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Holt, Dennis Graham

THE DEVELOPMENT OF THE RAYA SOUND-SYSTEM

University of California, Los Angeles PH.D. 1986

UNIVERSITY OF CALIFORNIA

Los Angeles

The Development of the Paya Sound-System

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of Philosophy in Linguistics

by

Dennis Graham Holt

1986

The dissertation of Dennis Graham Holt is approved.

Raimo Anttila

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University of California, Los Angeles

1986

ERRATA

The following errors, both typographical and substantive,were discovered after this dissertation was filed. Most of the latter are the result of a misinterpretation of the phonological analysis of Cuna by Nils Holmer. The corrected forms for Cuna are as given in his Cuna dictionary (with the predictable final -a of his citation-forms for verb-stems removed in most cases). The symbol '>' means 'should be rewritten as'.

Page	Line	
13	4	: 'ŋʷàri' > 'ŋʷà:ri'
45	5	: '54' > '57'
74	20	: Delete 'b d g gʷ'
74	23	(and page 75, line 1) : Delete the sentence: 'Voiced stops occur only medially.' and insert the following: 'Oral stops are realized as [+voiced] except when geminate. Geminate oral stops are realized as single voiceless stops.'
77	14	: '[c]' > '[č]'
85	21	: Add at end of line: '(Rivet and Armellada 1950)'
88	6	: 'ak-' > 'akk-'
88	9	: 'ag-' > 'ak-'
88	18	: 'aka-na' > 'akka-na' and 'aka-n-kala' > 'akka-n-kala'
89	7	: 'abe' > 'ape'
89	19	: 'al-lakwa' > 'al-lakkwa'
91	11	: '?' > '?'
92	14	: 'pig-' > 'pik-'

92 17 : '-biri' > 'x-biri'

93 5 : 'gwa' > 'kwa' and 'puge-puge' > 'puke-puke'

96 12 : 'sakwa' > 'sakkwa'

96 14 : 'sag-i' > 'sak-i'

98 9 : 'tada' > 'tata'

98 13 : 'tè?' > 'tè?-'

98 14 : 'tag-' > 'tak-'

100 1 : 'tig-' > 'tik-'

101 6 : 'wa-duku' > 'wa-tukku'

101 13 : 'tuk-u' > 'tukk-u'

102 7 : 'aka-la' > 'akka-la'

102 11 : 'ak-wa' > 'akk-wa (or ak-kwa)'

102 18 : 'og-' > 'ok-'

103 11 : 'uka' > 'ukka'

104 19 : 'i-bi' > 'i-pi' and '-bi' > '-pi'

105 5 : 'ibe' > 'ipe'

105 15 : 'Caba' > 'Cabe'

106 10 : '*kic' > '*kita'

108 17 : 'kika' > 'kikka'

109 18-19 : 'a-kila' > 'ak-kila'

111 1 : 'yo-kor' > 'yok-kor'

111 17 : 'Culmi' > 'Culmí'

112 12 : 'kab(i)-' > 'kap(i)-'

113 1 : Add '/' at end of line.

113 8 : 'bina' > 'pina'

114 10 : 'nab-polo' > 'nap-polo'

114 21 : 'ma-k-' > 'ma-kk- (?)'

115 1 : 'mag-' > 'mak-'

115 4 : 'mag-' > 'mak-'

115 7 : 'mana-ke-pilli' > 'mana-kke-pilli'

115 10 : 'o-mukw-' > 'o-muk-kwa-'

116 13 : 'e-nuk-' > 'e-nukk-'

116 16 : '-nugar/-nugal' > '-nukar/-nukal'

116 18 : 'pak-' > 'pakk-'

118 5 : 'pat-' > 'patt-'

120 18 : 'sai-di-le' > 'sai-ti-le'

120 20 : 'sak-a-di-' > 'sakka-ti-'

121 1 : 'saka' > 'sakka'

121 5 : 'sib-u' > 'sip(p)u'

121 11 : 'sig-u' > 'sik-u'

122 5 : 'su-surí-' > 'sur-surí-'

122 13 : 'suku' > 'sukku'

123 3 : 'a-šá?-' > 'a?-šà?-'

124 18 : 'si-g-' > 'si-k-'

125 2 : 'sik-' > 'sikk-'

126 14 : 'na-ga' > 'na-ka'

128 7 : 'nak-' > 'nakk-'

128 11 : 'nag-' > 'nak-'

128 15 : 'take' > 'takke'

129 16 : 'e-dinna' > 'e-tinn-'

130 8 : 'e-dič-' > 'e-tič-'

130 17 : 'ne-ga' > 'ne-ka'

131 5 : 'napa' > 'nappa'

131 12 : 'nag(u)be/naibe' > 'nak(u)pe/naipe'

132 2 : 'negu-' > 'neku-'

133 8 : 'tuk-' > 'tùk-'

133 10 : 'o-duk-' > 'o-tukk-'

133 13 : 'nog-a' > 'nok-a'

134 2 : 'ku-dur' > 'ku-tur'

134 8 : 'tu:r-mak-' > 'tu:r-makk-'

134 19 : 'u-kup' > 'u-kkup ~ uk-kup'

136 8 : 'wag(a)' > 'wak(a)'

136 11 : 'waga-san' > 'waka-san' and 'waga-la' > 'waka-la'

136 12 : 'waga-p' > 'waka-p'

139 14 : 'ar-pig-' > 'ar-pik-'

140 6 : 'olli-ma-ta' > 'olli-mat-ta'

141 12 : 'meka-' > 'mek-'

142 2 : 'pen-gwa' > 'pen-kwa'

143 8 : '*ci(n)' > '*ci(d)'

145 2 : 'tak(e)/tai' > 'tak-'

148 4 : 'i:s-mak-' > 'i:s-makk-'

150 2 : 'koč-' > 'kos-'

151 16 : 'ne-ga-' > 'ne-ka-'

151 17 : 'nega-sunna-' > 'neka-sunna-'

152 5 : 'wa-gwa' > 'wa-kwa (sg.), wa-kan (pl.)'

154 8 : 'par-pati' > 'par-pat(-ti)'

156 7 : 'DH' > '(DH)'

156 10 : 'na(p)-polo' > 'nap-polo'

156 14 : 'iša' > 'ìša'

157 9 : 'súk-' > 'sùk-'

157 18 : 'sun-wa-šo' > '<sun-gua-xo>'

159 13 : 'toni(kwa)' > 'toni(kkwa)'

161 7 : 'uk-sa' > 'uk-k-'

161 8 : Delete '(dissimilation)'

163 1 : 'wis-meːa' > 'wis-metta'

165 7 : 'b' > 'p'

166 11 : 'b' > 'p'

167 13 : Delete '221'

167 15 : 'd' > 't' and add '221'

168 16 : 'd' > 't'

170 2 : 'k' > 'kk'

170 4 : 'g' > 'k'

171 3 : 'k' > 'kk'

171 4 : 'g' > 'k'

171 15 : 'k^{w}' > 'kk^{w}'

177 8 : '37-41' > '38-41'

177 10 : '37-41' > '38-41'

177 16 : '37-39' > '38-39'

178 3 : Delete '37', and '119' > '121'

184 7 : 'a(?)i' > 'a(?)i'

191 10 : 'c' > 'č'

191 11 : 'c' > 'č'

191 25 : 'na-ga' > 'na-ka' and 'ne-ga' > 'ne-ka'

192 4 : 'nag(u)be' > 'nak(u)pe'

299 Add at bottom: 'Rivet, Paul and Cesáreo de Armellada. 1950. Les indiens Motilones. Journal de la Société de Américanistes de Paris, n. s., 39:15-57.'

TABLE OF CONTENTS

VITA

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PUBLICATIONS

Holt, Dennis and William Bright
1975
La lengua paya y las fronteras lingüísticas de Mesoamérica. Proceedings of the Mesa Redonda del Instituto Nacional de Antropología e Historia (México).

Holt, Dennis
1977
Evidence of genetic relationship between Chibchan and Uto-Aztecan. BLS 3.

ABSTRACT OF THE DISSERTATION

The Development

of the Paya Sound-System

by

Dennis Graham Holt

Doctor of Philosophy in Linguistics

University of California, Los Angeles, 1986

Professor William O. Bright, Chair

This study deals with the Paya language of northeastern Honduras, the northernmost member of the Chibchan family of languages, which includes most of the languages of southern Central America and a number of languages of northwestern South America. Until the present study, Paya had been a little-known language whose genetic affinities had been a matter of conjecture.

The study consists of three main sections:

1. An analysis and discussion of the synchronic phonology of Paya, constituting the first rigorous look at Paya phonology in the light of the linguistic theories that have developed since the work of Conzemius (1928). Attention is given to the phonemic inventory of Paya, segment- and sequence-structure constraints, morphophonemic processes and phonological rules.

2. A comparative analysis involving Paya and five other languages of the Chibchan family, in which the genetic affiliation of Paya with Chibchan is conclusively demonstrated, and large parts of the lexicon and sound-system of Proto-Chibchan are reconstructed.

3. A determination and discussion of the historical sound-laws that must have operated during the development of Paya from Proto-Chibchan.

In appendices to the main work, more distant genetic relationships between Chibchan and Pano-Tacanan, and Chibchan and Uto-Aztecan are explored and discussed. As a result of these researches, the emergent picture is that of a huge linguistic super-phylum which includes the Uto-Aztecan, Chibchan, Panoan and Tacanan families.

Chapter 1 - Introduction

1.1 The purpose of this study is to present and discuss certain of the findings of my research during the last few years into the structure, historical development and genetic affinities of the Paya language of northeastern Honduras. What began as simply an attempt to classify Paya convincingly within a particular language family has burgeoned into a full-scale comparative reconstruction of Proto-Chibchan, and has also produced new evidence for establishing more distant genetic relationships between Chibchan and (Pano-)Tacanan to the south and between Chibchan and Uto-Aztecan to the north.

Even though in my recent work I have not limited my descriptive and comparative studies to the area of phonology, it was necessary to place such a limitation on the present study in order to keep it within manageable bounds. Consequently, in this study I intend to trace the historical development of the Paya sound-system as far back as possible using currently available data and methods.

The organization of this study will roughly follow the order of my original investigations, which began with the analysis and description of the synchronic facts about Paya, and progressed through comparative work with other attested Chibchan languages and then to the comparison of reconstructed proto-languages. Within the historical sections four methods of research and analysis have been employed: (1) internal reconstruction based on the synchronic facts of Paya; (2) diachronic comparison of present-day Paya with earlier stages of the language as recorded by previous researchers; (3)

comparative reconstruction involving data from other languages genetically related to Paya; and (4) investigation of loan-words between Paya and neighboring languages. Attention will be given to the details of developments in related languages only when such discussion serves to further illuminate the facts and conclusions about Paya or about the reconstructed proto-language.

1.2 The Paya language is spoken in the departments of Olancho and Colón in northeastern Honduras by approximately 300 speakers, most of them adults over 20 years of age. There are three principal Paya settlements, all of them in the northern part of the Department of Olancho. These are: Vallecito, which is situated in the foothills of the Sierra de Agalta about 5 kilometers northwest of the town of Dulce Nombre de Culmí; Marañones, or Pueblo Nuevo Subirana, or Kahã Wayka (New Town), which lies about 15 kilometers north of Culmí, also in the Sierra de Agalta foothills; and El Carbón (originally Santa María del Carbón), which is located near the Quebrada Agua Amarilla in a higher mountain valley in the upper Río Sico watershed, some 35 kilometers north of Culmí and about 30 kilometers northeast of the town of San Esteban. Vallecito and Marañones each have between 120 and 150 inhabitants. El Carbón is reported to be approximately twice as large.

A number of smaller Paya settlements are scattered about the mountains and valleys of the upper Río Guampú watershed in northern Olancho: La Danta, Aguazarca, Aguaquire, Pisijiri, and Jocomico. The largest of these includes only a few families and probably not more

than 40 individuals. A small settlement at Plantain River in the Department of Colón, which was once a purely Paya community, has in recent years become a mixed community of Payas and Miskito people from the nearby coastal areas. A good deal of intermarriage has been reported, and it would appear that consequent cultural and linguistic assimilation has favored the Miskito, with resultant deterioration or loss of certain aspects of traditional Paya culture in that region.

Dulce Nombre de Culmí, which was once the largest Paya settlement in the entire Río Guampú watershed, has been gradually evacuated by the Payas during the last 15 or 20 years, until now only a single Paya family remains. This exodus seems to have been a direct result of the recent influx of large numbers of ladino (mestizo) people into Culmí, an immigration brought about by the increased commercial exploitation of the forest resources of the area in recent years, including the construction and operation of three sawmills and a plywood-factory. Culmí now has about 1000 inhabitants, only four of whom are Payas. (Somewhat ironically, the mother of the single Paya family has been chosen Culmí's "Mother of the Year" for the last two years.)

1.3 Although the Paya people were encountered quite early by Spanish explorers, nothing about their language seems to have been gathered until late in the nineteenth century. In fact, the first Central American people Columbus met on the island of Guanaja during his fourth voyage in 1502 may have been Payas. Lehmann (1920, p. 629), citing Herrera (1726-30), reports that Cortés encountered Payas during his visit to the northern coast of Honduras in 1525-6, and even took a

Paya chieftain by the name of Pizacura with him on his return voyage to Mexico in April of 1526.

The earliest published word-list of the Paya language was apparently the one included in the second edition of Alberto Membreño's Hondureñismos (1897, pp. 229-32). The list was prepared by one Gregorio Duarte, who was the schoolteacher in Culmí, and thus almost certainly represents the Culmí dialect. The list, as republished in Lehmann (1920, pp. 649-54), includes slightly more than 300 forms. The forms are transcribed in a Spanish-based orthography and, as is usual in such early word-lists, a number of important phonological distinctions are not specified. For example, nasalized vowels are not noted in a number of cases and glottal stops are consistently omitted. Certain other segment-types are written using orthographical conventions which, if literally interpreted, would indicate segment-types different from those I have encountered in the modern language. Thus, what I have heard and recorded as [š] in post-vocalic position is transcribed by Duarte as <is>, and what I have recorded as [w̃] appears as <mu> in his list. I don't believe that these orthographical differences reflect recent sound-changes. Rather, it seems probable that these discrepancies are merely the result of having forced a Spanish-based orthography to cope with segment-types that do not exist in the phonological inventory of Spanish. And, as will be shown later, there is historical-comparative evidence to support this conclusion.

Another, somewhat longer list of Paya words and phrases was published by David Díaz Estrada in three numbers of the Boletín de la

Escuela Normal de Varones (Tegucigalpa) in 1922-23. This list was gathered in El Carbón, where Díaz Estrada was the schoolteacher, and thus represents a slightly different dialect than the Duarte list. The orthographical conventions used in the Díaz Estrada list seem to better reflect what must have been the phonetic facts of Paya at that time, though there are still a number of apparent inaccuracies and omissions. Díaz Estrada's ear in many cases seems to have been better than either Duarte's or Conzemius's (see below). Thus, for example, he usually notes nasalized vowels and semivowels where the other two researchers failed to notice them. Both the Duarte and the Díaz Estrada list are also plagued by large numbers of typographical errors.

Until the present study, the only attempt at a more or less detailed description and analysis of the Paya language has been that of Eduard Conzemius (1928). In addition to a brief, varyingly obtuse and insightful grammatical description, Conzemius provides a rather extensive vocabulary-list consisting of almost 2000 items. He states that his "estudio lingüístico...data de Culmí y de El Carbón y fué revisado en el Payal (río Paulaya) y en Puskíra (río Plátano)." I judge from this that his vocabulary-list is a multidialectal compilation of information on Paya. However, in the following paragraph Conzemius gives special thanks to his Culmí informant for "las pruebas de paciencia que ha demostrado durante nuestras prolongadas y fastidiosas 'sesiones'", which indicates to me that some large proportion of Conzemius's data is from the Culmí dialect.

Conzemius's study, while without question the best of the published sources on Paya, nevertheless provides a somewhat incomplete and misleading representation of certain of the facts about the language. Conzemius was principally an ethnographer, and, despite the fact that he devoted a great deal of time and energy to linguistic investigations among the native peoples of the area of the Mosquito Coast (Miskito, Sumo, Ulua and Rama, in addition to Paya), his abilities as a linguist are somewhat questionable. Most specifically in the area of phonetics his work leaves a lot to be desired. In his Paya word-list he consistently fails to note certain important phonological distinctions, such as nasalized vowels and semivowels, and ʔ and h. And he apparently never became fully aware of the phonemic importance of the distinction between high and low syllabic tone in Paya, though he does allude to this very briefly: "En algunos pocos casos un cambio del acento tónico causa una diferencia en la significación del vocablo." (p. 257) Also, in his morphological analysis of Paya verb-paradigms, Conzemius did not notice certain generalizations which would have allowed him to make much simpler statements of the inflectional processes and the shapes of the suffixes involved.

In 1977, while rummaging around in the Tozzer Library of the Peabody Museum at Harvard University, Lyle Campbell uncovered a manuscript word-list of Paya which, so far as I know, had never been reported in any of the bibliographical sources on Latin American Indian languages. The list, which contains over 2600 entries (and thus is the largest Paya vocabulary-list gathered prior to the

research on which the present study is based), was prepared sometime before 1941. Doris Stone, who presented the manuscript to the library, has indicated to me by letter that "The list was made in Dulce Nombre de Culmí, a conservative center, by a schoolteacher who sent it to Felix Ramos, head of the "Biblioteca" in Tegucigalpa." Mrs. Stone has not informed me of the date of the manuscript.

The Ramos list suffers from many of the same defects as the earlier word-lists of Paya, having been transcribed in a Spanish-based orthography by someone other than a trained phonetician. Yet in at least one respect the unnamed schoolteacher's ear worked better than those of earlier researchers: he did manage to hear and transcribe many of the word-medial glottal stops in the forms he elicited. These are recorded, cleverly and efficiently enough, by a dash in the transcription. The list apparently represents an extremely conservative dialect of the language, judging from the facts that many archaic forms and glosses are cited, and, for many words, the pronunciation recorded indicates that certain sound-changes that had taken place or were underway in some dialects as early as Conzemius's study, had not (yet) operated in the dialect in question. Because of the conservative nature of the data it contains, the list provides invaluable information for the study of the history of the language. I wish to again thank Lyle Campbell for his oculaquilinity in finding such buried treasure and for his kindness and generosity in sending me a copy of the manuscript.

Chapter 2 - Segmental Phonology

2.1 The systematic phonemic inventory of Paya includes 18 non-syllabic segment-types and 10 syllabic segment-types, which are specified in the following articulatory and distinctive feature charts. There are also the suprasegmental features of length /:/, high tone /ˊ/, and low tone /ˋ/. Stress-phenomena seem to be predictable on the basis of underlying tone.

Consonants

	Bilabial	Apico-Dental	Lamino-Alveolar	Velar	Labio-Velar	Laryngeal
Stops, voiceless	p	t	[č]	k	k^w	ʔ
voiced	b	[d]		[g]		
Fricatives		s	š			h
Nasals	m	n	ñ	[ŋ]	$ŋ^w$	
Liquids, flap		r				
trill		r̃				
lateral		l				
Semivowels			y		w	

Vowels

	Front		Central		Back	
	oral	nasal	oral	nasal	oral	nasal
High	i	ĩ			u	ũ
Mid	e	ẽ			o	õ
Low			a	ã		

Figure 1 - Articulatory chart of Paya phonemes

	p	b	m	t	s	n	r	r̃	l	š	ñ	k	k^w	$ŋ^w$	y	w	ʔ	h	i	ĩ	e	ẽ	a	ã	u	ũ	o	õ
Consonantal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	(-	-	-	-	-	-	-	-	-	-)
Syllabic	(-	-	-	-	-	-	-	-	-	-	-	-	-	-)	-	-	-	-	+	+	+	+	+	+	+	+	+	+
Sonorant	-	-	+	-	-	+	+	+	+	-	+	-	-	+	+	+	-	-	(+	+	+	+	+	+	+	+	+	+)
High	(-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	-	-)	+	+	-	-(-	-	-)+	+	-	-	
Back	(-	-	-	-	-	-	-	-	-)-	-	+	+	+	-	+	-	-		-	-	-	-	+	+(+	+	+	+)	
Low	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	(-	-	-	-)+		+(-	-	-	-)	
Anterior	+	+	+	+	+	+	+	+	+	-	-(-	-	-)	-(-	-	-)												
Coronal	-	-	-	+	+	+	+	+	+	+	-	-	-	+	-(-	-)												
Voiced	-	+(+	-	-	+	+	+	+	-	+	-	-	+	+	+	-	-)	(+	+	+	+	+	+	+	+	+	+)	
Continuant	-	-	-	-	+	-	-	-	-	+	-	-	-	-	+	+	-	+	(+	+	+	+	+	+	+	+	+	+)
Nasal	-	-	+	-	-	+	-	-	-	-	+	-	-	+	-	-	-	-	-	+	-	+	-	+	-	+	-	+
Round	(-	-	-	-	-	-	-	-	-	-	-)-	+	+	-	+(-	-)		(-	-	-	-)-		-	+	+	+	+	
Lateral							-	-	+																			

Figure 2 - Distinctive feature chart of Paya phonemes (redundant feature-markings within parentheses)

The following set of minimal and locally minimal pairs (given here in systematic phonemic notation) is sufficient to demonstrate the distinctiveness of each of the binary features used in the chart above.

[±consonantal]	k :	àkka	'plate'
	ʔ :	àʔká	'big'
[±syllabic]	i :	wàtia	'tear (n.)'
	y :	wìʔtyá	'you dance'
[±sonorant]	m :	mústwá	'it's full'
	b :	bústwá	'he farts'
	r :	arárhna	'outside'
	t :	atàhá	'his foot'
[±anterior]	p :	pàskwá	'he takes (it) out'
	k :	kàskwá	'he kicks about'
	s :	sáʔa	'wife's sister'
	š :	šáʔa	'sasal (manioc tamale)'
	n :	nãawá	'I go'
	ñ :	ñãhawá	'I speak'
[±coronal]	p :	pàskarí	'I took (it) out'
	t :	tàskarí	'I cut (it)'

	m :	mìskí	'he flicked (it) away'
	n :	nìskí	'he tore (it)'
[+voiced]	b :	bàrká	'agouti'
	p :	pàrká	'tail'
[±continuant]	s :	sìra	'meal'
	t :	tìra	'northwind'
	h :	artéhwá	'he loves her'
	ʔ :	tèʔwa	'chile pepper'
[±nasal]	m :	mísrə́škwá	'its leaping'
	b :	bísrə́škwá	'she's sucking (it)'
	ã :	pãyhá	'tree'
	a :	pàyhá	'husband's sister'
[±round]	kʷ:	kʷàra-	'ten (combining form)'
	k :	kára	'evil spirit'
	o :	korá	'ear of corn'
	a :	kará	'shoulder, upper arm'
[±lateral]	l :	sẽysala	'small heron'
	r :	sàra	'fart (n.)'
[±trill]	r̃ :	arṍ	'pine'
	r :	àropẽ́	'zapotillo (fruit sp.)'
[±high]	i :	pìškawá	'I laid (it) down'
	e :	pèškawá	'I took (it) off'

	u :	úkakã́	'rainbow'
	o :	ókakán	'down, downward'
[±length]	ã: :	ã̀:ská	'cornfield'
	ã :	ã̀ská	'large tick (patacon)'
[+high tone]	V́ :	káskù:rí	'he used to fish'
[+low tone]	V̀ :	kàskù:rí	'he used to kick about'

The classification of h and ʔ as glides, i.e. $\begin{bmatrix} -\text{cons} \\ -\text{syl} \end{bmatrix}$, is not only consistent with current phonological theory (cf. Schane 1973, p. 27), but is also motivated by the behavior of h and ʔ in Paya. h and ʔ and the two semivowels y and w pattern together with respect to their failure to block the progressive nasal assimilation of vowels and semivowels (cf. rule 13, below). Thus, for example:

kitã̀-há →	kitã̀hã́ 'peccary (Absolutive)'
pã̀ʔ-a-wá →	pã̀ʔãw̃ã́ 'I lift (it)'[1]

The phoneme $\underline{ŋ}^{\underline{w}}$ is somewhat problematical. Its usual surface phonetic shape is [w̃], though occasionally a true [$ŋ^{w}$] is produced. I have set up /$ŋ^{w}$/ rather than /w̃/ in order to avoid the skewness that would result from positing a nasalized semivowel series with only one member. /$ŋ^{w}$/ also reduces the skewness of the labiovelar series, which includes $\underline{k}^{\underline{w}}$ and w. I had originally analyzed surface [w̃ṽ] sequences as being the result of regressive nasal assimilation in underlying /wṼ/ sequences. However, there appears to be evidence that at least some cases of Paya [w̃] (or [$ŋ^{w}$]) are reflexes of a historical nasal stop *m or *$ŋ^{w}$ (or possibly *m^{w}?). For example, cf.:

Paya ŋ̀ʷà-ŋ̀ʷà-há : Cuna mala 'thunder'

Paya ŋ̀ʷàh-ŋ̀ʷà-há : Rama mala 'grandchild'

Paya ŋ̀ʷìs- 'strong smell' : Chibcha mʷ̀s-kí- 'smell'

Paya ŋ̀ʷàri- : Colorado melé 'wild pig'

There is also a small piece of evidence from within Paya that supports the setting up of /ŋ̀ʷ/ (or /w̃/) as a separate phoneme. With the /ŋ̀ʷ/-analysis the sequence-structure-condition

(2.23) $$* \begin{bmatrix} +\text{syl} \\ +\text{nas} \end{bmatrix} \begin{bmatrix} +\text{cons} \\ +\text{son} \\ -\text{nas} \end{bmatrix} \quad ([-\text{syl}]) \$$$ (cf. p. 23),

as stated, has no exceptions. However, if [w̃] were analyzed as the reflex of underlying /wṼ/, then the verb stem ta-wẽrs- 'creak' (instead of ta-ŋ̀ʷers-) would have to be marked as the only exception to the sequence-structure-condition.

In at least one stem, phonetic trilled [r̃] seems to be the result of the gemination of two underlying flap /r/'s in adjoining morphemes:

ar- rò?- a- wa 'I polish it'

it polish 1S Pres.

However, such an analysis is not possible with the other stems containing [r̃], and consequently /r̃/ has to be set up as a separate phoneme, despite the fact that the total number of stems containing /r̃/ is probably not more than a dozen.

A few phonemes occur only in loanwords from Spanish:

/d/ (=[d] ~ [ð]) : sèda-há 'silk' (< Sp. seda)

/g/ : gitá̃ra-há 'guitar' (< Sp. guitarra)

/f/ : flòr-ká 'flower' (< Sp. flor)

(These non-Paya phonemes are not included in the charts in Figures 1 and 2 above.) Similarly, initial /r̃/, which occurs in only one native Paya word--r̃àyha 'pimientero (a type of bird)'--occurs in a few Spanish loanwords, e.g.:

r̃èsa-iš̌kwa 'he prays' (< Sp. reza).

In the dialect of Colón, [d] occurs in place of [l] in the other dialects. Thus, for example:

lèrwá 'they are' ~ dèrwá (Colón)

alúhawá 'I dented (it) ~ adúhawá (Colón)

2.2 Segment-Structure-Constraints

The relative skewness of the Paya phonemic inventory requires a rather large number of segment-structure-constraints (redundancy-rules), since these are a direct consequence of the existence of holes or gaps in the maximal matrix defined by the set of distinctive features necessary for distinguishing all the phonemes of the language. The following segment-structure redundancy-rules apply to the distinctive feature-matrix given above in Figure 2. The rules are stated first as negative constraints on feature-combinations representing non-occurring natural classes (that is, these negative constraints specify systematic and anomalous holes in the maximal feature-matrix), and then as the logically equivalent implicational

statements which are inferrable from these negative constraints. In accordance with current phonological theory, these segment-structure redundancy-rules (and the sequence-structure redundancy-rules which are presented in 2.3.2 below) should be thought of as well-formedness conditions on the underlying forms of morphemes. Universal constraints are marked with a superscript u.

(2.1) $* \begin{bmatrix} +\text{cons} \\ +\text{syl} \end{bmatrix}^{u} \therefore \begin{matrix} [+\text{cons}] \rightarrow [-\text{syl}] \\ [+\text{syl}] \rightarrow [-\text{cons}] \end{matrix}$

(2.2) $* \begin{bmatrix} +\text{syl} \\ -\text{son} \end{bmatrix}^{u} \therefore \begin{matrix} [+\text{syl}] \rightarrow [+\text{son}] \\ [-\text{son}] \rightarrow [-\text{syl}] \end{matrix}$

(2.3) $* \begin{bmatrix} +\text{nas} \\ +\text{cont} \end{bmatrix}^{u} \therefore \begin{matrix} [+\text{nas}] \rightarrow [-\text{cont}] \\ [+\text{cont}] \rightarrow [-\text{nas}] \end{matrix}$

There are no [+ant] glides:

(2.4) $* \begin{bmatrix} -\text{cons} \\ +\text{ant} \end{bmatrix}^{u} \therefore \begin{matrix} [-\text{cons}] \rightarrow [-\text{ant}] \\ [+\text{ant}] \rightarrow [+\text{cons}] \end{matrix}$

(2.5) $* \begin{bmatrix} -\text{son} \\ +\text{nas} \end{bmatrix}^{u} \therefore \begin{matrix} [-\text{son}] \rightarrow [-\text{nas}] \\ [+\text{nas}] \rightarrow [-\text{son}] \end{matrix}$

There are no palato-alveolar stops:

(2.6) $$* \begin{bmatrix} -son \\ -ant \\ +cor \\ -cont \end{bmatrix} \quad \therefore \quad \begin{bmatrix} -son \\ -ant \\ +cor \end{bmatrix} \longrightarrow [+cont]$$

$$\begin{bmatrix} -son \\ -ant \\ -cont \end{bmatrix} \longrightarrow [-cor]$$

$$\begin{bmatrix} -son \\ +cor \\ -cont \end{bmatrix} \longrightarrow [+ant]$$

$$\begin{bmatrix} -ant \\ +cor \\ -cont \end{bmatrix} \longrightarrow [+son]$$

b is the only voiced obstruent. There are no voiced obstruents other than b:

(2.7) $$* \begin{bmatrix} -son \\ \left\{\begin{matrix} -ant \\ +cor \\ +cont \end{matrix}\right\} \\ +vcd \end{bmatrix} \quad \therefore \quad \begin{bmatrix} -son \\ +vcd \end{bmatrix} \longrightarrow \begin{bmatrix} +ant \\ -cor \\ -cont \end{bmatrix} \qquad (b)$$

$$\begin{bmatrix} -son \\ \left\{\begin{matrix} -ant \\ +cor \\ +cont \end{matrix}\right\} \end{bmatrix} \longrightarrow [-vcd] \qquad (t,s,\check{s},k,k^{w})$$

$$\begin{bmatrix} \left\{\begin{matrix} -ant \\ +cor \\ +cont \end{matrix}\right\} \\ +vcd \end{bmatrix} \longrightarrow [+son] \qquad (N,L,G)$$

All fricatives are coronal. There are no non-coronal fricatives:

(2.8) $* \begin{bmatrix} +\text{cons} \\ -\text{cor} \\ +\text{cont} \end{bmatrix} \therefore \begin{bmatrix} +\text{cons} \\ -\text{cor} \end{bmatrix} \longrightarrow [-\text{cont}]$ (p,k,b)

$\begin{bmatrix} +\text{cons} \\ +\text{cont} \end{bmatrix} \longrightarrow [+\text{cor}]$ (s,š)

$\begin{bmatrix} -\text{cor} \\ +\text{cont} \end{bmatrix} \longrightarrow [-\text{cons}]$ (h)

There is no unrounded velar nasal:

(2.9) $* \begin{bmatrix} -\text{ant} \\ -\text{cor} \\ +\text{nas} \\ -\text{round} \end{bmatrix} \therefore \begin{bmatrix} -\text{ant} \\ -\text{cor} \\ +\text{nas} \end{bmatrix} \longrightarrow [+\text{round}]$ ($ŋ^{w}$)

$\begin{bmatrix} -\text{ant} \\ -\text{cor} \\ -\text{round} \end{bmatrix} \longrightarrow [-\text{nas}]$ (k,ʔ,h)

$\begin{bmatrix} -\text{ant} \\ +\text{nas} \\ -\text{round} \end{bmatrix} \longrightarrow [+\text{cor}]$ (n)

$\begin{bmatrix} -\text{cor} \\ +\text{nas} \\ -\text{round} \end{bmatrix} \longrightarrow [+\text{ant}]$ (m)

There are no voiceless sonorants:

(2.10) $* \begin{bmatrix} +son \\ -vcd \end{bmatrix} \quad \therefore \quad \begin{matrix} [+son] \longrightarrow [+vcd] \\ [-vcd] \longrightarrow [-son] \end{matrix}$

All liquids are dental-alveolar. There are no non-dental-alveolar liquids:

(2.11) $* \begin{bmatrix} +cons \\ +son \\ -nas \\ \left\{ \begin{matrix} -ant \\ -cor \end{matrix} \right\} \end{bmatrix} \quad \therefore \quad \begin{bmatrix} +cons \\ +son \\ -nas \end{bmatrix} \longrightarrow \begin{bmatrix} +ant \\ +cor \end{bmatrix}$ (r,ɾ̃,l)

$\begin{bmatrix} +cons \\ +son \\ \left\{ \begin{matrix} -ant \\ -cor \end{matrix} \right\} \end{bmatrix} \longrightarrow [+nas]$ (m,ñ)

$\begin{bmatrix} +cons \\ -nas \\ \left\{ \begin{matrix} -ant \\ -cor \end{matrix} \right\} \end{bmatrix} \longrightarrow [-son]$

There are no laterals that are not liquids:

(2.12) $* \begin{bmatrix} \left\{ \begin{matrix} -cons \\ -son \\ +nas \end{matrix} \right\} \\ +lat \end{bmatrix} \quad \therefore \quad [+lat] \longrightarrow \begin{bmatrix} +cons \\ +son \\ -nas \end{bmatrix}$

$\begin{bmatrix} \left\{ \begin{matrix} -cons \\ -son \\ +nas \end{matrix} \right\} \end{bmatrix} \longrightarrow [-lat]$

The only round non-syllabic segments are velar. There are no non-velar round non-syllabic segments:

(2.13) $$* \begin{bmatrix} (-syl) \\ \begin{Bmatrix} +ant \\ +cor \end{Bmatrix} \\ +round \end{bmatrix} \quad \therefore \quad \begin{bmatrix} (-syl) \\ \begin{Bmatrix} +ant \\ +cor \end{Bmatrix} \end{bmatrix} \longrightarrow [-round]$$

$$\begin{bmatrix} (-syl) \\ +round \end{bmatrix} \longrightarrow \begin{bmatrix} -ant \\ -cor \end{bmatrix} \qquad (k^w, ŋ^w, w)$$

There are no syllabic consonants:

(2.14) $$* \begin{bmatrix} +syl \\ +cons \end{bmatrix} \quad \therefore \quad \begin{matrix} [+syl] \longrightarrow [-cons] \\ [+cons] \longrightarrow [-syl] \end{matrix}$$

(2.15) $$* \begin{bmatrix} +hi \\ +low \end{bmatrix}^u \quad \therefore \quad \begin{matrix} [+hi\ ] \longrightarrow [-low] \\ [+low] \longrightarrow [-hi\ ] \end{matrix}$$

There are no low front vowels:

(2.16) $$* \begin{bmatrix} (+syl) \\ +low \\ -back \end{bmatrix} \quad \therefore \quad \begin{bmatrix} (+syl) \\ +low \end{bmatrix} \longrightarrow [+back]$$

$$\begin{bmatrix} (+syl) \\ -back \end{bmatrix} \longrightarrow [-low\ ]$$

There are no front rounded vowels:

(2.17) $$* \begin{bmatrix} (+syl) \\ -back \\ +round \end{bmatrix} \therefore \begin{bmatrix} (+syl) \\ -back \end{bmatrix} \longrightarrow [-round]$$

$$\begin{bmatrix} (+syl) \\ +round \end{bmatrix} \longrightarrow [+back]$$

An interesting problem arises in connection with the division of a phonemic inventory feature-matrix into sets of redundant and non-redundant feature-markings. In the case of certain non-minimal (or non-privative) oppositions, it is not always obvious which of the contrasting feature-markings should be marked as redundant and which ones as non-redundant. In most of these cases, however, the existence of redundancy-rules involving relevant features can aid in making such decisions. Thus, for example, in the phonemic inventory of Paya the only [+cons, -ant, +cor] segments are s̆ and ñ, whose feature-matrices contrast at four points: [son], [vcd], [cont] and [nas]. Any one of these four features might be used as the distinguishing non-redundant feature for this opposition, with the remaining feature-markings specified as redundant. In this case [son] is the 'highest' of the contrasting features (that is, it defines the most major class-division), and, on these grounds, might seem to be the best distinguishing non-redundant feature for this opposition. However, [son] and [nas] are linked by the (universal) redundancy-rule 2.5: *[-son, +nas]^{u} and thus it would seem a more efficient procedure to mark s̆ as non-redundantly [-son] and ñ as non-redundantly [+nas], allowing this rule to provide the redundant markings [-nas] for s̆ and [+son] for ñ at no added cost to the grammar. If we were to mark the

feature [son] as non-redundant for both s̆ and ñ̆, then we would require an additional language-specific redundancy-rule to specify the remaining [+nas] feature value for ñ̆.

2.3. Sequence-Structure-Constraints

2.3.1 There has been a lot of discussion recently about whether sequence-structure-constraints should be stated in terms of morphemes and morpheme-boundaries or in terms of syllables and syllable-boundaries, and if in terms of syllables, how the syllable is to be defined. (Cf. Anderson 1974, Chapter 14; Hooper 1972, 1973; Hyman 1975, pp. 188ff.) I had originally attempted to state the sequence-structure-constraints for Paya in terms of morphemes. However, when it came to stating the constraints on medial clusters in such synchronically unanalyzable monomorphemic noun-stems as -a?ku 'mother's brother', a?sa 'shit', -arki 'friend', etc., it became evident that a set of unnatural and ad hoc constraints would be necessary, whereas if the constraints were stated in terms of syllables, a number of important generalizations would be captured.

As a tentative first step toward establishing the position of internal syllable-boundaries, consider the following rule:

$$(2.18) \qquad \emptyset \rightarrow \$ \;/\; V \; [-syl]_{o} \_\_ \; [-syl] \begin{bmatrix} -cons \\ +son \end{bmatrix}$$

(Syllable-boundaries are also understood to exist at the beginning and end of each word.) Thus, for example, the word ars-tiš-ród̆-k-wa

'dry-become-Continuative-Aspect-Present' = 'it's getting dry', would be syllabified as ars$tiš$rós̆$kwa. This word exemplifies the fact that in most cases in Paya, syllable-boundaries correspond to morpheme-boundaries. This rule should be adequate for establishing syllable-boundaries in underlying sequences, since at that stage of phonological derivation there are no syllable-initial [+cons] [+cons] clusters and no VV sequences. (But, as we shall see, the rule may require some slight modification on the basis of the behavior of the laryngeal glides, ʔ and h see p. 37f.)

2.3.2. The following sequence-structure-constraints are valid for the underlying forms of Paya morphemes:

r does not occur word-initially:

(2.19) $* \# \begin{bmatrix} +\text{cons} \\ +\text{son} \\ -\text{nas} \\ -\text{lat} \end{bmatrix}$

However, r does occur in syllable-initial position in certain morphemes that never occur word-initially, for example, rós̆- Continuative, and -ríh Mediative.

The laryngeal glides ʔ and h do not occur word-initially:

(2.20) $* \# \begin{bmatrix} -\text{cons} \\ -\text{syl} \\ -\text{son} \end{bmatrix}$

However, ? and h do occur syllable-initially in certain morphemes which never occur word-initially, for example, -ʔáʔa 'leaf', and -hará 'liver', both of which are inalienably possessed nouns requiring a possessive pronominal prefix.

There are no syllable-initial consonant-clusters at the systematic phonemic level:

(2.21) $* \$ [-syl] [-syl]$

However, phonological rule 9, below, produces the syllable-initial clusters pr, tr, kr, and br at the surface phonetic level.

Non-low nasalized vowels do not occur before syllable-final k:

(2.22) $$* \begin{bmatrix} +syl \\ -low \\ +nas \end{bmatrix} k \$$$

(This fact, although true for the corpus, nevertheless may be merely accidental.)

Nasalized vowels do not occur before syllable-final r or r in a syllable-final cluster:

(2.23) $$* \begin{bmatrix} +syl \\ +nas \end{bmatrix} \begin{bmatrix} +cons \\ +son \\ -nas \end{bmatrix} ([-syl]) \$$$

In verb-roots, $\underline{k^w}$ does not occur syllable-initially:

(2.24) $\quad * \$ \begin{bmatrix} -son \\ +round \end{bmatrix}$

At first glance this seems to be an odd kind of constraint, but the situation is probably explainable on the basis of the fact that verb-roots are often preceded by object or derivational prefixes which would cause root-initial $\underline{k^w}$ to occur word-medially, often in intervocalic position, where it would have weakened historically to $\underline{w}$.

Nasalized vowels do not occur after voiced non-nasal consonants ([+cons]):

(2.25) $\quad * \begin{bmatrix} +cons \\ +vcd \\ -nas \end{bmatrix} \begin{bmatrix} +syl \\ +nas \end{bmatrix}$

This constraint suggests that there may have been an earlier rule which nasalized voiced consonants before nasal vowels:

(2.26) $\quad \begin{bmatrix} +cons \\ +vcd \end{bmatrix} > [+nas] / \_\_ \begin{bmatrix} +syl \\ +nas \end{bmatrix}^2$

Or, less plausibly, a rule which denasalized nasal vowels after voiced consonants:

(2.27) $$[+syl] > [-nas] / \begin{bmatrix} +cons \\ +vcd \end{bmatrix} \_\_ .$$

The possible syllable-final consonants are k, s, š, n, r, ʔ, h, and possibly ñ. The labials -- p, b and m -- and t, k^w, $ŋ^w$ and l do not occur in syllable-final position. Neither of these groups of segments constitutes a single natural class. This fact is reflected in the unwieldiness of the following constraint:

(2.28) $$* \left\{ \begin{bmatrix} +ant \\ -cor \end{bmatrix} \begin{bmatrix} -son \\ +ant \\ +cor \\ -cont \end{bmatrix} \begin{bmatrix} +cons \\ +round \end{bmatrix} \begin{bmatrix} +lat \end{bmatrix} \right\} \$$$

The only syllable-final [-syl] clusters consist of r or a semivowel as first member and a sibilant as second member:

(2.29) $$\text{If} \quad [+seg]\ [-syl]\ [-syl]\ \$$$
$$\text{Then} \quad [+syl] \begin{bmatrix} +son \\ +cont \\ -lat \end{bmatrix} \begin{bmatrix} +cons \\ -son \\ +cont \end{bmatrix}$$

The existence of such stems as kĩ̀s- 'press' and ka-tṹs- 'work' suggests that there were probably earlier historical clusters consisting of nasal plus sibilant, that is, that this condition was more general:

(2.30) If [+seg] [-syl] [-syl] $
↓ ↓ ↓
Then [+syl] [+son, -lat] [+cons, -son, +cont]

The only diphthongs that occur in closed syllables are ay and aw:

(2.31) If [+syl] [-cons, +son] [-syl] $
↓
Then [+low].

Diphthongs with a non-low vowel as first member are extremely rare in Paya. For example:

tróyña 'white-breasted squirrel'

There seem to also be a few cases of the diphthong ey, but these are usually difficult to distinguish phonetically from long e:. For example:

sẽywa ~ sẽ:wa 'cold; flavorless'

sẽysala ~ sẽ:sala 'small heron'

With only one exception, high vowels do not occur before syllable-final clusters:

(2.32) $$* \begin{bmatrix} +syl \\ +hi \end{bmatrix} [-syl] [-syl] \$$$

The exceptional stem is <u>burš</u>- 'rough'. This condition almost certainly reflects a historical change in which short high vowels were lowered in closed syllables:

(2.33) $$\begin{bmatrix} +syl \\ -length \end{bmatrix} > [-hi] / \_ C \begin{Bmatrix} C \\ \# \end{Bmatrix}$$

Thus we might explain <u>burš</u>- as historically and underlyingly containing a long vowel: <u>bu:rš</u>-, and rewrite the sequence-structure-condition as either:

(2.34) $$\text{If } \begin{bmatrix} +syl \\ +hi \end{bmatrix} [-syl] [-syl] \$$$
$$\text{Then } [+length]$$

or, alternatively, in the logically equivalent form:

(2.35) $$\text{If } \begin{bmatrix} +syl \\ -length \end{bmatrix} [-syl] [-syl] \$$$
$$\text{Then } [-hi]$$

which is also logically equivalent to the historical rule 2.33 above. A diachronic process -- merger -- has resulted in a synchronic

condition -- neutralization. On historical grounds, then, 2.35 seems a better formulation of the sequence-structure-condition in this case, since it seems to directly reflect a historical development in the language. Condition 2.34, while expressing a true statement about the synchronic facts of the language, does not directly reflect any historical process, since it was not the case that

(2.36) $$* \begin{bmatrix} +syl \\ +hi \end{bmatrix} > [+length] / \_\_ C \begin{Bmatrix} C \\ \# \end{Bmatrix} .$$

Condition 2.34 is merely a secondary effect of the historical process which lowered short high vowels in closed syllables. In this example it can be seen how rules of historical sound-change can remain visible in the synchronic language as sequence-structure-constraints (in the absence of other independent changes which might obscure the fact of their having operated).

Since <u>bu:rš̆-</u> is phonetically realized as [bʊrš̆], that is, as if the underlying vowel were short <u>u</u>, there was apparently also a historical rule which shortened long vowels in closed (or CVCC) syllables:

(2.37) $$[-syl] > [-length] / \_\_ C \begin{Bmatrix} C \\ \# \end{Bmatrix} .$$

This rule must remain as a synchronic phonological rule in order to preserve the exceptionless nature of sequence-structure-condition 2.35.

3.1 Grammatically Conditioned Alternation

In this section I will discuss the non-automatic or grammatically conditioned morphophonemic alternations of present-day Paya. The alternations to be discussed are listed here in the order of presentation:

1. $p \rightarrow w \;/\; V\rceil_{\text{Dir.Obj.}} + Vb[\_\_$ in certain verb-stems

2. $t \rightarrow n \;/\; h + \_\_$ in certain suffixes

3. $k \rightarrow h \;/\; \begin{bmatrix}-\text{cons}\\-\text{length}\end{bmatrix} + \_\_$ in certain suffixes

4. $a \rightarrow \begin{Bmatrix}e\\i\end{Bmatrix} \;/\; \_\_\left(\begin{bmatrix}-\text{cons}\\-\text{syl}\\-\text{son}\end{bmatrix}\right)\rceil_{Vb}$ + 3rd Pers in certain verb-stems

5. $\left\{\begin{Bmatrix}p\\b\end{Bmatrix}\rightarrow m \quad t \rightarrow n\right\} \;/\; [\tilde{s}\tilde{a}]_{Vb} + X\_\_$

6. $k \rightarrow \emptyset \;/\; \_\_\rceil_{\text{Aspect}} + [-\text{son}]$

7. $V \rightarrow [+\text{hi tone}] \;/\; \_\_\ C_o + \begin{Bmatrix}\text{Neg}\\\text{Agent}\end{Bmatrix}[$

8. $\tilde{u}: \rightarrow \begin{bmatrix}\alpha\text{hi tone}\\-\alpha\text{low tone}\end{bmatrix} / \_\_\rceil_{\text{Caus}} + Vb[X\begin{bmatrix}{}^{V}\alpha\text{hi tone}\\-\alpha\text{low tone}\end{bmatrix}$

3.1.1. $p \rightarrow w \;/\; V\rceil_{\text{DOPro}} + Vb'[\_\_$

The alternation p ~ w occurs with a number of inherently transitive verb-stems whose unprefixed forms have initial p. When

direct-object pronouns (all of which end in a vowel) are prefixed, p weakens to w. For example:

/ka-pìš-k-a-wa/ → kawìškawa 'I put them down'

/ta-pá̃-k-i-wa/ → tawéhwã̀ 'he touched me'

This alternation is known to take place with the following verb-stems: pà:- 'take, carry', pàs- 'take out', pá̃- 'touch, move', pè?- 'bring', pìš- 'put down, place, lay down', pò:k- 'put in'.

The alternation does not occur when only benefactive pronouns (which also end in a vowel) are prefixed to these verb-stems (that is, in forms with the unmarked [ø] 3s direct object). For example:

taka-pàskúh 'take (it) out for me'

pika-pò:kkwa 'he put (it) in for you'

The benefactive pronouns consist of the pronominal root (which is identical with the direct-object pronoun) plus the benefactive suffix -ka. This lack of alternation suggests that the benefactive pronouns are not as intimately associated with the verb-stem and perhaps at some earlier stage in the language constituted separate words or clitics rather than prefixes. Their status as prefixes in the modern language is supported by the facts that they never occur anywhere except immediately before the verb (with or without a direct-object pronoun) and there is never a pause between them and the rest of the verbal construction.

The p ~ w alternation also does not occur with the reflexive prefix a-:

a-pìškawa 'I lay down'

a-pàski 'he left' (='took himself out')

There is little doubt that this prefix forms an inseparable part of the verbal word. Nor does the alternation seem to occur with derivational prefixes. For example:

aka-pìškawa 'I stepped on/squashed (it)'

(= aka- Causative (?) + pìš- 'put/lay a long/flat object down').

Thus it appears that the alternation p ~ w is a case of true grammatical conditioning, since it is not explainable as a purely phonologically based process of internal sandhi. The only historical explanation I am able to suggest for the severely limited environments of the alternation are that the prefixing of direct-object pronouns dates from a time when the rule p → w /V___V was still productive in the language, the other prefixes having developed after this rule was lost. If in fact the rule p → w /V___V was a productive one at some time in the history of the language, we would expect to find comparative evidence for its having operated in environments other than verb-initially after direct-object prefixes, for example, in monomorphemic noun-stems, where synchronic alternations would not exist. As we shall see in a later chapter, such evidence is available from other Chibchan languages. (See Chapter 7, page 164f.)

The statement of the p → w change would be more explanatory and more natural if w were characterized by some feature of bilabiality in its underlying feature-matrix. Using only the features specified in Figure 2 (p. 9), the rule is complicated and unnatural:

$$\begin{bmatrix} +\text{ant} \\ -\text{cor} \\ -\text{vcd} \end{bmatrix} \rightarrow \begin{bmatrix} -\text{cons} \\ +\text{son} \\ -\text{ant} \end{bmatrix} / \begin{bmatrix} -\text{syl} \\ (-\text{cons}) \end{bmatrix} \_\_ \begin{bmatrix} -\text{syl} \\ (-\text{cons}) \end{bmatrix} .$$

The shift in place of articulation implied by this rule would not be easy to explain. If w were marked [+ant], the rule would be somewhat easier to state and in no way unnatural:

$$\begin{bmatrix} +\text{ant} \\ -\text{cor} \\ -\text{vcd} \end{bmatrix} \longrightarrow \begin{bmatrix} -\text{cons} \\ +\text{son} \end{bmatrix} / \begin{bmatrix} -\text{syl} \\ (-\text{cons}) \end{bmatrix} \_\_ \begin{bmatrix} -\text{syl} \\ (-\text{cons}) \end{bmatrix}$$

The voicing and lenition indicated by the changes in the features [cons] and [son] are quite natural processes in intervocalic position.

3.1.2. t → n / h+ __

The alternation t → n / h __ (with subsequent h → : / $\begin{bmatrix} V \\ -\text{low} \end{bmatrix}$ __ n) occurs in the iterative aspect-marker -t-/-n- and also in the adjectival suffix -ta/-na. Some examples of the alternation in the iterative suffix are:

bòh-t-Ø-wá → bò:ná 'it blooms'

turùh-t-er-wá → trù:nerwá 'they sprout'

wàh-t-er-wá → wàhnerwá 'they cry out'

(In the first of these forms the w of the present tense suffix is deleted by the rule $w \longrightarrow \emptyset / \begin{bmatrix} +\text{cor} \\ \begin{Bmatrix} -\text{son} \\ +\text{nas} \end{Bmatrix} \end{bmatrix} \_\_$).

As can be seen in the above examples, the aspect-marker follows immediately after the verb-stem and is followed in turn by the person and tense suffixes:

(Object Pronoun) - V_{stem} - Aspect - Person - Tense.

Iterative stems are inherently so, and the -t-/-n- aspect is obligatory for them, even in those cases where the meaning is explicitly non-iterative. For example: krispes nasti 'just-once he-jumped'. However, there are a few cases of non-iterative stems that have the same phonological shape and apparently the same etymology as iterative stems. E.g. teš-k- 'leave, go' (non-iterative), teš-t- 'disappear gradually, diminish in strength or size' (iterative).

With most iterative stems in final h, the h is deleted with concomitant lengthening of the preceding vowel in those forms of the paradigm in which the iterative n (or t) is not deleted by the rule C → Ø / [-son]___ [-son], i.e. in those cases where n is followed by a person or tense suffix beginning with a vowel, semivowel or r: h → : /___ n (or / ___ n [-son] : the exact necessary and sufficient form of the rule depends on rule-ordering considerations). Thus

turùh-t-Ø-wá → trùh-n-á → trù:ná 'it sprouts'

but turùh-t-Ø-pã́-i → trùhpẽ́ 'it will sprout'; and

yùh-t-u-pã́-i → yù:nupẽ́ 'you're going to bend over'

but yùh-t-Ø-pã́ → yùhpã́ 'I'm going to bend over'.

The only exceptions to the rule h → : / ___ n among verb-stems are the verbs wah- 'bark, shout, cry out' and ak̃́ah- 'weep', both of which contain the low vowel a. I have found only one verb in a that does follow the rule: arà̀h- 'sound, make a noise'. The original rule seems to have been h → : / $\left[\begin{smallmatrix} V \\ -low \end{smallmatrix}\right]$___ n, whose domain has only begun to be extended to include verb stems in a. The exceptional behavior of the two stems in a may possibly be related to the [+low] feature-value shared by both h and a.

The four rules that have been mentioned in this section can be treated as ordered rules, or, with a single slight modification, can be allowed to operate as anywhere-rules. As ordered rules they are slightly simpler and would operate as follows:

1. $C \rightarrow \emptyset$ / [-son] __ [-son] (bleeds rules 2 and 3)

2. $t \rightarrow n$ / h __ (feeds rule 3)

3. $h \rightarrow :$ / $\begin{bmatrix} V \\ -low \end{bmatrix}$ __ n

4. $w \rightarrow \emptyset$ / $\begin{bmatrix} +cor \\ \begin{Bmatrix} -son \\ +nas \end{Bmatrix} \end{bmatrix}$ __ .

Rule 2 could also precede rule 1 without affecting the final derived forms, but both 1 and 2 must precede rule 3. Rule 4 could operate at any stage of the derivation without affecting the derived forms. A few sample derivations involving these rules follow:[3]

	/yùh-t-Ø-pã́/	/yùh-t-er-wá/	/yùh-t-Ø-wá/
Rule 1.	yùh-Ø -pã́	---	---
2.	---	yùh-n-er-wá	yùh-n -wá
3.	---	yù:-n-er-wá	yù:-n -wá
4.	---	---	yù:-n -Øá
	yùhpã́	yù:nerwá	yù:ná

'I'll bend over' 'they bend over' 'he bends over'

For the rules to operate as unordered anywhere-rules, only rule 3 would require modification:

$$h \rightarrow : / \begin{bmatrix} V \\ -low \end{bmatrix} \_\_ n\ [-son]$$

Following are some examples of the t→n/h ___ alternation in the adjectival suffix -ta:

k^{w}a(h)-k^{w}ah-ta → k^{w}ak^{w}ahna 'hard'

suri-surí-h-ta → sursurí:na 'smooth'

mãyh-mãyh-ta → mãyhmãyhna 'soft'.

It seems possible that this adjectival suffix may be at least historically related to the iterative aspect-suffix described above, i.e. that adjectival forms in -ta/-na stem originally from verbal constructions, with perhaps a durative meaning rather than an iterative one.

3.1.3. k→h /[-cons] + ___

The alternation k~h occurs in two morphemes: the absolutive suffix -ká/-há and the non-iterative aspect-suffix -k-/-h-.

The absolutive suffix -ká/-há does not occur with all nouns, though the set of nouns it does occur with is rather large. Besides the large number of native Paya lexical items that exhibit the absolutive suffix in citation-forms, it also occurs without exception in the citation-forms of recent loanwords from Nahuatl and Spanish, where -ká is regularly added after non-nasal consonants and -há is added after vowels and n (since Spanish Vn# sequences become Ṽ upon being borrowed into Paya).

ã:s-ká 'cornfield'

flor-ká 'flower' (< Sp. flor)

sũ-há 'ear'

pã̀-há́ 'bread' (< Sp. pan)

totò̃ni-há́ 'chicken' (< Nahuatl totoli-)

The full form of the absolutive suffix occurs in citation-forms and in sentence- or clause-final emphatic or clarifying forms. When the noun occurs in non-final position in a sentence or clause, or in a compound, the -ká́ allomorph is dropped entirely, whether or not another case-ending is subsequently added to the noun. For example:

sùk-ká́ 'back'

pi-sùk-yã́ 'your-back-on'

sùk-pàña 'back-bone'.

Nouns in -há́, however, lose only the final -a in these environments, e.g.:

sũ̀-há́ 'ear(s)'

a-sũ̀-h-yó́ 'his-ear(s)-with'

sũ̀-h-bòni 'ear-busted: deaf'.

Apparently the h has been reanalyzed as part of the noun-stem. That this is so is particularly evident in loanwords from Spanish, where the final h of the reanalyzed stem is obviously not part of the original Spanish word, e.g. pala-h-yó́ 'shovel-with' (< Sp. pala). The behavior of h in such forms seems to reflect the tendency toward a CVC syllable-structure that can be seen in other parts of the phonology of Paya.

There are a number of nouns whose citation-forms end in ?á́ and which lose the final a in phrases and compounds, e.g.

ú?-á́ 'large wild cat, puma'

ú?-buru 'cat-spotted: tigrillo, mountain cat'

yè?-á 'child'

yè?-pó:k 'child-two: twins'.

Since vowel apocope is not a normal process apart from that associated with the absolutive allomorph -<u>há</u>, it seems reasonable to posit an underlying -<u>há</u> in the citation-forms of such nouns: /ú?-há/, /yè?-há/, the <u>h</u> being lost by a regular rule: $\{h, ?\} \rightarrow \emptyset$ / [-syl]___, which is probably related to sequence-structure-condition 2.20 (p. 22), which prohibits <u>?</u> and <u>h</u> from occurring word-initially. The posited occurrence of the -<u>há</u> absolutive after -<u>?</u>, rather than -<u>ká</u>, is consistent with the behavior of <u>?</u> as a [-cons] segment elsewhere in the phonology (cf. P-rule 13, p. 54). It is probably also the case that -<u>há</u> (surface -<u>á</u>) would be the form of the absolutive after stems historically ending in <u>h</u>, though such stems, if they existed, would be impossible to distinguish from those ending in a vowel and followed by the -<u>ha</u> absolutive.

Returning for a moment to the rule

$$\begin{bmatrix} -\text{cons} \\ -\text{syl} \\ -\text{son} \end{bmatrix} \longrightarrow \emptyset \; / \; [-\text{syl}] \_\_,$$

there appears to be a rule-conspiracy, involving this rule and sequence-structure-condition 2.20, which prevents <u>?</u> and <u>h</u> from occurring syllable-initially after a word-boundary or a consonant. Notice, however, that if we reinterpret this conspiracy more broadly so as to prevent <u>?</u> and <u>h</u> in syllable-initial position everywhere (including after a vowel), then we are provided with an additional explanation for the retention of <u>h</u> in such forms as <u>sù̃-h(á)</u> 'ear'.

That is, if the syllable-boundary falls between h and the following vowel, rather than before h, this helps to explain the reanalysis of h as part of the noun-stem in such cases. The rule is then simply: drop the final syllable of the absolutive form of a noun in order to arrive at its basic stem, which applies generally to both -ká and -há absolutive nouns, as well as to those nouns in which the h of the absolutive has been lost after ?. This analysis, however, requires a modification of the rule for syllable-boundary-placement (2.18, p. 21). The rule could be rewritten either as:

$$\emptyset \rightarrow \$ \;/\; V \left\{ \begin{bmatrix} -\text{cons} \\ -\text{syl} \\ -\text{son} \end{bmatrix} \_\_ \;\; , \;\; [-\text{syl}]_{o} \_\_ [-\text{syl}] \right\} \begin{bmatrix} -\text{cons} \\ +\text{son} \end{bmatrix}$$

or as two rules: rule 2.18 followed by the rule:

$$V \; \$ \; \begin{bmatrix} -\text{cons} \\ -\text{syl} \\ -\text{son} \end{bmatrix} \longrightarrow 1 \; 3 \; 2 \; .$$

$$1 \; 2 \quad\quad 3$$

This change (whichever of the rule-sequences is chosen) renders the Paya sequence-structure-conditions more consistent with the principle stated by Hyman (1975, p. 189) that "ideally, the same sequential constraints which operate at the beginning of a word should be operative at the beginning of a syllable, even if this syllable is word-internal." In the case of Paya, the laryngeal glides do not occur word-initially, but are allowed word-finally.

The foregoing analysis does not, however, account for a few instances of noun-stems in final ʔ that take the -ká absolutive suffix, e.g.:

wã̀ʔ-ká 'forest'.

As a tentative solution I would suggest that such cases of ʔ/___+ká are reflexes of an underlying or historical [+cons] stop, namely p or t, neither of which ever occurs in syllable-final position on the surface. This analysis would require both that sequence-structure-condition 2.28 (p. 25) be modified to allow syllable-final p and t in underlying forms, and also the phonological rule

$$\begin{bmatrix} +\text{ant} \\ -\text{cont} \\ -\text{vcd} \end{bmatrix} \rightarrow \begin{bmatrix} -\text{cons} \\ (-\text{ant}) \end{bmatrix} \; / \; \_\_\_ \; \$ \; .^{4}$$

Hopefully, comparative reconstruction will provide corroboration for this hypothesis, though so far I have not found cognates for the above noun-stems in any other language.

As was noted above, in the case of the absolutive suffix the k h alternation is a productive one, occurring with recent loanwords from Spanish:

kawáyo-há	(< Sp. caballo)	'horse'
taʔòr-ká	(< Sp. ataud)	'coffin'
pã̀-há	(< Sp. pan)	'bread' .

However, the allomorph -há (⟶ -á /¦-syl | ___) also occurs after l in such Spanish loanwords as:

karsèl-á	(< Sp. cárcel)	'jail'
kál-á	(< Sp. cal)	'(quick-)lime' .

The addition of the expected -ká allomorph in such forms would require that the original Spanish l be changed to r (cf. syllable-structure-condition 2.28, p. 25, which prohibits syllable-final l). (I.e. *karsèl-ká → *karsèr-ká, *kál-ká → *kár-ká.) This fact probably explains the inconsistent behavior of the absolutive in these cases. l is a possible segment in Paya, but only in prevocalic position, and thus apparently a strategy was devised to allow it to retain its identity in such Spanish loanwords, while still conforming to Paya sequence-structure-conditions. (Alternatively, the original rule for the k~h alternation may have included l along with n in the conditioning environment for the -há allomorph, but there seems to no longer be any evidence for this among native Paya vocabulary. Comparative evidence suggests, however, that Proto-Chibchan *Vl > Paya $\tilde{V}$ in a number of cases, which would give further support to this hypothesis. The rule Vl > $\tilde{V}$, which would haff to have operated before the rule h → Ø/[-syl] ___, has subsequently been lost from the language.)

In a number of cases it seems possible that earlier derived agent-nouns in -ká/-há have been reanalyzed as nouns plus the absolutive suffix after the verb-root of such derived forms has lost currency in the language, thus obscuring the agential nature of such nouns.[5] Thus, for example, the analysis of sù̃-há 'ear' as stemming from earlier *sun-ha 'hear-er' is corroborated by the existence of the Cuna verb-stem sunna- 'hear, listen' (cf. set 190, p. 126).

Similarly, a number of names of animals and plants that in nature typically occur in groups, plus the names of certain substances, seem to have originally consisted of a noun-stem plus the collective or mass-noun suffix *-s̆ɨka (cf. set 185, p. 125). After syncope of the first vowel of this morpheme, the -ka sequence was apparently reanalyzed as the -ká absolutive, thus allowing (requiring) the s̆ in turn to be reanalyzed as an integral part of the noun-stem. For example:

*taka-s̆ɨka 'shrimp'-Collective > takàs̆-ká 'shrimp'-Abs.
(singular or plural; there is no true noun plural in Paya.)

*wan(V)-s̆ɨka 'smoke'-Mass > wàs̆-ká 'smoke'-Abs.
(As this form exemplifies, *s̆ seems to have become s in some cases) (cf. set 334, below).[6]

I have called the morpheme -k-/-h- that occurs in verb-constructions an aspectual suffix because in most cases it seems to occupy the same slot as the interative aspect-suffix -t-/-n- (cf. 3.1.2, p. 32), that is, immediately following the verb-stem. Its exact grammatical function is not easy to specify, however. There are proportionately only a very small number of verb-stems that do not take either of the aspectual suffixes -k/-h- or -t-/-n-. In most cases these stems are semantically quite primitive and can be traced back to the earliest reconstructible stages of Proto-Chibchan. This fact suggests the possibility that -k-/-h- is historically a derivational rather than an inflectional suffix. This hypothesis is further supported by such Paya verb-pairs as:

šä-	'be, live'	:	šä-h-	'set, put, place'[7]
nä̃-	'go'	:	nẽ-h-	'arrive'
weš-	'hear'	:	ñah-weš-k-	'word-hear: obey'

In such pairs the semantic distinction between the suffixed and the unsuffixed forms seems to be one of punctual vs non-punctual (or stative) meaning. Thus, the -k-/-h- suffix (which I have called the non-iterative aspect-marker) might just as well be called the punctual aspect-marker. -k-/-h- may in fact be related to the verb-root ka?-/ki?- 'do, make', and may have originally had a causative or completive meaning. In the synchronic language, however, -k-/-h- may function simply as a 'place-holding' morpheme (similar to the absolutive suffix -ká/-há) in most cases, without any real semantic function.

The -k-/-h- suffix exhibits phonological conditioning similar to that of the -ká/-há absolutive suffix, but with some noteworthy differences. The -k- allomorph occurs after consonants, including ? (though possibly not in all cases), and after most cases of long vowels. The -h- allomorph occurs after short vowels, and possibly after some instances of ?. Among verb-stems ending in ?, it is impossible to distinguish between those that take no aspect-suffix at all and those that take the -h- allomorph of the non-iterative aspect, since in the latter case the h would be deleted by the same rule that operates with the -ha absolutive: $\{?,h\} \rightarrow \emptyset$ / [-syl] ___. Examples:

èrš-k-wa	'he scrubs (it)'
a-tak-k-er-wa	'they just now separated'
pè?-k-a-wa-ši (→ pè?ko:ši)	'I brought (it)'
pà:-k-ú-h	'carry (it)'

ta-mṹ-h-i	'it soaked me'
ã̀ʔ-(Ø~hʔ)-a-ri	'I ate (it)'
wi:s̆-Ø-a-wa	'I gave (it) to him'

In at least some of the cases in which the -k- allomorph occurs after verb-stems ending in ʔ, there is comparative evidence that the ʔ is the reflex of an historical (and possibly synchronically underlying) [+cons] stop. For example, compare the following: Paya pèʔ-k- 'bring': Cuna per-we- 'bring,carry': Miskito bri- 'take'. These forms, if cognate, point to an earlier root *bit, and possibly to an underlying /pet/ in Paya. There is also at least one case of the -h-(or Ø) allomorph after ʔ for which there is comparative evidence that the ʔ may have been historically *ʔ, and not the reflex of a [+cons] stop. Compare:

Paya ka-pã́ʔ- : Colorado pã́ʔa 'ask for, request' (cf. set 148, p. 116).

As with the h of the -há absolutive, the -h- allomorph of the non-iterative aspect behaves as part of the verb-stem, from which it is never deleted, since it is always syllable-final following a vowel. However, the -k- allomorph, in those members of the verb-paradigm in which it occurs between two [-son] segments, is deleted by rule 21 below:

$$C \rightarrow \emptyset \ / [-son] \_\_ [-son].$$

This deletion (which also applies to the -t- allomorph of the iterative aspect [cf. p. 33]) takes place in all 1st person plural forms, both inclusive and exclusive (in which either -bar- or -par-

follows the aspect-marker), and in the 1st and 3rd person singular forms of both the future (marked by -pã́) and the negative (marked by tV) sub-paradigms. For example:

ka-tṹš-k-bar-i	⟶ katṹšbri	'we worked'
ta-war-k-pã́-i	⟶ tawarpẽ́	'it will be more than enough'
a-kamás-k-t-ã́-wa	⟶ akamástã́wã́	'I didn't taste (it)'.

However, the -k- allomorph is also deleted in the same members of the paradigm even in those cases where the verb-stem ends in a long vowel. For example:

pà:-k-pã́	⟶ pà:pã́	'I'll carry (it)'
ò:-k-t-ã́-wa	⟶ ó:tã́wã́	'I didn't sleep'.

Apparently the phonological process that deletes the k between [-son] segments has been extended and grammaticalized so as to delete k in these specific paradigmatic environments, even though they don't provide phonological motivation for the deletion.

3.1.4

$$a \rightarrow \begin{Bmatrix} \langle i \rangle \\ e \end{Bmatrix} / \_\_ \left(\left(\begin{bmatrix} -\text{cons} \\ -\text{syl} \\ -\text{son} \end{bmatrix} \right) \right) \begin{Bmatrix} \langle Vb_1 \rangle \\ Vb_2 \end{Bmatrix} +3\text{rd Person}$$

The ablaut-like vowel-alternations a~e or a~i occur quite regularly in non-iterative verb-stems which end in either a vowel (usually followed by the aspect-marker -h-) or ?. The more common alternation is a~e; the a~i alternation occurs with only a very few verb-stems. For example:

nãhawa	'I speak'	:	nẽhwa	'he speaks'
nã́:wa	'I go/went'	:	nẽwa	'he goes/went'
ã́ʔpã́	'I'll eat'	:	ẽ́ʔerpẽ́	'they'll eat'
ká́ʔtari	'I didn't do (it)'	:	kí́ʔtĩ́	'he didn't do (it)'
ša:wa	'I was born'	:	šiwa → šuwa (by rule 20, p. 54)	
	'he was born'.			

Most forms of the verb-paradigm exhibit subject-suffixes which fill a morpheme-slot immediately following the aspect-marker and preceding the tense-suffix. For most verbs only the 3rd person singular forms exhibit no overt subject-marker. For example, consider the future paradigm of the verb ók- 'bathe':

	Singular	Dual	Plural
1.	ók-k-a-pã́	ók-(k)-par-pẽ́	ók-(k)-bar-pẽ́
2.	ók-k-(ʔ)u-pẽ́		ók-k-(ʔ)u-pí́-wá́
3.	ók-(k)-Ø-pẽ́		ók-k-er-pẽ́

(Segments in parentheses are deleted by regular phonological rules [rule 15, p. 55, and rule 21, p. 57]).

Verb-stems in which the a~e or a~i alternation takes place seem to be exceptions to the generalization that 3rd singular forms are unmarked for subject. A possible explanation for these alternations is that there was, in fact, a historical -i- suffix for the 3rd person singular, which occupied the same slot as the other subject-suffixes, but which no longer occurs either in this form or in this position. (The 3rd person plural suffix may in fact include this suffix: -er- < *-i-r- [*i > e/_rC, cf. rule 25, p. 212].) The -i- suffix has left a trace, however, in those stems that exhibit the a~e and a~i

alternations. In those cases in which this -i- occurred after a [+cons] segment, it was apparently lost by a regular process of syncope. However, in those cases in which the -i- was preceded by a [-cons] segment (a vowel, h or ʔ), it monophthongized with, or umlauted, the preceding stem-vowel, either directly, or following metathesis in the case of a preceding laryngeal. For example, in the a~e case:

*nã-i-wa > nẽwa 'he goes/went'

*pã́ʔ-i-pẽ́ > pã́-i-ʔ-pẽ́ > pẽ́ʔpẽ́ 'he'll lift (it)'

*ar-ká-h-i-í > ar-ká-i-h-í > arkéhí 'he covered it'

This process of metathesis of a stem (or aspect) laryngeal and a subject-marking vowel, followed by monophthongization of the stem- and suffix-vowels, is not limited to such 3rd person forms. It can also be seen operating in certain 2nd person forms of verbs with stem-final ʔ. For example:

širaʔ-(ʔ)u-pẽ́ → šira-u-ʔ-pẽ́ → široʔpẽ́ 'you'll lower (it)'.

(This process does not take place in second person forms with the -h- aspect, however: šah-u-pẽ́ 'you'll set (it) down', not *šohpẽ́, as we might expect.) (Cf. rules 16 and 17, pp. 55 and 56.)

The a~i alternation can be explained in similar fashion, that is, as the result of the influence of a subject-marking vowel on the stem-vowel. In this case, however, the original stem-vowel must have been something other than a, else we would have an a~e alternation here also. The best hypothesis seems to be that the stem-vowel was somehow more 'neutral' or 'impressionable' than a, and therefore able to completely assimilate to the vowel of the following subject-marker.

Comparative evidence supports the setting up of an earlier *ɨ or *ə for many of these cases. It would be extremely difficult to justify the setting up of an underlying /ɨ/ or /ə/ in the synchronic language, however, since neither of these segments occurs at the phonetic level, except, in the case of [ə], as the unstressed allophone of some other underlying vowel (usually i or e).

The a~e alternation that occurs between the first person singular allomorph of the future tense suffix, -pã́, and the allomorph for the other persons, -pẽ́ (except in the second plural, where the suffix, or suffixes, is -pí-wa), may be related to the same umlauting process under discussion. The future-suffix may stem from an earlier verb or auxiliary which was also conjugated, at least for subject, along with the main verb: possibly *-pá-(a)-n(a) > -pã́ in the 1st person singular, and *-pá-i-n(a) > -pẽ́ originally in the 3rd person only, but extended to certain other persons.[8]

Forms in earlier word-lists attest to ai sequences in the 3rd person forms of a number of verbs at earlier stages, for example:

*<ainkamai-hua> 'it tastes sour' (√ãʔ- 'eat'; Ramos, p. 4)

*<chaimuá> 'he sees' (√s̆ã- ; Membreño 278)

*<paimuá> 'he touches (it)' (√pãh- ; Membreño 275).

$$3.1.5 \quad \begin{bmatrix} C \\ -son \\ -cont \\ -back \end{bmatrix} \longrightarrow \begin{bmatrix} +nas \\ (+vcd) \end{bmatrix} \quad / \quad \check{s}\tilde{a}]_{Vb} + X \_\_$$

As indicated earlier, progressive nasal assimilation of vowels and semivowels is blocked by a [+cons] segment, and in no cases (except those under discussion here) do [+cons] segments themselves assimilate to a preceding nasal segment. For some still unexplained reason, however, the verb šà- 'see' causes nasal assimilation of following b, p and t in its future and negative paradigms.

For example:

/šà-a-bar-pá-i/ → šà:marmé 'we will see (it)'

/šà-i-er-'t'-e-pá-i/ → šé:rnémé 'they won't see (it)'

/šà-a-'t'-a-wa/ → šá:nãwã 'I don't see (it)'

The rule also operates in at least one derived form:

/šà-'tahá/ → šãnãhá 'watchman, lookout'.

A possible explanation for the failure of the rule to operate in the present and past affirmative paradigms is that there are only two forms (out of seven) in each of these paradigms to which the rule would be applicable. Due to the preponderance of regular formations in each paradigm, the potentially irregular 1st person dual and plural forms (in -par- and -bar-) have been removed from the domain of this rule (or were never allowed to enter it). In the future and negative paradigms, on the other hand, all seven forms are subject to the operation of this rule (due to the presence in each form of either the future -pá- or the negative -'t'-), thus producing a kind of 'regular irregularity', which has been allowed to stand.

The changes are clearly motivated by the nasalized vowel in the stem, and yet other similar verb-stems do not cause such nasal assimilation. For example:

/nà̃-a-pá̃/ → nà̃:pá̃ 'I'll go' (not *nà̃:má̃).

3.1.6. $k \rightarrow \emptyset$ / ___]$_{\text{Aspect}}$ + [-son]

Examples of the operation of this rule are as follows:

/pà:-k-bar-wa/ → pà:barwa 'we carry (it)'

/ò:-k-pá̃/ → ò:pá̃ 'I'll sleep'.

This rule has apparently come about through an extension and grammaticalization of the purely phonologically motivated rule: $C \rightarrow \emptyset$ /[-son] ___ [-son], which regularly deletes the -k- aspect-marker in those forms of the paradigm in which the k is followed by a suffix beginning with a [-son] segment. This k-deletion has been extended analogically to the same forms of the paradigm for verbs whose stems end in a long vowel, even though the phonological environment-conditions of the rule are not completely met. (Recall that verb-stems ending in a long vowel take the -k- aspect, rather than the -h- aspect that normally follows short vowels.)

3.1.7. V → [+hi tone] / ___ C_o + $\left\{\begin{matrix}\text{Neg} \\ \text{Agent}\end{matrix}\right\}$ [

A few inflectional and derivational suffixes cause [+hi tone] in the preceding stem- or suffix-vowel. These include the present and future negative-suffix -ˊt$^{(\acute{\sim})}$-, and the agent-noun-suffix -ˊtaháˊ, and

possibly a couple of others. For example: /tè̲ʔ-´t˜-a-wa/ → té̲ʔtã́wa → téʔtã́w̃ã́ (by rule 13, p. 54) 'I'm not coming'.

/a-šah-bar-´t´-e-pẽ́/ → ašàhbártépẽ́ 'we won't sit down'

/šah-´tahá/ ('settle'-Agent) → šáhtahá 'inhabitant'.

There are a number of irregularities in the behavior of negative verb-forms and valid generalizations are hard to make. The rule I have presented here seems to operate in most cases, though often individual verb-stems exhibit their own idiosyncrasies.

3.1.8. $\tilde{u}: \rightarrow \begin{bmatrix} \alpha \text{hi tone} \\ -\alpha \text{low tone} \end{bmatrix} / \; \_\_\_]_{\text{Caus}} + {}_{\text{Vb}}\left[X \begin{bmatrix} V \\ \alpha \text{hi tone} \\ -\alpha \text{low tone} \end{bmatrix} \right]$

The causative prefix ũ̲:- assimilates in tone to the following verb-stem. For example:

/ũ̲:-mús-t-a-wa/ → ṹ̲:mústawa 'I fill(ed) (it)'

/ũ̲:-yà̲s-t-i/ → ũ̲̀:yàsti 'he straightened (it)'.

3.2. Phonologically Conditioned Alternation

In this section I will present, exemplify and discuss the regular and variable phonological rules of Paya. Following is an ordered list of these rules with examples of the operation of each. I have included here the grammatically conditioned rules discussed in section 3.1 in order to give a more or less complete picture of the Paya phonological component.

In general, rules which change or delete phoneme-types are given early in the list, while phonetic-detail rules (rules of allophonic variation) are given toward the end. However, whenever other

ordering-principles are involved, I have indicated and given examples of the type of actual or potential interaction with other rules that necessitates the order given. Variable rules operate only in rapid speech.

1. $p \rightarrow w / V]_{DOPro} + Vb' [\_\_$

(Grammatically conditioned: see discussion, sec. 3.1.1)

E.g. ta-pà:-k-ú-h/ → tawà:kúh 'take me'

2. $t \rightarrow \begin{bmatrix} +vcd \\ +nas \end{bmatrix} / \begin{bmatrix} -cons \\ +cont \end{bmatrix} + \left\{ \begin{matrix} AdjSuf \\ IterAsp \end{matrix} \right\} [\_\_$

(Grammatically conditioned: see discussion, sec. 3.1.2)

E.g. /bò-h-t-er-wa/ → bòhnerwa → bò:nerwa (by rule 20) 'they bloom(ed)'. Feeds rule 20, as exemplified by the example given.

3. $k \rightarrow h / \begin{bmatrix} -cons \\ \langle -length \rangle \end{bmatrix} + \left\{ \begin{matrix} \langle Non\text{-}IterAsp \rangle \\ Absolutive \end{matrix} \right\} [\_\_$

(Grammatically conditioned: see discussion, sec. 3.1.3)

E.g. /pã́-k-a-wa/ → pã́hawa → pã́hãw̃ã́ (by rule 13) 'I moved (it)'. Feeds rule 13, as exemplified by the example given. Feeds rule 23 (q.v.).

4. $a \rightarrow \left\{ \begin{matrix} \langle i \rangle \\ e \end{matrix} \right\} / \_\_ \left(\begin{bmatrix} -\text{cons} \\ -\text{syl} \\ -\text{son} \end{bmatrix} \right) \Big]_{\left\{ \begin{matrix} \langle Vb_1 \rangle \\ Vb_2 \end{matrix} \right\}}$ +3rd person

(Grammatically conditioned: see discussion, sec. 3.1.4)

E.g. /kà?-wa/ → kì?wa 'he did (it)'

/nã̀-wa/ → nẽ̀wa → nẽ̀w̃ã (by rule 13) 'he goes'.

5. $\begin{bmatrix} C \\ -\text{son} \\ -\text{cont} \\ -\text{back} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{nas} \\ (+\text{vcd}) \end{bmatrix} / \; \check{s}\tilde{\grave{a}} \Big]_{Vb} + X \_\_$

(Grammatically conditioned: see discussion, sec. 3.1.5)

E.g. /š̃à-'tahá/ → š̃à-'nahá → š̃ánahá (by rule 7) 'watchman'.

6. $k \rightarrow \emptyset \; / \; \_\_ \Big]_{Aspect} + [-\text{son}]$

(Grammatically conditioned: see discussion, sec. 3.1.6)

E.g. /ò:-k-par-á-h/ → ò:paráh → ò:práh (by rule 9) 'let's you and me sleep'.

7. $V \rightarrow [+\text{hi tone}] / \_\_ \; C_o + \left\{ \begin{matrix} \text{Pres/FutNeg} \\ \text{Agent} \end{matrix} \right\} \Big[$

(Grammatically conditioned: see discussion, sec. 3.1.7)

E.g. /a-pàs-k-bar-'t̃-a-wa/ → apàskbártã́wa → apàsbártã́w̃ã (by rules 13 and 21) 'we're not leaving'.

8. $\tilde{u}: \rightarrow \begin{bmatrix} \alpha \text{ hi tone} \\ -\alpha \text{ low tone} \end{bmatrix} / \_\_ \;] \text{Caus} + \text{Vb} \left[X \begin{bmatrix} \alpha \overset{V}{\text{hi}} \text{ tone} \\ -\alpha \text{ low tone} \end{bmatrix} \right.$

(Grammatically conditioned: see discussion, sec. 3.1.8)

E.g. /ũ:-bóh-t-er-wa/ → ũ:bóhterwa → ũ:bóhnerwa (by rule 2) → ṹ:bóhnerwa → ṹ:bó:nerwa (by rule 20) 'they exploded (it)'.

9. $\begin{bmatrix} \overset{V}{-\text{hi}} \text{ tone} \\ -\text{low tone} \end{bmatrix} \rightarrow \text{ə} \rightarrow \emptyset \; / \; \text{C} \_\_ \text{r} \begin{bmatrix} \left\{ \begin{matrix} \overset{V}{+\text{hi}} \text{ tone} \\ +\text{low tone} \end{matrix} \right\} \end{bmatrix}$ (variable)

E.g. /turùh-t-wa/ → turùhnwa (by rule 2) → trùhnwa → trù:na (by rules 18 and 22) 'it germinates/sprouts'.

waréš-k-bar-ù:-rí/ → wəréšbrù:rí → wəréšbrù:rí (by rules 21 and 30) 'we used to fell (trees)'.

/kú-k-par-ã̀/ → kúhparã̀ (by rule 3) → kúhprã̀ 'you and I having bought (it)'. In counterbleeding order with respect to rule 11. If rule 11 preceded rule 9, we would have, e.g., /ta-harár#a-mãýš-a-wa-ma-h/ → *tahar#amãýšawamah (by rule 11) 'what I prefer', and rule 9 would no longer apply since the tonic vowel has been deleted.

10. V → [+nas] / __ Cã̀# V (variable: operates only if rule 11 does)

E.g. /kàhã̀#ú:ya/ → kãhã̀#ú:ya → kãh ú:ya (by rule 11) 'big town'. In counterbleeding order with respect to rule 11. If rule 1 preceded rule 10, we would have /kàhã̀#ú:ya/ → *kàh#ú:ya (by rule 11), and rule 10 would not apply.[9]

11. $\begin{bmatrix} V \\ +low \end{bmatrix} \rightarrow \emptyset$ / ___ # V (variable)

E.g. /ta-hará#a-mã́yš-a-wa-ma-h̲/ → tahrá̲#amã́yšawamah (by rule 9) →

tahr‿amã́yšawamah 'what I prefer' (lit. 'my-liver I-feel-Rel').

/šorwáwa̲# ú:ya/ → šorwáw#ú:ya 'big cockroach'.

In counterbleeding order with respect to both rule 9 and 10 (q.v. for examples).

12. $t \rightarrow ? \ / \left[\begin{matrix} V \\ \left\{\begin{matrix} +hi\ tone \\ +low\ tone \end{matrix}\right\} \end{matrix}\right]$ ___ V (variable)

E.g. /pàt̲a-tì:š-tahá/ → pàʔ̲atì:štahá 'our-sow-er = God'.[10]

As in the example, this rule operates commonly with the 1st person plural possessive prefix p̲à̲t̲a̲-. I have not observed it in any other environment. The process also operated historically: see the discussion on p. 201. If indeed the domain of this rule is larger than simply the prefix p̲à̲t̲a̲-, it could potentially feed rule 13.

13. $\begin{bmatrix} -cons \\ +son \end{bmatrix} \rightarrow [+nas] \ / \begin{bmatrix} -cons \\ +nas \end{bmatrix} [-cons]_0$ ___

E.g. /ã̀ʔ-(k)-a-wa/ → ã̀ʔã̃w̃ã̃ 'I eat/ate (it)'

The -k̲- aspect, if present, would be changed to -h̲- by rule 3, and subsequently deleted by rule 15.

/kitã̀-ká/ → kitã̀há̲ (by rule 3) → kitã̀hã̲́ 'peccary (Abs)'

/ñã̀-k-wa/ → ñẽ̀hwa̲ (by rules 3 and 4) → ñẽ̀hw̃ã̲ 'he says'

Fed by rule 3 and potentially fed by rule 12.[11]

14. h → š / š ___

E.g. /peš-hará/ → peš$\underline{\text{h}}$rá (by rule 9) → peššrá 'their livers'.

This is an extremely ad hoc rule, since the form given in the example is the only place it has been observed to operate. There may be other forms in which the rule operates, for example: /wakáš̲-h̲ã́/ 'cattle'-Emphatic, but these are so far unattested. Bleeds rule 15 and also is in counterbleeding order with respect to rule 15. If rule 15 preceded rule 14, we would have /peš-hará/ → peš$\underline{\text{h}}$rá (by rule 9) → *pešrá (by rule 15), and rule 14 would not operate.

15. $\begin{bmatrix}-\text{cons}\\ -\text{syl}\\ -\text{son}\end{bmatrix} \rightarrow \emptyset \;/\; \left[\begin{Bmatrix}+\text{cons}\\ -\text{son}\end{Bmatrix}\right]$ ___

E.g. /úʔ-h̲á/ → úʔá 'large wild cat (Abs)'

/ã̀ʔ-ʔ̲u-pẽ́/ → ã̀ʔʔ̲ũpẽ́ (by rule 13) → ã̀ʔũpẽ́ → õ̀ʔpẽ́ (by rules 16 and 17) 'you'll eat (it)'.

/ta-ka-péʔ-k-ʔ̲u-pĩhã́/ → takapéʔkupĩhã́ 'you'll return (it) it to me'

/ñaʔ-tã́h-ʔi/ → ñaʔtã́hʔ̲ĩ (by rule 13) → ñaʔtã́hĩ 'it's big' (lit. 'small'-Neg-Copula)

Bled by and in counterbleeding order with respect to rule 14 (q.v. for example). Feeds rule 16, as shown in the second example.

16. $\underset{1}{\begin{bmatrix}\begin{Bmatrix}-\text{hi}\overset{a}{\ }\text{tone}\\ +\text{low tone}\end{Bmatrix}\end{bmatrix}}\ \underset{2}{ʔ}\ \underset{3}{u} \rightarrow 1\ 3\ 2 \;/\;$ ___ $[+\text{seg}]_2$

E.g. /nã̀-ʔu-pí-wa/ → nã̀ʔṹpíwa (by rule 13)→nãũ̀ʔpíwa →nõ̀ʔpíwa (by rule 17) 'you-all will go'.

Fed by rule 15 (q.v. for example). Feeds rule 17, as shown in the example. (This rule is probably related historically to the ablaut-phenomena discussed in section 3.1.4. An earlier, more general rule seems to have involved both the laryngeal glides, ʔ and h, as well as i:

$$\begin{bmatrix} a \\ \begin{Bmatrix} +hi & tone \\ +low & tone \end{Bmatrix} \end{bmatrix}_1 \begin{bmatrix} -syl \\ +low \end{bmatrix}_2 \begin{bmatrix} V \\ +hi \end{bmatrix}_3 \longrightarrow 1 \quad 3 \quad 2 / \_\_ [+seg]_2 .)$$

17. $a \begin{bmatrix} V \\ +hi \end{bmatrix} \rightarrow \begin{bmatrix} 2 \\ -hi \end{bmatrix} / \_\_ C$ (variable)

1 2

E.g. /sìra-íš-ká/ → siréška 'kitchen' (lit. 'meal-mak-er').

Fed by rule 16 (q.v. for example).

18. $w \rightarrow \emptyset \; / \begin{bmatrix} +cor \\ \begin{Bmatrix} -son \\ +nas \end{Bmatrix} \end{bmatrix} \_\_$

E.g. /mór-t-w-a/→ mórta 'he snores'.

Could potentially bleed rule 19.

19. $$\left\langle \begin{bmatrix} V \\ +low \\ -hi\ tone \\ -low\ tone \end{bmatrix} \right\rangle \begin{bmatrix} -cons \\ +hi \\ +back \end{bmatrix} \begin{bmatrix} V \\ +low \\ -hi\ tone \\ -low\ tone \end{bmatrix} \rightarrow \begin{bmatrix} V \\ -high \\ -low \\ +back \\ \langle +length \rangle \end{bmatrix} / \_\_\ C$$ (variable)

E.g. /pè:šwàkwa-térs-ká/→pè:šwàkotérská 'lasso' (lit. 'animal-tier')

This rule may operate across word-boundaries in very rapid speech.

20. $$\begin{bmatrix} V \\ +hi \\ (-length?) \end{bmatrix} \rightarrow [+back] / \_\_\ \begin{bmatrix} -cons \\ +hi \\ +back \end{bmatrix}$$ (variable)

E.g. /šì-wa/→šùwa 'there is'.

This rule may also include non-high vowels: the word sàwa 'hand' is occasionally pronounced [sùwa].

21. C→Ø / [-son]___ [-son]

E.g. /à?-t-pá/→à?pá 'I'm going to vomit'.

/a-ùh-t-bar-wa/→aùhnbarwa (by rule 2)→aùhbarwa 'we cough(ed)'.

Bleeds and is in counterbleeding order with respect to rule 22, as shown in the second example. If rule 22 preceded rule 21, we would have /a-ùh-t-bar-wa/→aùhnbarwa (by rule 2)→*aù:nbarwa (by rule 22), and rule 21 would not operate.

22. $\begin{bmatrix} V \\ -low \end{bmatrix}_1 h_2 \longrightarrow \begin{bmatrix} 1 \\ +length \end{bmatrix} / \_\_ n$

E.g. /bòh-t-wa/ → bòhna (by rules 2 and 18) → bò:na 'it blooms'.

Fed by rule 2 and bled by rule 21 (q.v. for examples).

23. ěr → 2 1 /Vh ___ [+cons] (ě = $\begin{bmatrix} e \\ -hi\ tone \\ -low\ tone \end{bmatrix}$)

12

E.g. /kú-k-er-pā̀-i/ → kúherpḗ (by rules 2 and 17) → kúhrepḗ 'they'll buy (it)'.

Fed by rule 3, as shown by the example. The only place I have found this rule to operate is with the 3rd person plural subject-marker in verbs. The original form of the suffix may be -ere-, which becomes -re-/Vh ___ [+cons] and -er- elsewhere.

24. s → h/ ___ $\begin{bmatrix} C \\ +vcd \end{bmatrix}$ (variable)

I have noticed this in only one word, but I suspect it's more general:

/tàs-ma/ → tàhma 'I (Subject)'.

This rule seems to have operated historically.

25. $\begin{bmatrix} +cons \\ -son \\ +cor \end{bmatrix} \longrightarrow [+ant] / \_\_ \begin{bmatrix} +cons \\ +cont \\ +ant \end{bmatrix}$

E.g. /pěs-sàwa/ → pessàwa 'their hands'.

Potentially fed by rule 21.

26. $\begin{bmatrix} V \\ -\text{hi tone} \\ -\text{low tone} \end{bmatrix} \longrightarrow ə \sim \emptyset \;/\; \begin{bmatrix} V \\ \left\{\begin{matrix} +\text{hi tone} \\ +\text{low tone} \end{matrix}\right\} \end{bmatrix} C \_\_ C \begin{bmatrix} V \\ \left\{\begin{matrix} +\text{hi tone} \\ +\text{low tone} \end{matrix}\right\} \end{bmatrix}$ (variable)

E.g. /wàru̲-wàru/ ⟶ wàrᵊ̲wàru ⟶ wàrwàru 'butterfly'.

27. $\underline{\emptyset} \longrightarrow ʔ \;/\; \begin{bmatrix} V \\ -\text{length} \end{bmatrix} \#\#$ (phrase finally)

E.g. /a-šì-k-pẽ́/ ⟶ ašìhpẽ́ (by rule 3) ⟶ ašìhpẽ́ʔ̲ ⟶ ašìhpɛ̃́ʔ (by rule 30) 'he'll sit down'.

Feeds rule 30, as shown in the example.

28. $\emptyset \rightarrow ʔ \;/ V + \_\_ V$ (variable)

E.g. /šã̀-a-wa-šì/ ⟶ šã̀õ:siʔ (by rules 5, 19 and 27) ⟶ šã̀ʔ̲õ:siʔ (⟶ š̰ã̰̀õ̰:siʔ [by rule 29]) 'I saw (it)'(Recent Past).

Feeds rule 29, as shown in the example.

29. ʔ ⟶ glottal stricture ('creaky voice':⟨ ̰ ⟩)/V __ V (variable)

E.g. /pàʔšàʔ̲a/ ⟶ pàʔšà̰a̰ 'female'.

Fed by rule 28 (q.v. for example).

30. $\begin{bmatrix} V \\ -\text{length} \\ \left\langle\begin{matrix} -\text{hi} \\ -\text{low} \end{matrix}\right\rangle \end{bmatrix} \rightarrow [-\text{tense}] \;/ \left\{\begin{matrix} \_\_ \; C \left\{\begin{matrix} C \\ \# \end{matrix}\right\} \\ \left\langle \begin{bmatrix} \_\_ \\ +\text{nas} \end{bmatrix} \right\rangle \end{matrix}\right\}$

E.g. /surmãh-á/ → surmãhã́? (by rules 13 and 27) → surmãhã́? 'army-ant (Abs)'.

/ǒrš-k-pẽ́/ → ǒršpẽ́? (by rules 21 and 27) → ɔ̀rspɛ̃́? 'he'll break (it)'.

Fed by rule 17, and by rule 27, as shown in the second example. In counterfeeding order with respect to rule 31 (q.v. for example).

31. V → [-length] / ___ CC (operates across word-boundaries)

E.g. /masù:s#tìš-k-wa/ → masùs tìškwa 'it got wet'.

/tò:k-k-a-wa/ → tòkkawa 'I entered'.

In counterfeeding order with respect to rule 30. If rule 31 preceded rule 30, we would have, e.g., /tò:k-k-a-wa/ → tòkkawa (by rule 31) → *tɔ̀kkawa. ([tɔ̀kkawa] is an attested form meaning 'I drank (it)', but derives from underlying /tòk-k-a-wa/, with a short vowel in the stem.)

32. b → [+cont] / V ___ V

E.g. /tìbi/ → tìβi 'grass'.

33. k → [+vcd] / V: ___ (variable)

E.g. /ta-kà:ki/ → takà:gi 'my mother'.

34. $n \rightarrow \begin{bmatrix} +back \\ (-cor) \end{bmatrix} / \_\_ \begin{Bmatrix} \# \\ C \end{Bmatrix}$

E.g. /šàñ/ → šàŋ → čàŋ (by rule 35) 'earthworm'.

35. $\check{s} \rightarrow \begin{bmatrix} -\text{cont} \\ +\text{delayed release} \end{bmatrix} / \_\_ \text{ V (except in Colón dialect)}$

E.g. /ta-s̆ùna/ → tac̆ùna 'my nail'.

36. $\begin{bmatrix} +\text{cons} \\ -\text{son} \\ +\text{cont} \end{bmatrix} \rightarrow [+\text{length}] / \begin{bmatrix} \text{V} \\ -\text{length} \end{bmatrix} \_\_ \begin{bmatrix} \text{C} \\ -\text{vcd} \end{bmatrix}$

E.g. /tùs-ká/ → tùska (by rule 30) → tùs:ká 'coatimundi (Abs)'

37. $\begin{bmatrix} +\text{son} \\ -\text{nas} \\ -\text{lat} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{trilled} \\ \langle -\text{vcd} \rangle \end{bmatrix} / \_\_ \left\{ \begin{bmatrix} \text{C} \\ \langle -\text{vcd} \rangle \end{bmatrix} \right\}$

$\langle \# \rangle$

E.g. /a-pàr-ká/ → apàr̃ká 'its tail (Abs)'

38. $a \rightarrow \Lambda / \begin{bmatrix} \_\_ \\ -\text{length} \\ -\text{hi tone} \\ -\text{low tone} \end{bmatrix}$ (variable)

E.g. /ta-wè:-k-a-wa/ → tawè:hawa? (by rules 3 and 27) → tʌwè:hʌwʌ? 'I grow/grew'.

39. $\begin{bmatrix} \text{V} \\ -\text{hi tone} \\ -\text{low tone} \end{bmatrix} \rightarrow [-\text{vcd}] / \begin{bmatrix} \text{C} \\ -\text{vcd} \end{bmatrix} \_\_ \begin{bmatrix} \text{C} \\ -\text{vcd} \end{bmatrix}$ (variable)

E.g. /sikĩ-ko/ → sikĩko 'church' (lit. 'saint-place').

40. $$\emptyset \longrightarrow \begin{bmatrix} C \\ +ant \\ +cor \\ +vcd \\ -cont \end{bmatrix} / \begin{bmatrix} C \\ +nas \\ +ant \\ +cor \end{bmatrix} \_\_ \begin{bmatrix} C \\ +son \\ -nas \\ -lat \end{bmatrix}$$

E.g. /arah-t-ri/ → ara:nri (by rules 2 and 22) → ara:ndri 'they made a noise'.

41. $$\emptyset \longrightarrow \begin{bmatrix} C \\ +ant \\ +cor \\ -vcd \\ +cont \end{bmatrix} / \begin{bmatrix} C \\ +son \\ -nas \\ -lat \end{bmatrix} \_\_ \begin{bmatrix} C \\ -ant \\ +cor \\ -vcd \end{bmatrix}$$ (in Culmí dialect)

E.g. /tòk-k-bar-ši/ → tɔ̀kbʌr̃̆ci (by rules 21, 30, 35 and 37) → tɔ̀kbʌr̃̆sči 'we drank (it)' (Recent Past).

42. $$\emptyset \longrightarrow \begin{bmatrix} -cons \\ -syl \\ +hi \\ \alpha back \end{bmatrix} / \begin{bmatrix} V \\ +hi \\ \alpha back \end{bmatrix} h \_\_ \begin{bmatrix} V \\ \{ -hi \\ -\alpha back \} \end{bmatrix}$$

E.g. /suku-k-a/ → sukuha (by rule 3) → sukuhwa 'receptacle'.

In counterfeeding order with respect to rule 19.

43. $\begin{bmatrix} V \\ -\text{low tone} \end{bmatrix} \rightarrow [+\text{hi tone}] \;/\; \_\_\; C_{o}^{1}\; \#\#$ (phrase finally)

E.g. /a?ús-k-a-wa/ → a?ús:kawa? (by rules 27 and 36) → a?úskawá?
'I sucked (it)'.

44. $\begin{bmatrix} V \\ -\text{hi tone} \\ -\text{low tone} \end{bmatrix} \rightarrow ə$ (variable: in extremely rapid speech)

E.g. /íšpiti-kí?-wa/ → íšpətəkí?wə 'dirty'.

Bled by rules 7, 8 and 43. This rule and rule 26 are similar and possibly could be collapsed into a single rule.

45. $\begin{bmatrix} -\text{cons} \\ -\text{voc} \\ +\text{son} \end{bmatrix} \longrightarrow [+\text{cons}] \;/\; \#\; \_\_$ (variable)

E.g. /yìwi/ → dyìwi 'moon'
/wàha/ → ɣwàha 'forest'.

Chapter 4 - The Phonology of Proto-Chibchan

4.1. Until recently the genetic affinities of Paya had not been convincingly established. Over the years various suggestions had been made as to how Paya should be classified relative to other languages of the Americas, but none of these was both methodologically well-founded and adequately documented. And although most recent researchers into the problem have tended to agree that Paya is probably a member of the Macro-Chibchan phylum, the descriptive materials which were available were apparently not sufficient to allow an unambiguous classification. In this chapter I will present evidence which I think establishes conclusively that Paya is indeed a member of the Macro-Chibchan phylum as defined by Voegelin and Voegelin (1965), and that, in fact, because of its close lexical and grammatical resemblances to other Chibchan languages, Paya deserves to be included as a member of the main Chibchan family, rather than as an isolated outlier.

Previous attempts to classify Paya seem to have been based on impressionistic resemblances in lexical items and grammatical features, and there has apparently been no attempt to apply the comparative method to Paya plus any other language or set of languages. Squier (1853) noted an apparent relationship between Paya and Jicaque, which Thomas and Swanton (1911:75-6) gave some support to. Lehmann (1920:641), Sapir (1929:141) and McQuown (1955:535) all leave Paya unclassified, though Lehmann, by grouping Paya together with its immediate neighbors Lenca and Jicaque, seems to have been

suggesting a possible relationship, perhaps only areal, among the languages of that group, which he contrasted with a larger group composed of the Misumalpan and Chibchan languages to the south. It is at least evident that he meant to exclude Paya from this latter larger grouping, which has since come to be regarded as a single genetic entity.

Schmidt (1926:206-8) ascribed definite genetic status to the smaller Lehmann grouping, adding Xinca to form what he called his Paya-Xinca-Sprachen. He combined this group with his Miskito-Matagalpan-Sprachen (identical with the currently accepted Misumalpan group: Miskito, Sumu-Ulua-Yosco, and Matagalpa-Cacaopera) to form his Miskito-Xinca-Gruppe, which he set up as one of six major subgroups within the Chibchan family of languages. Schmidt characterized the languages of his Miskito-Xinca group as mixed languages which exhibit Chibchan features overlying a substratum of Central American Ursprachen. His classification seems to have been based on very little comparative evidence, however. Thus, he included the Choco languages of Panama and Colombia as one of his Chibchan subgroups, a conclusion that has since been shown to have been premature. Recently, the Cariban affinities of Choco have been convincingly demonstrated.

Jijón y Caamaño (1941-47: Vol. 4, pp. 239-344), apparently following Schmidt, also groups Paya with Jicaque, Lenca and Xinca, plus the Misumalpan group, to form a major subgroup of the Macro-Chibchan phylum. The inclusion of Paya forms in his extensive comparative Chibchan word-lists provides a certain amount of scattered

evidence to support his classification and constitutes a first step toward truly establishing the genetic status of Paya. (However, as with Schmidt before him, Jijón y Caamaño's conclusions seem to have been premature in the cases of Xinca and Lenca, and probably wrong in the case of Jicaque.)

Arana (1959), in attempting to discover possible genetic affinities for Cuitlateco, an unclassified language of west central Mexico, applied lexicostatistical procedures to Swadesh-lists of vocabulary-items from Cuitlateco and a number of other Latin American languages. Using the rather suspect procedure of assigning cognate status to impressionistically established matching pairs, with only a slight overture in the direction of discovering and stating regular sound-correspondences, she claims to have discovered affinities between Cuitlateco and Paya, with a divergence-figure of 47 mc., lowest of all the language-pairs involved in her study.

Swadesh (1967:98), who classifies Paya within the Chibchan family on the basis of lexicostatistical evidence, also reports a lexicostatistical divergence-figure of 46 mc. for Paya and Ulua of the Misumalpan group. Swadesh calls this group "Misuluan", and apparently doesn't consider it to be part of any larger grouping with the Chibchan family. He thus considers the Paya-Ulua relationship to be the closest external relationship for the Chibchan family. Swadesh also reports (p. 84) an unpublished paper by Lastra (which I haven't seen), in which she investigates external relationships of Chibchan using lexicostatistical procedures.

Voegelin and Voegelin (1966) classify Paya as a language-isolate within their Macro-Chibchan phylum. Similarly, Loukotka (1968:252-3) classifies Paya as the lone member of the Paya group of his Chibcha stock. Neither of these classifications is supported by documented comparative evidence, though Loukotka furnishes a short list of a dozen diagnostic lexical items which are meant to be suggestive, without specifying exact phonological correspondences.

Recently, Landar (1968), bucking the trend toward establishing Paya as a Chibchan language, has made a somewhat strained and unconvincing attempt to relate Paya both to Karankawa, an extinct, unclassifed language of the Texas Gulf Coast, and to the Carib family of languages.

4.2 Comparative studies of widely recognized members of the Chibchan family have tended to be more convincing than similar studies involving Paya, but this is undoubtedly due in large part to the closer relationship and greater similarity among the languages involved, rather than to any methodological superiority inherent in the studies. Only in two recent studies has the comparative method been more or less rigorously applied to data from Chibchan languages (namely Moore [1962] and Wheeler [1972], both discussed below).

Lehmann (1920) provides a number of short word-lists comparing various small groups of Chibchan languages, but he makes no attempt to state sound-correspondences. Rivet (1924a, 1924b) gives a number of comparative sets of forms with like meanings from various Chibchan languages. In many cases these sets are unrealistically narrow,

however, due to a failure to recognize certain consistent sound-correspondences between various groups within the family. Thus, for example, recognition that initial nasals in some of the more southern languages often correspond to homorganic stops in the northern languages would have allowed for even larger comparative sets.

Jijón y Caamaño's comparative word-lists, mentioned above, may still constitute the most extensive set of comparative Chibchan materials to be found in one place. Furthermore, his subclassification of the Macro-Chibchan phylum has provided the basis, directly or indirectly, for at least two other subsequent classifications, namely those included in Mason (1950) and McQuown (1955).

Holmer (1947), in discussing the historical aspects of Cuna, provides a number of insightful observations about lexical, morphological and grammatical similarities between Cuna and certain other Chibchan languages, notably Cágaba. Some of his discussion deals with historical sound-changes within the Chibchan family. His attempts to relate Cuna forms to forms in other distant languages and language-families, including Quechua, Nahuatl, Arawakan and Algonkian, seem somewhat speculative and premature, however. (But see Appendix 2 on Chibchan-Uto-Aztecan affinities.)

Longacre (1968) reports only one recent comparative study of Chibchan languages: that of Colorado and Cayapa, Ecuadorian languages of the Barbacoan group, by Bruce R. Moore (1962). Moore's reconstruction looks quite sound, but it is nevertheless somewhat surprising to me that he was unable to provide a longer list of

cognate pairs for two such apparently relatively closely related languages. He implies that the 207 morpheme pairs he worked with were all that were discoverable. Longacre summarizes the phoneme-inventory of reconstructed South Barbacoan Chibchan which is extractable from Moore's article, though not explicitly stated there.

Most recently, Wheeler's (1972) comparative study of Chibchan based on six languages of Colombia - Chibcha, Tunebo, Kogi (Cágaba), Arhuaco, Marocacero and Motilón - represents the first attempt to establish regular sound-correspondences for a representative sample of Chibchan languages and to reconstruct proto-forms based on those correspondences. Unfortunately, Wheeler's methodology is unsound in a number of areas, and, as a result, many of the sound-correspondences and most of the reconstructions he presents are incorrect. His greatest error, one which he commits in a number of his proposed cognate sets, is that he has tried to compare lexical items that are not cognate. In some cases the degree of phonological difference among members of his sets is so great that it is somewhat ludicrous. In other cases he has failed to recognize regular developments in some of the reflex-languages, an oversight which has led to unnecessarily complicated reconstructions. The prime example of this is the regular Chibcha reflex pkw < Proto-Chibchan *k^w, which Wheeler has concluded must stem from an earlier *bVk^w sequence. Also in the case of Chibcha, Wheeler apparently did not notice that the author of his principal source of data for this long-extinct language (Acosta Ortegón, 1938) had consistently 'regularized' certain earlier spellings of Chibcha forms, including the replacement of earlier <y>

by <i>, thus completely losing an orthographic vowel-contrast which appears to have had a very real basis in phonetic fact (cf. p. 79 below). In still other cases Wheeler did not perform the small amount of morphological analysis that would have been necessary to isolate roots from affixes. In short, Wheeler's paper seems to me to be useful only as a source of forms from Chibchan languages for which more extensive word-lists have not yet been published. Any other use it might be put to (for example, the inclusion of Wheeler's 'Proto-Chibchan' forms in the larger-scale comparison of Amerindian languages in Matteson's introductory article in Matteson et al., 1972) is decidedly mistaken.

4.3. The present study

4.3.1. In this study the comparative method was applied to Paya and five other languages whose membership in the main Chibchan family is generally accepted: Rama, Bribri, Cuna, Cágaba and Chibcha (henceforth also referred to as P, R, B, Cu, Cg, and Ch, respectively). Rama may still be spoken by a very few people on and near the island of Rama Key off the southeastern Nicaragua coast. Bribri is still spoken by perhaps four to five thousand people living on the Ríos Coca and Tarire in the Cordillera de Talamanca in southeastern Costa Rica. Cuna is spoken by some 20 to 30 thousand people in the Caribbean coastal areas of eastern Panama. Cágaba is apparently still spoken by a few people in the Sierra Nevada de Santa Marta in northern Colombia. Chibcha, which was formerly spoken in the

area around Bogotá, Colombia, became extinct probably during the first half of the 18th century.

The five additional languages were chosen somewhat arbitrarily, the principal criteria being that they be (1) genetically close enough to Paya to afford a relatively large number of full and partial cognate sets, each of which would include a Paya form, and (2) far enough from one another within the Chibchan family to give the final reconstructed forms some claim to being representative of some large part of the Chibchan family as a whole. The languages chosen, in addition to being quite widely and evenly distributed geographically, are representatives of five different subgroups within the Chibchan family or stock as defined by McQuown and Loukotka. Within McQuown's classificatory set-up, Rama is a member of the Central American group of the Eastern branch of Chibchan (his index I.2.d. .(1)); Bribri is a member of the Talamanca group of Western Chibchan (I.2.a. .(8)); Cuna is in the Cunan subgroup of the Barbacoan group of Western Chibchan (I.2.a. .(4).(b)); Cagaba is in the Arhuacoa group of Eastern Chibchan (I.2.d. .(1)); and Chibcha is in the Cundinamarcan group of Eastern Chibchan (I.2.d. .(1).(a)). Within Loukotka's scheme the minor subgroupings are roughly equivalent to McQuown's, but they have not been further grouped into larger subgroupings.

I feel that these six languages constitute a sufficiently varied and representative selection from the Chibchan family to justify considering the reconstructions based on them as forming a part of Proto-Chibchan, that is, the historical proto-language common to all the languages of the Chibchan family (not including the Misumalpan

family of the Macro-Chibchan phylum). I realize, nevertheless, that such a claim would be unfounded without a thorough investigation of related forms in the dozens of other Chibchan languages left unconsidered here.

Haas (1966) discusses this problem quite clearly in connection with the status of Bloomfield's Algonkian reconstructions, which were based on only four geographically central Algonkian languages. She suggests that such sets of reconstructions be regarded only as "formulae adequate to account for the attested developments in these four languages", not as part of a historical proto-language to which the attested languages stand in the relation of daughter, and certainly not representative of an entire genetic grouping. She suggests that a device such as *fA-B-C-D might be employed to designate such a set of formulae. Following her suggestion, the reconstructions presented in this study should be thought of as forming part of *fP-R-B-Cu-Cg-Ch. No claim is made that these formulae are adequate representations of developments in any language other than those on which they are based, even though such possibilities may eventually turn out to be the case.

It was also necessary that there be adequate descriptive materials available for each of the languages used in this study, and while this requirement could not be satisfied as well as might be desired in every case, the materials that were used did prove to be sufficient to allow convincing reconstructions to be made in most cases. Paya forms are based on my own field-notes. Rama forms are from Lehmann (1914 and 1920:416-461). Lehmann's (1920:246-62, 274-

341) word-lists, supplemented by material from Pittier de Fábrega (1898) and Bogarín (1972), were used for Bribri. Holmer's (1947, 1951) grammar and dictionary, supplemented by word-lists given in Lehmann (1920:125-42), were used for Cuna. Preuss's (1927) grammar and dictionary, supplemented by information from Celedón (1886) and Holmer (1953), were used for Cágaba. And Chibcha forms were educed from a careful weighing of the data presented in Uricoechea (1871), Acosta Ortegón (1938) and Lucena (1967). Quite a number of additional works on these and other Chibchan languages were also consulted during the course of the reconstruction in order to supplement the cognate sets with related forms from other languages. Most of these works are listed in the bibliography.

4.3.2. The phonemic inventories of the six diagnostic languages are listed below. Marginal phonemes, i.e., those with extremely low functional yield, are given in parentheses.

Paya - consonants: / p t k k^w ʔ b m n ñ s š h r (r̃)(l)w y/
vowels: i e u o a ĩ ẽ ũ õ ã/
plus vowel-length <:>, high tone <ˊ>, low tone <ˋ>

Rama - consonants: /p t k k^w b (d) m n ŋ s š x r l w y/
vowels: /i (e) u (o) a/
plus vowel-length <:>

As with the other languages of the Mosquito Coast area - Miskito, Sumu

and Ulua - Rama exhibits basically a three-vowel system. However, /e/ and /o/ crop up in a few lexical items which may not be borrowings. The above is based on a judicious interpretation of information given in Lehmann (1914, 1920). Lehmann states (1914:12) that phonemic tone-phenomena "scheinen im Rama nicht vorhanden zu sein."

Bribri - consonants: /p t c č k ʔ b d ǰ m n ñ s š h r l r̃ w y/
vowels: /i I e u ʊ o a ĩ ẽ ũ õ ã/
plus high tone <ˊ>, low tone <ˋ>

The above is based on Wilson (1974) and Bogarín Benavides (1972). Wilson claims that [m], [n], and [ñ] can be derived from underlying /b/, /d/ and /ǰ/ in environments preceding nasalized vowels, and do not need to be set up as independent systematic phonemes. Bogarín's vocabulary-list includes what I take to be phonemic /m/, /n/, and /ñ/, and given this apparent controversy, I have chosen to include the nasal stops in the inventory listed here. The assimilation-process described by Wilson also manifests itself as a historical development, as can be seen in a number of sets below (e.g. 16, 36, 37, etc.). But not all synchronic nasal consonants derive from historical voiced oral consonants (cf. e.g. sets 136, 142, 145, etc.).

Cuna - consonants: /p t (č) k k^w b d g g^w s m n r l w y/
vowels: /i e u o a/
plus vowel-length <:>

The above is based on Holmer (1947). Voiced stops occur only

medially. Holmer also notes geminate liquids in Cuna, which may correspond to the trilled r's in the more northern languages.

Cágaba - Consonants: /(p) t (c) č k b d [or l] g m n s š h z ž w y/
vowels: /i e u o a/
plus vowel-length <:>, vowel nasalization <N>

The above is based on Preuss (1927) and Stendal and Stendal as cited in Wheeler (1972). The Stendals consistently employ /d/ in those cases where Preuss uses /l/. This may reflect slightly different dialects or a different phonemic analysis. (Preuss's data indicates that [d] and [l] are allophonic variants of the same phoneme. Note the similar correspondence of /l/and /d/ in the Culmí and Colón dialects, respectively, of Paya.) The Stendals also appear to have set up a three-vowel system for Cágaba. However, both Preuss's word-list and that of Celedón before him include numerous items containing e and o, and on that basis I have retained them here. (I do not have access to the Stendals' original writings on this question and do not know the complete details of their analysis.)

Chibcha - Consonants: /p t č k p͡kʷ b g m n f s h z/
vowels: /i e u o ɨ a/
plus vowel-length <:>

The inventory given here is based on a careful interpretation of the data and statements provided by Uricoechea (1871) and Acosta (1938).

There is a sizeable amount of ambiguity and mutual contradiction in their discussions of the Chibcha sound-system and of their own conventions for orthographic interpretation, and as a result, the inventory I have given is somewhat tentative.

A particularly interesting and tricky set of problems is presented by the Chibcha sibilants, which Uricoechea and Acosta transcribe as <s>, <z> (or <c>), <x> and <ch>. Among these, only <s> can be assumed with any assurance to have the same value ([s]) as in Spanish. The remaining symbols are subject to various interpretations, depending on what relative weight we give to the comments of earlier investigators, which in most cases are vague and ambiguous, and in some cases even mutually contradictory.

Regarding <z>, Uricoechea states (p. LII) that "el sonido que nosotros reservamos a la z ... es el equivalente al ts castellano o casi al tch frances." I interpret this as reference to [c]. Acosta, however, disagrees with this interpretation and offers his opinion (p. 24) that <z> "debe hacerse sonar como ch suave ... separando los maxilares lo más posible al tiempo de pronunciar la ch." By this he means [š], as he more clearly specifies elsewhere (p. 22): "... como el de la ch francesa, que se reproduce separando lo más posible los maxilares, y se halla representado por la z y por la c..." Comparative evidence may shed additional light on this problem (or may further complicate it). The fact that in many cases Ch <z> seems to be the reflex of what I have reconstructed as *r (or *l) is evidence, however slight, that the original phonetic value of <z> may have been something like [ž] or [ẓ], that is, the retroflex voiced sibilant

which occurs in a number of Andean languages, including Quechua and Aymara, and has become the Andean variety of Spanish /r̃/. Due to the great ambiguity involved here, I have decided to retain the ⟨z⟩ from the earlier word-lists. Further evidence must be brought to light before a conclusive determination of its original phonetic value can be made.

Concerning ⟨ch⟩, Uricoechea states that "cha, che, chi, cho, chu se deben pronunciar como el ch frances en chercher o el sh ingles en ship [i.e. [š]]...raras veces la ch tiene el sonido de la ch castellana." Here again, Acosta disagrees, stating (p. 22) that "El idioma indígena de Cundinamarca [i.e. Chibcha] tenía dos sonidos diferentes para la letra ch, a saber: uno fuerte, como el de ch castellana, que es el que se representa propiamente con esta letra en todos los escritos indígenas..." This [c] sound is in contrast to the [š] Acosta claims is represented by ⟨z⟩. I have chosen to rewrite ⟨ch⟩ as [č] in the following list of cognate sets, since, assuming that one or the other of the hypotheses is correct, [č] will be at most only one feature-value different from the correct phoneme.

Neither investigator makes any clarifying statement concerning the phonetic value of ⟨x⟩. Following a lengthy discussion of the values of ⟨x⟩ in the Spanish of the conquistadors, Acosta decides not to choose among the various possibilities for Chibcha. Noting the use of ⟨x⟩ in the early standard orthography devised for Nahuatl, we might assume it to have the same or similar value in Chibcha, namely [š]. However, Uricoechea has already assigned this value to the sequence ⟨ch⟩, while Acosta has assigned it to ⟨z⟩. Whatever the actual

phonetic value of <x> was in Chibcha, it was a relatively rare sound. This fact, together with the fact that in the great majority of cases <x> occurs before i (roughly 15 out of 17 cases as initial consonant in different stems in Acosta's listing), constitute strong evidence that the sound represented by <x> was an allophonic variant of a phoneme whose remaining allophones are represented by another grapheme, probably <s>. This hypothesis is given support by the occurrence in Acosta's word-list of such related and double entries as <xie> : <sie> 'quién'; <xie> : <sie> 'río'; <xiu> 'sudor, zumo' : <siu> 'lluvia'; <xihua> : <sihua> 'órganos genitales femeninos'; <xiquica> 'rivera, orilla': <siquie> 'arroyo, acequia'. Consequently, I have interpreted all cases of <x> as /s/ in what follows.

Ch <h> is also quite problematical. Uricoechea states (p. 2) "...estas sílabas ha, he, hi, ho, hu...por los cuales se distinguen unos vocablos de otros...", and then adds in a footnote (p. LII) that "Esta es la ح árabe; una jota española mui gutural." And then in the next footnote the following (apparently misplaced) statement occurs: "La h la aspiraban los escritores de la lengua chibcha i así debe usarse en nuestros escritos, dándole un sonido ménos fuerte que el de la j castellana." It is difficult to interpret such seemingly contradictory statements. In the great majority of cases of <VhV> the vowels are identical, and I have taken this as a basis for interpreting such sequences as indicating long vowels, even though <h> in initial position in Uricoechea's data (Acosta retranscribes this as <j>) does seem to correspond to historical *h in most cases, and

probably represents a true phonetic [h] in Chibcha. In certain cases, medial <h> may also represent a true [h] (or [x]), for example in <quyhyca> 'boca', in which *h seems to have existed at least at some stage of pre-Chibcha: cf. Bint káhka, Guam/Atan <köhka> < PArhu *kahka (~ *kɨhka); Tune káhka. (The proto-form, in turn, may stem from *kas- 'eat' [set 106] + *ka Agent/Instrument [cf. P/Cg -ka Instrument].)

Ch <v> is probably an allophone or an orthographic variant of either /w/ (usually <gu>) or /b/, as is indicated by such double entries as <guahaia> : <vahaya> 'difunto, muerto'; <guaia> : <vaya> 'madre'; <-bita> : <vita> 'punto'; <tiba> : <tiva> 'jefe'.

Uricoechea interprets <y> in interconsonantal position as indicating a sound whose "pronunciacion es una que ni es de E ni de I, sino un medio entre las dos..." (p. 2). "Es el sonido de la i inglesa en pin, alfiler..." (p. LII). Despite the clarity of these statements, both of which seem to refer to [I], I have chosen, to interpret <y> as indicating a non-low central vowel, either /ə/ or /ɨ/, in accordance with a priori principles of vowel-symmetry. I have used the latter here, since it conforms to the *ɨ I have reconstructed for the proto-language and which seems to give rise to Ch <y> in a number of instances.

Chapter 5 - First-Order Cognate Sets

5.1 Introduction

In this section I have listed the first-order Chibchan cognate sets on which I have based my reconstructions of the Proto-Chibchan sound-system (sec. 8) and of the items of the Proto-Chibchan lexicon which preface these sets. The set of historical sound-laws I have postulated to explain the development of the Paya sound-system (sec. 9) is also based primarily on the reconstructions included in this list. (Needless to say, this list also constitutes my primary evidence for considering Paya to be a full-fledged member of the main Chibchan family, and not an isolated outlier, as some earlier researchers have suggested.)

By 'first-order cognate set' I mean those cognate sets for which I have found probable cognates from Paya and at least two other diagnostic languages. The probability of a form being cognate with the other members of a given set is a function of both (1) the degree to which its phonological shape conforms to the shape expected on the basis of the more or less regular sound-correspondences observable throughout this list of cognate sets (and elsewhere); and (2) its semantic similarity with other forms in the proposed cognate set. In deciding which possible cognate sets to include in this first-order list, I have weighed these factors in a careful but non-rigorous (i.e. non-algorithmic) way. The range of cognate probabilities in this first-order list may be suggested by the following extreme cases:

1. Highly probable: set 40 (*buru [N] 'ashes,dust'), in which every form from the diagnostic set conforms both phonologically and semantically with the other diagnostic forms and with the resulting reconstruction.

2. Marginally probable, but phonologically problematical: set 159 (*pus/*muc [?] 'fill,full'), in which the meanings of the diagnostic set-members are adequately similar to one another, but certain sound-correspondences are not consistent with what we might expect on the basis of hypotheses derived from other sets.

3. Marginally probable, but semantically problematical: set 164 (*sak'a '[female] relative'), in which the phonological conformity of the set-members is good, but the semantic similarities are somewhat tenuous, even though the meanings can be fitted into a relatively small semantic domain.

Less probable, but possible cognate sets are listed separately in Chapter 6 (p. 138). To avoid complicating or confusing any future references to sets in either of these lists, I have simply continued the numeration of these second-order sets as if both lists constituted a single large list, which in some senses they do. It should be emphasized here, however, that the first-order sets (1-236) have been the primary data-base used in the determination of the phonemic inventory of Proto-Chibchan and the historical sound-laws applicable to Paya. (And, accordingly, only first-order sets are referenced in the tabulation of sound-correspondences in section 7.) The second-order sets nevertheless provide additional valuable corroboratory evidence for the hypotheses based on only the most probable sets.

The relatively small number of first-order cognate sets included here -- small in comparison with certain recent reconstructions of other proto-languages (e.g. Girard's [1970] Tacanan reconstruction, or Shell's [1965] Panoan reconstruction, in both of which about 500 sets are listed) -- is due to at least two important factors: (1) the greater time-depth and divergence within the Chibchan family as compared with certain other families; and, probably most importantly, (2) my rather stringent requirement (necessary for at least the titular purposes of this study) that each set include a P form and forms from at least two other diagnostic languages. When my second-order sets are added to the first-order sets, their total number compares somewhat more favorably with such lists in similar studies of other families; and if sets that do not include a P form or the minimal two additional diagnostic forms were allowed into consideration, the total might reach 600 or more.

Certain orthographic conventions and transcriptional procedures used in the following lists should be noted here:

In order to eliminate the sub-phonemic distinctions involved in Lehmann's highly detailed phonetic transcriptions of R and B (and Guatuso), I have tried to phonemicize his data in accordance with more recent phonemic analyses of these languages. Most of the resulting differences are in the transcription of vowels, where the most common changes were simply to remove L's diacritic (˘ or ¯), or to write his ‹V_1V_1› as ‹V:›. Additional orthographic correspondences are as follows:

Lehmann ⟨n̈⟩ → ⟨ŋ⟩

⟨ÿ⟩ → ⟨y⟩

⟨ẋ⟩ → ⟨x⟩

⟨ɬ̇⟩ → ⟨L⟩ (B only)

⟨ts⟩ → ⟨c⟩

⟨tš̆⟩ → ⟨č⟩

⟨dž̆⟩ → ⟨ǰ⟩

⟨æ⟩ → ⟨e⟩

⟨a̤⟩ → ⟨o⟩

⟨ŭ⟩/___V→⟨w⟩.

In certain Ch forms, segments in square brackets (usually s or z) have been added to roots where the added segment (predictable on the basis of sound-correspondences) may have been undiscernible in the forms elicited by early transcribers, due to the phonetic similarity of the following affix-consonant. For example, in set 159 one Ch form is given as -pu[s]-, which reflects the facts that the expected Ch reflex of the reconstructed form, *pus, would be -pus-, the final segment of which may have been obscured by the following -s- of the tense-suffix in the documented form ⟨zepuscua⟩ = /ze-pu-skwa/. It is of course possible that the final s of the root actually did disappear in this environment.

Also in Chibcha, as transcribed by Uricoechea, transitive verb-stems generally include the object-prefix -b-/___C ~ -m-/___V. These have been excluded from Ch forms in the sets below.

In the reconstructed forms, segments within parentheses indicate possible elements which are reflected in some but not all of the

diagnostic reflex-forms, and thus can not be assumed with certainty to have existed in the proto-language.

Parentheses in the reflex-forms, on the other hand, are used to indicate optional segments or segment-sequences that occur in one or more but not all documented instances of a given reflex-form.

The symbol ^{x} before a reflex-form indicates an attested earlier form of the word or stem.

Doubtful or problematical forms are indicated by following question-marks, those with parentheses indicating low doubtfulness or only slight problematicity.

If a gloss of a reflex-form is identical to a reconstructed gloss, that reconstructed gloss is indexed by a number in parentheses, rather than repeated as a word (or words). For example, in set 6 every reflex-form is glossed by numerical reference to one or more of the reconstructed glosses: (1) = 'good', (2) = 'true', and so on.

In many or most reflex-forms I have used hyphens to indicate (etymological) morpheme-boundaries in those cases where such divisions are suggested either by the reconstructional hypothesis or by other evidence either internal or external to the daughter-language involved. The hypothetical nature of many of these morpheme-boundaries must be kept in mind, especially in such cases where there is not sufficient internal evidence to warrant such divisions.[12] Often in such cases the associated underlying compound gloss is also hypothetical and is indicated as such with an asterisk.

The following abbreviations are used for the names of supplementary languages (following each name I have also indicated the source of forms from that language L = Lehmann, 1920):

Anda	Andaquí	(L)
Arhu	Arhuaco (= Bintucua)	(Wheeler 1972)
Atan	Atanques	(L)
Bari	Barira	
Bint	Bintucua	(L, Celedón 1886)
Blan	Blanco	(L)
Boru	Boruca	(L)
Cabe	Cabécar	(L, Bourland 1973)
Caca	Cacaopera	(L)
Caya	Cayapa	(L, Moore 1962)
Chan	Changuena	(L)
Chim	Chimila	(L, Celedón 1886)
Chir	Chiripó	(L)
Chum	Chumulu	(L)
Colo	Colorado	(L, Moore 1972)
Cuai	Cuaiquer	(L)
Cuev	Cueva	(L)
Dobo	Dobocubí	(= Motilón)
(Duit)	Duit	(L)
Gual	Gualaca	(L)
Guam	Guamaca	(L, Celedón 1886)
Guat	Guatuso	(L, Constenla Umaña 1975)

Guay	Guaymi	(Alphonse 1956)
Maro	Marocacero	(Wheeler 1972) (= Guamaca)
Mata	Matagalpa	(L)
Misk	Miskito	(L)
Moti	Motilón	(Wheeler 1972)
(Move)	Move	(L)
(Muoi)	Muoi	(L)
Muri	Murire	(L)
Nort	Norteño	(L)
Peno	Penonomeño	(L)
PSB	Proto-South Barbacoan	(Moore 1962)
RL	Río Lara Bribri	(L)
Saba	Sabanero	(L)
Sins	Sinsiga	(L, Rivet 1924)
SJ	San José	(L)
(Sumu)	Sumu	(L and my own field-notes)
Tegr	Tegría	(Rivet 1924)
Terr	Terraba	(L)
Tiri	Tiribi	(L)
Tucu	Tucurrique	(L)
Tune	Tunebo	(Rivet 1924)
(Ulua)	Ulua	(L)
Vice	Viceyta	(L)
Yaru	Yaruro	(Jijón y Caamaño 1942)

When not otherwise noted, diagnostic forms are based on the following sources: Paya (P) - my own field-notes [13]; Rama (R) -

Lehmann 1914; Bribri (B) - Lehmann 1920; Cuna (Cu) - Holmer 1951; Cágaba (Cg) - Preuss 1927; Chibcha (Ch) - Acosta Ortegón 1938. Additional sources of diagnostic forms are abbreviated as follows: BB = Bogarín Benavides 1972; C = Celedón 1886; H = Holmer 1953; L = Lehmann 1920; PdF = Pittier de Fábrega 1898; R = Ramos c. 1940.

5.2. Listing of First-Order Cognate Sets.

1. *a- 'his, her, its' > P a-; Cu a-; Cg a-; Ch a-. (Cf. also SJ a-)

2. *a- Reflexive > P a-; R a-l- (?); B e-(?); Cu a-; Cg a-; Ch a-.

3. *a(N)- 'that' (Demonstrative Pronoun) > P a-/ã-; B ã-wĩ (BB); Cu a-; Ch a-/a-na-. (Cf. also Bint amán)

4. *ad Object: 'something, it' > P ar-; R al- Reflexive (?); Cu adi 'he, that', ade 'he, it'; Cg ale 'this', alẽ 'he'; Ch ɨs- 'something'. (Cf. also Guat ere-; Sumu di, adi-k 'this')

5. *(h)ada 'laugh' > P ar-kõ̀- (cf. Cu); R i-álat bai-ŋ- 'joke (v.)', yu-alal- 'play with s.th.'; B añ- (BB); Cu alla-kol-. (Cf. also Sumu ará-; Cabe sa-hãña; SJ kama-haná; Guay hadá- 'make fun or jokes, flirt'; Chim hára-)

6. *ai(na) 'good, true, right, genuine; full' > P ãy-h-ña (1), ay-ña (5); R ãy-x-wa (2,4); B i-e-na (5) (Pdf) (Cf. Cg); Cu e-na (5); Cg hi-e-n (1,3). (Cf. also Guay é [2,3,4])

7. *ak 'be (in a place or state)' > P àk- (1), 'stand'; R ak-ri (1), 'arise, come up'; Cu ak- 'feed, make grow, bring up' (?); Ch ak 'place, site', apkwa-ne (1) (< *ak-wa-ne ?).

8. *aka- Verb Prefix (Causative ?) > P aka- Causative; Cu ag-/ai-/e-; Cg aga-. The functions of the Cu and Cg prefixes are unclear. In both languages, verb-stems that include these prefixes have the same or similar meanings as the corresponding unprefixed stems. Holmer (1947:74) suggests that the Cu prefix may in some cases indicate up or down motion in the air.

9. *(h)aka 'sharp, tooth' > P ák-kam-ẽ̀?- 'be bitter' (= [1]-'taste-eat'); B aká (2), 'point', aka-ta (1), (a)ká-ũ- 'sharp-en'; Cu aka-na 'axe' (= [1]-Adj.), aka-n-kala 'shoulder-blade' (= [1]-Adj.-'bone'); Cg aka-wi 'molar' (= [2]- 'big'); Ch hɨko 'molar' (< *hɨka-wi [2]-'big' [cf. Cg]). (Cf. also Guat óka [2])

10. *a(i)n- 'fall' > P ã̀-; B ã́n- (BB); Cu ail-; Cg hi-ẽ̄n-'climb down, let the head droop', aḳ-hi-ẽ̄n- (1), 'climb down'; Ch -ena-n-.

11. *apí 'blood' > P apé 'bile' (Note that this correlates with the meaning of P -hra 'liver' < *hɨd 'heart, liver'. Cf. set 79); R air-bi (= *'heart-juice'); B apì (BB); Cu abe; Cg abi; Ch ɨba (through metathesis ?). The initial a may have originally been a possessive prefix (cf. set 1), which was reanalyzed as an integral part of the word. (Cf. also Chum/Gual havé, Moti ʔa:bi-)

12. *api 'squash' > P à?i (or poss. < *ati : cf. Sumu ati); R. abí-s; B api; Cg abei-ži ~ -zi.

13. *(h)ari 'clear' > P arí:- (1), 'clean'; R ŋ(a)ri-(k-) 'smooth, shiny', ŋari-ŋ- 'mix'(?); Cu ali 'space'; Cg ali 'in, inside, on top of'; Ch -a:zɨ (~ -a:sɨ) 'sweep, clean, blow the nose' (Cf. also Guat arí:ye 'pure' [L])

14. *at 'egg, testicle' > P á?- (1), á?-lawa (2); R -a:t (1,2); B aLa (?); Cu al-lakwa (1) (Cf. P). (Cf. also Tune ana(g)wa [2]; Chum hág-al [1] [= *'rock'-(1) :cf. set 76])

15. *ba(n) 'you, your' > P pa-; R ma (< *pã̀ ?); Cabe bá (DB); Cg ma; Ch ma(n) (accus.). (Cf. also Misk/Sumu man; Guat ma- [2]; Chum/Gual/Muri/Muoi ba; Guay mo; Tune bá?a; Moti bai)

16. *bai(N) 'three' > P mã́yh; R páŋ-sak (= [1]-'finger'); B mm̃ãt (BB) (< *main-ata [1]-'hand'?); Cu pa:-gwa (= [1]-'round object'); Cg mai-gwa (= [1]-'round object'); Ch mi-ka (?: Wheeler claims that this is not a reflex of the PCh word for 'three', but he does not propose an alternative etymology.) (Cf. also Guat pói; Boru maŋ; Muri mai; Guay -mon/-me; Tune báya; Duit meia; PSB *pemaN [< *paiN-wa...?])

17. *bal(i~u) 'sea, salt; sweet' > P parè?-wa (3), pàri 'pineapple'; R malí- 'good' (?); B boLo (3); Cu palu (1); Cg málu-rzē (3), malu/balu 'ripe' (H); Ch base- (3). (Cf. also Chum/Chan/Muri bali [1,2]; Move mane [3]; Terr pre-bre [3])

18. *bal 'colored, dark, black' > P pár-tãw 'dirty', pã̀-wa 'red'; R par-na (3); B marú 'red brown' (PdF) (?:*b > m is unexplained); Cu par-ya 'tar, pitch'; Cg maḳ-su (< *mar-su : Preuss) (3),'dirty, muddy'; Ch mwɨ:z- 'dirty', mwɨ:š̆-yo (3),'black clouds'. (Cf. also Ulua

barás- [3]; Guat palix 'black cat' [L], pɔlix 'blue' [L]; Gual salí-bal [3])

19. *bar 'big, more' > P a-tí?-par- 'thick'; Cu pal/par (2), 'further, again'; Cg malei- 'far, quickly,' (Cf. also Guat pal [1]; Guay bori [2],'bigger'; PSB *bare 'long')

20. nil

21. *bi- Interrogative > P pi-; R pi-n-; B bi-/mĩ́-; Cu pi-; Cg mi-; Ch fi-. (Cf. also Guat pí-; Boru bi; Guay -be 'how many?', me-den 'which?' Duit bi-/we-; Chim mi-)

22. *bi 'your, you' > P pi-; B bẹ? (BB); Cu pe; Cg mi- (1); Ch me/mwe (2) (by analogy with ma[n] [set 15]) (Cf. also Guat mI- [by analogy with ma- (set 15)--expected is *pI-])

23. *bi/*ba 'want, will', Future > P -pí-/-pá- (1,2,3); R ba-tí- (1)?; B -mi (3); Cu pi (1,2,3); Cg -mí-a Optative; Ch -bé Optative (L). (Cf. also Guat -pe/-p [1])

24. *bi(ri) 'top, sky' > P pirí (2), pir-à?a 'cross-beam, rafter'; R pi-up 'star' (=*'sky-eye'); B bĩ́-kwU 'star' (=*'sky-eye') (BB); Cu piri/pilli (1); Cg i-veiḳ-ši- 'bring to a high place' (=*'top-set'?) (ḳ < *r : Preuss). (Cf. also Guay biti 'upon, over, above',

kokoin biti (2), 'heaven' (='starry heaven'?); Sins bere-zá 'crown of head' [= 'top-head'])

25. *bic 'point' > P pís-pís- 'pointed', pís-ti 'end'; R i-pis- 'point out', pis-up 'huiscoyol (plant with spiny fruit)' (='pointy-fruit'); B bica- 'begin'; Cu pis-ki-pis-ki 'having little points'; Cg mis-ei 'agave (sp.)' (Cf. also Caya mih-ku)

26. *(a)bica ~ *pica 'new' > P (ka)bísa 'white, clean'; R/Cg abisa; Ch fi:za. (Cf. also Sumu pis-/pih- 'white'; Arhu abít-i [W]; Tune í-bsa-ya. The Arhu form [with t] provides the principal evidence for setting up *c, rather than *s. The Sumu forms point to *p)

27. *bi(N)k(am) 'how many?' > P píš; R pinkam; B bikã-s (-s : Interrogative < * -sa : cf. set 162 and Cg); Cu pig-wa; Cg bit-sa (*k > t/_s); Ch fika/fik-wa. (Cf. also Guat piŋka [L])

28. *biri 'edge, border; go around' > P -brì (1,2) (< -biri [R]), b(i)rì:- 'wind around, wrap up'; R pri-k- 'turn', al-bri-n- 'spin'; Cu pili 'curved', pili-(3),'surround'; Cg mi:ži- 'wander'. (Cf. also Caya puŋ-bele 'ear-edge', bel-u?-pu- 'roll up [sleeve]', bel-u?-ka 'fold [e.g. border of cloth]')

29. *bɨ 'just, only, alone' > P pé; R pai-n (3), Reflexive; B í-me (1,2) (PdF); Cu pi: (3),'all'; Cg mei (2). (Cf. also Guay -be [1,2])

30. *bu(k)/*bo(k) 'two' > P pó:k; R puk-sak 'two-finger'; B bŬ-t (BB); Cu po(:)(gwa), puge-puge 'two together'; Cg mau-žua; Ch bo-za. (Cf. also Guat pau-ŋka (L); Sumu bu/buk-i; Terr bu; Boru bu:k; Guay -bu; Gual mo; Tune buká-; Chim múx-una)

31. *bu (k) 'hit, beat, pound' > P pók-(1),'slap', bùk-'hit with fist'; R bu-la- (2,3) (heart); B h-pŬ- (1) (BB), ñíh-pU-'fight' (BB); Cg muš-/muk- 'play (beat) a drum'. (Cf. also Tune ti-muxá 'fight')

32. *bud 'bee, wasp' > P mṍ-ʔã́ 'beeswax' (< *bud-hadi ?); R a-mut (2); B buL; Cu pulu (2); Cg mul-i 'small black wasp'; Ch bus-kwa pkwane (1,2). (Cf. also Guat po'ro [2]; Boru but; Guay mun [1]; Bint bun [2]; Colo mun-une hina) (Possibly two roots are involved here.)

33. nil

34. *bul(pa) 'shadow, spot; soul, ghost' > P ˣpur-pa-kaki 'crescent moon' (=*[1]-'night')(R); R mo-bu (1,3); B wik-buLu 'good spirit'; Cu pur-pa 'evil spirit causing

disease, echo, dark spots on moon'; Cg mul-ba-ta 'disease'; Ch -mwi:zi- 'stain, dirty (v.); eclipse'. (Cf. also Misk bul-pis 'spotted-skin disease'; Peno koti-bura [1]; Guay mru-kro [4] [< *bulu-kadu : cf. set 100])

35. *bun 'white, gray' > P bòn-i (2); B mun-úš-mun-úš (2); Cg mun-ši (1),'light, bright'. (Cf. also Guay bon [2])

36. *bun(~ *pun) 'female, wife' > P -ʔű-h- 'sister' (< *mű-)?; B mu 'uncle's wife'; Cu pun(a) (1), pun-o (2); Cg mun-yi/mun-ži (1),'woman', bun-yi 'daughter' (?); Ch fu-ča 'woman' (< *bu(n)-ta [1]-'person')? (Cf. also Guay bun 'granddaughter')

37. nil

38. *bur 'burn' > P b(V)rò- 'scald, parboil'; B bur-i-ña- (PdF) (=[1]-Obj-[1]?); Cu o-bur-mak- 'send out smoke' (= Caus.-[1]-'make'); Cg pul- (m is the expected reflex in #_). (Cf. also Guat pru-ten- 'burn oneself' [L]; Sumu ma-bus- [1], bus- 'roast'. Cf. set 40)

39. *bur(a)(kada) 'breath(e), wind' > P mór-t- 'snore' (-t-: Iterative Aspect); R pul-kat (3), bula- 'snore'; B bura-r 'blow (a horn), snore' (PdF); Cu pur-kala (1), 'voice, hissing', pur-wa (3); Cg múl-kala (3); Ch

fi:z-ka (1,2),'air, spirit, soul', fi:z-ta 'snore'. (Cf. also Guat púra [1]; Terr pru-k [3]; Guay mur-yé 'air'; Chim mronta [3]; PSB *fur-i- [1]; Sumu put-ni: 'lungs'? Onomatopoeia may be an influence here.)

40. *buru(N) (~ *bulu[N]) 'ashes, dust' > P aka-purù-š- (2)(v.); R pluŋ (1); B mLŭ-čka (1) (< *buruN-šɨka [1]-'stuff': cf. set 185) (BB); Cu puru (1); Cg mul-i (1); Ch fus-kɨ (2) (< *fus-skɨ [2]-'stuff'[?]: cf. B). (Cf. also Guat púru [1]; Terr prun-šuk [1]; Boru brun [1], ta-buruŋ [2]; Gual bulu-kú; Nort/Peno nu-bru [1]; Guay bur-é [2]; Tune búr-a [1]; cf. set 38)

41. *burú 'big' > P -b(u)rú, púrú-túk^{w}a 'full moon' (?); B bru/bulú-bulu; Cu pul-a (1),'many' (or < *pu[N]d, set 158a, q.v.); Cg a-bulu 'small' (=*'not-big'?), mulu-kai-kai 'large-rat' (?); Ch fwiza 'all, full'? (Cf. also Guat puru [L], Boru bru-)

42. *bus ~ *buc 'break, burst' > P bús-t- 'fart, spring up' (-t- : Iterative Aspect); R ya-p(u)s-uk- 'pour out' (?); B buca- (1)(rope); Cu o-bus-k-'peel (v.)'; Ch -posi- (2),'split'. (Cf. also Boru buc-áših 'peeled')

43. *ca 'split, cut, chew, grind' > P sà- (3); Cu sa-iy- (4); Cg za- 'eat'; Ch -ta- (1),'break, tear'. (Cf. also Sumu

sah- [1],'break'; Chim sak- [4]; Guay sa 'crushed corn'; Guam sa- 'eat')

44. *ca/*cɨ 'stone, sand' > P sà (1); R sá-paŋ 'hearthstone (sp.)'; B ca (2), ca-wó 'small stone' (=[1]-'round object': cf. set 226); Cg sei- (1) (in sei-kwiči 'magic stone', sei-žaku 'rock-salt'), se-wa 'ceremonial stone' (H); Ch wan-za (2)? (Cf. also Guat u-ɬi-xa [2] [< *u-sɨ-wa < *u-cɨ-(u)ba : cf. sets 225, 226]; Caya se-ru 'brujo's stone')

45. *cak(w)a or *sɨk(w)a 'hand, arm, finger' > P sàwa (1,2); R -sak (3) (in puk-sak 'two', paŋ-sak 'three'); B cka (3); Cu sakwa (2); Ch ita saka 'back of hand' (? : normally *c > Ch t). (Cf. also Guay ki-sókwo 'paw')

46. *cak'a 'inside(s)' > P -sà?a; Cu sag-i 'intestines'; Ch taka.

47. *can 'hair, head' > P sã́ (2); R i-sa-i- 'oil the hair'(?); B cã́ (1) (BB); Cu sa-ila (< *sa-kla [2]-'bone' [H]: cf. Cg), o-čan-a (2) (Cullen in L); Cg sã́, sán-kala (2) (= [2]-'bone'). (Cf. also Terr/Tiri zoŋ 'beard'; Tune/Sins kwi-san-ara [1]; Maro ša [1]; Guam san- [1]; Boru sa-gra [2])

48. *cidi 'inside(s)' > P sə̀̃-sirí 'brain (s)' (= 'head'-[1]); B cinî 'brain(s)'; Ch tin-a (1),'under', zo-te 'brain(s)' (< *du[k]-ci[d] 'head'-[1]?). (Cf. also PSB *pe-sili 'intestines')

49. *cipa 'bile, yellow, green' > P sè(:)wa (2)?; B cipà-cipá (3) (BB); Ch ti:ba 'liver, entrails', tiba (2). (Cf. also Sumu sapah- 'sour'[?]; Terr semóh [1])

50. *cik(u) 'scorpion, spider' > P pár-sik-ĩ́ (1); B be-čék (~bi-čé) (1); Cg zeik-u (1). (Cf. also Chum/Gual čí [2]; Guam seku [1]; Muri/Saba sogó [2])

51. *cu 'take, get, grab, hold' > P su-kù- (cf. set 115); R ál-su- 'steal'; B cu- (1),'carry' (PdF); Cu su- (1,2); Cg su- (1,3),'possess'; Ch tu 'loan(ed)', -tyu- 'take (as loan)' (?).

52. *cu 'suck, suckle, lick; breast' > P sù- (1,2), ar-sú- (3); R i-su- (1), ya-su- (3); B cu (4); Cg su-mi 'teat' (H); (Cf. also Sumu su- [1,2]; Guat ču- [2]; Bint tu [4] [*c > t is regular]; Colo čo- [1]; Tune/Sins su-ta [4])

53. *da(m)/*di(m) Negative > P -tṼ́- (in verbs), -tã́-h (with nouns and adjectives); R -ta(h)ma 'without'; Cu ta; Cg na-

(in na-gakí 'none', na-liža 'no, neither', na-lakí 'no more'); Ch -za, -ziŋ-ga. (Cf. also Atan -nei-ka; Tiri žam-ko 'not'; Duit ča ?)

54. *da 'road, way' > P tà-ʔa-; Cg ni-na 'river' (='water'-[2]); Ch sa-ya 'high-road'. (Cf. also Sumu ta-)

55. *dada 'sun, fire, hot' > P tà̃-i-wa (2),'light' (< *tan[a]-ikʷa [2]-'lord' or *tan[a]-i-wa 'it's hot' [?]); B doló 'sun's reflection, light'; Cu tada (1); Cg nã́(ŋ)-kah- 'rise (sun or moon)' (?). (Cf. also Misk lal [1]); Peno nono [1]; Terr/Tiri doró [1]; Chir dalá-buLu 'sun-god [chief]')

56. *dak' 'come' > P tèʔ (< *taʔ-i- [?]); R tak- 'go'; B do (?); Cu tag-; Cg naš-i/nak-a; Ch -za- 'leave' (?). (Cf. also Guat tak/toŋ [L])

57. *dauk 'enter' > P to:k-; R i-tauk-; Cu tog-; Cg nauš-i/nauk-a 'be or live in a place, stay, last', abu-lauš- 'put in'; Ch -zo- 'be (in a place), stay, last'. (Cf. also Guat tiok̃-i; Guay nuk-é 'come')

58. *dawa (~ *daba) 'man, person, boy, enemy' > P tawà-hka- 'Sumu' (=*'people-other'?); R laxwa (4) (poss.< Misk

[L]); B ǰab 'family' (cf. Chir ǰaba 'son'): Cu to(a) 'who?' (< *taw[a]); Cg šiba-lama 'Tairona' =*'godly-people'; Ch sawa (4),'war', sa:wa 'husband' (?:⟨sahaoa⟩). (Cf. also Misk lama [4]; Terr dob-én [1]; Moti dobo-kubí 'Motilón')

59. *(aka)di 'close, shut' > P aka-tí-š-; Cg ni-h-/li-h-, aka-li-h- (1),'block'; Ch -zi:- (?:⟨-zihi-⟩) 'cover'.

60. *di 'water' > P tì-sa 'bog, ditch'; R -li/-ri; B di? (BB); Cu ti(:); Cg ni; Ch si-e. (Cf. also Misk li-; Sumu di- 'drink'; Guat tí/-li; Boru di; Chum/Chan ǰi; Gual ti; Terr di; Tune ri-?ya)

61. *di-a 'secretion, juice' (='water' + X : cf. set 60)>P -tia/-lia; B -dio; Cg -lia. (Cf. also Gual -tia; Terr/Tiri dió [2]; Tune ri?a; Maro -l^{y}á)

62. *dic 'little, a little' > P tís; R tís-kam (1), tís-kaŋ (2),'a few'; Ch -sit-i 'skinny' (?). (Cf. also Misk lis-bi [2],'splinter'; Sumu min-tis-ki [1], bin-tis-bin 'thin'; Chim nís-aso [2]) A highly tenuous reconstruction. *tis is also possible if the Ch form is cast out.

63. *di:k 'sow, plant' > P tì:š̌-; B tke (*d > t/_k); Cu tig- (2), 'bury'; Cg ni:š̌-i/ni:k-a. (Cf. also Guat tíki; Guay nõku [2]; Moti díg-a-; Sumu dih- 'copulate')

64. *di-s 'dry' (='water-without': cf. set 60) > P ˣar-ti-s- (1) (vegetation) (v.) (R); Cu ti:-si 'there is no water'; Cg (a)li-ta 'dried (as meat)' (< *(a-)li-h-ta ?). (Cf. also Guat a-tis-teŋ [L])

65. *(ar)dɨ 'want' > P ar-té-; R ba-ti-ŋ- (?: cf. set 23); Cg ar-le:- (1),'be able'; Ch -zɨ- (1),'ask for, call'.

66. *dɨku 'meat' > P yukú; B čkù- (BB); Cg niku-ala '(1) eaten during a fiesta'. (Cf. also Chum/Gual čagu-li; Nort neg-ri; Sumu dika-sna 'venison' = *[1]-'deer'; Tune/Sins rugwa)

67. *dɨkʷi(da) (~ *dikʷi[da]) 'bat' > P tiki-mi; B dukúr (< ˣdekur); Cg niwiž̌-i; Ch supkw-a. (Cf. also Guat kútu [?: metath.]; Chum doku-kaska 'brujo'; Move ñibita; Peno nibda; Nort nikura-re 'brujo'; Tune rúkura)

68. *dɨw (~ *dɨb) 'sun' > P yìwi/yùwi 'moon, month'; B díwU (BB); Cg nui (~ niwi [H]) (1),'day'; Ch su(w)-a ? (Cf. also Terr dab-a 'day'; Sins yíbi-ra 'warmth'; Maro ʲʷí)

69. *du 'cook' > P tù-; R al-tu-ŋa- 'eat'?; B i-lu-; Cu tu-; Cg nu:-š̌-i/nu:-k-a; Ch zo-ya 'pot'? (Cf. also Guat tú-xe; Guay do-lén 'cooked')

70. *dudu 'oropendula, bower-bird' > P *tulu (R); R tut; Cu tulu 'bird sp.'; Cg núlu-ka.

71. *duk 'ear, hear' > P sṹh-túk- (2) (sṹh- [1]); Cu wa-duku (1) (L); Cg nuk̤š̌-i/nuk-a (2). (Cf. also Guat tuku-tuk [1]; Boru dox-krah [2]; Sins kuka-yuka-ra 'hearing' [kuka (1): cf. P])

72. *duk 'tail, point, top' > P ka-túk-ka-túk- 'balanced (on end)', bu-tuk-ti 'dull, without a point' (= 'break-[2]-...': cf. set 42); R -tuk; B duk-a 'beak' (or poss. du-ka *'bird-tooth'); Cu tuk-u (2,3),'edge'; Cg nu:k-i (1); Ch su:k-a (1). (Cf. also Guat túk̃i [1]; Chum/Gual dug-á [1]; Guay nuk-wo 'bird' [=(1)-'with': cf. set 231])

73. nil

74. *dur 'grow, live' > P t(u)rù-h-n- 'sprout, germinate', ka-tur-wa 'plant (n.)'; R -lut 'people'; B dur-u 'sprout (n.)' (PdF); Cu tul-a 'alive; living being', o-dul-o- 'revive' (o- Caus.), tul(e)/tur- 'person, people'; Cg

nul-a 'species'; Ch su:z-a 'month following planting', -sos-/-zosi- 'graze, eat leaves or grass'(?). (Cf. also Guat tur-u 'woods' [L]; Boru dur-á 'seed'; Guay nur-a 'plant'; Gual dur-iga 'woods'; Colo lur-í 'born')

75. *haka 'different, other' > P àk-wa; B haka 'different people'; Cu aka-la (1),'various'; Cg aka-učí; Ch hɨka (2). (Cf. also Guat áka 'elsewhere')

76. *hak' 'rock' > P á?- 'egg' (?: for semantics cf. Nahuatl te- (1),'egg'. Poss. the P form < *at 'egg': set 14); B àk (BB); Cu ak-wa (= [1]-'round object': cf. set 226); Cg hag-i; Ch hɨk-a. (Cf. also Guat ók-tara; Chir hak; Terr ak; Chum/Chan hag-á; Chum hág-al 'egg' [cf. P and set 14]; Sins a-hak-a; Tune ák-a)

77. *hala 'noise, thunder' > P arà-h-n- 'make a noise'; B hala-r (PdF); Cg hal-yiá (2). (Cf. also Misk/Sumu ál-waná [2]; Sins kwi-har-hará 'lightning'[?])

78. *hauk 'bathe' > P ók-; B uk-; Cu og-; Cg hauš-i.

79. *hɨd 'liver, heart' > P -hrá (1); R air-bi 'blood' (=*[2]-'liquid'); B ẽn (1) (BB) (< *hen [PdF]); Ch he:s-en 'red'(?). (Cf. also Blan -er-pi 'blood' [cf. R]; Chim <eiiná> 'blood'; Vice her [2]; Tune urá [2])

80. *hu 'house' > P ka-ʔo (ka- Locative: 'place'?); R ŋũ; B hu; Cu u:; Cg hu(i) (1),'nest'; Ch u-ze 'nest'. (Cf. also Sumu/Caca/Mata u; Guat ú (< *hu [PdF]); Muri/Saba/Move/Nort/Peno hu; Bint/Atan u-ráka; Tune u-baša)

81. *hu(N) 'smell' > P ò- (1),'kiss'; R i-ŋu-k-; B ʕu-á 'skunk'; Cu u-; Cg húnu-káda 'nose (=[1]-'bone') (S); Ch si-um 'sweat (n.)' (='water'-[1]?). (Cf. also Guat ú-ɬa; Sumu uŋ- [1],'kiss'; Terr oño)

82. *huk$^{(w)}$a 'skin, hide, bark' > P kà:wa (< *kad-uwa 'tree-bark': cf. Cg); R uk; B hkwU-lit (BB); Cu uka (1); Cg -huba (3),'peel', kad-húba 'tree-skin': 'bark' (S); Ch huka. (Cf. also Chum/Gual ugá [1]; Terr húga 'out[side]'; Tune umá)

83. *hum(V)c 'hair, beard' > P -ʔús (1); R ŋunís (2); Cg humš-i 'flower' (?). (Cf. also Boru uhsí [<ujzi>] [2]; Guam umṣa [2],'chin'; Bint oróze-únta [2],'chin'; Chim ónsova 'mustache')

84. *huru 'below, inside; hole' > P ùru-ha 'deep'; R ŋur-í (3); Cu ulu- (1,2); Cg hulu- (2),'enter'; Ch us-a (1). (Cf. also Cabe/Vice oro-na 'depth'; Caya huru [3], ku:-huru 'canoe'-[2])

85. *h^{w}al 'cut; tooth' > P wàr-š- (1),'harvest, pick', war-éš- 'chop down (tree)'; R ŋal-íŋ 'stone', ŋal-íŋ saká 'stone axe', ar-ŋul- 'bite'(?); Cu mar- (1),'split' (?); Cg hwala (2); Ch -o[s]- 'bite' (?). (Cf. also Guat xalíɬí 'fell trees', xala 'canine tooth'; Chum/Gual olixá 'axe'; PSB *hali- 'bite'; Chim nei-han-grá 'molar' [-grá 'bone'])

86. *h^{w}ini 'round; bead' > P wèni 'curved, bent'; Cu wini (2), 'fruit'; Cg (a)hwini (1); Ch -ben-o- 'make round' (-o- Caus. ? : cf. set 228). (Cf. also Move mwenu [2]; Peno ŋwenu [2]; PSB * wiN 'beads')

87. *h^{w}iš(i) 'urine, urinate' > P íši (1); R ŋus-tí (1)-'liquid' (cf. set 60); Cg hwizi (1); Ch hɨs-u (1). (Cf. also Sumu usú [1]; Misk is-ka [1]; Guat učú [2]; Boro hwiš-ku [2]; Gual bwiči-ko 'bladder' [= *(1)-'container']; Tune isá [1])

88. *i 'sing' > P i-ya- 'song'; B i- 'cry' (?); Ch -i- 'warble, chirp'.

89. *(h)i(N) 'what?' > P ĩ-ráhã̃-h; B í (BB); Cu i-bi (-bi Interrogative: cf. set 21); Cg hí ~ hĩ (H); Ch i-pk^{w}a. (Cf. also Guat í-ri [L])

90. *(ʔ)i(N) 'this' > P ĩ-; B iʔ (BB); Cu i-. (Cf. also Guam í-ma; PSB *ʔin- [DH]. Sets 89 and 90 are almost certainly related.)

91. *ik^{w}a 'owner, lord; possession' > P -iwa (1,2); R ikw-ak-r- 'have, possess' (= [1]-'be'); Cu ibe (1,2) (< *iba-i); Ch ipk^{w}a 'property, riches', š(i)-ipk^{w}a-wa/-na 'whose is it?' (Cf. also Misk -ik- Possessive Suffix)

92. *in 'open, spread, extend' > P ĩ́- 'pull, stretch'; Cu in-tak- 'let loose'; Ch -i- (1,2),'scatter, separate'.

93. *in(s) 'medicine' > P ĩ̀:si, ĩ̀:si-kä̀:- 'cure' (=[1]-'do, make'); Cu in-a; Ch -iz-ka- 'cure' (cf. P). (Cf. also Misk in-ma/-ta 'medicinal herb')

94. *±c 'one' > P á̀s/-s; R k^{w}ik-is-tar 'five' (= 'hand-one-whole'); B et-k (?), s-kel 'five'(?); Cg eiz-; Ch ata. (Cf. also Sumu as; Caba ^{x}esta-; Boru e:ci; Guam íš-; Atan iž-)

95. ±r 'rub' > P è̀r-š- 'scrub'; R er-er-yu-ŋ- (=[1]-[1]-'do'); Cu el-i- 'wipe'.

96. *-ka Benefactive: 'for' > P -ka; Cu -ka; Cg -k/-ka (in verbal pronominals); Ch -ka Goal. (Cf. also Boru -ka 'against')

97. *kac(~*kɨc) 'foot' > P kàs- 'kick'; Cu kas-i 'keel'; Cg kás-a (1),'hoof' (S). (Cf. also Bint káte [*c > t is regular]; Sins kas-kára [1],'leg'; Tune kes-kára; Maro kɨsá?. The last two forms suggest that possibly *kɨc is the correct reconstruction. The following apparently cognate set may also be related to the form for 'foot': *kic 'root' > R -kit; B kiča; Ch čiːza/čiːt-sa)

98. *kad(a) (~*kal) 'tree, stick' > P kár 'piece of wood, splinter', a-kàr-wa 'wooden', kã̀ːwa 'bark' (< *kad-hukʷa 'tree-skin'; cf. set 82); R kat; B kál- (BB); Cu kala (2), kar-kawa 'bush' (L); Cg kal-, kala 'growing things, grass, forest'; Ch kɨe/ke (< *kɨ̃ ?). (Cf. also Guat kóra; Terr/Tiri kor; Boru -kra [1],'plant'; Gual čuká-gala 'broom'; Bint/Guam kan; Tune kár-ukwa [cf. P]; Chim kat; Moti kã̃ː- 'firewood')

99. *kada 'bone' > P k(a)rá 'upper arm, shoulder', -šɨ́h-kã́- 'knee, elbow' (El Carbón); R kal- 'foot'; Cu kala; Cg zala-kala; Ch kɨne. (Cf. also Sumu wa-kál-; Guat kóra; Gual koné; Saba gdá; Move/Peno kro; Bint -kana

[in numerals]; Tune kára-ra; Bari kadá; Guam kana 'leg')[14]

100. *ka(N)du 'ghost' > P kà̃:-so 'spirit of the dead'; R kanu-kola 'evil place'; B kõ̃-se 'shadow'; Cu kalu 'place of taboo'; Cg ih-kalu-šа; Ch kɨne ~ ken(e) 'soul'. (Cf. also Guay mru-kro [1],'place of [1]'; Boru katux-sux-kra 'duende')

101. *kai 'now, soon, already' > P ke: (1,3); R ki/ka (2,3) (?); Cu ke-pe 'first, early',(2); Cg kai-ga (1),'today'. (Cf. also Guat ké-pe [2],'recently' [cf. Cu]; Bint kéi-bu [1])

102. *kak 'land, dirt' > P *kak-ku 'dust' (M), kak-kru 'soot, crud'; Cu kako (L); Cg kag-i (1,2),'earth'; Ch kika (1),'country, region' (?). (Cf. also Tiri kok 'country'; Boru kak-tux 'forest')

103. *kak(i) 'mother' > P kà:ki; Cg kagi 'mother-in-law; Ch kak-a 'grandmother'. (Cf. Terr/Tiri kak 'sister-in-law')

104. *kam 'time' > P kà̃:; R kam-á; B mĩ́-kã̃ 'when?' (= Interrogative-[1]: cf. set 21) (BB); Cg kaŋ 'in olden time, earlier', a-kaŋ(-ga). (Cf. also Caca us-kam 'old'; Caya ča-i-kama 'still, until now' [= 'now'-X-(1)])

105. *kana 'shit' > P kana 'chicken-shit'; Cg gan-uk̬-šiːža 'intestines' (=*[1]-'inside'[cf. set 84]-'ropes'); Ch kana 'croup, buttocks'. (Cf. Misk kana [< P?]; Guay ŋon; Cuev kan-ika)

106. *kas 'tooth; eat; food' > P kasá-sa-há 'molar' (= [1]-'chew-er':cf. set 43); R kas 'meat'; Cg kah-~gah- (2) (?), gaː-ta 'meat' (< *gah-ta ?); Ch -ka[s]- 'bite, eat hard things', kas-kwa (3),'meal', (Cf. also Sumu kas-[2],'bite, chew'; Boru kasa [1])

107. *kau(N)d 'call, shout' > P ar-kõ̀- 'laugh' (= 'laugh'-[2]: Cf. set 5); R i-kaun- (1); Cu kol-/koč-/kot-, alla-kol- 'laugh' (cf. P); Cg kaul-; Ch -kon- 'weep'. (Cf. also Moti kora-r 'weep, cry')

108. *-ki Locative > P -ki 'in'; R -ki; B -ki 'on, along'; Cu -ki; Cg -ki Locative/Temporal adverbial suffix. (Cf. also Duit -g)

109. *kik'a 'daughter-in-law' > P kí?-šuh- (1),'niece'; Cu kika 'name of mythical woman' (?); Ch gika. (Cf. also Misk kika 'little girl', kika-l 'oldest daughter')

110. *kiN 'press, squeeze' > P ar-kɨ́̃-s- 'smash, flatten'; Cu kin-ti- (1), kin-na-/-ne- 'press down, fasten'; Ch -ki- (< *kɨ̃) (2),'step on'.

111. *kiN 'point, edge' > P kɨ́̃ʔ- (1),'tooth, sharp edge'; R kiŋ 'ridge of a roof, tooth, (1),top, head'; B betá-kín 'summit of a hill' (Cf. set 236) (PdF), u-kɨ̃ 'on the top surface of a house' (u- 'house'); Cg (i)keih- 'sharpen' (?); Ch gina 'on top of, above', kɨ̀:na 'in/at the beginning' (?), kɨ̀n-wa 'chin. (Cf. also Cuai kim-pu 'nose'; Colo ki(n)-fu 'nose'; Anda kina-xi 'head')

112. *kiN 'ahead, forward' > P kɨ́̃ʔ-; Cu kin- 'go'; Ch -kɨ̀- 'move s.th. forward', ki-wa 'forehead'(?). (This set is probably related to the previous set.)

113. *kɨ̀/*ka 'do, make' > P kɨ̀ʔ-/kà?-; B i-ka- 'pull, move, impel,...'; Cu ka-; Cg (a)kaw- ~(a)gaw- (?); Ch -kɨ̀- (1,2),'place, participate...'.

114. *(a)kɨ̀da 'by, between' > P a-kèra-hɑ̃̌; B ket 'against'; Cu a-kila; Cg keiža 'edge' (C); Ch a-kin-za 'impossible, i.e. not among (possible things)'?? (-za Negative). (Cf. also Guat kara [1],'beside'; Misk kira; Sumu -kara-k; Tiri <ji-gra-i> [2]; Chim ke:rá 'near')

115. *ku 'get, take, receive' > P su-ku- (1,2,3),'grab'; R ku- (2); B i-ko-lo (2),'grab'; Cu su-ku-el- (1,2) (cf.P) (L); Cg ku-~gu- (1,2). (Cf. also Guat kú)

116. *ku(N) 'day' > P (u)ku-; B koŋ (possibly < *kaŋ : cf. Cabe/Tucu kaŋ); Cu kun Numerical classifier for days. (Cf. also Tiri kun-ma 'day after tomorrow' [=(1)-'three'])

117. *kuda 'arm' > P kór-ya 'elbow', korá 'ear of corn' (?); B uLá 'hand' (BB)?; Cu sar-kona 'wing'; Cg gula. (Cf. also Gual kulá 'hand'; Chum kul-gula [1]; Bint/Atan gúna 'hand')

118. *kuk 'ground, land, place' > P kúk- (2),'terrain, country'; R kuŋ-up 'hill, mountain'; B koŋ-tuk 'mountain' (= *[2]-'point'; or poss. < *kak-tuk: cf. set 102, esp. Boru form); Cu -kuk Numerical classifier: 'group or stand of plants'; Cg kuk-tu (3); Ch kika (2),'country, region' (?). (Cf. also Boru kug-ríši 'dirt-y'; Duit koga [2])

119. *kul 'female, woman, wife' > P kór-ta (1,2) (= [1]-'person'?); R nu-kul-íŋ (3); B alà-kUr (2) (BB), kutá 'older sister' (?); Cg muŋ-kul-ú (2) (sp.)(?). (Cf. also Guat kuri-sa [1] [L], ku'ri [3])

120. *kul 'foot' > P kṹh-kṹh- 'heel'; B kLÚ (BB); Cu yo-kor 'knee' (?); Ch kus. (Cf. also Guat -kuru 'toe, finger'; Chum kuló-sol 'digit'; Guay ŋur-e 'leg, base'; Sins kus-kára 'knee' [= (1)-'bone']; Bint gun-ga-kan 'thigh' [=(1)-X-'bone'])

121. *kur 'river; run' > P kór-pa-pã̀?- 'swell (river)', *kur-mi Place name: Culmi; Cg kur-/kul- in names of rivers; Ch -kosi- (2) (liquids). (Cf. also Bint kore-ni [2]; Dobo kurí 'flee')

122. *kut 'neck, nape' > P ka-túk-kta 'throat' (cf. Cu); R kur-ban 'shoulder (= [1]-'bone'); B kuLi? (1) (BB); Cu tuk-kur (1); Ch guta-kɨn 'shoulder, back' (=[1]-'bone': cf. set 99). (Cf. also Guat tu-kúra [2]; Boru čǔ-xuráh 'necklace'; Muri čero-góta [2]; Nort nikwa-kora-n [2]; Caya kutu [1],'voice'; Guay kutó-kro 'shoulder' [=(1)-'bone'])

123. *kuta 'tree, branch' > P kor- in names of trees, korá 'ear of corn'(?), kor- 'poke with a stick'; R kula 'bush'; B urá (2) (?); Cg -kula (2). (Cf. also Guat kora [L]; Terr/Tiri kor; Muri kutá 'horn'; Chum kola 'horn'. Sets 120, 122 and 123 may all derive from a single earlier root with a more general meaning such as 'cylindrical object or projection'.)

124. *k'a 'leaf' > P -ʔá-ʔá; R ka; B -kU (BB) < ^{x}ko; Cu ka; Cg ka-i; Ch k̶i̶(e). (Cf. also Chum/Gual -ka; Muri/Saba ga; Guay -ko; Chim -ká; Sumu a-ká 'tobacco'?)

125. *k'ak 'sun, day' > P ^{x}hak (R); B kaŋ; Cg kag-i(an) 'year' (?). (Cf. also Misk kak-na [2],'daylight'; Boru kak [1])

126. *k'ala 'net' > P à:ra; R mo-kala ~ mau-kla, kal-ma 'clothes' (?); B kaLá; Cu kar-pa 'basket'; Ch k̶i̶ne. (Cf. also Boru kra; Chum kal-bu; Move/Nort/Peno kra-de; Caya piš̌-kal^{y}i 'basket')

127. *k'ap 'sleep' > P ò:- (< *aw < *ab ?: highly tentative); R i-kam-; B kpU- (BB) (< ^{x}kap...); Cu kab(i)-; Cg kaba-; Ch -k̶i̶b̶i̶-. (Cf. also Move kobi-; Saba gabe-de; Gual kabi-gal; Bari kabá. Certain other forms suggest that a variant root may also have existed: Sumu kimi (n.); Muri -gepe; PSB *kípi 'dream'. These indicate *kipi or *k̶i̶p̶i̶, which is probably the source of the slightly anomalous Ch form above.)

128. *k'u(N) 'louse' P ú (< ^{x}huʔu [R]); R ku:ŋ; B kũ̀ (BB); Cu ku:; Cg ku-i; Ch ku-e. (Cf. also Terr/Tiri kuŋ; Boru

kwa; Chum/Gual/Chan <kū>; Guay kún; Muri/Saba/Move Nort/Peno ku; Tune ku; Moti ku)

129. *k'ulu 'zapote, avocado' > P ùru (1) (< *huru R); R kul-up (2)-'fruit', kul-ma-up (1); B koró-p ~ koLó-b (1). (Cf. also Guat kuru 'fruit (gen.)'; Misk kur-i [1],'mamey'; Moti kuro [2])

130. *k'up(a) 'tongue' > P (ʔ)ù:wa; R ku:p; B kuʔ (BB); Cu kwa-bina (cf. pina 'core'?); Ch -kub-u(n)- 'speak', kub-un 'language, word', pkwa (1) (?). (Cf. also Guat ku; Blan kup-tú; Chum/Gual kuba; Sins/Tune ku[w]a; Chim ku[w]á; Moti kobɨ ~ kobé)

131. *k'ut(u) 'wild cat' > P úʔ-; B namú kororo 'manigordo'; Cu ačumi-kur 'jaguar'; Ch kom-ba 'jaguar' (< *kon-ba). (Cf. also Sumu kúru 'tigrillo'; Boru kurah 'jaguar'; Muoi kure-davé 'puma' [= *'cat-red']; Guay kúrá; Tiri kro; Chim <koonne> ; Tune koto(w)a 'jaguar')

132. *kʷa(tu) 'butterfly' > P wàr(u)-wáru; R kwat-aŋ 'moth', kwa-kak (1); B kwá-kwa; Cg sumun-kwalu (1) (sp.). (Cf. also Tiri/Terr kwo-ŋwo [< *kwa-kwa ?]; Peno mayan-kwate; Tune kwa-kwa)

133. *k^{w}it ~ *k^{w}id 'dance' > P wì?-t-; B kolo (?), we (sp.)(?); Cu kwila-; Cg kwi:zi (the normal Cg reflex of *t or *d in this environment is ž). (Cf. also Chim kwi-ahné)

134. *k^{w}i(N)k 'wing, arm' > P wíš- (1),'feather, fin'; R mu-kwik (2); B pìk (1) (BB) (?); Cg gwih-kala (1), 'feather'; Ch pkwaka (?) (*i > Ch a is irregular). (Cf. also Ulua kinki 'hand'; Guat kwinka [1], kwiŋ 'branch, hand'; Chum kek [1]; Guay ŋwike [1]; Tune kwíka [2])

135. *laba 'egg, testicle' > P á?-lawa (2); B (a)La (1) (?); Cu nab-polo (1) (=[1]-'round'); Cg tei-žawa (2). (Cf. also Tune -nawa; Colo nap-i-pu [1] [cf. Cu])

136. *ma 'navel' > P ma-kú; B mo-wo; Cu mu-wa (< *ma-wa ?); Cg ma-la; Ch mue (< *ma-we ?). (Cf. also Guay mo-tó 'stomach, liver') The second elements in the P,B,Cu and Ch (?) forms may be the reflexes of earlier *k^{w}a or *wa 'eye'. Given this, *ma might be better glossed as 'belly', giving the larger construction 'belly-eye' for 'navel'. (The Guay form cited further supports this hypothesis.)

137. *ma 'die, kill' > P ah-ma-s- (2), a-õ- (1) (< *a-w̃a-?); R i-ma-li-ŋ- (2), al-ma-li-ŋ- (1); Cu ma-k- (2),'hunt'; Cg wa-š-i/wa-k-a (1)?

138. *mai 'think, be sad' > P a-mái-š-; Cu mai-/mag- 'know'; Ch -mai- 'get sad'.

139. *mak 'color (v.), red' > P mák- 'stain, dye'; B mat-ke (2); Cu mag- 'smear, paint'.

140. *mat(a) 'top' > P mák-ka 'crown of head' (< *ma?-ka ?); B mane-beta 'crown of head'; Cu mana-ila-pilli 'loft for sleeping', mana-ke-pilli 'balcony'; Cg mata 'at the top, above'; Ch wat- 'high; leap, jump'? (Cf. also Guam madá-ka 'up, above' [cf. P])

141. *muk$^{(w)}$ 'crumble, fall apart' > P mù:k- 'rot'; Cu o-mukw- 'stir up fire' (=Caus.-[1]?); Ch mupkwa- (1).

142. *muN 'wet, bathe' > P mṹ- (1)(v.), 'soak'; B mõ̀n-mõ̃ (1), 'humid' (BB), mõ̀ 'fog' (BB); Cu mu: 'sea', mun-ku-/mum-mu- 'be drunk' (?); Cg mõ̃-sá 'dew'; Ch -mo- (2), mo(n) 'bath', mon-ga 'bathed'. (Cf. also Colo mu-mun- 'baptize'; Caya mu:n-ge- 'anoint', mu:n-ga:- 'baptize')

143. *ni 'come' > P nẽ̃-h- 'arrive'; Cu ni- 'go out, come out'; Ch -ni-.

144. *-nia (~*-ñ̃á) Locative > P -ñ̃á; B i-nia 'here' (PdF); Cu ya(:) 'inside; hole, opening' (?), -ki-ne 'in'?; Ch -na/-n 'in'. (Cf. also Guat nío 'from here' [?])

145. *nɨ(n)/*na(n) 'go, run' > P nà̃-/nè̃- (1); B i-néne (2) (PdF); Cu na(na) (1); Cg nei- (1); Ch i-nɨn-/i-na- (1), -fa-nin- 'walk', -nɨn-ga Future. (Cf. also Guay neñe [2]; Colo néna 'walk'; Caya ne- 'walk', ne-ne- 'roam, rove, wander')

146. *nɨm(a) 'liver, heart' > P ˣneuwa (1) (R) (=neũ̃a ?); B ã́g-nemo 'spirit, soul' (PdF); Ch nɨm(ɨ)-suk (2). (Cf. also Boru nom 'spleen')

147. *nu(k) 'clear, clean' > P nò(:)s̆- 'clear ground, weed'; Cu e-nuk- 'wash'; Cg nuk̟-s̆ihi 'clarify, make understandable'.

147a. *nuk'al 'point, beak, tooth' > P -nṹʔã̃ (1),'top'; Cu -nugar/-nugal (1,3); Cg hu-núkala (2).

148. *pa 'ask for, buy' > P ka-pã́ʔ- (1); R i-a-paya- (1), i-a-l-paya- (2); B pa-tã̃- 'pay' (PdF); Cu pak-/pai- (2). (Cf. also PSB *paNʔa)

149. *pa(k) 'open, opening, hole, hollow, surface' > P pak- (1), pak-k-a?a (2,4),'palm, sole...', pák- 'wide'; R i-a-pa-ir- (1)(v.), pa-sá in 'palm, sole, gum'; B ki-pak 'horizontal' (PdF); Cg paukwé/-a (2), 'cave' (?), héi-pak-we 'wide' (C); Ch pa:-ma 'wide'. (Cf. also Misk pah 'open, frank', pak-ni 'deep [hole]'; Cabe čǐ-paha 'wide', his-pag 'width')

150. *pa(r) 'talk, speak, say' > P ka-pà-š-, ka-pàr- 'greet'; R (i-)bal-ti-ŋ- (2),'answer'; B kõ-pa-k- 'tell stories'; Cu -pali-/par- (in various stems). (Cf. also Sumu par-ás- 'greet'; Guat pór-ete 'sing' [L])

151. *pai/*pi 'other(s), more, many, very' > P pé: (3),'much'; R baiŋ (3,4); B pi (1); Cu pai-t (1); Cg i-bi-ša 'much',(4)?; Ch fi-e/ma-bi-e (3),'much'. (Cf. also Guat pai 'another' [Thiel], am-pe [2] [L])

152. *pan 'stick,bone' > P -páña (2), pãyh- 'tree',(1); R kur-ban 'shoulder' (= 'neck-bone'?); B pã́ 'firewood' (BB); Cu sap-pan 'tree-wood'. (Cf. also Caca pána 'hand, arm'; Chir pã́ 'leg'; SJ a-pá 'leg'; Blan -pan 'leg'; Anda sowa-pana 'foot'; Colo pan-čǐ 'shoulder(-bone)', pan-pe 'wing, fin'; Mata man [1]; Sumu pana [1])

153. *pan 'move' > P pã́- (1),'touch'; Cu pan-; Cg aga-pan- 'start, put into action'; Ch -fana-go- 'turn, revolve'. (Cf. also PSB *pana 'carry on back')

153a. *pa(N)t 'fall, hang' > P pã́ʔ-pe:- (2); R i-al-patá́- (1); Cu pat- (2) (< 'fall, descend'? [H]); Cg pein- (1) (s.b. a); Ch ma- (1) (< *man-?). (Cf. also PSB *pahta- [1])

154. *pi ~ *pe 'people, person' > P pe-š̌-ka; B pi (1), pe 'white people'; Cu pe 'country' (Haly, 1834 in L); Ch mwi-ska (?: cf. Sumu muyh). (Cf. also Chir/RL pi [1]; Boru a-bí [1]; Caya pe:-čul^{y}a 'people-black')

155. *pi 'fold' > P pi-kìš̌- (1),'pleat' (n.-v.); B pe-; Cu pi- 'gather (a garment)'; Ch -fi:-sta-.

156. *pi(k) 'place s.th. long, stretch out' > P pìš̌- 'lay down'; B pik- 'fell (trees)'; Cu pi- 'put threads in loom, hang', o-bi- (2); Cg pi-amigo 'horizontal roof-poles'; Ch mi- 'open, (1), knock down, lay down,...'.

157. *pi(k) 'blow, wind' > P ũ-piš̌- (2) (=Caus.- [1]?); Cu pik-pi 'fan (n.)'; Ch fi-va (2),'air'. (Cf. also Colo peʔ-pé 'fan [n.]')

158. *pɨ(k) 'take off or away' > P pèš-, ar-pèš- 'unstick, separate'; B bi 'take out or away' (?: s.b. p); Cu pe- 'leave'; Cg aḳ-peiš-/-peik- 'scatter, shuck, open', i-peiš- 'lift lid'; Ch -mai- (1) (?). (Cf. also Tune pé-seba 'thief' [?])

158a. *pu(N)d 'grow, increase, swell' > P pṍ-h-t- (3); R yá-pun- (1); Cu pur-pul-o- (2), pul(e) 'much, more'; Cg mun- (1,2) (s.b. p. This may be a back-formation from the following prefixed stem), i-bun- (1,2); Ch -mwis-ki- (1),'be born'(?). (Cf. also Guat púra-ye- [3]; Guay brö̃- 'sprout [n.]'; Caya pul^{y}a 'stronger, bigger'; Sumu pulu-ne 'blossom'; Chim mūn-i 'abound')

158b. *pur 'perish, erase' > P -bòr- (2),'tan (leather), bare'; Cu pur-k- 'die'; Ch -fi:s-tami-/-fi:s-tebta- (2). (Cf. also Misk pru- 'die') (This set is just at the edge of being admissible as a first-order set.)

159. *pus/*muc (?) 'fill, full' > P mus-t- 'be full, abound with'; R pus-ti-; Ch pusa 'enough, satisfied', -pu[s]- 'satiate', -mu:ta- 'swell'(?). (Cf. also Misk pús-kan 'swelling', pus-k- [1], 'stuff'; Chir psi-nawa [2])

160. *ra(i) 'be', Copula > P r-/l-; B (e)r; Cu le- Passive; Cg la/ža/ya. (Cf. also Guat a'ra 'be in a place', lea/li/la 'sit'; Doba ara- 'place, set, put')

161. *-ri 'with, and' > P -ri Mediative: (1),'through, by', -ri-h (2); B i-ri-n (2) (BB) (?); Cu -le/-r (1); Cg -rh (1), Instrumental (C). (Cf. also Guat -mú-ri [2]?; Colo -le 'by (por)')

162. *sa Interrogative > P -sà-h; R ni-sa-ŋ 'how?'; B bi-kã-s 'how many?' (< *bi-kam-sa ?); Cu sa-na 'when?'; Cg -sa (in mit-sá 'when?', bit-sa 'how many?'), sa-ki 'which one?', sa-kí 'what? how? how much?'; Ch sa(n) 'if' (Conditional, Subjunctive). (Cf. also Sumu ay-sa 'what?', way-sa 'who?')

163. *sa(N)da 'trunk, stem' > P sã́ʔa (1),'stalk'; Cu sar Num. class. for trees; Cg sana 'family, race'. (Cf. also Sumu sar [1])

163a. *sak 'tie, fasten' > P sak- (2),'mount, put in place'; R sak-ak uŋ- (1) (=[1]-'be' 'do'); Cu sai-di-le- 'be wrapped, tied up, closed' (=[1]-[1] [cf. set 204]-Passive), sak-a-di- 'cover'.

164. *sak'a '(female) relative' > P sá?a 'wife's sister'; Cu saka 'parent-in-law'; Cg sāka 'grandmother; moon'.

165. *si 'thin' > P sí-h-sí-; B (i)si:; Ch a-si-ten. (Cf. also Mata si-lako)

166. *sib(a) 'white' > P síwa-ra 'pale'; B siwo 'sun'; Cu sib-u; Ch sua 'sun' (< *siwa ? ~ < *dɨw ?). (Cf. also Guat sixi 'moon'; Boru swa-t; Chum siwá; Guam siwi 'sun'? [~ < *dɨwi ?]; Bint tima 'moon' (?), which, if cognate, would indicate *c instead of *s.)

167. *sik 'point(ed)' > P síki 'thorn', tã-síki 'needle'; R sik (1),'tooth, tip'; B sik 'leaf' (PdF); Cu sig-u 'arrow'; Cg s(i)kala 'needle' (< *sik-kala [1]- 'bone'); Ch sik-a 'beak, tooth', bob-sik-a 'bramble' (='vine-thorn'). (Cf. also Tune sik-ara 'needle' [cf. Cg])

168. *sɨ(N) 'all, complete; one' > P šẽ:? (1),'exact', ~šé- Completive; R saimiŋ (3); B sẽ (1,2) (Gabb in L), sè-xka (1,2) (BB); Cg seil-/sal- 'finish',(2); Ch si- (1,2). (Cf. also Chum kal-sen 'woods' [='tree-all'?])

169. *s̶i̶ma (~ *s̶i̶ŋ̃a) 'cold' > P sew̃a; R saima; B sĩwã? 'wind' (BB); Cg sui (< *s̶i̶w̶-i). (Cf. also Sumu saŋ; Terr samo; SJ sunwa; Blan sinwa-lwé; Colo ?i-sẽ́; Boru sex-ka-h ?)

170. *s̶i̶ri/*suri 'smooth' > P su-surí-; R sa-sér (1),'soft'; B uLís-uLís (BB) (metath.); Cu suili-/suiri-; Cg sulí-ngace (C); Ch sus-kuko 'bland, (1), soft'. (Cf. also Sumu salái- [v.]; Boru seri-ipíh 'smooth fish sp.'; Guam sel-an-kwéga)

171. *suk 'back' > P suk- 'lower back, spine; behind'; B sko-wo 'vertebra'; Ch suk-a 'behind, in back of.'

172. *suk(u) 'point(ed)' > P suk-uk- 'porcupine' (< *suk-huk- [1]- 'skin'?); B su 'porcupine' (PdF); Cu suku 'saw-fish'; Cg -suk-a (1); Ch supkwa 'spear' (< *suk-wa ~ *suku-a). (Cf. also Boru su 'fish-hook'; Chum/Gual su 'beak'; Guay wa-i-suku 'fish-X-spear, harpoon')

173. *sul(u) 'side, flank, edge' > P súru 'rib'; R sVr-ák (1,2); B wó-sul-i 'side of body' (Gabb in PdF); Cu sol(a)/sor- (1),'back, bottom', sulle (3); Cg sur-li/sul-i 'under' (? cf. Cu). (Cf. also Sumu sulu-ki/sulu-n 'rib' [loan < P ?]; Guat ku-suru 'elbow'

[=*'arm-side']; Boru -sud-i [1]; Guay sulu-n 'armpit'; Caya šu?hu 'armpit'??)

174. *ša 'excrement, defecate' > P a-šá?- (2), a?-sa (1)?; B ča-L 'urine' (< *ča-li (1)-'liquid'); Cu sa(a) (1); Cg ša 'bad, evil'; Ch či-ča 'diarrhea' (= 'liquid'-[1]?).

175. *ša 'now' > P šá 'tomorrow'; Cg niwi-za ('sun-now') (H); Ch sa (1),'today'. (Cf. also Guat só-xe [1],'today, day'?; Boru ča; Colo čá-ina 'right now'; Caya ča-i^{y}a, ča-i-ba/ča-i-kama 'still, until now'; Chim ča-ra 'yesterday')

176. *ša(i)(N) 'see, feel' > P šà-/šè- (1); B uh-čèn 'know' (?) (B); Cg šai- (2),'sense' (H). (Cf. also Guat ko-čeŋ- 'find' [= 'place'-(1)])

177. *ši 'be, live, inhabit' > P ša-/ši-; R si-k- 'come' (=[1]-Caus.?); B se-n- (2)?; Cu si(i) (1) ('estar, haber'); Cg -ši (1) (Aux); Ch -ši-ki- 'come' (=[1]-Caus.? Cf. R). (Cf. also Tiri si 'alive'; Duit či [1])

178. *ši 'from, of' > P -ši/-ša (1); Cu -se (1),'to, at'; Cg -či Genitive; Ch ši-ka(sa). (Cf. also Caya -či 'of [Poss.], by [Instr.]')

179. *ši (~*šɨ) 'fear, tremble' > P ši-rõ- 'fright'; Cg šei-šei-nihĩ (2) (C), žei (1)(n.); Ch -sie-se- (1)(v.), a-b-sie 'coward'. (Cf. also Misk si [1][n.], si(h)-b- 'shake' [v.t.])

180. *ši(N) 'knee, knot' > P šĩh-; R síŋ-; B k-či-wo (1); Cu sim-u (2),'navel', kar-sim-mur 'elbow' (=*'bone'-[2]-'rounded protuberance'); Cg ih-či-ane (2) (C); Ch či-pkwa 'elbow'. (Cf. also Boru kwa:-ci-t [1]; Bint ga-si-ro 'navel' [?]; Guam ši-wa-na 'joint, vein' [cf. B])

181. *šidi 'scale, scab' > P širí; R sli-ba 'wound'; Ch zin-wa (1) (<zingua>), sin-wa 'dandruff' (<sinua>) (prob. only one form is involved here). (Cf. also Misk sih(i)ri 'mange'; Guat liči-ki [1] [metath.]; Guay čiri 'sore, ulcer')

182. *ši-k-/*ša-k- 'set, put' (cf. set 177) > P ši-h-/ša-h-; R si-k- 'come' (i.e. 'put oneself'); B šk-öna 'be (estar)' (GR); Cu si-g- 'sit down'; Cg ši-h-/ša (1), 'lie, be'; Ch ši-kɨ 'come'. (Cf. also Misk sa 'is, are' [3 pers]; Guay ŋi-se 'put on the fire' [= 'fire-put']; Guam a-ša-ma 'sit down'; Caya šuike- 'leave s.th.'?)

183. *šik- 'cut, divide, break' > P šik-imi 'cutworm'; R sik-; B ɛ-šká 'wound oneself'; Cu sik-; Cg šik-wan- (3) (C). (Cf. also Misk skiro 'knife' [?]; Caya ši:ʔe:- 'break [s.th. spherical]', či- 'split' [?])

184. *šin 'worm' > P šẽ; Cg zĩ (S); Ch zina. (Cf. also Terr/Tiri š-to [?]; Moti či-ko 'earthworm'; Caya či-para [sp.])

185. *-šɨka 'stuff', Mass Noun Suffix > P -ška/-ska; B -čka; Ch -skɨ. (Cf. also Terr -šuk; SJ -čeké; Bint -ska/-zka [in či-ska 'language' (či- 'say'), sa-bunn-zka 'ashes'])

186. *šɨl (~*sɨl) 'old' > P šer-kaha 'greatgrandparents(s), forefathers'; B sin-awa 'withered' (?), sin-e 'dry' (?); Cu sele/sere(ti) < *čele-ti (Cullen 1853 in L); Cg zẽle 'ripe'. (Cf. also Misk sra-kia 'greatgrandparent(s), forefathers' [< P?], sra-w- 'wither, dry out' [? Cf. B]; Cabe nú-čeir; Muri/Saba -sulia 'grandparent'; Guay sulin 'old person'; Tune séra 'man' [i.e. 'elder'?])

187. *šɨr(u) 'knife' > P ka-šúru-sta; R siru; Cg šeiž-a/šẽž-a (1),'machete'. (Cf. also Guam šér-a)

188. *šu 'dog' > P šú-šú; R taw-su-ŋ; Cu a-ču. (Cf. also Sumu su-lu; Guat ciú 'coyote' [L]; Colo šu-šu ~ su-su [BM])

189. *šu(wa) ~ *su(wa) 'water, river, rain' > P a-só (1,2), a-só-wa (2), a-sò- (3)(v.); R si-su (2), si sówa 'drizzle'; B a-Lu (2)? (*š(v) > B L is unprecedented); Ch šua 'dew'. (Cf. also Boru šu-m 'dew'; PSB *šu(w)a [1] [DH])

190. *šuN ~ *suN 'know' > P šu-wíš 'teach' (< *šuN-wiš-: cf. Cu); R i-suŋ-; B suLé-wo 'heart'; Cu sunna-wisi- ('true-know' [H]); Cg a-vīta-suna 'lung'; Ch -či-ču-a 'learn' (?). (Cf. also Sumu sum-ál- 'advise, counsel'; Misk sm-al-k- 'teach' [< Sumu?]; Vice sule-psa 'reasoning' [cf. B]; PSB *suN 'live'?)

191. *ta(ka) 'foot' > P tà-há; B ta-wo 'shin, ankle' (PdF), kolo-ta-wo 'toe-knuckle'; Cu na-ga/na-i; Cg i-ta-n- 'step, tread, stomp'; Ch za:-na (~ zaha-na?) 'dance (n.), kick, step, footprint'. (Cf. also Sumu ta-ih- 'step on'; Terr/Tiri š-kor-mo [< *ta-kal-ma]; Guay to 'footprint'; Yaru ta-ho)

192. *ta 'go' > P ta-; B ɛ-to-wa 'go to bed'?; Cu ta- (1),'come' (Aux); Cg ta-n 'step, tread' (~ < *ta 'foot', to which this root may be related). (Cf. also Guay ta 'come' [in koböi-ta 'pronto viene'])

193. *-ta Adjective Suffix > P -ta/-na; Cu -ta Resultative (?); Ch -ne (< *-na-i). (Cf. also Cabe -na [in color-terms]; Colo -n)

194. *ta 'person; who?' > P tá- (2), kor-ta 'woman-person'(?); R tá-kala/ta-iŋ 'which one?'; Cu tóa (<*ta-wa [H]) (2); Ch ča (1). (Cf. also Guat tá-ika [1]; Duit sa-iga [1]. These two forms and the second R form all point to *ta-ika: cf. set 198)

195. *tab 'leave, disappear' > P tõš- 'be lost',(2) (< *taw-na-š- [2]-'go'-X ?); R i-tab- 'go out',(1), tab- 'appear'; Cu no (< *naw-) 'go out, come out, escape'. (Cf. also Sumu daw- 'die'; Misk law- 'dry up, be used up'; Tune rawí- 'come'?)

196. *tab(ɨ)(~ *tap) 'yellow, ripen, red' > P tá?-t- (2,3) (*b > p/___ ç?); B tabe 'metal, iron' (?); Cu tap-lis-mor 'yellow cloth'; Cg tavei-n- 'turn yellow'. (Cf. also Guat ka-tax-eŋ[eŋ]e-leŋ [3]; Terr/Tiri šowi- [1]; Boru čama-h 'ochre'; Muoi dabe-re [3]; Bint čami-kaba [1]; Guam tamu-kwega [1]; Moti taba [2]; PSB *la?-ke [1][DH])

197. *taba 'chest' > P táwa 'neck, throat'; Cg taba-kala 'breast (-bone)'; Ch tɨ:ba 'liver, entrails', tɨ:b-kɨne 'breast-bone (of birds)'. (Cf. also Misk láma)

198. *ta-ik$^{(w)}$a 'who?' (*ta-: cf. set 194) > P ^{x}tekwa 'somebody' (R); R taiŋ 'which one?'; Cu tegwa (Prince); Ch šˇ(i)ewa (<xieua>). (Cf. also Guat táika; Duit saiga)

199. *tak 'rise, raise' > P -tak- (in various stems); Cu nak- (1); Ch -ta- (2). (Cf. also PSB *lá- 'come up')

200. *tak 'scratch, grind, pound' > P tak- 'eat (birds)' (i.e. 'scratch for food'); B tak 'piece, board' (< *'cut'?); Cu nag- (2); Cg taš-i/tak-a (3),'crush (with a stone)'; Ch -toike- (1)? (Cf. also Sumu dak- cut, chop'; Boru taga 'split, divide' [Imperative?])

201. *taka 'point' > P ^{x}daka?a 'arrow' (R), ^{x}taká 'north' (R); R taik (1),'nose' (?); B tke 'spear'; Cu take 'nettle'; Cg kus-taka 'corner, angle'. (Cf. also Sumu náŋ...ták [1],'nose'; Misk taka [1],'end', daka 'harpoon' [cf. P]; Boru čak-cit 'nettle'; Chan θaka-i [1],'nose'; Sins kwis-taga 'shoulder-blade'; Moti daka 'chin, beard')

202. *tas (~*das) 'self, own, I' > P tas- (3), un-tas- 'we'; R na:s/na (3); Cg nas/das; Ch ča:s- (3), tas- (1,2). (Cf. also Colo 1a)

203. *ti (or *tɨ) 'say, tell' > P ti-/ta- Quotative; R bal-ti- 'speak' (= 'language-say'?) (It is possible that this is the Iterative -ti-: cf. set 208); B i-čV̀ (BB), ǰi (PdF); Cu ni-sa- 'talk rubbish' (=*'say shit'? Cf. set 174); Ch -tɨ- 'sing'. (Cf. also Misk da(h)-ra 'story, s.th. said' [< *tɨ]; Guat ti-ki- [L]; Colo ti-; Bint či-ska 'language')

204. *ti 'tie, fasten'. This root, with various suffixes, is treated in sets 204a (*ti-dV), 206 (*ti-k), and 207 (*ti-š~*ti-c) (q.v.). The unsuffixed root can be seen in Cg i-ti- (1) (C) and Ch či: 'lasso'.

204a. *ti-dV 'tie, bind' > P ter-s- (1),'connect'; B dekí-tene 'still, firm, solid' (?); Cu e-dinna 'fasten'; Ch -či:ze-. (Cf. also Terr kro-tén-; Boru (i)-niri 'knot'; Guay neke-tete 'stick, unite' [cf. B], dite-ko 'join'; PSB *tele-)

205. *tik 'ant (sp.)' > P tìš-tìš- 'zompopo'; R tik-tik 'zompopo'; B tkir-wak (-wak is general animal suffix.

Cf. set 232). (Cf. also Guat tíx-aráƥa; Guay nikite; Tegr ri- [?]; Tune rik-a-)

206. *ti-k 'tie, fasten' > P tik-, is-tik-; Cu a-čik- 'un-tie'; Ch -čik-i- 'join, bring together'. (Cf. also Tune tik-tako 'fastened'; Moti čik-on [2],'close'; Guam a-teš- [? ~ <*ti-š: set 207])

207. *ti-š ~ *ti-c 'stick (v.)' > P tí:š- (1),'be stuck, adhere'; Cu e-dič- 'fasten'; Ch -čit-a- 'get stuck'. (Cf. also Guam a-teš- 'tie, fasten')

208. *ṫ (~*ti) Iterative > P -t-/-n-; R -ti- (in 'sneeze, cough, swell...'); Cu -ti- Durative (~[1]); Cg -tei Frequentative. (Cf. also Caya -ti-/-di- in murun-di- 'groan, grunt', pa-pa-ti- 'repeat, say over' [though in both cases this apparent morpheme may reflect earlier *ti 'say, tell': set 203])

209. *ṫ(ka) 'field, land' > P -ta-há (1),'plantation' (< *ṫ-ka: cf. Cu); R sai; B te~ti; Cu ne-ga (1,2), 'ground; space; time; house; weather'; Cg tei (1), 'plantation'. (Cf. also Guat laka 'ground, region' [?]; Bint/Atan u-ráka 'house [and land]'; Chim áá-taka 'house [and land]')

210. *tɨ̀-bɨ̀ 'earth, dirt' (*tɨ̀ 'land' seems to be involved in sets 209, 210 and possibly 211) > P tìbi 'grass' (in Payaland most non-mountainous land is covered with tall thick grass); B do-čeka 'mud'(-'stuff': cf. set 185) (< *diw: cf. Chir divü-čeka 'mud'); Cu napa (1),'land, ground'; Cg tui/čui (1,2),'mud' (<*tɨ̀wi). (Cf. also Terr tu-ško [< *tɨ̀w-šɨ̀ka]; Boru tap 'ground, soil, mud'; Muri/Saba debi; Guay dobö; Tune tabo-ra/tama-ra; Dobo taba 'clay, mud'; PSB *tape 'brush, weeds' [cf. P]; Yaru dabú-h [1])

211. *tɨ̀-kɨ̀bi (~ *takɨ̀bi) 'snake' > P tùwi 'boa' (< *tɨ̀kwi); R tagbu-t 'eel'; B tkbɪ́ (BB); Cu nag(u)be/naibe; Cg ta(k)bi/tarvi. (Cf. also Guat tak-tak [sp.]; Terr/Tiri bgu-r [metath.] [Cf. R]; Cabe kébɪ̋ (DB); Blan kéwé; Boru tebék [metath.]; Muri θegébe; Move kebé; Sins ríkuma [non-venomous]) (As indicated earlier [set 210], the first syllable may be the root *tɨ̀ 'land'. The reflex-forms without trace of this syllable support this two-morpheme hypothesis. The original distinction was probably between land-snakes [*tɨ̀-kɨ̀bi] and water- or tree-snakes. [Cf. Proto-Numic *to-ko(h)wa- 'rattlesnake' < *tɨ̀-kowa 'rock-snake' (Sapir cited in Miller [1967]).])

212. *tɨ́kú (or *tikú) 'hot, fire' > P tokó 'ash' < *tikó (R); Cu negu-'be hot'; Ch čigu 'heat'. (Cf. also Guat to'ke-ȳa [1] [?]; Chir čekó [2]; Boru čik-čuah 'coal'; Peno nig-bdo 'coal') (That this set is number 212, i.e. the °F for boiling water, is probably only coincidental.)

213. *tɨ́r 'six' > P séra (*t > P s is irregular); B *ter-i (Thiel in L); Cu ner-kwa; Cg teiž-u-wa; Ch ta, tas-in 'sixth'. (Cf. also Terr ter; Muoi ter-e; Boru teš-an; Tune tér-aya) (That the sum of the digits in the set number [213] is 6, is probably only coincidental)

214. *tɨ́r 'person, man' > P ter-su 'Carib' = 'person-black'(?); B ǰeL-a 'uncle, stepfather' (?); Cg teiž-u 'older brother'. (Cf. also Guat tar-ába-kášа 'people-old'; Terr teř-aba [cf. Guat]; SJ yir-í 'husband'; Chum/Gual/Chan tar-o [2]; Bint čeír-wa; Guam teř-úa [2], tér-u 'husband'; Tune sér-a[2])

215. *tu 'liquid, secretion' > P -tú 'juice, sap, pitch'; Cu nu: 'milk'; Cg u-tu 'saliva'. (Cf. also Boru tu-h 'pus'; Muoi aín-tu 'rain' [?]; Muri ka-čú 'milk') (cf. set 216 *tu(tu) 'breast')

216. *tu(tu) 'breast, milk' > P tùtu 'nipple'; Cu nu:; Ch ču-e (1), ču-či 'suck'. (Cf. also Guat čuču 'suckle'; Guam/Atan tutu [1]; Moti tu [1]; Caya čuču 'teat', ču?-pi [2])

217. *tuc(a) 'mammal (sp.)' > P tùs- 'weasel (pizote)'; B ci 'weasel (pizote)' (< *t(V)c-i); Cu nusa 'rat'; Ch ču:ta 'mouse'.

218. *tuk 'put, place, hide' > P tuk- (1,2); R al-tuk-wá- (3); B e-tuk- 'lie down' (e- Reflexive) (PdF), tk-e- (1,2),'hang (on clothing)'; Cu o-duk- (3). (Cf. also Caya čux- 'put s.th. in its place')

219. *tuk 'drink' > P tok- (1),'swallow'; R al-tuŋ-a- 'eat'; B jÙK (BB), tk-õ 'drinking-gourd'; Cu nog-a 'drinking-vessel'; Cg tuš-i/tuk-a. (Cf. also Misk dawk- [< *dok-]; SJ yok- 'eat'; Caya l^{y}u?-u- 'swallow' [?])

220. *tur 'twist, curve' > P t(u)rú- 'roll up (paper)', túr-túr- 'rolled up', tor-š- (1); B bru-turé 'bent, curved', ĩ-trU- 'turn' (BB), i-wo-be-tru- 'roll up, wring' (PdF); Cu a-čur-i- (2),'curl (flowers)'. (Cf. also Sumu tulu- 'fold', turú-s- 'curly (hair)'; Misk tur-b- 'revolve'; Guay tol-ene 'twisted'; PSB * čuru 'wring')

221. *tur (or *dur) 'black, dark' > P aka-tor-s- 'be dark'; B dLóLó (BB) < ˣdororoi (Thiel); Cu ku-dur (=*'fire-black'?). (Cf. also Guat téurik [2][L]; Boru tur-in; Guay dru-ne; Moti tutu 'charcoal'[?])

222. *tur(ɨ)(k) 'flee' > P t(o)rok-; B tur-/tun- 'run' (GR), turke-/tune- 'jump' (GR) (Cf. semantics of Nahuatl čolo-[1],'jump' [which also appears to be cognate]); Cu tu:r-mak-; Cg tušeiš-i 'rob, steal' (< *tulɨk-i ?) (Cf. also Guam a-túr- 'leave'; Caya turu-ke- 'empty out' [= 'leave'-Caus.])

223. *-u Imperative (2nd pers. sg.) > P -ú-; B -ú; Cg -u-a (?: gua); Ch -ú.

224. *(h)u 'grind' > P ò-; R ŋu-lúŋ 'meal, powder' (cf. Cg); B u-; Cu om-u- 'corn-grind'; Cg u-lih-. (Cf. also Sumu wa-uh- 'grain-grind'; Guat ú; Boru u-ah [Imperative]; Guay u-ka)

225. *u.. 'sand' > P ú-ʔu (< *u-k'u...? Cf. Cu); R u-ntas (? Cf. Tune u-mta, Moti ʔu-ŋda, Chim i-ton-u-ndá, all pointing to an earlier *u-Nta); Cu u-kup; Cg ú-i. (Cf. also Boru u-p; Muoi u-bar; Move hu-má; Bint u-lu; Guam u-nhu) This root possibly is related to the root *(h)u 'grind' (set 224).

226. *uba 'round object: eye, seed, fruit,...' > P -wa; R up; B -wo; Cu m-uwa 'navel'(< *ma-uba 'belly-eye': cf. set 136); Cg uba; Ch uba 'seed, fruit, face, grain'. (Cf. also Guam/Bint/Atan uma; Tune uba; Maro ũma) *uba may be a later form of *ukʷa 'eye', which is also reconstructable for PC: Tucu ókwo; Chan ukú; Move/Peno okwa; Ch upkwa (a doublet?).

227. *uli/*ulu 'monkey (sp.)' > P ùru-s- 'spider monkey'; R uli-ŋ-uli-ŋ; Cu ul-ur 'howling monkey', uli-uli (its call). (Cf. also Guat uri-uri 'congo'; Boru uri 'congo'; Muri/Nort uri; Chum/Chan uli) (Obviously onomatopoeia is a factor here, and possibly also borrowing, but neither of these precludes direct historical transmission.)

228. *uN 'do, make': Causative > P ũ:- (3), Initiative; R (i-)uŋ- (1,2); B ũ- (1,2) (cf. aka-ũ- 'sharp-en'); Cu o- (3); Cg u- (3); Ch -o- in -ben-o- 'round-make'?

229. *uNu 'fish (sp.)' > P õhõ- 'blanco'; Cu unu-s 'sardine (small white fish)'; Cg uñuñ-a 'fish (gen.)' (L) (?: may be redup. < *uŋʷa: set 230)

230. *uNwa 'fish' > P w̃a; Cu ua (< *uwa); Cg uñ̃a; Ch wa. (Cf. also Terr/Tiri má; Boru uŋ; Guay wa)

231. *-wa 'with' > P -wá (1),having its...' (e.g. a-tamùkti-wá 'its-fat-with': 'it's greasy'); R -wa; B -wa. (Cf. also Misk -wa-l ?; Guay nuk-wo 'bird', i.e. *'tail-with': 'the one with the tail'?)

232. *wak 'people, clan, animal' > P peš̌-wàk-wá (3) (? ~ peš̌-wakwa 'people-wild'?); B -wak; Cu wag(a)/wai 'stranger', wag-akala 'foreigner' (='people-other')(L); Cg wak-wei (1). (Cf. also Boru va 'tribe')

233. *(h)waka 'face' > P̄ wak-; B hak; Cu waga-san, waga-la (1), 'cheek', waga-p 'in front of'; Cg waka (1),'cheek'. (Cf. also Guat xuá-k̄i, xuáká-r̄a-ni 'in front of'; Tune áka [?])

234. *wi 'big; much, many' > P wé (2,3), ta-we- 'grow' (ta-Middle); Cg wi-lēš̌-i/-lek-a 'grow, get big'; Ch vi (2,3). (Cf. also Guat á-xe 'long'; Chir bi [3]; Tiri kor-gor-wi 'forest' = *'tree-tree-many'?; Guam bí-ni [2,3]; Misk wi-hka 'long'; SJ ber-wi [1])

235. *wiš̌/*wa(i)š̌ 'know' > P weš̌- 'feel, sense, hear', š̌u-w̃iš̌- 'teach, learn' (< *š̌uN-wiš̌- ? Cf. Cu. Cf. set 190); B

waifče-, wiuxčer (PdF); Cu wis-/wič-, sunna-wisi 'true-know'; Cg a-waš- (C); Ch a-wes-nu 'reason', a-wes-nu-k 'certainly, truly'. (Cf. also Chim wíx-ni- 'know how')

236. *wita 'angle, point' > P -wé:ta 'corner (inside)'; B betá (2),'peak, summit, end'; Cg win-wi 'mountain' (=*'peak-big'?); Ch vita (2),'extreme, end, summit, peak'. (Cf. also Misk wita 'head, top, chief, end',[2]; Sumu wit- 'end [v.]'; Boru idru-[w]eta 'angle-corner'; Bint wir-kane 'hill')

Chapter 6 - Second-Order Cognate Sets

In this section I have listed what I think of as 'second-order' cognate sets, by which I mean those sets that are rather convincing in themselves, but which either (1) do not meet my principal criterion for first-order sets, namely, that they include a probable cognate from at least three of the six diagnostic languages; or (2) in which problems of orthographic interpretation or high semantic or phonological variance decrease the probability of cognatehood of one or more of the diagnostic forms in the set.

An example of the first type of problem can be seen in set 238, in which I have found possibly cognate forms from only two of the diagnostic languages (and even here the Cu form is somewhat tenuous, given the anomalous *a > o reflex). The supplementary forms, however, do point to a proto-form that seems likely to be the ancestor of the P form.

In set 250, the Cu form is problematical both phonologically (#*b > Cu p is the expected sound-change) and semantically. These are the most typical reasons for the inclusion of a set in this section, rather than in the first-order listing.

In set 331, the ambiguity of the orthographic sequence ⟨gu⟩ in Pittier de Fabrega's data from Cg casts doubt on the correctness of including the Cg form in this set. The Cg form also contains the anomalous vowel e, where a is the expected reflex of *a.

As I indicated earlier, these sets are not part of the tabulation of sound-correspondences in Chapter 7, and in only a few cases have I

used information from these sets to support my hypotheses about the Proto-Chibchan phonemic inventory and about historical sound-change in Paya. In most cases, however, the sound-correspondences observable in these sets are consistent with and serve to further corroborate hypotheses based on the first-order sets alone.

237. *al 'male, man' > P ár-wã̀; R ál-ba 'slave (?); B aLá 'son' (BB). (Cf. also Misk/Sumu al-muk 'man-old' (?); Sumu al- (2),'people'; Guat alá-ϕi 'son'; Boru ar-wa 'son'; Colo a:r-uku [1])

238. *(h)apu 'corn' > P a?ṹ; Cu om/op(a) (?). (Cf. also Sumu am; Chum hábu; Gual ábu; Chan háu; Muoi heú; Cuev <hobba>)

239. *ar-pik 'spread, open' > P aprih- (2) (metath.?), ar-pìš̌- 'cover' (i.e. 'spread s.th. over')(?), ar-pèš̌- 'unstick, separate' (?); Cu ar-pig- (1),'extend'; Cg aḳ-peiš̌-(2),'take apart' (H claims that Cg ḳ <*r). (Cf. also Guam a-pes- [2])

240. *aun 'end (v.)' > P awn- (~on-) 'die'; B on- (1),'finish'; Cu ona- 'pass' (or o-na Caus.-'go'?).

241. *bad(ɨ) 'tail' > P pàr-; B mlȅk (BB) < mal-ek (L); Cu pane 'penis' (?); Ch m^{w}ɨ:-ka 'end, tip, braid, branch' (?). (Cf. also Estr a-mar-ek; Terr frak; Tiri prok;

Move kó-bara; Nort u-bara; Peno ku-bara; Guat a-par-iri tepuŋ 'behind'?)

242. *bad 'spider, scorpion' > P pár-sikĭ (2); B be-čék (2)?; Cg mál-kwa (1). (Cf. also Bint mán-ku 1 ; Atan mán-kwa [1]; Chim pa:n-wa [2])

243. *bak 'mud; black' > P pàk-ká (1); Cu olli-ma-ta 'swamp' (< *olli-mak-ta ?); Cg maḳ-su 'dirty, muddy',(2). (Cf. also Sumu was-mak [1] [was- 'water']; Guam mök-ši [2]; Sins bak-sa-ya [2])

243a. *bal Plural > P -bar-; R -baŋ 1st Pers. Pl. Imperative (?); Cg malai 'many' (H) (? or < *ŋʷala, set 297, q.v.). (Cf. also Sumu -bal-na; Caca -wal [or < *ŋʷala ?])

244. *bal 'again' > P war (1),'over' (?), ta-war- 'be more than enough'; B mré (PdF); Cu pal(i)/par (1),'further, more'; Cg malai 'many' (H)? (Cf. also Guay bori 'more, greater, bigger'; PSB *maN- 'one, again'[?]) Sets 243a and 244 may be related.

245. *bal 'seek' > P pró-h- (< par-ó-h- ?); R i-bal-p-; B buL-u 'hunt' (< *bal-u? Cf. P); Cu pali-ka-/par-ka- 'catch', pali-mak- 'catch, pursue'. (Cf. also Misk pli-k-)

246. *bani 'morning' > P ka-pàni; Cu pane 'tomorrow'; Ch mena (?).

247. *bi 'swim' > P ta-pé:-h-; R yá-mi 'bathe'; Cg (u)sa-bi-h- 'carry downstream'. (Cf. also Tiri ah-weh; Guam wei-kumáma; Caya pi-pe- 'bathe', pi-šuiŋge-)

248. *bin 'pay' > P ar-ta-mì̃-h-; Cu pen-nuk-; Cg ar-zé-bih-/ar-zaǹá-bih-.

249. *bɨ(k) 'turn, revolve; wrap' > P war-pe-h- 'turn around'; B i-bek-úwa (3); Cg iž-veiš-/izi-beiš- (1),'wind around'; Ch -mena- (2,3)? (Cf. also Colo la?-pi- [3]; Caya pih-te-[3],'wind around')

250. *bɨka 'squeeze' > P pe:ka-; B i-bek-u 'pack down, push' (PdF); Cu meka- 'lie down, stay'? (Cf. also Caya beh-) (Cf. *pai[k][u] 'lay down', set 301)

250a. *bɨl 'big' > P bèr-š- 'thick'; R baiŋ 'very, very many'?; B bírrie (BB); Ch fis-ta 'wide'? (Cf. also Chir -beli; SJ ver-wi; Blan bel-wi-si; PSB *beN-be)

251. *bɨt or *bɨd 'bent, curved' > P weh-weh- 'winding', weni (1,2)?; Cu pili (2); Cg meiža; Ch be:ta 'twisted; one-eyed', a-ben-oka 'round'.

252. *bɨt or *pɨt 'weigh, heavy' > P pe:-h- (1); R u-brí-u-bíŋ 'weight'; Cu pene (2), pen-gwa (2),'difficult'; Cg i-veiḳ-ši-h- 'lift' (ḳ < *r?); Ch fi:z-ko (2), -fiza- (1).

253. *bu-c 'break, burst' > P bús-t- 'fart; spring up'; R ya-p(u)s-uk- 'pour out'? B bucá-na (1), buca- 'break (rope)'; Cu o-bus-k- 'peel (v.)'; Ch -posi- (2), 'split'. (Cf. also Boru bucá-ših 'peeled')

254. *bu-k 'cut, break' > P bòk- (1); Cu o-muk-kwa 'stir up fire' (?); Ch -mugu- (1),'split, tear'. (Cf. also Misk buk-baik-[1]; Sumu buk-; Anda boxo-ka 'axe'.)

255. *bu-n(i) 'burst, spring forth' > P boh-n-/bo:-n- (1,2),'flower, open up' (? loss of $\tilde{V}$ by analogy?); R ya-pun- 'grow'; B pone 'give birth (animals)' (s.b. b); Cg mun- 'sprout'; Ch -mni- 'be born'. (Cf. also Guat puáni [1],'explode'; Chim mu:ni- 'abound'.) As indicated, sets 253, 254, and 255 share an apparent earlier root *bu 'break, burst'.

256. *bustuku 'dove' > P búhtukú 'mountain dove'; R bútukú; B ótuk. (Cf. also Misk butku/busku; Sumu bút(u)ku; Guat mustutú; Chim muanuku; Caya fituku.) While onomatopoeia and borrowing are certainly factors here,

the possibility of genetic transmission can not be completely discounted.

257. *cata 'body, flesh' > P pé?-ša?a; B sañá 'intestines' (?: s.b. c); Cu sana (1,2) < x*čana (2) (Cullen in L); Cg zala-kala 'bone' (='body-bone'); Ch tana 'inside' (?: *t > Ch n is irregular). (Cf. also Sumu sana 'deer', dika-sna 'meat'; Guat časa 'trunk'.)

258. ci(n) 'thin, small' > P síh-sí-na (1), x*si-si-na 'shallow' (R) (? or < *si 'thin': set 165, q.v.); B ci-ci-n (2), ci-r (2), x*ci-dera (2) (Thiei in L); Cu seni 'little'; Ch a-tɨ 'wide' (= Neg-'narrow'?). (Cf. also Mata si-lako [1] [or < *si ?]; Cabe cín-ara [2]; Estr cin-ekra [2]; Chir ci:ne [2], is-cin-da-delehe [1]; SJ sin-seke [2]; Boru cit [2]; Muri si-arí [2]; Muoi/Saba si-drí [2]; Guay či [2]; Chum či-tri-ga)

259. *cid(u) 'bird' > P sé? 'wild turkey' (?); R sin-sak; B cene ~ cane 'woodpecker'; Cu sinna 'kingfisher'; Cg se:žu-véi 'small bird sp.'. (Cf. also Chir cere 'woodpecker'; Terr séno-wa; Tiri sín-wa; Move mo-solo-ro 'partridge' [? cf. Gual]; Gual činu-lu 'partridge.')

260. *cɨb(i) 'mud' > P í-špi-ti-kí?- 'be dirty'; B cõ-nõ 'land' (< *cɨw ?); Cg čui ~ tui; Ch tɨb-so (1),'clay'. (Cf. also Sumu saw 'earth'; Misk saw-mbla 'clay', saw-ŋka 'earth', ta-sba 'earth' [?]; Guat ɨu:xi < ˣsu:xi (L) (< *su:wi); SJ tibe-čeké 'earth, dirt'; Muri čiwa; Saba swayda; Chum sávi-kal; Gual sábi-kula; Bint ka-tui-kába)

261. *da(r)(~ *la) 'cut, break' > P tra-h- 'divide'; R ya-lár-iki (2); Cu o-la- 'chop down (trees)'; Ch -za- 'wound, injure'. (Cf. also Caya da(a)- [1])

262. *dada 'red, yellow; ripen' > P tá?- (1,3) (or < *tab [196]?); R sala (1); Ch sasa-mi 'red corn'. (Cf. also Caca lála [1,2]; Misk/Sumu lala-h- (1,2); Chir daɨá 'ochre, brownish'; Bari dad-?áw [1] [< *dada-kawa])

263. *daik 'pass' > P teš- 'go, leave, wander, disappear'; B de 'come' ?; Cu teki 'then, so, and', teki teki teki 'and so forth' (?); Cg neiš-i/neik-a (~ ne:š-i : possibly 2 roots) 'make, be, become, change'. (Cf. also Misk dai-k-/-w- 'pull up by roots, extract, leave'; Guat tói-ki 'pass, happen'; Boru dek/tek 'walk'; Guay noi-n 'go', noi-n-ta 'cease, pass away' [?]; Bari taek-taek 'walk')

264. *dak'(i) 'come' > P te?- (< *ta?i) (?); R (i-)tak- 'go'; B do ?; Cu tak(e)/tai; Cg naš-i/nak-a; Ch -za- 'leave' (? <*za? ?) (Cf. also Misk tak- 'leave'; Guat tó-ki; Guam naka-u:gáni; Caya take-/ta?- 'carry',[1])

265. *dakɨ́ 'salt; sea' > P takɨ́; R táuli (? < *ta?u-li ?: li = 'water'); B djǐ́ (BB) < ˣdečɨ́ (L), ˣdejǐ́ (PdF); Cg naku (1). (Cf. also Boru ki [1]?; Guam nangu [1]; Atan nŏngwi [1] ; Tune rauwa [1] [? This is reminiscent of the R form]; Moti toko 'salty'; Chim nei-taka [2], ní:-take 'water')

266. nil

267. *dal(i) 'see, know' > P ar-tɛ̃́-h- 'please, be seemly'? B dolóy- 'notice, respect, pay attention to, admire'; Cu tale-ku- (2),'seem'; Ch -za[s]- 'spy on, appear, conceive'. (Cf. also Sumu tal- [1]; Misk talia 'similar to, like')

268. *dVri 'really, truly' > P yàri; Cu yeri 'well, content, good'; Cg nali; Ch zes 'right, correct'. (Cf. also Guat tuɛ́ri 'always, still, definitely') If all these forms are cognate, the wisest reconstruction might be something like *dɨ́ri, though both the Cu and the Guat

forms would indicate something additional going on with the *d or with the first vowel (or diphthong).

269. *dɨk' ~ *dik' 'nose' > P tə́ysá (< *tái?-sə́ = 'nose-body'?); R taik; B ǰik; Cg ˣnik-sáiŋ (C) > ni:tše; Ch saka. (Cf. also Guat táigi [L]; Sumu náŋ...ták; Terr nek-wo; Muri čeg-wa [?]; Chum nekó; Gual negú; Chan θakai; Tune rexa; Dobo tix 'arrow')

270. *du 'lower, sink' > P -lú- (2); Cg du-ani (1,2). (Cf. also Bint yu-rí [1])

271. *du(wa) 'tobacco' > P yu-ri (? cf. Chan below), wi-ru ?; R tu; B doa; Cg noa-i; Ch sua 'sun' ?, sua-waya 'Cigarra': wife of sun = 'tobacco-woman'? (If there is a connection here it may have come about, in part, through the homonymization of the originally similar roots *dɨw 'sun' and *duwa 'tobacco', but even without this, such a close relationship between the sun [-god] and tobacco [the chief sacramental plant] should not be surprising in these cultures.) (Cf. also Guat tua; Cabe duwa; Boru duah ~ dová; Chum dua; Chan du-rni; Muoi du-ga; Bari do)

272. *duka 'head' > P ka-túk-kta 'throat' (= Loc-'head-cylinder (neck)'; Cu tuk-kur 'neck' (cf. P), tuk-wa 'point, top

(of tree or plant)'; Ch zo-te 'brains' (< *du[k]-ci[di] 'head-insides'?). (Cf. also Sumu tuk-sar 'throat' = 'head-trunk'; Guat tukura 'nape' [cf. P and Cu], tokó-sik 'brains' = 'head-meat'?; Chum dukú; Chan du; Muri/Saba čuga; Move θokwá; Guay dokwo; Dobo dok^{w}a 'face')

273. *had 'wax' > P mṍ-ʔã́ (< *bun-han < *bud-had 'bee-wax'); R ŋana-li 'honey' (-li = 'secretion')?; Cg hali (poss.< *had-li); Ch ɨskɨ (< *ɨs-skɨ 'wax-stuff'?). (The proto-gloss may turn out to be 'bee'.)

274. *huk$^{(w)}$a 'ten' > P ukkwa/húkkwa < ^{x}huka (R); Cg ugwá; Ch ub-čí:ka (< *upk^{w}(a)-čí:ka ?). (Cf. also Muoi huva; Bint uga; Guam/Atan ugwá)

275. *hulu (or *udu) 'cedar' > P k-uru-nti (Conzemius)?; R ut (< *ud); B ulu-k; Cu ur-wala/hulú-b, ulu 'canoe'; Cg ulu-lá. (Cf. also Guat úruŋ [L]; Cabe urú-k; Terr r̃u-ga; Boru uru-n-krah/run-kra, ru 'canoe' [< ^{x}hurú (Thiel in L)]; Chum/Gual/Chan ulú; Cuev uru; Guay ru-ka; Chim ka:-hón 'canoe')

276. *huN 'smoke' > P ũ-h- 'smoke (v.), bake' (< ^{x}hũ-h- [R]), ^{x}uma 'soot' (Membreño in L); Cu u- 'smoke (fumar)', ua-nara 'smoke fish'. (Cf. also Guat úxu-ma; Chir ũm-pa

'soot'; Moti o:-ka 'oven'?) (R iŋi:si, Cg ĩhia, and Chim i:ná (all 'smoke [n.]') all appear to reflect earlier *iN 'smoke', which may be related to *huN.)

277. *iš 'see, watch' > P iša-kán 'similar'; Cu i:s-mak- 'shine' (= 'see'-Caus.?); Ch -i:s-ti- 'see, find, seem, discover.'

278. *ɨ(k) 'he, him' > P é:ka- (1); B yɛ- (1,2)?; Cu e- (1,2); Cg ahí 'his'(?), ay 'this'?; Ch ɨk (2).

279. *ɨra 'know' > P -ír-/-ér-; B ɛwo-uLa-ũ- 'learn'; Ch -ɨ:zɨ- 'teach'. (Cf. also Guat ura; Terr mid-era)

280. *ka 'he, she, it; they' > P é:-ka- (1) (? or < *ɨk [278, q.v.]), ka- 'them'; R -ka (possessive); Cg ka-wi-žen 'they', ka-wi 'their'. (Cf. also Caca kara, -ka [possessive]; Guay ko)

281. *kaki 'night, dawn' > P kaki (1,2); R kikik/kikit ?; B kan-tevina (1) (< *kaŋ-?); Ch kagi/kagwi 'star, morning-star, 2nd half of night, dawn'. (Cf. also Terr kok-šrúŋ 'morning'; Boru kak-digat [1], kak 'light, sun', kak-turiŋ 'night-black' = 'dark' [which might be

enough to drive a Manichaean up the wall]; Mogu kok-za [1])

282. *kam 'far' > P kã:-ra; B kã̀m-mĩ́ (BB); Ch kɨ́(?). (Cf. also Cabe/Vice ˣkam-[m]iní; Cabe kom-mĩ́ [DB]; Guay ŋan 'long'; Chir kam-ímí)

283. *-kan 'like, as, how, -ly' > P -kán; R ni-ka 'how?'; Cg (-)hana 'in the same way as'; Ch ina-kan 'then' (= 'there/then-ly'?). (Cf. also Misk dia-kan 'why?'; Guat ní-ka 'thus, so' [prob. related to R]; Chir amí-kané 'forwards', šebí-kané 'backwards'; Duit wekeneka 'how?')

284. *kiri 'piece' > P kré (1), krih 'time, instance'; Cu ki(a) (1) (< *kiy-a ?); Cg kʷiža ~ hwiža 'time (vez)'? (*r > Cg ž/i__ is regular; the labialization is decidedly a problem); Ch kɨ: 'side, face, distance between thumb and forefinger', kɨyto 'side'? (Cf. also Misk kli/kli-ki 'again', kri-k-/-w- 'smash to pieces'; Guat ki'ri [1],'unit'; SJ -kre(') Mass noun suffix: 'some'; Guay kiri 'side, party') As is most obviously suggested by the Misk forms, two etymons seem to be involved here, probably *kiri 'piece', and *kili 'time (vez)'.

285. *kur 'shout, yell' > P kus-t- 'screech, shriek'; R i-kul-ak- 'laugh'; B kuL- (1),'scream'; Cu kol-/koč-/kot- 'call',(1); Cg kawče-aka-ĩ 'make a noise' (cf. R); Ch -ki:[s]- (1,2)(?). (Cf. *kaud 'call, shout', set 107)

286. *k^{w}a 'finger, digit' > P wá-wa-ʔá (1),'toe; B kwo 'nail' (also wo 'knuckle'?); Cu ko: (1) (< ^{x}kwo-gwa [Gabb 1875 in L]); Cg kau(-kala) (1)(-'bone') (H).

287. *k^{w}it 'squirrel' > P wìʔ-sã́(?); B bitaŋ; Cu kwini; Cg kut-ẽku. (Cf. also Sumu bút-suŋ [?]; Guat ku-sa [cf. P]; Chum kúit; Gual kúi; Bint kwi-yumak[a]; Atan kwin-dumaka; Tegr kwi-rama; Tune kwit-roa)

288. *k^{w}ɨr 'parrot' > P wèr-ska (sp.); B koču (?); Cu wela (sp.); Ch pkwi:s-ta : <pquihista>. (Cf. also Guat koaruŋ[L]; Chir kuŋgreh ?; Boru kurix)

289. *ma/*mɨ 'give' > P ã̀-h-/ẽ̀-h- (< *ma[i]?); R misma 'gift'; B i-me; Cu o-ma- 'give food'; Ch -m-ni-? (-m- may be the object prefix -b-~-m- assimilated as the nasal variant /___n). (Cf. also Cabe mẽ- [DB]; SJ he-ma; Caya me?-)

290. *maci(N) 'weasel, otter' > P ma(:)si (1),'possum'; aso-masi 'water-weasel' = 'otter'; R mámo (2)?; B ci 'pizote'; Cg maĉĩ-ga 'macc'. (Cf. also Guat masíŋ 'manigordo' [= Felis pardalis])

291. *mɨn 'fall, lower' > P man-ȍk- (2); R yal-main- 'load'; B me- 'lay down'; Cu mai- 'lie, extend', mel-le- 'spread, extend'?; Cg mein- (1),'pull, tear', mein-g- 'fell (trees)'; Ch -ma- (1),'abort', -mnɨ- (1,2) (? cf. 292). (Cf. also Guat meni [1]; PSB *mena- 'bury'; Guay moin 'dig'?)

292. *na 'fall' > P ná-; B ó-na-; Cu ai-la- (< *-na : cf. H Grammar, p. 41); Ch -m-nɨ- (1)? (If this is the correct analysis, the -m- would appear to be the object-prefix and thus the verb is transitive and probably meant 'drop' or 'lower').

293. *nia (or *ñ̃a) 'speak, speech' > P ñ̃ã-h-/ñ̃ẽ-h-; Cu ne-ga- (2),'noise' (?: in nega-sunna- 'listen'), ni-sa- 'talk-rubbish' (-'shit') (or ni- < *ti, set 203?); Cg nei- 'say, tell'. (Cf. also Sumu wolá nyá- 'cheer'; Guay ñ̃o-ke 'talk')

294. *ŋʷa 'die' > P a-õ̃-h- (< *a-w̃a-h- ?); Cg <g>waš-i/<g>wak-a; Ch wa:ya 'dead, corpse'. (Cf. also Cabe da-w̃ãũw̃ã

[DB]; Terr/Tiri šin-mo 'person-dead' [< *til-ma]; SJ bwena-⟨g⟩wa 'dead' [='man-dead'? < *win ?]; Guay ŋʷa-ka 'dead body'; Chim ⟨g⟩wax- 'kill')

295. *ŋʷa(1) 'grandchild, child' > P -w̃áh-w̃áh- (1); R mala (1); Cu mala- 'fellows, friends'?, wa-gwa (1); Ch wa-ča 'child-person', was-wa (2). (Cf. also Sumu wala-bes [2]; Misk mula [1]; Caca misa-walá [2]; Terr/Tiri wa [2]; Boru va: [2]; Guay mon-so [2]?)

296. *ŋʷal(-ŋʷal) 'thunder' > P w̃á-w̃áh- (1),'grandfather'; Cu mala (~ mara); Ch ti-bara 'lightning'? (cf. Bari) (Cf. also Guat íwa-faló-falo 'lightning'; Chum ba-bá; Guay mo-minko; Bari di-ba-bá 'lightning')

297. *ŋʷala Plural, Collective > P -waria 'some, group, pack', -w̃aha (1); R u-mal-íŋ 'everyone'; Cu -mala/-mar Permanent group; Cg malai 'many' (H)? (Cf. also Caca -wal [1] [or < *bal, set 243a, q.v.]; Tune -mara 'group, pack' [in animal and insect names])

298. *ŋʷali 'quickly' > P ũ:-w̃árí-pé 'later, soon', w̃e:š- (1)?; R ŋal-b- 'hurry', ŋat-ska(ŋ) (1); Cg malei '(in) a little while', malei mei (1); Ch wa:y-uk 'immediately'. (Cf. also Vice mene- 'fast') (Also related may be R ŋal-íŋ ['river'?-]'stone'; Sumu was

'river'; Misk a-wal 'river', wal-pa 'river-stone' [cf. R]; Chim mra:-mrá 'current'; Ch wan-za 'sand' = 'river-stone[s]'?)

299. *ŋʷis(ki) 'smell' > P ŵis-ki?- 'smell strong, reek', wíh- 'stench'?; R i-ŋu:-ki (< *ŋuh-?); Cg wiñadze 'flavorful' (C)?; Ch -mʷɪs-kɨ-. (Cf. also Bint mi[s]-sún-a 'nose' = 'smell-know-er (-sensor)'; Atan mi[s]-sun-ha 'nose'; Guam mi(a)-žuwa 'nose')

300. *pa 'water' > P pak-kwa 'swamp', pak-ka 'mud', ˣpak-kaí 'lake' (R), ˣparmi 'rain' (M)?; B ˣpá-i-kere- 'wash' (PdF), ˣi-pá-kruk 'wash, rub' (PdF), ˣi-pá-škuok 'wash' (PdF); Cu pal- 'fetch water; pour, fill'. (Cf. also Misk paŋ-k- 'fetch water', pa-b- 'bail water, defoam, sweep'; Nort paro:ta 'mud', Moti boy 'river, fish'?)

301. *pai(k)(u) 'lay down' > P pe:- 'put', pe:-ka- 'squeeze'(?); B i-beku 'pack down, push' (PdF)?; Cu pe- 'stay'; Cg pei-n- 'fall down'(?); Ch -be-na- 'fall down'(?). (Cf. also Misk paik- 'stretch out'; Move beko 'fall'; Guay ne-beko 'fall on'; Caya beh- 'squeeze' (?), bai-nde- 'knock over, overturn', paih- 'fall' [This diversity in Caya suggests that more than one root is involved here: one with *p and at least one with *b. The

reflex vowels e and ai can arise from both *ai and *i.] These reflex forms are members of an even larger set of phonologically and semantically similar forms whose assignations to reconstructed proto-forms are still highly tentative. Cf. *bika 'squeeze', set 250; *min 'fall, lower', set 291.)

302. *pVr 'mottled'(?) > P pér-š- (1),'woven'; R i-par-k-/-i-pr-ik- 'braid (v.)'; Cu par-pati (1),'spotted'.

303. *pita 'liver, chest' > P [x]naši-pina-to?a 'life' (R)?, -pé(?) 'bile'?, pé?-ša?a 'flesh, body' (< *pita-cata [1]-'body'?); R psá (1); Cu pina (1),'core, heart', pina-s-kala 'chest(-bone)'; Cg a-bíta (1); Ch fiza 'throat' (< *fida ?). (Cf. also Misk pira/piri 'bile', lama-bila [2]; Estr her-beta 'liver-chest'; Bint biča 'breast'; Guam anši-píta [1]; Ulua pilá- 'ribs'; Tune/Sins peca-raga; Bari bidõ [2])

304. puk 'water (v.), drink' > P púk- (1),'irrigate'; Cu puk-lu (~pui-lu) 'drinking-gourd', puk-lu-sa 'drink, eat'; Cg muk-su 'small jar' (?: s.b. p). (Cf. also Guat ɸu'ču 'urinate, gush'; Tiri puk-tóŋe 'wet'; Terr puh-úi 'wet'; Colo fohi-/fole-/fo- 'irrigate, spill, empty')

305. *pul 'good, strong' > P -pún-h (2) (-púr-a?- 'be able'?); R púl-ka (1); B ble 'el bien' (Gabb in L)?; Cu pule (2), puruet 'better'; Cg mule:tua (1),'pretty'; Ch fun-za 'powerful' (?), fusu 'beauty, life, flowers' (?), po/po:z (2). (Cf. also Guat pué [1]; Guay ko-bó 'strength' ?; PSB *puluN 'hard'; Caya pul-^{y}a 'stronger, bigger') There is enough ambiguous and contradictory data here to indicate that probably two different, but similar and probably related stems are involved here, both based on the root *pu 'power'. (In fact, the Guat and Guay forms may contain reflexes of the unsuffixed root [unsuffixed at the proto-language level, that is].) The stem *pu(N)d 'grow, increase, swell' (set 158a) may also be derived from this root.

306. *pulu (or *bulu ?) 'round' > P púrú-túkwa 'full (moon)'; B wŰ-bLa 'eye-ball' (BB); Cu mullu; Cg (a)bulu 'small, short' (cf. Guay below; and, for semantics only, cf. P pašti 'short, round'). (Cf. also Caca bulwika 'full'; Cabe burey, wŰ-buLa 'eye-ball' [DB]; Guay bolo-re [1], bolö-ke 'short and fat, chubby', bule 'belly'?) This set may be related to both *pu(N)d 'grow, increase, swell' (set 158a) and *pus 'fill, full' (set 159).

307. *pur 'pierce, put into; point' > P por- (1),'sew' < ˣpur- (R); B uka-bur-ka 'arrow'; Cu muru (3),'beak'; Cg poŋgui (1)? (Cf. also Guat ɸóra 'thorn, needle', ma-puru 'spear' [del Tristán in L]; Chir bulí 'thread'?; Terr d-boróŋ [3]; Guam buna-gala 'espinilla'? [If cognate, this would point to *pud or *pul]; PSB *pu 'thorn; put into' DH ; Caya puŋ- 'sew, stick oneself [with a fish-bone]')

308. *puCu (C= t, d, l...?) 'egg' > P -póno; R i-puŋu-l- 'lay (eggs)'; Cu na(p)-polo (cf. nap-tulu 'bird'). (Cf. also Guat i-pu; Muri muru-e; Move muru-ge; Colo napi-pu [cf. Cu, Guat]). This stem may be related to *pulu 'round' (set 306).

309. *su(li) 'deer' > P iša < ˣ⟨isncha⟩ (?!) (DDE) = i-s(V)n-ša ?; R súli 'animal', súla (1); B suLí~suni (?) < ˣsurí (PdF); Cg su-gi (?). (Cf. also Cabe sunri; Estr/Chir suni; Blan soli; Guat suli; Muri/Saba seú; Atan kučuár ?; Moti čiri-ku; Boru su-turík [= 'deer-black'?]; Terr/Tiri šuriŋ would be the regular reflex in these languages of *turik [cf. Boru], but it is easy to see how 1) *su-turik > *su-šuriŋ > šuriŋ, or 2) *su-turik > *sturik > *turik > šuriŋ might have taken place.)

310. *su 'dark, black' > P su-kwa (1), ter-su 'Carib' = 'person-black'(?); Cu kap-su-s (1) (= 'color'-[1]); Cg a-baḳ-su/maḳ-su ('mud'-)(2), su-mun-kwalu 'large black butterfly' (=[2]-'ash-butterfly'?); Ch su-e-mwi:za 'black-person', su-ske 'ashes' (=[2]-'stuff'), su-kta 'ashes' (=[2]-'wood'?). (Cf. also Sumu míkpa su-máne 'pupil of eye'; Terr so-k-sie [2]; Tune bak-só-ya [2] [cf. Cg])

311. *suk 'wash' > P súk-; B cui? skuUk (BB) ˣi-pa-sku-/-suk-(L); Ch -čuhu- (1),'scrub'. (Cf. also Sumu suh-; Misk sik-b- 'wash hands' [?]; Guay suk-öte 'clean [v.]'; Bint ačukuan ? ; Guat ɬó-ki; Tune atum-suku-negro 'bathe oneself')

312. *suN 'ear, hear' > P sũ̀ha (1) < *sun-ha (2)-'er'; R (i)su(:)ŋ- 'know', malis-suŋ- 'love, like'; Cu sunna-(2),'listen, true'. (Cf. also Atan mi[s]-sun-ha 'nose' [='smell-sens-or']; Bint mi[s]-suna 'nose'; Guam mi-ču-wa 'nose'; Anda suŋ-wa-šo [1]; Tair šum-gukwá [1] [Loukotka])

313. *suN 'banana > P sõ-kwa (=[1]-'fruit'?); R sumú: (1), sunukba 'guabul (banana-drink)' (cf. P); Cu sur 'banana-tree' (?). (Cf. also Guat su: [L])

314. *šud (or *šul) 'nail, claw, hoof' > P šuna (< *suña [R][?]); R sl-úp/sli-úp 'knuckle'; B čoloñV- 'tickle' (< *'scratch'?); Cg kat-su-ma (< *kat-sulu-ma : cf. Guam below). (Cf. also Mata su-su [1]; Chir u‡á-sul‡ 'ring-finger'; Chum kuló-sol 'finger'; Guam k-sulu-ma; Tune čú-ka [?]; Sins arker-šu-ka 'hand-nail'; Bari šdo)

315. *šuwa 'rain' > P a-sówa 'river', asó (1); R si sówa 'drizzle' (si 'water'); Ch šu[w]a 'dew'. (Cf. also Misk yû-k- 'anoint' [?]; Boru šum 'dew'; PSB *su[w]a [DH])

316. *ta(s) 'cut' > P tas-; Cu nas-i 'spear-point'?; Cg ta/ta-k 'sound of cutting s.th. off'; Ch ta[s]- 'split, break, tear'. (Cf. also Caya da[:]-)

317. *tan 'come down' > P tãh-war- 'spill'; Cu tani 'come'; Cg tan- 'fall, collapse; flow quickly, be swollen (river)', aga-tan- 'flow down',(1).

318. *tara 'valley, savanna' > P ka-tara (1,2); Cu tar 'space, span'; Cg ubu-tara 'face' (='eye-space') (Jijón y Caamaño). (Cf. also Chir tarah [2]; Tucu taráh [2])

319. *taš 'green' > P tàš-ã̀ 'green macaw' (?); Cg a-taš-i (1), taš-aš- 'become green'; Ch -čɨs-kɨ-. (Cf. also Guam ta-nki-kwega ?; Bint a-zače [< *a-čaze : metath.?])

320. *tɨk~*tik 'cut' > P a-ták- 'separate (reflex.)', tak- 'eat (birds, i.e. scratch)' (?); R a-taik- (1), yaŋ-tik- 'cut off, chop down'; B tùk- (BB), i-tökö-/tegé-; Ch -tɨ:pk-wa 'wound', a-tek-wa 'split (adj.)'. (Cf. also Misk dak-b-; Sumu dak-; Boru tága 'split, divide (imperative)'; Guay tike 'scratch', tike-ko [1]; Tune a-tak-te-; Moti diko 'bite')

321. *tu(n~d) 'bend; bow (n.); shoot' > P tũ-h- 'shoot, send'; R ya-tun- 'hit with an arrow'; B i-t-ku- 'shoot a bow' (PdF)?; Cu toni(kwa) 'curved, bow-shaped'; Ch čʉ-kɨ 'rainbow', kie-čo 'arrow' (< *kĩe-to 'stick-...'). (Cf. also Sumu tu-sat- 'to bow [baw]'; Misk lul-k- 'throw',[3]; Cabe e-ǰuLũ 'hunt' [DB]; Boru tun-kra [2] [= 'shoot-stick'], tun-kasa 'arrow'; Move tu-gé [2]; Nort tu-ke [2]; Peno tu-ken [2] [cf. Ch]; Guay do-tu-ko [1]; Sins to-ta 'arrow'; Chim ñooni-né 'stoop[ed], bend, bent')

322. *tuk(u) 'fire, hot, light a fire' > P a-túk- (3),'kindle', pata-ʔuk-wa (2)?; R tukú-ba (2); Cu nuk-nuk sa- 'fan a fire' (nuk-nuk 'fan [n.]')?; Ch čʉ-tupk-wa

(2)(object), ǩi-tuk-a-gene (2)(person). (Cf. also Guat to'ke-ȳa [2]; Chir ǰukú 'kindle'; Tucu čokó [1]; Terr/Tiri yuk [1] [?: regular is *t > š]; SJ yokó [1]; Blan čúko [1]; Bint ki-čuku 'coal'; Atan <g>wí-tuku 'coal'; Colo lu- 'burn', lo- 'hot' ?)

323. *tus 'pound, grind, peck' > P tus- 'break up (rock with hammer), crush (?), ˣpeck', tus-kor-ka 'peck-wood-er'; B tus-i 'ground dried plantains'; Cu to(:) 'beat, knock, hammer, sound of thrown stone' (?), tu(:)r kole 'knock on wood' (?); Ch -to[s]- 'split, break, chip, open', -ǩu:[s]- 'wash, scrub'(?). (Cf. also Misk tus-k- [3],'provoke, push (with pointed object), wash clothes', tus-kaya 'guabul-grinder', tus-kra-nák 'woodpecker'; Sumu tus- 'prick, smash', tus-dak- 'cut'; Guay tu 'tooth'[?], to-ke 'strike, hit')

324. *u 'arrow' > P u:-kwà-kwa; R u-ru 'bird-arrow'; B u:-kábot (1), u-ǰa- 'shoot arrows'. (Cf. also Guat kar-u ['wood'-(1)]; Estr u-kávu; Cabe kwavuta [< *u-kavuta])

325. *uba-dia 'eye-secretion' = 'tear' > P wa-(a)-tia; B wÚ-dio; Cg uba-lía. (Cf. also Chir wu-riu; Guam umő-lía) (Cf. sets 61 and 226)

326. *uN 'quantity, many' > P ṹ-ha; Cu un-ni (1),'size; enough', un-tara 'much, very'; Cg ein-un-ka/han-un-ka (2),'very'. (Cf. also Blan ulu-sede [2]?; Bint a-un-kaba 'big')

327. *uN-das ~ *das-uN 'we' (=X-'I' ~ 'I'-X) > P ũ-tas; R nus-ula 'us'; Cg nas-uŋ. (Cf. also Misk won ?)

328. *ut (or *uk')(ša) 'sell' > P ú?-šä̆-h-; Cu uk-sa- (1),'give' (dissimilation?); Ch -uti-.

329. *wa(ka) 'under, down(ward)' > P -wak- 'under(side)'; Cg wa 'underling' (?), wei-ni (1),'lower'? (< *wɨ); Ch wa(ka) 'down, below', wa-sa 'downward', -wa- 'lower (v.)'. (Cf. Anda san-waka 'neck' [='head'-(1)]; Chim wá-r- 'lower'?)

330. *wa(N)da 'affinal relative' > P wã̃?a 'woman's father-in-law'; B wana 'mother-in-law' (PdF); Cg (h)wad-bi 'niece', (h)waz-i 'son-in-law', (h)waz-wi 'father-in-law'; Ch wa:za 'sister'. (Cf. also Guat fa-fára 'mother-in-law')

331. *waka 'mountain' > P wàha; Cg <g>weka (PdF)?; Ch wa(ka) (1), 'woods'. (Cf. also Tune wa 'woods [Sp. monte]')

332. *war(i) or *wal(i) 'bad, evil' > P war-kwa (1,2), brok-wár-ki 'sore'; R ŋal-ma 'hard, difficult'?; B bór-uk 'enemy' (< *war-uki :cf. Ch, Chir); Ch wa:ya 'dead, corpse', -wa:ya- 'injure, corrupt, harm', ‹g›way-ka 'evil', ‹g›way-oke 'devil, demon' (cf. B) (*r > Ch y is not well attested, but the high similarity between this last Ch form and the Talamanca [B, Chir] forms is strong evidence that all these forms are cognate). (Cf. also Sumu walásа 'devil, demon', na-wal 'devil, demon' [prob. < Nahuatl nagual]; Misk lasa 'demon' [cf. Sumu]; Chir bor-gi 'enemy'; Tiri mori-mos-kwo 'enemy'; Chan wali; Tune [k]waya-wano 'devil'?) (*k^{w}ar is also a possibility: cf. Ch, Tune)

333. *wara 'wood, woods' > P wàr-š̌- 'block or chunk of wood'; B kõ̃-bará 'forest'; Cu wala 'tree, stem, wood, wooden part'. (Cf. also Tule ču-wãra 'woods', čo-wala 'trees'; Tune pó-bara [2]; Sins bo-bwará [2])

334. *wa(N)s 'smoke' > P wã̀s-(ka); B bo:s-kale; Cu wa(:), wasaet 'smoking'. (Cf. also Gual ké-busa [?]; Chum ké-vsa [?])

335. *wa(N)wa or *ba(N)ba 'grandfather' > P -wã́wã́-ha; Cg -bama; Ch baba/vaba 'most worthy (honorific)'. (*ba[N]ba now appears to be the more probable form.)

336. *wic 'give' > P wi:š-; R mis-ma 'gift, present'; Cu wis-meta; Ch -witi-. (Cf. also Sumu wis- 'hit'; Guay bi-)

337. *widi 'deep' > P *wini-s- 'drown' (R); Cu wil-a (1),'depth'; Cg ⟨g⟩wini/⟨g⟩weini 'below'; Ch ⟨g⟩wi[s]- 'drown', -mis- 'sink' (?). (Cf. also Guam kašu-bili 'hole'?; Bint in-witi-kába 'low, short')

338. *yuk 'loosen, undo, spread out' > P yok- (1,2),'peel'; Cu yok- 'kill' (i.e. 'kill and skin'?); Ch yoke 'loose skin, peel', -ya- 'open, spill, uncover, spread'? (*u > Ch a is unprecedented). (Cf. also Sumu yak- 'open' [poss. < P yok- = [yɔk]]; Guat yuki 'knife' (L), yu:xe 'dry cacao' [v.] [i.e. 'open and spread out to dry'?])

Chapter 7 - Proto-Chibchan Correspondences

Following is a tabulation of the Proto-Chibchan phonemes I have reconstructed on the basis of the first-order cognate sets in the foregoing list, together with the corresponding recurring reflexes in the diagnostic daughter languages. Proto-phonemes and their reflexes have been indexed by set-number. Reflexes that do not appear in at least two cognate sets have not been tabulated.

Wherever possible I have provided environment-conditions for reflex segments. In most cases, however, this amounts to merely specifying that a reflex occurs in initial or intervocalic position, minimal environment-conditions that are often shared with other reflexes supposed to stem from the same proto-phoneme. In such cases there is not enough data on which to base more specific environment-conditions that might serve to explain the different reflexes. Further work on the Chibchan languages should eventually produce more and better explanations for the observed reflexes.

*p /#__: 148-159

/V__: 11(?),12,49,127,130,213

*p > P p/#__(148-158a)

w/V__V (49,127,130)

R p/#__(148,149,153a,158a,159)

b/#__(150-152)

b/V__V (11,12)

B p/#__ (148-152,154-156)

p/V__V (11,12,49,127)

Cu p/#__ (148,150-158a)

b/V__V (11,127)

Cg p/#__ (149,153,153a,156,158)

b/V__V (11,12,127,158a)

Ch f/#__ (151,153,155,157)

p/#__ (149,159)

m, m^{w}/#__ (149[?],153a[?],154,156,158-159[?])

b/V__V (11,49,127,130)

*b/#__: 15-42

/V__: 135,166,195-197,210,211,226

*b > P p/#__ (15,17-25,27,29-31,34,40)

b/#__ (26,28,35,37,38,41,42)

m/#__ (16,32,39)

w/V__V (135,166,195,197,211,226)

R p/#__ (16,18,21,24,25,27-30,39,40,42 [?])

b/#__ (23 [?],31,34 [?],39)

m/#__ (15,17 [?],34 [?])

b/V__V (26,195,211)

B b/#__ (15,17,21,22,24,25,27,30,32,34,38,39,
41,42)

m/#__N (16,35,36,40 [/__CVN])

w/V__V (166,210)

b/V__V (196 [?],211)

Cu p/#__ (16-25,27-30,32-36,39-41)

b/V__V (38,42,135,166,211)

w/V__V (195,226 [?])

Cg m/#__ (15-23,25,28-36,39-41)

b/V__V (26,41 [?],196 [v],197,211,226)

w/V__V (135,210)

Ch f/#__ (21,26,27,36,37,39,40,41 [f^{W}] [?])

m^{W}/#__ (18,22,34)

b/#__ (17,23,30,32)

b/V__V (197,226)

*t/#__: 191-222

/V__: 14,122-123,131,133,140,153a,236

*t > P t/#__ (191-212,214-222)

?/V__V (14,131,133,153a)

n/V+__ (193,208) (?)

R t/#__ (194,195,198,201[?],203[?],205,208,211,218)

(t/V__[14 (/__#),153a (__$\acute{V}$)])

B t/#__ (191,192,196[?],200,201,204a,205,209,211,213,

218-220,222)

$\check{j}$/#__ (203,214[?],219)

d/#__ (210,221)

L/V__V (14,122,133)

r/V__V (123,131)

Cu n/#__ (191,195,199,200,203,209-213,215-217,219)

t/#__ (192-194,196,198,201,208,221,222)

$\check{c}$/#__ (206,220)

d/V+__V (207,218)

r/__{#,C} (122,131)

Cg t/#__ (191,192,196,197,200,201,208-211,213-215,219,222)

Ch t/#__ (197,199,200[?],202,203,213)

$\check{c}$/#__ {u,i} (198[$\check{s}$],204a,206,207,212,216,217)

$\check{c}$/#__ (194,202)

t/V__V (120,140[?],236)

n/V__V (131,193)

*d/#__: 53-74

/V__: 4,5,32,48,55,70,79,98-100,107,114,117,163,181,204a

*d > P t/#__ (53-60,61[t ~ l],63-65,67,69-72,74)

y/#__± (66,68)

N > $\tilde{V}$/V__ (32,55,98-100,107,158a,163)

r/V__V (4,5,48,79,98,99,114,117,181,204a)

R t/#__ (53,56,57,65[?],69,70,72)

l/V__ (4,5,98,99,181)

n/V__V (100,107,158a)

t/V__# (32,70,98)

B d/#__ (55,56,60,61,67,68,72,74)

n/V__ (5,48,79,100,[> $\tilde{V}$],204a)

L/V__ (32,98,117)

Cu t/#__ (53,55-58,60,63,64,69,70,72,74)

l/V__V (5[11],32,70,98-100,107,114,158a)

d/V__V (4,55,71)

Cg n/#__ (53,54,55[?],56,57,59,60,63,66-74)

l/V__V (4,32,57-59,61,64,65[/r__V],70,98-100,107,117)

Ch s/#__ (54,58,60,67,68,72,73)

z/+__(V) (53,56,57,59,65,69[?],73)

n/V_V (99,100,107,114[?],181)

s/V_V (4,32,79,158a)

*k/#_: 96-123

V_: 7-9,27,45,50,57,63,66,71,72,75,78,82[~*k^{w}],102,103,118,
125,134,139,141[~*k^{w}],167,171,172,182,183,185,199-201,
205,206,211,212,218,219,232,233

*k > P k/#_ (96-123)

k/V_V (7-9,50,57,66,71,72,75,78,102,103,118,125,139,
141,167,171,172,183,185,199-201,206,212,218,219,
232,233)

š/i_ (27,63,134,205)

ø/V_w (~< *k^{w})(45,82,211)

R k/#_ (98-101,104,106-108,111,115,118,119,122,123)

k/V_ (7,27[/n_V],45,57,72,87,134,167,182,183,201,205,218)

B k/#_ (98,100,104,108,111,113-116,118-120,122)

ǿ/#_VCV́ (117,123)

k/V_ (9,27,45,50,63,66,72,75,78,82,134,167,171,182,183,185,
201,205,211,218,219,232,233[?])

ŋ/V_# (118,125)

Cu k/#__ (96-102,107-110,112-118,120,122)

k/V__ (7,9,45,71,72,75,82,102,118,141,172,183,199,201,206,
218)

g/V__ (8,27,57,63,78,139,167,182,200,211,212,219,232,233)

Cg k/#__ (96-104,107,108,111,113-115,118,119,121,123)

g/#__ (105,106,113[?],115[?],117)

k/V__ (9,50,57,63,66,71,72,75,118,172,183,200,201,211,
219,232,233)

g/V__ (8,102,103,125)

s̆/V__i (57,63,71[?],78,200,219)

Ch k/#__ (96,98-100,102,103,105-107,110-114,120,121)

g/#__ (109,111[?],122)

k/V__ (7,9,27,45,72,75,82,102,103,134,167,171,182,185,
200[?],206)

pk/V__w (141,172)

*k'/#__: 124-131

/V__: 46,56,76,109,147a,164

*k'> P ʔ~Ø/#__ (124,126-131)

ʔ/V__V (46,56,76[?],109,147a,164)

R k/#__ (124,126-130)

B k/#__ (124-131)

Cu k/#__ (124,126-128,130,131)

k/V__V (76,109,164)

g/V__V (46,56,147a)

Cg k/#__ (124,125,127,128)

k/V__V (147a,164)

Ch k/#__ (124,126-128,130,131)

k/V__V (46,76,109)

*k^w/#__: 132-134

/V__: 45(?),67,82(?),91,141(?),198(?)

*k^w> P w/#__ (132-134)

w/V__ (45,82,91)

k/V__ (67,141,198[kw])

R k^w/#__ (132,134)(91/V__)

Cu k^w/V__ (45,141,198 [gw])(133/#__)

Cg k^w/#__ (132,133,134[g^w])

Ch pkw/V__ (67,91,141)(134/#__)

*m/#__: 136-142

/V__: 83(?), 104,146,169(?)

*m > P m/#__ (136,142)

(ṽ)/V__ (83,104)

ṽ/V__V (146[?],169[?])

R m/V__V (104,169)(137/#__)

B m/#__ (136,139[?],140,142)

Cu m/#__ (136-142)

Cg m/#__ (136,140,142)

Ch m/#__ (136,138,141,142)

*n/#__: 143-147a

/V__: 10,35,36,47,86,92,93,105,152,153,184

*n > P n/#__ (143,145-147a)

(ṽ)/V__ (10,36[?],47,92,93,153,184)

n/V__V (35,86,105)

B n/#__ (144-146)

n/V__ (10,35)

(Ṽ)/V__ (36[?],47,152)

Cu n/#__ (143,145,147,147a)

n/V__ (36,86,92,93,152,153)

Cg n/#__ (145,147,147a)

n/V__ (10,35,36,47[~(Ṽ)],86,105,153)

(Ṽ)/V__ (47,184)

Ch n/#__ (143-146)

n/V__ (10,86,105,153,184)

ø(<*Ṽ)/V__ (36,92,93)

Cf. other nasalized medial segments (*N) in sets 16(?),33(?),100(?), 107(?),110-112,116(?),142,145(?),163(?),168(?),180(?),190,228-230.

*s/#__: 162-173

/V__: 42(~*c),64,106,159,202

*s > P s/#__ (162-167,169-173)

s/V__ (42,64,106,159,202)

R s/#__ (162,167-170,173)

s/V__ (42[?],106,159,202)

B s/#__ (162,165-169,171-173)

Cu s/#__ (162-164,166,167,170,172,173)
s/V__ (42,64)

Cg s/#__ (162-164,167-170,172,173)
h/V__ (64[?],106)

Ch s/#__ (162,165-168,170-172)
s/V__ (42,106,159,202)

*c/#__: 43-52
/V__: 25,26,62,83,94,97,217

*c > P s/#__ (43-52)
s/V__ (25,26,62,83,94,97,217)

R s/#__ (44,45,47[?],51,52)
s/V__ (25,26,62,83,94)

B c/#__ (44,45,47-49,51,52)

Cu s/#__ (43,45-47,51)
s/V__(25,97,217)

Cg s/#__ (44,47,51,52)

z/#__ (43,50)

s/V__ (25,26,97)

Ch t/#__ (43,46,48,49,51)

t/V__ (62,94,217)

*s̬/#__: 174-189,190(or *s)

/V__: 87,207(or *c),235

*s̬ > P s̬/#__ (174-188,190)

s̬/V__ (87,207,235)

R s/#__ (177,180-183,187-190)

B c̬/#__ (174,176,180,185)

s̬/#__k (182,183)

s̬/#__ (177,186[?],190)

Cu s/#__ (174,177,178,180,182,183,186,190)

c̬/#__ (186[x c̬],188)

c̬/V__ (207,235[~s])

Cg š/#__ (174,176,177,179,182,183,187)

č/#__ (178,180)

ž/#__ (175,186)

Ch č/#__ (174,180,190)

š/#__ (177,178,182,189)

s/#__ (175,179,181,185)

z/#__ (181,184)

s/V̇__ (87,235)

*h/#__: 75-84

*h > P Ø/#__ (75-78,81,82,84)

ʔ/V+__ (80,83)

R ŋ/#__ (80,81,83,84)

Ø/#__ (79,82)

B h/#__ (75,77,80,82)

Ø/#__ (76,78[?],79[<ˣh])

Cu Ø/#__ (75,76,78,80-82,84)

Cg h/ǂ__ (76-78,80-84)

Ch h/#__ (75,76,79,82)

Ø/#__ (80,84)

*h^w/#__: 85-87

*h^w> P w/#__ (85,86)

R ŋu/#__ (85,87)

Cg hw/#__ (85-87)

*r/#__: 160,161

V__: 13,18,19,28,37-41,74,84,95,119,170,187,213,214,220-222

*r > P r/#__ (160,161)

r/V__ (13,18,19,28,37-41,74,84,95,119,170,187,213,214,220-222)

R r/V__ (13,18,28,84,95,170,187)

l/V__ (39,40)

B r/V__ (18,38,39,41[~l],74,213,220,222)

Cu l/#__ (160,161)

l/V__V (13,28,41,74,84,95,170[~r])

r/V__{C/#} (18,19[~l],37-39,213,221,222)

r/V__V (40,170[~l],220)

Cg 1/V__ (13,19,38-41,74,84,119,170)

ž/i__ (28,187,213,214)

Ch s/V__ (37,40,84,119,170,213)

z/V__ (13,18,39,41[?])

*1/V__: 17,34,77,85,119,120,126,129,147a,173,186,227

*1>P r/V__ (17,34,77,85,119,126,129,173,186,227)

(Ṽ)/V__ (120,147a)

R 1/V__ (17,85,119,126,129,227)

B L/V__ (17,34,77[ˣ1],120,126,129,173[ˣ1])

Cu 1/V__V (17,173,186[~r],227)

r/V__{#,C}(34,85,120,126,147a[~1])

Cg 1/V__ (17,34,77,85,119,147a,173[~r ?],186)

Ch s/V__ (17,120)

*w/#__: 231-236

/V__: 58,68,230 (/N__)

*w > P w/#__ (231-236)

w/V__ (58,68,230[*Nw > w̃])

B w/#__ (231,232,235)(68/V__V)

Cu w/#__ (232,233,235)

w/V__ (58,230)

Cg w/#__ (232-235)(68/V__V)

Ch v/#__ (234,235[w],236)

w/V__ (58,68,230)

*i: 11-13,21-28,48,49,59-64,67,86-93,108-112,133,134,143,144,
154-157,161,165-167,177-184,203-207,211,227,234-236

*i > P i (12,13,21-27,28[2],48[2],59-64,67,86-93,108-112,133,
134,155-157,161,165-167,177-180,181[2],182,183,203,
205-207,211)

e (11,49,86,143,154[?],184,204a,234-236)

R i (11-13,21,24-28,60,62,91,108,111,134,
167,177,180-183,203,205,227)

B i (12,21,23,25,27,48[2],49,60,61,88-90,108,111,134,
144,156,161,165-167,180,203)

I (11,24,211)

e (22,133[?],154[?],155,177,204a,236)

Ø/[C]—[C] (63,182,183,205)
[-vcd] [-vcd]

Cu i (13,21,23-25,27,28[2],60,63,64,86[2],89-93,108-
110,112,133,143,155-157,166,167,177,180,182,183,
203,204a,206,207,227[?],235)

e (11,22,154[?],161,178,211)

Cg i (11,13,21-23,25-27,28,59-61,64,67,86[2],87,89,
108,134,156,167,177,178,180,182-184,211,234)

i: (<$\bar{1}$>) (28,63,133)

ei (12,24[?],111[?],179)

Ch i (21,27,48,60,62,88,89,91-93,109-112,143,156,157,
165,167,177-182,184,206,207,234,236)

i: (<ihi>) (49,59,155,204a)

$\dot{\imath}$: (13,87,111,112,154[?],203)

e (22,23,48[?],86,235)

*$\dot{\imath}$: 29,44[?],50,65-68,79,94,95,113[?],114,145,146,158,168-170,
185-187,208-214

*ɨ > P e (29,65,68,95,114,145,146,158,168,169,186,213,
214)

i (50,67,113,210,212)

u (66,170,187,211)

Ø (79,94,185,208)

a (94,209)

R ai (29,79,168,169,209)

i (65,94,187,208)

e (95,170)

B e (29,50,67,79,94,114,145,146,168,209[~i],213,
214)

i (68,158,168,186,209[~e])

Ø/[C, -vcd]___[C, -vcd] (66,185,211)

Cu e (95,158,186,209,212,213)

i (29,114,208)

a (113[?],210,211[?])

Cg ei (29,44,50,94,114,145,158,168,169,187[~e:],208,
209,213,214)

i (66,67[?],68[?])

e: (<ē>) (65,186,187[~ei])

u < *ɨw (68,210)

Ch ɨ (<y>) (65,113,145,146)

i (114[?],168,212)

u (67,68)

a (94,213)

*u : 30-42,51,52,66,69-74,80-84,115-123,128-131,141,142,147,147a,
159,170-173,188-190,212,215-230

*u > P u (31,34,36,40-42,51,52,66,69-74,83,84,115-
116,118,120,122,128-131,141[u:],142,147a,
159,170-173,188,190,215-218,220[~o],223,
225,227[2],228)

o/_r+ (37,39,117,119,121,123,221)

o/_N (32,35,81,158a,229)

o/_(k)# (30,31,80,189,212)

o (38,147,219,220[~u],222,224)

R u (30-34,39,40,42,51,52,69,70,72,74,80-84,115,
118,119,122,123,128-130,158a,159,188-190,218,
224-228)

B u (32,34-36,38-42,51,52,69,72,74,80,81,117,119[~U],
122,123,128,130,170,172,173,189,190,218,220[~U],
222-224,228)

U (30,31,66,82,119,120,219,220)

o (115,116[?],118[?],129[2],131,142,171[?],221)

Cu u (30[~o],32,34,36-42,51,69-74,80-82,84[2],115-116,
118,122,128[u:],131,141,142,147,147a,158a,172,
173[~o],188,190,212,215[u:],216[u:],217,218,
220,221,222[u:],224-227,229,230)

o (30[~u],117,120,173[~u],219,228)

Cg u (31-36,38-40,41[2],51,52,66,69[u:],70[2],71,
72[u:],74,80-83,84[2],115,117-119,121,123,128,
147,147a,158a,170,172,173,190,215,219,222,224-226,
228-230)

Ch u (32,36,40,51,52,72[u:],74[u:],80,82,84,120,122,
128,130,141,159,170-172,189,190,212,216,217,223,
226)

o (30,42,69[?],119,131,142,228)

i:/f (<*b)__ (37,39)

wi (41[?],158a[?])

*a : 1-19,23,26,43-47,49,53-58,61,75-78,82,85,91,96-107,109,113,114,
117,123-127,132,135-140,144,145,147a-153a,160,162-164,169,174-176,
182,185,191-202,226,230-233,235,236

*a > P a (1-7,8[2],9-19,23,26,43-47,49,53-55,58[2],61,
75,76,77[2],82,85,91,96-98,99[2],100,102-104,105[2],
106,113,114,117[?],123[?],124,125,126[2],132,135[2],
136-140,144,145,147a-150,152-153a,162-164,169,174-176,
182,185,191-194,196,197[2],199,200,201[2],202,226,
230-233,236)

e < *a(?)i (56,101,151,176,198,235)

o < *au ~ *aw (57,78,107,127,195)

R a (2,4,5[2],6,7,12,13[?],14-18,23,26,44,45,47,53,
56-58,85,98-101,104,106,107,123,124,126[2],127,
132,137,148-152,153a,162,163a,169,194,195,198,
201[?],202,231)

B a (3,5,9[2],10-12,14,18[?],44,45,47,49,58,75[2],76,
77[2],98,104,113,117[?],123,125,126[2],132,135,
139,140,144,148-150,152,169,174,185,191,196,200,
231-233,235,236)

o/w (136,192,226. Cf. also 166)

o (17,55[2],56,61,100 [< a(n)u ?],124)

e < *ai (6,176)

Cu a (1-4,5[2],7,8,9[2],10,11,13,14,16-19,43,45[2],46,47,
53,55[2],56,75[2],76,82,85[?],96-98,99[2],100,102,
109,113,114,117,124,126,127,135,137-140,144[?],145,

147a,148,150-153a,162-163a,164[2],174,191-193,196,
199-201,226,230,232,233[2])

o < *au ~ *aw (57-58,78,107,194,195)

e < *ai (6,91,101,160,198. Monophthongization does <u>not</u> take place in sets 10,138[?],151)

Cg a (1,2,4,8[2],9[2],11-13,15-19,26,43,47,53-57,58[2],
61,75[2],76-78,82,85,96-98,99[2],100-107,113[?],
114,117,123-125,127,132,135[2],136,137[?],140,147a,
149[?],153,160,162,163[2],164[2],174-176,191,192,
196,197[2],200,201[2],202,226,230,232,233[2],235)

e < *ai (6,10. But <u>not</u> in 16,101)

Ch a (1-3,7,13,15,17,43-45,46[2],49,53,54,56,58[2],75,
82,91,96,103,105[2],106,109,117,138,140[?],144,145,
149,153,153a[?],162,174,175,191,194,197-199,
202,226,230)

±/k (9,75,76,98-100,124,126,127,185. Many exceptions.)

± (4,11[?],18[?],197)

e < *ai (10,99[?],193,198,235. But <u>not</u> 138.)

o < *aw ~ *au (9,57,107. Cf. 185: o < *wa ?)

(i ? [16,102])

Chapter 8 - The Phonemes of Proto-Chibchan

On the basis of sound-correspondences observable in the cognate sets in Chapter 5, the following inventory of phonemes can be reconstructed for Proto-Chibchan:

*p	*t	*c	*k	*k'	*k^w
*b	*d				
*m	*n				*$ŋ^w$(?)
	*s	*š			*h
	*r	*l			
*w		*y			
		*i	*ɨ	*u	
			*a		

There is also evidence for reconstructing stress-accent in a number of cases (e.g. sets 11, 41, 212, etc.); and the existence of phonemic tone or pitch-accent in a few of the daughter languages may be evidence for phonemic tone-phenomena in the proto-language also. There is also abundant evidence throughout the comparative data that a phonemic vowel-length distinction existed in the proto-language. The data is often so ambiguous or contradictory, however, that I have not attempted to firmly postulate which proto-vowels are long and which short in the PCh reconstructions given here. Certainly this problem will provide ample and interesting fodder for later studies. (In

order to explain later sound-changes in Paya, however, in Chapter 9 I have had to postulate specific vowel-quantities at some earlier stage of Pre-Paya, without rigorous corroborational reference to comparative facts from other Chibchan languages. In most cases these postulations are supported by the comparative evidence.)

The inventory given above, and the assignments reflected by the reconstructions in section 5.2 (and 5.3) represent what I consider to be the optimal, most probable hypothesis formulable on the basis of the information available. In most cases where a proto-phoneme is reflected by two or more phonemes in a diagnostic daughter-language, I have tried to propose reasonable explanations for the variation. In some cases, however, the best I could do was to simply list the variant reflexes without explanation. I hope that further research will clarify these problems.

A number of problems arose in deciding exactly how many and which proto-phonemes to reconstruct, and which sets of reflex-correspondences could be subsumed under the same proto-phoneme. Some of these problems are discussed below.

8.1 *p : *b. B and Cg are the only languages in the diagnostic set that more or less consistently reflect the *p : *b distinction that I have set up in the proto-language. Because of this, in sets where forms from B and Cg non-contradictorily point toward one or the other of the proto-phonemes, that one has been postulated in the reconstruction. (In a number of cases the Ch reflex provides

additional support for the assignments, though the Ch reflexes are not quite as regular as those in B and Cg.)

In only two sets do the B and Cg reflexes contradict each other: 31 (B p, Cg m) and 158 (B b, Cg p). In set 31 the particular environment of the B p reflex (/h__) provides an explanation for the anomalous devoicing of *b, though, as suggested by the two P forms, two separate roots, *puk and *buk, may be involved here. In set 158 I have somewhat arbitrarily given more weight to the Cg p reflex, on the basis of the assumption that the change *b > p would be less likely (and more anomalous) in a language like Cg, in which consonants have tended to weaken historically, than the change *p > b would be in a language like B, which has tended to conserve the voicing-values of the proto-language. That is, the assumption of *p results in less abnormal reflexes in the two daughter languages. Through recourse to distinctive feature-values we can make this procedure even more rigorous. The normal and expected relevant feature-values of the reflex consonants are,

for *p: B $\begin{bmatrix}-\text{vcd}\\-\text{nas}\end{bmatrix}$, Cg $\begin{bmatrix}-\text{vcd}\\-\text{nas}\end{bmatrix}$; and for *b: B $\begin{bmatrix}+\text{vcd}\\-\text{nas}\end{bmatrix}$, Cg $\begin{bmatrix}+\text{vcd}\\+\text{nas}\end{bmatrix}$

The observable feature-values (B $\begin{bmatrix}+\text{vcd}\\-\text{nas}\end{bmatrix}$, Cg $\begin{bmatrix}-\text{vcd}\\-\text{nas}\end{bmatrix}$) differ by two feature-values from those expected from *b, but by only one feature-value from those expected from *p, and on this basis (and in the absence of an alternative hypothesis based on other factors) *p is the more reasonable choice. This is consistent with the principle of

regularity of sound-change: the observed reflexes are less irregular if we assume them to have stemmed from *p.

There are also a few sets (19, 28, 42, 148, 153, etc.) in which either a B form or a Cg form is missing. In these cases the available Cg or B reflex is used as the principal criterion in deciding whether *p or *b is the proper reconstruction. Most of these involve *p and include half of the sets in which #*p has been reconstructed. (*p was apparently rarer than *b in initial position, but surely the evidence is good enough to warrant its inclusion in the phonemic inventory of Proto-Chibchan.)

In Cu the *p : *b distinction has been completely neutralized, i.e. the two proto-phonemes have merged, at least in initial position. In P there has been a partial merger, but a few reflexes of *b have mysteriously remained b in the modern language. These could be the result of a later split, after the total merger of *p and *b, but there isn't sufficient evidence to support this hypothesis.

The situation in Ch is chaotic, with p, f, m, and m^w as possible reflexes of initial *p, and all of p, b, f, f^w, m and m^w as possible reflexes of initial *b. This confusion may merely reflect my open-minded and lax criteria for proposing a Ch form as a member of a cognate set, or may in fact be the result of an intricate set of sound-changes that took place in the language. Admittedly, many of the Ch forms involved are questionable or tentative, but the only way around this problem would be to exclude a Ch form from certain sets. On the chance that such variant forms might later be conclusively shown to be cognate, I have decided on the procedure used here. The

change {*p, *b} > Ch m/__VN will explain the Ch m reflexes in sets 15, 16, 153a and 158a. (This rule fails to operate in sets 36 and 153, however.) In set 22 the Ch m reflex is almost certainly the result of analogy with the m in the related pronoun in set 15.

It is entirely possible that, as Wheeler has proposed, there was only one bilabial stop in PCh. (Comparative evidence from the related Uto-Aztecan family, for which only *p has been reconstructed for the proto-language, would tend to support this hypothesis.) The observed oppositions of p : b in B and p : m in Cg (which, as I have shown, closely align with each other) then could be explained as having arisen through a split of the single bilabial PCh phoneme at a stage of development when there existed some intermediate Pre-B-Cg language common to both B and Cg, but by then independent of (most of) the other Chibchan daughter languages. In order to convincingly propound this hypothesis it would be necessary to show that indeed B and Cg are members of the same sub-group within Chibchan, a conclusion that is far from obvious at present. In fact, as I have already noted, McQuown's (admittedly derivative and suspect) sub-classification assigns B and Cg to entirely different sub-groups. My own relatively superficial consideration of the problem of sub-grouping has led me to believe that the closest sister languages to Cg are Cu and P, which, if true, would lead us to expect evidence of a similar bilabial split in those languages, and such evidence is not observable. These facts, plus the fact that the conditions for such a split in 'Pre-B-Cg' seem impossible to specify, make the *p : *b hypothesis the better explanation for the observable phenomena. (The single proto-bilabial

hypothesis would, in the face of the *t : *d opposition I have set up, also introduce an even greater skewness among the PCh stop-phonemes than exists with my present analysis, though possibly this could be resolved by assigning all cases of *d to *l.)

8.2 *t : *d. As with the *p : *b opposition, *t and *d have been set up as independent phonemes primarily on the basis of the reflexes observable in B and Cg. In this case, however, Ch also provides strong, non-contradictory (though somewhat ambiguous) supporting evidence for the reconstructions.

*t > Ch c /#__{i,u} operates without exception in the corpus of my first-order sets. (*t > Ch c/#__a in sets 194 and 202 is so far unexplainable.) The fact that this sound-change operates before high vowels except ɨ is systematic evidence that perhaps the correct value for the non-low central vowel in Ch (and perhaps also in PCh) is ə, rather than ɨ. Then the sound-change could be succinctly expressed as

$$*t > [+hi] / \_\_ \begin{bmatrix} V \\ +hi \end{bmatrix}$$

in Ch. (Linking-conventions would change [+ant] to [-ant].)

The split in Cu of *t > t ~ n/#__ is well supported by the comparative evidence, but I have not been able to concoct a hypothesis to explain it. The idea that perhaps certain morpheme-initial stops were weakened when they occurred word-medially due to the presence of possessive prefixes (in the case of nouns) or object prefixes (in the case of verbs) works in only a few of the cases here, e.g. 191. *ta > Cu na-ga/na-i 'foot', 209. *tɨ-ka > Cu ne-ga 'house, field'

and 215. *tu > Cu nu: 'milk, breast', which are typically inalienably possessed; and 200. *tak > Cu nak- 'grind', a transitive verb. But this explanation does not seem applicable to such forms as 211. *tɨ̇kɨ̇bi > Cu nag(u)be/naibe 'snake', 213. *tɨ̇r > Cu ner-kwa 'six', or 195. *tab > Cu *naw > no 'leave, escape'. Later research should help clarify this problem.

Quite obviously, the situation with the intervocalic dental stops and laterals (*t, *d, *r, *l) is a complete mess. In my highly tentative analysis there are so many near inconsistencies, and so many hypotheses that may prove to be too far afield, that the problem should be considered one in need of new methods of analysis. The problem is that of assigning four discrete category-values to sets of phenomena that range quasi-continuously over some n-dimensional field of values. In those cases where the ambiguity is excessive, I have suggested alternative reconstructions (e.g. 133. *k^{w}it ~ *k^{w}id 'dance'; 98. *kad ~ *kal 'tree'). Certainly a much more painstaking analysis, involving many more of the Chibchan daughter languages, will be necessary to resolve these ambiguities. Indeed, in a number of cases I have allowed data from non-diagnostic languages to influence my decision as to which dental to propose in the reconstruction (e.g. 99. *kada 'bone', in which the Saba and Bari forms both point to *d, while the diagnostic forms alone would ambiguously indicate *d ~ *l).

There is abundant, though not conclusive evidence that *l (for which I have been able to tentatively reconstruct only a single form in which it occurs morpheme-initially) was in fact a medial allophone of *d. (Similar close relationships between [d] and [l] can be

observed synchronically in Cg and between dialects of P.) However, because of the complexity of the situation, the assignation of my *l reflex-sets to *d would make explanation of the observed changes extremely difficult, if not impossible. Therefore both *d and *l have been reconstructed as medial consonants. Later findings may confirm or disprove this assumption, but it is methodologically more efficient than, say, my grouping of the similarly confusing *p : *b medial reflexes into only two groups.

8.3. *k : *k'. Because of the relatively large number of sets (14) in which a PCh velar stop becomes either ? or ∅ in P, I have decided to set up a second unrounded velar stop in the proto-language. There is, in fact, not enough evidence from the other daughter languages to justify strong belief in such a hypothesis, but because this presentation is specifically oriented toward explaining developments in P, and because I have not found a way to explain the changes as the result of a split at some stage of Pre-P (even though this may turn out to be the case), I have allowed myself this methodological procedure. Assuming, for the sake of argument, that such a second velar stop did exist in the proto-language, we might venture some guesses as to what its phonetic nature might have been. (The symbol --*k'-- that I have used here is merely for convenience and is not necessarily meant to imply that I believe the phoneme to have involved [k'], i.e. glottalized [k].) The two most obvious possibilities are [k'], and [ḳ] or [q], a backed velar stop. The latter possibility seems the better guess on the basis of systemic considerations at the

proto-language level, since (in my analysis) no other glottalized segments have been postulated. Also, the fact that the Ramos-list provides evidence that, at least in some cases, *k' passed through an intermediate h stage in P (sets 125, 128 and 129), further supports the [q] hypothesis. Given the similar, but less common, changes *p > P ʔ (in set 12, only) and *t > ʔ, a case, albeit extremely tenuous, could be made for the existence of a complete glottalized stop series in PCh, which was neutralized everywhere but in P.

8.4. *g ʔ It should be noted here that in three sets (182, 191, and 209) there is consistent evidence from P and Cu for the existence of a third plain velar consonant. The correspondence P -h-: Cu -g- which is exhibited in these sets may point to *g or *x. The relatively large number of g reflexes in Cu (medial) and Cg (both initial and medial) may also be evidence for *g, but there is very little correlation between the g reflexes in these two languages. Medial -g- occurs in both languages only in set 8. In set 125, the B -ŋ# reflex correlates with Cg -g-; and in set 117 B Ø correlates with Cg #g-. (The Chum form in this set also includes a g reflex.) In five sets Cu -g- corresponds to Cg -š-/V_i (57, 63, 78, 200, and 219). It is difficult to decide how to interpret these phenomena, especially given the fact that these five occurrences of Cg -š- account for all but one of the postulated instances of *k > Cg š. However, the fact that in four of these cases the Cg forms in š are morphophonemic variants of verb-stems that exhibit k before the vowel a makes the Cu g : Cg š correspondence less trustworthy as evidence for *g.

Because of the limited and confusing nature of this picture, I have decided not to reconstruct *g for the proto-language. There still remains, however, the problem of the P -h- : Cu -g- correspondence, which seems to relate directly to the synchronic morphophonemic alternation k ~ h in P, for which there is little other historical evidence than that contained in these sets. P -h- in set 182 seems to be a case of the non-iterative aspect-marker (cf. sec. 3.1.3), and P -há in sets 191 and 209 is most easily interpreted as the post-vocalic variant of the absolutive suffix. *k > P h/V__V was not tabulated in Chapter 7 because two of these examples of *k were not definitely reconstructible at the level of the proto-language. I have included this change as one of the historical sound-laws governing developments in P, however (cf. p. 205).

8.5. *ŋ̲ʷ. I have tentatively reconstructed *ŋ̲ʷ primarily on the basis of the phenomena exhibited in the second-order sets 294 through 299. Evidence for medial *ŋ̲ʷ also appears in the first-order sets 146 and 169. As is the case with m ~ ŋ̲ʷ in the related Uto-Aztecan languages, *ŋ̲ʷ is explainable in many of these cases as the intervocalic allophone of *m; however, the initial correspondence P w̃ (or/ŋ̲ʷ/): R ŋ̲ : Ch w ~ m̲ʷ, which is observable in sets 294(?), 298 and 299, is evidence that *ŋ̲ʷ may have contrasted with *m in initial position in the proto-language and thus had phonemic status there.

8.6. *N. Sets 100, 107, 153a, 158a and 163 pattern together with respect to the nasalized reflexes of the medial consonant (or cluster) in P, R (100, 107, 158a), Ch (100, 107) and Cg (158a, 163). The data

seems to suggest the presence of an additional nasalized element in the proto-forms for these sets, which, accordingly, I have indicated with ⟨N⟩ in parentheses.

In certain other cases I have used the symbol N to indicate an ambiguous nasal proto-consonant (*m, *n or *ŋ^{w}): e.g. sets 168, 176, 180, etc.

8.7. *r: *l. The problematic nature of medial dentals has already been discussed somewhat in section 8.2. (q.v.). Lateral and flapped liquids contrast in intervocalic position in only two of the diagnostic languages: R and B (where *l > L).[15] Thus these languages provide the only more or less consistent evidence for deciding whether to reconstruct *r or *l in those sets where a proto-liquid is indicated by the reflex-forms. In only two sets is the data wholly in favor of *l (17, 126). In five additional sets (34, 77, 85, 120, 227) one or the other diagnostic reflex of *l is present, and *l is reconstructed on this basis. In a few other sets, the reflexes in R and B provide contradictory evidence (39, 170, 173). In these cases, data from languages outside the basic diagnostic set has been used in making the final decision between *r and *l.

In set 40. *buru(N) 'ashes', both the R and B reflexes point to *l, however I have decided to reconstruct *r on the basis of (1) the anomalous Cu r reflex, (2) the evidence from supplementary languages, and (3) the similarity of the reconstructed form to the root for 'burn': *bur (38).

Chapter 9 - Historical Sound-Change in Paya

9.1. The following sound-changes can be postulated as having taken place during the development of Paya from Proto-Chibchan. As can be seen, many (or most) of these 'sound-laws', as I have formulated them here, are irregular in various ways and to varying degrees. In some cases I have been able to propose explanations for observed irregularities--either non-operation of a sound-law where we would expect it to apply, or its apparent operation in an environment outside its specific domain. In many cases the environment-conditions I have specified are obviously too restricted or not restricted enough, but the available data does not permit more specific statements that would satisfy both the requirements of conformity to the observed and hypothesized facts and adherence to some reasonable principles of phonological generalization.

Because of the pioneering nature of this work, however, I have not concerned myself yet with trying to explain deviations and anomalies that do not seem to pattern in some generalizable way. I have tried to discover and state the most obvious and important tendencies observable in the available data. The details of the deviant patterning have been left for later investigation. The factors of analogy and borrowing are undoubtedly involved in many of the exceptional cases, but it will require much more comparative work in order to come up with reasonable explanations for all of the individual discrepancies.

Following the list and discussion of the historical sound-laws is a more succinct presentation of the emerging picture, with consideration given to the possible ordering (or relative antiquity) of the sound-laws, and with sets of specific rules collapsed into more general statements wherever it seemed reasonable.

9.2 List of changes

1. *p > *b(>w)/V́__(V) : $*\begin{bmatrix} C \\ +ant \\ -cor \\ -vcd \end{bmatrix} > [+vcd] \; / \; \begin{bmatrix} +voc \\ -cons \end{bmatrix} \_\_ \left(\begin{bmatrix} +voc \\ -cons \end{bmatrix} \right)$

e.g. *cipa > *ciba > sè:wa 'yellow' (49)

*k'ap > *k'ab > *aw > ò:- 'sleep' (127)

*k'upa > *k'uba > -(?)ù:wa 'tongue' (130)

This rule feeds rule 4 (*b > w/V́__V), q.v.

As noted in an earlier synchronic section (3.1.1), a morphophonemic p ~ w alternation still exists in the modern language, and may ultimately be related to or a result of this historical rule. In the examples above, however, we can see that historically *p > *b > w was a purely phonological process in apparently monomorphemic stems and did not depend on grammatical conditioning.

2. *b > p/+__ : $*\begin{bmatrix} C \\ +ant \\ -cor \\ -nas \end{bmatrix} > [-vcd] \; / \; +\_\_\_)$

e.g. *ba > pa- 'your' (15)

*bi- > pi- Interrogative (21)

*bɨ > pé 'just, only' (29)

(and also in sets 17-20, 22-25, 27, 30-31, 34, and 40)

This is the most normal Paya reflex of *b in initial position. A number of stems in the first-order sets have retained morpheme-initial b-, however. In two of these the b is never word-initial: -b(i)ri 'edge' (28), an inalienably possessed noun always preceded by a possessive prefix; and -b(u)ru 'big' (41), an adjectival root occurring (in my corpus of data) only as the second member of certain compound nouns. A third reflex-form exhibiting b < *b occurs alternately as bisa or ka-bisa 'white, clean' (26); and this second derived form, in which the b occurs medially, may have provided sufficient analogical pressure to keep bisa from becoming pisa. The remaining cases of *b > b are so far without the beginnings of explanation.

3. *b > m/#__VN : $*\begin{bmatrix} C \\ +ant \\ -cor \\ +vcd \end{bmatrix} > [+nas] / \#\_\_V\ [+nas]$

e.g. *baiN > mãyh 'three' (16)

*bud-had > *bun-han (by rule 9) > mõ-ʔãʔ 'beeswax' (32)

*bun > *mũ > -(ʔ)ũ-h- 'sister' (by rule 15) (36)

(Exception: *bun > bòn-i 'gray' [35] [a borrowing ?])

4. *b > w/V__V : * $\begin{bmatrix} C \\ +ant \\ -cor \\ +vcd \\ -nas \end{bmatrix}$ > [-cons]/ $\begin{bmatrix} +voc \\ -cons \end{bmatrix}$ __ $\begin{bmatrix} +voc \\ -cons \end{bmatrix}$

e.g. *taba > -tawa 'neck' (197)

*tɨkɨbi > *tɨkɨwi >> tuwi 'snake' (211)

*laba > a?-lawa 'testicle' (135)

(and also in sets 166, 195, 226.)

Rules 1 and 4 are probably part of the same medial weakening of consonants that is also observable in rules 8 and 10 (q.v.). Rules 1 and 4 might be collapsed into a single historical law (the labial part of some more general law of weakening):

$$*\begin{bmatrix} C \\ +ant \\ -cor \\ -nas \end{bmatrix} > \begin{bmatrix} -cons \\ (+vcd) \end{bmatrix} / \begin{bmatrix} +voc \\ -cons \end{bmatrix} \_\_\_\_ \begin{bmatrix} +voc \\ -cons \end{bmatrix},$$

which is the most efficient expression from the phonological theory point of view; or we might alternatively hypothesize that the change *p > b/V__V preceded the later further weakening of medial b, i.e. that rule 1 fed rule 4 historically.

5. $$*t > ?/\acute{V}(N)\_\_\begin{Bmatrix}+\\V\end{Bmatrix} : *\begin{bmatrix}C\\+ant\\-cor\\-vcd\\-cont\end{bmatrix} > \begin{bmatrix}-cons\\-voc\\(+low)\\\begin{pmatrix}-ant\\-cor\end{pmatrix}\end{bmatrix} /\acute{V}(N)\_\_\begin{Bmatrix}+\\V\end{Bmatrix}$$

e.g. *k'ut > ú?- 'wild cat' (131)

*k^{w}it > wì?- 'dance' (133)

*paNt > pã́?-pe:- 'hang' (153a)

*at-lak^{w}a > á?-lawa 'testicle' (14)

This is the dental component of a more general process through which the voiceless stops became glottal stops in certain medial environments. The rule has many exceptions, probably due to an inadequate specification of the conditioning environment. The accent indicated in the environment-condition here is ambiguous as to its interpretation, since neither stress-accent nor pitch-accent can be conclusively reconstructed for the proto-language. The accent corresponds to marked pitch-accent in modern Paya, on the basis of which, in my analysis, phonetic stress-accent can be predicted.

The corresponding bilabial change, *p > ?, can be seen in the corpus of my first-order sets only in set 12. *api > P à?i 'squash'. The same change seems to be involved also in the second-order set 228. *(h)apu > P a?ṹ 'corn', though the accent is contrary to what is expected.

The corresponding velar change is represented by the medial reflexes of what I have reconstructed as *k', and is described in rule

12. The general rule for the entire plain stop series (which, because of the high degree of irregularity involved, should be thought of, for the time being, as a 'tendency') can be expressed as:

$$* \begin{bmatrix} C \\ -vcd \\ -cont \end{bmatrix} > \begin{bmatrix} -cons \\ (+low) \end{bmatrix} \; / \; \acute{V} \_\_ \begin{Bmatrix} + \\ V \end{Bmatrix}.$$

6. *d > t/+__ : $* \begin{bmatrix} C \\ +ant \\ +cor \\ -nas \end{bmatrix} > [-vcd] \; /+\_\_$

e.g. *dauk > *tauk > tò:k- 'enter' (57)

*aka-di > aka-tí-š- 'close' (59)

*ar-dɨ > ar-te- 'want' (65)

*dic > tís 'a little' (62)

This is part of a more general devoicing of morpheme-initial voiced stops:

$$* \begin{bmatrix} C \\ +ant \\ -nas \end{bmatrix} > [-vcd] \; /+\_\_.$$

(Cf. rule 2 for examples of *b > p/+__.)

The only exceptions to this rule in the corpus of first-order sets are the two examples of *d > y/__ɨ (rule 7 below). This change must be assumed to have taken place before the devoicing of the remaining cases of *d (i.e. rule 7 preceded rule 6 historically).

7. *d > y/#__ɨ

e.g. *dɨku > yukú 'meat' (66)

dɨwi > yìwi/yùwi 'moon' ('sun') (68)

These are the only examples I have found of this sound-change, and there are apparent exceptions (e.g. *dɨkʷi > tiki-mi 'bat' [67]. The failure of rule 7 to operate here may be evidence for reconstructing *i rather than *ɨ in this case.) As I noted earlier (p. 63), y often exhibits a slight [+cons] onset, [ᵈy], in the pronunciation of some speakers. This may in fact be a residue of *d. Similar palatalization of *d in other reflexes of the two proto-forms above may be evidence for a palatalized allophone at the proto-language level, or, indeed, for a separate palatal or palatalized proto-phoneme (*dʸ?): cf. *dɨku > B čkù-; Chum/Gual čagu-li; *dɨwi > Sins yíbi-ra; Maro ǰʷí.

(Set 268, in the second-order listing, also seems to exhibit this change: *dɨri > P yari 'truly'; and here again the highly anomalous y in Cu yeri points to something different than merely [d] at the PCh level. More examples will be needed to resolve this problem. It is probably also important to note the intimate relationship between d and y among the related Uto-Aztecan languages. What has been reconstructed as PUA *y has d reflexes in a number of daughter languages. [cf. Miller 1967, p. 8.])

8. *d > r/V__ $\left\{\begin{matrix}+\\V\end{matrix}\right\}$

e.g. *ad- > ar- Object : 'something, it' (4)

*cidi > sã̀-sirí 'brains' (='head-insides') (48)

*hid-á > -h(a)rá 'liver' (79)

*kad 'stick' > kár 'piece of wood' (98)

9. $\left\{\begin{matrix}*d\\ *l\end{matrix}\right\} > n(>(\tilde{V}))/V\_\left[\begin{matrix}-cons\\ -voc\end{matrix}\right]$ (by rule 18)

e.g. *kad-huk^{w}a > *kad-(u)wa > -kã́:wa 'bark' (82)

*kada-ka > *kad-ha > -kã́-ha 'bone' (99)

*bal-kaba > *pal-(k)wa > pãwa 'red' (18)

This rule, as given, is the best explanation I have so far been able to concoct for the observed $\tilde{V}$ reflexes of *V$\left[\begin{matrix}C\\ +ant\\ +cor\\ +vcd\end{matrix}\right]$ sequences in P. While it seems rather ad hoc and strained in some cases, it is nevertheless not inconsistent with universal principles of phonological change. The problematical nature of the reflexes of medial dental consonants in the entire diagnostic set (and indeed within the entire Chibchan family) has already been discussed (section 8.2); and given the ambiguity and tenuousness of the situation in this area, this sound-law must be considered a working hypothesis.

10. *k > h/V+__

e.g. *ǰi-k- > ǰi-h- 'set, put' (182)

*-ti-ká > -ta-há 'field' (209)

*ta-ka > -tà-há 'foot' (191)

See the discussion of these examples in section 8.4. Besides this rather limited evidence based on comparative studies, there is also important internal evidence for this change in the synchronic k~h alternation observable in the general behavior of the same non-iterative aspect and absolutive suffixes involved in the examples above (and also in the agent-noun suffix). (Cf. section 3.1.3.)

11. $*k > \check{s}/i\_\_ : *\begin{bmatrix} C \\ +back \\ -round \end{bmatrix} > \begin{bmatrix} -back \\ (+cor) \\ +cont \end{bmatrix} / \begin{bmatrix} V \\ +high \\ -back \end{bmatrix} \_\_\_$

e.g. *di:k- > tìš- 'sow' (63)

*bik > píš 'how many?' (27)

*pik > ũ-piš- 'wind' (157)

*k^{w}iNk > wíš- 'wing' (134)

(and also in sets 156 and 205)

This change is fairly well attested, though there are apparent exceptions, e.g. 183. *ǰik- 'cut' > ǰik-imi 'cut-worm', etc. (A similar change: *k > š/__i occurs quite regularly in Cg. Cf. sets 57, 63, 71[?], 78, 200, and 219.)

Set 158. *pɨk > P peš- 'take away' seems to exhibit the same change after the vowel ɨ. In fact, this may be evidence that there was a Vi diphthong in the proto-form for this set: *paik-, or possibly *pɨik (?).

12. *k' > h > ∅ (or ?)/#__

e.g. *k'u > xhu-?u (reduplication?) > ú 'louse' (128)

*k'ut > ú?- 'wild cat' (131)

*k'ak > xhak 'sun, day' (125) (The modern reflex of this form seems to be unattested in my data.)

*k'upa > -(?)u:wa 'tongue', u:wa 'hunger' (130)

(and also in sets 124, 126-127 and 129)

13. *k'(> h ?) > ?/V__V

e.g. *cak'a > -sà?a 'insides' (46)

*kik'a > kí?-šuh- 'daughter-in-law' (109)

*nuk'al > -nṹ?ã́ 'point, top' (147a)

(and also in sets 56, 76[?] and 164)

See the discussion of *k' in section 8.3.

14. $*k^{w} > w \quad : \quad * \begin{bmatrix} C \\ -ant \\ -cor \\ -nas \\ +round \end{bmatrix} > [-cons]$

e.g. *k^{w}it > wì?- 'dance' (133)

*k^{w}iNk- > wíš- 'wing' (134)

*k^{w}adu-k^{w}adu > wàr(u)-wáru 'butterfly' (132)

*ik^{w}a > -iwa 'owner' (91)

In initial position this rule operates without exception in the present corpus (including both first- and second-order sets). The existence of forms in #k^{w} in the modern language may be evidence of exceptions to this rule, or, alternatively, evidence that such forms are later borrowings that entered the language after this change had been completed and the rule lost from the language. It appears that in at least a few cases this rule was fed by the operation of rule 32 (V > Ø/VC__CV) on earlier *kVwV sequences.

15. *mV > Ṽ/#__ : * $\begin{bmatrix} C \\ +ant \\ -cor \\ +nas \end{bmatrix}$ V > Ø $\begin{bmatrix} 2 \\ +nas \end{bmatrix}$ /#__

1 2

e.g. *bun > *mũ (by rules 3 and 18) > -?ṹ- 'sister' (36)?

x*ma: (R) > ã: 'sun' (not in cognate sets)

*ma/*mɨ > ã-h-/ẽ-h- 'give' (289)

This is a highly tentative rule and, as expressed, there are many more exceptions than examples of its possible operation. The exact conditions for the change have not been determined. The most

convincing piece of evidence is the form for 'sun', which is attested in its earlier form in the Ramos list. The form is so far not reconstructible for the proto-language and may be a borrowing from Sumu, in which the word for 'sun' is ma. The rule is valuable in that it provides the only explanation for the forms given (and certain others), which would not otherwise be relatable to forms in the other Chibchan languages.

16. $*m > \eta^{w}$ ([$\tilde{w}$])/V__V : $*\begin{bmatrix} C \\ +ant \\ -cor \\ +nas \end{bmatrix} > \begin{bmatrix} -ant \\ +round \end{bmatrix}$ /V__V

e.g. *nima > ^{x}neuwa (=ne$\tilde{w}$a?) 'liver' (146)

*sima > se$\tilde{w}$a 'cold' (169)

This is apparently the normal intervocalic reflex of *m. However, the two examples given are the only ones in the present corpus: a rather limited domain. As was indicated earlier, *η^{w} may have also been the (or an) intervocalic allophone of *m in the proto-language. If the /*η^{w}/hypothesis can not be adequately maintained, then all cases of #$\tilde{w}$ in P must be assumed to be reflexes of *m also. (Though a possible alternative explanation would be that #$\tilde{w}$ arose through regressive nasal assimilation of *w$\tilde{V}$ sequences. Comparative evidence for this hypothesis is weak.)

17. $$*Vm > \tilde{V}/\_\begin{Bmatrix} C \\ \# \end{Bmatrix} : *V\begin{bmatrix} C \\ +ant \\ -cor \\ +nas \end{bmatrix} > \begin{bmatrix} 1 \\ +nas \end{bmatrix} \emptyset/\_ \begin{Bmatrix} C \\ \# \end{Bmatrix}$$

1 2

e.g. *dam- > -t$\tilde{\acute{a}}$-h ~ -t$\tilde{\acute{V}}$- Negative (53)

*hum(V)c > -ʔ$\tilde{\acute{u}}$s 'hair' (83)

See discussion following next rule.

18. $$*Vn > \tilde{V}/\_\begin{Bmatrix} C \\ \# \end{Bmatrix} : *V\begin{bmatrix} C \\ +ant \\ +cor \\ +nas \end{bmatrix} > \begin{bmatrix} 1 \\ +nas \end{bmatrix} \emptyset/\_\begin{Bmatrix} C \\ \# \end{Bmatrix}$$

1 2

e.g. *tun-k- > t$\tilde{\acute{u}}$-h- 'shoot, send' (321)

*an-k- > $\tilde{\grave{a}}$-h- 'fall' (10)

*can- > s$\tilde{\acute{a}}$ 'head' (47)

The changes described by rules 17 and 18 can quite obviously be collapsed into a single general rule for nasals:

$$*V\begin{bmatrix} C \\ +nas \end{bmatrix} > \begin{bmatrix} 1 \\ +nas \end{bmatrix} \emptyset/\_ \begin{Bmatrix} C \\ \# \end{Bmatrix}$$

1 2

19. $$*c > s \quad : \quad *\begin{bmatrix} C \\ -cont \\ +d.r. \end{bmatrix} > \begin{bmatrix} +cont \\ (-d.r.) \end{bmatrix}$$

e.g. *can > sã́ 'head' (47)

*ca > sà 'stone' (44)

*cidi > sà̃-sirí 'brains' ('head-insides') (48)

*cu > su-ku 'take, get' (51)

*bic > pís-pís- 'pointed' (25)

20. *h > Ø/#__ : $* \begin{bmatrix} -\text{cons} \\ -\text{voc} \\ -\text{vcd} \end{bmatrix} > Ø/\#\_\_$

e.g. *haka > àk- 'different' (75)

*hauk > ók- 'bathe' (78)

*hun > ò̃- 'smell, kiss' (81)

*huru > ùru-ha 'deep' (84)

*huk- (R) > úk- 'blow' (not in cognate list)

21. *h > ʔ/V__V : $* \begin{bmatrix} -\text{cons} \\ -\text{voc} \\ -\text{vcd} \end{bmatrix} > [-\text{cont}]/V\_\_V$

e.g. *bud-had > *bũ-hã̃ (by rule 9) > mṍʔã́ 'bee-wax' (273)

*ka-hu > ka-ʔó 'house' (80)

*a-hum(V)c > a-ʔṹs 'his-hair' (83)

22. $*h^{w} > w \quad : \quad *\begin{bmatrix} -\text{cons} \\ -\text{voc} \\ -\text{vcd} \\ +\text{round} \end{bmatrix} > [+\text{vcd}]$

e.g. *h̲ʷal > wàr-š- 'cut, pick' (85)

*h̲ʷini > wèni 'curved' (86)

(Exception: *h̲ʷiši > íši 'urine' (87). It is possible that in this case *h̲ʷ was actually an optional prefix or first-member of a compound noun: *hu-iši.)

There are no examples of *h̲ʷ in medial position in the present corpus, but it seems reasonable to assume, on the analogy of the behavior of *k̲ʷ, that this change took place in all environments. This rule and rule 14 (*kʷ > w) can be collapsed into a single more general rule:

$$* \begin{bmatrix} -\text{voc} \\ +\text{round} \end{bmatrix} > [-\text{cons}],$$

but this may not reflect the actual historical facts. One of the changes may have preceded the other and then been extended to include both rounded segment-types.

23. $*l > r/V\_\begin{Bmatrix} V \\ C \end{Bmatrix} \quad : \quad * \begin{bmatrix} +\text{cons} \\ +\text{voc} \end{bmatrix} > [-\text{lat}]/V\_\begin{Bmatrix} V \\ C \end{Bmatrix}$

e.g. *bali > parè-ʔ-wa 'sweet' (17)

*k'ulu > ùru 'zapote' (129)

*hala > arà-h-n- 'make a noise' (77)

*kul > kor-ta 'female' (119)

*h^{w}al > wàr-š- 'cut' (85)

24. *C > Ø/C__C

e.g. ^{x}uruksũ (R) > *urksũ > òrsũ 'duck'.

Even though I have found only this single example of this change (and this based on evidence from the Ramos-list), the fact that there still exists a very similar synchronic rule (rule 21, p. 57 :

C → Ø/[-son] __ [-son]),

coupled with the historical rule of syncope (rule 32)--which probably gave rise to similar medial clusters--are evidence that this rule might have operated more generally than the paucity of direct evidence would indicate, at least during the relatively recent history of the language.

25. *ĭ > e

e.g. *apĭ > apé 'bile' (11)

*balĭ > parè-ʔ-wa 'sweet' (17)

*nĭ > nẽ- 'arrive' (143)

*tĭ-dV- > tér-s- 'tie' (204a)

As was discussed earlier, there was almost certainly a long-short or tense-lax vowel-distinction in the proto-language, but the great irregularity in the present data (at least in the diagnostic set) does not permit the conclusive and consistent reconstruction of lax or

short vowels for more than a few highly regular cases. The tendency of high vowels to lower in certain environments (as described for *ŭ in rule 28 below) may be involved in the *ĭ > e change also, and there may be a more general rule for *ĭ and *ŭ together. Unfortunately, the data for *ĭ > e is not as ample and does not allow for as much specification of environment-conditions as the data for *ŭ > o.

26. *ɨ̆ > e/[—]
[+accent]

e.g. *bɨ̆ > pé 'just, only' (29)
*ar-dɨ̆ > ar-té- 'want' (65)
*kɨ̆da > -kèra- 'by, between' (114)
*nɨ̆ma > ˣneuwa (=newa?) 'liver' (146)

There is evidence that vestigial cases of *ɨ̆ persisted in Paya until quite recently. The variability of the first vowel in the careful pronunciation of different speakers in such words as yiwi ~ yuwi 'moon', sàwa ~ sùwa 'hand', and ˣtikó (?) ~ toko 'ash', is indication that different strategies were chosen for adapting the effectively neutral or ambiguous vowel that occurred in these words to the emergent 5-vowel (-position) system (which may have been impelled by contact with Spanish, though the neighboring Sumu and Miskito languages seem to have lost any trace of *ɨ̆ much earlier and may also have been an influence). Importantly, the reconstructed vowel is *ɨ̆ in these three cases, and thus, the first two cases are exceptions to *ɨ̆ > e. It can be seen that one common strategy was to allow *ɨ̆ to

totally assimilate with the following V (sawa, yiwi, tokó). Another strategy was to apply optional rule 20: V→u/___w (p. 57) wherever possible: *yiwi > yuwi, *siwa > suwa (and thus rule 20 would have operated historically also).

27. *i > V_1/__CV_1

e.g. *tikʌ́ > -tahʌ́ 'field' (209)

*diwi 'sun' > *yiwi 'moon' (68)

*tikŭ́ > *tikó (by rule 28) > tokó 'ash' (212)

*širu > ka-šurú-sta 'knife' (187)

See discussion after rule 26.

28. *ŭ > o/__ ?

e.g. *bŭr- > mor- 'snore' (39)

*nŭ- > nò-š 'clear ground' (147)

*bŭn > bòn-i 'gray' (35)

*bŭd-had > > mṍʔã́ 'beeswax' (32)

*ka-hŭ́ > kaʔó 'house' (80)

This change may have depended on certain conditioning environments as well as the short (or lax) nature of *ŭ. There are many examples of this change in the environments __{k,h,n,r,#} and the historical changes are probably related to the synchronic rule of allophonic variation that lowers short vowels in similar environments (rule 30, p. 59). See also the discussion under rule 25 above.

29. *(~)ai > e(:)

e.g. *kai > ke: 'now, already' (101)

*pai > pé: 'many, much' (151)

*ta-ikʷa > ˣtekʷa (or e: ?) 'somebody' (198)

This is part of a more general rule of monophthongization that also includes the changes described in the following rule.

30. $*\overset{(\sim)}{a}\begin{Bmatrix} u \\ w \end{Bmatrix} > o(:) \quad : \quad *\begin{bmatrix} V \\ +low \end{bmatrix}_1 \begin{bmatrix} -cons \\ +high \\ +back \end{bmatrix}_2 > \emptyset \begin{bmatrix} 2 \\ +voc \\ -high \\ (+length) \end{bmatrix}$

e.g. *hauk > ók- 'bathe' (78)

*tab > *taw-N-š- > tõš- 'leave' (195)

ˣsãwkwa > sõkwa 'black' (not in cognate list)

*k'ap > ˣaw > ò:- 'sleep' (127)?

A general rule of monophthongization combining rules 29 and 30 can be formulated as follows:

$$*\begin{bmatrix} V \\ +low \end{bmatrix}_1 \begin{bmatrix} -cons \\ +high \\ \alpha back \end{bmatrix}_2 > \emptyset \begin{bmatrix} 2 \\ +voc \\ -high \\ (+length) \end{bmatrix}$$

31. $*V > \emptyset / \#\begin{bmatrix} C \\ -cont \end{bmatrix}\_\_ r\acute{V}$

e.g. *bi̲rí > b(i)rì 'edge' (28)

x*ta̲-ris- (R) > trìs- 'heat up' (not in cognate list)

*bu̲rú > brú 'big' (41)

That this vowel-syncope has occurred as a historical process is without question. From the synchronic point of view, however, it appears that the syncopated vowel may still exist in the underlying (systematic phonemic) forms of these (and similar) words. Often, in the slow or careful speech of certain speakers, the vowels (or sometimes a more neutral ə̲) are pronounced. Accordingly, I have postulated sequence-structure-condition 2.21 (p. 23) and phonological rule 9 (p. 53) to account for these phenomena. For other speakers the historical change may be complete, allowing initial Cr clusters in underlying forms.

32. *V > ∅/V́C$_1^2$__ CV

e.g. *ádа̲-kaud- > ar_-kõ̀- 'laugh' (5,107)

*áka̲-kam(a) > ák_-kam-ẽ̀?- 'taste bitter' (9)

*á-hi̲dá > à-h_rá 'his liver' (79)

*kád-huk$^{(w)}$a > *kád-u̲wa > *kan-_wa > kã̀:wa 'bark' (82)

*..V́(C)-ši̲ká > ..V(C)-š́_ká '..-stuff' (185)

This is a very common change observable in the history of languages all over the world. The large number of available examples in the present corpus indicates that it was quite general and regular throughout the development of Paya, and it can still be observed as a

synchronic process in such variable forms as wàru-wáru ~ wàr_-wáru (cf. rule 26, p. 59). (The devoicing of vowels in similarly unstressed environments, as described by rule 39, p. 61, may be related to these changes, and may have been an intermediate stage in certain cases historically.)

33. $*\emptyset > w/uk\_\_ : *\emptyset > \begin{bmatrix} -cons \\ -syl \\ +high \\ +back \end{bmatrix} / \begin{bmatrix} V \\ +high \\ +back \end{bmatrix} k\_\_$

e.g. *huka > *huk^{w}_a > (kã:)wa 'bark' (82)

*huka > ^{x}huka (R) > ukk^{w}_a 'ten' (274)

(In the latter case the geminate -kk- is unexplained. It may point to earlier *-kk-, though the comparative evidence doesn't corroborate this.)

A related process involving -h- (which, in at least some cases, is a reflex of *-k-) is described by synchronic rule 42, p. 62.

9.3 Ordering of historical sound-laws.

Because of the observable fact that many sound-laws depend for their operation on the results of the earlier operation of other sound-laws, there is an implicit ordering-relationship among them. In more current jargon: some sound-laws feed or are fed by other sound-laws, or bleed or are bled by them. Such specific one-to-one interdependencies can be established on the basis of individual

historical examples and the total set of these interdependencies can be used to postulate an ordering (or orderings) for the entire set of sound-laws.

The following possible relative ordering-relationships can be observed in the set of sound-laws given in section 9.2.

Rule 1 (*p > b/$\acute{V}$__(V)) feeds rule 4 (*b > w/V__V).

Rule 3 (*b > m/#__VN) feeds rule 15 (*mV_1 > V_1/#__).

Rule 4 (*b > w/V__V) feeds rule 30 (*aw > o).

Rule 4 (*b > w/V__V) feeds rule 19 (*k^w > w) in conjunction with rule 32 (*V > ∅/VC__CV): e.g. *t̬i̬k̬i̬b̲i > *t̬i̬k̬i̬w̲i (rule 4) > *t̬i̬k̲w̲i (rule 32) > *t̬i̬w̲i (rule 19) > tuwi 'boa'.

Rule 6 (*d > t/+__) is bled by rule 7 (*d > y/#__i̬).

Rule 8 (*d > r/V__V) feeds rule 31 (*V > $\acute{V}$/*C__r$\acute{V}$).

Rule 9 ($\begin{Bmatrix} *d \\ *l \end{Bmatrix}$ n/V__ $\begin{bmatrix} -cons \\ -voc \end{bmatrix}$) feeds rule 18 (*Vn > $\tilde{V}$).

Rule 10 (*k > h/V+__) should be in counterfeeding order with respect to rule 21 (*h > ʔ/V__V). (In fact, rule 13 : *k' > h(?) > ʔ/V__V, may be evidence against this restriction, in at least some cases.)

Rule 14 (*k^w > w) potentially feeds rule 30 (*aw > o) for *k^w in medial position (no examples).

Rule 18 (*Vn > $\tilde{V}$/__C) feeds rule 21 (*h > ʔ/V__V): e.g. *bud-had > *bu̲n-han > *b$\tilde{u}$-h$\tilde{a}$ > m$\acute{\tilde{o}}$ʔ$\acute{\tilde{a}}$ 'beeswax'.

Rule 22 (*h^w > w) might also potentially feed rule 30 (*aw > o) in cases of medial *h^w (no examples).

Rule 23 (*l > r/V__V) feeds rule 31 (*V > Ø/#C__rV́).

Rule 24 (*C > Ø/C__C) is potentially fed by rule 32 (*V > Ø/V́C__CV).

Rule 33 (*Ø > w/uk__) feeds rule 14 ($*k^{w} > w$).

Chapter 10 - Summary

In what remains, I shall attempt to summarize both the findings and methodology of this study. The study can be conceived of as consisting of three principal sections:

1. A rather rigorous analysis and discussion of the synchronic phonology of the Paya language. (Chapters 1-3).

2. A comparative analysis involving Paya and five other languages of the Chibchan family (plus supplementary comparative data from a number of other languages, both within the Chibchan family proper and from the larger Macro-Chibchan phylum), leading to a reconstruction of the sound-system and a substantial part of the lexicon of Proto-Chibchan. (Chapters 4-8)

3. A determination of the historical sound-laws that must have operated in the development of Paya from Proto-Chibchan. (Chapter 9).

The first section, which deals with the synchronic phonology of Paya, can, if desired, be considered independently of the historical sections (although it does include a few cross-references to these later sections). As far as I know, it constitutes the first rigorous look at Paya phonology in the light of the linguistic theories and methods that have been developed since the work of Conzemius (1928). (Additional work on Paya phonology has recently been done by Summer Institute of Linguistics researchers Stephen and Pam Echerd, but I have not yet seen any of their results.)

The second part of the study, the comparative reconstruction, was by far the most painstaking part of the project. Many hundreds of

hours were spent in poring over word-lists and dictionaries, looking for possible cognate forms. The results of this labor, presented here in the lists of cognate sets, should provide an ample data-base for further comparative-historical studies involving the Chibchan languages. For example, given these listings it should not be too great an undertaking to infer many or most of the historical sound-laws that have operated in any of the other diagnostic languages, in a way similar to what I have done for Paya only. (In fact, I am extremely interested in mapping the historical development of the entire Chibchan family, but obviously this could amount to at least my own lifetime of work and could not reasonably be undertaken here.)

The original problem, as I perceived it, was to search for and convincingly establish genetic relationship for the hithertofore imprecisely classified Paya language. The suggestion and largely unchallenged assumption that Paya was part of the larger Macro-Chibchan phylum, but not includable within the Chibchan family proper, had been allowed to stand for many years without either convincing evidence of its affiliation within the larger phylum-grouping or rigorous attempts to link it more closely with the Chibchan languages per se.

At the beginning of my investigation I made no initial assumption as to the genetic affinities of Paya, but given its generally accepted classification as a Macro-Chibchan language, I naturally looked first in that direction for evidence and clues that might lead me toward some more rigorous determination of its proper genetic classification.

As early as 1974, while I was still in the field among the Paya, I searched for matchings between Paya and Sumu, another supposedly Macro-Chibchan language from which I had collected a word-list earlier in the year. While I found a number of probable matchings, the irregularity of the sound-correspondences and the probability of loan-words between such geographically proximate languages made it difficult to make any definite conclusions as to their genetic relationship.

It was not until I looked into Holmer's Cuna dictionary later in 1974 that I found conclusive evidence that Paya should be classified as a Chibchan language. I found not only close matchings with quite regular sound-correspondences among lexical morphemes, but also a number of matchings of grammatical morphemes and similarities in morphological processes. Data from four additional Chibchan languages was added (Bribri, Cágaba, Chibcha, and Guatuso--later replaced by Rama), and a rigorous comparative reconstruction of Proto-Chibchan was begun.

My comparative reconstruction of Proto-Chibchan was already well under way when, in the summer of 1975, I came across Girard's Proto-Takanan reconstruction in the library of the Universidad de Costa Rica. A cursory examination of his data and reconstructions produced so many matchings with my Proto-Chibchan reconstructions that I was impelled to hypothesize a relationship between the two families (and, by implication, between Chibchan and Panoan also). Further research into this possibility after I returned to the United States resulted in the paper "Pano-Takanan as a Macro-Chibchan Phylum", which is

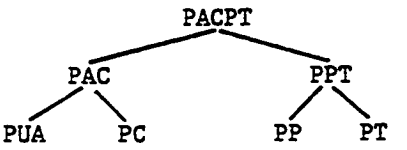
included here as Appendix 1. (The paper was presented orally, with a hand-out listing of proto-language matchings, at the annual meetings of the Southwestern Anthropological Association in 1976.)

In the spring of 1976 I was browsing briefly in a Papago dictionary when I came across the form for 'meat': čuku. It was so close to the corresponding Paya form, ^{d}yuku, that I decided to investigate the possibility of genetic affinities between Chibchan and Uto-Aztecan. A careful look at Miller's Uto-Aztecan cognate sets convinced me that a rather close relationship existed between the two families. I first discussed this relationship, together with the Pano-Tacanan connection, in a colloquium presentation at UCLA later that spring, and then gave a more rigorous presentation of my findings in a succinct paper, "Evidence of Genetic Relationship Between Chibchan and Uto-Aztecan", before the Berkeley Linguistic Society in 1977. That paper, which was subsequently published in BLS 3, is included here as Appendix 2.

A subsequent paper, "Supplementary Notes on Aztec-Chibchan", in which I modified certain earlier reconstructions, added a number of additional Aztec-Chibchan cognate sets, and provided a complete listing of the reflex-forms on which my Proto-Chibchan reconstructions are based, was made available in manuscript form to the Friends of Uto-Aztecan at their meeting in Reno in 1978. This paper is included here as Appendix 3.

As a result of all these researches, the emergent picture is that of a huge linguistic super-phylum which includes the Uto-Aztecan, Chibchan, Panoan and Tacanan families. On the basis of the degree of

closeness of cognate sets, the appropriate family-tree diagram would appear to be as follows:



This is a somewhat tentative hypothesis and much more work will be necessary to corroborate it. The indicated direction for further research would be to first establish sound reconstructions of PAC and PPT, and then to work from there toward third-level reconstructions of PACPT. (It might also be a good thing to come up with a more succinct name for the super-phylum.)

The Tanoan family, which has traditionally been considered to be genetically related to Uto-Aztecan, would appear to link into the super-phylum (if at all) at an even higher level. I believe the Whorf-Trager Aztec-Tanoan hypothesis loses quite a bit of credibility in the light of these closer and more solidly established genetic relationships.

Notes

1. Similar rules of nasal assimilation involving the glides y, w and ʔ operate in Capanahua, a Panoan language of Peru (cf. Loos 1969, pp. 102, 177-180), and Hindi (Bright, personal communication).

2. Schuh (personal communication) has pointed out that a similar distribution occurs in the Akan languages, and that Schachter and Fromkin have proposed a historical rule identical to 2.26 as an explanation for the synchronic situation there.

3. In the example yùh-t-ʔu-pã́-i → yù:nupẽ́, the rule

$$\begin{bmatrix} -\text{cons} \\ -\text{syl} \\ -\text{son} \end{bmatrix} \rightarrow \emptyset / C \_\_$$

must operate first to delete the ʔ, otherwise the t(→n) would be deleted by the rule C → ∅/[-son]__[-son].

4. As Schuh (personal communication) has pointed out, current phonological theory and practice would disallow such a "radical case of absolute neutralization" as is indicated by this rule, even though it is quite reasonable as a historical process. Given this stricture, it seems best to mark the few forms in ʔ-ká as exceptions to rule 3.1.3.

5. A productive derivational process forms agent-nouns by adding the suffix -á to transitive verb-stems, e.g. térs-k-á 'tie-r'; íš-k-á 'make-r'.

6. Bright (personal communication) suggests that in this case $\check{s} > [+ant] / [+ant]\_\_$, before the operation of the rule(-sequence):

$V > [+nas] / \_\_ [+nas]$ and $n > \emptyset / \tilde{V}\_\_ \sim$

$$VN > \begin{bmatrix} 1 \\ +nas \end{bmatrix} \quad \emptyset$$
$$12$$

7. I am using the symbol <ä> as the orthographic vowel in the dictionary-forms of those verb-stems in which underlying a becomes e in 3rd person forms. (See the discussion of this ablaut phenomenon in section 3.1.4.).

8. An alternative explanation for the forms of the future-suffix is that -pã́ and -pẽ́ are contractions of the optative-emphatic suffixal strings -pá-hã̃ and -pí-hã̃, which also are used as future tense-markers in certain idiolects. The presence of the suffix -pí in the 2nd person plural future lends support to this hypothesis. The kinds of phonological processes which would be involved in the change -pí-hã̃ > -pẽ́, while not common in the language, are certainly plausible. The monophthongization of a $\begin{bmatrix} -cons \\ -hi \end{bmatrix} \begin{bmatrix} -cons \\ +low \end{bmatrix}$ sequence can be seen in rule 19, below; and h, in Paya as well as universally, is an extremely weak segment and prone to being lost.

9. The example given is the only case I have found in which this rule operates, but I am assuming that it would apply in other similar cases, if they exist (ã̃ in the final syllable of

multisyllabic words is rare at the systematic phonemic level). The interdependency of rules 10 and 11 is a rare situation in which the operation of a necessarily earlier rule is contingent upon the operation of a later variable rule. These phenomena suggest that perhaps it is fallacious in this case to adhere to principles of linear ordering. Here simultaneous rule-operation would also produce the observed segment-sequences, though the stipulation that rule 10 operate only when rule 11 does would still be necessary (i.e. we would not expect *kà̰hã́ ú:ya). Note also that the neutral or unmarked nature of the a vowel seems to be an important factor in rules 10 and 11. Loss of any other vowel in such a situation would probably result in the loss of too much information.

10. The word pàtatì:šťahá is an exception to rule 7, which states that the tone of stem-vowels is raised before the Agent-suffix -tahá.

11. Note that this rule does not operate between lexical morphemes in compound stems, e.g.:

    ñà̃hṵ́hwa 'he denies (it)' (lit. 'he hides [through his] words') (from /ñã́-k(a)-ú́-k-wa/), not *ñã̀hṵ̃hwã̀.

12. Note, however, that hyphens in supplementary Guat forms from Constenla Umaña's data are his own.

13. Paya forms are given in taxonomic phonemic notation.

14. Sets 98 and 99 may ultimately derive from the same root: *kad(a) 'long thin object', but there seems to be enough

evidence to posit two semantically and phonologically (?) distinct roots at some stage of the proto-language.

15. It is possible that in certain cases there is also contrast between reflexes of *l and *r in Cu, but the existence of double entries in Holmer's dictionary indicates to me that the situation there is far from certain and that [r] and [l] may be in some kind of free variation in Cu.

Appendix 1:

PANO-TACANAN AS A MACRO-CHIBCHAN PHYLUM

0. Introduction

1. Previous classifications of Pano-Tacanan

2. Proto-Tacanan phonemic inventory (Girard)

3. Proto-Chibchan phonemic inventory and reflexes

4. Chibchan-Tacanan phonological correspondences

5. Chibchan-Tacanan cognate sets

6. The Key-Girard controversy: new evidence from Chibchan

0. As a somewhat indirect result of my current work in historical Chibchan linguistics, I have recently discovered abundant and clear evidence that the Tacanan languages (and, by transitivity of genetic relationship, the Panoan languages also) are genetically related to the Chibchan languages. As I hope to show in this paper, the degree of relationship is so close that Pano-Tacanan deserves to be included as a member stock or phylum within the Macro-Chibchan phylum.[1]

1. To varying degrees, this conclusion runs counter to a number of currently proposed genetic classifications of South American languages. For example, Suárez (1975), in his recent classification in the Encyclopaedia Britannica, sets up Macro-Pano-Tacanan as an independent phylum whose only suspected external relationship is with the Arawakan phylum. Greenberg (1956), in an earlier classification, placed Pano-Tacanan within his Macro-Ge-Pano-Carib phylum, while the

Chibchan languages constitute the major sub-group within his Macro-Chibchan phylum. Thus, either the link between Chibchan and Pano-Tacanan is a link between two of Greenberg's three major groupings of South American languages, or the new-found relationship is evidence that Greenberg was mistaken in his classification of Pano-Tacanan. The closeness of the relationship supports the second possibility, and, consequently, tends to cast doubt on the overall validity of Greenberg's classification.

The first explicit conjecture that the Pano-Tacanan and Chibchan families might be genetically related seems to have been that of Swadesh (1954), who noted certain lexical resemblances among Cašinahua of the Panoan family, Chibcha, and Uto-Aztecan. Swadesh (1954:325) states that within the Macro-Chibchan phylum

> "the degrees of relationship may in some cases be quite remote, so much so that Utaztecan quite possibly is as close to Chibchan as some of the other members proposed for the phylum. On the other hand, Utaztecan appears to be about as close to Chibchan as to Kiotanoan. What appears to be shaping up is a merging of Aztectanoan with MacroChibchan in a chain relationship ... The affiliation of Panoan, which apparently has not been previously linked with MacroChibchan, suggests that the full embrace of Kiochibchan has yet to be established."[2]

It is somewhat surprising that Swadesh's Kiochibchan-Panoan hypothesis has apparently not been further investigated by other scholars, nor indeed was it commented on further by Swadesh himself. In fact, in later classificatory studies Swadesh seems to have repudiated his earlier suggestion that Panoan (or Pano-Tacanan) might be included in a grouping with Chibchan and Uto-Aztecan. Thus, in his study of 1959, which was based on the then still relatively new lexicostatistical methods, Swadesh reaffirms the supposed Macro-Chibchan-Uto-Aztecan

relationship by placing the two groups together in close proximity within his Central dialect-grouping, but he places Pano-Tacanan together with Quechumaran, Uru-Chipaya, Mosetén and Chon in a separate minor sub-grouping, which he calls Quechuachón, and which, in turn, is part of his Western dialect-grouping. Similarly, in his lexicostatistical classification of 1967, Swadesh places (Macro)Chibchan and Uto-Aztecan (Yutonahuan) together in his proposed Macro-Mayan phylum, while Pano-Tacanan is classified as a member of his Macro-Quechuan phylum.

2. The present study consists primarily of a second-order comparative reconstruction based on Girard's (1971) reconstructions of Proto-Tacanan and my own previously unpublished Proto-Chibchan reconstructions. Girard's study was chosen over Key's (1968) earlier Proto-Tacanan reconstruction due to the fact that it specifies a greater number of reconstructed forms and provides much more extensive reflex-sets, which were extremely useful in establishing the probable semantic range of proto-forms. In a few instances, however, reconstructions proposed by Key proved to better align themselves to their proposed Proto-Chibchan cognates than did the corresponding reconstructions of Girard. These differences are noted in the cognate-list in section 5 and are discussed further in section 6 below.

The phonemic inventory that Girard (1971:26,30) proposes for Proto-Tacanan is given in Figure 1 below.

*p	*t	*c̣	*k	*k^{w}	(*ʔ)	*i	*u
*b	*d	*j				*e	*a
		*s					
		*z					
*m	*n						
	*r̆						
	*r						
*w		*y					

(Here *j and *z represent sets of reflexes and are not intended to have "any inherent phonetic value.")

Figure 1

Phonemes of Proto-Tacanan

3. My Proto-Chibchan reconstructions are based primarily on data from six diagnostic languages: Paya (P), Guatuso (G), Bribri (B), Cuna (Cu), Cágaba (Ca) and Chibcha (Ch). In certain sets, data from additional languages has provided supplementary evidence for the reconstruction.

The tentative phonemic inventory I have reconstructed for Proto-Chibchan is given below in Figure 2. The correspondences in the diagnostic daughter-languages on which the reconstructions are based, are given in Figures 3, 4, and 5.

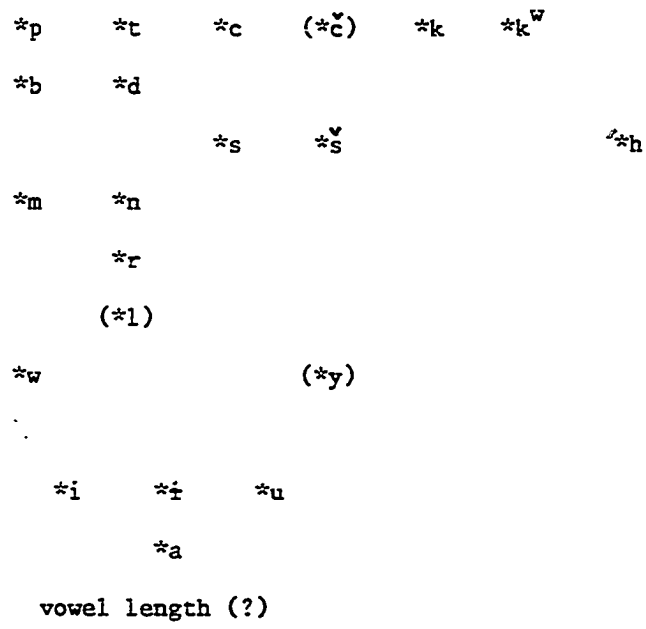


Figure 2

Phonemes of Proto-Chibchan

*d and *l may be allophonic variants of the same proto-phoneme. There is also evidence for reconstructing *x and *x^{w}, and perhaps one more sibilant, but the data is far from clear.

	P	G	B	Cu	Ca	Ch
*p	p	p	p	p/m	p	p/f
*b	p	p	b	p	m	b/f
*t	t	t	t/č	n	t	t
*d	t	t	d/ǰ	t	n	s
*k	k/ʔ	k	k	k	k	k
*k^{w}	w/b	x	p/b/w	k^{w}	k^{w}/w	pk^{w}
*c	s	č	c	s	s	č
*s	s	ɬ	s	s	s	s
(*č)	s/ʒ	?	č	č	?	č
*š	š	?	č	s	š	z
*h	Ø	Ø	h	Ø	h	h
*m	m/Ø	m	m	m	m	m
*n	n	n	n	n	n	n
*w	w/b	w	w/b	w	w	w

Figure 3

Chibchan Initial Consonant Correspondences

	P	G	B	Cu	Ca	Ch
*p	w/ʔ	p	p	p	m	p
*b	w	?	b	b	b	b
*t	n/ʔ	r/s	n	t/l	n	s
*d	r	l	L	l	l	z
*k	h/ʔ	x/ŋ	k	g/k	k	k/g
*k^w	w	x	w/p	g^w	k^w	pk^w
*č	s	č?	c	s	s	z
*s	s	ɬ	s	s	s	s
(*č insufficient data)						
*š	š	č	č	s/č	š/ž	z
*h	?	ø	h	ø	ø	(V):
*m	m/$\tilde{V}$h	m	m	m	m	m
*n	n/$\tilde{V}$h	n	n	n	n	n
*w	w	x	w/b	w	w	w
*r	r	r	r	r	l	r

Figure 4

Chibchan Medial Consonant Correspondences

	P	G	B	Cu	Ca	Ch
*i	i	i	i	i	i	i
*ɨ	e/a	i	e	e/a	ei/u	ɨ
*u	u/o	u	u/o	u/o	u	u
*a	a	a/o	a	a	a	a

Figure 5

Chibchan Vowel Correspondences

4. Following is a tabulation of the recurring phonological correspondences among the proposed cognate sets in section 5.

**p	: PC *p	: PT *p /#__	in sets 9, 13, 31, 41, 42, 52, 57, 68
	*p	: *w /V__V	26, 55
**t	: PC *t	: PT *t /#__	in sets 6, 20, 21, 22, 24, 34, 60, 62
	*t	: *t /V__V	63, 64, 70
	*t	: *r /V__V	18, 67
**c	: PC *c	: PT *ç	in sets 11, 23, 28, 58
**ć	: PC *c	: PT *z	in sets 3, 26, 39, 54

(The phonological nature of **ć is hard to ascertain with certainty. Both **č and **ǰ seem to be reasonable possibilities in the light of the reflexes in both Chibchan and Tacanan. It is also possible that both PT *ç and *z are reflexes of **c.).

**k	: PC *k	: PT *k	in sets 2, 22, 37, 46, 51, 67 (PC *k')
	*k	: *t/#__[V, -back]	10, 23, 55 (PC *k')
**k^{w}	: PC *k^{w}	: PT *k^{w}	in sets 7, 14, 43
	*k	: *k^{w}/__[V, -back]	17, 34, 36, 40, 45, 67 (?)
**b	: PC *b	: PT *b/#__	in sets 4, 12, 29, 59, 64
	*b	: *m/#__	1, 72
**d	: PC *d	: PT *d/#__	in sets 15, 35, 66
	*d	: *n/V__V	4, 53, 69
	*d	: *ř/V__V	27, 39(r), 62
	*d	: *d/V__V	10, 19
**s	: PC *s	: PT *s	in sets 17, 56
**š	: PC *š/*č	: PT *ç/#__	in sets 14, 51, 71
		*j/V__V	33, 65

```
**m  :  PC  *m  :  PT  *m        in sets 3, 5, 63, 72
**n  :  PC  *n  :  PT  *n/#__    in set  25
            *n  :      *n/V__V           40, 43
            *n  :      *r/V__V           28, 45
**r  :  PT  *r  :  PT  *r        in sets 1, 7, 38, 56
**w  :  PC  *w  :  PT  *w        in sets 19, 32, 47, 69
**i  :  PC  *i  :  PT  *i        in sets 7, 8, 17(2), 18, 19(2),
                                         35(2), 39, 44, 45, 47, 56,
                                         57, 61, 65, 66, 72
            *i  :      *e            9, 32(?), 33, 40, 42(?),
                                         62, 64, 71
**ɨ  :  PC  *ɨ  :  PT  *e        in sets 7, 12, 14, 20, 23, 25, 30,
                                         36, 56, 69
            *ɨ  :      *i            22, 23, 29, 39, 55, 59(?),
                                         62, 65, 70
            *ɨ  :      *a            34(2), 36(?), 69
**u  :  PC  *u  :  PT  *u        in sets 1(2), 4, 6, 11, 13, 15,
                                         21, 27, 31, 46(2), 49,
                                         58, 60, 67, 68
**a  :  PC  *a  :  PT  *a        in sets 2(2), 3(2), 5, 8, 10(2),
                                         14, 16, 24, 26(2), 28,
                                         38, 41, 43(2), 48, 50
                                         51(2), 52, 53, 55, 59(?),
                                         63(2), 70
            *a  :      *e            40, 54
*ai  :  PC  *ai :  PT  *ei       in sets 32(?), 37, 42(?)
```

The determining environments of the alternating PT reflexes of **ṯ, **t, **d, **n, etc., have yet to be discovered. The relative position of stress (or pitch) may be a factor in the alternations of the dental consonants in intervocalic position, as seems to be the case within the Chibchan family. It is also possible that certain of these PT dentals are reflexes of the tentative reconstructed phoneme **l.

On the basis of the above correspondences the following tentative phonemic inventory can be set up for *fChibchan-Tacanan:

**p	**t	**c	**č	**k	**k^w	(**ʔ)
**b	**d					
		**s	**š			
**m	**n					
	**r					
	(**l)					
**w						
**i	**ṯ	**u				
	**a					

Figure 6

Phonemes of *fChibchan-Tacanan

The fact that this inventory differs only slightly from the inventory I have proposed for Proto-Chibchan is not surprising, given the greater divergence and apparently greater time-depth among the members of the Chibchan family. It seems logical to conclude that

Proto-Pano-Tacanan separated quite early from Proto-Chibchan, followed by the split into Proto-Panoan and Proto-Tacanan, with internal divergence within the Tacanan family developing only relatively recently. Certain shared features, both phonological and lexical, between the Tacanan languages and the Guaymi languages, and the Tacanan languages and Cuna, suggest that perhaps these groups remained in contact for some time after the separation of the other Chibchan groups. Further investigation into the nature of shared retentions and innovations among the various sub-groups of Macro-Chibchan would test these hypotheses. The relative chronology of the splitting off of other proposed members of the Macro-Chibchan phylum, such as the Misumalpan family, is also difficult to establish in the absence of rigorous comparative studies.

5. In the following list of proposed cognate sets, I have included, for the Proto-Chibchan (PC) reconstructions, numerical references to the corresponding cognate sets in Chapters 5 and 6 of the main part of this work. In the remaining fully specified Chibchan sets, Paya forms are based on my own field-notes.[3] Guatuso forms are from Constenla (1975) and Lehmann (1920) (L). Bribri forms are from Lehmann, Pittier de Fábrega (1898) (PdF) and Bogarín (1972) (BB). Cuna forms are from Holmer (1947, 1952). Cágaba forms are from Preuss (1927) and Stendal and Stendal (S) as cited in Wheeler (1972). Chibcha forms are from Acosta (1938). Cabécar forms are from Lehmann and Bourland (1973) (DB). Proto-South Barbacoan forms (PSB) are from Moore (1962). Guaymi forms are from Alphonse (1956). The remaining supplementary forms are from Lehmann.

Following each Proto-Tacanan (PT) form is a reference to the number of the set in Girard in which it is found. (Similarly, following the suspected Proto-Uto-Aztecan (PU) cognates are references to set numbers in Miller (1967) or Voegelin, Voegelin, and Hale (1962).) Because Shell's Proto-Panoan (PP) reconstruction has not been available to me, I have used her forms as cited in Girard and in Matteson (1972). In a few cases I have found it possible to reconstruct additional PSB, PT, PP and PU forms on the basis of information given in the above named sources. These are marked with (DH).

Reconstructed glosses are intended to be representative of the semantic range of reflex glosses among the daughter languages. The PT glosses are my own, based on the data given in the Girard sets cited. When a reflex gloss is identical to the entire range of the reconstructed gloss of its nearest ancestor, no gloss is given. When a reflex gloss or part of a reflex gloss is identical to part of the reconstructed gloss of its nearest ancestor, the reconstructed gloss is indexed by a number: (1) = first reconstructed gloss, (2) = second reconstructed gloss, etc.

1. ASHES, DUST

**buru

PC *buru (40)

PT *muru (G 298)

2. ASK FOR, BUY

**ba(N)ka

PC *pa(N)(ka) (148)

PT *baka (G 40)

3. BAD

**maća

PC *maca-r 'devil' > P maysara; G maču:ru (L); Cu masar

PT *maza (G 280)

4. BEE, STINGING INSECT

**bud

PC *bud 'bee, wasp' (32)

PT *buna 'ant (sp.)' (G 81)

PP *bona 'wasp, ant'

5. BELLY, HEART

**ma

PC *ma (136)

PT *ma (G 256)

(Cf. PU *nema 'liver': M 265)

6. BEND, TWIST, BOW (n.)

**tu

PC *tu-n- (1,3)

PC *tu-ru (1,2) (220)

PT *tu (G 432)

(PU *to (1) M 37)

7. BIG

**k^{w}ɨri

PC *k^{w}ɨri (1),'thick' > P ber-s- (2); B bírrie (1) (BB); Cu k^{w}ale 'heavy' (?); Ca wilē- 'grow, get big '; PSB *beNbe (redup.); Muoi kweri

PT *k^{w}eri 'big river' (G 246)

(A problematical set)

8. BLOOD

**api

PC *api (11)

PT *ami (G 11)

PP *imi

9. BLOW, WIND, FAN

**pi

PC *pi (157)

PT *pei (G 337) (> Kav. e-piki [3(n.)])

10. BONE, HARD

**kada

PC *kada (99)

PT *tada (G 401) (~*kada : Ese ka?a; Mar -tra (1), which Girard places with his set 96. *ṣau, is most likely a reflex of *tada)

11. BREAST

**cu

PC *cu (52)

PT *aṣu (1), 'milk' (G 6)

(Cf. also 58. SUCK)

12. BRING

**bɨ(ta)

PC *bɨ(ta) (1), 'push' > P pe?- (1); G pi- 'take'; B bet-ku- (2); Cu meta (1), pali-meta (2); Ch bta- (2), 'carry'

PT *be (1),'send' (G 53) (*beta 'accompany')

PP *bɨ 'carry' (*bɨta 'along with')

(PU *pin : M 616)

13. BURST, BREAK

**pu

PC *bu (253-255)

PT *pu (G 355)

14. CHILD

**šɨkʷa ~ **cɨkʷa

PC *šikʷa (?) > P ye?a; G ɬuéxa 'grandchild'; B ujuk 'grandchild'; Cu ma-čigʷa 'boy', nu-čugʷa 'baby'; Ca sukʷa 'small'; Ch tekʷa 'boy'

PT *cekʷa in *u-cekʷa 'grandchild' (G 441)

15. COOK

**du

PC *du (69)

PT *du (G 142) (> Kav do-ca- 'cook, meal')

16. CUT, BREAK

**la

PC *la > P ta-ra- 'divide', ka-ra- 'split'; Cu o-la 'chop down'; Ch za- 'wound, injure'

PT *ři (G 364)

17. CUT

**sikʷi

PC *šik (183)

PT *sikʷi (G 391)

(PU *siki/a : VVH 225, *sik : M 118)

18. DANCE

**kʷi(:)t

PC *kʷi:t (133)

PT *tiři (G 428)

19. DROWN, DEEP

**widi

PC *widi/a (337)

PT *widi (1) (G 473)

20. FIELD, PLANTATION

**tɨ

PC *tɨ (209)

PT *te(ʔ)e (G 418)

(PU *te~*tep 'earth, ground' : M 150)

21. FIRE, LIGHT A FIRE

**tu

PC *tuk (322)

PT *tu (2) (G 433)

22. FIRE, COAL, ASHES

**tɨkɨ

PC *tɨku (212)

PT *tiki (G 429)

(PU *ku [1] : M 170 ?, Nahuatl teko- [2])

23. FOOT, LEG

**kɨcɨ

PC *kɨca/ɨ (1) (97)

PT *tiçe (2), 'hip' (G 420) (Ese kise [1])

(PU *kasi (2),'thigh' : M 435)

(Two roots may be involved here.)

24. FOOT

**ta

PC *ta (191)

PT *ta (1),'leg' (G 398)

(PU *ta~*to : M 187)

25. GO, WALK

**nɨ́

PC *nɨ́(n)/*na(n) (145)

PT *neti (2),'stand up, be' (G 317)

(PU *nemi 1,2 ,'live' : M 263a)

26. GREEN, UNRIPE, RAW

**ćapa

PC *capa > P sá?-ka; G ɬaŋa (?); B cipà-cipá (1,2)
(BB); Cu sap-ka-leti (1,2)

PT *zawa (1,2,3),'blue' (G 494)

(PU *saw~*sam 3 : M 342, *sawa 'yellow' : M 478)

27. GROW

**butu

PC *pu(N)d (1),'swell' (158a)

PT *muřu (1),'be born' (G 300)

28. HAIR

**can

PC *can (1),'head' (47)

PT *c̣aru (G 88)

PP *ṣ̌ni in *kʷɨ-ṣ̌ni 'beard'

(PU *coni 'hair of the head' : M 219c)

29. HEAVY, WEIGH

**bɨ̇

PC *bɨt ~ *pɨt (252)

PT *bikʷe (1) (G 68)

(PU *pete (1) : M 223)

30. HIS, HER, ITS

**yɨ̇

PC *(y)a-/*ɨ̇ (1, 278)

PT *e (/*y-) (G 149) Girard glosses this as 'absolutive prefix', but the fact that it occurs with nouns that are typically possessed (body-parts, kinship-terms, etc.) is evidence for the gloss given here.

31. HIT

**pu(k)

PC *pu(k)/*bu(k) (31)

PT *pu 'fist, hit with fist' (G 352)

(PU *paka/i [1],'beat, kill' : M 244)

(Onomatopoeia is a confounding factor in this set.)

32. KNOW

**wi ~ **wəi

PC *wiš̌/*wa(i)š̌ (235)

PT *wei in *ba-wei- (1),'teach, learn' (G 27)

33. LIVE

**š̌i

PC *š̌i (1),'be' (177)

PT *ije 'alive, awake, well' (G 159) (?)

34. LIVER

**tɨkʷɨ (?)

PC *tɨk(ʷ)ɨ > B tak 'spleen', Ch tɨ:ki 'bile'; Sabanero takʷa; Muoi tukʷe-rema (cf. set 5. PU)

PT *takʷa (G 403)

35. MOSQUITO

**diki

PC *diki > P té?; G nakaṛak-ték (sp.)(L); B tki-La 'chigger'; Cabécar dike-réh

PT *di?i (G 137)

36. MOUTH

**kʷɨ

PC *kɨhka > P kĩ?- (?); G koŋ (L); B hkU (BB); Cu kaka; Ca kaka-; Ch kɨ:ka; Guamaca kõhká; Tunebo káhka

PT *kʷei- (G 243), *kʷaça (G 232) (?)

PP *kʷɨ

37. NOW

**ke ~ **kai

PC *ke ~ *kai (1),'soon' (101)

PT *kea (1),'today' (G 211)

38. OBJECT, SOMETHING, IT

**ara

PC *ara ~ *ad (4)

PT *-ra 'transitivizing suffix' (G 361)

39. OLD

**ćɨdi

PC *šɨli ~ *ćɨdi (186)

PT *ziri (G 500)

PP *ṣ̌ɨni

40. ONE, FIRST

**k^{w}in

PC *k$^{(w)}$ina (111, 112)

PT *k^{w}ene (2) (G 244)

41. OPEN

**pa

PC *pa(k) (149)

PT *pa (G 327)

42. OTHER(S)

**pi ~ **pai

PC *pi/*pai (1),'many' (151)

PT *peia 'one',(1) (G 338)

43. PLURAL (n.)

**-k^{w}ana

PC *-k^{w}ana > P -wãha; B -pa (?); Cu -kana

PT *-k^{w}ana (G 234)

44. POINT

**pis ~ *bis

PC *bic (25)

PT *pisa 'arrow' (G 348)

PP *pia 'arrow'

(PU *pi 'breast' : M 58 ?)

45. POINT, SHARP

**k^{w}i

PC *kiN (111)

PT *(i)k^{w}i (1) (G 250), *k^{w}e-ru (G 239)

46. POINT

**cuku

PC *suk(u) (172)

PT *ɕuku 'needle, corner...' (G 115)

47. POINT

**wi

PC *witá (236)

PT *wi (1),'nose' (G 472)

48. PUT

**ǰa (?)

PC *ǰa/*ǰi (182)

PT *iya 'put into, leave' (G 175) (> Tac iča, Kav iša)

49. PUT INTO

**b(i)u

PC *bu ~ *pu > P pok- (1),'harvest'; G pió-ki; Ca poŋgi 'pierce'; Ch bki-; PSB *pó-

PT *biu (G 73)

50. REFLEXIVE

**xa-(?)

PC *(h)a- (2)

PT *ka- (G 197), *xa- (Key)

51. ROOT

**ǰaka

PC *ǰaka > P sáʔa 'sasal (a manioc tamale)', Cabécar ško 'manioc'; Murire sága; Sabanero ska

PT *caka (1),'foot' (G 93)

52. SAY

**pa

PC *pa (150)

PT *pa 'se dice; cry' (G 329, 328)

(PU *pai ~ *pay 'call' : M 74)

53. SALT

**badu

PC *bad(u) (1),'sea' (17)

PT *banu (G 48) (cf. Tac banu/bue with Ca above)

(Two roots may be involved here, cf. 59. SWEET?)

54. SHIT

**ša

PC *ša (174)

PT *ze (G 495)

(PU *sa : M 127)

55. SLEEP

**kap

PC *k'ap (127)

PT *tawi (G 412)

(PU *kup ~ *ku : M 386)

56. SMOOTH

**siri

PC *siri (170)

PT *seri 'slippery' (G 389)

57. STRETCH OUT, SPREAD

**pi

PC *pi (156)

PT *pi (1),'straighten' (G 345)

58. SUCK, LICK

**cu

PC *cu (52)

PT *ʦeu (2), 'taste' (G 106)

PP *cucu ~ *čuču

(PU *cun : M 420, *ci : M 421)

59. SWEET

**bad

PC *balu (17)

PT *bita (metathesis?) (G 71)

PP *bata

60. THAT, THOSE

**tu

PC *tu ~ *du > P to?-; Ca tui 'this'; Guaymi noko; G noi 'there' (?) (L)

PT *tu (1,2),'he, them' (G 431)

PP *tu

61. THIS

**ʔi

PC *(ʔ)i(N) (90)

PT *iʔi (?: DH) (G 363)

(PU *ʔi : VVH 116)

62. TIE

**tidɨ

PC *tidɨ (204, 204a)

PT *teǰi 'close, enclose' (G 416), *tiri 'finish' (G 427) (?),
*ǰi- (G 372) (?)

63. TOP, CROWN OF HEAD

**mata

PC *mata (140)

PT *mata (1),'forehead, hill' (G 278)

PP *maʔči

64. TWO

**bita

PC *bita Dual, Plural > P -par-/-pra-(1) (anal.); B pina
'they'; Cu pela (1),'together, all', Ca
-win; Ch ana-biza 'those' (?); Murire
-bita/-beta (2)

PT *beta (61)

PP *bɨta

65. URINE

**iš̆ɨ

PC *(h)iš̆ɨ (87)

PT *iji 'liquid, drink' (G 161)

PP *is(ɨ)o̰-

(PU *si? : M 447)

66. WATER, SECRETION

**di

PC *di (60)

PT *di in *k^{w}ei-di 'saliva' (DH) (G 243); cf. also *madi 'resin, latex, milk' (G 262)

67. WILD CAT

**kut

PC *k'ut (131)

PT *kuš̆i (G 225)

68. WOMAN, FEMALE

**pun

PC *pun ~ *bun (36)

PT *puna (G 359)

(PU *mona 'affinal relative': M 505)

69. WOMAN, WIFE

**ẇɨdɨ

PC *ẇɨdɨ > G -xuli (L); B beri (2); Cu wale-; Ca weiž̌u 'old woman'; Ch wisa; Guaymi meri

PT *wane (G 460)

70. WOOD,STICK, TREE

**katɨ

PC *kal ~ *kad (1,2,3) (98)

PT *k^{w}ati (1,2),'firewood, fire' (G 229)

PP *karu (DH)

71. WORM

**š̌ina

PC *š̌in(a) (184)

PT *ṣena (G 104)

PP *š̌ɨna

72. YOU, YOUR

**mi

PC *mi/*bi (22)

PT *mi- (G 104)

PP *mi-

6. The Chibchan-Pano-Tacanan relationship makes it possible to now reassess certain problematical areas within comparative Tacanan studies in the light of the new-found comparative evidence from Chibchan. In particular, data from Chibchan should permit a meaningful reappraisal of the competing claims of Key and Girard as to the correct phonemic inventory for Proto-Tacanan and the subsequent developments in the daughter languages. Their proposed reconstructed inventories differ in at least two main areas: velars and sibilants.

Both investigators set up two reconstructed velars on the basis of the data available. Key sets up *k to represent the correspondence-set Tacana k/k^w, Cavinena k^w, Ese'ejja (Chama) k^w, and *x to represent Tac h, Cav h, Ese x. Girard proposes *k^w and *k, respectively, as the proto-phonemes underlying these sets. The present study tends to confirm Girard's hypothesis, while at the same time adding further complications to the picture. It appears that in at least some cases **k (and **k^w ?) > t/__ $\begin{bmatrix} V \\ -back \end{bmatrix}$ in Tac and Cav, but not in Ese (cf. sets 10, 18, 23, 55). This shift was obscured by the backing of **t > k in Ese, resulting in the neutralization of **t and **k in certain environments. Similarly, it appears that **k^w k/__ $\begin{bmatrix} V \\ -back \end{bmatrix}$ in certain Chibchan languages (cf. sets 17, 34, 36, 40, 45, 67 [?]).

The problem of the sibilants is not notably clarified by the addition of the present Chibchan data (which itself contains problematical sibilant correspondences), but further comparative work should produce valuable information relevant to the problem. It seems likely to me that there may ultimately turn out to be more Proto-

Chibchan-Pano-Tacanan sibilants than the four I have reconstructed here, but not so many as the nine proposed by Girard for Proto-Pano-Tacanan.

As the above discussion indicates, the Chibchan-Pano-Tacanan relationship broadens and enriches the storehouse of useable materials for comparative studies in both phyla. This fact should allow a number of new linguistic discoveries to be made, while providing new bases for testing already existing hypotheses. The addition of more comprehensive materials from Panoan (and from Uto-Aztecan) should result in a much clearer picture of the facts of Proto-Macro-Chibchan phonology and lexicon.

NOTES

1 Suárez's (1969) recent attempt to demonstrate the relationship of Mosetén to the Pano-Tacanan phylum does not seem to me very convincing. Consequently, I think any decision to include Mosetén as a member of the Macro-Chibchan phylum must depend on further comparative work, which would take into account all of the evidence now available, including Shell's Proto-Panoan reconstructions, the Proto-Tacanan reconstructions of both Key and Girard, and the findings reported in the present paper.

2 Since this paper was begun, some months ago, I have also discovered what I feel is sufficient evidence to prove Swadesh's claim of genetic relationship between Uto-Aztecan and Chibchan. While it is not the immediate purpose of this paper to discuss this relationship, I have nevertheless, wherever possible, included suspected Proto-Uto-Aztecan cognates in the Chibchan-Tacanan cognate-list in section 5 of this paper. I am still in the process of marshalling the comparative facts in support of the Chibchan-Uto-Aztecan relationship, and I plan to present and discuss these in a subsequent paper.

3 My Paya data was gathered during the period April through August, 1974, in Vallecito and Dulce Nombre de Culmí, Olancho, Honduras, while I was employed as a research-assistant under National Science Foundation grant NSF-GS-39634 to the University of Missouri, Lyle Campbell, Principal Investigator.

Appendix 2:

EVIDENCE OF GENETIC RELATIONSHIP BETWEEN CHIBCHAN AND UTO-AZTECAN

The purpose of this paper is to provide evidence of genetic relationship between the Chibchan and Uto-Aztecan language-families. As I believe the following presentation shows, the relationship is so close that it is somewhat surprising that it has not been demonstrated before now. The failure of linguists to notice the relationship is undoubtedly a result of the traditional lack of attention given to American Indian languages south of Guatemala.

Only two scholars seem to have previously recognized the possibility of linking Chibchan and Uto-Aztecan--Nils Holmer and Morris Swadesh. In his Critical and Comparative Grammar of the Cuna Language (1947), Holmer notes a number of lexical and grammatical resemblances between Cuna and Classical Nahuatl, but he does not explicitly postulate a close genetic relationship between the two languages. Instead, he seems to be implying that the similar forms are members of a set of shared retentions from some ancient Amerindian Ur-Sprache, a fact which tends to reduce the credibility of his comparisons. Nevertheless, it was Holmer's work that put the bug, for a short time at least, into Swadesh's ear.

In an article in Word in 1954, Swadesh presents a small set of lexical matchings from Cashinawa, Chibcha and Uto-Aztecan that he claims are evidence for postulating a genetic relationship among the

Panoan, Chibchan and Aztec-Tanoan families. Swadesh's matchings and conclusions, while provocative, were apparently not sufficient to impel other researchers to investigate his claim more carefully, and Swadesh himself apparently never returned to look at the problem in any great detail.[1] The lack of rigorous comparative studies within the three families was certainly an impediment to further research on the question.

Since the time of Swadesh's claim, a large body of new comparative materials has been made available for the three families. The works of Voegelin, Voegelin and Hale (1962) and Miller (1967) have provided a broad and solid basis for comparative studies in Uto-Aztecan phonology and lexicon and for comparison with other language-groups. The studies of Shell (1965), Key (1968) and Girard (1971), in addition to having provided rather convincing evidence of genetic relationship between the Panoan and Tacanan families, have also provided sound reconstructions for cross-group comparisons involving the Pano-Tacanan phylum. And my own recent comparative work with the Chibchan languages has resulted in the first large set of broadly based reconstructions of Proto-Chibchan. It has now become possible to reassess Swadesh's Kio-Chibchan-Panoan hypothesis in the light of all this new information.

In an earlier paper (Holt 1976) I presented evidence which I think clearly shows the existence of a genetic relationship between the Chibchan and Tacanan families (and, by implication, between Chibchan and Panoan also). I also listed there a number of Proto-Uto-Aztecan forms which appear to be cognate with certain of the Chibchan-

Tacanan sets. In this paper I will provide further evidence of genetic relationship between Chibchan and Uto-Aztecan.

Below I have listed what I feel are the most probable cognate sets that I have discovered between Proto-Uto-Aztecan and Proto-Chibchan. (The remaining probable but problematical sets that I have discovered would make up another list about as long as this one.) The PUA forms cited are in most cases the formulae proposed by Miller and are indexed by his set-numbers. Miller's *e has been retranscribed as *ɨ in accordance with more recent hypotheses (cf. Langacker 1970). In a few cases where Miller does not propose a 'reconstructed' form, I have provided one on the basis of the reflex-forms he lists. My Proto-Chibchan reconstructions are based primarily on data from six diagnostic languages: Paya[2], Guatuso, Bribri, Cuna, Cágaba and Chibcha. Supplementary data from other languages has been used whenever necessary. Within each cognate set, the PC form is followed by a representative set of three reflex-forms from daughter-languages in different subgroups within Chibchan. In most cases the PC forms are based on much larger sets of reflexes, but space-limitations do not allow me to present them in their entirety here. I have also included for comparative purposes the corresponding Proto-Tanoan forms for those sets where they are available. These are indexed by their Whorf-Trager (1937) set numbers.[3]

1. ARM, HAND PUA *sɨka (7), *sɨka 'shoulder' (375): PC *sak(w)a > P sawa, Gy ki-sókwo 'paw', Cu sakwa.
2. ARROW PUA *hu (9): PC *u > P u:kwakwa, R uru, Br u:kábot.

3. BACK, BEHIND PUA *co 'buttocks' (66): PC *suk > P suk-, Br skowo 'vertebra', Ch suka '2'.

4. BAT, OWL, SORCERER PUA *tuku '2,3' (313): PC dɨkʷɨr '1,3'>Br dekúr, Tn rúkura, Ch sukʷa.

5. BEND, BOW PUA *to '1' (37): PC *tu > Bo tun-kra '2', Cu toni 'curved, bow-shaped', Gy dotuko '1'.

6. BIRD 2 PUA *cutu (41): PC *culu > Gt su:lu 'wild chicken', Gy čolú-be 'heron', Cu sulu-pa 'eagle'. (PT *sule (55))

7. BIRD 2 PUA *totoli 'chicken' (85): PC *tudi > Gt tu:li 'dove', Gy tõde, Bn turi. (PT *dilu 'hen' (8))

8. BLACK, DARK PUA *tu (45a): PC *tu > Bo turin, Cg toã 'darkness', Mo tutu 'charcoal'. (PT *dakʻu (7))

9. BREAST 1, SUCKLE PUA *cun 'suck' (420): PC *cu > P su- '2', Gt ču '2', Br cu '1'.

10. BREAST 2, CHEST PUA *pi (58): PC *pita > Cu pina 'liver, core', Bn biča, Ch fiza 'throat'.

11. BREAST 3, CHEST PUA *tawi (59): PC *taba > P tawa 'neck, throat', Cg taba-, Ch ti:b-.

12. BREATH, BLOW PUA *puc '2' (49a): PC *bur > Gt pur-, Cg mul-kala '1', Cl furí-. (PT *pʻu/*pʻuci '2' (45))

13. BURST, BREAK PUA *posa/*poca 'swell' (429): PC *bu(c)/*pu(c) > P bo-, Br bucana, Ch posi.

14. CARRY, TAKE, BRING PUA *wɨ '1,2' (77): PC *wɨ > Gy wen '1,3', Cu we- '2', per-we '1,3' Cg i-veikši- '3'.

15. COLD PUA *sɨ/*sɨp (94a): PC *sɨm > P seŵa, R saima, Br sẽsẽ. (PT *ciya (2))

16. COME PUA *ya (pl.) (98), *ya 'run' (358), *yɨ́ (sg.) (97): PC *da > Cu ta, Cg na, Tn ra-wí-; *dɨ́ > P te?, Br de, Bo dek 'walk'.

17. COOK PUA *yu 'warm' (453) (cf. also Tarahumara túga 'roast', Hopi tɨ:ve 'roast'): PC *du > P tu, Cg nū, Gt túxe.

18. CUT 1 PUA *sik (118): PC *sik > R sik-, Br e-šká 'wound oneself', Cu sik-.

19. CUT 2 PUA *tɨ́k (117): PC *tɨ́k R a-taik-, Gy tike-, Ch zike 'cut off'. (PT *t'eyẽ (49))

20. DEER PUA *su/*suka (124a): PC *su/*suli > Gt suli, Tr šuriŋ, Cg sugi.

21. DOG PUA *cu (137): PC *šu > P šúšu, Cu aču, Cl susú.

22. EAR, HEAR PUA *naka (148a): PC *nak > Cu naga 'beside, edge', Gm naku, Mo naka 'cheek'.

23. EARTH 1, DIRT PUA *tɨ́p (150): PC *tɨ́p/*tap > Bo tap-, Cu napa, Cb tipi-.

24. EARTH 2, GROUND, FIELD PUA *tɨ́ (150): PC *tɨ́/*tɨ́ka > P -taha 'three', Cu nega '1,3', Cg tei '3'.

25. EXCREMENT PUA *sa (127): PC *sa > P a'sa, Br sa-ña 'intestines', Cu sa.

26. FEMALE RELATIVE 1 PUA *ka 'grandmother' (496): PC *kak > P ka:ki 'mother', Tr kak 'sister-in-law', Ch kaka 'grandmother'.

27. FEMALE RELATIVE 2 PUA *was (506): PC *wac > Cmu bači 'sister', Bn wati 'aunt', Ch wa:za 'sister'.

28. FILL, FULL PUA *pu (193), *posa/*poca 'swell' (429): PC *pus > P mus- 'be full', R pus-ti-, Ch pusa 'enough, satisfied'.

29. FIRE PUA *ku (170a): PC *ku '1, burn' > R kun-kunu 'light', Gy kuke '2', Cu kum-mak- '2'.

30. FOOT PUA *ta/*to (187): PC *ta > P taha, Gy to- 'footprint', Cu naga.

31. FUTURE, INTENTIONAL PUA *pa (Steele 1975): PC *-bi/*-ba > P -pí/-pá, Br -mi '1', Ch -be Optative.

32. GO PUA *nɨm-i '1, live, walk' (263a): PC *nɨN > Br -néne 'run', Cu nana, Ch nɨn-.

33. GREEN, RAW, YELLOW PUA *saw '2' (342), *sawa 'leaf' (255), *sawa '3' (478): PC *saŋʷa > Gt ɬáŋa '1,2', Gl yi-sama '1', Cy sana '2'.

34. HAIR 1, HEAD PUA *ccni '1' (219c): PC *can > P sã́ '2', Br cã́ '1', Cg san-kala 'head-bone'.

35. HAIR 2, FEATHER PUA *moc/*mos/*mus (214) (or *humuca (DH) > Tubatulabal ʔumuša- '2', Luiseño humṣa- '2', Hopi hõ'mi '1'): PC *humVc > P ṹs- '1', Gm umṣa 'beard', Cm ónso-va 'mustache'.

36. HEART, MIND PUA *sula (222a): PC *šuN/*šul > Br sula-wo '1', R suŋi 'know', Cg -bita-suna 'lung'.

37. HEAVY, WEIGH PUA *pɨtɨ (223): PC *pɨ/*pɨt > P pe:- '2', Cu pene '1', Ch fi:z- '2'.

38. HIDE, SKIN PUA *ho (227): PC *huka > R uk, Cu ũka, Ch huka.

39. HIT 1 PUA *po 'pound' (331), *paka/*paki '1, beat, kill' (244): PC *puk/*buk > P pok/buk, Br hpÚ́k, Tn -muxá.

40. HIT 2, KILL, HUNT PUA *mak '1' (233), *mɨk/*mɨ '2,3' (128d): PC *ma/*mak/*mɨ/*mɨk > P mas- '1,2', Gy ko-mika '2', Cu mak- '2,3'.

41. HOLE PUA *hora '1, open' (Whorf and Trager 1937, 13): PC *hulu > Cu ulu 'inside', Cg hulu 'inside', Cy huru. (PT *həw/*həwol 'gulch, arroyo' (13))

42. HOUSE PUA *hu (DH: 241): PC *hu > Gt ú, Cu u:, Cg hu.

43. I, ME, MY PUA *ni- 'myself' (Langacker 1976): PC *na- > R na-, Gt -na, Cg na-.

44. INTERROGATIVE, POSSIBILITY PUA *sa '1, Inferential, Future' (Steele 1975): PC *sa > P -sà-h '1', Cg sa- '1', Ch -sa(n) Subjunctive, 'if'.

45. IRREALIS, PAST PUA *ta (Steele 1975): PC *ta > P -t/-ta Negative, Cu -ta '2', Ch -za Negative.

46. KNOT, NAVEL, KNEE PUA *sik '2' (301), *poci '2' (302) (cf. 'stomach' *poka (418)): PC *ši/*šiN > P šíh- '1,3', R siŋ '1, 3', Cu simu '1,2'.

47. LEG PUA *kasi '1, thigh' (435): PC *kac/*kic > Cg kásа 'foot', Sn kas-, Mr kisá? 'foot'. (PT *kʕow/*kʕũ (20))

48. LIQUID 1, SECRETION PUA *cic/*cit 'spit, spittle' (406), *kV-ci 'spit, saliva' (='tooth-secretion') (DH: 407), PNumic *pi-ci 'milk' (='breast-secretion') (DH: Davis 1966, 101b): PC *di '1,2, water'>Gt tí, Cu ti, Cg ni.

49. LIQUID 2, SECRETION PUA *tu 'spit' (405): PC *tu > P -tú, Cu nuu 'milk', Cg utu 'saliva'.

50. LIVE, GROW PUA *yo '2' (264); PC *dul > Br duru 'sprout (n.)', Cu tula 'alive', Cl lurí 'born'.

51. LIVER PUA *nima (265): PC *nim > P newa/newa, Bo nom 'spleen', Ch nimi-suk 'heart'.

52. MANY, MUCH PUA *wɨ '1,2, big' (39a): PC *wɨ/*wi > P wé, Cr bi:, Ch vi.

53. MEAT, FLESH PUA *tɨk 'eat meat, deer' (353b), *tuhku (279): PC *dɨkɨ/*duku > P yukú, Br čkŮ, Cg niku-alá.

54. NAIL PUA *sut (298a): PC *sud > P šuna, Gl kulo-ko-soi 'finger', Gm k-sulu-ma. (PT *-ci-/*-ce- (1))

55. NECK PUA *kuta (303): PC *kut > Gt tu-kúra 'nape', Br kuɨi?, Cu tuk-kur. (PT *k'əwo (19)) (Cf. set 73. STICK)

56. NOSE PUA *yaka (308): PC *dak/*dik > Gt táiki, Br ǰik, Ch saka.

57. ONE, COMPLETE PUA *sɨmɨ (507b), *sɨ (507a): PC *šɨm > P šẽ '2', R saimiŋ '1', Br sẽ 'all'.

58. PERSON 1, SOMEONE PUA *ta- Unspecified Subject (Langacker 1976), cf. also *taka (272), *tawa (273a), *tana/*ta (273c) all with glosses 'man, person, etc.': PC *ta 'who?' > P tá-, Gt táika, Cu tóa (<*ta-wa ?).

59. PERSON 2, MAN PUA *tɨwɨ '1, people' (273b), Mejicano teel- (273f): PC *tɨr > Tr teẽaba, Gm teẽúa '2', Tn séra '2'.

60. POINT 1 PUA *pi 'breast' (58), *wopi 'awl' (15), *mupi 'nose' (='face-point') (162b): PC *bi/*bis > P pís-, Cu pis-, Br bi-.

61. POINT 2 PUA *cɨk 'stick (poke)' (415), cf. also PNumic *ci 'point' (DH: Davis 1966, 23), Nahuatl čikalo- 'thorn', Hopi cɨkɨ 'point': PC *cik > P síki 'thorn', R sik '1, tooth, tip', Cu čikwa 'arrow'.

62. POINT 3, ANGLE PUA *wi 'awl, needle' (14): PC *wita > P -wé:ta 'inside corner', Br betá '1, peak', Ch vita '1, peak'.

63. POUND, BEAT, GRIND PUA *tu '3' (206c), *tus '3' (206a): PC *tu>P tus- '1, peck', Cu to- '1,2', Ch to- 'break, chip'. (PT *t'ɔo (52))

64. PUT, PLACE PUA *tɨka (Voegelin et al. 1962, 18): PC *tuk > P tuk-, Cu o-tuk- 'hide', Cy čux-.

65. RAT PUA *ka/*kawa (340): PC *kaki > P ka?i-, Gt koŋ 'gopher', Cg mulu-kai-kai 'big rat'.

66. ROUND PUA *pɔt '1, spherical' (357): PC *pulu > P puru-tukwa 'full (moon)', Gy bolore, Cu mullu.

67. SAND PUA *?o '1, rock' (355a): PC *u > P ú?u, Cu ukup, Cg u-.

68. SAY, TELL PUA *tɨ (434), *ya (363) ?: PC *tɨ/*dɨ > P ta-/ti-, Gt ti-ki, Cg nei-.

69. SEE PUA *tɨ/*tɨw (365), Tarahumara riwa '1, find', Hopi tɨwa 'find, know of': PC *tɨ/*tɨb > Gt tí 'look for', Ch čɨbɨ-, Mo diba 'look at'.

70. SLEEP PUA *ku/*kup (386): PC *kɨp/*kap > Br kp-, Cu kab-, Ch kɨbɨ.

71. SMELL PUA *hu (391a), *hupa (391b): PC *hu > P õ-, R -ŋu-k-, Cu u-.

72. SNAKE PUA *ko/*kowa (395), PNumic *to-kowa-/*to-kohwa- 'rattlesnake' < *tɨ-kowa 'rock-snake' (Sapir cited in Miller): PC *tɨkub > Br tkbí, Cu nag(u)be, Tn ríkuma.

73. STICK PUA *kuta (170d); PC *kuta > R kula 'bush', Mu kutá 'horn', Cg kula 'branch'. (cf. set 55. NECK).

74. STOMACH, MIDDLE PUA *to (417): PC *tu > Tr túwoŋ 'navel', Cu nuku '2, lap', Gy tuklό 'navel'.

75. STONE, SAND PUA *sa/*sɨ/*si '2' (360-1-2): PC *ca/*cɨ > P sa '1', Br ca '2', Cg sei '1'.

76. STRONG PUA *pu 'medicine, power' (281): PC *pul > P pũ-, Ch fun-za 'powerful', Cy púlu '1, hard'.

77. SUN 1, FIRE, HOT PUA *tata '3' (423e): PC *dada > Pn nono '1', Cu tada '1', Cr dalá-buɨu 'sun-god (chief)'.

78. SUN 2, DAY PUA *ta (or *tapi (DH)) (423a): PC *dɨwi > Gt tóxi, Cg niwi, Mr ǰwi. (PT *tᶜow (51))

79. SWALLOW, EAT, DRINK PUA *tɨk '2' (Voegelin et al. 1962, 163): PC *tuk > P tok- '1,3, Br čkU- '2', Cg tuk- '1'.

80. TAKE 1, GET PUA *cupa 'gather' (194): PC *cu > Br cu-, Cu su-, Cg su-. (PT *cuwi (4)).

81. TAKE 2 PUA *kʷɨ '1, carry' (76): PC *ku > Gt kú, R ku-, Cg ku-. (PT *xʷiya (27)).

82. TALK, SAY PUA *pai 'call' (74), Nahuatl ǰa-h-pal-oa 'greet': PC *pa/*pal > P ka-paš- '1', ka-par- 'greet', Cu pali-, Cl pá.

83. THIS PUA *?i (Voegelin et al. 1962, 116): PC *?i/*?iN > P ĩ-, Br i?-, Cl ?ĩ́-.

84. THREE PUA *pahi (510): PC *bai > Gt pói, Mu mai, Tn báya. (PT *poyuwo (39)).

85. TOOTH, BITE PUA *kɨ/*kɨy '2' (42), *ko 'chew' (84), *kV-ci 'tooth-secretion: saliva' (DH: 407): PC *ka/*aka '1' > Gt óka, Br aká, Gy ko-li 'tooth-water: saliva', *ka 'eat' > Br katá-, Cg ka-, Ch ka-.

86. TWO PUA *wo/*woka (509a-b): PC *bu/*bo/*buka > P po:k, Cu po, Tn bukáya. (PT *wi/*wiyi (58)).

87. UNDER, LOWER PUA *tuk 'below' (34), *tuk 'deep' (122): PC *tu/*tuk > Gy toni '1', Ch to- '2', Cy čuka 'sink'.

88. URINE, URINATE PUA *si? '1' (447): PC *h^{w}iši > P íši '1', Bo h^{w}iš-ku '2', Cg h^{w}izi '1'.

89. WET PUA *musa 'sweathouse' (426), Luiseño mó:ma- 'sea', Nahuatl (Pochutla) mowé 'bathe': PC *mu/*muN > P mũ-, Cm móre 'sweat', Cl mumun- 'baptize'.

90. WOMAN 1, FEMALE PUA *ko/*koci/*kuci (or *kuti (DH)) 'older sister' (492a-b): PC *kut/*kuti > P kor-ta, Gt ku'ri 'wife', Br kutá 'older sister'.

91. WOMAN 2 PUA *siw (470): PC *ɨwa > P pe:-suwa 'señora, doña', Gt ura-sifa 'child-female: daughter', Cg seiwa 'wife'. (PT *ɨiw (31)).

92. YELLOW, GREEN, BILE PUA *si/*ci (476), *cipu 'bitter' (43): PC *cip/*cɨp > P se:wa '1', Br cipà-cipá' '2', Ch čičiba 'liver'.

93. YOU PUA *mo 'himself, themselves, yourselves' (Langacker 1976): PC *ma/*ba > P pa-, Cg ma, Ch ma.

The phoneme inventory of Proto-Uto-Aztecan as reconstructed by Voegelin, Voegelin and Hale is as follows: consonants *p *t *c *k *k^{w} *ʔ *s *h *m *n *ŋ *r *l *w *y, vowels *i *ɨ *a *u *o.

I have reconstructed the following set of phonemes for Proto-Chibchan: consonants *p *t *c *k *k^{w} *?(?) *b *d *s *š *h *h^{w}(?) *m *n *r *l(?) *w, vowels *i *ɨ *a *u. *d and *l may be allophonic variants of the same phoneme. There is also some weak evidence for reconstructing *č *ŋ^{w}, *y and perhaps *r̃.

The two inventories are quite similar, as we would expect from such closely related languages. The most noticeable typological differences between them are the presence of a voiced stop series in PC where none seems to have existed in PUA, and a four-vowel system for PC versus a five-vowel system for PUA. Many instances of PC *b and *d may eventually prove to be subsumable under *p and *t once the determining environments of the sound-changes affecting them have been discovered. As should be evident from many of the Chibchan reflex-sets given above, the Chibchan languages exhibit the same kinds of consonant-weakening processes as do the Uto-Aztecan languages. For example *p > b ~ w in sets 70, 92, etc., *t > n ~ l ~ r in sets 54, 55, etc., *m > $\eta^{w} \sim \tilde{w} \sim w$ in sets 15, 51, etc. This can be interpreted as evidence that the two proto-languages had similar rules of allophonic variation.

Below I have listed the recurring sound-correspondences between the phonemes of PUA and PC, together with a tabulation of the cognate sets in which each occurs.

PUA *p : PC *p in sets 10, 23, 28, 37, 39, 66, 70, 76, 82, and 92.

*p : *b in sets 12, 13, 31, 60, and 84.

*t : *t in sets 5, 7, 8, 11, 19, 23, 24, 30, 37, 45, 49, 55, 58, 59, 63, 64, 68, 69, 73, 74, 79, 87.

*t : *d in sets 4, 53, 54, 77(2) and 78.

*k : *k in sets 1(?), 18, 19, 22, 26, 29, 40, 47, 53, 55, 56, 61, 64, 65, 70, 72, 73, 79, 85, 86, 87(?) and 90.

*c : *c in sets 6, 9, 13, 34, 35, 61, 80 and 92.

*s : *s in sets 1, 15, 18, 20, 25, 33, 36, 44 and 91.

*s : *c in sets 27, 47 and 75.

*s : *š in sets 46, 54, 57 and 88.

*h : *h in sets 35, 38, 41, 42 and 71.

*h : Ø in sets 2 and 84.

*m : *m in sets 35, 40, 51, 57, 89 and 93.

*n : *n in sets 22, 32, 34, 43 and 51.

*w : *w in sets 14, 27, 52, 62 and 91.

*w : *b in sets 11, 69, 72 and 86.

*y : *d in sets 16, 17, 50, 56 and 68(?).

*i : *i in sets 7, 10, 18, 46, 48, 60, 62, 78(?), 83, 84, 88 and 92.

*ɨ : ɨ in sets 14, 15, 16, 19, 23, 24, 32, 37, 40, 51, 52, 53, 57, 59, 68, 69 and 75.

*ɨ : *a in sets 1, 23(?), 43 and 85.

*ɨ : *u in sets 53(?), 64 and 79 (all / _k).

*a : *a in sets 1, 11, 16, 22, 25, 26, 27, 30, 31, 33(2), 40, 44, 45, 47, 56, 58, 65, 73, 75, 77(2), 82, 84 and 86.

*a : *ɨ in sets 47(?), 68(?) and 78.

*o : *u in sets 3, 5, 6(2), 7, 13, 38, 39, 41, 50, 66, 67, 72, 74, 86(?) and 90.

*o : *a in sets 30(?), 34 and 93.

*u : *u in sets 2, 8, 9, 12, 17, 20, 21, 28, 29, 35(?), 36, 42, 49, 53(2)(?), 54, 55, 63, 71, 73, 76, 80, 87 and 89.

*u : *ɨ in sets 4(2), 53(2)(?) and 70.

Often in attempts to demonstrate more distant relationships (as, for example, in the case of Aztec-Tanoan) the best that can be done is to show the existence of large numbers of matchings of initial consonants in lexical morphemes of similar meaning, while ignoring the lack of similarity among medial consonants and vowels. Here, however, the closeness of the Aztec-Chibchan relationship is indicated by the high degree of similarity between both consonants and vowels throughout the cognate sets, by the large number of CVC (and even CVCV) matchings in basic vocabulary items, and by the matchings between grammatical morphemes. In fact, in most cases reflex-forms from one family would not seem out of place if they appeared among the corresponding reflex-sets of the other family.

Given the closeness of the relationship, data from one family should be able to provide clues for the solution of problems in the other. As an example of this, consider the following. The anomalous correspondence PUA *c : PC *d in set 48. LIQUID 1, SECRETION PUA *ci/*cit/*cic : PC *di, is valid only if the change *t > *c/__i took place at some stage of Pre-PUA or in a much larger subset of daughter languages than is generally supposed. If this had happened, we would expect to find few or no examples of PUA *ti sequences. And, in fact, this is the case. Miller gives in effect only a single reconstruction

in initial *ti, namely the form for 'boy, man' : *ti/*ti?o/*tiho, which he lists in three different places (sets 55, 273d-e). There are at least a dozen reconstructions for each of the other initial *tV possibilities. Similarly, there are only three cases of reconstructed medial *ti in Miller's list: *mati 'know' (249), *hatis 'sneeze' (396), and *kuti 'nephew' (503). *hatis is probably onomatopoetic and therefore resistant to sound-change. *kuti is not a well-founded reconstruction, since one of the two reflex-forms on which it is based, Luiseño kuli-may 'older sister's son', seems to mean etymologically exactly that (cf. sets 492a and 86), and should be included among the reflex-forms for 'older sister' (492a). Notice that the *ti > *ci hypothesis accounts for the r ~ c alternation among the reflex-forms in sets 492a and b. The indicated reconstruction is *kuti, which corresponds exactly to the reconstructed PC form in my set 90. The remaining *ti reconstruction, *mati, has the variant form *maci, which reflects the fact that the *t > c change took place in some daughter languages in which it was not expected. There is additional evidence for the *ti > *ci change in Miller's listing of reconstructions with medial *c (p. 79). There fully 15 of the 27 forms listed contain *ci. Some of these are almost certainly reflexes of Pre-PUA forms with *ti.

Another important problem-area indicated by the comparative evidence is the discrepancy between the vowel-systems of the two proto-languages. The large number of PUA *o : PC *u matchings implies to me a need for reevaluation of my criteria for setting up only a single back round vowel for PC. It will be necessary to double-check

what I have established as conditioning environments for the change *u > o in the Chibchan daughter-languages. It may ultimately prove necessary to reconstruct a fifth PC vowel, *o, or, alternatively, to postulate a PC vowel-length-opposition.

As these examples suggest, the Aztec-Chibchan relationship should provide a huge new storehouse of relevant materials for comparative studies in both branches of the new phylum. I sincerely hope that the evidence I have presented here is convincing enough to at least pique the curiosity of researchers in both Uto-Aztecan and Chibchan, as well as American Indianists in general. There is no longer any reason for the relationship to lie unrecognized, as it seems to have during the more than twenty years since Swadesh noticed it. The comparative data I have provided is intended as merely a preliminary step toward the reconstruction of the language of a group of people whose descendents once ranged over this hemisphere from Montana to Bolivia.

NOTES

1. In Swadesh (1967) he does reaffirm his belief that Chibchan and Uto-Aztecan are closely related, but without providing any additional evidence.

2. The Paya data used in this study is based on field-work I did in Vallecito and Dulce Nombre de Culmí, Olancho, Honduras, during the period March through August, 1974, while I was employed as a Research Assistant under National Science Foundation grant NSF-GS-39634 to the University of Missouri, Lyle Campbell, Principal Investigator.

3. The glosses which head the cognate sets are intended as tentative reconstructions of the approximate semantic range of the etymons at the Proto-Aztec-Chibchan stage of their development. Throughout the cognate sets, glosses are not given for reconstructed forms or for Chibchan reflex-forms if they are identical to the heading gloss(es) or to the PC gloss(es). If the gloss of a form is identical to only one or a subset of the heading glosses or PC glosses, these are indexed by numbers: '1' = first gloss, '2' = second gloss, etc.

The following abbreviations are used for the names of languages: PUA Proto-Uto-Aztecan, PC Proto-Chibchan, PT Proto-Tanoan, PNumic Proto-Numic, Bn Bíntucua, Bo Boruca, Br Bribri, Cb Cabécar,

Cg Cágaba, Ch Chibcha, Cl Colorado, Cm Chimila, Cmu Chumulu, Cn Changuena, Cr Chiripó, Cu Cuna, Cy Cayapa, Gl Gualaca, Gm Guamaca, Gt Guatuso, Gy Guaymí, Mo Motilón, Mr Marocacero, Mu Murire, Mv Move, Pn Penonomeño, P Paya, R Rama, Sb Sabanero, Sn Sinsiga, Tn Tunebo, Tr Terraba.

The abbreviation DH in parentheses after a form indicates a reconstruction I have made on the basis of data provided by an earlier researcher (Miller, if not otherwise stated).

Appendix 3:

SUPPLEMENTARY NOTES ON AZTEC-CHIBCHAN

In a paper presented at BLS III and published in the proceedings of the meeting, I gave a list of 93 proposed cognate pairs of reconstructions from Proto-Uto-Aztecan and Proto-Chibchan as evidence of genetic relationship between the two families. At that time, space-limitations prevented me from including certain questionable matchings and from commenting more fully on some of the observable phonological and semantic relationships in the data.

In what follows, I will augment the list of probable cognate sets, revise some parts of my earlier paper, and propose further hypotheses about Pre-Proto-Uto-Aztecan which are suggested by comparative evidence from Chibchan.

In order to better align the Aztec-Chibchan hypothesis with the principal data available for comparative studies involving Uto-Aztecan, I have here adhered to Miller's numeration and proposed proto-glosses. I have provided cross-referencing from Miller's sets to the sets I proposed in my earlier paper.[1]

1. acorn PUA *k^{w}i, *k^{w}ini (and probably also 2. acorn *wi): PC *k^{w}it in words for 'squirrel' > Cu kwini; Cmu kúit; Tn kwit-roa (< *kwit-daba 'acorn-person'); At kwin-dumaka; Cg kut-ẽku.

7. arm — cf. my set (DH) 1. Py sawa ~ suwa 'hand, arm' and Tr sak-wo are evidence for PC *sɨk-wa (i.e. PC* sak-wa ~ *sɨk-wa).

9. arrow — cf. DH 2.

14. awl — cf. DH 62. To M's set might be added Az wic- 'thorn'; SP a-wita 'chief'; Tb yaha:-wi-t 'point of a hill'. Ms wita 'point, end, top, head, chief' suggests the possible semantic range of this etymon. (Cf. also PT *wi 'nose, point')[2]

15. awl — cf. 58. breast, below (DH 60).

22. bark (vb.) — PUA *wah, *woh (both DH) (also Az wa-wa-l-) : PC *wa 'cry, make a sound' > Py wah-; Cg wa-/wa-k-; Ms wak- 'bark'. (Cf. also PT *iwara 'call') While onomatopoeia is certainly a factor here, the possible cognate status of these forms can not be ignored.

27. bathe — PUA *u-pa : PC *(h)uba 'bathe, swim' > Cu ob-; Gy huba (1); Bn a-umá-ba (1).

34. below — (and 122. deep) cf. DH 87. To M's set might be added Tr tó 'bury', tó-báci 'sink', tú 'below'; Ls tó:-ŋax 'below, down, under'. The forms in set 164. fall *yu may be distantly related.

37. bend — cf. DH 5. (Cf. also PT *tu 'bend, bow')

39a. big — cf. DH 52.

41. bird — cf. DH 6. (Cf. also PP *čunu 'swallow')

42. bite (and 84. chew, and 407. spit) cf. DH 85. Apparently related is PC *kas-ka ~ *kah-ka 'bite-r' = 'mouth' > Cu kaka; Cg káhka; Ch kɨhka.

43. bitter (and 476. yellow [guts, gall]) cf. DH 92.

45a. black cf. DH 8. To M's set add Ls tó:wa 'get dark'. A similar, possibly related root is suggested by Ls yú:va 'be dark', yulóča 'stay overnight'; Az yowa 'get dark, become night', yowa-l- 'night' < PUA *yu (or *du) : PC *du 'black' Br d(o)LóLó; Cr doló; Ch sue-.

45c. black PUA *cuk : PC *su(k) (or *cu(k) ?) > Py suk-wa; Tr sok-sie; Cg a-bak-su.

47a. blood PUA *?ɨt (cf. also Pg het- 'red', Az e:l- 'liver') : PC *hɨda 'liver, heart' > Py -h(a)rá (1); Rm air-bi 'blood' (-bi 'secretion'); Cb ẽr̃ (1) (< earlier her [1,2]).

49ab. blow cf. DH 12. Reanalysis indicates that the PC root is better reconstructed as *pu, *pul 'blow, breathe, wind', aligning it even more closely with M's PUA reconstructions.

54. boy PUA *tu : PC * tu > Rm tutuŋ 'brother'; Cg tuéi 'brother'; Ch čuta 'son'.

58. breast (cf. DH 10 and 60) PUA *pi, 15. awl PUA *wopi, *(h)opi, 162b. nose PUA *mupi, and 224. heel PUA *tanapi (and possibly 17. back PUA *pi) all seem to contain an earlier root *pi 'point'. The corresponding PC root is ambiguously reconstructed as *bi(s) or *pi(s). (Cf. also PT *pisa 'arrow'; PP *pia 'arrow')

59. breast (chest) cf. DH 11.

60abc. breath(e) PUA *hi, *hik, *hik^{w} : PC *huk > Py úk- 'blow; burst' (< earlier huk-); Bn hugenó 'breathe'; Cl hukina 'wind'.

66. buttocks (cf. also Az co-yo-) cf. DH 3.

69. buzzard PUA *mar (DH) (> NT kuši-mari) : PC *kus-ma(la) > Rm kús-malá-tu; Sm/Cc/Mt kús-ma; Gt kon-kús-kus 'black hawk'. (Borrowing is probably a factor here.)

74. call cf. DH 82. To M's set might be added SP am-paka 'talk'; Hp paŋqa- 'tell'; Az pa-pa-wi:- 'shout, scream', pa-pal 'talkative (one)'. (Cf. also PT *pa 'cry; se dice')

76. carry cf. DH 81. Cc su-kwe-la 'get, take' and Cg kwi 'take, pick, lift' indicate a variant root : PC *k^{w}i or k^{w}ɨ.

77. carry cf. DH 14.

85. chicken cf. DH 7.

86. child PUA *mal, *ma : PC *ŋ^{w}al or *mal 'child, grandchild' > Py -w̃ah-w̃aha (2); Rm mala (2); Sm wala-bes (1).

94a. cold cf. DH 15. The PC form may be *sim or *siŋ^{w}.

97. come cf. DH 16.

98. come cf. DH 16.

105. cough PUA *?oh : PC *awh > Py aw-; Rm ohó-ti-; Sm awh- 'roar, bellow'. (Cf. also Es oho- [Tacanan])

117. cut cf. DH 19.

118. cut cf. DH 18. The PC form should be *šik. (Cf. also PT *sikwi)

122. deep cf. DH 87. To M's set might be added Az toka- 'bury, plant', tok-ti- 'hide oneself'; Tr túka 'bury'. (Cf. also 34. below, above)

124a. deer PUA *su, *suka : PC *su(k) 'point, pointed' > Py suk-uk 'porcupine' (= 'point-skin'); Cg a-suka (1), sug-i 'deer'; Ch suk-wa 'spear'. Cf. semantics of Sn sika-rama 'point-person' = 'deer'. (Cf. also PT *ṣuku 'point')

127. defecate cf. DH 25. The PC form is either *sa or *ša (or both) : cf. Py aššá?-; Cg ša 'bad' (?); Ch či-ča 'diarrhea' (či- 'liquid').

128d. die cf. DH 40.

137. dog cf. DH 21.

148a. ear cf. DH 22. Probably related is the homonymous PC form *naka 'branch' > Ms naga; Cu naga; Mu/Sb naga. Cf SP naŋka- 'ear; branch'.

150. earth, ground cf. DH 23 and 24. Also (23) Cg tui (< *tiwi); Cb tipi-gi-nak 'mud'; Gy dobõ; Mr/Sb debi; Db taba 'clay, mud'.

162a. face PUA *mu (and 218. head PUA *mo?o [?]) : PC *mu > Rm mu-ŋut 'face'; Sm mu- 'face', muh- 'cheek'; Ch mu-e 'crown of head'. (Cf. also PT *mu-tiru 'hat')

162b. nose cf. DH 60 and 58. breast, above.

163. fall PUA *wɨ, *wɨci, *wɨcɨ, *wɨsi, *wɨsɨ : PC *witi (or *wɨti) 'deep' > Py winis- 'drown'; Cu wila 'deep, depth'; Cg wini/weini 'below'; Bn in-witi-kába 'low, short'. (Cf. also PT *widi 'drown'.) The PUA form seems to be another example of Pre-PUA *t > *c/__i (see the discussion of this hypothesis in my earlier paper).

164. fall PUA *yu (Add also Ls yóna/yúna 'dive, sink, drown, press down'.) : PC *du 'lower, sink' > Py -lú- (2); Cg duani; Bn yurí (1). (Cf. also PT *du- 'inside, deep')

169. finger PUA *waci : PC *wa > Py -wawa; Tr sák-wo (< *sɨk-wa 'hand-digit')

170a. fire cf. DH 29. Also Gt kué; Sm kuh 'firewood'. (I have given these additional Chibchan forms in order to 'justify' using the Rm and Cu forms I gave in my earlier paper in 170b. below).

170b. firewood PUA *kuna : PC *kun 'fire, light, heat' > Rm kun-kunu (2); Cu kun-wa (2), kum-mak- 'burn'; Mv koñi (3).

170c. stick of wood cf. DH 73.

173. fish PUA *kV ... (> Yq kúcu; Hch keecəə; etc.) : PC *kVsV or *kVšV > Py kusã́ ~ wišã́ (< *kʷɨšáN ?); Sm kisá-ne 'fish-scales' (?); Gt kásaŋ 'róbalo'(sp.); Cmu/Gl kisi; Nr kuso-kara.

176. flow (run) PUA *wa : PC *wa(l) > Ms a-wal(a) 'river'; Sm was 'river, water'; Cu wala 'branch of a river'; Gm a-wári 'vomit' (?); Ch wan-za 'sand' (= 'river-stone' ?).

177. flow (run) PUA *mɨl : PC *ŋʷɨl (or *ŋʷal or *mɨl) > Py w̃e:š- 'quickly'; Rm ŋal-b- 'hurry'; Cg malei 'rapidly'; Gm malá-mala-ké 'hurry up'; Ch i-mɨ:sɨ- 'flow, run' (*l > Ch s is regular); Cm mra:-mrá 'current'. A single root (*ŋʷɨl ?) could underlie all the forms in 176 and 177.

179. flute PUA *kus : PC *ku(N) 'blow, whistle' > Py kúš- (2); Rm a-kuk- (1),'breathe'; Sm kuŋ-wĩwh- (1,2); Ch -ku- (1).

182. fly (vb.) PUA *ya may be related to 98. come PUA *ya.

184. fly (vb.) PUA *nɨ may be related to 263a. live (go) PUA *nɨm-i.

187. foot cf. DH 30.

193. full (and 429. swell) cf. DH 28.

194. gather cf. DH 80.

201. good PUA *ʔay : PC *ay 'good, true, right' > Py áyhña (1); Rm ãyxwa (2); Cc áy-dika 'right hand'; Gy é (2,3).

206ac. grind cf. DH 63.

212a. hair of the body PUA *pɨ : PC *bas 'skin, hair' > Py ba:ki 'near' (< *bah-ki 'skin-on' ?); Sm bas (2),'leaf'; Mt bas-to 'leather'; Rm bas-uŋ- 'kiss' = 'skin-smell'.

214. hair, facial cf. DH 35.

215. hand PUA *ma : PC *ma 'hand, arm' > Py -maya ~ -mãña 'forearm'; Sm ma-ki-tis 'upper arm'; Cg kat-su-ma 'fingernail' (?); Cy maŋ- 'five'. (Cf. PT *me 'hand')

218. head see 162a. face, above.

219c. hair of the head cf. DH 34.

222a. heart cf. DH 36. Cf. the additional forms : Py šuw̃iš- 'teach'; Sm sumal- 'advise, counsel'; Ul ásuŋ 'liver'?; Vc sulepsa 'reasoning'; Cu sunna-wisi 'know'; Cl sõ- 'live'. PC *sun/*sul seem more probable than my earlier reconstructions with *š.

223. heavy cf. DH 37.

224. heel see 187. foot and 58. breast (point) above.

227. hide, skin cf. DH 38. To M's set might be added Az kam-o?- 'yam' = 'red-skin'. (For semantics cf. Py ta?-o 'yam' = 'red-skin'.)

233. hit cf. DH 40.

241. house cf. DH 42.

244. kill (beat) cf. DH 39. Cf. also Rm bak- 'beat, mix'; Br se-bak 'drum', urá-wo-bak 'fist'(?).

249. know PUA *ma, *mai, *mati, *maci : PC *mai 'think, be sad' > Py a-mãyš- (1,2); Cu mai- 'know'; Ch -mai- 'get sad'.

251. laugh PUA *?ac : PC *hada > Sm ará-; Gy hadá- 'make fun or jokes; flirt'; Cb sa-hãña. An earlier **hat > PrePUA *?at-i must be assumed. M's reflex-forms provide evidence for PUA *?aci or *?acɨ.

261. light (in color) PUA *maci, *masi : PC *ma (?) > Py ka-mas- 'shine, glow', ka-ma:sa 'white'; Cu me- (< *mai ?) 'shine'. (Forms available from only two lgs. A highly tentative matching.)

263a. live cf. DH 32. (M's *nɨm-i was misprinted as *nim-i in my earlier paper.)

264. live cf. DH 50.

265. liver cf. DH 51. The Ch reflex-form given earlier may be nimi-suk or nɨm(ɨ)-suk, further supporting the reconstruction *nɨm. (Cf. also PT *nime 'conscience, mind, seat of feelings'.)

270. lungs cf. 222ab. heart, breath, above (?).

272. man PUA *taka : PC *taka 'person' > Py -tahá Agent, '-er'; Rm taka-la 'which one?'; Cu naga Honorific : 'sir'. Cf. also PC *tak 'liver' > Br tak 'spleen'; Sb tak-wa; Ch tɨ:kɨ 'bile'. (Cf. also PT *takwa, PP *tak^{w}a, both 'liver'.) For semantics cf. PUA *nɨm... 'person, liver' (M 263b and 265).

273a. man PUA *tawa : PC *daba > Tr dob-én; Cu toa (< *tawa) 'who?'; Tn -rama 'person, animal'; Ch sa:wa 'husband'. (Cf. also PP *nawa 'stranger, person, enemy')

273b. person, people cf. DH 59.

279. meat (and 353b. eat meat, deer) cf. DH 53.

281. medicine PUA *pu (cf. also Ls purá-pra- 'be hard, tough') : PC *pu, *pul, *pun 'strong, powerful; good' > Py -pún- (1), -púra?- 'be able'; Cu pule (1); Ch po/po:z (1), fun-za (2); Cy púlu (1),'hard'; Rm pul-ka (3); Gt pué (3).

297a. mud PUA *so : PC *cɨb > Sm saw 'earth'; Br cõ-ñ̃o 'land'; Cmu sávi-kal; Ch tɨb-so 'mud, clay'. (A problematical set.) Cf also 45c. black, above (?).

298a. nail cf. DH 54.

301. navel cf. DH 46.

303a. neck cf. DH 55.

306. no PUA *ka, *kai : PC *ka, *kai > Cr kai; Br ke- (< *kai); Cg -ga.

308. nose cf. DH 56.

313. owl cf. DH 4. Cf. also Az tekolo-.

330. pot PUA *sa : PC *sɨr 'pot, container' > Py seri (1); Cc saña (1); Mt seya (1); Gt señ 'net'.

331. pound cf. DH 39.

340. rat cf. DH 65.

342. raw cf. DH 33.

353b. eat (meat) cf. DH 53.

355a. rock cf. DH 67.

357. round cf. DH 66.

358. run cf. DH 16.

360-1-2. sand cf. DH 75.

365. see cf. DH 69.

375. shoulder cf. DH 1.

376. side PUA *nak^{w} : PC *nak > Ms nak 'on this side'; Cu naga 'beside, near'; Mo naka 'cheek'. (Cf. 148a. ear PUA *naka, to which this set may be related.)

386. sleep cf. DH 70.

391ab. smell, odor cf. DH 71.

395. snake cf. DH 72.

405. spit PUA *tu : PC *tu > Ms tu-b-; Sm tuh-; Br čali-tu(w)e- 'vomit'; Bo turút-ča 'saliva'; Cg tu 'saliva'; Tr truŋ 'saliva'. (Cf. also DH 49.)

406. spit cf. DH 48.

407. spit PUA *kV(h)-ci (DH) : PC *ka-di 'tooth-secretion' > Cr ka-ri; Gy ko-li. *di is the principal PC root for 'water, juice, secretion'. The forms point to earlier **k{ɨ/a}-{t/d} i (> PrePUA *kɨ-ti). (Cf. DH 48.)

408. spit PUA *cu? (DH) : PC *šu or *cu > P šun-, šurú?- 'drool'; Rm su-iŋwair-; Cy cuh-ke- 'spit s.th. out'.

411. stand PUA *wɨ, *wɨnɨ : PC *wɨ 'be' > Py ta-we-h- 'grow'; Cu wi-mak- 'make, do' (mak- Causative); Gy bi; Ch -we-, -we-ne-.

413. star PUA *su, *cu : PC *su or *cu > Py su-kor-su-kor- 'Pleiades'; Gt surú-suru 'small stars', só-toruŋ 'comet'; Tc šuri-wo; Cg zu-meia.

415. stick (poke) cf. DH 61.

416. stomach PUA *sap : PC *sap > Py sapa 'mouth'?; Rm saba 'vulva'; Cu sapa; Bn zama 'meal'?

417. stomach cf. DH 74. (Cf. also PT *tu 'belly')

418. stomach PUA *poka : PC *puk (?) > Gl/Cmu bugú 'heart'; Ch puki 'stomach'. (Cf. also PP *poko.) PUA *po 'stomach' (> *po-ci 'navel', Hp póno, etc.) : PC *pu(t) 'stomach, heart' > Gl/Cmu potú 'navel'; Gy motó (1),'liver'; Sm put-(2).

420. suck cf. DH 9. Also Rm i-su- 'suck'; Sm su- 'suck'.

421. suckle PUA *ci (< PrePUA *ti) may be related to PC *di 'liquid, water, secretion (e.g. milk)'. Cf. DH 48 and M 406 and 407.

423a. sun cf. DH 78. Also Tr ḍaba 'day'; Br díwU 'sun'.

423d. fire PUA *tai : PC *dai > Py tãy-wa; Sm dayh- 'burn'.

423e. hot cf. DH 77. Also Mt lal 'sun'; Tr doró 'sun'.

426. sweathouse cf. DH 89. Also Ch mon 'bath'; Br mõ̀n-mõ̃ 'wet'.

429. swell cf. DH 28. Also Ms pus-k- 'fill, stuff'. To M's set might be added Ls pú:sa 'inflate'.

432a. talk PUA *niok or *nɨok (cf. also Ls ŋá:- 'weep, cry; sing (birds)') : PC *nɨa(k) or *ñɨ(k) > Py ñã-h-/ñẽ-hi; Cu nega- 'speech, noise'; Gy ñoke; Cg nei- 'say, tell'.

433. taste PUA *ka(h)ma (?:DH) (cf. also Az kama- 'mouth') : Py kam(a)- 'taste' (the only probable cognate I've found).

434. tell cf. DH 68. The PC form is better reconstructed as *ti > Cu ni-sa- 'talk rubbish' (sa 'excrement'); Rm bal-ti-ŋ- 'speak'; Bn čǐ-ska 'language'; Cl ti-. (Cg nei-, included in earlier set, is probably a reflex of PC *ñɨ : cf. 432a. above)

435. thigh cf. DH 47. Also Py kas- 'kick'; Bn káte 'foot'. (Cf. also PP *kiš̆i 'thigh')

442. tooth PUA *tam : PC *tam 'point, tooth' > Py tan-síki 'needle', kaš̆-tama 'crest (of a bird)'; Sm tam(ni) 'horn'; Mt/Cc tawa 'mouth'; Ms twisa (< *taw-isa ?) 'tongue' (?).

446. turtle PUA *ko : PC *kuk or *kok ? > Gt koki; Br kok.

447. urinate cf. DH 88. Also Ch hɨsu 'urine'; Tn isa 'urine'; Cy šǐ:-pi 'urine' (-pi 'secretion'). (Cf. also PP *isõ- 'urinate'; PT *iji 'liquid')

455a. water PUA *pa : PC *ba in *ba-di- 'sea, salt' > Bo ki-baŋ (1); Cu palu (1); Cmu/Cn/Mr bali (1,2) (Cf. also PT *banu 'salt'); and in *ba-k 'mud' > Py pak-, pak-kwa 'swamp'; Sm was-mak; Cg bak-su.

455c. blood PUA *pa (DH) (Cf. also Az ʔa-pal- 'red, colored') : PC *paw ~ *pal 'red, colored, dark in color' > Py pawa (1); Rm par-na 'black'; Ms paw- (1,3),'brown'; Sm paw- (1), 'dye (v.), tan (v.)'; SJ -mawa (1); Cu pole 'be dark' (< *paw-le- ?); Cl pabá 'black'; Bn mánña 'red sky' (?).

465. wing PUA *ʔana : PC *ana 'appendage' > Py aha 'horn'; Cu ana 'branch'.

470. woman cf. DH 91. To M's set might be added Ls ṣwa:may 'daughter'. (2 roots may be involved in M's data) Also Ch siwa 'female genitals'.

475. worm PUA *k^{w}ic (cf. also SP wiši 'caterpillar') : PC *k^{w}it (?) > Py wíʔa; Ul wítaŋ 'caterpillar'; Cmu/Gl kisi; Sb kibeta; Mr we; Tc bisóh 'earthworm' (?). The forms point to Pre-PUA *k^{w}it-i > *k^{w}ici (the earlier root apparently gave rise to the Mej forms).

476. yellow cf. DH 92. Also Tr semóh 'bile'; Sm sapah 'sour'; Cr spa-na 'green'; Ch tiba 'yellow'.

478. yellow cf. DH 33. Some of the reflex-forms given under 476 above may belong here instead.

481. yes PUA *u... (DH) (Cf. also Ls ʔuhó:) : PC *u... > Py ũ:ʔṹ; Bo uú. (A tentative set.)

492. grandfather PUA *k^{w}a: PC *wawa or *baba > Py -wáwá-ha; Cg -bama; Ch baba 'most worthy' (Honorific).

492b. older sister cf. DH 90.

496. grandmother cf. DH 26. Also Cg kagi 'mother-in-law'.

499. uncle PUA *kumu : PC *kuku > Py a?ku (1),'father-in-law'; Sm kukó- 'cousin', kúkuŋ- 'grandfather'; Mt kuku-; Cg kuku-i 'aunt'; Gm kúgu 'grandfather'. (Cf. also PP *koka; PT *kuku)

506. affinal relative cf. DH 27. Also At wáse 'aunt'.

507ab. one cf. DH 57.

509ab. one cf. DH 86.

510. three cf. DH 84. Also Cg/Bn/Gm mái-; Gl bái; Py máyh; Cl pai-man/pé-ma.

NOTES

1. The following abbreviations have been used (M's abbreviations are not listed here):

At	Atanques	Gy	Guaymi
Az	Aztec (Classical Nahuatl)	Mo	Motilón
Bn	Bíntucua	Mr	Murire
Bo	Boruca	Ms	Miskito
Br	Bribri	Mt	Matagalpa
Cb	Cabécar	Mu	Muoi
Cc	Cacaopera	Mv	Move
Cg	Cágaba	Nr	Norteño
Ch	Chibcha	Py	Paya
Cl	Colorado	Rm	Rama
Cm	Chimila	Sb	Sabanero
Cmu	Chumulu	SJ	San José
Cr	Chiripó	Sm	Sumu
Cu	Cuna	Sn	Sinsiga
Cy	Cayapa	Tc	Tucurrique
Db	Dobocubi	Tn	Tunebo
Es	Ese'ejja	Tr	Terraba
Gl	Gualaca	Ul	Ulua
Gm	Guamaca	Vc	Viceyta
Gt	Guatuso		

2. After a number of sets I have given in parentheses apparently cognate reconstructions from Proto-Panoan (PP; from Shell 1965) and Proto-Tacanan (PT; from Girard 1971).

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