM 3PF + husband (46) roast + PERFECT + NON/FUTURE manioc here this/feminine (47) 3PM + take + RECIPROCAL + CAUSATIVE + NON/FUTURE + 3PF 3PF + husband manioc (onomatopoeia) (48) 3PM + put + PERFECT + NON/FUTURE + 3PF platform + NON/POSSESSIVE + RESEMBLANCE + LOCATION (49) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE 3PM + call + RECIPROCAL + CAUSATIVE + RESOLVED + PERFECT + REFLEXIVE/NON/FUTURE (50) 2P + causative + feed + REFLEXIVE/FUTURE manioc + EXCLAMATORY (51) ∅ + RELATIVE + EXCLAMATORY (52) come + PLURAL + ARRIVAL + RESOLVED + PERFECT + NON/FUTURE + PLURAL 3PM + causative + feed + REFLEXIVE/FUTURE manioc (53) 3PM + causative + feed + PLURAL + REFLEXIVE/NON/FUTURE + PLURAL 3PM + causative + feed + PLURAL + REFLEXIVE/NON/FUTURE + PLURAL (54) 3PM + finish + PERFECT + NON/FUTURE + 3PF 3PM + causative + feed + REFLEXIVE/FUTURE manioc (55) ∅ + RELATIVE causative + feed + PERFECT + NON/FUTURE (56) yes ∅ + RELATIVE + EXCLAMATORY (57) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE woman + PLURAL + PLURAL name + also + NON/FUTURE 3PF + call + RECIPROCAL + CAUSATIVE + NON/FUTURE + PLURAL 3PF + causative + feed + REFLEXIVE/FUTURE manioc (58) 3PF + causative + feed + PLURAL + REFLEXIVE/NON/FUTURE + PLURAL 3PF + causative + feed + PLURAL + REFLEXIVE/NON/FUTURE +

PLURAL (59) 3PF + finish + PLURAL + PERFECT + NON/FUTURE +
 3PF + PLURAL 3PF + causative + feed + NON/FUTURE (60) ∅ +
 RELATIVE 3PF + causative + feed + PERFECT + NON/FUTURE (61)
 yes ∅ + RELATIVE + EMPHATIC 1PI + causative + feed +
 PERFECT + NON/FUTURE all (62) 3PF + happen + PERFECT +
 NON/FUTURE 3PM + say + DEPARTURE + PERFECT + NON/FUTURE + 3PF
 3PM + wife (63) let's/go 1PI + go + RESOLVED + FUTURE
 (64) let's/go (65) 3PF + dawn + EARLY + FUTURE 1P + do +
 CONTINUATIVE + ARRIVAL + RESOLVED + PROGRESSIVE + FUTURE 1P +
 do + ARRIVAL + RESOLVED + FUTURE 1P + field + POSSESSIVE
 (66) 3PF + happen + PERFECT + REFLEXIVE/NON/FUTURE 3PM +
 greet + spoken + REASON + DEPARTURE + REFLEXIVE/NON/FUTURE
 (67) go + RESOLVED + FUTURE + 1P 1PI + fellow/countryman
 (68) go + RESOLVED + FUTURE + 1P all (69) yes go/then
 (70) what time + INDEFINITE 2P + FUTURE + come + REPETITIVE +
 FUTURE + INDEFINITE (71) no 1P + know + NON/FUTURE seem +
 PERFECT + REFLEXIVE/NON/FUTURE ∅ + RELATIVE + INDEFINITE
 1P + FUTURE + finish + PERFECT + FUTURE + 3PF 1P + field +
 POSSESSIVE (72) ∅ + RELATIVE + TEMPORAL 1P + FUTURE +
 come + REPETITIVE + FUTURE here (73) yes hear + PERFECT +
 REFLEXIVE/NON/FUTURE + 1P (74) 3PF + happen + PERFECT +
 REFLEXIVE/NON/FUTURE 3PM + wife 3PF + greet + spoken +
 REASON + DEPARTURE + PERFECT + REFLEXIVE/NON/FUTURE (75)
 go + RESOLVED + FUTURE + 1P 1PI + fellow/countryman (76)
 yes go/then (77) 3PF + happen + PERFECT + REFLEXIVE/NON/
 FUTURE lost + REFLEXIVE/NON/FUTURE (78) 3PM + come +
 RESOLVED + NON/FUTURE 3PM + come + RESOLVED + NON/FUTURE
 (79) arrive + REFLEXIVE/NON/FUTURE 3PM + house + LOCATION
 be + ARRIVAL + RESOLVED + NON/FUTURE (80) ∅ + RELATIVE 3PF +
 be/thus + NON/FUTURE 1P + tell + derivation + spoken +
 NON/FUTURE

PADDLE

- (1) 1P + FUTURE + tell + derivation + spoken + DATIVE + FUTURE + 3PM I paddle + nominalizer/feminine + NON/POSSESSIVE
- (2) 3PM + name + PASSIVE + NON/FUTURE + RELATIVE paddle + nominalizer/feminine + NON/POSSESSIVE plant + tree 3PM + construct + PASSIVE + NON/FUTURE + RELATIVE 3PF + wing/root
- (3) it/feminine + PERFECT + FUTURE 3PM + construct + PASSIVE + NON/FUTURE + RELATIVE paddle + nominalizer/feminine + NON/POSSESSIVE (4) 1PI + want + FUTURE + RELATIVE + INDEFINITE 1PI + construct + FUTURE 1PI + paddle + nominalizer/feminine
- (5) 1PI + split + FUTURE plant + tree 3PF + wing/root (6) \emptyset + RELATIVE + INDEFINITE 1PI + split + PERFECT + FUTURE + 3PF 3PF + wing/root (7) 3PF + FUTURE + happen + PERFECT + REFLEXIVE/FUTURE 1PI + FUTURE + shave/hacking + FUTURE + 3PF machete + LOCATION (8) \emptyset + RELATIVE + INDEFINITE 1PI + FUTURE + finish + PERFECT + FUTURE + 3PF 1PI + FUTURE + shave/hacking + FUTURE + 3PF all (9) 3PF + FUTURE + happen + PERFECT + REFLEXIVE/FUTURE 1PI + test + REFLEXIVE/FUTURE + 3PF water + LOCATION (10) 1PI + FUTURE + paddle + REASON + REFLEXIVE/FUTURE + 3PF canoe + NON/POSSESSIVE + LOCATION (11) what + RELATIVE + INDEFINITE 1PI + go + FUTURE (12) \emptyset + RELATIVE 3PF + is/thus + NON/FUTURE 1PI + tell + derivation + spoken + DATIVE + NON/FUTURE + 3PF paddle + nominalizer/feminine + NON/POSSESSIVE

WILD BOAR

- (1) 1P + FUTURE + tell + derivation + spoken + DATIVE + FUTURE + 3PM wild/boar (2) 3PM + name + PASSIVE + NON/FUTURE + RELATIVE wild/boar 3PM + be + NON/FUTURE jungle + LOCATION (3) wild/boar 3PM + causative + feed + PASSIVE + NON/FUTURE + RELATIVE very 3PM + be/delicious + NON/FUTURE (4) wild/boar 3PM + causative + feed + REFLEXIVE/

NON/FUTURE + 3PF palm/huicungo + fruit it/feminine +
 PERFECT + NON/FUTURE 3PM + causative + feed + REFLEXIVE/NON/
 FUTURE + RELATIVE (5) name + also + NON/FUTURE 3PM +
 suck + DISTRIBUTIVE + REFLEXIVE/NON/FUTURE + 3PF water/hole
 (6) it/feminine + PERFECT + NON/FUTURE 3PM + drink + NON/
 FUTURE + RELATIVE 3PM + manioc/beer 3PM + put + NON/FUTURE +
 3PF he (7) wild/boar has + STATIVE 3PM + head 3PM +
 snout 3PM + shoulder 3PM + leg 3PM + foot 3PM + ear
 3PF + have + DEPARTURE + PERFECT + NON/FUTURE 3PM + eye (8)
 no + derivation + STATIVE 3PM + tail (9) wild/boar all
 3PM + come + PLURAL + NON/FUTURE + PLURAL 3PM + come +
 PLURAL + NON/FUTURE + PLURAL 3PM + line/up + PLURAL + REFLEX-
 IVE/NON/FUTURE + PLURAL (10) 3PM + be/like + REFLEXIVE/NON/
 FUTURE + 3PM cow + PLURAL + PLURAL (11) \emptyset + RELATIVE
 3PM + be/so + REFLEXIVE/NON/FUTURE he wild/boar (12) no
 3PM + walk + NON/FUTURE one one (13) 3PM + walk +
 PLURAL + NON/FUTURE + PLURAL all (14) \emptyset + RELATIVE 3PF +
 be/thus + NON/FUTURE 1P + tell + derivation + spoken +
 DATIVE + NON/FUTURE + 3PM wild/boar

MONKEY

(1) 1P + FUTURE + tell + derivation + spoken +
 DATIVE + FUTURE + 3PM monkey (2) 3PM + name + PASSIVE +
 NON/FUTURE + RELATIVE monkey 3PM + go + NON/FUTURE above +
 LOCATION plant + tree + grove + LOCATION (3) \emptyset + RELATIVE
 3PM + go + NON/FUTURE (4) monkey 3PM + black + want +
 PROGRESSIVE + NON/FUTURE (5) monkey have + STATIVE 3PM +
 hand 3PM + leg 3PM + head 3PM + eye 3PM + nose 3PM +
 ear 3PF + have + DEPARTURE + PERFECT + NON/FUTURE 3PM +
 tail (6) all 3PF + have + NON/FUTURE (7) monkey 3PM +
 suck + NON/FUTURE + 3PF wild/fruit + fruit be + STATIVE +
 RELATIVE jungle + LOCATION (8) it/feminine + PERFECT +

NON/FUTURE 3PM + suck + NON/FUTURE + RELATIVE he (9)
 3PM + want + FUTURE + RELATIVE + INDEFINITE 3PM + FUTURE +
 have + FUTURE young (10) 3PM + have + PERFECT + FUTURE +
 RELATIVE + INDEFINITE young 3PM + FUTURE + carry + FUTURE +
 3PM 3PM + shoulder + LOCATION (11) ∅ + RELATIVE 3PM +
 carry + NON/FUTURE + 3PM young 3PM + shoulder + LOCATION
 (12) ∅ + RELATIVE 3PF + be/thus + NON/FUTURE 1P + tell +
 derivation + spoken + DATIVE + NON/FUTURE + 3PM monkey

RED BIRD

(1) 1P + FUTURE + tell + derivation + spoken +
 DATIVE + FUTURE + 3PM species/of/bird (hereafter referred to
 as "red/bird") (2) 3PM + name + PASSIVE + NON/FUTURE +
 RELATIVE red/bird 3PM + be + NON/FUTURE jungle + LOCATION
 (3) 3PM + go/about + FUTURE above + LOCATION plant +
 tree + grove + LOCATION (4) ∅ + RELATIVE 3PM + go/about +
 NON/FUTURE red/bird (5) red/bird 3PM + red + want +
 PROGRESSIVE + NON/FUTURE (6) no 3PM + large + masculine
 + NON/FUTURE small + diminutive (7) 3PM + causative +
 feed + REFLEXIVE/NON/FUTURE + 3PM insect/huayuco (8) 3PM +
 have + DEPARTURE + PERFECT + NON/FUTURE cricket (9) this +
 PERFECT + NON/FUTURE 3PM + causative + feed + REFLEXIVE/NON/
 FUTURE + RELATIVE red/bird (10) red/bird ∅ + RELATIVE
 3PM + answer + PERFECT + 1PI 1PI + talk + CONTINUATIVE +
 FUTURE + RELATIVE + INDEFINITE 3PM + FUTURE + hex + 1PI
 (onomatopoeia) (11) ∅ + RELATIVE 3PM + be/thus +
 REFLEXIVE/NON/FUTURE red/bird (12) 3PM + FUTURE + hex +
 PERFECT + 1PI + RELATIVE + INDEFINITE 1PI + be/sick +
 PROGRESSIVE + FUTURE (13) or no + RELATIVE + INDEFINITE
 3PM + know + PROGRESSIVE + NON/FUTURE + 3PF be/sick +
 nominalizer/masculine + NON/POSSESSIVE (14) red/bird 3PM +
 want + FUTURE + RELATIVE + INDEFINITE 3PM + lay/egg +

FUTURE 3PM + build/platform + leaf + REFLEXIVE/FUTURE above + location + diminutive plant + vine + LOCATION (15) \emptyset + RELATIVE 3PM + put + NON/FUTURE + 3PM 3PM + egg (16) 3PF + FUTURE + happen + PERFECT + REFLEXIVE/FUTURE 3PM + incubate + FUTURE + 3PM (17) red/bird 3PM + have + FUTURE 3PM + egg two no 3PM + have + FUTURE many (18) 3PM + want + FUTURE + RELATIVE + INDEFINITE 3PM + cry + REFLEXIVE/FUTURE 3PM + FUTURE + say + FUTURE (onomatopoeia) (19) \emptyset + RELATIVE 3PM + say + NON/FUTURE red/bird 3PM + cry + REFLEXIVE/NON/FUTURE (20) \emptyset + RELATIVE 3PM + be/thus + NON/FUTURE 1P + tell + derivation + spoken + DATIVE + NON/FUTURE + 3PM red/bird

LAND BIRD

(1) 1P + FUTURE + tell + derivation + spoken + DATIVE + FUTURE + 3PM species/of/bird (hereafter referred to as "land/bird") (2) 3PM + name + PASSIVE + NON/FUTURE + RELATIVE land/bird 3PM + be + NON/FUTURE jungle + LOCATION (3) 3PM + walk + NON/FUTURE below + LOCATION land + LOCATION (4) have + STATIVE 3PM + feather 3PM + body/hair 3PM + neck 3PM + head 3PM + eye (5) 3PF + have + DEPARTURE + PERFECT + NON/FUTURE 3PM + beak (6) land/bird 3PM + causative + feed + REFLEXIVE/NON/FUTURE + 3PM small/ant + DIMINUTIVE (7) 3PF + have + DEPARTURE + PERFECT + NON/FUTURE causative + feed + derivation + nominalizer/masculine + NON/POSSESSIVE + LOCATION + PLURAL + PLURAL (8) land/bird 3PM + want + FUTURE + RELATIVE + INDEFINITE 3PM + sing + PLURAL + FUTURE + PLURAL 3PM + FUTURE + say + FUTURE (9) (onomatopoeia) (10) \emptyset + RELATIVE 3PM + say + NON/FUTURE 3PM + sing + PLURAL + NON/FUTURE + PLURAL land/bird (11) 3PM + be + FUTURE + RELATIVE + INDEFINITE one + only (12) 3PM + want + FUTURE + RELATIVE + INDEFINITE 3PM +

FUTURE + call + FUTURE + 3PM 3PM + fellow/countryman (13)
 3PM + FUTURE + say + FUTURE (onomatopoeia) (14) male
 3PM + say + NON/FUTURE (15) 3PM + sing + NON/FUTURE
 (onomatopoeia) (16) \emptyset + RELATIVE 3PM + say + NON/FUTURE
 (17) 3PM + sing + NON/FUTURE male land/bird (18) 3PM +
 want + FUTURE + RELATIVE + INDEFINITE 3PM + sleep + PLURAL +
 FUTURE + PLURAL (19) 3PM + sleep + FUTURE plant + narrow +
 LOCATION (20) \emptyset + RELATIVE 3PM + sleep + PLURAL + FUTURE +
 PLURAL 3PM + FUTURE + line/up + PLURAL + REFLEXIVE/NON/
 FUTURE + PLURAL (21) \emptyset + RELATIVE 3PF + be/thus + NON/
 FUTURE 1P + tell + derivation + spoken + DATIVE + NON/FUTURE +
 3PM land/bird

ENGLISH TRANSLATION

CANOE

(1) I will tell about my father. (2) My father is not in his house. (3) He is going to Bovinsana. (4) He will see his canoe again. He will cut it again. (5) My uncle went with him and so did my mother. (6) So they will sleep in the jungle. (7) Long ago he cut it partially while he was doing mahogany (i.e. working lumber). (8) He didn't finish it. The mahogany had left (i.e. they had pushed it all into the river). (9) He had left his canoe unfinished. (10) When he sees it again now, he will cut it again. (11) Now he has gone. (12) Tomorrow morning he will have begun cutting it. (13) The next morning, if he has completed it, at night he will come back. (14) On Sunday he will call a session (i.e. village meeting). (15) So they will all gather together. (16) If he will have a meeting session (17) what is it about, that he will tell us about (18) so that he may go back where he was (i.e. cutting his canoe). (19) When he stops it he will tell for a while. (20) He will say to the others as he's leaving (21) "Let's go, help me pull my canoe. (22) If you just go and help me pull, (23) so that I can come here." (24) We don't know about my father, (25) what it is that he will do, or will he be making a school? (26) Maybe the present school isn't worth anything. (27) So that is all now.

HOUSE

(1) Now I will tell about something of my own, my house. (2) I want to build my house. (3) Perhaps on the twenty-sixth I will see about building my house. (4) First I will go and get poles, it's roof lattice work ("it's ribs"). (5) Then I will go and get vine that I will tie it with. (6) When I bring back the vine, I will tie it. (7-8) Then I will return to split palm bark with which I will tie the thatch

(9) When I have finished I will split it all. (10) If I bring it, on arrival I will tie it (thatch). (11) Then I will get thatching leaves. (12) I will bring them here. (13) On arrival I will fold them (the leaves). (14) When I have finished all I will fold them (the leaves). Then I will tie them together (leaving). (15) When I have tied it, if I have finished it, I will tie it all. (16) Then I will get yarina palm leaves. (17) I will use them to cover the ridge pole above. (18) When I have completed it I will cover it (the ridge pole). (19) Then I will carry (making several trips) some small rocks in baskets. (20) Whatever there are (however many), I will carry (making several trips). (21) Perhaps thirty in a basket, if not, less. (22-23) Then when I have finished all of it, I will take palm bark. (24) I will split the palm bark. I will get my floor. (25) If I have finished it or if I don't finish it soon, (26) when the month arrives that I go to Yarina, I'll leave it without finishing. (27-28) I'll do it again (when I) come back some-day when I come again from Yarina. (29) When I have returned maybe it is such that I will finish it (on arrival). (30) That's it, I told for a while.

BEETLE (MAGGOT FLY)

(1) I will tell about beetle. (2) It was like this long ago with beetle, he went to take a wife. (3) He went, he went, he went, on arrival he entered the house. (4) So on arrival he greeted, "Morning, Uncle," (5) "Morning, Aunt", (6) "Morning, cousin." (7) Then the beetle said, "Uncle, (8) I came looking for your daughter." (9) Well, there (she) is, and she has really been looking for a companion for a while." (10) Then, beetle wanted a woman. (11) So he asked for her, he took her, he began to have his wife. (12) Then, his brother-in-law said to him, (13) "Brother-in-law, let's go and get

corbinsha (edible insect) (by putting a stick into their hole, the corbinsha bite the stick, and then they are pulled out)." (14) "let's go". (15) They left. (16) They went and went, (17) and arrived where the corbinsha were. (18) They dug for them on arrival. (19) They saw their hole. (20) They stuck in and out for them, (21) They stuck and stuck for them. (22) They (corbinsha) bit (the stick). (23) They (brothers) ate and ate for a while. (24) They finished eating. (25) His (beetle's) brother-in-law said to him, (26) "Brother-in-law, let's go, we'll stick for them (27) and take some back to the house." (28) Then he took a leaf (29) folded it up to put his corbinsha in. (30) He stuck and stuck for them. (31) He brushed them off (of the stick) a bit. (32) He put them in (the folded leaf) a bit. (33) It was almost nightfall. (34) He said to his brother-in-law (beetle) (35) "Brother-in-law, let's go, we will go back." (36) "Yes, let's go." (37) They left to go back. (38) They went and went, (39) His (beetle's) brother-in-law arrived at the house. (40) Still beetle followed behind all the while. (41) He ate waste for a while. (42) He went out (of the jungle and in) to the house. (42) He arrived. (43) It was really night. (44) His brother-in-law said to him in vain, receiving him as he was returning, (45) "Brother-in-law, drink (from this) gourd." (46) He answered, "Yes, I'm full." (47) What he was like was serious. (48) He never laughed. (49) His brother-in-law said, "How is our brother-in-law (50) that he never does laugh? (51) Also, why doesn't he come when we call in vain for him? (52) Now, we will hide to see him, (53) why it is that he always follows behind alone." (54) Then, the next day, his brother-in-law said to him, (55) "Brother-in-law, let's go do it again, we will stick for corbinsha." (56) "Yes, let's go." (57) His brothers said among themselves, (58) "Now, look, I will hide to see (59)

why it is that our brother-in-law always follows behind, alone." (60) "Yes, go on, hide to see." (61) Then they left. (62) They went and went. (63) They arrived where they usually stick for corbinsha. (64) They dug for them on arrival. (65) They saw their hole. (66) They stuck for them, in and out for a while. They (corbinsha) bit. (67) They (brothers) ate a while. (68) They finished eating. (69) His (beetle's) brother-in-law said to him, (70) "Let's go, we will stick getting ready to leave, brother-in-law. (71) We will take them back to the house." (72) They stuck in and out. (73) They took many corbinsha, wrapped them up departing. (74) The sun was down, at night. (75) His brother-in-law said to him, (76) "Brother-in-law, let's go, we will go back. It's almost night." (77) "Yes, let's go. You go on ahead." (78) "I'll follow behind slowly." (79) "Yes, we will go." His brothers-in-law left. (80) They went and went. (81) So there on the way (they stopped). (82) His brother said to him, (83) "I will stay here. (84) I will hide, waiting for our brother-in-law. (85) I will see why it is that he always follows behind alone." (86) "Yes, we will go." (87) His brothers went. (88) He stayed and stayed. (89) He saw him. He (beetle) went out. (90) He passed by. (91) He followed him (beetle) departing. (92) He followed and followed him. (93) So there on the way he (beetle) left the trail, (94) where his brothers had defecated first. (95) He looked at him (beetle). He saw he ate waste for a while. (96) He passed him, departing. (97) He heard him. He (beetle) ate waste for a while. (98) He scooped it in his drinking gourd. (99-100) What he took was that which was his drinking gourd, which was a monkey's skull. (101) He (brother who was watching) went and went, went out to his house. (102) He said to his brothers on arrival, (103) "Where I saw our brother-in-law was where he

was eating waste." (104) His brother said to him, departing, "What! Our brother-in-law will eat waste!" (105) "It's true, I didn't lie. (106) It is why he didn't ever answer when we called him in vain, (107) so that we wouldn't smell him." (108) He didn't tell his sister (beetle's wife). (109) He was afraid, he did not shame him. (110) Also, he did not notify his mother. (111) Then beetle came out. (112) His wife told him in vain on his return, (113) "Eat manioc." (114) "Yes, I'm full." (115) Her sister even said to her, (116) "What is wrong with him, that he doesn't laugh?" (117) "Look, I will make him laugh." (118) She tickled him. (119) He didn't laugh. (120) Her sister called her, (121) "Come, sister, (122) surround him, tickle him." (123) They surrounded him in vain. They tickled him but he didn't laugh. (124) He wanted to laugh. He chewed (i.e. clamped his teeth together) in vain. (125) He just wouldn't laugh. (126) All he said was "cough" (with mouth closed). (127) They left him alone, he didn't laugh. (128) Then the next morning, his brother-in-law said to him, (129) "Let's go, we'll stick for corbinsha again." (130) "Yes, Let's go." They left. (131) They went and went. (132) They arrived where they usually stick for (133) their corbinsha. (134) On arrival they dug for them. (135) They saw their hole. (136) They stuck for them and stuck for them, they bit. (137) They ate for a while, they ate. They finished eating. (138) His brother-in-law said to him, (139) "Brother-in-law, let's go. We will stick for them departing. We will take them to the house. (140) They stuck and stuck for them. (141) They brushed them off into their folded leaf. (142) The sun was getting low. (143) It was about to be night. (144) His brother-in-law said to him in vain, (145) "Brother-in-law, let's go, we will go back. (146) It's about to be night." (147) "Wait, brother-in-law, let's really stick, departing.

(148) Aren't we lightning bugs?" (149) "Yes, o.k. brother-in-law, (150) I heard when you were saying, 'Aren't we lightning bugs?'" (151) They stuck and stuck. (152) His brother-in-law said to him, (153) "Brother-in-law, let's go. We will go back." (154) "Stop, brother-in-law, let's really stick for them on departing. (155) Aren't we lightning bugs?" (156) "Yes, o.k. brother-in-law, (157) since you were saying, 'Aren't we lightning bugs?'" (158) "Come, we will go." (159) His brothers-in-law went, departing. (160) They flicked their lights, departing. (161) Beetle followed as well, departing. (162) He called in vain, "Brother-in-law, brother-in-law, wait, you abandoned me, brother-in-law, wait for me." (163) He was finishing. He spilled all his corbinsha on the trail. (164) His brothers-in-law arrived, returning to the house. (165) On arrival they told a bit, (166) "We abandoned brother-in-law. (167) I said to him in vain, (168) 'Let's go, we will go back, brother-in-law. (169) It's almost night.'" (170) He said, departing, 'Wait, brother-in-law, (171) Aren't we lightning bugs?'" (172) Then beetle came back. (173) He was on the trail when it became night. (174) He was getting finished (almost there), he bumped his head. (175) His head was black (said with ridicule). (176) He arrived in vain at the house. (177) It was midnight when he arrived. He went out to the house. His wife saw him. (178) His brothers-in-law flicked their lights at him. (179) They saw his black head (said with ridicule). (180) His brother-in-law said, "Beetle bumped his head." (181) Beetle said, departing, "I bumped my head - goodbye lightning bugs, birds." (182) When he said their names the lightning bugs disappeared. (183) They flew away. (184) Also the birds, the birds disappeared away. (185) They flew away. (186) Also, beetle disappeared away. (187) He flew away. (188) That is how it was. (189) Long ago birds were also people.

(190) They were very ashamed of their names. (191) When they said each other's names, (192) they made each other disappear. (193) So that's it, I have told about beetle.

Explanatory notes: Axininca legend has it that the animals were once human beings, and they were turned into animals when their names were said, since they were so ashamed of their names. In most of the legends, whatever the human was doing when his name was said, that is now the primary characteristic of the animal he became. Thus in the Beetle legend, the two main characters had the names "Lightning Bug" and "Beetle". The latter is actually the adult fly of the maggot. In the legend, "Beetle" had been eating human waste when his brothers-in-law said his name in ridicule. Beetle therefore changed into an animal that mainly eats waste. In retaliation, Beetle said Lightning Bug's name, and since they had just been shining their lights to see Beetle come home late at night, they were turned into an animal with a light. The birds seem incidental to the story.

CONVERSATION

(1) I'm going to tell you about a man and his wife.
 (2) They went to visit in a village. (3) He said to his wife,
 (4) "Let's go visit for a while." (5) "Let's go, when will
 we come back?" (6) "I don't know, maybe in the morning we'll
 come back." (7) "Yes, o.k." (8) Then they left. (9) They
 went and went. (10) They arrived in the village, and entered
 the house. (11) They greeted, (12) "Good morning, fellow
 countrymen." (13) "Good morning, so you've come." (14)
 "Yes, I came. (15) I came so we could visit with each other."
 (16) Yes, come on in, rest on the floor." (17) "Yes, o.k."
 (18) Then his wife also greeted, (19) "Good morning, fellow
 countrymen." (20) "Good morning, so you've come." (21) "Yes,
 I came. (22) I followed. I accompanied him. He said, (23)

'Let's go visit a while.' (24) This is why I came." (25)
"Well then, go ahead and visit. (26) Climb up, (27) rest
on the floor." (28) Then the men conversed among themselves
for a while. (30) Then night came upon them. (31) Then
he said, (32) "That's all, we have talked a while. Let's
sleep." (33) "Yes, let's sleep." (34) Then they slept.
(35) They slept and slept. Morning came upon them. (36)
Then they got up. They greeted each other. (37) "Good
morning." (38) "Good morning." (39) "What did you dream
about?" (40) "I didn't dream." (41) Then he said to his
wife, (42) "Roast some manioc." (43) Then his wife roasted
manioc for a while. (44) She roasted and roasted, it was
roasted. (45) Then she said to her husband, (46) "The
manioc is roasted, here it is." (47) Her husband took the
manioc. (48) He put it on the floor. (49) Then they called
among themselves (50) "Eat manioc." (51) "O.K." (52)
They came to eat manioc. (53) They ate and ate. (54) They
finished eating the manioc. (55) "So we've eaten." (56)
"Yes, o.k." (57) Then the women also called among themselves
to eat manioc. (58) They ate and ate. (59) They finished
eating. (60) "So we've eaten." (61) "Yes, we've eaten it
all." (62) Then he said to his wife, (63) "Let's go back."
(64) "Let's go." (65) "Tomorrow I'm going to work for a while.
I'll make my field." (66) Then they greeted, (67) "I'm
going back, our countrymen, (68) I'm going back, all." (69)
"Yes, go on back. (70) When will you come again?" (71)
"I don't know, maybe when I finish my field, (72) then I'll
come here again." (73) "Yes, we hear." (74) Then his wife
greeted, (75) "I'm going back, our countrymen." (76) "Yes,
go on back." (77) Then they disappeared. (78) They came
back and came back, (79) arrived in their house, and were
back. (80) That's it, I have told.

PADDLE

(1) I will tell you about paddles. (2-3) What is called paddle, which is made from the wing root of a tree, that is what a paddle is made from. (4) If we want to make our paddle (5) we split the wing root of a tree. (6) When we have split the root, (7) then we shave it with a machete. (8) When we have finished shaving it all, (9) then we try it out in the river. (10) We use it to paddle in a canoe, (11) wherever we go. (12) So that's it, I have told you about paddles.

WILD BOAR

(1) I will tell you about the wild boar. (2) What is called wild boar lives in the jungle. (3) The wild boar is eaten, it's very delicious. (4) The wild boar eats huicungo palm fruit, it's what he eats. (5) Also he likes to suck at the salt water hole. (6) It's what he drinks, it takes the place of his manioc beer. (7) The wild boar has a head, snout, shoulders, legs, feet, ears, and eyes. (8) He does not have a tail. (9) The wild boars all come and come in a line. (10) They are like cows. (11) That's how the wild boar is. (12) They don't walk one by one. (13) They walk all together. (14) So that's it, I have told about wild boars.

MONKEY

(1) I will tell about monkeys. (2) What is called monkey goes about up in the groves of trees. (3) That's where it goes. (4) Monkey is almost black. (5) Monkey has his hand, his leg, his head, his eye, his nose, his ear, and also his tail. (6) There is everything. (7) Monkey sucks the wild fruit that are in the jungle. (8) This is what he sucks. (9) If he wants to have young (monkeys), (10) when he has the young, he carries it on his back. (11) So he carries

the young on his back. (12) So that's it, I have told about monkey.

RED BIRD

(1) I'm going to tell about red bird. (2) What is called red bird lives in the jungle. (3) He goes about above in tree groves. (4) That's where red bird goes. (5) Red bird is reddish-colored. (6) He is not big, he's small. (7) He eats huayuco insects (8) and also crickets. (9) That is what red bird eats. (10) Red bird answers us when we talk to him, he hexes us, saying, "tsican". (11) That's what red bird says. (12) If he hexes us we will get sick, (13) or if not he knows (i.e. is forewarning) a sickness. (14) When red bird wants to lay his egg, he will build his nest right up in the tree branches. (15) There he lays his eggs. (16) Then he incubates it. (17) Red bird has two eggs, he doesn't have many. (18) If he wants to cry, he says (sound of crying). (19) That's what he says, red bird cries. (20) So that's it, I told about red bird.

LAND BIRD

(1) I will tell about land bird. (2) What is called land bird lives in the jungle. (3) He walks below on the land. (4) He has his feathers, his body hair (i.e. small feathers), his neck, his head, his eyes, (5) and there is his beak. (6) Land bird eats small ants (7) and also what is normally eaten. (8) When land bird wants to sing he says, (9) (song of land bird). (10) That's what land bird says as he sings. (11) When he is alone, (12) when he wants to call his fellow kind, (13) he will say (song of land bird). (14) The male says, (15) he sings (song of male land bird). (16) That's what he says, (17) the male land bird, as he sings. (18) When they

want to sleep, (19) they sleep on a twig. (20) That's where they sleep, in a row. (21) So that's it, I have told about land bird.

APPENDIX B
PARADIGMS

Following are four sets of paradigms illustrating aspects of the phonology and morphology of Axininca. The transcriptions are surface (phonemic) representations. The first paradigm, AUXILIARY, illustrates the morphophonemic alternations resulting from the co-occurrence of ASPECT, TENSE, and OBJECT. The second paradigm, VERB, illustrates verbs of various canonical shapes and subcategorizations occurring with selected suffixes of the MODAL, AUXILIARY and QUALIFIER.

This paradigm has six distinct expansions of each verb. Column I, translated 'to ___', is (verb + INFINITIVE). Column II, translated 'I have ___ (to her, it)', is (1/PERSON + verb + PERFECT + NON/FUTURE + (3/PERSON/FEMININE)). Column III, translated 'you will ___ (to her, it)', is (2/PERSON + FUTURE + verb + FUTURE + (3/PERSON/FEMININE)). Column IV, translated 'they will ___ (to her, it)', is (3/PERSON/MASCULINE + (FUTURE) + verb + PLURAL + FUTURE + (3/PERSON/FEMININE) + PLURAL). Column V, translated 'she might continually ___ (to her, it)', is (3/PERSON/FEMININE + (FUTURE) + verb + CONTINUATIVE + FUTURE + (3/PERSON/FEMININE) + SUBJUNCTIVE). Column VI, translated 'we are ___ (to her, it)', is (1/PERSON/INCLUSIVE + verb + PROGRESSIVE + NON/FUTURE + (3/PERSON/FEMININE)).

The third paradigm, GENITIVE, illustrates each of the PERSON prefixes and GENITIVE suffixes occurring with nouns of various canonical shapes and subcategorizations. The fourth paradigm, KINSHIP, gives the complete range of PERSON and VOCATIVE

for kinship terminology together with a kinship tree and an exhaustive expansion of the glosses of the terms. The tree refers by number to the terms in the paradigm. The squares refer to males and the circles to females. Numbers above the line indicate a male ego while those below the line indicate a female ego. The VOCATIVE form of the kinship term is used with the expansion of the glosses.

AUXILIARY PARADIGM

hotiti	<i>he will put in</i>
hotiŋi	<i>he put in</i>
hotiča	<i>he will get in</i>
hotita	<i>he got in</i>
hotitakirika	<i>when he has put in</i>
hotitakirika	<i>when he had put in</i>
hotitačaarika	<i>when he has got in</i>
hotitakarika	<i>when he had got in</i>
hotitači	<i>he will be putting in</i>
hotitaŋi	<i>he is/was putting in</i>
hotitačiiya	<i>he will be getting in</i>
hotitača	<i>he is/was getting in</i>
iŋčhiki	<i>he will cut</i>
ičhiki	<i>he cut</i>
iŋčhiča	<i>he will cut himself</i>
ičhika	<i>he cut himself</i>
iŋčhikakirika	<i>when he has cut</i>
ičhikakirika	<i>when he had cut</i>
iŋčhikačaarika	<i>when he has cut himself</i>
ičhikakarika	<i>when he had cut himself</i>
iŋčhikači	<i>he will be cutting</i>
ičhikaŋi	<i>he is/was cutting</i>
iŋčhikačiiya	<i>he will be cutting himself</i>
ičhikača	<i>he is/was cutting himself</i>

INFINITIVE čhikaančhi *to cut*

FUTURE-OBJECT

iNčhikina	<i>he will cut me</i>
iNčhikimi	<i>he will cut you</i>
iNčhikiri	<i>he will cut him</i>
iNčhikiro	<i>he will cut her</i>

NON/FUTURE-OBJECT

ičhikana	<i>he cut me</i>
ičhikimi	<i>he cut you</i>
ičhikiri	<i>he cut him</i>
ičhikiro	<i>he cut her</i>

PROGRESSIVE-FUTURE-OBJECT

iNčhikačhiina	<i>he will be cutting me</i>
iNčhikačhiimi	<i>he will be cutting you</i>
iNčhikačhiiri	<i>he will be cutting him</i>
iNčhikačhiiro	<i>he will be cutting her</i>

PROGRESSIVE-NON/FUTURE-OBJECT

ičhikačaana	<i>he is cutting me</i>
ičhikačhiimi	<i>he is cutting you</i>
ičhikačhiiri	<i>he is cutting him</i>
ičhikačhiiro	<i>he is cutting her</i>

PERFECT-NON/FUTURE-OBJECT

ičhikakina	<i>he has cut me</i>
ičhikakimi	<i>he has cut you</i>
ičhikakiri	<i>he has cut him</i>
ičhikakiro	<i>he has cut her</i>

INFINITIVE ɕhipataaŋɕhi *to accompany (REFLEXIVE)*

FUTURE-OBJECT

iŋɕhipatina	<i>he will accompany me</i>
iŋɕhipatimi	<i>he will accompany you</i>
iŋɕhipaɕaari	<i>he will accompany him</i>
iŋɕhipaɕaaŋo	<i>he will accompany her</i>

NON/FUTURE-OBJECT

iɕhipatana	<i>he accompanied me</i>
iɕhipaɕimi	<i>he accompanied you</i>
iɕhipatari	<i>he accompanied him</i>
iɕhipataŋo	<i>he accompanied her</i>

PROGRESSIVE-FUTURE-OBJECT

iŋɕhipataɕiina	<i>he will be accompanying me</i>
iŋɕhipataɕimi	<i>he will be accompanying you</i>
iŋɕhipataɕaari	<i>he will be accompanying him</i>
iŋɕhipataɕaaŋo	<i>he will be accompanying her</i>

PROGRESSIVE-NON/FUTURE-OBJECT

iɕhipataɕaana	<i>he is accompanying me</i>
iɕhipataɕiimi	<i>he is accompanying you</i>
iɕhipataɕaari	<i>he is accompanying him</i>
iɕhipataɕaaŋo	<i>he is accompanying her</i>

PERFECT-NON/FUTURE-OBJECT

iɕhipatakina	<i>he has accompanied me</i>
iɕhipatakimi	<i>he has accompanied you</i>
iɕhipatakari	<i>he has accompanied him</i>
iɕhipatakaŋo	<i>he has accompanied her</i>

INFINITIVE otitaaǵhi *to put in*

FUTURE-OBJECT

hotitina	<i>he will put me in</i>
hotitimi	<i>he will put you in</i>
hotitiri	<i>he will put him in</i>
hotitiro	<i>he will put her in</i>

NON/FUTURE-OBJECT

hotitana	<i>he put me in</i>
hotiǵimi	<i>he put you in</i>
hotiǵiri	<i>he put him in</i>
hotiǵiro	<i>he put her in</i>

PROGRESSIVE-FUTURE-OBJECT

hotitačiina	<i>he will be putting me in</i>
hotitačiimi	<i>he will be putting you in</i>
hotitačiiri	<i>he will be putting him in</i>
hotitačiiro	<i>he will be putting her in</i>

PROGRESSIVE-NON/FUTURE-OBJECT

hotitačaana	<i>he is putting me in</i>
hotitaǵiimi	<i>he is putting you in</i>
hotitaǵiiri	<i>he is putting him in</i>
hotitaǵiiro	<i>he is putting her in</i>

PERFECT-NON/FUTURE-OBJECT

hotitakina	<i>he has put me in</i>
hotitakimi	<i>he has 'put you in</i>
hotitakiri	<i>he has put him in</i>
hotitakiro	<i>he has put her in</i>

INFINITIVE o^{wa}an^ghi *to eat (REFLEXIVE)*

FUTURE-OBJECT

ho ^{wi} na	<i>it will eat me</i>
ho ^{wi} mi	<i>it will eat you</i>
ho ^{ya} ri	<i>it will eat him</i>
ho ^{ya} wō	<i>it will eat her</i>

NON/FUTURE-OBJECT

ho ^{wi} ana	<i>it ate me</i>
ho ^{wi} mi	<i>it ate you</i>
ho ^{wi} ari	<i>it ate him</i>
ho ^{wi} a ^{wō}	<i>it ate her</i>

PROGRESSIVE-FUTURE-OBJECT

ho ^{wi} a ^{ci} ina	<i>it will be eating me</i>
ho ^{wi} a ^{ci} imi	<i>it will be eating you</i>
ho ^{wi} a ^{ca} ari	<i>it will be eating him</i>
ho ^{wi} a ^{ca} a ^{wō}	<i>it will be eating her</i>

PROGRESSIVE-NON/FUTURE-OBJECT

ho ^{wi} a ^{ca} ana	<i>it is eating me</i>
ho ^{wi} a ^{ci} imi	<i>it is eating you</i>
ho ^{wi} a ^{ca} ari	<i>it is eating him</i>
ho ^{wi} a ^{ca} a ^{wō}	<i>it is eating her</i>

PERFECT-NON/FUTURE-OBJECT

ho ^{wi} a ^{ka} ina	<i>it has eaten me</i>
ho ^{wi} a ^{ka} imi	<i>it has eaten you</i>
ho ^{wi} a ^{ka} ari	<i>it has eaten him</i>
ho ^{wi} a ^{ka} a ^{wō}	<i>it has eaten her</i>

VERB PARADIGM

	I	II	
	to _____	I have _____ (to her, it)	
1	<i>enter</i>	čaaŋ ^{hi}	nočaaki
2	<i>feed</i>	paaŋ ^{hi}	nopakiro
3	<i>go</i>	hataaŋ ^{hi}	niyaataki
4	<i>suck, kiss</i>	thotaaŋ ^{hi}	nothotakiro
5	<i>chew</i>	naataaŋ ^{hi}	nonaataki
6	<i>illuminate</i>	ootaaŋ ^{hi}	nootakiro
7	<i>cut</i>	čhikaan ^{hi}	nočhikakiro
8	<i>lose</i>	piyaaŋ ^{hi}	nopiyakiro
9	<i>break</i>	ɸiŋkagaan ^{hi}	noɸiŋkaakiro
10a	<i>peel</i>	mičaaŋ ^{hi}	nomičaakiro
10b	<i>peel oneself</i>		nomičaaka
11	<i>be angry</i>	kisaaŋ ^{hi}	nokisakiro
12	<i>go about</i>	kinaaŋ ^{hi}	nokinaki
13	<i>fall</i>	parYaaŋ ^{hi}	noparYaaki
14	<i>burn</i>	tagaaŋ ^{hi}	notaakiro
15	<i>sleep</i>	magaan ^{hi}	nomaaki
16	<i>answer</i>	akaaŋ ^{hi}	nakaki
17	<i>drink</i>	iraaŋ ^{hi}	niraki
18	<i>put</i>	owāaŋ ^{hi}	nowāakiro
19	<i>wait</i>	oyaaŋ ^{hi}	noyakiro
20	<i>take</i>	agaaŋ ^{hi}	haakiro
21	<i>fear</i>	thaaWaaŋ ^{hi}	nothaaWaki
22	<i>to be, sit</i>	saikaaŋ ^{hi}	nosaikaki
23	<i>throw out, leave</i>	ookaaŋ ^{hi}	nookakiro
24	<i>sweep</i>	pisitaaŋ ^{hi}	nopisitakiro
25	<i>heal</i>	siŋ ^{hi} hitaan ^{hi}	nosī ^{hi} takiro
26	<i>heap</i>	piyotaaŋ ^{hi}	nopiyotakiro
27a	<i>get in</i>	otitaaŋ ^{hi}	notitača

	I	II
	to _____	I have _____ (to her, it)
27b	<i>put in</i>	notitakiro
28	<i>have session</i>	naasitaki
29	<i>cultivate</i>	nothamaitakiro
30	<i>repeat</i>	napiitakiro
31	<i>hit, kill</i>	noϕhitokakiro
32	<i>abandon</i>	nositoŵaki
33	<i>jump</i>	nomitaaki
34	<i>bite</i>	naϕhikakiro
35	<i>look</i>	naminakiro
36	<i>insert</i>	noyaagakiro
37a	<i>bathe</i>	nokaŵositakiro
37b	<i>bathe oneself</i>	nokaŵositaka
38	<i>buy</i>	namanaNtakiro
39	<i>pole a canoe</i>	noϕiyaka
40	<i>laugh</i>	nosiroNtaka
41	<i>arrive</i>	nariitaka
42	<i>accompany</i>	noϕhipatakaŵo
43	<i>eat</i>	noŵaka
44	<i>climb</i>	niithokitaki
45	<i>cry</i>	niraaka

III

you will _____
(to her, it)

IV

they will _____
(to her, it)

1	<i>enter</i>	piNči	iNčaiyini
2	<i>feed</i>	piNpiri	iNpaiyironi
3	<i>go</i>	piyaati	hiyaataiyini
4	<i>suck, kiss</i>	piNthoti	iNthotaiyironi
5	<i>chew</i>	pinaati	hinaataiyironi
6	<i>illuminate</i>	pootiro	hootaiyironi
7	<i>cut</i>	piNčhikiro	iNčhikaiyini
8	<i>lose</i>	piNpiyiro	iNpiyaiyironi
9	<i>break</i>	piNčiNkairo	iNčiNkagaiyironi
10a	<i>peel</i>	pimičiiro	imičaiyironi
10b	<i>peel oneself</i>	pimičiia	imičaiyani
11	<i>be angry</i>	piNkičiro	iNkisaiyironi
12	<i>go about</i>	piNkini	iNkinaiyini
13	<i>fall</i>	piNparvi	iNparvaiyini
14	<i>burn</i>	piNtayıro	iNtagaiyironi
15	<i>sleep</i>	pimaiyi	himagaiyini
16	<i>answer</i>	paki	hakaiyironi
17	<i>drink</i>	piri	hiraiyini
18	<i>put</i>	powıro	howıaiyironi
19	<i>wait</i>	poyiro	hoyaiyironi
20	<i>take</i>	payiro	hagaiyironi
21	<i>fear</i>	piNthaawi	iNthaawaiyini
22	<i>to be, sit</i>	pisaiki	isaikaiyini
23	<i>throw out, leave</i>	pookiro	hookaiyironi
24	<i>sweep</i>	piNpisitiro	iNpisitaiyironi
25	<i>heal</i>	piNchiti	isinchitaiyini
26	<i>heap</i>	piNpiyotiro	iNpiyotaiyironi
27a	<i>get in</i>	potiča	hotitaiyani

	III	IV
	<i>you will _____</i>	<i>they will _____</i>
	<i>(to her, it)</i>	<i>(to her, it)</i>
27b <i>put in</i>	pitiitiro	hotitaiyironi
28 <i>have session</i>	paasiti	haasitaiyini
29 <i>cultivate</i>	piNthamaiti	iNthamaitaiyironi
30 <i>repeat</i>	papiitiro	hapiitaiyironi
31 <i>hit, kill</i>	piNɣhitokiro	iNɣhitokaiyironi
32 <i>abandon</i>	pisitoŋi	isitoŋaiyini
33 <i>jump</i>	pimitai	himitagaiyini
34 <i>bite</i>	paɣhikiro	haɣhikaiyironi
35 <i>look</i>	paminiro	haminaiyironi
36 <i>insert</i>	poyaayiro	hoyaasaiyironi
37a <i>bathe</i>	piNkaŋositiro	iNkaŋositaiyironi
37b <i>bathe oneself</i>	piNkaŋosiča	iNkaŋositaiyani
38 <i>buy</i>	pamanaNtiro	hamanaNtaiyini
39 <i>pole a canoe</i>	poɣiya	hoɣiyaiyani
40 <i>laugh</i>	pisiroNča	isiroNtaiyani
41 <i>arrive</i>	pariča	hariitaiyani
42 <i>accompany</i>	piNɣhipačaawo	iNɣhipaiyawoni
43 <i>eat</i>	poya	howaiyani
44 <i>climb</i>	piithoNkiti	hiithoNkitaiyini
45 <i>cry</i>	piraya	hiragaiyani

V

*she might continu-
ally ___ (to her, it)*

VI

*we are ___
(to her, it)*

1	<i>enter</i>	oNčaawāitiita	ačaaɣi
2	<i>feed</i>	oNpawāitiroota	apaɣiiro
3	<i>go</i>	iyaawāitiita	aataɣi
4	<i>suck, kiss</i>	oNt ^h owāitiroota	at ^h otaɣiiro
5	<i>chew</i>	onaawāitiita	anaataɣi
6	<i>illuminate</i>	oowāitiita	ootaɣi
7	<i>cut</i>	oNčhikawāitiita	ačhikaɣi
8	<i>lose</i>	oNpiyawāitiita	apiyaɣiiro
9	<i>break</i>	oNɣiNkaawāitiroota	aɣiNkaaɣiiro
10a	<i>peel</i>	omiɣaaWāitiroota	amiɣaaɣiiro
10b	<i>peel oneself</i>	omiɣaaWāičaata	amiɣaača
11	<i>be angry</i>	oNkisaWāitiroota	akisaaɣiiro
12	<i>go about</i>	oNkinaWāitiita	akinaɣi
13	<i>fall</i>	oNparyaawāitiita	aparyaaɣi
14	<i>burn</i>	oNtaawāitiroota	ataaɣiiro
15	<i>sleep</i>	omaaWāitiita	amaaɣi
16	<i>answer</i>	akaWāitiita	akaɣi
17	<i>drink</i>	irawāitiita	araɣi
18	<i>put</i>	owāwāitiroota	owāɣiiro
19	<i>wait</i>	oyawāitiroota	oyaɣiiro
20	<i>take</i>	aaWāitiroota	aaɣiiro
21	<i>fear</i>	oNthaawāwāitiita	athaawāɣi
22	<i>to be, sit</i>	osaikaWāitiita	awaikaɣi
23	<i>throw out, leave</i>	ookawāitiroota	ookaɣiiro
24	<i>sweep</i>	oNpisiwāitiroota	apisitaɣiiro
25	<i>heal</i>	osiNɣhiwāitiita	asiNɣhitaɣi
26	<i>heap</i>	oNpiyowāitiita	apiyotaɣiiro
27a	<i>get in</i>	otiWāičaata	otitača

	V	VI
	<i>she might continually ___ (to her, it)</i>	<i>we are ___ (to her, it)</i>
27b	<i>put in</i>	otiwaĩtiroota
28	<i>have session</i>	aasiwaĩtiita
29	<i>cultivate</i>	oNthamaiwaĩtiita
30	<i>repeat</i>	apiiwaĩtiroota
31	<i>hit, kill</i>	oNghitokawaĩtiita
32	<i>abandon</i>	ositoŵawaĩtiita
33	<i>jump</i>	omitaawaĩtiita
34	<i>bite</i>	aǰhikaŵaitiroota
35	<i>look</i>	aminaŵaitiroota
36	<i>insert</i>	oyaagaŵaitiroota
37a	<i>bathe</i>	oNkawosiŵaitiroota
37b	<i>bathe oneself</i>	oNkaŵosiŵaičaata
38	<i>buy</i>	amanaNtaŵaitiita
39	<i>pole a canoe</i>	oǰiyaŵaičaata
40	<i>laugh</i>	osiroNtaŵaičaata
41	<i>arrive</i>	ariiŵaičaata
42	<i>accompany</i>	oNǰhipaŵaičaawoota
43	<i>eat</i>	oŵawaĩčaata
44	<i>climb</i>	iithoNkiwaĩtiita
45	<i>cry</i>	iraaŵaičaata
		otitaǰiiro
		aasitaǰi
		athamaitaǰi
		apiitaǰiiro
		aǰhitokaǰiiro
		asitoŵaǰi
		amitaaǰi
		aǰhikaǰiiro
		aminaǰiiro
		oyaagaǰiiro
		akaŵositaǰiiro
		akaŵositača
		amanaNtaǰiiro
		oǰiyača
		asiroNtača
		ariitača
		aǰhipatačaawo
		oŵača
		aithoNkitaǰi
		araača

GENITIVE PARADIGM

	<i>unpossessed</i>	<i>my</i> _____
1 <i>palm (aguaje)</i>	toniro	notoniroti
2 <i>hummingbird</i>	thoNkiri	nothoNkiriti
3 <i>gourd</i>	pamoko	nowamokoti
4 <i>small toucan</i>	pisiro	nowisiroti
5 <i>white monkey</i>	kosiri	noyosiriti
6 <i>rodent (achuni)</i>	kapisi	noyapisiti
7 <i>tapir</i>	kimari	noymariti
8 <i>blue quail</i>	kiNthori	noyiNthoriti
9 <i>land</i>	kipaɣhi	noipaɣhi
10 <i>needle</i>	kiθapi	noithapiti
11 <i>bird</i>	ɣhimiri	noɣhimiriti
12 <i>pineapple</i>	ɣiwana	noɣiwanati
13 <i>large armadillo</i>	čokori	nočokoriti
14 <i>arrow</i>	čhikopi	nočhikopiti
15 <i>small snail</i>	saNkiro	nosaNkiroti
16 <i>vine</i>	siwitha	nosiwithati
17 <i>large quail</i>	çoNkiri	noçoNkiriti
18 <i>fan</i>	hiwāNɣhi	noiwāwō
19 <i>papaya</i>	mapoča	nomapočhati
20 <i>bee</i>	niroNto	noniroNtoti
21 <i>fish (carachama)</i>	iposi	nopositi
22 <i>orchid</i>	anaNta	nanaNtati
23 <i>toucan</i>	opiNpi	nopiNpiti
24 <i>black bee</i>	yaarato	noyaaratoti
25 <i>new leaf</i>	iirisi	niirisiti
26 <i>mahogany</i>	aawana	naawānati
27 <i>crab</i>	oiroNɣi	noiroNɣiti
28 <i>hen</i>	ačaapa	načaapati

	<i>your</i> _____	<i>his</i> _____	<i>her</i> _____	<i>our</i> _____
1	pitoniroti	itoniroti	otoniroti	atoniroti
2	pihoNkiriti	ithoNkiriti	othoNkiriti	athoNkiriti
3	piwamokoti	iwamokoti	owamokoti	awamokoti
4	piwisiroti	iwisiroti	owisiroti	awisiroti
5	piyosiriti	iyosiriti	oyosiriti	ayosiriti
6	piyapisiti	iyapisiti	oyapisiti	ayapisiti
7	piyimariti	iyimariti	oyimariti	ayimariti
8	piyiNthoriti	iyiNthoriti	oyiNthoriti	ayiNthoriti
9	piipaḡhiti	iipaḡhiti	oipaḡhiti	aipaḡhiti
10	piithapiti	iithapiti	oithapiti	aithapiti
11	piḡhimiriti	iḡhimiriti	oḡhimiriti	aḡhimiriti
12	piḡiwanati	iḡiwanati	oḡiwanati	aḡiwanati
13	pičokoriti	ičokoriti	očokoriti	ačokoriti
14	pičhikopiti	ičhikopiti	očhikopiti	ačhikopiti
15	pisaNkiroti	isaNkiroti	osaNkiroti	asaNkiroti
16	pisiwithati	isiwithati	osiwithati	asiwithati
17	piçoNkiriti	içoNkiriti	oçoNkiriti	açoNkiriti
18	piiwawo	riiwawo	oiwawo	aiwawo
19	pimapočhati	imapočhati	omapočhati	amapočhati
20	piNiroNtoti	iniroNtoti	oniroNtoti	aniroNtoti
21	pipositi	ripositi	ipositi	apositi
22	panaNtati	hanaNtati	ananTati	ananTati
23	popiNpiti	hopiNpiti	opiNpiti	opiNpiti
24	piyaaratoti	iyaaratoti	oyaaratoti	ayaaratoti
25	piirisiti	riirisiti	oiriisiti	airiisiti
26	paawanati	raawanati	aawanati	aawanati
27	poiNḡiti	roiNḡiti	oiNḡiti	oiNḡiti
28	pačaapati	račaapati	ačaapati	ačaapati

	<i>unpossessed</i>	<i>my</i> _____
29 <i>rice bird</i>	piɣhiɣhiro	noWiɣhiɣhiroti
30 <i>fish (paco)</i>	komayiri	noyomayiriti
31 <i>wild pig</i>	kitairiki	noitairikiti
32 <i>land snail</i>	poNpo	noŵoNpooti
33 <i>ant (pucacura)</i>	ɣhimi	noɣhimiiti
34 <i>bat</i>	piiri	noWiiriti
35 <i>termite</i>	kairo	noyairoti
36 <i>bee</i>	airi	nairiti
37 <i>tree (pashaca)</i>	saari	nosaariti
38 <i>manioc worm</i>	korva	noyorvani
39 <i>water hole</i>	ɣhimi	noɣhimini
40 <i>shrimp</i>	kito	noitoni
41 <i>squash</i>	kimi	noyimini
42 <i>monkey (musmuqui)</i>	pito	noWiitoni
43 <i>macaw</i>	sari	nosarini
44 <i>peanut</i>	iNki	niNkini
45 <i>black dye</i>	ana	nanani
46 <i>edible plant</i>	oNko	noNkoni
47 <i>anteater</i>	ɕaa	noɕaani
48 <i>louse</i>	niɣhi	noni
49 <i>grey hair</i>	paɣhi	nopai
50 <i>urine</i>	ɣhinɣhi	noɣhini
51 <i>house</i>	paNkoɣhi	nopaNko
52 <i>hookworm</i>	kinɣhi	nokini
53 <i>sole of foot</i>	koNtaɣhi	nokoNta
54 <i>pants</i>	ɕhiNkoɣhi	noɕhiNko
55 <i>eye</i>	okiɣhi	noki
56 <i>bow</i>	yaaniNɣhi	noyaani
57 <i>foot</i>	iɣiNɣhi	noɣi

	<i>your</i> _____	<i>his</i> _____	<i>her</i> _____	<i>our</i> _____
29	piwighighiroti	iwighighiroti	owighighiroti	awighighiroti
30	piyomayiriti	iyomayiriti	oyomayiriti	ayomayiriti
31	pitairikiti	itairikiti	oitairikiti	aitairikiti
32	piwōNpooti	iwōNpooti	owōNpooti	awōNpooti
33	piǵhimiiti	iǵhimiiti	oǵhimiiti	aǵhimiiti
34	piwīiriti	iwīiriti	owīiriti	awīiriti
35	piyairoti	iyairoti	oyairoti	ayairoti
36	pairiti	rairiti	airiti	airiti
37	pisaariti	isaariti	osaariti	asaariti
38	piyorvani	iyorvani	oyorvani	ayorvani
39	piǵhimini	iǵhimini	oǵhimini	aǵhimini
40	piitoni	iitoni	oitoni	aitoni
41	piyimini	iyimini	oyimini	ayimini
42	piwītoni	iwītoni	owītoni	awītoni
43	pisarini	isarini	osarini	asarini
44	piNkini	riNkini	iNkini	aNkini
45	panani	ranani	anani	anani
46	poNkoni	roNkoni	oNkoni	oNkoni
47	piçaani	içaani	oçaani	açaani
48	pini	ini	oni	ani
49	pipai	ipai	opai	apai
50	piǵhini	iǵhini	oǵhini	aǵhini
51	pipaNko	ipaNko	opaNko	apaNko
52	pikini	ikini	okini	akini
53	pikoNta	ikoNta	okoNta	akoNta
54	pičhiNko	ičhiNko	očhiNko	ačhiNko
55	poki	iroki	oki	oki
56	piyaani	iyaani	oyaani	ayaani
57	piǵi	iǵi	oǵi	aǵi

	<i>unpossessed</i>	<i>my</i> _____
58 <i>head</i>	iitoŋchi	noito
59 <i>name</i>	wairoŋchi	nowairo
60 <i>produce</i>	pankiriŋchi	nowankiri
61 <i>forehead</i>	tamakoŋchi	notamako
62 <i>ear</i>	kinpitaŋchi	nokinpita
63 <i>tear</i>	yaakiŋchi	noyaaki
64 <i>egg</i>	iithokiŋchi	noithoki
65 <i>liver</i>	irapanaŋchi	nirapana
66 <i>body hair</i>	siwat'hakiŋchi	nosiwat'haki
67 <i>crown</i>	amanthairiŋchi	namanthaki
68 <i>cotton</i>	anpi	nanpiiri
69 <i>pole</i>	inčhaki	niŋčhakiiti
70 <i>ballast</i>	kiripata	noiripatari
71 <i>thorn</i>	kitočhi	noitočhiri
72 <i>manioc</i>	kaniri	noyaniri
73 <i>basket</i>	kanđiri	noyanđiri
74 <i>comb</i>	kisiri	noisiri
75 <i>panpipes</i>	sonkari	nosonkari
76 <i>clay pot</i>	kowiti	noyowiti
77 <i>purse</i>	thaato	nothaati

	<i>your</i> _____	<i>his</i> _____	<i>her</i> _____	<i>our</i> _____
58	piito	iito	oito	aito
59	piwairo	iwairo	owairo	awairo
60	piwankiri	iwankiri	owankiri	awankiri
61	pitamako	itamako	otamako	atamako
62	pikinpita	ikinpita	okinpita	akinpita
63	piyaaki	iyaaki	oyaaki	ayaaki
64	piithoki	iithoki	oithoki	aithoki
65	pirapana	irirapana	irapana	arapana
66	pisiwathaki	isiwathaki	osiwathaki	asiwathaki
67	pamanthairi	ramanthairi	amanthairi	amanthairi
68	panpiiri	ranpiiri	anpiiri	anpiiri
69	pinchakiiti	rinchakiiti	inchakiiti	anchakiiti
70	piiripatari	iiripatari	oiripatari	airipatari
71	piitochiri	iitochiri	oitochiri	aitochiri
72	piyaniri	iyaniri	oyaniri	ayaniri
73	piyanḡiri	iyanḡiri	oyanḡiri	ayanḡiri
74	piisiri	iisiri	oisiri	aisiri
75	pisonkari	isonkari	osonkari	asonkari
76	piyowiti	iyowiti	oyowiti	ayowiti
77	pithaati	ithaati	othaati	athaati

KINSHIP PARADIGM

	1/PERSON	2/PERSON	3/PERSON/ MASCULINE	3/PERSON/ FEMININE	1/PERSON INCLUSIVE	UNPOSSESSED
1	notomi	pitomi	itomi	otomi	atomi	tomiŋ ^{hi}
2	nisiNto	pisinto	irisinto	isinto	asinto	sintoŋ ^{hi}
3	naniro	paniro	iriniro	---	aniro	aniroNŋ ^{hi}
4	niwatairo	piwatairo	---	owatairo	awatairo	watairoNŋ ^{hi}
5	ŋoŋ ^{hi}	piŋ ^{hi} niri	iŋ ^{hi} niri	---	aŋ ^{hi} niri	ŋ ^{hi} niriNŋ ^{hi}
6	ŋoŋ ^{hi} niri	piŋ ^{hi} niri	---	oŋ ^{hi} niri	aŋ ^{hi} niri	ŋ ^{hi} niriNŋ ^{hi}
7	noyiyiti					
	norinŋi	pirinŋi	iririnŋi	---	arinŋi	
8	noyaariri	piyaariri	---	oyaariri	ayaariri	
9	noŋ ^{hi} ro	piŋ ^{hi} ro	iriŋ ^{hi} ro	---	aŋ ^{hi} ro	ŋ ^{hi} roŋ ^{hi}
	nočoočoti	pičoočoti	ičoočoti	---	ačoočoti	čoočo
10	nirinTo	pirinTo	---	irinTo	arinTo	irinToNŋ ^{hi}
11	noinathori	pinathori	inathori	---	ainathori	inathoriNŋ ^{hi}
11'	noina	piina	iina	---	aina	iinaNŋ ^{hi}
12	nonatoto	pinatoto	---	onatoto	anatoto	natotoNŋ ^{hi}
13	naniiri	paniri	iraniri	---	aniri	ani
14	noimithori	piimithori	---	oimithori	aimithori	imithoriNŋ ^{hi}
14'	noimi	piimi	---	oimi	aimi	imiNŋ ^{hi}

	1/PERSON	2/PERSON	3/PERSON/ MASCULINE	3/PERSON/ FEMININE	1/PERSON/ INCLUSIVE	UNPOSSESSED
15	noḡawačhoriti nirithori	piḡawačhori pirithori	iḡawačhoriti iririthori	---	aḡawačhoriti arithori	paḡačhori irithorinḡhi
16	nirithori	pirithori	---	orithori	arithori	irithorinḡhi
16'	noḡaapati	piḡaapati	iḡaapati	oḡaapati	aḡaapati	paapa
17	niyoti	piyoti	iriyoti	---	ayoti	
18	nayiro	payiro	---	ayiro	ayiro	ayironḡhi
19	nonaanainiti	pinaanainiti	inaanainiti	onaanainiti	anaanainiti	naanaini
19'	nonaanati	pinaanati	inaanati	onaanati	anaanati	naana
20	nokoNkiri	pikoNkiri	ikoNkiri	---	akoNkiri	konki
21	nokonkiri	pikonkiri	---	okonkiri	akonkiri	konki
22	nočharini	pičharini	ičharini	---	ačharini	čharininḡhi
23	naapiti	paapiti	---	aapiti	aapiti	aapi
24	nočiičati	pičiičati	ičiičati	---	ačiičati	čiiča
25	naminiti	paminiti	---	aminiti	aminiti	amini
26	nosawo	pisawo	isawo	---	asawo	sawonḡhi
27	nosari	pisari	---	osari	asari	sarinḡhi

1 nočomi:

son

1A nočomi(thori):

nephew

(sister's son, female ego)

(brother's son, male ego)

male second cousin

(father's sister's daughter's son, male ego)

(father's sister's son's son, female ego)

(father's brother's daughter's son, female ego)

(father's brother's son's son, male ego)

(mother's sister's daughter's son, female ego)

(mother's sister's son's son, male ego)

(mother's brother's daughter's son, male ego)

(mother's brother's son's son, female ego)

2 nisiNčo:

daughter

2A nisiNčo(thori):

niece

(sister's daughter, female ego)

(brother's daughter, male ego)

female second cousin

(father's sister's daughter's daughter, male ego)

(father's sister's son's daughter, female ego)

(father's brother's daughter's daughter, female ego)

(father's brother's son's daughter, male ego)

(mother's sister's daughter's daughter, female ego)

(mother's sister's son's daughter, male ego)

(mother's brother's daughter's daughter, male ego)

(mother's brother's son's daughter, female ego)

3 aniryo:

- daughter-in-law (male ego)
- niece (male ego)
 - (sister's daughter)
- female second cousin (male ego)
 - (father's sister's son's daughter)
 - (father's brother's daughter's daughter)
 - (mother's sister's daughter's daughter)
 - (mother's brother's son's daughter)

4 niwāčiro:

- daughter-in-law (female ego)
- niece (female ego)
 - (brother's daughter)
- female second cousin (female ego)
 - (father's sister's daughter's daughter)
 - (father's brother's son's daughter)
 - (mother's sister's son's daughter)
 - (mother's brother's daughter's daughter)

5 ñoǵhi:

- son-in-law (male ego)
- nephew (male ego)
 - (sister's son)
- male second cousin (male ego)
 - (father's sister's son's son)
 - (father's brother's daughter's son)
 - (mother's sister's daughter's son)
 - (mother's brother's son's son)

6 ñoǵhiniri:

- son-in-law (female ego)
- nephew (female ego)
 - (brother's son)
- male second cousin (female ego)

(father's sister's daughter's son)
 (father's brother's son's son)
 (mother's sister's son's son)
 (mother's brother's daughter's son)

7 iyi / yiyi:

brother (male ego)

7A iyi(t^hori) / yiyi(t^hori):

male cousin (male ego)

(father's sister's daughter's husband)

(father's brother's son)

(mother's sister's son)

(mother's brother's daughter's husband)

8 aari:

brother (female ego)

8A aari(t^hori):

male cousin (female ego)

(father's sister's daughter's husband)

(father's brother's son)

(mother's sister's son)

(mother's brother's daughter's husband)

9 čhoini / čoočo

sister (male ego)

9A čhoini(t^hori) / čoočo(t^hori):

female cousin (male ego)

(father's sister's son's wife)

(father's brother's daughter)

(mother's sister's daughter)

(mother's sister's son's wife)

10 iinčo:

sister (female ego)

- 10A iinčo(thori):
 female cousin (female ego)
 (father's sister's son's wife)
 (father's brother's daughter)
 (mother's sister's daughter)
 (mother's brother's son's wife)
- 11 iñaini:
 sister-in-law (male ego)
 female cousin (male ego)
 (father's sister's daughter)
 (father's brother's son's wife)
 (mother's sister's son's wife)
 (mother's brother's daughter)
- 11' noina:
 wife
- 12 ačo:
 sister-in-law (female ego)
 female cousin (female ego)
 (father's sister's daughter)
 (father's brother's son's wife)
 (mother's sister's son's wife)
 (mother's brother's daughter)
- 13 ani:
 brother-in-law (male ego)
 male cousin (male ego)
 (father's sister's son)
 (father's brother's daughter's husband)
 (mother's sister's daughter's husband)
 (mother's brother's son)

- 14 iimini:
 brother-in-law (female ego)
 male cousin (female ego)
 (father's sister's son)
 (father's brother's daughter's husband)
 (mother's sister's daughter's husband)
 (mother's brother's son)
- 14' noimi:
 husband
- 15 paḡač'ori:
 uncle (male ego)
 (father's brother)
 (mother's sister's husband)
- 16 paḡaini:
 uncle (female ego)
 (father's brother)
 (mother's sister's husband)
- 16' paapa (apa-male ego)
 father
- 17 iyoini:
 aunt (male ego)
 (father's sister)
 (mother's brother's wife)
- 18 ayiini:
 aunt (female ego)
 (father's sister)
 (mother's brother's wife)
- 19 naanaini:
 aunt
 (father's brother's wife)
 (mother's sister)

- 19' naana:
mother
- 20 koNki:
uncle (male ego)
(father's sister's husband)
(mother's brother)
- 21 kokoini:
uncle (female ego)
(father's sister's husband)
(mother's brother)
- 22 čharini:
grandfather (male ego)
grandson (male ego)
- 23 aapi:
grandfather (female ego)
- 24 čiiča:
grandmother (male ego)
- 25 amini:
grandmother (female ego)
granddaughter (female ego)
- 26 noçawō:
granddaughter (male ego)
- 27 noçari:
grandson (female ego)

APPENDIX C
DERIVATIONS

Following are sample derivations illustrating the application of each of the phonological rules formulated in Chapters IV through VII. Underlying forms of each morpheme of a word are given with a corresponding morpheme-by-morpheme gloss as prescribed by the rules of inflectional morphology. The application of each rule, as specified for order, is indicated by the change effected on the form by that rule. Finally, the surface form is given with an English gloss. The words used in the sample derivations are for the most part selected from the texts of Appendix A.

ir + iito	3PM + head	
∅∅	IRREGULAR PREFIX DELETION	
iito	<i>his head</i>	(MONKEY 5)
ir + maaNkoyi + ni	3PM + insect/ <u>corbinsha</u> + POSSESSIVE	
∅	PREFIX SEGMENT DELETION	
	t	GENITIVE STRENGTHENING
imaaNkoyiti	<i>his insect (<u>corbinsha</u>)</i>	(BEETLE 133)
ir + iyaa + i	3PM + go + NON/FUTURE	
∅h	OPTIONAL PREFIX SPIRANTIZATION	
	+t+	EPENTHESIS
	ʔ	AFFRICATION
hiyaaʔi	<i>he went</i>	(BEETLE 38)

koma + ro + \emptyset^hi	paddle + nominalizer/feminine + NON/POSSESSIVE	
N	GENITIVE STRENGTHENING	
\bar{w}	LABIAL ASSIMILATION	
koma \bar{w} oN \emptyset^hi	<i>paddle</i>	(PADDLE 2)
mani + iriki	ant/ <u>izula</u> + DIMINUTIVE	
\emptyset	CLUSTER SIMPLIFICATION	
maniiriki	<i>little ants (<u>izula</u>)</i>	
ir + ag + ak + i + ro	3PM + take + PERFECT + NON/FUTURE + 3PF	
$\emptyset h$	OPTIONAL PREFIX SPIRANTIZATION	
\emptyset	VELAR GLIDE DELETION	
haakiro	<i>he had taken her</i>	(BEETLE 11)
ir + moo	3PM + hole	
\emptyset	PREFIX SEGMENT DELETION	
\emptyset	GEMINATE REDUCTION	
imo	<i>his hole</i>	(BEETLE 19)
ir + ag + i + ro	3PM + take + NON/FUTURE + 3PF	
$\emptyset h$	OPTIONAL PREFIX SPIRANTIZATION	
y	GLIDE FRONTING	
hayiro	<i>he took her</i>	
a \bar{w} is + an + ak + i	pass + DEPARTURE + PERFECT + NON/FUTURE	
h	BACKING	
a \bar{w} ihanaki	<i>padded (departing)</i>	(BEETLE 90)
no + kiri + ni	1P + palm/ <u>pifayo</u> + POSSESSIVE	
\emptyset	WEAKENING	
noirini	<i>my palm (<u>pifayo</u>)</i>	

<p>pi + o + p + ap + ag + ia</p> <p>∅</p> <p style="padding-left: 40px;">w̄</p> <p style="padding-left: 100px;">i y</p> <p>pōwapaia</p>	<p>2P + causative + feed + ARRIVAL + RESOLVED + REFLEXIVE/FUTURE</p> <p>PREFIX SEGMENT DELETION</p> <p>WEAKENING</p> <p>PALATALIZATION</p> <p><i>(you) eat on arrival</i> (BEETLE 113)</p>
<p>a + osagaaNt + piro + an + ak + i + ta</p> <p>∅</p> <p style="padding-left: 80px;">+a+ +t+</p> <p style="padding-left: 180px;">i</p> <p>osagaaNtapirotanakiiti</p>	<p>TPI + stick/for + VERITY + DEPARTURE + PERFECT + FUTURE + SUBJUNCTIVE</p> <p>PREFIX SEGMENT DELETION</p> <p>EPENTHESIS</p> <p>SUBJUNCTIVE LENGTHENING</p> <p><i>let's really stick for on departure</i> (BEETLE 147)</p>
<p>kōw + [REDUPLICATION] + w̄ai + ak + i</p> <p>a</p> <p style="padding-left: 40px;">kōwa</p> <p style="padding-left: 180px;">+t+</p> <p>kōwakōwaw̄aitaki</p>	<p>want + REDUPLICATION + CONTINUATIVE + PERFECT + NON/FUTURE</p> <p>SYLLABLE ADDITION</p> <p>REDUPLICATION</p> <p>EPENTHESIS</p> <p><i>has continually wanted more and more</i> (BEETLE 9)</p>
<p>ir + N + piyo + aiy + ak + ia + ni</p> <p>∅</p> <p style="padding-left: 80px;">+t+</p> <p style="padding-left: 100px;">∅ ∅</p> <p style="padding-left: 180px;">č ∅</p> <p style="padding-left: 200px;">a</p> <p>iNpiyoiačaaani</p>	<p>3PM + FUTURE + gather + PLURAL + PERFECT + REFLEXIVE/FUTURE + PLURAL</p> <p>PREFIX SEGMENT DELETION</p> <p>EPENTHESIS</p> <p>OPTIONAL PLURAL CONTRACTION</p> <p>PALATALIZATION</p> <p>LENGTHENING</p> <p><i>they will have gathered together</i> (CANOE 15)</p>

APPENDIX D
SAMPLE LEXICON

The following section is a sample lexicon with partial lexical specifications for selected words from the major classes (VERBS, NOUNS, and ADVERBS) as well as a listing of the affixes of inflectional morphology. An extended word list is given following these.

For each of the following entries the immediately dominating node (i.e. the part of speech or affix label) is given together with an underlying phonological representation. Any relevant derivational morphology, subcategorizations or suppletive forms are indicated as well.

In the word list, verbs are given with a hyphen following while other parts of speech are not. Spanish loans are indicated as well as some minor classes (e.g. RI POSSESSIVE and Ø POSSESSIVE). Spanish glosses are sometimes given where the English is general or unknown. The forms are given basically in phonemic representation except that long final vowels are indicated as they would be in underlying forms. Normally possessed nouns are indicated by a hyphen and the NON/POSSESSIVE suffix $-tʰi/-Ntʰi$.

MAJOR CLASS WORDS

$tʰik$	<i>cut</i>	VERB	
			[1 TRANSITIVE]
$mapɪ$	<i>rock</i>	NOUN	
			[-POSSESSED
			-KINSHIP
			-SPANISH/LOAN]

o + man *hide* VERB

[1 TRANSITIVE]

< o *causative*
man *hide (intransitive)*

ag + siNto *marry* VERB

[1 TRANSITIVE]

< ag *take*
siNto *daughter*

kim + niNt *not/hunger* VERB

[0 TRANSITIVE]

< kim *feel*
niNt *want*

iNčha + to *tree* NOUN

[-POSSESSED
-KINSHIP
-SPANISH/LOAN]

< iNčha *plant*
to *tree*

iNčha + maisi *tangled/vines* NOUN

[-POSSESSED
-KINSHIP
-SPANISH/LOAN]

< iNčha *plant*
maisi *tangled vines*

iroo *it/feminine* ADVERB

apani + roini *alone* ADVERB

< apani *one*
roini *only*

wi + t^ha *greet* VERB

[1 TRANSITIVE]

[___ X [+REFLEXIVE]]

< wi *greet*
t^ha *spoken*

o + p *eat* VERB

[1 TRANSITIVE]

[___ X [+REFLEXIVE]]

< o *causative*
p *feed*

- oki *eye* NOUN
 [+POSSESSED
 -KINSHIP
 -SPANISH/LOAN]
 → ooki / [3/PERSON/MASCULINE] _____
- ani *brother/in/law(of/male)* NOUN
 [-POSSESSED
 +KINSHIP
 -SPANISH/LOAN]
 [_____ [RI POSSESSIVE]]
- iriNto *sister(of/female)* NOUN
 [+POSSESSED
 +KINSHIP
 -SPANISH/LOAN]
 → iinč'o / [VOCATIVE]
- kaniri *manioc* NOUN
 [-POSSESSED
 -KINSHIP
 -SPANISH/LOAN]
 [_____ [∅ POSSESSIVE]]
- eskuera *school* NOUN
 [-POSSESSED
 -KINSHIP
 +SPANISH/LOAN]

INFLECTIONAL AFFIXES

- ADVERBIAL → -ra
 AFFECTIONATE → -ma^hi
 ARRIVAL → -ap
 BENEFACTIVE → -w̄iNt
 CAUSATIVE → -ak
 CLASSIFICATORY → -t^hori
 CLIMAX → -ɣii
 COMPARATIVE → -taki
 CONTINUATIVE → -w̄ai
 DATIVE → -ako
 DEPARTURE → -an

- DIMINUTIVE → -iriki
- DISTRIBUTIVE → $\left\{ \begin{array}{l} -i\dot{g}hi / C \underline{\quad} \\ -\dot{g}hi / V \underline{\quad} \end{array} \right\}$
- DUBITATIVE → -ma
- EARLY → -aman
- EMPHATIC → -ča
- EXCLAMATORY → -wī
- FRUSTRATIVE → -wī
- HABITUAL → -piŋt
- INDEFINITE → -ka
- INFINITIVE → -aaŋg^{hi}
- INTERRUPTIVE → -ima
- LOCATION → -ki
- NON/POSSESSIVE → -g^{hi}
- PASSIVE → -ai
- PERFECT → -ak
- 1/PERSON → $\left\{ \begin{array}{l} ni- / \#\# \underline{\quad} \text{mag} \\ no- / \#\# \underline{\quad} \\ -na / [\text{TENSE}] X \underline{\quad} \end{array} \right\}$
- 1/PERSON/INCLUSIVE → $\left\{ \begin{array}{l} a- / \#\# \underline{\quad} \\ -ai / [\text{TENSE}] X \underline{\quad} \end{array} \right\}$
- 2/PERSON → $\left\{ \begin{array}{l} pi- / \#\# \underline{\quad} \\ -mi / [\text{TENSE}] X \underline{\quad} \end{array} \right\}$
- 3/PERSON → $\left\{ \begin{array}{l} -na / a \underline{\quad} [3/\text{PERSON}] \\ -ni / i \underline{\quad} [3/\text{PERSON}] \\ ir- / \#\# \underline{\quad} \\ \quad \quad \quad [+MASCULINE] \\ o- / \#\# \underline{\quad} \\ \quad \quad \quad [-MASCULINE] \\ -ri / [\text{TENSE}] X \underline{\quad} \\ \quad \quad \quad [+MASCULINE] \\ -ro / [\text{TENSE}] X \underline{\quad} \\ \quad \quad \quad [-MASCULINE] \end{array} \right\}$
- PLURAL → $\left\{ \begin{array}{l} -aiy / [\text{VERB}] X \underline{\quad} \\ -pai / [\text{NOUN}] X \underline{\quad} \\ -ni / [\text{PLURAL}] X \underline{\quad} \end{array} \right\}$
- where X ≠ [PLURAL]

POSSESSIVE → $\left\{ \begin{array}{l} -ri / [RI \text{ POSSESSIVE}] \\ \emptyset / [\emptyset \text{ POSSESSIVE}] \\ -ni / \underline{\quad} \end{array} \right\}$

PROGRESSIVE → -ač

PURPOSE → -asi

RAPID → -apaiNt

REASON → -aNt

RECEIVING → -a \bar{w}

RECIPROCAL → -a \bar{w}

REFERENTIAL → -pit^ha

RELATIVE → -ri

REPETITIVE → -aa

RESOLVED → -ag

STATIVE → - ϕ ^hi

SUBJUNCTIVE → -ta

TENSE

[+FUTURE
-REFLEXIVE] → -i

[-FUTURE
-REFLEXIVE] → $\left\{ \begin{array}{l} -a / X ([\text{PROGRESSIVE}]) \underline{\quad} [1/\text{PERSON}] \\ -i / X ([\text{PERFECT}]) \underline{\quad} \underline{\quad} \end{array} \right\}$

[+FUTURE
+REFLEXIVE] → $\left\{ \begin{array}{l} -i / \underline{\quad} \left\{ \begin{array}{l} 1/\text{PERSON} \\ 2/\text{PERSON} \end{array} \right\} \\ -ia / \underline{\quad} \end{array} \right\}$

[-FUTURE
+REFLEXIVE] → $\left\{ \begin{array}{l} -i / \langle \text{PERFECT} \rangle \underline{\quad} \left\{ \begin{array}{l} \langle 1/\text{PERSON} \rangle \\ \langle 2/\text{PERSON} \rangle \end{array} \right\} \\ -a / \underline{\quad} \end{array} \right\}$

THERE/AND/BACK → -aki

VERITY → -piro

WORD LIST

aa- *go*

aa- *bring forgotten thing*

aa- *not lack, complete*

aa ϕ ik- *step*

aa ϕ hi *trail*

aaka *we*

aako- *carry water*

aamag- *be insulted*

aariiti *black bird (paucar)*

aasi- *call meeting*

- aasiNto- marry a woman
 aatikoꝽi partridge (panguano)
 aaWana mahogany
 aꝽiri people
 aꝽhik- bite
 aꝽimiik- chew noisily
 aꝽaapa hen
 aꝽoo- gather to eat
 aꝽaagawo-NꝽhi, aꝽaagago-NꝽhi
 things
 aꝽ- marry, own, possess
 aꝽ- take, carry
 aꝽ- fly
 aiki-NꝽhi tooth
 aipa- wrap
 airi bee
 ak- answer
 akiꝽhi heat
 ako-Ᵹhi hand
 am- bring
 amaa- swim
 amaatako- travel downriver
 amaꝽiNk- whisper
 amanaNt- buy
 amaNthairi-NꝽhi crown, hat
 amasi- wound, destroy
 amatawī- trick
 ami- get accustomed
 amiꝽooW- wring out clothes
 amii- cut hair
 amik- file, sharpen
 amin- see, look for
 amiNpori white condor
 amiNtha- entwine
 amitakag- domesticate
 amoNkoꝽi- chew
 ana edible plant (huito)
 anaako- gain, win
 anaNꝽi crane
 anaNta orchid
 anii- walk
 anona fruit tree
 (Spanish loan)
 aNpii cotton [RI POSSESSIVE]
 aNporitho-NꝽhi
 small intestines
 aNt- do
 aNt- fight
 aNtami jungle, bush
 aNta-ri, -wō large, strong
 añ- live
 añaamiNto-Ᵹhi lungs
 apaaha wait
 apaani one
 apaniroini alone, only
 apato- gather together
 apathakiroini always
 apii- repeat
 apinai- roll up
 apiti two
 apiti- move toward
 apitha- tie together
 arii- arrive (not at home)
 aroosaki rice

asaNk-	smell	ɕiwiito	beetle, maggot fly
asaNkani-ɕhi	heart	ɕiya-ɕhi	feces
asi-	cover	ɕhiɕhiri	cricket
asiro	metal (Spanish loan)	ɕhiɕoki	parakeet
asiy-	suck	ɕhiito	gnat
ataki	enough	ɕhika	what?
atii-	climb	ɕhikaa-	strain, filter
atik-	have pain	ɕhiki	palm (<u>chonta</u>)
atha-	equal	ɕhiko-	hook fruit
athak-	squeeze	ɕhikoɕi-	scoop
aŋamitha-	do well, in order	ɕhikomiro-Nɕhi	fruit hook
aŋaŋaNɕhi	small river frog	ɕhimi	salt water hole
aŋis-	pass	ɕhimii	ant (<u>pucacura</u>)
aŋiNt-	cure	ɕhimiri	bird
aŋithano-	embrace	ɕhinag-	raise
aŋiy-	be able	ɕhinani	female
aŋiy-	give to drink	ɕhini-ɕhi	urine
aŋo	bird (<u>atatahuo</u>)	ɕhiNki	eel
ayii-	descend	ɕhipa-	accompany
ɕim-	have	ɕhipana	leaf
ɕimasi-	spy	ɕhipaŋairo	whippoorwill
ɕiNk-	break in two	ɕhipi	monkey (<u>bolsillo</u>)
ɕiNkami-Nɕhi	corner pole	ɕhipiri	mat
ɕiNko-ɕhi	tail	ɕhiraka	yellow-breasted bird
ɕiNkotag-	split	ɕhirapa	tree with flat pods
ɕiri	resinous tree	ɕhiri	snakelike amphibian
ɕiroki	Venus flytrap	ɕhiriɕi	small bird
ɕirooɕi	palm (<u>huicungo</u>)	ɕhiriNɕhi	palm (<u>chonta</u>)
ɕisiŋir-	split	ɕhirikanaa	chili pepper
ɕiso	buzzard	ɕhirini-	be night
ɕiŋana	pineapple	ɕhirooɕi	bird (<u>chihuaquitos</u>)
ɕiŋi	salt	ɕhitok-	hit, kill

ǧhiroNpitha <i>vine (tamshi)</i>	ǧhiriwīto <i>kingfisher</i>
ǧhiwāaki <i>tree (copal)</i>	ǧhiroki <i>redheaded parrot</i>
ǧhiwāNkiri <i>tree (huairuro)</i>	ǧhiwīro <i>fish (macana)</i>
ǧhiwīri <i>wood-boring insect</i>	ǧhiwōNǧhi <i>swallow</i>
ǧhiwōo <i>cane box</i>	ǧhoǧhoki <i>fruit</i>
ǧhiya <i>bird (chicua)</i>	ǧhokita-Nǧhi <i>shoulder</i>
ǧhiyaki-Nǧhi <i>tail</i>	ǧhoNǧho <i>blunt arrow</i>
ǧhiyawo <i>palm (chivon)</i>	ǧhoNpi <i>white bird</i>
ǧhiyiri <i>small white monkey</i>	ǧhoNpiniro <i>black bird</i>
ǧhiyoNǧhi <i>small woodpecker</i>	ǧhookiro <i>tree ant</i>
ǧ- <i>carry (tump line or</i> <i>on shoulder)</i>	ǧhopawairoǧi <i>species of bird</i>
ǧ- <i>enter</i>	ǧhopi- <i>cook in liquid</i>
ǧiīča <i>grandmother</i>	ǧhopiri-Nǧhi <i>soup</i>
ǧokori <i>armadillo</i>	ǧhorina <i>species of palm</i>
ǧoNkiǧhiki <i>small bean</i>	ǧhorita <i>small parrot</i>
ǧoopi <i>chick</i>	ǧhōwi-ǧhi <i>parasitic worm</i>
ǧōwiri <i>species of insect</i>	ǧaa <i>anteater</i>
ǧhaanari <i>jaguar</i>	ǧaamiǧhi-Nǧhi <i>namesake</i>
ǧhaaNǧho <i>pig (Spanish loan)</i>	ǧiitaki-Nǧhi <i>finger nail</i>
ǧhakaNpi <i>bird (trompetero)</i>	ǧiitini- <i>be afternoon</i>
ǧhamairo <i>dry vine</i>	ǧiito-Nǧhi <i>intestines</i>
ǧhamaNto <i>woodpecker</i>	ǧiniNka-Nǧhi <i>fellow countryman</i>
ǧhapiǧhi <i>insect (huayuco)</i>	ǧino-ǧhi <i>Adam's apple</i>
ǧhapiNki <i>long ago</i>	ǧiNpa-ǧhi <i>upper arm</i>
ǧharawā <i>catfish</i>	ǧiNpiri <i>tree (lupuna)</i>
ǧhii-ǧhi <i>horn, antler</i>	ǧiwāNto <i>species of tree</i>
ǧhiiNkari <i>snake (gergón)</i>	ǧiya <i>palm (ungurahui)</i>
ǧhik- <i>cut</i>	ǧoiNčo <i>small banana</i>
ǧhikopi <i>cane, arrow shaft</i>	ǧoNkiri <i>large partridge</i>
ǧhiNko-ǧhi <i>pants</i>	ǧooNǧhoǧhi <i>black partridge</i>
ǧhira-ǧhi <i>lips</i>	ǧōwiri-Nǧhi <i>cane flute</i>
	eskuera <i>school (Spanish loan)</i>

ha oh	iithoki-Ng̃hi egg
ha- go	iithonki- climb
haka here	iig̃i-Ng̃hi foot
haniri species of monkey	iig̃hikonTa-Ng̃hi sole of foot
haNto there	imaa very, true
hi yes	imoŵo tree grub
hiNto large edible frog	iNg̃hipa tree (<u>shimbillo</u>)
hiŵi slingshot (Spanish loan)	iNčarYohaNti exclamation
hinig̃hi meteor	iNčha go
hinoki above	iNčhačonki small twig
hiñaa water, river	iNčhaki pole (RI POSSESSIVE)
hiñookiini right above	iNčhapanki pole
hirika this (masculine)	iNčhasi shrubs, weeds
hiriŵag̃iki tree (<u>estoraqui</u>)	iNčhato tree
hiro monkey (<u>huapo</u>)	iNkaari lake
hiroka this (feminine)	iNkani rain
hito small poisonous spider	iNki peanut
hiŵaNg̃hi fan	iNkiti sky
hoika- play (Spanish loan)	iNpaniki sand
homo- species of frog	iNpari potato
hoNkiro red wood	iNpita crawfish
i- precede	iNpoi- follow behind
iig̃i small armadillo	iNpookiro star
iig̃hiki wild fruit	iNpooto earthworm
ii- name, be called, be	iposi fish (<u>carachama</u>)
iiki already	ir- drink
iipatha-Ng̃hi brain	iraa-Ng̃hi blood
iiriki green, unripe	irakaaNto ripe plantain
iirisi green leaf	irag- cry
iiro no	irapana-Ng̃hi liver
iiroka you	irii it (masculine)
iito-Ng̃hi head	irirori he, him, it

iroꞑi	parrot	kag-	bring water
iroñaaka	now, today	kaim-	call
iroo	it (feminine)	kairi	animal (like anteater)
iroori	she, her, it	kairo	termite
irvani	small, young	kairok-	tickle
irvapa	rifle	kamaari	shaman
isaaꞑiki	below, down	kamaNt-	tell, advise
itho	small swallow	kamato	insect (eats potato)
iꞑaꞑkari	single man	kami-	ask
iꞑaꞑkaꞑo	single woman	kamiitha	good
iꞑiꞑiki	weed	kamisa	shirt (Spanish loan)
iꞑito	rodent (<u>ronsoco</u>)	kanari	wild turkey
iꞑiy-	be (location)	kaniri	manioc (Ø POSSESSIVE)
iyaa-	go	kaniyaꞑhi	manioc stalk
iyoꞑhi	catfish	kaꞑiri	basket (Ø POSSESSIVE)
iyoo-	know	kaꞑona	palm (<u>pona</u>)
iyopiꞑpi	bird (<u>pinshe</u>)	kaNt-	say, tell
kaa-	be, have	kaNt-	be thus
kaagasi	rough leaf	kapiꞑhiini	few, little
kaani-	be ashamed	kapisi	animal (<u>achuni</u>)
kaaꞑkari	small toucan	kapoh-	hit with fist
kaari	why not?	kasiri	moon, month
kaaꞑa	river frog	kasirik-	strangle
kaꞑik-	wring the neck	kataꞑosi	weed
kaꞑhikoꞑana-	fold leaf	katha-	hold in the hand
kaꞑhikori	small ant	kaꞑana	palm (<u>pona</u>)
kaꞑhiy-	fold leaf	kaꞑiniri	termite
kaꞑok-	mix salt and meat	kaꞑiniro	species of tree
kaꞑhaa-	fish (with hook)	kaꞑithok-	strain manioc beer
kaꞑhaari	smoke	kaꞑiy-	insult, scorn
kaꞑhawa-ꞑhi	fish hook	kaꞑosi-	bathe
kaꞑikari	wildcat	kay-	hull

kiɣhiroi <i>ni</i> <i>first</i>	kisiri <i>comb</i> (∅ POSSESSIVE)
kim- <i>hear, listen, understand</i>	kisori <i>hard</i>
kimaniNt- <i>be full</i>	kita- <i>dig, bury</i>
kimari <i>tapir</i>	kitairiki <i>wild boar</i> (<i>sajino</i>)
kimi <i>squash</i>	kitamaari <i>white</i>
kimi- <i>scrape with knife</i>	kitiçi- <i>dawn</i>
kimi- <i>appear, seem</i>	kitiriri <i>yellow</i>
kin- <i>go by trail</i>	kito <i>crawfish</i>
kinaki <i>blue, green</i>	kitočhi <i>thorn</i> (RI POSSESSIVE)
kini-ɣhi <i>parasitic worm</i>	kit ^h a <i>monkey</i> (<i>chosna</i>)
kinɣhi-ɣhi <i>nape of neck</i>	kit ^h api <i>needle</i>
kinKisiry- <i>think</i>	kithari-Nɣhi <i>kaftan</i> (<i>cushma</i>)
kinKitha- <i>tell, remember</i>	kithoki-Nɣhi <i>seed, coin</i>
kinPiçi <i>fish</i> (<i>carachama</i>)	kiw- <i>wash</i>
kinPita-Nɣhi <i>ear</i>	kiy- <i>dig</i>
kinPito <i>cacao tree</i>	kiyaari <i>small toucan</i>
kinTawo <i>parrot</i>	koçi-ɣhi <i>walking stick</i>
kinTiro <i>armadillo</i>	koɣhimi <i>red flowering tree</i>
kinTha- <i>tell</i>	kočhirikoɣhi <i>bird</i> (<i>trompetero</i>)
kinThori <i>blue partridge</i>	kočhiro <i>short-tailed rat</i>
kipaçi <i>land, ground</i>	koçosika <i>dolphin</i>
kipayi <i>hardwood tree</i>	koma- <i>paddle</i>
kipiya <i>tree</i> (<i>bombonaje</i>)	komawo-Nɣhi <i>paddle</i>
kipiyari <i>poison</i>	komayiri <i>fish</i> (<i>gamitana</i>)
kiri <i>palm</i> (<i>pifayo</i>)	komNPiki <i>species of vine</i>
kiri-ɣhi <i>nose</i>	komINT ^h a- <i>be a hunter</i>
kiriiki <i>coin</i>	komisiki <i>guava</i>
kiripata <i>ballast</i>	konaa- <i>fish</i> (<i>with poison</i>)
kis- <i>be angry</i>	koŋapi <i>barbasco, poison root</i>
kisaari <i>black</i>	konɣikota <i>floor lattice</i>
kisaw- <i>stick</i> (<i>splinter</i>)	končari <i>small woodpecker</i>
kisi- <i>comb</i>	kooNčhi <i>barbed catfish</i>

koNpiro	<i>red-breasted bird</i>	mačhaaki	<i>large bean</i>
koNpirosi	<i>palm (<u>yarina</u>)</i>	mačook-	<i>close the eyes</i>
koNta-ğhi	<i>sole of foot</i>	maçiro	<i>species of frog</i>
koNthawo	<i>wild dove</i>	maçironki	<i>species of snake</i>
koriği	<i>edible plant (<u>camote</u>)</i>	mag-	<i>sleep</i>
koričha	<i>tree with red sap</i>	mainari	<i>single man</i>
korinto	<i>legendary animal</i>	mainawo	<i>single woman</i>
korva	<i>manioc worm</i>	maini	<i>bear</i>
kosaniri	<i>alligator</i>	mairi-	<i>be serious, solemn</i>
kosi-	<i>steal</i>	makiriğhi	<i>small bee</i>
kosikaki	<i>small wasp</i>	makory-	<i>rest</i>
kosinthağhi	<i>fruit (bird food)</i>	makota	<i>small alligator</i>
kosipirinKi	<i>snake (<u>ajuaninca</u>)</i>	mamawo	<i>owl</i>
kosiri	<i>white monkey</i>	mamori	<i>wild pig (<u>sábaló</u>)</i>
kosiriniPi	<i>large poison spider</i>	manaasawo	<i>turtle</i>
kotary-	<i>split, break</i>	manapitha	<i>hide in waiting</i>
koḡ-	<i>want</i>	mani	<i>large ant (<u>izula</u>)</i>
koḡaakiğhi	<i>white-throated hawk</i>	maniro	<i>deer</i>
koḡana	<i>species of fish</i>	maḡoo	<i>mosquito</i>
koḡanği	<i>species of tree</i>	maNpiriğhi	<i>insect (<u>isango</u>)</i>
koḡinKari	<i>danger</i>	maNpitha	<i>thread</i>
koḡiği	<i>clay pot</i>	maNthaki-Nğhi	<i>worn dress</i>
koḡiri	<i>fish (<u>corvina</u>)</i>	maNthari-Nğhi	<i>spider web</i>
maagği	<i>turkey (<u>maracaraco</u>)</i>	mapaa	<i>tree (<u>zapote</u>)</i>
maakawagğhi	<i>black eagle</i>	mapi	<i>rock</i>
maamiNto-ğhi	<i>bedding, mosquito net</i>	mapiği	<i>species of bird</i>
maana	<i>potato (<u>sachapapa</u>)</i>	mapiki	<i>pebbles</i>
maanKi	<i>snake</i>	mapočha	<i>papaya</i>
maanKisi	<i>snakebite herb</i>	mari-ğhi	<i>bracelet</i>
maanKoyi	<i>insect (<u>corbinsha</u>)</i>	maritha	<i>ayahuasca</i>
maawoni	<i>all, every</i>	masawinka-Nğhi	<i>sweat</i>
		masonği	<i>dumb</i>

matiri <i>catfish</i>	moo-ŕhi <i>hole</i>
mato <i>moth</i>	moy- <i>boil</i>
mathoNthori <i>small wildcat</i>	na- <i>carry on shoulder</i>
mi- <i>jump</i>	naa- <i>chew</i>
miŕika-Nŕhi <i>spinal column</i>	naaka <i>I, me</i>
miŕ- <i>peel fruit</i>	naana <i>mother</i>
miŕaa <i>tree (capirona)</i>	naasaNpi-Nŕhi <i>forearm</i>
mii <i>otter</i>	naNpi-ŕhi <i>community</i>
mimiiki <i>species of nut</i>	naraNka <i>orange (Spanish loan)</i>
miNkari-Nŕhi <i>hunting blind</i>	naŕaŕhi <i>freckle, mole</i>
miNki-ŕhi <i>partly burned wood</i>	ni-ŕhi <i>louse</i>
miNko <i>roasting grill</i>	nini-ŕhi <i>tongue</i>
miNkori <i>cloud</i>	niNŕhikiroini <i>slowly</i>
miNkosi-Nŕhi <i>nest</i>	niNt- <i>want to</i>
miNtarv- <i>split</i>	niroNta <i>bee</i>
miriŕhi <i>orphan</i>	niy- <i>swallow</i>
miriki-Nŕhi <i>rib</i>	niyaminto-ŕhi <i>throat</i>
mirikipaNki <i>roof lattice</i>	niyaNki <i>half</i>
miripiri <i>filing rock</i>	noma-ŕhi <i>jaw</i>
mirito <i>fish (anchoveta)</i>	nooNki <i>boa</i>
misi- <i>dream</i>	nosik- <i>pull</i>
misiki-Nŕhi <i>wart, pimple</i>	ñ- <i>see</i>
misina-Nŕhi <i>animal skin</i>	ñ- <i>talk, sing</i>
mitag- <i>jump over</i>	ña- <i>be morning</i>
mitiri <i>small parrot</i>	ñaana- <i>read</i>
miyiri <i>large squirrel</i>	ñaaNt- <i>try, test</i>
moŕikirosi <i>thatching leaves</i>	o <i>or (Spanish loan)</i>
moŕaa-Nŕhi <i>spring, well</i>	oŕik- <i>block, obstruct</i>
moito-Nŕhi <i>navel</i>	oŕipiy- <i>twist vines</i>
mok- <i>perforate</i>	oŕisi <i>ridge, mountain</i>
moNĉ- <i>cross river</i>	oŕiy- <i>pole upriver</i>
moNti- <i>surround</i>	oŕhiŕhi <i>dog</i>

oĉ-	<i>fell, knock down</i>	osagaaNt-	<i>stick in to pull out</i>
oĉaaNt-	<i>send</i>	osaNkina-	<i>write</i>
oĉhiwa	<i>island</i>	osaNpi-	<i>ask</i>
oĉ-	<i>be like, resemble</i>	osiNta-	<i>string together</i>
oĉiki	<i>many, much</i>	osiri-	<i>come to get</i>
oĉiro	<i>crab</i>	osiriNk-	<i>separate</i>
oĉito	<i>monkey (choro)</i>	osok-	<i>throw, scatter</i>
oirik-	<i>hold, grab</i>	otaapiki	<i>cliff</i>
oiriNk-	<i>descend</i>	otaNtaŵasi	<i>rafter</i>
oiroNĝhi	<i>round crab</i>	otaNto-	<i>lash pole wall</i>
oho-	<i>tie thatch</i>	oti-	<i>put in</i>
oki-ĝhi	<i>eye</i>	otik-	<i>shake</i>
omani	<i>black catfish</i>	otiy-	<i>hold on</i>
omoNĉ-	<i>insert</i>	otoNk-	<i>kill</i>
oNchooŵ-	<i>squeeze, wring</i>	oŵ-	<i>eat</i>
oNkiro	<i>rat</i>	oŵ-	<i>put, place</i>
oNko	<i>edible plant</i>	oŵaaĝi	<i>wolf</i>
oNkoĝhi-	<i>cook</i>	oŵaaĝhi	<i>manioc stalk</i>
oNkona	<i>tree (siteco)</i>	oŵamag-	<i>kill</i>
oNpiriNĝhi	<i>locust</i>	oŵanaŵo-Nĝhi	<i>staple food</i>
oNpoh-	<i>hit the head</i>	oŵaŋ-	<i>shame</i>
oNtah-	<i>slap</i>	oŵasiro-Nĝhi	<i>cage, blind</i>
oNtahaŵako-	<i>applaud</i>	oŵawiro-Nĝhi	<i>joint</i>
oo-	<i>shine</i>	oŵik-	<i>insert</i>
ook-	<i>abandon</i>	oŵiNt-	<i>plant manioc stalk</i>
oorŷa	<i>sun</i>	oy-	<i>wait</i>
oosa-	<i>tie</i>	oyaa-	<i>follow after</i>
ooŵ-	<i>dry in the sun</i>	oyaaĝ-	<i>insert</i>
opaayaa	<i>beach</i>	oyi	<i>rainbow</i>
opaNta-ri, ŵo	<i>be valuable</i>	oyii-	<i>harvest, collect</i>
opiNpi	<i>toucan</i>	p-	<i>feed</i>
oryaaĝhiri	<i>sun</i>	paaNpari	<i>cooking fire</i>

paaNti-Nghi	mouth	pasighi	tick
paapa	father	pasik-	cover
paapani	ash	pasini	other
paata	some	paso	gourd (<u>tazon</u>)
paato	balsa	pa ^w a	God, sun
pačhaka	gourd	pa ^w i-ghi	ladder
pai-ghi	grey hair	pa ^w o	night bird
paik-	nail	pi ^h iNghi	species of bird
paiki ^h i	bird (<u>violinista</u>)	pi ^h irisi	plant, thread dye
pairani	long ago	pi ^h i	bee hive
pairi	species of worm	pi ^h i ^h iro	bird (<u>arrocero</u>)
pairv-	say a name	pi ^h ithari	black clay
paiti	when	piiNpi	butterfly
pakag-	finish	piiri	bat
pakitha	hawk	pimaNt-	sell, give
pamačaki	black bird	pina-	pay
pamaki	species of fruit tree	pira ^h i	wild pig (<u>huangana</u>)
pamoko	drinking gourd	piri ⁱ Nt-	raise, lift
paniki-Nghi	sawdust	piriNk-	cut, shave
paNčo	domesticated duck	piriNto	lake frog
paNka-ghi	forehead	piroNghi	lightning bug
paNki-	plant seed	pirota	lightning bug
paNkiri-Nghi	products		(deviant pronunciation)
paNko-ghi	house, shelter	pirvatiNka ^w o	dry stream
paNpitha-	follow trail	pis-	clear brush
paNpithag-	sing	pisi-	sweep
papiri	paper (Spanish loan)	pisigi	small toucan
parari	otter	pisiro	small toucan
paritha-Nghi	root	pito	monkey (<u>musmuqui</u>)
parv-	fall	pito-ghi	canoe
parvaNghi	plantain	pithatha	small squirrel
pasi-	give a gift	piy-	lose, return, disappear

piya-	<i>avenge</i>	samito-Ngh	<i>godmother</i>
piyaa-	<i>empty, pour</i>	sanii	<i>wasp</i>
piyari-Ngh	<i>manioc beer</i>	saNkatari-Ngh	<i>armpit</i>
piyatha-	<i>disobey</i>	saNkiro	<i>small snail</i>
piyo-	<i>heap, gather together</i>	saNko	<i>sugar cane</i>
pochari	<i>sweet</i>	saNkori	<i>species of ant</i>
poha-	<i>roast</i>	saNpaa	<i>balsa</i>
pok-	<i>come</i>	saNpoWatha	<i>clay</i>
pona-	<i>entwine</i>	saNtani	<i>species of bird</i>
ponaaçimoo	<i>have a black face</i>	saNtari	<i>cedar tree</i>
poñ-	<i>happen</i>	saNtoma	<i>rubber tree</i>
poNk-	<i>split palm bark</i>	saNthari	<i>long, tall</i>
poNkito	<i>nettle</i>	sapaato	<i>shoe (Spanish loan)</i>
poNpoo	<i>land snail</i>	sari	<i>macaw</i>
poNpooçhi	<i>small owl</i>	sari-çhi	<i>grandson</i>
poo-çhi	<i>face</i>	satotori	<i>red bird</i>
pooWōNto	<i>species of bird</i>	saWāWō	<i>parrot (papagallo)</i>
pori-çhi	<i>thigh</i>	saWiri	<i>machete (Spanish loan)</i>
porita	<i>small hen</i>	saWito	<i>green parrot (quacamayo)</i>
posini-	<i>be delicious</i>	saWō-çhi	<i>granddaughter</i>
potooki	<i>medicinal nut</i>	saWoo	<i>cane</i>
pothoçhinki	<i>species of snake</i>	si-	<i>defecate</i>
rapisi	<i>pencil (Spanish loan)</i>	siçhi-	<i>rot, decay</i>
saaNkoçhi	<i>black partridge</i>	siirinçhi	<i>small partridge</i>
saari	<i>mimosa tree</i>	sikiri	<i>mosquito net</i>
saaWāNt-	<i>incubate</i>	sikoki-Ngh	<i>clavicle</i>
sagaari	<i>fox</i>	sima	<i>fish</i>
saik-	<i>be, sit</i>	simakoWari	<i>crane</i>
saira	<i>banana (Spanish loan)</i>	simaNpi	<i>vine</i>
samaka	<i>driftwood</i>	simasiri	<i>species of flower</i>
samani	<i>rodent (majás)</i>	simiro	<i>species of tree</i>
samaNpo	<i>ash</i>	simori-Ngh	<i>saliva</i>

simoto <i>beetle</i>	sitoW- <i>go out</i>
sina <i>tree (Lupuna)</i>	sitoW- <i>make a trail</i>
siniki <i>resinous vine</i>	sitha <i>species of worm</i>
siNghi- <i>heal</i>	sithapi-Nghi <i>vein</i>
siNghi-paa <i>balsa (RI POSSESSIVE)</i>	siWa <i>small fish</i>
siNki <i>corn</i>	siWaNki-Nghi <i>hair, feather</i>
siNpi <i>fish (carachama)</i>	siWathaki-Nghi <i>body, hair</i>
siNpiri <i>fish trap</i>	siWitha <i>species of vine</i>
siNpoki <i>horsefly</i>	siy- <i>escape, run</i>
siNto-ghi <i>daughter</i>	siyiNgi <i>dragonfly</i>
siNtori <i>wild pig (sajino)</i>	soNkari <i>panpipes</i>
siNtoro <i>belt (Spanish loan)</i>	(RI POSSESSIVE)
sipačoki-Nghi <i>eyelid</i>	soNki-ghi <i>kidneys</i>
sipani-Nghi <i>breast</i>	soo <i>sloth</i>
sipatona-Nghi <i>beard</i>	sorik- <i>blister</i>
siraNpari <i>male</i>	sorinaki-Nghi <i>corner</i>
siraNtaa <i>boulder</i>	soriNgi <i>bird (tangria)</i>
siri- <i>search</i>	soyooki-Nghi <i>sty</i>
siri-ghi <i>soul, spirit</i>	taam- <i>line up</i>
sirik- <i>sew, tie</i>	taaniča <i>I don't know</i>
siriNk- <i>make room</i>	taapiiki-Nghi <i>back</i>
sirisiriighi <i>cricket</i>	paighiNk- <i>push</i>
siro <i>white dove</i>	tag- <i>burn</i>
siroNgi <i>large hawk</i>	tairi <i>yellow-flowering tree</i>
siroNt- <i>laugh</i>	tamako-Nghi <i>forehead</i>
sision <i>meeting (Spanish loan)</i>	taNpiya <i>wind</i>
sitasiki <i>wild plant</i>	tapitha <i>species of vine</i>
sitasi-Nghi <i>mat</i>	tapo-ghi <i>gums</i>
sitatari <i>cockroach</i>	tarv- <i>peel manioc</i>
sitiki-Nghi <i>waste, trash</i>	tasi- <i>roast</i>
sito <i>monkey (capuchin)</i>	tasiri-Nghi <i>roasted food</i>
sitooWi <i>edible mushroom</i>	tasonk- <i>fan</i>

tasoriN̄hi	God, gods	thami	let's go
taWaaato-N̄hi	shin	thamiri	bird (<u>paujil</u>)
ti	no	thaNpisi-N̄hi	island
tini-ghi	breast, teat	thapiki-N̄hi	edge
tiNpag-	leave the trail	tho-	suck, kiss
tipoki-N̄hi	hip	thokih-	hiccough
tiWaa-N̄hi	branch	thomag-	carry baby
tiyaki-N̄hi	petal	thoNk-	finish, complete
to-	cut the hair	thoNki	small ant
toḡiroki	water snail	thoNkiḡhiro	yellow wood
tomINko	week (Spanish loan)	thoNkiri	hummingbird
toniro	palm (<u>aguaje</u>)	thoNpari	crane
toNkaari	hill, peak	thoNpita	species of ant
toNkag-	climb, ascend	thoori	bird (<u>paucar</u>)
toNkamiNto-ghi	rifle	thooriNki	green poisonous snake
toNki-ghi	bone	thoWaa-ghi	palm fruit, beak
torosa	shorts (Spanish loan)	thoWiro	monkey (<u>maquisapa</u>)
toW-	fell, cut down	Waaaka	cow (Spanish loan)
tha-	tie and pull up, hang	Waaaki-N̄hi	juice, broth
thaa-	bark, shout	Watha-ghi	meat, body
thaa-	finish drink	WathaN̄hi	fat
thaaNki-	hurry	Wiḡi-ghi	hair, feather
thaato	purse	Wiḡhik-	make, construct
thaaW-	fear, be afraid	Wiinti-	sell (Spanish loan)
thaaWak-	be reserved, timid	Wiiyo-N̄hi	mound
thač-	pull out, pull up	Wiritha-N̄hi	string from bark
thaiNk-	hex	Witha-	greet
thairo	black bird	Wiyonkari-N̄hi	spleen
thaiy-	line up	yaaki-N̄hi	tear
thak-	dye, stain	yaani-N̄hi	bow
thaki-ghi	waist	yaarato	black bee
thamai	cultivate		

yachinka-Nchi *poison*

yinKa-Nchi *body fat*

yipiti-Nchi *bile*

yirito-Nchi *knee*

yoNpari-Nchi *friend*

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