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Contributions to Chibchan historical linguistics

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2 Internal issues

The present section aims to provide a thorough reconstruction of Proto-Chibchan lexicon, grammatical elements, and phonology. As briefly outlined in the introduction, there are several reasons for this: First, the reconstructions of Proto-Chibchan prepared by Constenla Umaña (1981, 2012) and Holt (1986) disagree in several instances, in the domains of phonemes, suprasegmentals, phonotactics, and morphemes or words. As an illustration of sorts, tables 6 and 7 show the Proto-Chibchan vowel inventories reconstructed by Constenla Umaña (1981, 2012) and by Holt (1986). It is visible at first sight that Constenla Umaña reconstructs a much larger Proto-Chibchan vowel inventory than Holt.

Constenla Umaña (1981) reconstructs twelve Proto-Chibchan vowels, and then later, ten (Constenla Umaña 2012), as shown in table 6.

TABLE 6
PROTO-CHIBCHAN VOWELS, AS RECONSTRUCTED BY CONSTENLA UMAÑA (1981, 2012)

	Front	Central	Back
High	*i, *ĩ		*u, *ũ
Near high	(*ɪ)		(*ʊ)
High–mid	*e, *ẽ	(*ə, *ə̃)	*o, *õ
Low		*a, *ã	

Vowels in parentheses are no longer reconstructed by Constenla Umaña (2012).

Instead, Holt (1986) reconstructs only four vowels for Proto-Chibchan, shown in table 7.

TABLE 7
PROTO-CHIBCHAN VOWELS, AS RECONSTRUCTED BY HOLT (1986)

	Front	Central	Back
High	*i	*ɨ	*u
High–mid			
Low		*a	

Tables 8 and 9 show the consonant inventories reconstructed by Constenla Umaña (1981, 2012) and Holt (1986). In this case, however, it is Holt who reconstructs more Proto-Chibchan segments than Constenla Umaña. The Proto-Chibchan consonant inventories proposed by Constenla Umaña (1981, 2012) are shown in table 8. They contain 12 (13) phonemes.

TABLE 8
PROTO-CHIBCHAN CONSONANTS AS RECONSTRUCTED BY CONSTENLA UMAÑA (1981, 2012)

	Labial	Dental/alveolar	Velar	Glottal
Voiceless stops	*p	*t	*k	*ʔ
Voiced stops	*b	*d	*ᵑg	
Affricate		*ʦ		
Fricatives		*s		*h
Lateral		*l		
Vibrant		*r, (*ɾ)		

The tap (in parentheses) is no longer reconstructed by Constenla Umaña (2012).

The consonant inventory proposed by Holt (1986) is shown in table 9. It contains 17 (18) Proto-Chibchan phonemes. Among the segments reconstructed by Holt (1986) but not by Constenla Umaña (1981, 2012) are, for instance, nasal stops (*m, *n), labialized velar stops (*k^w, *$ŋ^w$), a palatal (*c) and a uvular stop (*q). Instead, a glottal stop *ʔ, reconstructed by Constenla Umaña (1981, 2012) (table 8), is not found in Holt's (1986) Proto-Chibchan consonant inventory (table 9).

TABLE 9
PROTO-CHIBCHAN CONSONANTS AS RECONSTRUCTED BY HOLT (1986)

	Labial	Dental/ alveolar	Postalveolar/ palatal	Velar	Labio -velar	Uvular	Glottal
Voiceless stops	*p	*t	*c	*k	*k^w	*q^9	
Voiced stops	*b	*d					
Fricatives		*s	*ʃ				*h
Nasals	*m	*n			(*$ŋ^w$)		
Lateral		*l					
Vibrant		*r					
Glides	*w		*j				

The labialized velar nasal (in parentheses) is only tentatively reconstructed by Holt (1986: 195).

Thus, the Proto-Chibchan phoneme inventories proposed by Constenla Umaña (1981, 2012) and Holt (1986) are quite distinct and need to be reconsidered.

The second reason why an updated reconstruction of Proto-Chibchan is wanting is that, so far, none of the Proto-Chibchan reconstructions has been based on evidence from all twenty-three Chibchan languages known at present. The Proto-Chibchan phonemes reconstructed by Constenla Umaña (1981) are based on the comparison of Muisca (an extinct Chibchan language of Colombia) and five Chibchan languages of Costa Rica (Guatuso, Bribri, Cabécar, Térraba, and Boruca), as the author himself explicitly states (ibid.: 18).[10] In contrast with that, Holt's (1986) Proto-Chibchan is based on data from the following six Chibchan languages: Pech, Rama, Bribri, Kuna, Kogi, and Muisca (Holt 1986: 70). Finally, Wheeler's (1972) Proto-Chibchan

[9] With respect to this Proto-Chibchan stop, Holt (1986: 193–4) states: "Because of the relatively large number of sets (14) in which a P[roto]Ch[ibchan] velar stop becomes either *ʔ* or Ø in P[aya], I have decided to set up a second unrounded velar stop in the proto-language. […] 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 two most obvious possibilities are [$k^ʔ$] and […] [q], a backed velar stop. The latter possibility seems the better guess on the basis of systematic considerations at the proto-language level, since (in my analysis) no other glottalized segments have been postulated."

[10] Notwithstanding, in the cognate sets and in the reflexes of Proto-Chibchan phonemes that he discusses for single languages, Constenla Umaña (1981) uses data from fourteen additional Chibchan languages: Pech, Rama, Kuna, Dorasque (including Chánguena), Guaymí, Bocotá, Tunebo, Kogi, Ika, Damana, Atanques, Chimila, and Barí. Actually, Constenla Umaña (1981) seems to have proceeded as follows: He reconstructed Proto-Chibchan on the basis of data from six languages and subsequently tested the validity of his reconstructions including additional data from fourteen languages.

reconstructions are only based on data from Colombian Chibchan languages: Barí, Damana, Ika, Kogi, Muisca, and Tunebo.

Third, since Constenla Umaña's and Holt's reconstructions, several modern descriptions of different Chibchan languages have become available which include both phonemic and phonetic data transcriptions (an overview of some of these sources is given in table 13, greater depth is provided in section 2.3). These recently published sources allow both a reconsideration and amplification of the existing reconstructions.

The structure of this section is as follows: It begins with a brief subsection dealing with methodology (2.1). Subsection 2.2 deals with Chibchan cognate sets and provides Proto-Chibchan reconstructions (lexicon, postpositions, affixes). Subsection 2.3 provides a detailed account on the reflexes of Proto-Chibchan phonemes in the different Chibchan languages. Finally, subsection 2.4 presents and discusses Proto-Chibchan phonemes, allophones, and phonotactics on the basis of (1) the correspondences observed in subsection 2.2 and (2) the reflexes observed in subsection 2.3. Background information clarifying several choices that were made in the reconstruction of Proto-Chibchan forms in subsection 2.2 is likewise provided in subsection 2.4. No detailed proposals concerning subgrouping have been made in the present thesis, except those mentioned in subsection 1.2.3 above. The reasons for this are (1) the often heavy criss-crossing of isoglosses which hampers neat subgrouping, and (2) the fact that Chibchan subgrouping is not directly relevant for the question dealt with in section 3, namely the external classification of Chibchan.

2.1 Analytical framework

The present subsection discusses the basic steps of the comparative method that were undertaken in order to reconstruct Proto-Chibchan (2.1.1). Detailed information on linguistic reconstruction can be found in Hock (1991: 556–661), Fox (1995: 57–121, 145–216), or Campbell (2004: 122–67, 225–42). Subsection 2.1.2 discusses the approach undertaken in the particular context of this thesis.

2.1.1 Basic steps in the reconstruction of a proto-language

A proto-language may be reconstructed on the basis of data from different languages, once the existence of a genealogical link between these languages is plausible. Needless to say, this is the case for the twenty-three Chibchan languages mentioned above, in table 1 (subsection 1.1.1). In what follows, I will present and discuss some basic procedures of the linguistic reconstruction.

Reconstructing a proto-language, a first step consists in arranging several forms (morphology, lexicon) of the different languages according to their meaning. Examples from Chibchan are shown in table 10.

TABLE 10
ARRANGING SEMANTICALLY RELATED TERMS IN ORDER TO DETECT RECURRENT SOUND CORRESPONDENCES

Cabécar	Boruca	Kuna	Muisca
hĩ́ʃʊkʊ́ ‘earth, floor	*tap* ‘earth, floor’	*nappa* ‘earth, land, ground, floor’	<tybso> ‘potter’s clay’
tɪ ‘cornfield’	*ɾáŋkra* ‘sowing, cultivation’		<ta> ‘tillage’
tã́ ‘gourd rattle’	*tá?* ‘gourd rattle’	*naa* ‘gourd rattle’	-/-

Sources are Holmer (1952) (Kuna); González de Pérez (1987) (Muisca); Margery Peña (1989) (Cabécar); and Quesada Pacheco and Rojas Chaves (1999) (Boruca).

Investigating distant genealogical relationships, different authors (e.g., Campbell 2003: 271–2; Adelaar 2013: 123–4) stress that only semantically equivalent forms should be taken into account when potentially related elements are compared with each other. This is also true when searching for cognate forms in established language families. In table 10, for instance, I tentatively consider ‘earth’ and ‘clay’ to be semantically close enough

to be compared. Which semantic steps are acceptable, and which are not, may sometimes be difficult to decide (see subsection 3.1.1.1.6 for a discussion of this issue).

Also, it is important to identify morphological elements which are not relevant in the comparison of the forms in question. This kind of data analysis is necessary if the comparison is going to yield robust results (Adelaar 2013: 122–3), both in the investigation of distant genealogical relationships and when assembling cognate sets in established language families. The correct interpretation of remnant morphology is not always an easy task: In the second row of table 10, for instance, Muisca <tybso> 'potter's clay' contains an element <-so> which is probably not part of the root. Constenla Umaña (1981: 417) identifies Muisca <-so> as "a relatively frequent Muisca derivational suffix". Alternatively, this element is cognate with Cabécar /dó/ 'mud' (cf. Margery Peña 1989: xvi). In any case, final <-so> does not seem to belong to the root in question and the Muisca form to be used in the subsequent comparison is <tyb->.

Whereas productive or fossilized morphological elements not belonging to the root in question need to be identified, the language data do not necessarily have to undergo other kinds of internal reconstruction before they are compared. On the contrary, only comparing forms that underwent further internal reconstruction (for instance, on the basis of allophonic variation or morphophonemic alternation), entails a simplification (cf. Fox 1995: 212–3) and a loss of potentially relevant information (Campbell 2004: 240–1).

In some cases, relevant data may be missing, and gaps are to be expected. In table 10, for instance, I could find no entry in the consulted Muisca source for 'gourd rattle' (cf. González de Pérez 1987).

Finally, obviously unrelated elements are deleted from the sets in question. By this criterion Boruca *ráŋkra* 'sown field, cultivation' in the third row and the Cabécar term *hĩ́ʃʊkʊ́* 'earth, soil' in the second row of table 10 are eliminated (the Cabécar cognate form belonging here might be in fact be *tãmã* 'dirty' (cf. Margery Peña 1989: l)). It is then possible to propose the following table 11.

TABLE 11
SEMANTICALLY RELATED TERMS REFLECTING RECURRENT SOUND CORRESPONDENCES

English	Cabécar	Boruca	Kuna	Muisca
'earth/clay'	-/-	*tap*	***nap-***	<tyb->
'field for cultivation'	*tɪ*	-/-		<ta>
'rattle'	*tã́*	*tá?*	*naa*	-/-

Based on the regular correspondence of Cabécar #*t*, Boruca #*t*, Kuna #*n* and Muisca #*t* in table 11, one may provisionally reconstruct Proto-Chibchan *#t, from which the segments in question derive (table 12). This decision is based on the principle of economy: If *t (and not, for instance, n*) is postulated as the Proto-Chibchan segment here, only one language (Kuna) undergoes a major change, *t > *n*, the others do not (cf. Campbell 2004: 133–4).

TABLE 12
RECURRENT REFLEXES OF PROTO-CHIBCHAN *#t

Proto-Chibchan	Cabécar	Boruca	Kuna	Muisca
*#t	#*t*	#*t*	#*n*	<#t>

These hypotheses (*#t > #*n* in Kuna; *#t > #*t* in Cabécar, Boruca, and Muisca) can then be tested with further lexical and morphological material. So far, the data shown in table 12 imply that Kuna has been innovative. If the same innovation (*t > *n*) is also observed in another Chibchan language, this might indicate a particularly close relationship of this language with Kuna, which is relevant in subgrouping. (Indeed, Proto-Chibchan *t > *n* is also found in Guaymí – compare Proto-Chibchan *tau 'dog' > Guaymí /nu/ 'dog' (Quesada Pacheco 2008: 25)). It goes without saying that it remains to be investigated whether or not such a single shared innovation reflects chance, contact, or a particularly close genealogical connection between the languages in question.

Later adjustment of the proposed hypotheses is often necessary, and the rules of sound change shown in table 12 may need further refinement and revision. This is the case, for instance, when Kuna #*n* in *noka* 'calabash, drinking vessel, cup' suddenly seems to correspond with Muisca <#z> in <zoca> 'calabash, gourd', and not with Muisca <t>* (there is no Muisca form <toka>*), which would be expected according to the sound correspondences given in table 12. An explanation for this apparent inconsistency can be sought in an analogical or conditioned sound change, a split in Muisca, a merger in Kuna, borrowing, or chance. When reconstructing the phoneme inventory of a proto-language, as in the establishment of phoneme inventories of living languages, the principle of parsimony is central. It seems to apply to the number of reconstructed proto-phonemes rather than to the number of conditioned sound changes that are postulated (cf. Fox 1995: 38–43).

Finally, there is of course no criterion to assess the validity of a reconstruction such as *#t in table 12 by external evidence (by its very nature, the proto-language is not spoken anymore), and the correspondence model of truth is replaced, as it were, by

the criteria of plausibility of the proposal, and coherence and reliability of the system-internal rules that have been postulated (Fox 1995: 89).

2.1.2 Approach in the present study

The reconstruction of Proto-Chibchan forms was undertaken according to the principles of the comparative method, of which some basic principles and procedures have briefly been outlined in the previous subsection 2.1.1. The language data were drawn from published descriptive works, and collected during fieldwork in the case of Barí, one of the easternmost and least known Chibchan languages (Pache 2014–16). This fieldwork was undertaken in two one-month field trips, in January/February 2014 and in October/November 2016, with speakers from the community of Aruutatakae, State of Zulia, Venezuela (for more details, see below, subsection 2.3.2).

Table 13 gives an overview of the published sources on single Chibchan languages that have been used for a reconstruction of Proto-Chibchan in this thesis. These sources were chosen because they were either the most comprehensive available so far (as in the case of Holmer's 1952 Kuna dictionary, or in the case of Celedón's 1892a Atanques wordlist), and/or because they also included phonetic transcriptions (such as, for instance, Chevrier 2017a for Bribri, or Ortiz Ricaurte 2000 for Kogi).

TABLE 13
OVERVIEW OF CHIBCHAN LANGUAGES USED IN THE RECONSTRUCTION OF PROTO-CHIBCHAN GIVEN IN THIS THESIS

	Language	Source	Source used in Constenla Umaña's (1981) or Holt's (1986) reconstructions
1	Atanques	Celedón 1892a	(Yes)
2a	Barí (eighteenth century)	Rivet & Armellada 1950	(Yes)
2b	Barí (present-day)	Pache 2014–16	No
3	Bocotá	Margery Peña 1993, 1996	No
4	Boruca	Quesada Pacheco & Rojas Chaves 1999	No
5	Bribri	Chevrier 2017a	No
6	Cabécar	Margery Peña 1989	No
7	Chánguena	Pinart 1890	(Yes)

8	Chimila	Malone 2005	No
9	Damana	Trillos Amaya 2000	No
10	Dorasque (Chumulu, Gualaca)	Pinart 1882, 1890	(Yes)
11	Duit	Lehmann 1920	No
12	Guatuso	Constenla Umaña 1998	No
13	Guaymí	Quesada Pacheco 2008	No
14	Huetar	Quesada Pacheco 1992	No
15	Ika	Landaburu 2000a	No
16	Kogi	Ortiz Ricaurte 2000	No
17	Kuna	Holmer 1947, 1952	(Yes)
18	Muisca	González de Pérez 1987	No
19	Nutabe	Rivet 1943a	No
20	Pech	Holt 1999a	No
21	Rama	Grinevald et al. 2002–06	No
22	Térraba	Constenla Umaña 2007	No
23	Tunebo	Headland 1997	No

(Yes) in parentheses indicates that the respective source was used in Constenla Umaña's (1981) cognate sets, but not in his reconstruction of Proto-Chibchan phonemes.

Data from these languages have been juxtaposed in tables. Hypotheses on the sound correspondences and their conditions were made, tested and reformulated or refined wherever necessary, and underlying Proto-Chibchan forms were reconstructed.

It goes without saying that Proto-Chibchan forms should not be reconstructed on the basis of parallels that are due to coincidence, recent (shared) lexical innovation, or language contact. For this reason, and if not indicated otherwise, a reconstructed Proto-Chibchan form is proposed below, in subsection 2.2, if the form in question is reflected in at least three Chibchan languages, two of which belong to one of the following three genealogical and/or geographically non-contiguous clusters:

- Atanques, Barí, Chimila, Damana, Ika, Kogi, Kuna, Muisca, Nutabe, Pech, Tunebo
- Bribri, Bocotá, Boruca, Cabécar, Chánguena, Dorasque, Guaymí, Kuna, Térraba/Teribe
- Guatuso, Huetar, Pech, Rama.

If in certain cases, Proto-Chibchan phonemes are only tentatively reconstructed in this thesis, and if the reflexes of Proto-Chibchan sounds in the daughter languages are not yet fully understood, this is also due to lack of information on the particular developments that took place in the respective daughter languages. For instance, the splits and mergers in the development of Proto-Chibchan *p and *^{m}b into Rama *p*, *b*, and *m* are still impossible to recover in many cases. A more fine-grained understanding of the underlying processes in Rama and other Chibchan languages and pre-languages, if possible, will eventually help to better predict the reflexes of Proto-Chibchan. Also, the question of how specific a proto-language should be at this stage of reconstruction remains to be discussed. In line with the principle of parsimony, I have tentatively avoided being overly specific, leaving further detailing, if ever possible, to future studies.

2.2 Cognate sets

The present subsection provides (1) the reconstructed Proto-Chibchan forms with the corresponding cognate sets in modern Chibchan languages and (2) some potentially cognate forms from Chibchan languages which are not sufficient to reconstruct a Proto-Chibchan form and need further investigation. If not indicated otherwise, I follow Constenla Umaña (1981, 2012) in giving Proto-Chibchan forms in phonemic, not in phonetic transcription.

In the context of the reconstructed Proto-Chibchan forms, there is often a rubric labelled 'compare also', where the reader can find forms with different status:

- Forms which are cognate, but only available in a different and/or problematic transcription, and which are therefore not used in further analysis.
- Forms whose cognacy status needs further analysis and that seem to contain some irregular correspondences or (fossilized) morphological elements that are not yet fully understood.
- Forms which imply important semantic steps if they should be derived from the reconstructed proto-root.

Several of the proto-roots presented here were reconstructed in a similar form by Constenla Umaña (1981, 2012), Holt (1986), and, in some fewer instances, by Holmer (1947), Wheeler (1972), and Levinsohn (1975). The corresponding reconstructions of these authors are always provided together with my own reconstructions. This implies that in these cases, Constenla Umaña, Holt, Holmer, and Wheeler must be credited primacy in the identification of all or at least some of the reflexes in the single languages given here.

The semantics of the Proto-Chibchan forms must remain approximative in those cases where several meanings are proposed.

In Chibchan data, I use bold for all segments that are accounted for by the proto-form.

Achiote tree (*Bixa orellana*)

Bocotá *geˈɾa gliˈa* ‘achiote tree’ (Margery Peña 1993: 69)

Compare also *geˈɾa* ‘achiote fruit’ (Margery Peña 1993: 69).

Boruca *krík*ɾ*a* ‘achiote tree’ (Quesada Pacheco & Rojas Chaves 1999: 114)

Compare also *krik* ‘achiote fruit’ (Quesada Pacheco & Rojas Chaves 1999: 114).

Chimila <kaarikra’> ‘achiote tree’ (Niño Vargas 2018: 362)

Compare also <kraarikra’>, <kroorikra’> ‘achiote tree’, <kroori’> ‘achiote fruit’ (Niño Vargas 2018: 362).

Afraid, angry, sad

Bocotá *ˈtadra* ‘fear’ (Margery Peña 1993: 90)

Boruca *ʤót* ‘to anger’ (Sp. *enfadar*) (Quesada Pacheco & Rojas Chaves 1999: 141)

Bribri: Amubre, Katsi *daɻò* ‘fear (noun)’ (Margery Peña 1982: 138)

Cabécar, southern dialects *ʃãnõ*, San José Cabécar variety *ʃánã* ‘sad’ (Margery Peña 1989: 538)

Chimila /dannu/ [ⁿdán:ù] ‘to fear’ (Malone 2005: 213)

Afraid, ashamed

Muisca <ze**fan**suca> ‘to be ashamed’ (González de Pérez 1987: 332)

Térraba ***bán***$k^hɾɪ$ ‘to fear’ (Constenla Umaña 2007: 276)

All$_1$ *^{m}ba^{n}d-

*$ŋ^{w}$ala plural, collective (Holt 1986: 152)

Bocotá ***bã*** *ˈlɛ* ‘completely’ (Margery Peña 1993: 82)

Chimila **/br**ii/ **[^{m}br**i:] ‘all, every’ (Malone 2005: 210)

Trillos Amaya (1997: 100) gives -$^{m}b^{ʔ}ɾe$ as a plural marker; this form might belong here, too.

Kuna -***mal****a* ‘plural’ (Holmer 1947: 86–8, 123–5)

There is a second plural marker *-kana* in Kuna (cf. Holmer 1947: 86) which might be related (alternations between velar and bilabial stops in Chibchan are discussed in subsection 2.4.3.1).

Muisca <**fuyz**e> ‘all’ (cf. González de Pérez 1987: 327–8)

A related form recurs in <hyca**fuyza**> ‘scree’ (González de Pérez 1987: 293). The element <hyca> means ‘stone’ (ibid.: 295).

Rama *uː****mal****iŋ* ‘every, all, together’ (Grinevald et al. 2002–06)

The element *uː* might be related to the comitative/instrumental marker *u* (cf. Craig 1989: 114).

Compare also:

Guatuso *maˈɾame* ‘plural’ (Constenla Umaña 1998: 118)

All$_2$ *pii-^{n}da

*bɨ ‘all’ (Holt 1986: 93)

Ika *pinna* ‘all’ (Landaburu 2000a: 747)

I have no explanation for geminated *nn*.

Kuna *pela* ‘all, altogether, it is finished’ (Holmer 1952: 118)

Térraba *ɸí*, ***ɸír****kɔ* ‘every, all’ (Constenla Umaña 2007: 277)

Final *kɔ* might be related to a suffix *-kɔ* which derives adjectives in Térraba (cf. Constenla Umaña 2007: 43).

Compare also:

Cabécar: northern dialects *bínã* ‘all’ (Sp. *todos*, *todas*) (cf. Margery Peña 1989: 535)

Allative/dative *ka

*ka ‘at, in, towards’ (Constenla Umaña 1981: 363)

*ka benefactive: ‘for’ (Holt 1986: 106)

This suffix may be related to the nominalizer$_3$ which is discussed below.

Bocotá /kɛ ~ gɛ/ dative postposition (Margery Peña 1996: 19)

Boruca *-ka* dative, allative, ablative, locative (Quesada Pacheco & Rojas Chaves 1999: 140)

Damana *-ga* dative, allative (Trillos Amaya 1999: 36)

> Trillos Amaya (2000: 754) gives Damana *-ka* locative, which might eventually turn out to be related.

Guatuso *-ko* ‘in, inside, to, toward (locative, ilocative, alocative, temporal)’ (Constenla Umaña 1998: 107)

Ika preverbal element *kə* (Frank 1985: 93)

> This element has been interpreted by Frank (1985: 93) as a valency-increasing verbal prefix indicating a peripheral participant.

Kuna *ka* dative (‘to, for, against’) (Holmer 1947: 186)

Muisca <-c(a)> locative (goal) (Ostler 1993: 9)

Pech *-ka* benefactive (Holt 1999a: 43)

> The use of this element is illustrated in *ta-ka-pàskúh* ‘to take it out for (*-ka*) me (*ta*)’ (Holt 1999a: 43).

Térraba *gɔ́ ~ gɔ* ‘to, in’ (Constenla Umaña 2007: 100)

Compare also:

Tunebo *ak* ‘for, to’ (dative, allative) (Headland 1997: 62)

Angry *u^{n}du

Cabécar **/ùɽú**dằ/ [**ùɽú**nằ] ‘to get angry’ (Margery Peña 1989: xx)

> Final /-dằ/ is not part of the root in question (cf. Margery Peña 1989: lv).

Guaymí *ɾu*, *ɾuɾu* ‘to fight’ (Sp. *pelear*, *guerrear*) (Quesada Pacheco 2008: 107)

> Compare also Guaymí *huɾuɔ* ‘fear (noun)’ (Quesada Pacheco 2008: 67); ***ɾu**bũ* ‘angry’ (ibid.: 54).

Kuna ***ur****wa* ‘to become angry, be bad, be in commotion, fight, go to war, be infested with disease’ (Holmer 1952: 177)

The suffix *-wa* seems to indicate an inchoative meaning (cf. Holmer 1947: 68–9)

Rama ***ul****iːn* ‘to be angry’ (Grinevald et al. 2002–06)

I have no explanation for final *iːn*. A related ending may recur in *alkiːn* ‘be peppery, itch’.

Compare also:

Guatuso /uːɾo/ ‘war’ (Constenla Umaña 1998: 10)

Bribri ***ũɲ́ṹ****k* ‘to quarrel’ (Margery Peña 1982: 149)

Térraba ***ɻú****k* ‘to feel ashamed’ (Constenla Umaña 2007: 233), *guɻɔ́ŋ* ‘threaten, be angry’ (Constenla Umaña 2007: 232, 271)

Arm, wing, shoulder *k^{w}ik

*ˈkuíkɪ ‘arm, hand, shoulder’ (Constenla Umaña 1981: 361)

*kwi(N)k ‘wing, arm’ (Holt 1986: 114)

The reflexes in Kogi, Barí and Guaymí may indicate the existence of a nasal vowel in the proto-form.

Barí [kũˈĩ́ĩ́] ‘upper back’

A related form may recur in Barí [kũˈĩ̄ⁿdà] ‘back’, a form which may be cognate with Boruca *kuíktaŋ* ‘shoulder’ (cf. Quesada Pacheco & Rojas Chaves 1999: 152).

Barí, eighteenth century, <kuix> ‘back’ (Rivet & Armellada 1950: 33)

Boruca ***kuík****taŋ* ‘shoulder’ (Quesada Pacheco & Rojas Chaves 1999: 152)

Final *taŋ* might derive from Proto-Chibchan *dã(kiⁿd) ~ *tã(kiⁿd) ‘back, roof, after’.

Guatuso |kuiKi ~ kuki | **/kuiŋ**ka/ ‘wing’ (Constenla Umaña 1998: 25)

Final /-ka/ is a stem formative and does not belong to the root (Constenla Umaña 1998: 24–5).

Guaymí ***ŋwi****je* ‘wing’ (Quesada Pacheco 2008: 157)

I have no explanation for final *je*.

Ika *kwiʔ* ‘feather’ (Landaburu 2000a: 747)

Kogi /**gu**ˈ**i**kala/ [**gu**ˈ**i**xaɮa] ‘wing’ (Ortiz Ricaurte 2000: 780)

Final *-kala* is a frequent stem formative in Kogi (cf. ibid.: 769–70), derived from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’.

Rama *k^{w}iːk* ‘arm, hand’ (Grinevald et al. 2002–06)

I have no explanation for the long vowel.

Tunebo ***kuik****a*, ***kuik****á* [kuíka, kuiká] ‘arm’ (Headland 1997: 117)

Final *a* or *á* is probably a later addition in Tunebo; it may recur in *bur****a*** [buúr**a**] ‘ash, snow’ (cf. Headland 1997: 96–7). Tunebo *kuika* may be related to Tunebo *kuistoka* ‘shoulder’ (ibid.: 120). Huber and Reed (1992: 19) give *k^{w}íka* ‘arm’.

Compare also:

Bocotá <guiále> ‘behind’ (Margery Peña 1993: 72)

Muisca <pquaca> ‘arm’ (Gonzáez de Pérez 1987: 198)

Armadillo *^{n}duʔ

Bocotá /ʧu/ ‘armadillo’ (Margery Peña 1996: 24)

Damana ˈ*du* ‘armadillo’ (Trillos Amaya 2000: 751)

Guaymí /**nu**si/ [ˈ**nu**si] ‘armadillo’ (Quesada Pacheco 2008: 34)

I have no explanation for final /si/.

Térraba ***dú****pkuɔ* ‘armadillo’ (Constenla Umaña 2007: 233)

Final *-pkuɔ* is a stem formative element in Térraba. It is probably an allomorph of *-kuɔ* (cf. Constenla Umaña 2007: 34–5) and may be compared with the Muisca stem formative/class term <-pqua> (for instance, in Muisca <upqua> ‘eye’, González de Pérez 1987: 285).

Tunebo ***ruʔ****rama* (Headland 1997: 169), ***ru****rama* ‘small armadillo’ (ibid.: 171)

The element *-rama* is reminiscent of the Waunana (Chocoan) diminutive suffix *-dama* (cf. Holmer 1963: 108).

Compare also:

Chimila <lutti’>, <sutti’> ‘armadillo (*Dasypus novemcinctus*)’, <luu̲gki>, <luu̲gki lu̲gki> ‘armadillo (*Cabassous centralis*)’ (Niño Vargas 2018: 241)

Kogi <nuuí, nuñgui> ‘armadillo’ (Preuss 1927: 476)

Ashes *^{m}bũ^{n}d(ũ)

*bur, *buˈrṹ ‘ashes’ (Constenla Umaña 1981: 362)

*buru(N) (~bulu[N]) ‘ashes, dust’ (Holt 1986: 95)

Proto-Colombian Chibchan *bu-N- ‘ash’ (Wheeler 1972: 104)

Atanques <bun> ‘ashes’ (Celedón 1892a: 593)

Bocotá /bũˈdũ/ [mũˈnũŋ] ‘ash’ (Margery Peña 1996: 15)

Margery Peña (1993: 83) writes *mõˈnõŋ* ‘ashes’.

Boruca *brúŋ* ‘ashes’ (Quesada Pacheco & Rojas Chaves 1999: 127)

Bribri: Amubre, Coroma [mɛ̀ɽ̃ṹ-ɟkạ̀] ‘ashes’ (Chevrier 2017a: 188)

Final [-ɟkạ̀] indicates a solid/semi-solid substance (Chevrier 2017a: 188). A related form may be Amubre [ˈbŏ-**mɛ̀ɽ̃ɛ̀**] ‘sawdust (= ‘log-powder’)’ (ibid.: 111). Margery Peña (1982: 116) gives Amubre, Katsi, Salitre *mũɽṹ* ‘ash’.

Dorasque: Chumulu <**bul**ku>; Gualaca <**bulu***c*u> (Pinart 1890: 9), <**bulu**cu> (Pinart 1882: 61).

Final <ku> and <cu> probably derive from Proto-Chibchan *k^{w}a ‘seed, fruit’ (cf. Pache 2016a).

Guatuso |puɾu| ‘ash’ (Constenla Umaña 1998: 44)

Ika ***buN****(səga)* ‘ash’ (Landaburu 2000a: 748)

I have no explanation for the element *səga*. A cognate element may be Bribri [-ɟkạ̀] which refers to a solid/semi-solid substance in Amubre/Coroma [mɛ̀ɽ̃ṹ-ɟkạ̀] ‘ashes’ (cf. Chevrier 2017a: 188).

Kogi /ˈ**muli**/, [ˈmuʌi] ‘ash’ (Ortiz Ricaurte 2000: 778)

Final /-i/ is a frequent stem formative in this language; it recurs, for instance, in /ˈ**nabi**/ ‘jaguar’ (Ortiz Ricaurte 2000: 768).

Kuna *puru* ‘ashes’ (Holmer 1952: 131)

Muisca <**fu**sque> ‘ash’ (González de Pérez 1987: 224)

A related form may be Muisca <fusque> ‘dust’ (ibid.: 299). Muisca <**fu**sque> ‘ash’ (González de Pérez 1987: 224) may be analysed as either <fus-que> or <fu-sque>, with <sque> having a cognate counterpart in Ika /buN(səga)/ ‘ash’ (cf. Landaburu 2000a: 748) and in Bribri (Amubre, Coroma) [mɛ̀ɽ̃ṹ-ɟkạ̀] ‘ashes’ (cf. Chevrier 2017a: 188).

Rama *pluŋ* ‘ash’ (Grinevald et al. 2002–06)

Térraba *ɸrúŋ* ‘ashes, flour, dust’ (Constenla Umaña 2007: 237, 250, 268)

Tunebo ***bura*** [**buúr**a] ‘ash, snow’ (Headland 1997: 96–7)

> Final *-a* is a frequent stem formative in this language; it may recur, for instance, in ***kuika***, ***kuiká*** [kuíka, kuiká] ‘arm’ (cf. Headland 1997: 117).

Compare also:
Chimila **/bu^{h}ŋaʔ/** [**^{m}bú^{h}ŋàʔ**] ‘ash’ (Malone 2005: 203)

Aspect, imperfective *-e

*-e[3] imperfective aspect marker (Constenla Umaña 2012: 406)

This form does not appear in the following subsection discussing all the reflexes of Proto-Chibchan phonemes in the single Chibchan languages. In fact, the vowel *e of this Proto-Chibchan form is only tentatively reconstructed as a phoneme (see subsection 2.4.1). In some cases (Guatuso, Guaymí, Kuna, see below), the reflexes of this Proto-Chibchan aspect marker seem to be preceded by the reflex of another element, for instance *^{n}d or *k.

Bribri /-é/ imperfective aspect marker (Constenla Umaña 2012: 406)

Cabécar /-é/ imperfective aspect marker (Constenla Umaña 2012: 406)

Chimila *-e* prospective aspect (Trillos Amaya 1997 152)[11]

Damana *-i* imperfective aspect (cf. Trillos Amaya 2000: 755)[12]

Guatuso *-e*, *-je*, *-ŋe*, *-Ø* realis mood (Constenla Umaña 1998: 177)

Guaymí *-e*, *-ẽ*, *-ɾe*, used when tense considerations are irrelevant for the action referred to (cf. Quesada Pacheco 2008: 19, 161)

Kogi *-hĩ* imperfective aspect (Ortiz Ricaurte 2000: 764)

Kuna *-e*; *-ke*, *-ne*, *-le*, *-je* present tense (Holmer 1946: 193)[13]

Rama *-i* [-ɪ/-e] imperfective aspect marker (cf. Craig 1989: 44–5, 144–6)

> The use of *-i* is illustrated in the form *ma: paun-**i*** ‘you cry, you are crying’ (Craig 1989: 143). This element *-i* is labelled ‘present’ by Craig (ibid.: 144).

Térraba /-í/ imperfective aspect (Constenla Umaña 2012: 406)

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[11] Compare the Emberá prospective suffix /-j/, which might be related (cf. Aguirre Licht 1999: 119).
[12] “Actualiza una acción no concluída” (Trillos Amaya 2000: 755).
[13] The vowel *e* is the result of contraction of final *-a* of the verb stem with the present-tense marker *-i*; also, “[i]n a certain number of verbs, the present is formed by an extension, chiefly by means of any of the formatives *-ka-*, *-na-*, *-la-* or *-ya-*” (Holmer 1946: 193).

Aspect, perfective *-o

*-o[2] perfective aspect marker (Constenla Umaña 2012: 406)

This form does not appear in the following subsection discussing all the reflexes of Proto-Chibchan phonemes in the single Chibchan languages. In fact, the mid vowel *o of this Proto-Chibchan form is only tentatively reconstructed as a Proto-Chibchan phoneme (cf. subsection 2.4.1).

Bocotá /-o/ perfective aspect (Constenla Umaña 2012: 406)

Bribri /-ô/ perfective aspect (Constenla Umaña 2012: 406)

Chimila *-o* perfective aspect (Trillos Amaya 1997: 151)

Muisca <-o> past tense marker used with some verbs (Adelaar & Muysken 2004: 92–3)

Rama-*u* [-ʊ/-o] past tense (cf. Craig 1989: 44–5, 144–6)

Back$_1$ *^{n}da(ki^{n}d) ~ *ta(ki^{n}d)

Vowel nasality may tentatively be reconstructed for this Proto-Chibchan form since several Chibchan languages (Rama, Boruca, and Kogi) seem to reflect it.

Boruca *ú* ***táŋ*** ‘roof’ (Quesada Pacheco & Rojas Chávez 1999: 193)

> The element *ú* means ‘house’ (cf. Quesada Pacheco & Rojas Chávez 1999: 127). It remains to be established whether or not Boruca *déŋi* ‘after’ belongs here, too (cf. ibid.: 137).

Ika [tɨkiŋ] ‘behind’ (Landaburu 2000a: 735)

> A related form may be Ika *təkin* ‘after’ (cf. ibid.: 744).

Kuna ***naa****le* ‘after’ (Holmer 1952: 82)

> The function of final *-le* in this Kuna form might be compared with the Bocotá suffix *-le* ~ *-ɾe* deriving adjectives from nouns (cf. Margery Peña 1993: 81, 87).

Rama *taŋkit* ‘back (body)’ (Grinevald et al. 2002–06)

> Final *kit* may have a cognate counterpart in *si:kit* ‘polewood’ (cf. Grinevald et al. 2002–06). The first morpheme in Rama *taŋkit* ‘back (body)’ might be related to ***taŋ****a:* ‘back (body, space), keel’ (ibid.).

Compare also:

Cabécar *tagí*, *takí* northern dialects ‘spine’ (Margery Peña 1989: 406), in Ujarrás ‘back’ and ‘shoulder’ (ibid.: 290)

Chimila /lakɾa/ [lák·ɾà] ‘back’ (Malone 2005: 202, 209)

Guatuso /tae:xa/ ‘yesterday’ (Constenla Umaña 1998: 15)

Kogi *təŋkua* ‘shelter’ (Huber & Reed 1992: 248)

Teribe ***ʃidok*** ‘hut’ (Quesada 2000a: 77)

Térraba *dóni* ‘after’ (Constenla Umaña 2007: 243)

Tunebo *kuis**toka*** (Headland 1997: 120), *k^{w}ik-**toka*** ‘shoulder’ (Huber & Reed 1992: 19)

Hyphenation in the second form is adopted from Huber and Reed (1992: 19).

Back$_2$ *ŋga(^{n}da)

*ˈgala ‘neck’ (Constenla Umaña 1981: 403)

Proto-Colombian Chibchan *ga-de-(-N) ‘neck’ (Wheeler 1972: 106)

This form might be etymologically related to Proto-Chibchan *ŋga^{n}da ‘neck’ (see below).

Bocotá ***h**ɛgɛˈtɛ* ‘back’ (Margery Peña 1993: 74)

The element *gete* probably derives from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (see below). Similar elements recur in Bocotá *sokuˈa**gɛtɛ*** ‘thigh’ and *kɛ**gɛtɛ*** ‘grass’ (cf. Margery Peña 1993: 79, 92).

Kogi /ˈ**ga**gla/ [ˈ**ga**ʁɮa] ‘neck’ (Ortiz Ricaurte 2000: 763, 779)

Final /-gla/ is a stem formative element derived from *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Constenla Umaña 1988; Pache 2016a). A similar construction is found in Muisca (see below).

Muisca <gy, **gy**quyn> ‘neck’ (González de Pérez 1987: 295)

Related Muisca forms may be <**ge**pqua> ‘spine’ (Sp. *espina[z]o*) (cf. ibid.: 260), and <ze**ga**han asucune> ‘s/he is behind me’ (cf. ibid.: 239). In the latter construction, the element <ha-n> is not part of the root in question (cf. Adelaar and Muysken 2004: 99–100). The prefix <ze-> indicates the first person singular, whereas <sucu> is the auxiliary.

Compare also:

Boruca ***ʧeŋ****kuá* ‘back’ (Quesada Pacheco & Rojas Chaves 1999: 143)

Ika *ˈ**gaʔ**kənə* ‘back’ (Huber & Reed 1992: 17)

Kuna *sola* ‘tail, back, bottom (e.g. of river, basket or instruments)’ (Holmer 1952: 144)

Pech *k(a)ɾá* ‘shoulder, upper arm’ (Holt 1986: 106)

Tunebo *ˈ**ikara*** ‘back, post’ (Sp. *espaldera de una trampa*) (Headland 1997: 139)

Bad$_1$ *^{ŋ}g^{w}ah^{n}d

*war(i), *wal(i) ‘bad, evil’ (Holt 1986: 162)

Chánguena <**gual**i> ‘bad’ (Pinart 1890: 20)

I have no explanation for final <i>.

Ika ***waʔ****mə* ‘damage (noun)’ (Landaburu 2000a: 737)

Final *-mə* is probably a reflex of the Proto-Chibchan nominalizer *-^{m}ba (see below).

Pech ***waɾ****-k^{w}a* ‘bad, evil’ (Holt 1986: 162)

The morphological analysis is adopted from Holt (1986: 162).

Rama ***k^{w}aːla*** ‘bad, rotten, ugly, mean, dangerous’ (Grinevald et al. 2002–06)

I have no explanation for final *a*.

Compare also:

Muisca <b**guaha**iasuca> ‘damage, harm (transitive)’ (González de Pérez 1987: 226)

Bad$_2$ *sa^{n}d(a)

Barí, eighteenth century <sala> ‘bad’ (Rivet & Armellada 1950: 37)

Kogi *ˈ**ʃane*** ‘bad’ (Ortiz Ricaurte 2000: 768)

I have no explanation for final *e* in this form.

Compare also:

Cabécar: northern dialects, Ujarrás ***sʊɽ****bí* ‘ugly’, rarely used in San José Cabécar (Margery Peña 1989: 438); San José Cabécar *ʃánã* ‘sad’ (ibid.: 538)

Basket, *mochila* *si

Barí [**ʃɪ̃ʃɪ̃**ˈbɑ̃ɪ̃ⁿdá] ‘bag’

> The elements [bɑ̃ɪ̃] and [ⁿdá] are probably not part of the root. The first element may recur in Barí <akseysey**bãy**> ‘glass’ (cf. Quesada 2004: 368), a morphologically complex form which is probably derived from a verb ‘to drink’ (cf. ibid.: 368).

Barí, eighteenth century, <**sisi**bey-ta> ‘bag’ (Rivet & Armellada 1950: 41)

> The elements <bey> and <ta> probably do not belong to the original root and may be derivational affixes. The morphological analysis is adopted from Rivet and Armellada (1950: 41).

Dorasque: Chumulu <si> ‘basket’ (Pinart 1890: 8)

Térraba ***síŋ****kʰuaŋ* ‘basket’ (Constenla Umaña 2007: 237)

> A related form in Teribe may be /ʃiŋ/ ‘basket’ (cf. Quesada 2000a: 75).

Tunebo ***si****ra* [siíra] a carrying bag used for food (Sp. *mochila*) (Headland 1997: 181)

> Final *ra* is probably a stem formative element and recurs in ***kára****ra* ‘bone, shinbone’ (cf. Headland 1997: 105).

Bat *(ⁿdu-)ku(ⁿd)

*dɨkʷi(da) (~dɨkʷi[da]) ‘bat’ (Holt 1986: 100)

The first element *ⁿdu in *(ⁿdu-)ku(ⁿd) ‘bat’ might be related to Proto-Chibchan *ⁿdu(ⁿd) ‘bird, dove’ term; the second element instead, *ku(ⁿd), to *ku(ⁿd-) ‘feline$_2$’ (see below).

Atanques <dúngu> ‘bat’ (Celedón 1892a: 596)

Bocotá ***sugu*** *ˈgɛ* ‘bat’ (Margery Peña 1993: 90)

> Final <-gé> is probably a stem formative derived from Proto-Chibchan *ka ‘leaf’ (cf. Pache 2016a), and recurs in Bocotá *ˈ**gu**gɛ* ‘seven’ (cf. Margery Peña 1993: 71).

Damana *ˈdungu* ‘bat’ (Trillos Amaya 2000: 751)

Dorasque: Chumulu <**doku**kaska> ‘shaman’ (Pinart 1890: 16)

> I have no explanation for the element <kaska>. In Muisca, González de Pérez (1996: 48–50) likewise identifies the root for ‘bat’ in a ‘shaman’ term.

Ika [ʤugᵍu] ‘bat’ (Landaburu 2000a: 736)

Tunebo ***rúkur****a* ‘vampire bat’ (Headland 1997: 168)

> Final *a* is probably a stem formative which recurs in ***bur****a* [**buúr**a] ‘ash, snow’ (cf. Headland 1997: 96–7).

Compare also:
Boruca *kuxʦí* ‘bat’ (Quesada Pacheco & Rojas Chaves 1999: 166)
Bribri: Coroma [tkṵ̂ɾ, ʈ̬kûɾ], Amubre [dạ̗ˈkûr ~ dẹ̗ˈkûɾ] ‘bat’ (Chevrier 2017a: 465)
Cabécar /dakúd/ [dəkúɾ] ‘bat’ (Margery Peña 1989: xxi)
Guatuso /**ku**:**t**u/ ‘bat’ (Constenla Umaña 1998: 12)
Muisca <**supqu**a> ‘bat’ (González de Pérez 1987: 281), <**supqua**guyn> ‘sorcerer’ (Sp. *brujo*) (ibid.: 199)
Térraba ***gu****ɾuɔ́* (<guɾhuó>) ‘bat’ (Constenla Umaña 2007: 260)

Final *-uɔ́* is a frequently attested stem formative in Térraba (Constenla Umaña 2007: 36). The Teribe counterpart is /gur/ ‘bat’ (cf. Quesada 2000a: 17).

To bathe, swim *hau^{m}b ~ *a^{m}bu?

*hauk ‘to bathe’ (Holt 1986: 102)
*(h)uba ‘to bathe, swim’ (Holt 1986: 280)
Constenla Umaña (1981: 294) notices the similarities between the Guaymí (Movere), Bocotá and Chimila forms.

Bocotá ***ˈhɔbɛ*** ‘to bathe’ (Margery Peña 1993: 76)

I have no explanation for final *ɛ*.

Boruca *abuʔ* ‘to swim’ (Quesada Pacheco & Rojas Chaves 1999: 168)
Damana *hom-* ‘to bathe’ (Trillos Amaya 2000: 754)
Guaymí *xub*/*xub* ‘to bathe’ (Quesada Pacheco 2008: 107)
Ika *oum-* ‘to swim’ (Landaburu 2000a: 747)

Compare also:
Chimila <hóuva> ‘to bathe’ (Reichel-Dolmatoff 1947: 42)
Kogi <**hau̯**ši> ‘to bathe (tr.)’ (Preuss 1927: 502)
Kuna ***o****ka* ‘to bathe’ (Holmer 1952: 101)
Muisca <aosgua> ‘to bathe (intr.)’ (González de Pérez 1987: 197)
Pech *ók* ‘to bathe’ (Holt 1986: 102, 210)

To be *^{n}da(i) ~ *ta(i)

*la(i) ‘to be’, copula (Holt 1986: 120)

Cabécar *dʊ* (after consonant), *rʊ* (after vowel) ‘to be’, copula (Margery Peña 1989: lxvi)

Ika ***na**n* ‘to be’, auxiliary (Landaburu 2000a: 741)

I have no explanation for final *n*. It probably does not belong to the root.

Térraba *t^{h}éŋ*, *ɹɔŋ* ‘to be’ (Sp. *estar*), plural form (Constenla Umaña 2007: 245)

Compare also:

Damana *nən* and *nan* ‘to be’ (Sp. *ser*) (Trillos Amaya 1999: 122).

Kuna *nai* ‘to be hanging, be fixed, be there, be’ (Holmer 1952: 82)

The Pre-Kuna form is *lai (Holmer 1952: 82).

Beam of light, heat *^{m}baʔ

*sib(a) ‘white’ (Holt 1986: 121)

A similar semantic association between ‘light’ and ‘heat’ may be reflected in Mapudungun (unclassified, southern Central Chile and parts of Argentina) *ale* ‘moonlight’ (Augusta 1916: 5) and *are* ‘heat, fever’ (ibid.: 11).

Barí [cīˈ**báɨ**] ‘moon’

The element [cī-] (/tī-/) is not part of the root discussed here. Barí [cīˈ**báɨ**] ‘ moon’ seems to have a cognate counterpart in Muisca <tybaxa> ‘ray, beam, thunderbolt’ (cf. González de Pérez 1987: 310), and in Bribri *dibà* ‘heat of the sun’ (cf. Margery Peña 1982: 114).

Cabécar: San José Cabécar *dí**bá*** ‘heat of the sun, sunbeam’ (Margery Peña 1989: 54)

The element *di* may derive from Proto-Chibchan *^{n}di ‘sun, day’.

Dorasque: Chumulu <*c*i**ba**gá> (Pinart 1890: 10), Gualaca <*c*i**bá**ga> ‘lightning, thunderbold’ (ibid.: 28), <ci**ba**ga> ‘lightning, thunderbold, comete’ (Pinart 1882: 54)

The first element <*c*i-> may be related to Proto-Chibchan *^{n}di ‘sun, day’ (see the Cabécar form above) or *siʔ ‘moon’. I have no explanation for final <ga>. To a certain extent, this element resembles final <xa> in Muisca <tyba**xa**> ‘ray, beam, thunderbolt’

(cf. González de Pérez 1987: 310), although the sound correspondence does not seem to be regular.

Ika *ti*ʔ***ma*** ‘moon’ (Landaburu 2000a: 747)

The element *ti*ʔ derives from Proto-Chibchan *siʔ ‘moon’.

Térraba ***mɔ́****k* ‘moon, month’ (Constenla Umaña 2007: 256, 259)

Final *k* is probably a stem formative which recurs in *ɸrúk* ‘air, wind’ (cf. Constenla Umaña 2007: 232, 280).

Compare also:

Atanques <túbihki> ‘lightning’ (Sp. *relámpago*) (Celedón 1892a: 598)

Boruca *tebex* ‘moon, month’ (Quesada Pacheco & Rojas Chaves 1999: 161, 164), *kák bok* ‘lightning’ (ibid.: 185)

Bribri: Coroma [báʔbà ~ bâʔbă] ‘hot’ (Chevrier 2017a: 287)

This morpheme recurs in Amubre, Katsi, Salitre *di****bà*** ‘heat of the sun’ (Margery Peña 1982: 114), the element *di* derives from Proto-Chibchan *^{n}di ‘sun’ (see below).

Chimila <mo̲g̲gra’> ‘thunder’ (Sp. *trueno*) (Niño Vargas 2018: 250)

Kuna *nii* ***mee****k*^{w}*a* ‘moonlight’ (Holmer 1952: 95)

Muisca <tybaxa> ‘ray, beam, thunderbolt’ (González de Pérez 1987: 310)

Nutabe <tebuna> ‘night’ (Rivet 1943a: 26)

Tunebo ***baʔ****k*^{w}*á* ‘lightning’ (Huber & Reed 1992: 70)

Beautiful *^{n}du

The unexpected reflexes of *^{n}d in the Ika, Damana, and Muisca forms shown below might be due to the fact that this root is monosyllabic and has *u* as its vowel. The reflexes of this Proto-Chibchan root in different Chibchan languages require further investigation.

Atanques <**zu**kánka> ‘beautiful’ (Celedón 1892a: 592)

The element <kánka> is probably not part of the root. A cognate element may recur in <bunchi**könke**> ‘white’ (cf. Celedón 1892a: 592).

Bocotá /dũ/ [nũ] ‘good, beautiful’ (Margery Peña 1996: 15)

Damana *ˈzu* ‘beautiful’ (Trillos Amaya 2000: 751)

Ika *du* ‘good’ (Landaburu 2000a: 736, 747)

Kuna ***nu****a* ‘good, well’ (Holmer 1952: 98)

> I have no explanation for final *a*. A related form, in the same language, might be ***nu****e* ‘good, well, much, very, completely, really’ (cf. Holmer 1952: 99).

Compare also:
Guaymí *tuɔre* ‘beautiful’ (Sp. *bello*) (Quesada Pacheco 2008: 51)
Kogi /**nu**ˈsa/ ‘damage’ (Sp. *daño*) (Ortiz Ricaurte 2000: 767)
Muisca <cho> ‘good’ (González de Pérez 1987: 199)

Bee, honey *La

*had ‘wax’ (Holt 1986: 147)

Atanques <**ná**nga> ‘wax’ (Celedón 1892a: 592)

> Final <nga> may derive from *ᵑga ‘excrement’, wax being conceived of as ‘excrement of the bee’.

Boruca *át* a kind of bee (Sp. *cantarria*) (Quesada Pacheco & Rojas Chaves 1999: 126)
Dorasque: Chumulu <χá**la**>; Gualaca <á**la**> (Pinart 1890: 21), <a**la**> ‘honey’ (Pinart 1882: 63)
Rama *ŋa**la**ːli* ‘honey’ (Grinevald et al. 2002–06)

> I have no explanation for the vowel length in *a*ː. In final *-li*, probably derived from *ⁿdiʔa ‘liquid’, there is no reflex of either *ʔ nor *a. The element *ŋa* might be a reflex of prothetic *ha before a Proto-Chibchan liquid.

Térraba /ɔ**ɾ**pì/ ‘to take out honey’ (Constenla Umaña 2007: 17)

> The element /pì/ is a reflex of Proto-Chibchan *hapi ~ *apiʔ ‘to take out, pick up’ (see below). The ‘honey’ term in Térraba is *ɔɾdiɔ* (ibid.: 259).

Compare also:
Bocotá *ˈh**l**i* ‘honey’ (Margery Peña 1993: 76)
Kogi <ha**l**i> ‘bee, wax’ (Preuss 1927: 439)

Bee, wasp *^{m}bu^{n}d(u)

*bud ‘bee, wasp’ (Holt 1986: 93)

Constenla Umaña (1981: 429) juxtaposes the Atanques, Bribri, Ika, Kogi, and Kuna forms for ‘bee’ or ‘wasp’ but does not provide a Proto-Chibchan reconstruction.

Bocotá ***bu ˈdu*** *ˈbõsaga* ‘drone’ (Margery Peña 1993: 62)

> For the second element, compare *ˈbõsaga* ‘fly (noun)’ (Margery Peña 1993: 83).

Boruca *bút* ‘wax’ (Quesada Pacheco & Rojas Chaves 1999: 127)

> A related Boruca form is *buttʃá* ‘wax’ (Quesada Pacheco & Rojas Chaves 1999: 127), ‘honey’ (ibid.: 165).

Huetar <burú> a black wasp (Quesada Pacheco 1992: 93)

Ika *buN* ‘wasp’ (Landaburu 2000a: 736)

Kuna *pulu* ‘wasp’ (Holmer 1952: 128)

Muisca <**busu**apquame> ‘bee’ (González de Pérez 1987: 166)

> The element <pquame> means ‘bag’ (ibid.: 198). The element <a>, intercalated between <busua> and <pquame>, may be a possessive marker. If this interpretation is correct, one might suspect the original meaning of <**busu**apquame> to be ‘beehive’.

Compare also:

Atanques <bundína> ‘wasp’ (Celedón 1892a: 592)

Cabécar: San José Cabécar *búɻu* ‘beehive’(Margery Peña 1989: 368)

Chimila <buñ̃ukwi’, muñ̃ukwi’> a wasp (Sp. *angolito*) (Niño Vargas 2018: 132, 253)

Kogi <muli> ‘small black wasp’ (Preuss 1927: 467)

Rama *uːmut* ‘wasp’ (Grinevald et al. 2002–06)

To begin, start, first *pah^{n}d-

Damana *ˈpana* ‘begun’ (Sp. *comenzado*) (Trillos Amaya 2000: 750)

Ika *-pan*, *-pən* inceptive (cf. Frank 1985: 19, 77–8); [pʌna] auxiliary indicating near future (“auxiliar de futuro cercano”) (Landaburu 2000a: 735)

Pech *-pár*, *-pír* preinceptive (Holt 1999a: 48)

> These forms may be related to the Pech future suffix *-pi*/*-pa* (Holt 1999a: 48).

Rama *pas* ‘first’ (Grinevald et al. 2002–06)

A related form is ***pas****ba* ‘first’ (Grinevald et al. 2002–06). Final *-ba* is a derivational element recurring in several adjectives (cf. Craig 1989: 71).

Compare also:
Kogi <pani> ‘to begin’ (Preuss 1927: 477);
Kuna *patto*, *pat* ‘already, at first, originally’ (Holmer 1952: 118)
Tunebo ***ibtu*** ‘first’ (Headland 1997: 138)

Belly *ita ~ *i^{n}da ~ *ia^{n}d

Dorasque: Chumulu <irá> ‘belly’ (Pinart 1987: 6)
Muisca <ie, ieta> ‘belly’ (González de Pérez 1987: 197)
Térraba *irɔ* ‘inside, in’ (Constenla Umaña 2007: 242, 244)

Whether or not this form is related to *idɔ* ‘body’ (Constenla Umaña 2007: 240) remains to be established.

Compare also:
Pech <ya> ‘belly’, <yaá> ‘spleen (of a human being)’ (Conzemius 1928: 283)
Tunebo *jira* ‘belly’ (Headland 1997: 230)

Big$_{1}$ *^{m}bu^{n}di ~ *ku^{n}di ~ *kui^{n}d(i)

We might be dealing here with a nominalized form of Proto-Chibchan *kuh ~ *Buh ‘to grow’ (see below).

Bocotá **/ku**ˈ**ɛɾ**i ~ **gu**ˈ**ɛɾi/** ‘big’ (Margery Peña 1996: 19)
Cabécar *mũɽĩ́* ‘thick, fat, robust’ (Margery Peña 1989: 197)
Chimila **/kwe**ˑ**ɾi**tuˑʔ/ [**k^{w}éˑɾī**tùˑʔ] ‘big’ (Malone 2005: 209)

The element /tuˑʔ/ is attested in other Chimila adjectives as well, such as /diˑsu**tuˑʔ/** [^{n}díˑsū**tùˑʔ**] ‘small’ (cf. Malone 2005: 209).

Tunebo ***kui****tro* ‘much, big, too much, more, enough’ (Headland 1997: 121); *bo****kuiʃ****ro* ‘cloudy’ (ibid.: 90).

The ending of the first form *-itro* means ‘similar’ (cf. Headland 1997: 145), whereas *-ro*, in Tunebo *bo****kuiʃ****ro* ‘cloudy’, is probably a declarative marker (cf. ibid.: 14). Tunebo *bo****kuiʃ****ro* ‘cloudy’ can probably be analyzed as “there is a big cloud” or “there are many clouds” (see below, Proto-Chibchan *^{m}ba- ‘cloud, fog’).

Compare also:

Boruca *kriʔ*, *kriʔéx* ‘big’ (Quesada Pacheco & Rojas Chaves 1999: 148)

Bribri: Katsi, Salitre *burí* ‘thickness’ (Sp. *grosor*), Amubre, Katsi, Salitre *burîrî* ‘thick’ (Sp. *grueso*) (Margery Peña 1982: 129)

Guaymí *kɾi* ‘big’ (Quesada Pacheco 2008: 53)

Kogi <ibuni> ‘to grow’ (Preuss 1927: 445); <muni, zubuni, arzubuni> ‘to sprout’ (ibid.: 467)

Térraba *idɔ****ɸɾ****ɛ́* ‘thick’ (Constenla Umaña 2007: 248)

Compare Térraba *idɔ* ~ *idɔ́* ‘body, thickness’ (Constenla Umaña 2007: 183).

Big$_2$ *^{m}bu-^{n}da

Final *-^{n}da is tentatively interpreted as a stative nominalizer (for the nominalizer in question, see below).

Damana *buˈna* ‘grown’ (Trillos Amaya 2000: 750)

Final *-na* may have a cognate counterpart in Kuna *pula* ‘big’ (see below).

Kuna *pula* ‘big’ (Holmer 1952: 128)

Kuna *-la* indicates the passive, according to Holmer (1947: 146).

Térraba *ɸɾɔ-*, *ɸɾa-* ‘numeral classifier, object of major dimensions’ (Constenla Umaña 2007: 50)

Compare also

Pech *-b(u)ɾu* ‘big’ (Holt 1986: 199)

Big$_3$

Kuna ***tumma****ti* ‘big, great, chief’ (Holmer 1952: 167)

Rama *suma* ‘big’ (Grinevald et al. 2002–06)

Bile, gall, bitter *haki?

The reconstruction of the Proto-Chibchan glottal consonants in this form is tentative and based on the reflex in Bribri. Constenla Umaña (1981: 385) notices the similarities of the Bribri and the Térraba forms without reconstructing a Proto-Chibchan form. It remains to be established whether or not this root is ultimately related to Proto-Chibchan *hapi ~ *api? 'blood'.

Cabécar *kí* 'gall' (Margery Peña 1989: 452)

> Related forms are *k^{h}í* (northern dialects and Ujarrás), and *k^{h}é* (northern dialects) 'gall' (ibid.: 390, 452).

Térraba *kí* 'bitter' (Constenla Umáña 2007: 232)

Tunebo ***kiki**tro* 'bitter' (Headland 1997: 156)

> Final *-itro* means 'similar' (Headland 1997: 145).

Compare also:

Bribri: Amubre, Katsi, Salitre *ahkɪʔ* 'gall' (Margery Peña 1982: 130)

Chimila *ka-kíiˀ* 'sap' (Huber & Reed 1992: 157), /kíiˀ/ 'sap' (Malone 2010: 4)

Bird, dove *^{n}du(^{n}d)

*dudu 'oropendula, bower-bird' (Holt 1986: 101)

*dù 'bird' (Constenla Umaña 1981: 365)

Final *^{n}d is probably a morpheme which recurs in other Proto-Chibchan animal terms (compare the entries for 'bat' above, or for 'squirrel' below).

Atanques <**súr**i> 'bird' (Celedón 1892a: 592)

> Final <i> is probably a stem formative which recurs in <kögu**i**> 'year' (cf. Celedón 1892a: 592). Proto-Chibchan *^{n}du(^{n}d) 'bird, dove' might also be reflected in Atanques <**dun**göna> 'feather' (cf. ibid.: 598). For final <-göna>, compare Kogi <gala, gela> 'feather, pubic hair, foreskin' (Preuss 1927: 433).

Boruca *du*, *dut* 'bird' (Quesada Pacheco & Rojas Chaves 1999: 119)

Bribri: Coroma [dŭ] 'bird' (Chevrier 2017a: 58)

> Margery Peña (1982: 143) gives Amubre, Katsi, Salitre *du* 'bird'.

Cabécar *du* 'bird (general term)' (Margery Peña 1989: 492)

Damana /ˌ**dun**ˈzisi/ ‘dove’ (Trillos Amaya 2000: 752)

I have no explanation for final /ˈzisi/. It may have the meaning ‘red’ (cf. Trillos Amaya 1999: 68). The first element of /ˌ**dun**ˈzisi/ ‘dove’ (Trillos Amaya 2000: 752) may recur in ***dun****-gɨra* ‘feather’ (cf. Huber & Reed 1992: 262); for the element *-gɨra*, compare Kogi <gala, gela> ‘feather, pubic hair, foreskin’ (Preuss 1927: 433).

Dorasque: Chumulu <dul> ‘bird’ (Pinart 1890: 24)

Guaymí /**nu**gwɔ/ ‘bird’ (Quesada Pacheco 2008: 31)

Final *-gwɔ* is probably a stem formative. It is frequently attested in Guaymí body-part terms (Quesada Pacheco 2008: 52).

Kogi /sinˈ**dul**i/ ‘hummingbird’ (Ortiz Ricaurte 2000: 762)

The element /sin/ might originally have had the meaning ‘small’ – compare Bribri (Amubre) [tsír] ‘small’ (Chevrier 2017a: 167) or Ika /sinə/ in /gəmə **sinə**/ ‘generation, son’ (Landaburu 2000a: 734). The order of modifier and modified in this Kogi construction is unexpected, however (cf. Ortiz Ricaurte 2000: 768). Final /-i/ is a frequently attested Kogi stem formative, also attested in /ˈ**nab**i/ ‘jaguar’ (cf. ibid.: 768).

Kuna *nuu* ‘dove, term referring to comestible birds in general’ (Holmer 1952: 101)

Muisca <**su**c> ‘bird’ (González de Pérez 1987: 292)

I have no explanation for final <c>. Like final <-e> in <si**e**> ‘water’ (cf. ibid.: 178), it probably does not belong to the root.

Tunebo ***rús****kara* a small dove (Headland 1997: 171)

Final *-kara* is probably a stem formative derived from *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Compare also:

Guatuso <tűuli> a dove (Sp. *paloma morada grande*) (Lehmann 1920: 399)

Blood *hapi ~ *api?[14]

*apí ~ *əpí ‘blood’ (Constenla Umaña 1981: 366)

*apí ‘blood’ (Holt 1986: 89)

Proto-Colombian Chibchan *ebi ‘blood’ (Wheeler 1972: 105)

Pre-Muisca *əp- ‘blood’ (Holmer 1947: 208)

Barí [āˈbːì] ‘blood’

Barí, eighteenth century, <abiy> ‘blood’ (Rivet & Armellada 1950: 41)

Bribri: Amubre, Coroma [pî] ‘blood’ (Chevrier 2017a: 68)

> Margery Peña (1982) gives the Amubre, Katsi, Salitre forms *apí* (p. 151) and *apıʔ* ‘blood’ (p. 11).

Cabécar /pí/ ‘blood’ (Margery Peña 1989: xv)

> A related form might be ***hãmẽ̂ĩ̃*** ‘vein, artery’ (cf. Margery Peña 1989: 382), the literal meaning of this form might be ‘path/road of the blood’, originally.

Dorasque: Chumulu, Gualaca <havé> ‘blood’ (Pinart 1890: 29)

> Final <é> might be explained as the reflex of Proto-Chibchan *i lowered by the laryngeal consonant.

Kogi /ˈabi/ [ˈabi] ‘blood’ (Ortiz Ricaurte 2000: 778)

Kuna *ape* ‘blood’ (Holmer 1952: 16)

> Final *e* might be explained as the reflex of *i lowered by following *ʔ.

Pech *apé* ‘bile’ (Holt 1986: 89)

> Final *e* might be explained as the reflex of *i lowered by following *ʔ.

Compare also:

Bocotá *ˈbɛ* ‘blood’ (Margery Peña 1993: 60)

Muisca <hyba> ‘blood’ (González de Pérez 1987: 317)

Rama *airbi* ‘blood’ (Grinevald et al. 2002–06)

Tunebo *aba* ‘blood’ (Headland 1997: 275)

[14] Holt (1986: 89) suggests that “[t]he initial a may have originally been a possessive prefix.”

To blow, fly *kuʔ

*ku(N) ‘to blow, whistle’ (Holt 1986: 285)

Boruca *kuŋ* ‘to fly’ (Quesada Pacheco & Rojas Chaves 1999: 199)

Whether or not this Boruca form reflects Proto-Chibchan vowel nasality remains to be established.

Kuna ***kuk****kua* ‘to fly, soar in air, let fly’ (Holmer 1952: 59)

Final *-kua* does not belong to the root (cf. Holmer 1947: 66–7, 155–7).

Muisca <yc b**cu**squa> ‘to blow out a candle’ (González de Pérez 1997: 320)

The element <yc> is a fused element, indicating, at the same time, third person and goal (Adelaar & Muysken 2004: 100). The prefix <b-> indicates transitivity, <-squa> indicates imperfective aspect (ibid.: 90–1).

Rama *aː****ku****k* ‘to blow’ (Grinevald et al. 2002–06)

The element *aː-* is a derivational prefix (cf. Craig 1989: 77–8). Final *k* recurs in other verbs as well, for instance in *taː****k*** ‘to go’ (Grinevald et al. 2002–06).

Tunebo ***kuʔ****winro* ‘to heal (blowing on a person with the feather of a heron), blow,[15] play (a snail, like a trumpet), blow out (e.g., a candle)’ (Headland 1997: 116)

I have no explanation for the element *wi*. This ending recurs in Tunebo *rauwinro* ‘to enter’ and probably does not belong to the root in question. The element *-n* indicates intention and *-ro* is a declarative marker (Headland 1997: 14).

Compare also:

Guaymí *kwit-* ‘to fly’ (Quesada Pacheco 2008: 101)

Body *apa

*AˈpÀ ‘body’ (Constenla Umaña 1981: 367)

Pre-Muisca *əpa(kəna) ‘body’ (Holmer 1947: 208)

Bocotá /ba/ ‘shape, appearance’ (Margery Peña 1996: 24)

[15] “[P]ara purificar, dicen que todos los que comen de la comida cocida de los blancos, se contaminan y necesitan purificarse; en Bócuta no soplan el mercado ni la sal y comen la comida de los blancos.” (Headland 1997: 116)

Bribri: Coroma [pá ~ pă] ‘body’ (Chevrier 2017a: 590)

Margery Peña (1982) gives Amubre, Katsi, Salitre *apà* ‘body’ (p. 118), ‘exterior (of a body)’ (ibid.: 125).

Cabécar *pá* ‘body’ (Margery Peña 1989: xv)

Guatuso /ton**ɸa**/ ‘I myself’ (Sp. *yo mismo*) (Constenla Umaña 1998: 14)

The element /ton/ means ‘I’ (Constenla Umaña 1998: 10).

Guaymí /bɔ/ ‘feature, trait’ (Quesada Pacheco 2008: 24)

Kuna *apa* ‘body’ (Holmer 1952: 16)

This root recurs in Kuna *apa-kan* ‘body’ (cf. Holmer 1947: 208); a similar construction is also attested in Muisca (see below).

Muisca <yba, eba> ‘body’ (González de Pérez 1987: 138, 223)

Compare the form <ybaquyn> ‘body of an animal’ (González de Pérez 1987: 223) which is strikingly reminiscent of Kuna *apa-kan* ‘body’ (see above).

Rama *aːp* ‘body’ (Grinevald et al. 2002–06)

Vowel length in this Rama form may originate in metathesis between *p and the final *a of *apa ‘body’.

Térraba ***pɔ́iɪ*** ‘to dress’ (Constenla Umaña 2007: 280)

Constenla Umaña (Constenla Umaña 2007: 52) interprets the prefix *pɔ́-* as a derivational prefix. The element *pɔ́-* might derive from Proto-Chibchan ‘body’ (cf. Constenla Umaña 1981: 367). The element *ií* means ‘to put’ (Constenla Umaña 2007: 238).

Compare also:

Proto-Chibchan *ApÍ- ‘person’ (Constenla Umaña 1981: 406)

Bribri [pí?] ‘person, individuum’ (Chevrier 2017b), Amubre, Katsi, Salitre *apɪ?* ‘person’ (Margery Peña 1982: 145)

Cabécar /pí/ ‘people’ (Margery Peña 1989: xv)

Kuna *kar**pii*** ‘(human) bones, skeleton’ (Holmer 1952: 50)

Boruca *abí* ‘person’ (Quesada Pacheco & Rojas Chaves 1999: 177); *abí*, *abíx* ‘the same’ (ibid.: 140)

Body hair

Rama *ŋunis* ‘antenna, whisker, beard’ (Grinevald et al. 2002–06)

Ika *ˈunti* ‘body hair’ (Huber & Reed 1992: 237)

Bone, strong, hard *kã^{n}d-

The reconstruction of vowel nasality in this Proto-Chibchan root is purely tentative.

Kuna ***kann****oa* ‘to strengthen, be strong’ (Holmer 1952: 47)

> Final *-oa* derives inchoative verbs (cf. Holmer 1946: 191).

Muisca <quyne> ‘bone, strength’ (González de Pérez 1987: 265, 267)

Térraba **/k^{h}án**kɔ̀/ ‘hard’ (Constenla Umaña 2007: 17)

> Related forms might be Térraba *k^{h}ánkɪ* ‘to become hard’ (ibid.: 244) and Teribe *kan* ‘hard’ (Quesada 2000a: 44). A suffix *-kɔ* derives adjectives in Térraba (Constenla Umaña 2007: 43).

Tunebo ***kana****rá*, ***kan****orá* ‘work, strong’ (Headland 1997: 103)

> Final *-rá* is probably a later addition in Tunebo. Final *-ra* is also attested in ***kára****ra* ‘bone, shinbone’ (cf. ibid.: 105).

Compare also:

Bocotá *bõˈdõ* ‘hard’ (Margery Peña 1993: 83)

Bone, hard *^{n}da^{n}di ~ ^{n}dai^{n}d- / sa^{n}di ~ *sai^{n}d-

As the Proto-Chibchan term for ‘big’, this Proto-Chibchan term may contain a nominalizing element *-^{n}d(i) (for the nominalizer in question, see below).

Bocura ***det****kra* ‘bone’ (Quesada Pacheco & Rojas Chaves 1999: 153)

> Final *-kra* derives from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Chánguena <séri> ‘foot’ (Pinart 1890: 26)

Dorasque: Chumulu <ser> ‘foot’ (Pinart 1890: 26)

> Related forms are Chumulu <seré> ‘leg’ (Sp. *pata*) (ibid.: 25), Gualaca <séro> ‘foot’ (Pinart 1890: 26).

Tunebo ***réna**ra* ‘leg (from the hip to the foot)’, in the Cobaría dialect: ‘thigh’ (Headland 1997: 160)

> Final *-ra* is a frequently attested stem formative in Tunebo; it recurs, for instance, in *kára**ra*** ‘bone, shinbone’ (cf. Headland 1997: 105).

Compare also:
Bocotá /saˈɾa/ [səˈɾa] ‘foot’ (Margery Peña 1996: 12)
Bribri: Coroma [ˈdɽɔ̂jèʔ] ‘hard’ (Chevrier 2017a: 86), Amubre and Katsi *darîrî*, *drîrî*, *daɽóie*, *dɽóie* ‘hard’ (Margery Peña 1982: 122)
Cabécar *daríɾɪ* ‘hard’ (Margery Peña 1989: 426)
Kogi **/sla**ˈkala/ [ˈ**sla**xaɮa] ‘bone’ (Ortiz Ricaurte 2000: 778), <**s(i)lá**kala> ‘small fishbone’ (Preuss 1927: 481), <sánkala **sani**> ‘skull’ (ibid.: 519).
Kuna ***sel**oa* ‘to make or become hard’ (Holmer 1952: 138)
Térraba *dɾéa* ‘shin’ (Constenla Umaña 2007: 245)
Teribe /dre/ ‘foot’ (Quesada 2000a: 16)
Rama *sarak*, an element attested in compound constructions and which may be translated as ‘base, foot’ (Grinevald et al. 2002–06)

Bow, rainbow

The terms shown here might be related to Proto-Chibchan *taka^{m}b- ~ *ta^{m}bak ‘snake’ (see below, for this form).

Atanques <komesa> ‘rainbow’ (Celedón 1892a: 592)
Bribri: Coroma [ʃkɑ̃́ˈmɛ̃́ʔ ~ ʃkɛ̰́ˈmɛ̃́ʔ] ‘bow’ (Chevrier 2017a: 110)
Damana *komesa* ‘rainbow’ (Huber & Reed 1992: 71)
Kogi *kuˈmesa* ‘rainbow’ (Huber & Reed 1992: 71)
Muisca <hacapa> ‘bow’ (Sp. *arco*, *ballesta*) (González de Pérez 1987: 193)
Pech <akamas-ká> ‘bow’ (Sp. *arco de flecha*) (Conzemius 1928: 280)

Breast, teat$_1$ *kãʔ

*kAʔ ‘breasts’ (Constenla Umaña 1981: 367)

Nasality is reconstructed for this root on the basis of the reflexes in Guaymí and Rama.

Boruca *kaʔ* ‘teat, udder’ (Quesada Pacheco & Rojas Chaves 1999: 194, 196–7)

Chimila /kaaʔ/ [kaːʔ] ‘breast’ (Malone 2005: 202)

Guatuso **/ko**ːɾi/ ‘teat’ (Constenla Umaña 1998: 10)

> A parallel construction is probably attested in Rama *kaŋali* ‘breast’ (cf. Grinevald et al. 2002–06). Final *-ɾi* in Guatuso and *-li* in Rama probably derive from Proto-Chibchan *^{n}diʔ ‘water, river’. Guatuso **/ko**ːɾi/ ‘teat’ and Rama *kaŋali* ‘breast’ might, a priori, have had the meaning ‘milk’ rather than ‘breast’. Likewise, in Kuna, ‘breast’ and ‘milk’ are referred to by the same term, *nuː* (Holmer 1952: 101).

Compare also:

Guaymí /kj̃ã/ ‘teat’ (Quesada Pacheco 2008: 29)

Rama *kaŋali* ‘breast’ (Grinevald et al. 2002–06)

Breast, teat$_2$ *ʦuʔ

*ˈ¢úʔ, *ˈ¢úʔ¢ú ‘breast’ (Constenla Umaña 1981: 368)

*tsuʔ ‘teats’ (Constenla Umaña 2012: 413)

*cu ‘suck, suckle, lick; breast’ (Holt 1986: 97)

*tu(tu) ‘breast, milk’ (Holt 1986: 133)

Atanques <túːtu> ‘breast, teat, udder’ (Celedón 1892a: 597–9)

Barí [tːúʔ] ‘nipple, teat’

Barí, eighteenth century, <tu> ‘nipple’ (Rivet & Armellada 1950: 37)

Bocotá *ʧuˈʧu* ‘teat’ (Margery Peña 1993: 64)

Boruca *ʧuʧúʔ* ‘woman’s breast’ (Quesada Pacheco & Rojas Chaves 1999: 189)

Cabécar *ʦú* ‘woman’s breast’ (Margery Peña 1989: 496)

> This form recurs in *ʦú wó* ‘nipple’ (cf. Margery Peña 1989: 501).

Damana /ˈtudu/ ‘teats’ Constenla Umaña (2012: 413)

> Huber and Reed (1992: 15) give the same form with the meaning ‘woman’s breast’.

Ika *tu* ‘woman’s breast’ (Landaburu 2000a: 736)

Kuna *nuu* ‘breast, milk’ (Holmer 1952: 101)

Muisca <**chu**e> ‘teat’ (González de Pérez 1987: 324)

Final <-e> is a stem formative element, recurring, for instance, in <cue> ‘louse of the head’ (cf. González de Pérez 1987: 296). A reflex of Proto-Chibchan *ʦuʔ ‘breast, teat$_2$’ is also found in <chupqua> ‘nipple’ (ibid.: 293).

Pech *tùtu* ‘nipple’ (Holt 1986: 133)

Térraba ***fú****ɾiɔ* ‘milk’ (Constenla Umaña 2007: 255)

A related form might be *nóɾio* ‘milk’ (cf. Constenla Umaña 2007: 255). For the final element *ɾiɔ*, compare Térraba *diɔ* ‘liquid’ (ibid.: 256).

Tunebo ***su****tá* ‘teat’ (Headland 1997: 188)

Final *tá* is probably a stem formative that recurs in *ri****tá*** ‘summer’ (cf. Headland 1997: 281).

Compare also:

Bribri: Amubre, Katsi, Salitre *ʦuʔ* ‘teat’ (Sp. *teta*), Amubre, Katsi *tsûbatà* ‘nipple’ (Sp. *pezón*) (Margery Peña 1982: 145, 155)

Kogi *suˈmi* ‘woman’s breasts’ (Huber & Reed 1992: 15)

Breath, wind *^{m}bu^{n}d-

*ˈBur- ‘wind’ (Constenla Umaña 1981: 432)

*bur(a)(kada) ‘breath(e), wind’ (Holt 1986: 94)

Bocotá ***bl****ĩˈɛ̃* ‘wind’ (Margery Peña 1993: 83)

I have no explanation for final *ĩˈɛ̃*. In the orthography of Margery Peña (1993: 83), the form is given as <mli̱é̱ë> ‘wind’. A cognate element may recur in Ika /mən**jə**/ ‘cloud’ (cf. Landaburu 2000a: 737).

Cabécar ***buɽu*** ‘spirit’ (Margery Peña 1989: 434)

Guatuso **/pu:ɾ**a/ ‘wind’ (Constenla Umaña 1981: 432)

Guaymí **/bur**e/ ‘breath’ (Quesada Pacheco 2008: 32)

A related form might be ***mu****ɾie* ‘wind’ (cf. ibid.: 67).

Kogi /ˈ**mul**o/ ‘air’ (Ortiz Ricaurte 2000: 768)

Kuna ***pur****wa* ‘wind’ (Holmer 1952: 131)

Final *wa* is probably a stem formative element and cognate with *-k^{w}a*.

Rama *put* ‘breath’ (Grinevald et al. 2002–06)

Térraba ***ɸr****úk* ‘air, wind’ (Constenla Umaña 2007: 232, 280)

The element *-k* is a stem formative which may recur in other terms: Compare, for instance, ***ɸó****k* ‘two, without any indication of class’ and *k^{h}ɾɔbó́* ‘two (longish objects)’ (ibid.: 243).

Compare also:

Atanques <buníte> ‘wind’ (Celedón 1892a: 599)

Brother$_1$ *^{n}da^{m}ba

Given the variation postulated for Proto-Chibchan *^{m}b and *k or *^{ŋ}g (cf. subsection 2.4.3.1), this term might eventually turn out to be related to Proto-Chibchan *^{n}daka/*saka ‘brother$_2$’.

Bocotá ***da*ˈ*ba****ia* ‘sister (said by a man); brother (said by a woman)’ (Margery Peña 1993: 65)

I have no explanation for final *ia*.

Cabécar ***dabá****i* ‘paternal uncle’ (Margery Peña 1989: 535)

Final *-i* might be an element indicating possessed status originally (cf. final *-i in Proto-Chibchan *^{n}dũ(-i) ‘father, uncle, ancestor’ below).

Tunebo *raba* [raába] ‘sibling of the same sex as ego; cousin (offspring with the same sex as father’s brother or as mother’s sister)’ (Headland 1997: 157)

Compare also *tet raba* ‘father’s brother’ (Headland 1997: 278).

Compare also:

Bribri: Amubre, Katsi, Salitre *nãũ̀* ‘uncle (mother’s brother)’ (Margery Peña 1982: 155)

Guaymí /ˈe**taba/** ‘brother’ (Quesada Pacheco 2008: 37)

Brother$_2$ *^{n}daka / *saka

*səˈkə ‘brother’ (Constenla Umaña 1981: 368)

Whether or not Proto-Chibchan *^{n}daka / *saka ‘brother$_2$’ is related to *^{n}da^{m}ba ‘brother$_1$’ remains to be established.

Guatuso /ɬaka/ ‘brother’ (Constenla Umaña 1998: 9)

Muisca <nyquy> ‘brother of a female ego’ (González de Pérez 1987: 270)

Tunebo *saka* ‘older brother (of the same sex as ego)’, ‘great-grandfather’ (Headland 1997: 172)

Brother$_3$

Bocotá *iˈadʒã* ‘brother (term used by men)’ (Margery Peña 1993: 72)

Kuna ***ia****ome* ‘brother’s wife’ (Holmer 1952: 25)

> The element *ome* means ‘wife’ in Kuna (cf. Holmer 1952: 106).

Tunebo ***ajá*** ‘mother’s brother’ (Headland 1997: 278)

> Initial *a* may be a truncated form of *abá* ‘mother’ (cf. Headland 1997: 16).

Brother-in-law *(^{n}d-)u^{m}ba

*ˈuba, *ˈduáʔ ‘brother-in-law’ (Constenla Umaña 1981: 368)

Initial *^{n}d- is a linking/relational element or “unspecified possessor marker” (cf. Campbell 2012: 297). See also below, where the underlying form of this element is reconstructed as *^{n}d(i).

Boruca *duá* ‘brother-in-law (husband of the sister or cousin)’ (Quesada Pacheco & Rojas Chaves 1999: 134)

> A Boruca root which may derive from the same Proto-Chibchan form is *bo* ‘brother-in-law (husband of the sister or of the cousin)’ (cf. Quesada Pacheco & Rojas Chaves 1999: 134).

Cabécar *duwá* ‘brother-in-law, term used by male speakers’ (Margery Peña 1989: 414)

> Compare also Cabécar *dawá* (Margery Peña 1989: 414) with epenthetic *a* (Constenla Umaña 1981: 216).

Guatuso |uɸa| ‘brother-in-law’ (Constenla Umaña 1998: 43)

Kuna *upa* ‘brother-in-law, wife’s brother, male relation of a first wife’s sister’ (Holmer 1952: 176)

Muisca <**ub**so> ‘brother-in-law’ (Sp. *cuñado respecto del otro cuñado*) (González de Pérez 1987: 223)

> Final <so> might be a stem formative, recurring in <chun**so**> ‘idol’ (cf. González de Pérez 1987: 334) – the form <chune>, without final <-so>, is translated as ‘pilgrim’s staff’ (Sp. *bordón*)’ (ibid.: 198).

Térraba *bɔ* ‘brother-in-law’, ‘sister-in-law’ (Constenla Umaña 2007: 240)

Tunebo *ruba* [ruúba] ‘brother-in-law (husband’s brother or sister’s husband) (Headland 1997: 167)

Compare also:

Damana /ˈʒema/ ‘brother-in-law’ (Trillos Amaya 2000: 752)

> The element /ˈʒe/ strongly resembles the genitive marker /-ʒe/ of Damana, described by Trillos Amaya (2000: 753).

Dorasque: Chumulu <duva> ‘aunt, mother-in-law’ (Pinart 1890: 30–1)

Kogi /ˈne**uma**/ (Ortiz Ricaurte 2000: 761), <lōma> ‘brother-in-law’ (Preuss 1927: 461)

But, however

Cabécar *tára* ‘but’, ‘however’ (Sp. *sin embargo*) (Margery Peña 1989: 292)

Guatuso |taːni ~ tan| ‘but’ (Constenla Umaña 1998: 27)

Guaymí *nã* <nan> ‘however, but’ (Quesada Pacheco 2008: 60)

Butterfly, hat *k^{w}ahk^{w}ah

*kuA-, *kuAʔ ‘butterfly’ (Constenla Umaña 1981: 368)

*k^{w}a(tu) ‘butterfly’ (Holt 1986: 113)

Boruca *kuaxkuáx* ‘butterfly’ (Quesada Pacheco & Rojas Chaves 1999: 163)

Cabécar *kuákua* ‘butterfly’ (Margery Peña 1989: 475)

Dorasque: Gualaca <koágua> (Pinart 1890: 21), <coagua> ‘butterfly’ (Pinart 1882: 56)

Muisca <pquapqua> ‘hat’ (González de Pérez 1987: 320)

> There is no apparent reflex of Proto-Chibchan *h in this word. This may have phonotactic reasons. The semantic equation butterfly/hat, implied by Muisca <pquapqua> ‘hat’ is plausible, considering Barí [sōmɛ̃ˈmɛ̀ɛ̀] which can mean either ‘butterfly’ or ‘hat’– the Barí form might be compared with Páez /tsme^{h}me/ [tsmɛ^{h}me] ‘butterfly’ (cf. Rojas Curieux 1998: 108) and with Miskito (Misumalpan) <sampapa> ‘butterfly (generic term)’ (cf. Lehmann 1920: 515).

Compare also:

Bribri: Amubre, Katsi *kuâkua*, Salitre *kuaʔ* ‘butterfly’ (Margery Peña 1982: 138)

Kuna *k^{w}akk^{w}a* ‘name of a bird with green feathers’ (Holmer 1952: 62)

Calabash$_1$ *^{n}dã^{m}bã / *sã^{m}bã

This Proto-Chibchan root may be etymologically related to Proto-Chibchan *taukaʔ ‘calabash$_2$’. It relates to the latter form in a similar way that Proto-Chibchan *^{n}da^{m}ba ‘feline1’ relates to Proto-Chibchan *tau ‘dog’.

Bocotá /ʤãˈbã/ [ŋ̊ˈmãŋ] ‘calabash’ (Margery Peña 1996: 16)

> A related form may recur in **/sa**ˈ**ba** gliˈa/ [**sə**ˈ**βa** ˈɣlja] ‘cedar’ (cf. Margery Peña 1996: 17). The possible link between the term for ‘calabash’ and ‘cedar’ would be in line with the fact that the reflex of Proto-Chibchan ‘cedar’ has the meaning ‘pot’ in several Chibchan languages of Colombia and in Dorasque (see below).

Kuna *napa* name of a tree and its fruit, a calabash of great importance to the Kuna (Holmer 1952: 87)

> The form *napa* probably recurs in Kuna ***nap**pili* ‘calabash bowl or the fruit from which they are made’ (Holmer 1952: 88).

Rama *sabaŋ* ‘gourd’ (Grinevald et al. 2002–06)

Compare also:

Barí, eighteenth century <čau> ‘calabash’ (Rivet & Armellada 1950: 31)

Damana *ˈʃu* ‘calabash’ (Trillos Amaya 2000: 752)

Ika *so* ‘calabash’ (Landaburu 2000a: 734)

Teribe *sbi* ‘pot’ (Quesada 2000a: 11)
Térraba *zbí* ‘cooking pot’ (Sp. *olla*) (Constenla Umaña 2007: 264)
Tunebo *soja*, *sojá* ‘cup, small pot’ (Headland 1997: 185)

Calabash$_2$ *tauka?

*tuk ‘to drink’ (Holt 1986: 133)
*toka ‘gourd cup’ (Constenla Umaña 2012: 413)

Bribri /tkã?/, Amubre [kʲɑ́?], Coroma and Amubre [ʧɑ́?] ‘calabash’ (Chevrier 2017a: 422)
Cabécar /tkɑ́/ [tkɑ́ ~ tkɔ́] ‘calabash (*guacal*)’ (Margery Peña 1989: xxix)
Chánguena <sok, θok> ‘*totuma*’ (Pinart 1890: 31)
Dorasque: Chumulu, Gualaca <sok, θok> ‘*totuma*’ (Pinart 1890: 31), Gualaca <θok> (ibid.: 7), <zoc> ‘calabash’ (Pinart 1882: 59)
Kuna *noka* ‘calabash, drinking vessel, cup, *totuma*’ (Holmer 1952: 97)
Térraba /zgó/ a type of container made of a calabash (*tula*) (Constenla Umaña 2007: 18)
Tunebo *toka* ‘*totuma* (for cup, tree calabash)’ (Headland 1997: 203)

Compare also:
Ika <chókue> ‘*totuma*’ (Celedón 1892b: 609)
Kogi <tauká> ‘calabash’ (Preuss 1927: 488)
Muisca <zoca> ‘*totuma*’ (González de Pérez 1987: 331)

To catch, grasp *ka

Barí, eighteenth century, <kaa> ‘to have’ (Sp. *tener*) (Rivet & Armellada 1950: 30)
Chimila /ka/ [ka] ‘to catch, grasp’ (Malone 2005: 213)
Guaymí *ka* ‘to grasp’ (Quesada Pacheco 2008: 104)
Kuna *kaa* ‘to catch, hold, inherit, marry’ (Holmer 1952: 37)
Muisca <cam b**quy**squa> ‘to grasp, catch’ (González de Pérez 1987: 213)

> I have no explanation for the element <cam>. The prefix <b-> indicates transitivity, whereas <-squa> indicates imperfective aspect (Adelaar & Muysken 2004: 90–1).

Tunebo ***ká****kinro* ‘to catch (for instance, fish, an animal, a person), stop, take out, take a photo’ (Headland 1997: 104)

> The element *-ki* is probably a stem formative which is also attested in Tunebo *ra**ki**nro* ‘to come’ (cf. Headland 1997: 159). The suffix *-n* indicates intention and *-ro* is a declarative marker (ibid.: 14, 28).

Cedar *u^{n}du

*huˈLù ‘boat, craft’ (Constenla Umaña 1981: 367)

*uˈru ‘cedar (several trees of the Cedrela genus)’ (Constenla Umaña 1981: 370)

*hulu (or *udu) ‘cedar’ (Holt 1986: 147)

*huru ‘below, inside; hole’ (Holt 1986: 103)

The reflexes of this root in several Chibchan languages suggest a semantic change ‘cedar tree’ > ‘boat’ > ‘pot’. The latter meaning is only reflected in Chibchan languages of Colombia (Constenla Umaña 2012: 420) and in Dorasque (Gualaca) <ut> ‘pot’ (cf. Pinart 1882: 61, 1890: 24).

Bocotá *ˈdu* ‘canoe’ (Margery Peña 1993: 67)

Boruca *ɾú* ‘boat’ (Quesada Pacheco & Rojas Chaves 1999: 123, 140)

Bribri: Coroma [**ɽú**k] ‘cedar’ (Chevrier 2017a: 84)

> I have no explanation for final [k]. Margery Peña (1982: 115) gives the form ***uɽù****k* ‘cedar’ for Amubre, Katsi, and Salitre.

Chánguena <ulú> ‘canoe’ (Pinart 1890: 8)

Dorasque: Chumulu, Gualaca <ulú> ‘cedar’ (Sp. *cedro hediondo*) (Pinart 1890: 9), Gualaca <vlu> ‘cedar’ (Pinart 1882: 59); Chumulu, Gualaca <ulú> (Pinart 1890: 8), <vlu> ‘canoe’ (Pinart 1882: 54); Gualaca <ut> ‘pot’ (Pinart 1882: 61, 1890: 24)

Guaymí /ɾu/ [ɾu] ‘boat’ (Quesada Pacheco 2008: 34)

Kogi /ˈulu/ ‘pot’ (Ortiz Ricaurte 2000: 768)

> Compare also <ululá> ‘cedar’ (Preuss 1927: 527). The ‘cedar’ term may also recur in Kogi /ulukuˈala/ term for a certain tree (Ortiz Ricaurte: 768).

Kuna *ulu* ‘boat, ship, canoe, box, trunk, chest, the interior of something, the lower part of something’, also ‘pot’ in certain constructions (Holmer 1952: 174, 175)

> Compare also *urwala* name of a tree (Sp. *cedro*) (ibid.: 177). This form may be cognate with Kogi /ulukuˈala/ ‘a certain tree’ (cf. Ortiz Ricaurte: 768)

Nutabe <ur> ‘pot’ (Rivet 1943a: 26)

Rama *u:t* ‘dory, cedar’ (Grinevald et al. 2002–06)

The long vowel might be explained by metathesis.

Chicha$_1$ *^{m}ba

Chánguena <m*a*> ‘chicha’ (Pinart 1890: 9)

Muisca <**fa**pqua> ‘chicha’ (González de Pérez 1987: 225)

The element <pqua> is a frequent stem formative in Muisca. It recurs, for instance, in <quy**pqua**> ‘place, occasion’ (González de Pérez 1987: 274).

Tunebo ***ba****kua*, ***ba****kuwa* ‘chicha made of maize or sugar cane’ (Headland 1997: 247)

Tunebo *kua* and *kuwa* are probably cognate with Muisca <-pqua>. Huber and Reed (1992: 178) give the form *bák^{w}a* ‘chicha’.

Chicha$_2$

Cabécar: northern dialects *iʃa ɽí* ‘chicha’ (Margery Peña 1989: 415)

Ika *in zəˈria* ‘chicha’ (Huber & Reed 1992: 178)

Chicken *atsa-ka^{n}da

The Proto-Chibchan term for ‘chicken’ seems to be morphologically complex. Its first element, *atsa-, is superficially reminiscent of *ata-* in Quechua *ata-waʎpa* ‘chicken’ (cf. Adelaar & Muysken 2004: 500). This coincidence requires further investigation. Also, both in modern Quechuan and Chibchan languages *ata-* and *atsa- do not always co-occur with the respective right-hand element. Whether the use (or the absence) of the opaque morpheme *ata-* or *atsa- is ultimately connected with the sexual dimorphism of chicken remains to be investigated. The reconstruction of a ‘chicken’ term does not necessarily imply that the speakers of Proto-Chibchan knew chicken. The word may have originally referred to another bird. The right-hand element *ka^{n}da is reminiscent of chicken terms in some languages of Lowland South America, for instance in Bora (cf. Adelaar & Muysken 2004: 501). The similarity of the Nutabe ‘chicken’ term and its counterparts in other Chibchan languages was first discovered by Rivet (1943a: 29).

Cabécar /óʃkòdò/ [óʃkórô] ‘chicken’ (Margery Peña 1989: xx)
Guatuso |tʃakara| (Constenla Umaña 1998: 47)
Nutabe <otokaró> (Rivet 1943a: 29)

Compare also:
Bribri: Coroma dialect [tkrɔ́ ~ krɔ́] ‘chicken’ (Chevrier 2017a: 123)
Kuna *kannira* ‘chicken, rooster, hen’ (Holmer 1952: 47)
Teribe ***kʊr****kwo* ‘hen’ (Quesada 2000a: 163)
Térraba *kʰrírɔ* ‘chicken’ (Sp. *gallina*) (Constenla Umaña 2007: 248)

Child *ŋgʷaʔ

*ˈuÁʔ ‘child, young of an animal’ (Constenla Umaña 1981: 371)
*ŋʷal or *mal ‘child, grandchild’ (Holt 1986: 282)

Boruca *uáʔ* (<huáʔ>) ‘child; son, daughter’ (Quesada Pacheco & Rojas Chaves 1999: 151, 168)
Kogi [ˈwawa] ‘baby, offspring’ (Ortiz Ricaurte 2000: 762)
Kuna ***wa****kʷa* ‘grandchild (boy or girl)’ (Holmer 1952: 181)

Compare also:
Muisca <guasgua cha> ‘child (male)’, <guasgua fucha> ‘child (female)’ (González de Pérez 1987: 283)
Tunebo *wakhá* ‘son, daughter’ (Headland 1997: 220)
Térraba *ãw̃ã* (<ãhũã>) ‘child’ (Constenla Umaña 2007: 261)
Teribe /wa/ ‘son, daughter’ (Quesada 2000a: 28), *wawa* ‘baby’ (ibid.: 143)

Child, small *tsu

Duit <**tú**tia> ‘son’ (Lehmann 1920: 53)

> I have no explanation for final <tia>. It may be cognate with Muisca <ta> in <chuta> ‘son, daughter’ (cf. González de Pérez 1987: 270).

Kogi /ˈ**su**kua/ [ˈ**su**kua] ‘child’ (Ortiz Ricaurte 2000: 778)

A related form may recur in /a-ˈ**tu**kua/ ‘3.POSS-grandson’ (cf. ibid.: 768). Final /kua/ is probably a stem formative derived from *k^{w}a ‘seed, fruit’ (cf. Pache 2016a).

Muisca <**chu**ta> ‘son, daughter’ (González de Pérez 1987: 270)

Final <ta> seems to recur in <ie, ieta> ‘belly’ (González de Pérez 1987: 197).

Rama ***su**k* ‘small, young, baby’ (Grinevald et al. 2002–06)

Final *k* is probably a stem formative, recurring in *pa:**k*** ‘flea’ (Grinevald et al. 2002–06). Proto-Chibchan *ʦu ‘child, small’ might also be reflected in Rama *suksuk* ‘little’ and *tukpa:* ‘young, unripe’ (cf. Grinevald et al. 2002–06).

Compare also:

Atanques <túga> ‘grandson, grandchild’ (Sp. *nieto*) (Celedón 1892a: 596)

Chimila *ogwe-**su*** ‘little child’ (Trillos Amaya 1997: 90, 92)

Kuna *susu* ‘son (used by the father and mother), brother (used by a sister), cousin’ (Holmer 1952: 151)

Damana *ˈtuga* ‘grandchild’ (Trillos Amaya 2000: 751), *ˈduga* ‘younger brother, youngest brother’ (Sp. *hermano menor*) (ibid.: 751)

Chili pepper

Cabécar (variety from San José Cabécar) *dapa* or *dapo* ‘chili pepper’ (Margery Peña 1989 50–1)

Nutabe <napa> ‘chili pepper’ (Rivet 1943a: 26)

These Cabécar–Nutabe parallel are not necessarily the result of cognacy, and potentially related roots are widely attested in South and Central American languages. Examples are Ch’imor Uru (Uru–Chipayan) <t'a̋pa> ‘chili pepper’(cf. Cerrón-Palomino 2016: 156), Aguaruna (Jivaroan) *japau* ‘bitter’ (Wipio Deicat 2015), Wichí (Matacoan) *ta*ˈ*paj* ‘bitter’ (Braunstein 2015), Nivaclé (Matacoan) <tʔapɔʔy> ‘bitter’ (Seelwische & Stell 2015), Kamsá (unclassified) *ta*ˈ*mo* ‘salt’ (Huber & Reed 1992: 177); Proto-Tupí *rʲop ‘bitter’ (Rodrigues 2007: 196); Matagalpa

(Misumalpan) <yabű́la> ‘salt’ (Lehmann 1920: 600),[16] Chayahuita (Cahuapanan) <yamora> ‘salt’ (Hart 1988: 448).

Clay, mud *(taBi-)^{n}da

*ˈdÚ ‘mud’ (Constenla Umaña 1981: 401)

*cɨb(i) ‘mud’ (Holt 1986: 144, 287)

Bribri: Amubre, Coroma [dô] ‘mud’ (Chevrier 2017a: 58)

I have no explanation for the falling tone in this form. Margery Peña (1982: 112) gives the form *dó* ‘mud’ for Amubre, Katsi, and Salitre.

Cabécar /dó/ ‘mud’ (Margery Peña 1989: xvi)

The first element of the Proto-Chibchan form, *taBi, might be related to Cabécar *tãmã* ‘dirty’ (cf. Margery Peña 1989: l).

Muisca <tybso> ‘clay for making pots’ (González de Pérez 1987: 197)

Tunebo *tábira*, *tabra* ‘clay, used to make pots’ (Headland 1997: 189)

A related form might be Tunebo *támara* ‘clay’ (Sp. *barro*) (Headland 1997: 239).

Compare also:

Kuna *napsaa* ‘clay’ (Holmer 1952: 88)

Térraba *zbíʃɔ* ‘clay, mud’ (Constenla Umaña 2007: 233–4)

Cloud, fog *^{m}ba-

*ˈbo̰, *bo- ‘cloud’ (Constenla Umaña 1981: 371)

The reflexes in several Chibchan languages suggest that the Proto-Chibchan form may have ended in a vowel *-u* or in a glottal stop. The Boruca and Bribri forms may reflect a final glottal stop.

Barí [**bā**ˈʧːi] ‘white’

Final [ʧːi] might recur in [kǻ́ǻ́ āqāˈ**ʧːi**] ‘leaf (of a tree)’.

Bocotá ***bo*** *ˈga* ‘cloud, mist’ (Margery Peña 1993: 62)

Final *ˈga* might be a stem formative which does not belong to the root.

[16] This Matagalpa term comes from a wordlist prepared by Alonso Valle (Lehmann 1920: 600).

Boruca *baʔ* ‘dawn’ (Quesada Pacheco & Rojas Chaves 1999: 116, 119)

Bribri: Amubre, Coroma [mɔ̃́] ‘cloud’ (Chevrier 2017a: 158)

Margery Peña (1982: 140) gives Amubre, Katsi, Salitre *mɔ̀̃* ‘cloud’.

Cabécar /bɔ̀̃/ ‘cloud’ (Margery Peña 1989: xvi)

Chimila **/mo˙n**seʔ/ [**mó˙n**sèʔ] ‘clouds’ (Malone 2005: 210)

Final /seʔ/ probably does not belong to the root. It may have a cognate counterpart in Ika *buN(**səga**)* ‘ash’ (cf. Landaburu 2000a: 748). The segment /n/ in Chimila /moːn-/ may be the reflex of old nasalization.

Damana *ˈbən* ‘dawn’ (Sp. *aurora*) (Trillos Amaya 2000: 751)

The consonant *n* in *ˈbən* ‘dawn’ is probably the reflex of vowel nasalization. A related form might be Damana *bo* ‘dawn’ (Sp. *amanecer*) (cf. Trillos Amaya 2000: 752).

Dorasque: Gualaca <**bo**kála> ‘dew’, <**bó**kala> ‘mist’ (Pinart 1890: 23, 28); <**bo**cala> ‘fog’ (Pinart 1882: 53)

Final <-kála> or <-kala> is probably a stem formative derived from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Ika **/mən**jə/ ‘cloud’ (Landaburu 2000a: 737)

The element /n/ is probably the reflex of vowel nasality. Final /-jə/ in this Ika term is not part of the root and may be cognate with *-ĩˈɛ̃* in Bocotá ***blĩ***ˈɛ̃ ‘wind’ (cf. Margery Peña 1993: 83) and with *-ie* in Guaymí ***mu*ɾ*ie*** ‘wind’ (cf. Quesada Pacheco 2008: 67).

Kogi /ˈ**mou**i/ [ˈ**mow**i] ‘cloud’ (Ortiz Ricaurte 2000: 778)

Final /-i/ is a frequent stem formative in Kogi. It recurs, for instance, in /ˈ**nab**i/ ‘jaguar’ (Ortiz Ricaurte 2000: 768).

Kuna *poo* ‘mist, snow’ (Holmer 1952: 126)

Muisca <**fa**oa> ‘mist; cloud, cloudy’ (González de Pérez 1987: 282, 284)

Final <-oa> is a stem formative that probably has a cognate counterpart in <sos**ua**> ‘worm’ (Sp. *lombriz*) (González de Pérez 1987: 274).

Térraba *ɸɔ́ŋ* ‘fog’ (Constenla Umaña 2007: 261)

Tunebo ***bo****kuiʃro* ‘cloudy’ (Headland 1997: 90)

The element *kuiʃ* might eventually turn out to derive from Proto-Chibchan *kũĩ^{n}d(i) ~ *^{m}bu^{n}di ‘big’, like Tunebo ***kuit****ro* ‘much, big, too much, more, enough’ (Headland 1997: 121); final *ro* might be a declarative marker (cf. ibid.: 14).

Compare also:

Atanques <múña> ‘cloud’ (Celedón 1892a: 597)

Coal, hot coal *ku^{n}da

There might a shared origin with Proto-Chibchan *^{m}bũ^{n}d(ũ) ‘ashes’. The Kogi form suggests the existence of a Proto-Chibchan form *kuta.

Dorasque: Gualaca <kebu**kóna**> ‘hot coal’ (Pinart 1890: 7); <kebú **kóna>** ‘coal’ (ibid.: 8), <quebucona> ‘carbon, hot coal’ (Pinart 1882: 61)

> Gualaca <keb*u*> means ‘fire’ (Pinart 1890: 14). The nasal reflex of *^{n}d in the Dorasque may reflect vowel nasality.

Térraba *iʊk* ***kʰuɾkuɬá*** ‘coal’ (Constenla Umaña 2007: 237); *iʊ**kúla*** ‘hot coal’ (ibid.: 235)

> The element *iʊk* means ‘fire’ (Constenla Umaña 2007: 247).

Tunebo *kú**kura***, *ku**kra*** ‘coal (of wood or natural); ember’ (Headland 1997: 115)

> The Tunebo seems to be reduplicated, as its Térraba counterpart.

Compare also:

Kogi ***gegu**ˈta* ‘charcoal’ (Huber & Reed 1992: 58)

Cold, cold substance *^{n}da^{m}ba-

Térraba seems to reflect a form *sa^{m}ba ‘cold’ (see below).

Atanques <**damön**gána> ‘snow’ (Celedón 1892a: 596)

> The element <n> in <damön> may reflect vowel nasality. Final <-gána> probably derives from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Guaymí *tibo* ‘cold’ (Quesada Pacheco 2008: 54)

Kogi **/nab**ˈgala/ [**nab**ˈgaɮa] ‘ice’ (Ortiz Ricaurte 2000: 779)

> Final /-ˈgala/ is a frequent stem formative in Kogi (Ortiz Ricaurte 2000: 770).

Rama ***tama**ːs* ‘early, morning’ (Grinevald et al. 2002–06)

> I have no explanation for the vowel length and final *s*. Alternatively, the Rama and Cabécar terms (see below) may both reflect a proto-form *^{n}damahD.

Compare also:

Cabécar: La Estrella *damãt* ‘cold (adj.)’ (Margery Peña 1989: 440)

Damana *dim* ‘snow’ (Huber & Reed 1992: 317)

Kuna *tampe* ‘ice’ (Holmer 1952: 154)

Teribe /smo/ ‘cold’ (Quesada 2000a: 23)

Térraba *sɔmɔ́* ‘cold (noun)’ (Constenla Umaña 2007: 247)

Cold *tsãĩh

*sɨma (~ *sɨŋ^{w}a) ‘cold’ (Holt 1986: 122)

Nasality is tentatively reconstructed here on the basis of the reflexes in Rama, Pech, Bribri and Cabécar. In the Proto-Chibchan term for ‘night’, which is probably cognate, no nasality is reconstructed.

Boruca ***sex****ká* ‘cold (adj.)’ (Quesada Pacheco & Rojas Chaves 1999: 146)

> Final *-ká* is attested as a derivational element in Boruca adjectives (cf. Rojas Chaves 1992: 50).

Cabécar /tsə́/ ‘cold (adj.)’ (Margery Peña 1989: xvi)

Damana *ˈse* ‘cold’ (Trillos Amaya 2000: 751)

Pech [**sə̀j̃**w̃ã ~ **sə̀**ːw̃ã] ‘cold, flavorless’ (Holt 1999a: 21)

> Final *w̃ã* is probably a stem formative element; a cognate element may recur in Pech ***òː****wa* ‘eight’ (cf. Holt 1999a: 63).

Rama ***sai****ma*, ***saiŋ****ka* ‘cold’ (Grinevald et al. 2002–06)

> Final *-ma* might be related to the stative nominalizer *-ima* (cf. Craig 1989: 68). The element *-ka* is probably also a suffix and recurs in several adjectives, for instance in *supka* ‘sour’ (cf. Craig 1989: 71). A similar alternation between final *-ma* and *-ka* is attested in the case of *mliːs* ‘good’, *mliːma/malima* ‘good’, and *mliːka* ‘happy’ (cf. Craig 1989: 84).

Compare also:

Bribri: Amubre, Coroma [sɛ̃́ˈsːɛ̃́] (Chevrier 2017a: 286)

> I have no explanation for the absence of falling tone in this Bribri form, which would be expected as a reflex of Proto-Chibchan *h. A reflex of Proto-Chibchan *tsãĩh ‘cold’ might likewise be attested in Bribri (Amubre, Katsi, Salitre) ***kɔ́̃sɛ̃́*** ‘cold’ (cf. Margery Peña 1982: 127).

Chimila /saˑnikaˑ^{h}/ [sáˑnīkàˑ^{h}] ‘cold’ (Malone 2005: 209)

Muisca <sie tyhyca> ‘water that has not been heated’ (González de Pérez 1987: 178)

Tunebo *séroa* wind, cold’ (Headland 1997: 177)

To come *^{n}da

*ˈda-, *ˈdI- ‘to come’ (Constenla Umaña 1981: 373)

*dakˈ ‘to come’ (Holt 1986: 91)

It remains to be established whether or not this form is etymologically related to Proto-Chibchan *^{n}daʔ ~ *taʔ ‘go$_{2}$’.

Damana ***na****k* ‘to come’ (Trillos Amaya 2000: 754)

> Final *-k* is probably a stem formative which is cognate with its counterpart in Ika (cf. Landaburu 2000a: 742; see also below).

Guatuso |to| ‘to come’ (cf. Constenla Umaña 1998: 33)

Ika ***na****k-* ‘to come’ (Landaburu 2000a: 747)

> Final *-k* is a stem formative and does not belong to the root (Landaburu 2000a: 742).

Kogi /ˈ**naʃ**i/ [ˈ**naʃ**i] ‘to come’ (Ortiz Ricaurte 2000: 778)

> Final *-ʃi* is a frequent ending in Kogi verbs (cf. Olaya Perdomo 2000: 781–2).

Kuna ***ta****ka* ‘to come’ (Holmer 1952: 152)

> Final *-ka* is probably not part of the root in question but is a stem formative (cf. Holmer 1947: 131).

Muisca <i**ny**squa> ‘to come’ (González de Pérez 1987: 332)

> The same root is probably also attested in Muisca <m**ny**squa> ‘to carry’ (cf. González de Pérez 1987: 276). The element <i-> indicates the first person singular, <m-> indicates transitivity, and <-squa> indicates imperfective aspect (Adelaar & Muysken 2004: 90–1, 97).

Tunebo ***ra****kinro* ‘to come’ (Headland 1997: 159)

> Final *ki* is probably a stem formative that recurs in ***su****kinro* ‘to gather (and peel corn), peel’ (cf. Headland 1997: 188). The element *-n* indicates intention and *-ro* is a declarative marker (ibid.: 14).

Compare also:
Pech *téʔ* ‘to come’ (Holt 1999a: 65), <**tek**-ka> ‘to come’ (Conzemius 1928: 347)

Comitative$_1$ *^{n}da ~ *ta

*tÁ ‘with’ (Constenla Umaña 1981: 432)
Whether or not this suffix is related to the locative suffix *ta ~ *^{n}da remains to be established.

Bribri [tə̀] comitative (Chevrier 2017a: 200)
Cabécar *da ~ ɾa* comitative (Margery Peña 1989: cvix)
The form *ɾa* occurs after vowels.
Terraba *t^{h}ɔ* comitative (Constenla Umaña 2007: 238)

Compare also:
Kuna *ome**le*** ‘with (his) wife’ (Holmer 1952: 107)
The element *ome* means ‘wife’ in Kuna (cf. Holmer 1952: 106).

Comitative$_2$ *u$^{\shortmid}$a

*-wa ‘with’ (Holt 1986: 136)
Constenla Umaña juxtaposes the Rama and Bribri forms without reconstructing a Proto-Chibchan form.

Cabécar *wa* ‘with’ (Margery Peña 1989: cviii)
Pech *-wa* ‘with, having its...’ (Holt 1986: 136)
Rama *-wa* ‘with X’, suffix deriving adjectives (Craig 1989: 72)

Compare also:
Bribri: Katsi, Salitre *wɔs* comitative, with reference to animals; Amubre, Katsi, Salitre *wa* instrumental ‘with’ (Margery Peña 1982: 117)
Tunebo *owara* [oówara] ‘together, with, equal’ (Headland 1997: 151)

Comitative$_3$ *^{m}ba

Constenla Umaña (1981: 432) juxtaposes the Boruca, Movere (Guaymí) and Kuna forms without reconstructing a Proto-Chibchan form.

Boruca *maŋ* ‘with, and’ (Quesada Pacheco & Rojas Chaves 1999: 131, 203)

Damana *-mba* instrumental (Trillos Amaya 2000: 754)

> Whether or not this suffix is related to Damana *-bi* comitative and *-mba* inessive (Trillos Amaya 2000: 754) remains to be investigated.

Guaymí *be* ‘with’ (Quesada Pacheco 2008: 64)

Kuna *pa* comitative, allative (Holmer 1947: 187)

> The meanings of Kuna *-pa* are ‘with, to, from, the same, than (with comparative), by (expressing the agent)’, according to Holmer (1952: 112).

To consume

*ˈga ‘to eat, drink’ (Constenla Umaña 1981: 378)

In Colombian Chibchan languages, the reflexes of *^{ŋ}ga tend to have the meaning ‘to eat’, whereas the reflexes of *iˈaʔ tend to have the meaning ‘to drink’. Given the observations made by Holmer (1947: 50–1) on sound symbolism in the context of the stop/affricate opposition in Bribri <kŏtā> ‘to eat maize’ versus <kūdžā> ‘to eat or suck juicy things, as oranges’ (cited from Lehmann 1920: 296), one may hypothesize that sound symbolism is at play here, and that a Proto-Chibchan form *^{ŋ}ga may have referred to the consumption of dry or hard substances, whereas *iˈaʔ referred to the consumption of juicy or liquid substances. These tentatively reconstructed, alternating forms *^{ŋ}ga ‘to eat’ versus *iˈaʔ ‘to eat, drink’ are reminiscent of the contast between Proto-Chibchan *^{ŋ}ga- ‘fire’ and *hiˈa ‘smoke’ (see below).

Atanques <**ya**me> ‘food’ (Celedón 1892a: 593)

> Final <me> is probably a nominalizing element and may have a cognate counterpart in Damana *ˈʒa**ma*** ‘food’ (cf. Trillos Amaya 2000: 751).

Boruca *ʤaŋ* ‘to drink’ (Quesada Pacheco & Rojas Chaves 1999: 122, 194)

Bribri: Coroma [ì-**ɟáʔ**] ‘to drink’ (Chevrier 2017a: 135)

> Remotospective perfective form; [a] is a thematic vowel (Chevrier 2017a: 135). The prefixed element [ì-] does not belong to the root, as suggested by the Amubre, Katsi,

Salitre form ***ɟaʔ*** ‘to drink’ given by Margery Peña (1982: 112). Amubre, Katsi *ʧakè*, *ʧakò*, Salitre *ʧkò* ‘food’ might be related (cf. ibid.: 117).

Cabécar ***ɟáɽ*** ‘to drink’ (Margery Peña 1989: 389)

Final *-ɽ* indicates the remotospective perfective aspect (Margery Peña 1989: lxxiii).

Damana *ˈga* ‘s/he ate’ (Trillos Amaya 2000: 751), *ˈʒama* ‘food’ (ibid.: 751)

The element *ma* is probably a fossilized nominalizer derived from Proto-Chibchan *-^{m}ba (see below).

Guaymí *ɲa* ‘to drink’ (Quesada Pacheco 2008: 102)

Ika *g-*, *z-* (Landaburu 2000a: 747), [gʌŋ] ‘to eat’ (ibid.: 735), *zamə* ‘food’ (ibid.: 734)

Final *mə* in this form might have a cognate counterpart *ma* in Damana *ˈʒa**ma*** ‘food’ (cf. Trillos Amaya 2000: 751).

Kogi /ga/ ‘to eat’ (Ortiz Ricaurte 2000: 775)

Muisca <b**gy**squa> ‘to eat bread, potato and any kind of root (González de Pérez 1987: 215)

The prefix <b-> indicates transitivity, whereas <-squa> indicates imperfective aspect (Adelaar & Muysken 2004: 90–1).

Térraba ***jɔ́***kɾɔ <yócro> ‘container for food or drink’ (Constenla Umaña 2007: 271)

The first element of this form is probably related to Térraba *jí* <yḗ> ‘to eat, drink’ (Constenla Umaña 2007: 234, 238). Final *-kɾɔ* in ***jɔ́***kɾɔ ‘container for food or drink’ is a common element in this language which derives instrumental nouns (cf. Pache 2016a). Related forms in Cabécar might be *dígɽó* ***ɟʊgɽʊ***, in northern dialects *ɟékɽʊ* ‘drinking fountain’ (Sp. *bebedero*) (Margery Peña 1989: 389).

Tunebo ***jáʔ****anro* ‘to drink’ (Headland 1997: 225)

I have no explanation for the element *a*. The suffix *-n* indicates intention and *-ro* is a declarative marker (Headland 1997: 72: 14).

To cook$_1$ *Li

Constenla Umaña (1981: 374) juxtaposes the Bribri, Teribe, Movere (Guaymí) and Bocotá forms without reconstructing a Proto-Chibchan form.

Bocotá **/alí**ɛ́/ [**ʔalí**ɛ] ‘to cook’ (Margery Peña 1996: 12)

Final /-ɛ́/ indicates imperfective aspect (cf. Gunn 1975: 114, cited in Constenla Umaña 1981: 374).

Cabécar ***ɽíőɽ*** ~ ***ɽíőɽɪ*** ‘to cook’ (Margery Peña 1989: lxxvi)

Remotospective perfective form; final *-őɽ(ɪ)* does not belong to the root in question (cf. Margery Peña 1989: lxxii–lxxvii).

Térraba ***ɻík*** ‘to cook’ (Constenla Umaña 2007: 238)

Final *-k* may have a cognate counterpart in Térraba *hũ**ɻék*** ‘to look for, find’ (cf. Constenla Umaña 2007: 235, 244).

Tunebo ***ani****nro* ‘to cook’ (Headland 1997: 72)

The element *-n* indicates intention and *-ro* is a declarative marker (Headland 1997: 72: 14).

Compare also:

Bribri: Amubre and Katsi *aɽiʔ* ‘to cook’ (Margery Peña 1982: 116)

To cook$_2$ *^{n}du

*ˈdu ‘to cook’ (Constenla Umaña 1981: 374)

*du ‘to cook’ (Holt 1986: 265)

Guatuso **/tu**:xe/ ‘to cook’ (Constenla Umaña 1981: 374)

Guatuso /-xe/ is attested as a verb stem formative in a few cases (Constenla Umaña 1981: 374).

Kogi /ˈ**zu**ʃi/ [ˈ**zu**ʃi] ‘to cook’ (Ortiz Ricaurte 2000: 778)

Preuss (1927: 476, 496) gives various different forms: <**nū**ši, **lū**ši, **žū**ši> ‘to cook’; *-ʃi* is a frequent ending in Kogi verbs (cf. Olaya Perdomo 2000: 781–2).

Kuna ***tu****a* ‘to cook, boil’ (Holmer 1952: 164)

Final *a* probably does not belong to the root.

Pech *tù*, *tu* ‘to cook’ (Holt 1986: 101, 265)

Cosmos (sky, day, time, space, earth, place) *kaʔ(k)

*ˈka ‘sun’ (Constenla Umaña 1981: 418)

*ˈká ‘place, time, environment, land’ (Constenla Umaña 1981: 406)

*kak ‘land, dirt’ (Holt 1986: 107)

*k'ak ‘sun, day’ (Holt 1986: 112)

*kuk ‘ground, land, place’ (Holt 1986: 110)

Proto-Colombian Chibchan *ka-gi ‘earth’ (Wheeler 1972: 105)

Vowel nasality may tentatively be reconstructed on the basis of the Bribri, Bocotá, Cabécar, and Pech forms.

Atanques <**kög**ui> ‘year’ (Celedón 1892a: 592)

> The element <u> is probably added for orthographic conventions in Spanish, and final <i> may be a stem formative which also recurs in Atanques <súr**i**> ‘bird’ (cf. Celedón 1892a: 592). A reflex of Proto-Chibchan *kaʔ(k) ‘cosmos’ might also be attested in Atanques <kangöma> ‘soil, floor’ (Celedón 1892a: 598).

Bocotá *ˈgã* ‘time, space, world’ (Margery Peña 1993: 85)

Boruca *kak* ‘place’ (Quesada Pacheco & Rojas Chaves 1999: 160, 190), *kák* ‘day, sun, thunder, sky’ (ibid.: 115, 129, 190, 196)

> I have no explanation for why there is no reflex of *ʔ in both Boruca forms. The existence of a glottal stop in the Proto-Chibchan form is suggested, however, by tone in the Pech and Bribri forms and the *h* in the Tunebo form (see below).

Bribri: Amubre, Coroma [kã̂ ~ kõ̂] ‘place, time, field’ (Chevrier 2017a: 67)

> Margery Peña (1982: 135, 155) gives Amubre, Katsi, Salitre *kã́* ‘time, place’.

Cabécar /kã́/ ‘time, place’ (Margery Peña 1989: xvii)

> Margery Peña (1989) also gives *kã́*, *kṍ*, northern dialects *kʰã́* ‘time’ (p. 534); *kã́ wɔ́*, northern dialects *kʰã́ wɔ́*, *kɔ́wɔ́* ‘sun’ (p. 527).

Duit <**co**ga> ‘place’ (cf. Uricoechea 1871: xli)

> Final <ga> may be a stem formative element; a similar situation is found in Muisca (see below).

Guaymí /kɔ/ ‘space, day’ (Quesada Pacheco 2008: 26, 50)

Ika *kaʔ* ‘earth’ (Landaburu 2000a: 736, 747)

> In Ika, reflexes of *kaʔ(k) ‘cosmos’ might also be attested in [**ka**pɯɾo] ‘dust’ (ibid.: 735) and /ʤiri**gakə**/ [ʤiɾi**gɒkə**] ‘hill’ (Landaburu 2000a: 736).

Kogi /ˈ**kag**i/ [ˈ**kag**i] ‘earth’ (Ortiz Ricaurte 2000: 778)

Muisca <**quy**ca> ‘sky, earth, homeland, region’ (González de Pérez 1987: 225, 326)

A cognate, final element <a> or <ca> seems to recur in <saca> ‘nose’ (cf. González de Pérez 1987: 282). Proto-Chibchan *kaʔ(k) ‘cosmos’ might also be reflected in Muisca <**quy**pqua> ‘place, occasion’ (cf. ibid.: 274).

Pech *ǎ:* ‘sun, day’ (Holt 1999a: 65)

Térraba /kʰɔ̀k/ ‘place, time’ (Constenla Umaña 2007: 14)

This root might recur in *kʰɔkuɔ kís* ‘sky, firmament’ (cf. Constenla Umaña 2007: 238, 247) – the element *kís* means ‘big’ (ibid.: 248), whereas *-kuɔ* is a frequently attested stem formative in this language (cf. ibid.: 34). The Teribe counterpart of the Térraba form discussed here is /kok/ ‘earth, land, time’ (Quesada 2000a: 38).

Tunebo ***kahk****a* ‘earth’ (Headland 1997: 102)

Final *a* probably does not belong to the root – a cognate element may be attested in ***eb****a* ‘maize’ (cf. Headland 1997: 132).

Creeping animal *^{n}da(^{n}d) / *sa(^{n}d)

Chimila /saŋ/ [sa ŋ] probably ‘lizard’ (Malone 2005: 205)

Dorasque: Chumulu <**dár**ki> ‘caiman’ (Pinart 1890: 7), Gualaca <**sal**bó> (Pinart 1890: 16), <**sal**bo> ‘worm’ (Sp. *gusano*) (Pinart 1882: 57)

The element <ki> might be derived from Proto-Chibchan *^{ŋ}gi ‘worm’. I have no explanation for final <bó ~ bo>.

Guatuso /**ɬal**aŋ/ [ˈ**ɬal**aŋ] ‘snake’ (Constenla Umaña 1998: 41)

I have no explanation for final *aŋ*.

Guaymí /sã/ ‘boa’ (Quesada Pacheco 2008: 26)

Rama ***sar****kin* ‘boa, whale’ (Grinevald et al. 2002–06)

Final *-kin* might be derived from Proto-Chibchan *^{ŋ}gi ‘worm’. Note the similarity between Rama ***sar****kin* ‘boa’ and Chumulu <**dár**ki> ‘caiman’ (Pinart 1890: 7). The ‘boa’ term recurs in the old term for ‘rainbow’ in Rama, *sarkiŋmaŋkat* (cf. Grinevald et al. 2002–06).

Compare also:

Muisca <**sos**ua> ‘worm’ (Sp. *lombriz*) (González de Pérez 1987: 274)

To dance *k^{w}i

*k^{w}it ~ *k^{w}id ‘dance’ (Holt 1986: 114)

Boruca ***kui****k* ‘to dance’ (Quesada Pacheco & Rojas Chaves 1999: 121)

> Final *k* probably does not belong to the root. A cognate element may recur in *bu****k*** ‘to braid, twist, spin’ (cf. Quesada Pacheco & Rojas Chaves 1999: 152, 194, 195).

Dorasque Gualaca <kúyi> ‘to dance’ (Pinart 1890: 6), <cuyi> ‘dance (noun), to dance’ (Pinart 1882: 69)

> Whether Gualaca <kayi> (Pinart 1890: 8), <cayi> ‘to sing’ (Pinart 1882: 69) belongs here, remains a matter of further investigation. A similar <a ~ u> alternation is also attested in the case of Gualaca <curiba> ‘ray, bolt of lightning’ (Sp. *rayo*), ‘storm’ (Sp. *tormenta*)’ and <cariba> ‘thunder’ (Sp. *truenos*) (cf. Pinart 1882: 53).

Kogi **/ku**ˈ**i**zihi/ [**ku**ˈ**i**zihĩ] ‘to dance’ (Ortiz Ricaurte 2000: 778)

> Final /-zihi/ does not belong to the root and recurs, for instance, in /ʒiˈue**zihĩ/** ‘to divide’, or in /ziˈ**zihĩ/** ‘to hunt’ (cf. Ortiz Ricaurte 2000: 779)

Kuna ***k^{w}i****la* ‘to dance’ (Holmer 1952: 65)

> Final *-la* seems to be a morphological element that does not belong to the root (cf. Holmer 1947: 133–4).

Compare also:

Atanques <küïánn> ‘dance (noun)’ (Celedón 1892a: 592)

Dark *tu^{n}di ~ *tui^{n}d

*tu, *tur (or *dur) ‘black, dark’ (Holt 1986: 134, 264)

Boruca *turíŋ* ‘dark’ (Quesada Pacheco & Rojas Chaves 1999: 172)

> This root may recur in *turinát* ‘darken’ (cf. Quesada Pacheco & Rojas Chaves 1999: 172).

Cabécar ***tuwí****nã* ‘dark, to darken’ (Margery Peña 1989: 491)

> Related forms are *tuwíi* (northern dialects), *tuwí* (southern dialects) ‘dark’ (cf. Margery Peña 1989: 491). Final *nã* [dã] from Cabécar *tuwí****nã*** ‘dark, to darken’ probably recurs in *ʦɛ́ ~ ʦɛ́nã* ‘cold’ (cf. ibid.: 440).

Ika /twi/ ‘black’ (Landaburu 2000a: 737)

Tunebo ***tui****a* ‘late afternoon’ (Headland 1997: 204)

Final *a* is probably not part of the root.

Compare also:

Damana [tũa] ‘dark’ (Trillos Amaya 2000: 752)

Guatuso **<ti**ˈ**uri**ˈka> ‘at night’ (Constenla Umaña 1998: 99)

Guaymí *diore* ‘dark, distant’ (Quesada Pacheco 2008: 55)

Kogi /tuˈan/ ‘dark’ (Ortiz Ricaurte 2000: 767)

Pech ***su****-kwa* ‘dark’ (Holt 1986: 157)

Dative *ia

Cabécar *ĩã* dative postposition, ‘for’ (Margery Peña 1989: 494)

In the San José Cabécar dialect, the corresponding form is *ẽ* (Margery Peña 1989: 494).

Guaymí /ie/ dative postposition (Quesada Pacheco 2008: 30)

Pech *-jǎ́* indicates locative relationships such as ‘in, on, at, to’ or the goal of motion verbs (Holt 1999a: 34; 37)

Compare also:

Bribri: Amubre, Katsi, Salitre *iók* ‘interrogative element ‘for what?’, asking for purpose (Margery Peña 1982: 40)

Damana *-ie* comparative (Trillos Amaya 1999: 37)

Rama *jaː*- relational preverb indicating dative (Craig 1989: 115)

Daughter-in-law

Guaymí *bosi* ‘daughter-in-law’ (Quesada Pacheco 2008: 156)

Kuna ***matʃi****ome* ‘daughter-in-law’ (Holmer 1952: 67)

Deep

Cabécar: northern dialects *ít.ʰʊ́* ‘hollow’ (Margery Peña 1989: 453)

Terraba *irɔ* ‘depth’ (Constenla Umaña 2007: 268); *idɔ* ‘thickness’ (ibid.: 248)

Muisca <etague etaynpuyca> ‘deep’ (González de Pérez 1987: 271)

Diarrhea *ᵑga-ⁿdi(a)

Bribri: Coroma [ˈɲɑ́ɾ̃ĩ̀] ‘diarrhea’ (Chevrier 2017a: 592)

Margery Peña (1989: 121) gives Amubre, Katsi, Salitre *ɲɑ̀ɾ̃i* ‘diarrhea’.

Cabécar *ɲɑ́ɾ̃í* ‘diarrhea’ (Margery Peña 1989: 424)

Kogi /ˈgania/ ‘diarrea’ (Ortiz Ricaurte 2000: 769)

According to Ortiz Ricaurte (2000: 769), the expected Kogi form would be /ˈgalia*/.

Ika /garja/ ‘diarrhea’ (Landaburu 2000a: 737)

Compare also:

Dorasque: Chumulu, Gualaca <koré> ‘excrement’ (Pinart 1890: 13)

To die

Kuna ***kir****kua* ‘to die’ (Holmer 1952: 54), *o****kin****na* ‘extinguish’ (ibid.: 102)

Térraba *kʰíɾ* ‘to die’ (Constenla Umaña 2007: 260)

To die, sick

Barí, eighteenth century <čibo> ‘sick’, <čiba> ‘to become sick’ (Rivet & Armellada 1950: 37)

Bocotá *ʧiˈbɛ* ‘to die violently’ (Margery Peña 1993: 63)

Muisca <**chihi**cha> ‘time of death’ (Sp. *tie[m]po de la muerte*) (González de Pérez 1987: 325)

I have no explanation for final <cha>.

Térraba *ʃĩ́nmɔ* ‘corpse’ (Constenla Umaña 2007: 41)

The segment *n* might be a reflex of old vowel nasalization. Final *-mɔ* is identified as a stem formative by Constenla Umaña (Constenla Umaña 2007: 41). A cognate counterpart in Teribe is attested in ***ʃinmo****kɪ* ‘to die’ (cf. Quesada 2000a: 90, 132).

Compare also:

Tunebo ***ʃin****inro* ‘to die (accidentally, suddenly)’ (Headland 1997: 129), ***ʃéi****na* ‘dead’ (Sp. *muerto*, *difunto*) (ibid.: 126)

To do, make *õ

This form is only tentatively reconstructed as such for Proto-Chibchan, given that there is little evidence for mid vowels as Proto-Chibchan phonemes. This form and its reflexes are not further discussed in subsection 2.3 but in subsection 2.4.1.

Boruca *óŋ* ‘to do, make’ (Quesada Pacheco & Rojas Chaves 1999: 150)

Cabécar ***ő̀ɽ*** ‘to do, make (to make material things)’ (Margery Peña 1989: 449)

> Remotospective perfective form; final *-ɽ* does not belong to the root in question (cf. Margery Peña 1989: lxxiii).

Kogi *u-* causative prefix (Holmer 1947: 122)

> This prefix occurs, for instance, in Kogi *unaʃi* ‘bring’, derived from *laʃi* ‘to come’ (cf. Olaya Perdomo 2000: 781).

Kuna *o-* causative prefix (Holmer 1947: 121–2)

Rama *u:ŋ* ‘to do, make’ (Grinevald et al. 2002–06)

Compare also:

Pech *ũ̀:-* causative prefix (Holt 1999a: 61)

Dog *tau

*ˈto ‘dog’ (Constenla Umaña 1981: 376)

It remains to be established whether or not this root is etymologically related to Proto-Chibchan *^{n}da^{m}ba ‘feline$_1$’ (see below).

Bocotá /ˈtɔ/ ‘dog’ (Margery Peña 1996: 10)

Guaymí /nu/ ‘dog’ (Quesada Pacheco 2008: 25)

Rama ***tau****suŋ* ‘dog’ (Grinevald et al. 2002–06)

> I have no explanation for the element *suŋ*.

Compare also:
Barí [**ɾū**ˈɾāābà] ‘dog’

Door (= ‘mouth of the house’)

Boruca *úkarás* ‘door’ (Quesada Pacheco & Rojas Chaves 1999: 181)

The second element, *karás*, might be related to *kása* ‘mouth’ (cf. Quesada Pacheco & Rojas Chaves 1999: 122).

Chimila /hukkasa/ [húkːāsːsà] ‘door’ (Malone 2005: 204)

The first element of Chimila /hukkasa/ ‘door’, /huk/, may recur in **/huk**ka**ʔ/** [**húk**:à**ʔ**] ‘roof’ (cf. Malone 2005: 204).

Dove *^{n}du-^{m}ba(^{n}d)

The first element *^{n}du in this form is probably related to *^{n}du(^{n}d) ‘bird, dove’.

Bribri: Coroma, Amubra [ˈnṹ-bòɽ] ‘dove’ (Chevrier 2017a: 85)

Margery Peña (1982: 143) gives Amubre *nũbʊɽ* a kind of dove (Sp. *paloma del monte*), Salitre *nṹmũn*, *nṹmũr* ‘dove’. The origin of vowel nasality in the Bribri and Cabécar forms for ‘dove’ needs further analysis.

Damana [**duˈbəŋ**ʃi] a kind of dove, Sp. *paloma mona* (Trillos Amaya 2000: 751)

I have no explanation for final [-ʃi].

Muisca <**sum**gui> ‘turtledove’ (González de Pérez 1987: 329)

An element <gui> is attested in other animal terms, too. It recurs, for instance, in <chutagui> ‘cockroach’ (cf. ibid.: 223).

Compare also:
Cabécar: San José Cabécar *nṹbʊɽ* ‘dove’ (Margery Peña 1989: 204)]

Dry$_1$ *^{n}di^{n}da / *^{n}disa

*diˈsə- ‘dry’ (Constenla Umaña 1981: 376)

*di-s ‘dry’ (Holt 1986: 100)

This Proto-Chibchan form is analyzed as ‘water-without’ by Holt (1986: 100).

Bocotá *ˈ**dra**lɛ* ‘dry’ (Margery Peña 1993: 67)

Final *-le* is a stative nominalizer (cf. Margery Peña 1993: 81).

Guatuso **/tiła**:xa/ ‘dry’ (Constenla Umaña 1981: 376)

I have no explanation for the vowel length. Final *-xa* is a common element in Guatuso adjectives (Constenla Umaña 1981: 376, cf. also Constenla Umaña 1998: 64).

Kuna ***tina****k^{w}a* ‘dry’ (Holmer 1952: 160)

Final *-k^{w}a* is a frequently attested ending in Kuna adjectives (Holmer 1947: 55).

Rama *a**lis***- ‘to dry’ (Grinevald et al. 2002–06)

The prefix *a-* may be a (fossilized) prefix which recurs in Rama ***a****biːsa* ‘new’ (Grinevald et al. 2002–06).

Dry$_2$ *pu^{n}d-

*buru(N) (-*bulu[N]) ‘ashes, dust’ (Holt 1986: 95)

Barí [būˈɾů] ‘dry’

Huetar <es**pur**uro, es**purrú**> ‘crumbling, an object turning to dust’ (Quesada Pacheco 1992: 94)

I have no explanation for the elements <es> and final <uro>.

Rama ***plu****ːs* ‘dry’ (Grinevald et al. 2002–06)

I have no explanation, neither for the long vowel, nor for final *s*. The same combination of vowel length and final *s* is attested in *tamaː**s*** ‘early, morning’ (ibid.).

Compare also:

Cabécar *pónã* ‘dry’ (Margery Peña 1989: 524)

Chimila /broˑntaʔ/ [^{m}bróˑntàʔ] ‘dry’ (Malone 2005: 211), *úŋŋambrónta* ‘dust’ (Huber & Reed 1992: 364)

Muisca <buchua> ‘dry’ (González de Pérez 1987: 317), <fusque> ‘dust’ (ibid.: 299)

These forms strongly resemble the Muisca term for ‘ashes’ (see above).

Tunebo *burabura* ‘dry’ (Headland 1997: 97)

Dust *kaʔ(k)-pu^{n}d-

Literally, this form has the meaning ‘dry earth’.

Pech *aka-purù-ʃ* ‘dust’ (Holt 1986: 95)

I have no explanation for initial *a* in this form.

Ika [kapɯɾo] ‘dust’ (Landaburu 2000a: 735)

Compare also:

Bribri, Amubre, Katsi, Salitre *kə̃mũɽẽ*, *kmũɽẽ* ‘dust’ (Margery Peña 1982: 146), Amubre [ˈkə̃̂pɔ̀] ‘dust’ (Chevrier 2017a: 607)

Tunebo *kahk burá* (Huber & Reed 1992: 364)

Earth, floor, mud *taB(a)

*ˈtÁBA ‘soil, earth, dirt, clay’ (Constenla Umaña 1981: 415)

*ti-bɨ ‘earth, dirt’ (Holt 1986: 131)

Proto-Chibchan *taB(a) recurs in Proto-Chibchan *(taBi-)^{n}da ‘clay, mud’

Barí, eighteenth century, <taba> ‘mud, clay’ (Rivet & Armellada 1950: 30)

Bocotá *daˈba* ‘earth, floor’ (Margery Peña 1993: 65)

Boruca *táp* ‘floor’ (Quesada Pacheco & Rojas Chaves 1999: 191)

I have no explanation for the high tone in this Boruca form.

Dorasque: Chumulu <**sav**ikal> ‘mud’ (Sp. *fango*) (Pinart 1890: 14), <**sáv**ikal> ‘mud’ (Sp. *lodo*) (ibid.: 19); Gualaca <**θáb**ikula> (ibid.: 19), <zabicula> ‘mud’ (Sp. *lodo*) (Pinart 1882: 55)

Kuna ***nap**pa* ‘earth, land, ground, floor’ (Holmer 1952: 87)

Final *pa* may be a stem formative and not belong to the root (cf. Holmer 1947: 60).

Compare also:
Cabécar *tãmã* ‘dirty’ (Margery Peña 1989: 530)
Guaymí *tibiẽ* ‘soil’ (Quesada Pacheco 2008: 76)

To eat *ku^{n}di ~ *kui^{n}d

Bocotá ˈ***gud***ɛ ~ ˈ***gut***ɛ ‘to eat’ (Margery Peña 1993: 71)
Dorasque: Chumulu, Gualaca <**kut**ái> ‘to eat’ (Pinart 1890: 10), Gualaca <**cut**ai> (Pinart 1882: 62)
Guaymí *kwet-* ‘to eat’ (Quesada Pacheco 2008: 101)
Kuna ***kun****na-* ‘to eat, bite’ (Holmer 1952: 60)

I have no explanation for final *na*.

Compare also:
Bribri <kūdžā> ‘to eat or suck juicy things, as oranges’ versus <kŏtā> ‘to eat maize’ (Lehmann 1920: 296, cited in Holmer 1947: 50–1)
Rama ***k^{w}i****:s* ‘to eat’, *ar****ŋut*** ‘to bite’ (Grinevald et al. 2002–06)

Egg

Boruca *kúp* ‘egg, testicle’ (cf. Quesada Pacheco & Rojas Chaves 1999: 153, 193)
Damana *ni****kuma*** ‘egg’ (Huber & Reed 1992: 260)

Egg, offspring *La

*əˈrə ‘child, young of an animal, egg’ (Constenla Umaña 1981: 370)

Bribri: Amubre, Coroma [ɽá] ‘child, offspring’ (Chevrier 2017a: 84)

Margery Peña (1982: 7) gives Amubre, Katsi, Salitre *aɽà* ‘child, offspring’; this form is also used to encode a diminutive meaning.

Chimila /ɾaaʔ/ [ɾáːʔ] ‘egg’ (Malone 2005: 210)

I have no explanation for the final glottal stop in this Chimila form. According to Malone (2005: 2010), the tonal pattern of this root is high–zero.

Guatuso *ˈora* ‘diminutive marker (Constenla Umaña 1998: 82)

Ika *aʔnə* ‘stone’ (Landaburu 2000a: 747)[17]

A cognate element may also recur in Ika <kúz**ane**> ‘nit’ (cf. Celedón 1892b: 606) which seems to contain a /ku/ ‘louse’ (Landaburu 2000a: 734, 747) and a relational element <z>.

Kuna *ana* ‘sons, offspring, branch (as of tree or river)’ (Holmer 1952: 15)

Nutabe <ta**nâ**> ‘egg’ (Rivet 1943a: 26)

This form seems to contain a fossilized relational prefix <t-> (cf. Rivet 1943a: 29).

Rama *aːt* ‘egg’ (Grinevald et al. 2002–06)

Tunebo *aʔná* ‘egg’ (Headland 1997: 66)

Compare also:

Dorasque: Chumulu <**án**i-biá> ‘daughter’ (Pinart 1890: 17); Gualaca <kókri-**án**i > ‘chicken’ (ibid.: 27), <cocri**an**i> (Pinart 1882: 56)

Eight *hap-

Proto-Colombian Chibchan *abia ‘eight’ (Wheeler 1972: 105)

Constenla Umaña (1981: 379) gives some cognate forms from Colombian Chibchan languages, but does not reconstruct any Proto-Chibchan term.

In the context of the cognate forms listed below, note that in Chibchan languages from Central America, forms ending in *-a* prevail, whereas in Chibchan languages of Colombia, the stems for ‘eight’ end in *-i*.

Atanques <**amb**igua> ‘eight’ (Celedón 1892a: 597)

Final <-gua> is probably an old numeral classifier (cf. Pache 2016a).

Bocotá *ˈhaba* ‘eight’ (Margery Peña 1993: 73)

[17] In Mesoamerican languages, there is a tendency to link ‘stone’ and ‘egg’, the latter being conceived of as the ‘stone of the bird’ (Campbell et al. 1986: 553–4). The terms for ‘egg’ and ‘stone’ are connected with each other in some South American languages, too: compare Mapudungun *kuɻa* ‘stone’ versus *kuɻam* ‘egg’ (Augusta 1916: 100). Across different language families, this phenomenon may also be attested in Proto-Guahiboan *tobɨ ‘egg’ (Christian & Matteson 1972) and Proto-Cariban *tôpu ‘stone’ (Gildea & Payne 2007). Semantic developments from ‘stone’ to ‘egg’, or from ‘egg’ to ‘stone’ are both conceivable *a priori*.

Bribri: Amubre, Coroma [ˈ**p**á-kòɽ] ‘eight’ (Chevrier 2017a: 94)

Final *-kòɽ* is a classifying element, derived from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a). Margery Peña (1982: 141) gives Amubre, Katsi, Salitre ***pà**kɔɽ* ‘eight, referring to human beings and to flat or round objects’.

Kogi /ˈ**ab**igua/ [ˈ**ab**igua] ‘eight’ (Ortiz Ricaurte 2000 778)

The element /-gua/ is probably a fossilized numeral classifier (cf. Pache 2016a).

Pech ***òːwa*** ‘eight’ (Holt 1999a: 63)

Final *-wa* is a fossilized numeral classifier, probably derived from Proto-Chibchan *k^{w}a ‘seed’ (cf. Pache 2016a).

Tunebo ***ábia*** ‘eight’ (Headland 1997: 265)

Final *-ia* also recurs in other Tunebo numerals, as for instance in *estária* ‘nine’ (cf. Headland 1997: 264).

To enter *^{n}daʔ-u

*ˈdok ‘to enter’ (Constenla Umaña 1981: 379)

*dauk ‘to enter’ (Holt 1986: 98)

The form *^{n}daʔ-u ‘to enter’ probably derives from *^{n}daʔ ‘to go’ and an element which is etymologically related to *hu ‘house’. Reflexes of Proto-Chibchan *hu ‘house’ apparently indicate a more general meaning of ‘inside’ in certain Chibchan languages, as in the case of Muisca <hui> ‘inside’ (cf. González de Pérez 1987: 175).

Kuna ***to**ka* ‘to enter, dive’ (Holmer 1952: 163)

Final *-ka* is a stem formative which seems to indicate a notion of entering into a state (Holmer 1947: 131).

Pech ***tòː**k-* ‘to enter’ (Holt 1999a: 18)

In Pech, *-k* indicates a semelfactive/punctual meaning, according to Holt (1999a: 44).

Rama ***tau**k* ‘to get in, come, dive, put on, wear’ (Grinevald et al. 2002–06)

Final *k* recurs in several verbs, such as, for instance, ***su**k* ‘to wash, peel’ (cf. Grinevald et al. 2002–06).

Tunebo ***rau****winro* ‘to enter, begin’ (Headland 1997: 159)

Final *wi* is probably not part of the root in question. It recurs, for instance, in Tunebo *kuʔwinro* ‘to heal’ (cf. Headland 1997: 246). The element *-n* indicates intention and *-ro* is a declarative marker (ibid.: 14).

Excrement *ᵑ̊ga

*ˈgã ‘excrement’ (Constenla Umaña 1981: 380)

*ʃa ‘excrement’, defecate’ (Holt 1986: 123)

Bocotá /ˈhɛ̃/ ‘excrement’ (Margery Peña 1996: 9)

Bribri: Amubre [ɲã́], [ɲa̋] ‘excrement’ (Chevrier 2017a: 358, 594)

Margery Peña (1982: 125) gives the Amubre, Katsi, Salitre form *ɲã́* ‘excrement’.

Cabécar /ɟã́/ [ɲã́] ‘excrement’ (Margery Peña 1989: xx)

Ika *ga* ‘excrement’ (Landaburu 2000a: 737)

It is unclear whether there is also a relation of cognacy with Ika *ʃə* ‘fart (noun)’ (cf. Landaburu 2000a: 735).

Kogi /ˈ**ga**i/ ‘excrement’ (Ortiz Ricaurte 2000: 768)

Final /-i/ is a stem formative that recurs, for instance, in /**ku**ˈi/ [**ku**ˈi] ‘louse’ (cf. Ortiz Ricaurte 2000: 779).

Kuna *saa* ‘posterior, belly, stomach, excrement’ (Holmer 1952: 133)

Muisca <**gy**e> ‘excrement’ (González de Pérez 1987: 261)

Final <-e> is a common stem formative in Muisca, and recurs in terms such as <cue> ‘louse of the head’ (cf. González de Pérez 1987: 296).

Térraba /ʒáŋ/ ‘excrement’ (Constenla Umaña 2007: 14)

Compare also Teribe /ʒan/ ‘shit’ (Quesada 2000a: 188)

Compare also:

Chimila <ganta’> ‘animal exrement’, <-~~g~~anta’> classifier (Sp. *noción de excremento*) (Niño Vargas 2018: 405)

Pech *a-ʃáʔ-* 'defecate', *aʔ-sa* ‘excrement’ (Holt 1986: 123)

Exterior *^{m}ba^{n}d(a) ~ *^{m}bat(a)

*bas ‘skin, hair’ (Holt 1986: 285)

Cabécar *kó* ***bata*** ‘mouth, lips’ (Margery Peña 1989: 161)

Another Cabécar form for ‘mouth’ is /kó/ (Margery Peña 1989: xvi).

Dorasque: Chumulu <*s*i-**mal**> ‘shore of the river’, <báli-**mal**> ‘shore of the sea’ (Pinart 1890: 24)

The meaning of <*s*i> is ‘river’ (Pinart 1890: 28), <báli> is ‘sea’ (ibid.: 21) or ‘salt’ (ibid.: 29) in Chumulu.

Kogi /kaˈka**bala/** ‘lips’ (Ortiz Ricaurte 2000: 770)

The element /ˈkaka/ [ˈkaxa] means ‘mouth’ (Ortiz Ricaurte 2000: 779). It remains to be investigated whether or not an element /bala/ with the meaning ‘exterior’ can also be identified in Kogi /muˈli**bala/** ‘covered with ashes’ (ibid.: 770). The first element /ˈmuli/, [ˈmuʌi] means ‘ash’ (cf. ibid.: 778).

Compare also:

Chimila /maˑnta/ [máˑntà] ‘skin’ (Malone 2005: 203)

Eye

Proto-Colombian Chibchan *uba-N-(k^{w}a) ‘eye’ (Wheeler 1972: 105)

Muisca <upqua> ‘eyes’ (González de Pérez 1987: 285)

Térraba *bɔ́kuɔ* ‘eye’ (Constenla Umaña 2007: 264)

Face *^{ŋ}g^{w}a(k)

*(h)waka ‘face’ (Holt 1986: 136)

This term is most probably cognate with Proto-Chibchan *k^{w}a ‘seed, fruit’ and with Proto-Chibchan *u^{m}ba ‘face, eye, fruit’. The latter link is suggested by the alternations, in Chibchan, of velar and bilabial stops (cf. subsection 2.4.3.1), and by the alternation of the sequence *uka* ~ *k^{w}a/kua* (cf. subsection 2.4.4.5).

Bocotá *guˈa* ‘face’ (Margery Peña 1993: 70), ***o*ˈ*agli*** ‘temple’ (ibid.: 86)

Final *-gli* probably derives from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a). A cognate element recurs in Bocotá *baˈda**gli*** ~ *baˈta**gli*** ‘end’ (Margery Peña 1993: 59–60).

Guatuso *xua* ‘before, in front of’ (Constenla Umaña 1998: 109)

This form might be related to Guatuso /xuːaŋ/ ‘face’ (cf. Constenla Umaña 1998: 12).

Guaymí ***ŋwɔ****ɾe* ‘face’ (Quesada Pacheco 2008: 71)

I have no explanation for final *ɾe*. It probably does not belong to the root. This element frequently recurs in kinship terms (Quesada Pacheco 2008: 53).

Kogi **/u**ˈ**a**ka/ ‘face’ (Ortíz Ricaurte 2000: 769)

This term may recur in Kogi /ˈuakahuˈaba/ ‘cheek’ (cf. Ortíz Ricaurte 2000: 766). It is not clear whether the stem formative is /-ka/ or /-a/ in Kogi /uˈaka/ ‘face’. A similar stem formative /-ka/ may recur in /ˈkuka/ [ˈkuxa] ‘ear’ (ibid.: 778).

Kuna ***wa****kala* ‘face, cheek’ (Holmer 1952: 180)

Final *-kala* is a frequent stem formative in this language, derived from *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Pech *wàk* ‘face’ (Holt 1999a: 39)

I have no explanation for the low tone in this form.

Compare also:

Boruca *ua* (<hua>) ‘fruit’ (Quesada Pacheco & Rojas Chaves 1999: 146)

Bribri: Coroma [wŏ] ‘face’ (Chevrier 2017a: 92), Coroma [ˈjâ-wò] ‘palm fruit’ (ibid.: 278), Amubre, Katsi, Salitre *wò* ‘face’ (Margery Peña 1982: 115), Amubre, Katsi, Salitre *wʊ* ‘fruit’ (ibid.: 127)

Cabécar *wó* ‘face, seed’ (Margery Peña 1989: 340)

Face, eye, fruit *u^{m}ba

*ub́ [sic] ‘eye’ (Constenla Umaña 1981: 380)

*uˈbə́ ‘face’ (Constenla Umaña 1981: 381)

*ubə́ ‘fruit’ (Constenla Umaña 1981: 385)

*uba ‘round object: eye, seed, fruit, …’ (Holt 1986: 135)

Considering possible alternations between Proto-Chibchan *^{m}b and *k or *^{ŋ}g (cf. subsection 2.4.3.1) and variation of the sequences *uka and *kua or *k^{w}a (cf. subsection 2.4.4.5), it seems that Proto-Chibchan *u^{m}ba ‘face, eye, fruit’ might ultimately be related to Proto-Chibchan *^{ŋ}g^{w}a(k) ‘face’ and *k^{w}a ‘seed, fruit’.

Atanques <úma> ‘eye’ (Celedón 1892a: 597)

Dorasque: Gualaca <kala**óbe**> ‘fruit’ (Pinart 1890: 14), <cala**obe**> (Pinart 1882: 59)

> A reflex of Proto-Chibchan *u^{m}ba ‘face, eye, fruit’ may also be attested in Gualaca <**óba**gala> ‘knee’ (cf. Pinart 1890: 29), probably meaning ‘face of the leg’ originally. The order of the constituents appears inverse, compared with <kala**óbe**> ‘fruit’ (Pinart 1890: 14). In this latter form, final <e> might be a reflex of *a in word-final position, or it may be the reflex of *ka^{n}da-u^{m}ba-i with an element *-i encoding possessed status (such a possessive-marking final *-i is probably also attested in *^{n}dũ(-i) in ‘father, uncle, ancestor’ below).

Ika *umə* ‘eye’ (Landaburu 2000a: 747)

> A reflex of Proto-Chibchan *u^{m}ba ‘face, eye, fruit’ is likewise attested in Ika [nʌŋumɯ] ‘my eye’ (cf. Landaburu 2000a: 737), and *əwa* ‘seed’ [ʌβ^{β}a] ‘seed’ (cf. ibid.: 736, 747).

Kogi /ˈuba/ [ˈuba] ‘eye’ (Ortiz Ricaurte 2000: 778)

Muisca <uba> ‘seed (general term)’ (González de Pérez 1987: 319), ‘face’ (ibid.: 209)

> A reflex of Proto-Chibchan *u^{m}ba ‘face, eye, fruit’ is also attested in Muisca <**u**pqua> ‘eyes’ (cf. González de Pérez 1987: 285).

Rama *uːp* ‘eye, seed, fruit’ (Grinevald et al. 2002–06)

> A possible explanation for the long vowel is metathesis. A similar sound change may be attested in *kumba ‘tongue’ > Rama *kuːp* ‘tongue’ (cf. Grinevald et al. 2002–06).

Térraba *bɔ́* ‘fruit’ (Constenla Umaña 2007: 247)

> A reflex of Proto-Chibchan *u^{m}ba ‘face, eye, fruit’ is also attested in Térraba ***bɔ́****kuɔ* ‘forehead, eye’ (cf. Constenla Umaña 2007: 247, 264) and ***bɔ́****gɾɔ* ‘face’ (cf. ibid.: 237).

Tunebo *uba* [uúba] ‘seed (of several fruits); kernel, fruit, eye, star’ (Headland 1997: 206).

Compare also:
Boruca *ua* (<hua>) ‘fruit’ (Quesada Pacheco & Rojas Chaves 1999: 146)
Bribri: Coroma [wŏ] ‘face’ (Chevrier 2017a: 92), Coroma [ˈjâ-wò] ‘palm fruit’ (ibid.: 278), Amubre, Katsi, Salitre *wò* ‘face’ (Margery Peña 1982: 115), Amubre, Katsi, Salitre *wʊ* ‘fruit’ (ibid.: 127)
Cabécar *wó* ‘face, seed’ (Margery Peña 1989: 340)
Chimila **/waa**ruˑʔ/ [ᵍ**wā́**ːɾùˑʔ] ‘fruit’ (Malone 2005: 207)

> According to Malone (2005: 207), the tonal pattern in this form is mid–high–low.

Face, toward

Muisca <husa> ‘toward’ (González de Pérez 1987: 269)
Rama *ŋʷut* ‘face’ (Grinevald et al. 2002–06)

To fall$_1$

*a(i)n ‘to fall’ (Holt 1986: 89)
*na ‘to fall’ (Holt 1986: 151)

Cabécar *hã́nɛ́ɽ* ‘to fall’ (Margery Peña 1989: 394)

> Remotospective perfective form (cf. Margery Peña 1989: 394).

Guaymí /ɾɔg/ ‘to fall’ (Quesada Pacheco 2008: 34)
Kogi *ar-* verbal prefix indicating downward direction in some cases (Holmer 1947: 76)
Kuna *ar-* verbal prefix indicating downward direction in some cases (Holmer 1947: 76)
Teribe *ɻon* ‘to fall’ (cf. Quesada 2000a: 146, 172)
Térraba *ɻɔ́n* ‘to fall (small entities)’ (Constenla Umaña 2007: 236)

To fall$_2$

*pa(N)t ‘to fall, hang’ (Holt 1986: 118)

Bribri: Salitre *pə̀nẽʔ* transitive or intransitive verb ‘to give birth (animals), to be born (animals)’ (Sp. *parir*, *nacer*) (Margery Peña 1982: 68)

Cabécar: southern dialects *pə́nə́r̃*, intransitive verb ‘to be born (animals)’ (Sp. *nacer*) (Margery Peña 1989: 232)

Kogi *pajn(i)* ‘to fall’ (Olaya Perdomo 2000: 781)

Kuna ***pat****ta* ‘to throw oneself into the water for a bath, hang down’ (Holmer 1952: 118)

The element *-ta* is not part of the root in question (cf. Holmer 1947: 69–71).

Muisca <ze**ben**ansuca> ‘to fall’ (Sp. *caerse una cosa de su estado*) (González de Pérez 1987: 204)

Térraba *ɸón* ‘to be born’ (Constenla Umaña 2007: 261)

Father *ka(ka)

*ˈkáka ‘father’ probably a reduplicated form (Constenla Umaña 1981: 381)

Potentially related words are found in several other Native American languages, both of North and South America alike: compare Kaingáng ***kã****kra* ‘mother’s brother; father-in-law’ (Key 2015f); Quechua *kaka* ‘mother’s brother or cousin, father’s sister, father-in-law of a man, brother-in-law’ (Steinen 1886: 292–3; Rosat Pontacti 2004: 370), Páez <kakka>, Zuñi <kaka>, Nisenan (Maiduan) <kaka>, Central Miwok <kaka> all ‘mother’s brother’ (Swadesh 1957: 33). It remains to be established whether or not these terms are related to each other, and to similar, widespread forms such as Proto-Cariban *kuku (Meira 2017), Purépecha *kuku* (Swadesh 1957: 31), both ‘grandmother’, Zuñi <kuku> ‘father’s sister’ (Swadesh 1957: 31) and related forms in other Native American languages. These terms may eventually turn out to reflect old networks spreading across both North and South America.

Atanques <káke> ‘father’ (Celedón 1892a: 597)

Final <e> might be a reflex of *a or of *a-i (a reflex of *-i may indicate the possessed status of the entity referred to, as final *-i in Proto-Chibchan *^{n}dũ(-i) ‘father, uncle, ancestor’ below). The matter requires further investigation.

Chánguena <kága> ‘father’ (Pinart 1890: 24)

Ika *kakə* ‘father’ (Landaburu 2000a: 734)

Térraba **/kʰɔ́k/** ‘father’ (Constenla Umaña 2007: 13)

I have no explanation for final *k*.

Compare also:

Muisca <kaka> ‘grandmother’ (Swadesh 1957: 33)

Father, uncle, ancestor *ⁿdũ(-i)

Final *-i is only tentatively reconstructed as part of the Proto-Chibchan root. It may be an element indicating the possessed status of the entity referred to (for *-i indicating possessed status, see below). The Guaymí and Rama forms for ‘father’ seem to reflect old vowel nasality which may have indicated notions of affection (compare subsection 3.1.1.1.5).

Boruca ***dú*** *ʦit* ‘father’ (Quesada Pacheco & Rojas Chaves 1999: 174)

This form was mentioned by only one consultant. The second element *tsit* probably derives from Proto-Chibchan *ʦĩⁿd(a) ‘small’ and may encode a diminutive meaning. A related form may be attested in Boruca <**du**xasúj> ‘great-grandfather’ (compare <xasúj> ‘grandfather’), or <**du**bríshba> ‘great-grandchild’ (compare <bríshba> ‘grandchild’) (cf. Rojas Chaves 1992: 59).

Chánguena <**tu**i> ‘uncle’ (Pinart 1890: 31)

Guaymí ***ɾu****a* ‘ancestor’ (Quesada Pacheco 2008: 74), ‘old man’ (Sp. *anciano*) (ibid.: 122), *ɾũ* ‘father’ (ibid.: 74)

I have no explanation for final *a* in ***ɾu****a* ‘ancestor’.

Rama *tuŋ* ‘father’ (Grinevald et al. 2002–06)

Tunebo ***rui****ja* ‘ancestor’ (Headland 1997: 169)

I have no explanation for final *ja*. The formal similarity between Tunebo ***rui****ja* ‘ancestor’ and Bocotá ***ɾui****á* ‘uncle (mother’s brother)’ (see below) is remarkable.

Compare also:

Bocotá ***ɾui****á* ‘uncle (mother’s brother)’ (Margery Peña 1993: 87)

Bribri: Coroma [ˈnw̃ɑ̂kɨ̰, ˈnw̃ɔ̂kɨ̰] ‘father-in-law, son-in-law’ (Chevrier 2017a: 596)

Feather, wing, arm, hand *ᵑgak

*cak(w)a or *sɨk(w)a ‘hand, arm, finger’ (Holt 1986: 96)

Boruca ***ʤ́ék**sa* ‘arm’ (Quesada Pacheco & Rojas Chaves 1999: 123)

I have no explanation for final *sa*.

Bribri: Amubre [ˈkó-**ɟòk**ˀ] ‘plumage’ (Chevrier 2017a: 58)

The element [ˈkó] means ‘leaf’ (Chevrier 2017a: 58). It is related to [kò] in Bribri [ˈkɔ̃̂kò] and [ˈkáɽkò], both ‘leaf’ (cf. ibid.: 594). Margery Peña (1982: 146) gives also Amubre, Katsi, Salitre *kɷ**ɟók*** ‘plumage’.

Chimila /ga/ [ᵑgáʰ] ‘feather’ (Malone 2006: 29)

Proto-Chibchan *ᵑgak ‘feather, wing, arm, hand’ might likewise be reflected in Chimila /**gaŋ**gwɾa/ [**ᵑgáŋ**ᵑgᵘɾà] ‘arm’ (cf. Malone 2005: 202).

Kuna ***sak**kʷa* ‘arm, sleeve, especially in plural: wing(s)’ (Holmer 1952: 135)

Final *-kʷa* is a frequent stem formative in Kuna (cf. Holmer 1947: 54–5; Pache 2016a).

Muisca <**ga**ca> ‘feather’ (González de Pérez 1987: 296)

Final <-ca> or <-a> seems to have a cognate counterpart in Muisca <cuhuca> ‘ear’ (cf. González de Pérez 1987: 286).

Térraba ***sák**uɔ* ‘finger’ (Constenla Umaña 2007: 242)

Final *-uɔ* and *-kuɔ* are suffixes mainly attested in body part terms and animal/plant terms (Constenla Umaña 2007: 34–6). Whether or not Proto-Chibchan *ᵑgak ‘feather, wing, arm, hand’ is also reflected in Térraba *sák* ‘bunch of bananas’ (ibid.: 258) remains to be investigated.

Compare also:

Barí [**āʔ**ˈdːùù] ‘hand’

Final [ˈdːùù] is probably a stem formative which recurs in [lːābɪ̄ʔˈdːùù] ‘ghost’.

Feline$_1$ *ⁿdaᵐba

*dəbɔ́ ‘feline’ (Constenla Umaña 1981: 381)

Proto-Colombian Chibchan *da-bai/-N ‘jaguar’ (Wheeler 1972: 106)

It remains to be established whether or not this root is etymologically related to Proto-Chibchan *tau ‘dog’ (see above).

Barí [ˈlāābà] ‘jaguar’

There is no trace of this word in the Barí wordlist of Catarroja (1730), but Alfaro (1788) gives a form <daaba> (both cited in Villamañán 1978: 54). Related, polymorphemic Barí forms are probably [ɾūˈɾāābà] ‘dog’ and [lāābī āʔˈdːù] a plant (Sp. *uña de gato*). Final [i] in the latter form might be a fossilized possessive element; [āʔˈdːùù] is ‘hand’.

Cabécar /dãbɑ́/ [nə̃mɑ́] ‘jaguar’ (Margery Peña 1989: xxx)

Guatuso |taɸa| ‘feline’ (Constenla Umaña 1998: 44)

Kogi /ˈ**nab**i/ ‘jaguar’ (Sp. *tigre*) (Ortiz Ricaurte 2000: 768)

Final /-i/ is a frequent stem formative in Kogi. It recurs, for instance, in /ˈnu**g**i/ [ˈnugi] ‘tail’ (Ortiz Ricaurte 2000: 779).

Muisca <nymy> ‘wildcat’ (Sp. *gato montés*) (González de Pérez 1987: 266)

A related form may recur in Muisca <chihi**saba**> ‘puma’ (cf. González de Pérez 1987: 273).

Térraba /dɔbɔ́ŋ/ [dᵊβɔ́ŋ ~ dᵊβɔ́ŋ] ‘feline’ (Constenla Umaña 2007: 15)

Compare also:

Bribri: Amubre, Katsi ***nãmʉ̃*** (Margery Peña 1982: 133), [dɛ̰ˈkɾɔ́**nɛ̰̀mɛ̰̀**] ‘jaguar (‘chicken-eater’)’ (the element [dəˈkɾɔ́, dàkɔ̰́ˈɾɔ́] means ‘chicken’) (Chevrier 2017b)

Chimila [ɾaa^{m}bɾaʔ ~ ɾaamɾaʔ] ‘puma (archaic)’ (Malone 2010: 9)

Feline$_2$ *ku(^{n}d-)

*kuLÁʔ ‘feline’ (Constenla Umaña 1981: 381)

*k'ut(u) ‘wild cat’ (Holt 1986: 113)

Boruca ***kuɾ****áʔ* ‘jaguar’ (Quesada Pacheco & Rojas Chaves 1999: 194)

Guaymí ***kuɾ****a* ‘jaguar’ (Quesada Pacheco 2008: 67)

Compare also:

Bocotá *guˈdɛ* ‘feline’ (Margery Peña 1993: 71)

Chimila <k*ú* : ye> ‘puma’ (Reichel-Dolmatoff 1947: 34)

Muisca <comba> ‘jaguar’ (González de Pérez 1987: 326)

Pech *úʔ* ‘jaguar’ (Holt 1999a: 34)

Rama *kruːbu* ‘jaguar’ (Grinevald et al. 2002–06)

Tunebo *kúnaba* ‘jaguar, ocelot’ (Sp. *tigre, tigrillo [término específico, canaguaro]*) (Headland 1997: 121), *kuinisá*, *kuinsá* ‘ocelot’ (Sp. *tigrillo*) (ibid.: 119)

Field for cultivation *tai

*te[1] ‘cultivated clearing’ (Constenla Umaña 2012: 420)

Cabécar /tì/ ‘cultivated field (*millpa*)’ (Margery Peña 1989: xxiii)

I have no explanation for the low tone in the Cabécar form.

Damana ˈ*te* ‘slash, clearance’ (Trillos Amaya 2000: 751)

Muisca <ta> ‘tillage’ (González de Pérez 1987: 273)

Térraba *tʰɪ* ‘cultivated field, tillage’ (Constenla Umaña 2007: 236, 255, 259)

Compare also:

Ika *ʧeʲ* ‘cultivated clearing’ (Huber & Reed 1992: 83)

Kogi ˈ*te* ‘cultivated clearing’ (Huber & Reed 1992: 83)

Kuna *neka* ‘house, home, land, ground, world, space, room, time, weather’ (Holmer 1952: 90)

Holmer (1952: 90) proposes a Pre-Kuna form *leka.

Pech *-tahá* suffix attached to nouns referring to cultigens. The derived element refers to the corresponding type of plantation/cultivated field (Holt 1999a: 38)

Tunebo *tiw̃a*, *tiw̃ kuta* ‘orchard’ (Headland 1997: 202), *ʃĩa* ‘cultivated clearing’ (Huber & Reed 1992: 83).

Field, savannah

Dorasque: Chumulu <bagué> ‘savanna’ (Pinart 1890: 29)

Muisca <muyquy> ‘field’ (Sp. *campo*) (González de Pérez 1987: 208)

Fight, war

Dorasque: Chumulu <χagé> ‘war’ (Pinart 1890: 16)

Kogi <kāka> ‘fight’ (Preuss 1927: 513)
Muisca <caque> ‘fight’ (González de Pérez 1987: 293)

To finish, end

Kuna *akkua* ‘to come short, not be sufficient, be finished, reach as far as’ (Holmer 1952: 12)
Rama *atkut*, *atkul* completive aspect (Craig 1989: 154), also: ‘to finish’ (cf. Grinevald et al. 2002–06)

Fire

*ge[2] ‘fire’ (Constenla Umaña 2012: 411)
*goˈka[3] ‘fire’ (Constenla Umaña 2012: 414)
Proto-Colombian Chibchan *guka ‘fire’ (Wheeler 1972: 105)
Based on some of the reflexes shown below, one might reconstruct a Proto-Chibchan root *ŋga- ‘fire’. In several Colombian Chibchan languages, there are reflexes of a form *ŋga-i ‘fire’ (for instance, in Barí, Kuna, Ika, see below); I have no explanation for final *-i.

Another Proto-Chibchan form that might be tentatively reconstructed based on the forms shown below is *hia. Comparing the two Proto-Chibchan forms *ŋga- and *hia, both seem to relate to slightly different aspects of fire, and sound symbolism might be at play here: whereas *ŋga- ‘fire’ and related forms may originally have referred to fire in general, the term *hia probably referred to its soft, fluid aspect, which is smoke. In the context of Proto-Chibchan ‘to consume’, tentatively reconstructed as *ŋga / *iˈaʔ (see above), a similar case of sound symbolism has been proposed: whereas *ŋga originally referred to eating dry or hard substances, *iˈa may have referred to consuming juicy or soft substances. Note that in both cases, this kind of sound symbolism is only tentatively postulated here and needs further investigation.

Barí, eighteenth century, <ee> ‘fire’ (Rivet & Armellada 1950: 34)
Bocotá *hĩˈã̄* ‘smoke’ (Margery Peña 1993: 75)

Bocotá ***hi***ˈ***a****gɛ* ‘fire’ (Margery Peña 1993: 74) is probably related.

Damana [ˈgʲe] ‘fire’ (Trillos Amaya 2000: 751)
Ika *gei* ‘fire’ (Landaburu 2000a: 747)

Kuna ***se****kar* ‘match’ (Holmer 1952: 138)

Final *-kar* in *sekar* ‘match’ is probably related to Kuna *kala* ‘bone, pipe, whistle, flute, music, teeth, necklace made of certain bones’ (Holmer 1952: 41).

Muisca <**ga**ta> ‘fire’ (González de Pérez 1987: 264), <**i**e> ‘smoke (noun)’ (ibid.: 271)

Final <ta> in <ga**ta**> ‘fire’ is probably a stem formative which recurs in <fihis**ta**> ‘chest’ (cf. González de Pérez 1987: 293).

Térraba /ɲɔ́/ [ɲɔ́ʔ] ‘smoke’ (Constenla Umaña 2007: 21), ***iʊ****k* ‘fire’ (ibid.: 247)

Final *k* in ***iʊ****k* ‘fire is probably a stem formative which recurs in Térraba *ɸók* ~ *-bó* ‘two’ (cf. Constenla Umaña 2007: 86). Related forms in Teribe are *juk, jok*, *jʊk* ‘fire’ (cf. Quesada 2000a: 63, 97, 194).

Tunebo ***íja****ra* ‘smoke (noun)’ (Headland 1997: 146)

Proto-Chibchan *ᵑga- ‘fire’, combined with a suffix *-i might also be reflected in Tunebo ***é****bara* ‘stick for making fire’ (cf. Headland 1997: 132, Constenla Umaña 2012: 414). Whether *-bara* in this form derives from Proto-Chibchan *kaⁿd- ~ *kat- ‘stick, bone, tree’ remains to be investigated. Final *ra* in *íja****ra*** ‘smoke (noun)’ is probably a stem formative which recurs, for instance, in *kára****ra*** ‘bone, shinbone’ (cf. ibid.: 105).

Compare also:

Bribri: Coroma [ì-ˈɟíwɔ̃̀] ‘his charcoal’ (Chevrier 2017a: 187)

Chimila <n:gé> ‘fire’ (Reichel-Dolmatoff 1947: 29); final /-ŋaʔ/, as attested in /ii**ŋaʔ**/ [ʔíː**ŋàʔ**] ‘smoke (noun)’ (Malone 2005: 204) or /buʰ**ŋaʔ**/ [ᵐbúʰ**ŋàʔ**] ‘ash’ (ibid.: 203); <gee’> ‘fire’ (Niño Vargas 2018: 409)

Guatuso /kuːe/ ‘fire’ (Constenla Umaña 1998: 15)

Fireplace *ᵑga-u (ka[k])

Final *ka(k) in *ga-u (kã[k]) ‘fireplace’ may be connected to *kaʔ(k), the Proto-Chibchan term for ‘cosmos (sky, day, time, space, earth, place)’ (see above.) The glottal stop present in *kaʔ(k), the Proto-Chibchan term for ‘cosmos (sky, day, time, space, earth, place)’ is not reconstructible for Proto-Chibchan *ᵑga-u (ka[k]) ‘fireplace’. This does not necessarily mean that the latter form did not contain this glottal stop. It is just not reconstructable from the few reflexes of Proto-Chibchan ‘fireplace’ that are attested in modern Chibchan languages.

Guaymí **/ŋu**bu/ ‘smoke (noun)’ (Quesada Pacheco 2008: 24)

Final /-bu/ may ultimately derive from Proto-Chibchan *ᵐba- ‘cloud, fog’, implying that ‘smoke’ is conceived of as the ‘cloud/fog of the fireplace’. Compare also **/ŋu**gwɔ/ ‘fire’ (Quesada Pacheco 2008: 31). Final /-gwɔ/ is a stem formative which is frequently attested in body-part terms (Quesada Pacheco 2008: 52).

Kuna *sou* ‘kitchen’ (Holmer 1952: 146), *soo* ‘fire, fire wood, fireplace’ (ibid.: 145), ***sokak**ka* ‘kitchen, fireplace’ (ibid.: 144)

I have no explanation for final *ka* in *sokakka* ‘kitchen, fireplace’; it is probably a stem formative that recurs in Kuna ***neka*** ‘house, home, land, ground, world, space, room, time, weather’ (cf. Holmer 1952: 90).

Tunebo *oka* [oóka] ‘fire, candle’ (Headland 1997: 146)

Compare also:

Cabécar /ɟòkó/ [ɟòkó ~ ɟògó] ‘fire, fireplace’ (Margery Peña 1989: xix)

Kogi <guḳséi̯, gau̯kséi̯> ‘fire’ (Preuss 1927: 507), ***ĩ**hiˈa* ‘smoke (noun)’ (Huber & Reed 1992: 59)

Firewood *ᵑgi

*ge[1] ‘firewood’ (Constenla Umaña 2012: 414)

This root is possibly related to Proto-Chibchan *ᵑga- / *hia ‘fire’ above.

Atanques <**gui**é> ‘fire’ (Celedón 1892a: 594)

Final <é> is probably a stem formative and does not belong to the root originally. It may have a cognate counterpart in final <a> in Nutabe <qui**a**> ‘fire’ (Sp. *lumbre*) (cf. Rivet 1943a: 26).

Bocotá /ˈhi/ ‘firewood’ (Margery Peña 1996: 11)

Boruca *ʤí* ‘firewood’ (Quesada Pacheco & Rojas Chaves 1999: 146)

Chánguena <ké> ‘firewood’ (Pinart 1890: 19)

Dorasque: Chumulu, Gualaca <ké> ‘firewood’ (Pinart 1890: 19)

Guaymí *ŋi* ‘firewood’ (Quesada Pacheco 2008: 55)

A related form might be Guaymí ***ŋi**re* ‘hot’ (Quesada Pacheco 2008: 31, 55). Final *-re* derives adjectives from nouns (ibid.: 55).

Nutabe <**qui**a> ‘fire’ (Sp. *lumbre*) (Rivet 1943a: 26)

Final <a> is probably a stem formative element and has a cognate counterpart in the Atanques form above.

Compare also:

Damana *ˈzina* ‘it was set on fire’ (Sp. *prendió fuego*) (Trillos Amaya 2000: 751)

Fish *ŋgʷa ~ *uŋg

*ˈuA ‘fish’ (Constenla Umaña 1981: 383)

*uNu ‘fish (sp.)’ (Holt 1986: 135)

*uNwa ‘fish’ (Holt 1986: 136)

The reflexes in Bocotá and Pech suggest that the Proto-Chibchan root may have had nasal vowels.

Atanques <**uá**ka> ‘fish’ (Celedón 1892a: 597)

Final <-ka> is probably a stem formative, with a counterpart in Ika (see below).

Bocotá /ũˈɛ̃/ [ˈw̃ɛ̃ŋ] ‘fish (generic term)’ (Margery Peña 1996: 12)

Chimila /waaʔ ~ **waa**gra/ [ᵍwaːʔ ~ ᵍ**wa**ːᵑgra] ‘fish’ (Malone 2005: 206)

I have no explanation for the geminated vowel and the glottal stop in this Chimila form. According to Malone (2005: 206), /waagra/ is a loan from Spanish *bagre* ‘catfish’.

Guaymí /gwa/ ‘fish’ (Quesada Pacheco 2008: 28)

Ika ***wa****kə* ‘fish’ (Landaburu 2000a: 747)

Final *-kə* is probably a stem formative which ultimately derives from Proto-Chibchan *ka ‘leaf’ (cf. Pache 2016a). It recurs in the Ika term for ‘mouth’, ***kəkə*** [kʌkᵏə] (cf. Landaburu 2000a: 736, 747).

Kogi /ˈ**ua**ka/ [ˈ**wa**xa] ‘fish’ (Ortiz Ricaurte 2000: 778)

Final /-ka/ is probably a stem formative, which is also attested in /ˈku**ka**/ [ˈku**xa**] ‘ear’ (Ortiz Ricaurte 2000: 778).

Kuna *ua* ‘fish’ (Holmer 1952: 170), ***uk****ka* numeral classifier for fish (cf. ibid.: 172)

I have no explanation for why the Kuna reflex of Proto-Chibchan *ŋgʷ is *u* and not the expected *w** in this case. As to the use of the numeral classifier for fish, *ukka*, compare

ukka*k*^{w}*en* ‘one fish’ (Holmer 1952: 172), *kwen* ‘one’ (ibid.: 64). Final *-ka* may be cognate with its counterparts in Arhuacic languages (Atanques, Damana, Ika, Kogi, see above). The Kuna numeral classifier for fish, *ukka*, and the Kuna root *ukka* ‘skin, bark, shell, scales (of fish)’ (cf. Holmer 1952: 172) may have different origins.

Muisca <gua> ‘fish’ (González de Pérez 1987: 295)

Pech *w̃a* ‘fish’ (Holt 1986: 136)

Compare also:

Boruca *uŋ* ‘fish’ (Quesada Pacheco & Rojas Chaves 1999: 177)

Damana ***wa****ka* (Huber & Reed 1992: 138)

Flea *^{m}bak-

Atanques <**máh**chi> ‘jigger’ (Celedón 1892a: 596)

I have no explanation for <h> in this form; it might be reflex of *k before <chi>; a similar situation is found in the Damana cognate (see below). Final <chi> might not be part of the root in question. Atanques <máhchi> ‘jigger’ resembles Atanques <möéhchi> ‘flea’ (cf. Celedón 1892a: 598).

Chánguena <bágue> ‘flea’ (Pinart 1890: 27)

Dorasque: Chumulu, Gualaca <bágue> (Pinart 1890: 27), <bague> ‘flea, jigger’ (Pinart 1882: 54)

Muisca <**muy**za> ‘flea’ (González de Pérez 1987: 305)

Final <za> is probably a stem formative/noun classifier that recurs in <iomza> ‘potato’ (González de Pérez 1987: 331).

Rama *paːk* ‘flea’ (Grinevald et al. 2002–06)

Vowel length in this form might be due to metathesis of a final vowel which is otherwise no longer identifiable.

Compare also:

Bribri: Amubre, Coroma /tkiʔ/ [kʲíʔ], in Coroma also [ʧĭʔ] ‘flea’ (Chevrier 2017a: 422)

Damana [ˈməçʧi] ‘flea’ (Trillos Amaya 2000 751)

Ika [mʌsˢi] ‘flea’ (Landaburu 2000a: 735, 736)

Foot, lower leg

Boruca *támix* ‘calf of leg’ (Quesada Pacheco & Rojas Chaves 1999: 174)

Muisca <quye**tamuy**> ‘trunk’ (González de Pérez 1987: 330)

Foot, root *kihtsa ~ *kihsa

*kac (~kɨc) ‘foot’ (Holt 1986: 106)

*kic ‘root’ (Holt 1986: 106)

Cabécar /kìʧà/ [kìʧã ~ gìʧã] ‘root, liana (generic term)’ (Margery Peña 1989: xix)

> A reflex of Proto-Chibchan *kihtsa ~ *kihsa ‘foot, root’ can also be found in Cabécar *kɽó* ***kiʧa*** ‘leg’; the element *kɽó* has a meaning ‘foot’ or ‘leg’ (Margery Peña 1989: 502).

Muisca <quihicha> ‘foot’ (González de Pérez 1987: 295)

Rama *kaːl****kit*** ‘root, shin, leg’ (Grinevald et al. 2002–06)

> The element *kaːl* derives from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (see the corresponding entry below).

Compare also:

Atanques <kösá> ‘foot’ (Celedón 1892a: 597)

Barí [kīʔˈtú] ‘foot’

Barí, eighteenth century <kitu> ‘leg’ (Rivet & Armellada 1950: 36), ‘foot’ (ibid.: 40)

Bribri: Amubre, Katsi, Salitre *kiʧà* ‘root’ (Margery Peña 1981: 148), Amubre, Katsi *kaɽòkiʧa*, Salitre *kɽòkiʧa* ‘leg’ (ibid.: 145)

Kogi ***kətʃi****huˈalda* ‘root’ (Huber & Reed 1992: 158)

Tunebo *kesa*, ***kes****kara* ‘foot’ (Headland 1997: 154–5)

For, because

See the entry Locative$_2$ *ki below.

Forehead

Térraba *bɔ́grɔ* ‘face, forehead’ (Constenla Umaña 2007: 237, 247)

Tunebo *úbkara* ‘forehead’ (Headland 1997: 208)

Forest

Dorasque: Gualaca <úri **kátaχála**> ‘rainforest’ (Pinart 1890: 29)

Kogi /kalˈkala/ [kalˈkaɬa] ‘forest’ (Oriz Ricaurte 2000: 780)

Four *^{m}bahka(i)

*bəhˈke ‘four’ (Constenla Umaña 1981: 384)

Proto-Colombian Chibchan *ma-ka-ya ‘four’ (Wheeler 1972: 106)

Atanques <**maké**ua> ‘four’ (Celedón 1892a: 593)

Final <-ua> is probably an old numeral classifier, as in Kogi (see below).

Bocotá /ˈbaga/ ‘four’ (Margery Peña 1993: 60)

Boruca *báxkaŋ* ‘four’ (Quesada Pacheco & Rojas Chaves 1999: 133)

Final *-ŋ* is the reflex of nasalization which may originate in analogy with *máŋ* ‘three’ (cf. Quesada Pacheco & Rojas Chaves 1999: 195).

Dorasque: Chumulu <kú**paki**>; Gualaca <kalá**paka**> (Pinart 1890: 11), <calacapa> ‘four’ (Pinart 1882: 52)

The elements <kalá-, cala-> and <kú-> are prefixed classifiers (cf. Pache 2016a).

Guatuso |pake| ‘four’ (Constenla Umaña 1998: 65)

Guaymí *bɔgɔ* ‘four’ (Quesada Pacheco 2008: 91)

Kogi **/ma**ˈ**ke**ua/ [**mã**ˈ**kẽ**wã] ‘four’ (Ortiz Ricaurte 2000: 778)

Final /-ua/ might be a fossilized numeral classifier (cf. Pache 2016a). Huber and Reed (1992: 182) give the form *məkˈkãiwa* ‘four’.

Kuna ***pakke****k^{w}a* ‘four’ (Holmer 1952: 113)

Final *-k^{w}a* is a frequently attested stem formative in Kuna. In this context, it is possibly a fossilized numeral classifier.

Tunebo ***baka****ja* ‘four’ (Headland 1997: 78)

> Final *-(j)a* does not belong to the root but recurs in terms such as *ka**ja*** ‘leaf (general term)’ (cf. Headland 1997: 107), or in a numeral such as *téra**ja*** ‘six’ (cf. ibid.: 199).

Compare also:

Bribri /tkî-/ ‘four’ (Chevrier 2017a: 422)

Cabécar **/pkí**ɽ/ ‘four, referring to human beings’ (Margery Peña 1989: xxiv)

Damana *makegwa* (Huber & Reed 1992: 182)

Ika *maʔˈkeʲwa* (Huber & Reed 1992: 182)

Muisca <mhuyzca> ‘four’ (González de Pérez 1987: 161); <quihicha muyhica> ‘fourteen’ (ibid.: 211)

Térraba *-bkíŋ* ‘four’ (Constenla Umaña 2007: 239)

Teribe *pkeŋ* ‘four’ (Quesada 2000a: 49)

Fox

Atanques <**sár**ma> ‘fox’ (Sp. *zorra*) (Celedón 1892a: 599)

> I have no explanation for final <ma>.

Dorasque: Gualaca <**θan**a> ‘fox’ (Sp. *zorra*) (Pinart 1890: 34)

Kuna ***tas****i* ‘fox’ (Holmer 1952: 155)

Friend, other *pai

*pai/*pi ‘other(s), more, many, very’ (Holt 1986: 117)

Dorasque: Gualaca <pâi> ‘friend’ (Pinart 1890: 5)

Kuna ***pai****tti* ‘other, else, next’ (Holmer 1952: 113)

> Final *-tti* is not part of the root in question but interpreted as a “general noun-forming suffix” by Holmer (1947: 167). I have no explanation for the fact that the Kuna reflex has a vowel sequence *ai* and not a mid vowel e*.

Térraba ***ɸɛ́i****ga* ‘friend, relative’ (Constenla Umaña 2007: 232, 266), ‘relative’ (ibid.: 266)

> I have no explanation for final *ga*, it probably does not belong to the root in question.

Compare also:
Kogi <**peị**vu, **pē**vu, **peị**bu> ‘friend’ (Preuss 1927: 477)

Frog, toad

Bribri: Amubre [bə̀ˈkwíʔ] ‘frog, toad’ (Chevrier 2017a: 103)
Kogi /mokuˈi/ ‘frog (generic)’ (Ortiz Ricaurte 2000: 769)

Fruit

Dorasque: Gualaca <kalaóbe> ‘fruit’ (Pinart 1890: 14)
Rama *katuːp* ‘fruit’ (Grinevald et al. 2002–06)

Full$_1$ *(hi-)i^{n}da ~ *(hi-)ita

*ai(na) ‘good, true, right, genuine; full’ (Holt 1986: 88)

Bocotá /ˈɛdɛ/ ‘full’ (Margery Peña 1996: 12)

Margery Peña (1993: 67) gives the forms *ˈede*, *ˈete* ‘full’ and ***i***ˈ***e****gli* ‘full’ (ibid.: 71).

Kuna ***ena****makka* ‘to fill’ (Holmer 1952: 23)

The right-hand element in this form *makka* means ‘to make, do’ (cf. Holmer 1952: 69).

Muisca <ies asucune, yetan asucune> ‘to be full’ (González de Pérez 1987: 276)

Final <-n> in <yetan> is a stative nominalizer. The element <asucune> can be translated as ‘it is’ (cf. González de Pérez 1987: 261).

Compare also:
Cabécar ***hiéné̋****ɽka* ~ ***ié****né̋****ɽ****ka* ‘to become full’ (Margery Peña 1989: 471)
Kogi *hiˈəldə* ‘full’ (Huber & Reed 1992: 289), <iteị> ‘to fill’ (Ger. *zugießen*)’ (Preuss 1927: 528)

Full$_2$

Bribri [tsîʔnè̠, ʦêːnè] ‘full’ (Chevrier 2017b)

Kogi **/sne**le/ [ˈ**sne**ɮe] ‘full’ (Ortiz Ricaurte 2000: 778)

Rama ***seːrin****ba* ‘full’ (Grinevald et al. 2002–06)

To go$_1$ *^{m}b-

The reflexes suggest that in Proto-Chibchan, this root was followed by a vowel *a / *i.

Bocotá **/b**ɛ**/** auxiliary indicating future tense (Margery Peña 1996: 35)

> This element mostly precedes the infinitive form of the verb (Margery Peña 1993: 60).

Bribri [ˈ**m**ḯnṵ̀k] ‘to go’ (Chevrier 2017b)

> The element [nṵ̀k] may be derived from *^{n}du ‘to stand’ (see below, for this Proto-Chibchan form). Margery Peña (1982: 132) gives Amubre, Katsi, Salitre *mík* ‘to go’.

Cabécar ***mã*** auxiliary ‘to go’ (Margery Peña 1989: 462)

> It remains to be established whether or not this form is etymologically related to the verbal suffix *-mĩ*, indicating directionality (cf. Margery Peña 1989: lxix).

Muisca <**m**i> ‘to be in motion (singular)’ (Adelaar & Muysken 2004: 104)

Rama *maŋ* ~ *baŋ* ‘go!’ suppletive imperative form of the verb *taːk* ‘to go’ (Craig 1989: 170, 255)

Térraba ***bí*** ‘to go (perfective aspect, used with first persons)’ (Constenla Umaña 2007: 239, 252)

Tunebo ***bi*** ‘to go’ (Headland 1997: 22, 38)

> Compare also the form *benro* ‘to go (sg.)’ (Headland 1997: 85); the element *-n* indicates intention and *-ro* is a declarative marker (ibid.: 14)

To go$_2$ *^{n}daʔ ~ *taʔ

*ˈdA ‘to go’ (Constenla Umaña 1981: 386)

*ta ‘to go’ (Holt 1986: 126)

Pre-Muisca *la- ‘to go’ (Holmer 1947: 208)

The final glottal stop in the Proto-Chibchan form is only tentatively reconstructed; its existence is suggested by the low tone in the Pech form.

Bocotá *ˈ**ʧa**gɛ* ‘to go’ (Margery Peña 1993: 63)

Final *gɛ* probably does not belong to the root in question.

Guatuso |to| future tense marker (Sp. *futuro mediato*) (Constenla Umaña 1998: 36)

This form has been interpreted as an enclitic by Constenla Umaña (1998: 36); it might be connected to *tue* ~ *to* ‘to go’ (cf. ibid.: 119).

Guaymí *nɔ̃* ‘to go, walk’ (Quesada Pacheco 2008: 107)

Kuna *ta* ‘to go’ (Holmer 1952: 152)

Muisca <ies i**na**squâ> ‘to walk’ (González de Pérez 1987: 207)

The element <ie> means ‘path’ (González de Pérez 1987: 207), whereas <-s> is a case marker (Adelaar & Muysken 2004: 99). The element <i-> indicates the first person singular, <-squâ> indicates imperfective aspect (ibid.: 91, 97). Proto-Chibchan *^{n}daʔ ~ *taʔ ‘to go$_2$’ might likewise be reflected in Muisca <sy>, as attested in <i**sy**ne> ‘to go, roam’ (González de Pérez 1987: 186).

Pech *nɑ̀* ‘to go’ (Holt 1999a: 68)

Rama ***ta**ːk* ‘to go’ (Grinevald et al. 2002–06)

Final *k* is probably a stem formative which is also attested in ***su**k* ‘to wash, peel’ (cf. Grinevald et al. 2002–06).

Térraba *tɔ́* ‘to go, imperfective form (without indication of direction)’ (Constenla Umaña 2007: 252–3)

This verb further grammaticalized into the future tense marker *tɔ* (cf. Constenla Umaña 2007: 68).

God, wind *si^{m}ba

*si̱ma (~ *si̱ŋ^{w}a) ‘cold’ (Holt 1986: 122)

Bribri: Coroma [siˈbŏ ~ sɔ̀ˈbŏ] ‘God’ (Chevrier 2017a: 111)

Margery Peña (1982: 121) gives the forms *sibɔ̀* ‘God’. Salitre *sĩwẽ* ‘story’ (ibid.: 72) and Amubre, Coroma [sw̃ɑ̃ʔ ~ sw̃ɔ̃ʔ] ‘wind, air’ (Chevrier 2017a: 159) might likewise be related.

Cabécar *sibɔ* ‘god’ (Margery Peña 1989: 425)

The forms *sĩã* ‘thunder god’ (Margery Peña 1989: 425) and *sĩwɑ̃́*, Chirripó *sĩmɑ̃́* ‘wind, legend’ (ibid.: 467, 547) might likewise be related.

Muisca <**chib**san> ‘whirlwind’ (González de Pérez 1987: 312)

I have no explanation for final <san>.

Térraba **/zb**ó/ ‘God’ (Constenla Umaña 2007: 18)

Térraba *sĩɔ̃́* ‘tale, prayer’ (Constenla Umaña 2007: 240, 261, 268) may be related.

Compare also:

Barí, eighteenth century <čaua> ‘wind’ (Rivet & Armellada 1950: 43)

Barí [sābāˈsēēbā] ‘god’, compare also <sevasavare> ‘hurricane’ in Alfaro’s (1788) wordlist (cited in Villamañán 1978: 31)

Boruca ***sib**ú* ‘God’, *debá* a deity (Sp. *dios malo*) (Quesada Pacheco & Rojas Chaves 1999: 138)

Damana *ˈʃama* ‘tale’ (Trillos Amaya 2000: 752), *ˈsewa* ‘amulet’ (ibid.: 751)

Kogi <**šiba**lama, **šiva**lama>, ‘song, wisdom, secret knowledge’ (Preuss 1927: 485), <**šiba**lama> ‘divine’ (ibid.: 509)

Kuna <sīv̇u> ‘white’ (Holmer 1947: 12).

To grow *kuH ~ *^{m}buH

This Proto-Chibchan root probably recurs in the Proto-Chibchan terms for ‘big’ (see above).

Muisca <**cuhu**ma> ‘big’ (Sp. *grande*) (González de Pérez 1987: 266)

Final *ma* in this Muisca form might be derived from the Proto-Chibchan nominalizer *-^{m}ba (see below).

Térraba ***kún*** ‘to grow’ (Constenla Umaña 2007: 162)

> Final *-n* is a thematic element in intransitive verbs (Constenla Umaña 2007: 47–8). The perfective form of ***kún*** ‘to grow’ is ***kunɔ́***. Perfective forms are derived by a suffix *-rɔ*. In combination with the intransitive marker *-ŋ*, the resulting ending is *-nɔ* (ibid.: 64). The corresponding forms that I could identify in Teribe are /kuŋ/ ‘to grow up’, and [ˈkuno] ‘grew up’ (Quesada 2000a: 25)

Compare also:

Tunebo *buʔwaro* ‘to develop (a baby)’ (Headland 1997: 245)

Hair, head *tsa

*ˈtsə̀ ‘head, hair’ (Constenla Umaña 1981: 389)

*can ‘hair, head’ (Holt 1986: 96)

Pre-Muisca *cən- (?) ‘hair, head’ (Holmer 1947: 208)

One may tentatively reconstruct a nasal vowel in this form, based on the cognate forms in Bribri, Cabécar, and some Chibchan languages of Colombia.

Atanques <**cha**kúku> ‘head’, <**lhan**göne> ‘hair of the head’ (Celedón 1892a: 592), <shá> ‘hair’ (Sp. *pelo*) (ibid.: 597)

> Final <kúku> is probably a stem formative element that recurs in <si**kúku**> ‘star’ (Celedón 1892a: 594). The two Atanques reflexes of *ʦ, <lh> and <sh> are interesting to compare with the situation in Guatuso, where /ɬ/ derives from Proto-Chibchan *s, see subsection 2.3.12.2.2. The Atanques ‘hair’ term also recurs in <uma**san**göna> ‘eyebrows’ (ibid.: 593); in the latter form, the element <uma> derives from *u^{m}ba ‘face, eye, fruit’, whereas <göna> derives from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Barí, eighteenth century, <ča> ‘head’ (Rivet & Armellada 1950: 42)

Barí [ā**ˈs**:**áɨ́**] ‘head’

> The element [a-] is probably a fossilized possessive marker. I have no explanation for final [ɨ́].

Boruca *sa* ‘head’ (Quesada Pacheco & Rojas Chaves 1999: 124)

This term recurs with high tone in *díʔ sá* ‘headwaters’ (cf. Quesada Pacheco & Rojas Chaves 1999: 124).

Bribri: Amubre [tsə̋], Coroma [tsə̋], [ˈtsə̋-kʊ̀] ‘hair (head or body)’ (Chevrier 2017a: 589)

Margery Peña (1982: 144) gives Amubre, Katsi, Salitre *tsə̀*, *tsə̀-kʊ* ‘hair of the head’. The element *kʊ̀*/*kʊ* may derive from Proto-Chibchan *ka ‘leaf’ (cf. Pache 2016a).

Cabécar **/tsə́**kʊ́/ [**tsə́**kʊ́] ‘head’ (Margery Peña 1989: xl)

Final /-kʊ́/ does not belong to the root, which is suggested by the existence of forms such as Cabécar *tsə́*, *tsʊ́* ‘head’ (Margery Peña 1989: 393). Cabécar **/tsə́**kʊ́/ [**tsə́**kʊ́] ‘head’ is most similar to Atanques <cha**kúku**> ‘head’ above.

Chimila <**tsán**-gra> ‘plume’ (Sp. *penacho*) (Reichel-Dolmatoff 1947: 26)

Damana *ˈʃa* ‘hair of the head’ (Trillos Amaya 2000: 752)

Guatuso |ʧaː ~ ʧa|, /ʧiːa/ ‘head, upper part’ (Constenla Umaña 1998: 9, 27)

Ika *sa* ‘hair of the head’ (Landaburu 2000a: 747)

Kogi /ˈ**sãĩ**/ [ˈ**sãĩ**] ‘hair’ (Ortiz Ricaurte 2000: 778), /ˈ**san**-kala/ ‘head’ (ibid.: 766)

Final /-ĩ/ does not belong to the root; it may be a stem formative or a fossilized possessive marker; a similar element recurs, for instance, in Kogi /kuˈ**i**/ [kuˈ**i**] ‘louse’ (Ortiz Ricaurte 2000: 779). The /n/ in Kogi /ˈ**san**-kala/ ‘head’ might be a reflex of vowel nasality.

Kuna *sakla* ‘head, hair of the head, base/trunk of a tree, beginning, principal, captain’ (Holmer 1952: 135)

Compare also the lenited form *saila* (Holmer 1952: 133). Holmer (1947: 46) argues that the second form goes back to an earlier *sakla, itself derived from *sakkala, which is not preserved. He connects these forms with Kogi <sánkala, sángala> ‘head, chief’.

Muisca <**zy**e> ‘hair (of the head)’ (González de Pérez 1987: 200)

Final <-e> is a stem formative that recurs, for instance, in <cue> ‘louse of the head’ (González de Pérez 1987: 296).

Pech *sə́* ‘head’ (Holt 1986: 210)

Térraba *zɔŋ*, ***zɔ́****k* ‘body hair, hair’ (Constenla Umaña 2007: 266);

Final *k* in *zók* ‘body hair, hair’ may be a stem formative which recurs, for instance, in ***ɸɾak*** ‘tail’ (cf. Constenla Umaña 2007: 238). Compare also ***zɔn*** ‘hair of the head’ (ibid.: 236). I have no explanation for final *n* in ***zɔn*** ‘hair of the head’; like *-ŋ*, it may be a reflex of vowel nasality.

Hammock

Proto-Colombian Chibchan *bu-k^{w}a ‘hammock’ (Wheeler 1972: 106)

Similar ‘hammock’ terms are attested in Guahiboan languages (cf. Huber & Reed 1992: 80)

Atanques <búmbu> ‘hammock’ (Sp. *chinchorro*) (Celedón 1892a: 593)

Barí, eighteenth century, <bo> ‘hammock’ (Rivet & Armellada 1950: 36)

Barí [bːó] ‘hammock’

Bocotá *ˈbuk^{w}a* ‘trough’ (Sp. *artesa en forma de hamaca*) (Levinsohn 1975: 15)

Ika *boʔ* ‘hammock’ (Sp. *hamaca*) (Landaburu 2000a: 736)

I have no explanation nfor the final glottal stop.

Damana *ˈbu* ‘hammock’ (Sp. *chinchorro*) (Trillos Amaya 2000: 751)

Tunebo ***bo****kua* [boku.a] ‘hammock’ (Sp. *hamaca, chinchorro*) (Headland 1997: 90)

Huber and Reed (1992: 80) give Tunebo *bók^{w}a* ‘hammock’.

Hand *ha^{n}d- ~ *hat-

Proto-Colombian Chibchan *hai-si ‘five’ (Wheeler 1972: 105)

In several Chibchan languages, both of Colombia and of Central America, this form acquired the meaning ‘five’.

Chimila **/hatt**akraʔ/ [**hát**ˑākràʔ] ‘hand’ (Malone 2005: 202)

Final /-kraʔ/ is a frequent stem formative in Chimila (from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’, cf. Pache 2016a).

Kuna ***ar****kana* ‘hand’ (Holmer 1952: 19), ***atta****le* ‘five’ (Holmer 1947: 99)

Final *-kana* may be related to the widespread stem formative *-kala*, which derives from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Muisca <**hys**ca> ‘five’ (González de Pérez 1987: 225), <yta> ‘hand’ (ibid.: 278)

Final <-ca> is a frequently attested stem formative in Muisca, and recurs, for instance, in <sa**ca**> ‘nose’ (González de Pérez 1987: 282). Proto-Chibchan *ha^{n}d- ~ *hat- ‘hand’ may also be reflected in also <**ys**pqua> ‘wrist’ (ibid.: 281), and in <gue **hyz**ca> ‘hundred’ (ibid.: 225) – the element <gue> from the latter form seems to recur in <guetâ> ‘twenty’ (Lugo 1619: 109v).

Térraba *ɔ́ɾkuɔ* ‘hand’ (Constenla Umaña 2007: 258)

Final *-kuɔ* is a frequently attested stem formative in Térraba, especially in body-part terms (cf. Constenla Umaña 2007: 34). The Teribe counterpart of the Térraba form discussed here is *orkwo* ‘hand’ (cf. Quesada 2000a: 126, 138).

Tunebo ***át****kara* ‘hand’ (Headland 1997: 75)

Final *-kara* is probably related to *kárara* ‘bone’ (cf. Headland 1997: 105).

Compare also:

Atanques <**ach**íua> ‘five’ (Celedón 1892a: 593)

Bribri: Amubre [skɛ̂-ɽ] ‘five (human beings)’ (Chevrier 2017a: 235)

Damana [**əçʧi**gwa] ‘five’ (Trillos Amaya 2000: 751)

Kogi **/a**ˈ**c**igua/ [**a**ˈ**c**igua] ‘five’ (Ortiz Ricaurte 2000: 778)

Hand, arm *ᵑguⁿdaʔ

*guLÀ ‘hand’ (Constenla Umaña 1981: 389)

*kuda ‘arm’ (Holt 1986: 110)

The final glottal stop in the Proto-Chibchan form is tentatively reconstructed on the basis of Boruca *ʤuréʔ* ‘hand’ (Quesada Pacheco & Rojas Chaves 1999: 163) and Atanques <günahkáne> ‘arm’ (Celedón 1892a: 592).

Atanques <**günah**káne> ‘arm’ (Celedón 1892a: 592), <gúna> ‘hand’ (ibid.: 596)

Final <-káne> probably derives from Proto-Chibchan *kaⁿd- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Boruca *ʤuréʔ* ‘hand’ (Quesada Pacheco & Rojas Chaves 1999: 163)

Bribri: Coroma [ùˈɽá] ‘hand’ (Chevrier 2017a: 164)

Margery Peña (1982) gives the Amubre, Katsi, Salitre forms *uɽà* ‘hand’ (p. 137) and ***uɽà****bátʂ* ‘to marry’ (p. 115); *bátʂ* means ‘to stick, adhere’ (p. 17).

Cabécar /hùɽà/ [hùɽâ ~ ɸùɽâ] ‘hand, arm’ (Margery Peña 1989: xxi)

In San José Cabécar, the corresponding form is *uɽa* ‘hand, arm’ (Margery Peña 1989: 391, 474). Proto-Chibchan *ᵑguⁿdaʔ ‘hand, arm’ is also reflected in Cabécar *hɛ́k* ***hula*** *kukʊ* ‘to marry’ (ibid.: 399–400). The element *kukʊ* means ‘to take’ (ibid.: 175), and *hɛ́k* indicates reciprocity (ibid.: 99).

Chimila /gaŋ**gwɾa/** [ᵑgáŋᵑ**g**ᵘ**ɾà**] ‘arm’ (Malone 2005: 202)

Initial /gaŋ/ may derive from Proto-Chibchan *ᵑgak ‘feather, wing, arm, hand’.

Ika *gunə* ‘hand’ (Landaburu 2000a: 747)

Dorasque: Chumulu <kulgúla> ‘arm’ (Pinart 1890: 7); <χūl> ‘feather’ (ibid.: 27), Gualaca <kulá> ‘hand’ (ibid.: 20), <**ulu**gála> ‘arm’ (ibid.: 7), <cula> ‘hands’, <ulugala> ‘arms’ (Pinart 1882: 65)

Final <-gála ~ -gala> in the Gualaca form are derived from Proto-Chibchan *kaⁿd- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a). Proto-Chibchan *ᵑguⁿdaʔ ‘hand, arm’ is also reflected in Chumulu <**kul**karla> ‘married’ (Pinart 1890: 9).

Guaymí /**gu**ɾe/ ‘married’ (Quesada Pacheco 2008: 24)

I have no explanation for final /e/ in this form.

Kogi /ˈgula/ [ˈguɬa] (Ortiz Ricaurte 2000: 763, 768) ‘arm’

Kuna ***sur****kana* ‘arm’ (Holmer 1952: 151)

Final *-kana* recurs in ***ar****kana* ‘hand’ (ibid.: 19). This element is probably derived from *kaⁿd- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Térraba /**uɭɔ**ɾbɔ̀/ [ᵍ**ʉ̀ɭɔ**ɾbɔ̀ʔ] or [ʸ**ʉ̀ɭɔ**ɾbɔ̀ʔ] ‘arm’ (Constenla Umaña 2007: 22)

The second element /ɾbɔ̀/ may be cognate with *dɔbɔ́* in Térraba ***dɔbɔ́****gɾɔ* ‘bone’ (ibid.: 251). Proto-Chibchan *ᵑguⁿdaʔ ‘hand, arm’ is likewise reflected in Térraba ***gu****ɭɔndɔ́* ‘forearm’ (ibid.: 232). The second element of this form, *ɔndɔ́*, may derive from Proto-Chibchan *haⁿd- ~ *hat- ‘hand’.

Compare also:

Barí, eighteenth century, <anakori> ‘armpit’ (Rivet & Armellada 1950: 29)

Bocotá *ˈbɔ̃ ˈ**ulɛ*** ‘to marry’ (Margery Peña 1993: 83)

Hand, finger *kuuʔ

*ˈkU ‘finger, hand’ (Constenla Umaña 1981: 382)

*k^{w}a ‘finger, digit’ (Holt 1986: 150)

Atanques <**ko**göna> ‘wrist’ (Celedón 1892a: 596)

Final <-göna> is probably derived from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a). Proto-Chibchan *kuuʔ ‘hand, finger’ might also be reflected in Atanques <koma> ‘finger’ (cf. Celedón 1892a: 593).

Bocotá /ˈko/ ‘hand’ (Margery Peña 1996: 9)

Margery Peña (1993: 80) gives Bocotá *ˈkɔ* ‘hand’.

Boruca ***kúʔ****skua* ‘finger’ (Quesada Pacheco & Rojas Chaves 1999: 136)

The intercalated element *s* might be the reflex of an old possessive marker or linking element. Final /kua/ in the Boruca form derives from *k^{w}a ‘seed, fruit’ (cf. Pache 2016a).

Chimila **/ko**kkwa/ [**kó**kːʷà] ‘finger’ (Malone 2005: 202)

Final /-kwa/ is a common stem formative in this language (cf. Reichel-Dolmatoff 1947: 25–6) and recurs, for instance, in /kak**kwa/** [ká**k**ˑ**ʷà**] ‘mouth’ (cf. Malone 2005: 202).

Kogi /ˈkou/ ‘hand’ (Ortiz Ricaurte 2000: 769)

The similarity with Kogi /kõũ/ ‘give’ (Ortiz Ricaurte 2000: 775) needs further research.

Kuna *koo* ‘finger’ (Holmer 1952: 56)

Muisca <cocua> ‘fingertip’ (González de Pérez 1987: 230)

Final <-cua> may be cognate with the more frequently attested stem formative <-pqua>, found, for instance, in <quy**pqua**> ‘place, occasion’ (cf. González de Pérez 1987: 274). It is interesting to observe a similar pair of stem formatives in Térraba: *-kuɔ* and *-pkuɔ* (cf. Constenla Umaña 2007).

Térraba **/kɔ̀**uɔ́~ **kɔ́**uɔ̀/ ‘branch’ (Constenla Umaña 2007: 16)

Final /-uɔ́ ~ -uɔ̀/ is probably related to the derivational suffix *-uɔ* <-huo> which is mainly attested in body part terms and animal/plant terms (cf. Constenla Umaña 2007: 36).

To hang

Boruca *biŋ* ‘to hang’ (Quesada Pacheco & Rojas Chaves 1999: 130)

Kuna ***pi****a* ‘to hang, put’ (Holmer 1952: 120)

Kogi /i-ˈ**bi**/ ‘to hang’ (Ortiz Ricaurte 2000: 769)

To hear$_1$

*duk ‘ear, to hear’ (Holt 1986: 101)

The forms given below seem to reflect Proto-Chibchan *^{n}duuHk ~ *^{n}dauHk- ~ *^{n}daHku.

Bocotá ˈ***ʧug****ɛ*, ˈ***ʤug****ɛ* ‘to hear’ (Margery Peña 1993: 65, 93)

Another form given by Margery Peña (1993) is *su*ˈ*gede* ‘to hear, listen’ (p. 90).

Boruca *dóxk* ‘to hear’ (Quesada Pacheco & Rojas Chaves 1999: 171), ***dúʔt*** ‘hearing’ (Sp. *oído*) (ibid.: 171)

I have no explanation for final *t* in ***dúʔt*** Boruca ‘hearing’.

Chimila /noˑ/ [nóˑ] ‘to hear’ (Malone 2005: 210)

Guatuso **/tok**o/ ‘ear’ (cf. Constenla Umaña 1998: 67)

Ika *noʔkw* ‘to hear’ (Landaburu 2000a: 747)

Kogi /**nuk**ˈka/, /ˈ**zuk**ʃi/ [ˈ**zuk**ʃi] ‘to hear’ (Ortiz Ricaurte 2000: 761, 779)

A similar alternation of the initial consonant occurs in Kogi <**nū**ši, **lū**ši, žūši> ‘to cook’ (cf. Preuss 1927: 476; 496). Final *-ka* and *-ʃi* are stem formative elements and not part of the roots in question (cf. Olaya Perdomo 2000: 782).

Muisca <m**nyqua**suca> ‘to hear’ (González de Pérez 1987: 286), ‘to understand’ (Sp. *entender*) (ibid.: 257)

The prefix <m-> indicates transitivity, <-suca> indicates imperfective aspect (cf. Adelaar & Muysken 2004: 90–1).

Pech ***sù̃****-hã́* ‘ear’ (Holt 1999a: 28)

Hyphenation is adopted from (Holt 1999a: 28). I have no explanation for the element *-hã́*.

Tunebo ***raʔku****inro* ‘to listen, hear’ (Headland 1997: 158)

The vowel *i* is probably a stem formative which recurs in Tunebo *kon**i**nro* ‘to ask, pray’ (cf. Headland 1997: 109–10); *-n* indicates intention and *-ro* is a declarative marker (ibid.: 14). Huber and Reed (1992: 270) give *rak^{w}i-n-ro* ‘to hear’.

Compare also:

Atanques <duhkuéga> ‘hearing’ (Sp. *oído*) (Celedón 1892a: 597)

Damana *nikˈkwa* ‘to hear’ (Huber & Reed 1992: 270)

Kuna *takka* ‘to see, look, visit, meet, search, find, watch, keep, guard, prepare, bring, recognize’ (Holmer 1952: 153)

To hear$_2$ *kuh

*ˈkuhká, ˈkuhkuá ‘ear’ (Constenla Umaña 1981: 377)

Atanques <**kuk**kuá> ‘ear’ (Sp. *oreja*) (Celedón 1892a: 597)

> Final <-kuá> is a stem formative (cf. Pache 2016a) and has cognate counterparts in the Ika and Damana forms (see below).

Cabécar **/kú**kó/ ‘ear’ (Margery Peña 1989: xxiii)

> Final *-kó* may be a stem formative derived from Proto-Chibchan *ka ‘leaf’ (cf. Pache 2016a).

Dorasque: Chumulu, Gualaca <**ku**gá> ‘ear’ (Pinart 1890: 24), Gualaca <**cu**ga> (Pinart 1882: 58)

> Final <gá ~ ga> is probably a stem formative, derived from Proto-Chibchan *ka ‘leaf’ (cf. Pache 2016a) – a cognate element is found, for instance, in Kogi ˈku**ka**/ [ˈku**xa**] ‘ear’ (cf. Ortiz Ricaurte 2000: 778) or in Cabécar /kú**kó/** ‘ear’ (cf. Margery Peña 1989: xxiii).

Ika ***ku****kwə* ‘ear’ (Landaburu 2000a: 747)

> Final *-kwə* is a stem formative element derived from Proto-Chibchan *k^{w}a ‘seed, fruit’ (cf. Pache 2016a).

Kogi /ˈku**ka**/ [ˈku**xa**] ‘ear’ (Ortiz Ricaurte 2000: 778)

> Final /ka/ is probably a stem formative which also recurs in /uˈa**ka/** ‘face’ (cf. Ortíz Ricaurte 2000: 769); it may derive from Proto-Chibchan *ka ‘leaf’ (cf. Pache 2016a).

Muisca <**cuhu**ca> ‘ear’ (González de Pérez 1987: 286)

> Final <ca> is probably a stem formative in Muisca. It recurs, for instance, in <sa**ca**> ‘nose’ (González de Pérez 1987: 282).

Rama *al-**ku**k* ‘to hear’ (Grinevald et al. 2002–06)

The element *al-* derives intransitive verbs (Craig 1989: 78), final *-k* recurs in several verbs, such as *su**k*** ‘to wash, peel’ (Grinevald et al. 2002–06), and is probably not part of the root. Rama ***ku***k^{w}*a ~ **ku**ka:* ‘ear’ (ibid.) is related.

Térraba /kúk/ ‘to hear’ (Constenla Umaña 2007: 26)

This verb also has the meanings ‘to listen, understand, feel, perceive’ (Sp. *experimentar una sensación*) (cf. Constenla Umaña 2007: 244–6, 274). Final *-k* is probably a stem formative element. A cognate form in Teribe is *ku-*, ***ku**k* ‘to hear’ (cf. Quesada 2000a: 83, 176).

Tunebo ***ku**kahá*, ***kuh**kahá* ‘ear’ (Headland 1997: 114)

The right-hand element *kahá* may be related to its counterpart in Kogi /ˈku**ka**/ [ˈku**xa**] ‘ear’ (cf. Ortiz Ricaurte 2000: 778).

Compare also:

Boruca *kuágax* ‘ear’ (Quesada Pacheco & Rojas Chaves 1999: 172)

Bribri: Amubre [kɔ̀ˈkɔ́ŋn̄ ~ kkɔ́ŋn̄] ‘ear’ (Chevrier 2017a: 603), Amubre, Katsi, Salitre ***ku**kɔ̀* ‘ear’ (Margery Peña 1982: 142)

Damana *kuˈkwa* ‘ear’ (Huber & Reed 1992: 7)

Guatuso *kuˈnu* ‘to listen’ (Constenla Umaña 1998: 91)

Heart, liver, center$_1$ *^{m}bih^{n}da ~ *^{m}bihta

Chimila **/bitta**kɾa/ [^{m}**bít**ˑ**ā**kɾà] ‘chest’ (Malone 2005: 202)

Final /-kɾa/ is etymologically related to /kɾaʔ/ in Chimila /kiˑkɾaʔ/ [kíˑkɾàʔ] ‘bone’ (cf. Malone 2005: 203).

Kogi /aˈ**bita/** [aˈ**bita**] ‘liver’ (Ortíz Ricaurte 2000: 779)

The element *a-* is probably a fossilized possessive element which recurs, for instance, in /aˈ**ke**/ [aˈ**xe**] ‘leaf’ (cf. Ortiz Ricaurte 2000: 779).

Kuna *pina* ‘core (of plant), liver’ (Holmer 1952: 122)

Muisca <**fihis**ta> ‘chest’ (González de Pérez 1987: 293)

I have no explanation for <h> in this Muisca form. Final <ta> is probably a stem formative, recurring in <ie, ie**ta**> ‘belly’ (cf. González de Pérez 1987: 197).

Rama *psa:* ‘liver’ (Grinevald et al. 2002–06)

Compare also:

Bribri: Amubre, Katsi, Salitre *bírbır* ‘middle’ (Sp. *medio*) (Margery Peña 1982: 138)

Boruca *bidráŋ* ‘chest’ (Quesada Pacheco & Rojas Chaves 1999: 175)

Heart, liver, center$_2$ *taH(^{m}ba)

*cak'a ‘inside(s)’ (Holt 1986: 96)

*cipa ‘bile, yellow, green’ (Holt 1986: 97)

*nɨm(a) ‘liver, heart’ (Holt 1986: 116)

Bocotá *ˈ**ta**gua* ‘liver’ (Margery Peña 1993: 90)

> Final *-gua* is a frequent stem formative in Bocotá. It recurs in *kiˈbi**gua*** ‘tongue’ (cf. Margery Peña 1993: 79).

Cabécar *tabó* ‘pulp of fruit or cane, edible part of a plant, palm heart’ (Margery Peña 1989: 290)

Kogi **/ta**ˈ**ba**kala/ [**ta**ˈ**ba**xaɬa] ‘chest’ (Ortiz Ricaurte 2000: 778)

> The element /-kala/ is a frequent stem formative in Kogi and recurs, for instance, in **/gu**ˈ**i**kala/ [**gu**ˈ**i**xaɬa] ‘wing’ (Ortiz Ricaurte 2000: 780).

Muisca <tyhyba> ‘liver’ (González de Pérez 1987: 270)

> Related forms may be Muisca <tyhyquy> ‘gall’ (González de Pérez 1987: 270), <**tyhyb**quyne> ‘chest of a bird’ (ibid.: 293) and <**tom**sa> ‘navel’ (ibid.: 286).

Pech *-**sàʔa*** ‘inside(s)’ (Holt 1986: 96)

> I have no explanation for final *a* in this form.

Tunebo ***tán**kara* ‘chest, front (of the body)’ (Headland 1997: 193)

> Final *-kara* is probably related to ***kára**ra* ‘bone’ (cf. Headland 1997: 105). A reflex of Proto-Chibchan *taH(^{m}ba) ‘heart, liver, center$_2$’ might also be attested in Tunebo ***taʔtf**orá* ‘lungs’ (cf. ibid.: 190).

Compare also:

Chimila *tóoˀ* ‘heart’ (Huber & Reed 1992: 34)

To hit with a longish object

*bu(k) ‘hit, beat, pound’ (Holt 1986: 93)

Bribri *ppók* ‘to hit with a longish object’ (Margery Peña 1989: 128)

Kogi <muši, buši, puši> ‘to hit’ (Preuss 1927: 519)

Pech *pók* ‘to hit, slap’, *bùk* ‘to hit with fist’(Holt 1986: 93)

Tunebo *bukin-ro* ‘to hit with a stick or liana’ (Headland 1997: 268)

To hit with a roundish object

Bribri *tók* ‘to hit with a roundish object’ (Margery Peña 1989: 128)

Tunebo *taki-n-ro* ‘to hit with a machete, ax, or hand’ (Headland 1997: 268)

Hole

Cabécar *hǎr*, *hǒr* ‘hole’ (Margery Peña 1989: 454), *hǎr* ‘burrow’ (Margery Peña 1989: 472)

Chimila <**jon**ta> ‘hole, perforated’ (Niño Vargas 2018: 185)

Compare also <**joñño**kwa’> ‘neck’ (Niño Vargas 2018: 185).

Dorasque: Chumulu <horé> ‘throat’ (Pinart 1890: 15)

Rama *ŋuri:* ‘hole, harbor’ (Grinevald et al. 2002–06)

To holler *^{m}bau(^{n}d) ~ *kau(^{n}d)

*ˈbo ‘to weep’ (Constenla Umaña 1981: 430)

*kau(N)d ‘to call, shout’ (Holt 1986: 108)

*kur ‘to shout, yell’ (Holt 1986: 150)

This Proto-Chibchan root might be related to the form *^{m}bau(^{n}d) ‘jealous’ (see below).

Atanques <**mo**ka> ‘weepy, weeper’ (Sp. *llorón*) (Celedón 1892a: 596)

Final <-ka> derives from Proto-Chibchan *ka, the nominalizer$_3$ discussed below.

Barí [**kō**ˈ**ɾ**õ̃õ̃ ɟːì] ‘s/he is weeping’

The element [ɟːì] seems to indicate imperfective aspect.

Barí, eighteenth century, <**kor**a-r> ‘to weep’ (Rivet & Armellada 1950: 40)

I have no explanation for the segment <a>; final <-r> is identified as a suffix by Rivet and Armellada (1950: 40).

Boruca *bo* ‘to cry’ (Quesada Pacheco & Rojas Chaves 1999: 160)

Compare also Boruca *bok* ‘to shout, scream’ (Sp. *gritar*) (Quesada Pacheco & Rojas Chaves 1999: 148).

Damana *mo-* ‘to weep’ (Trillos Amaya 2000: 752)

Dorasque: Chumulu, Gualaca <bo*s*> ‘to weep’ (Pinart 1890: 20)

Guaymí *mu* ‘to weep’ (Quesada Pacheco 2008: 107)

A related form might be Guaymí *muai-* ‘to lament’ (cf. ibid.: 106).

Ika **/maw**ria/ ‘tear’ (Landaburu 2000a: 734)

The final element /ria/ derives from Proto-Chibchan *^{n}diʔ-a ‘liquid (not water)’ (see below).

Kuna ***ko****la* ‘to call, sound, say, awaken, announce, hear, listen’ (Holmer 1952: 55–56)

The element *-la* is a stem formative element in certain verbs (Holmer 1947: 133).

Muisca <ze**con**suca> ‘to weep’ (González de Pérez 1987: 276)

The element <ze-> indicates the first person singular, whereas <-suca> marks imperfective aspect (cf. Adelaar & Muysken 2004: 91). This form is related to Muisca <cone> ‘weeping’ (Sp. *llanto*) (cf. González de Pérez 1987: 275).

Rama *kaun* ‘to call, cry out, holler’ (Grinevald et al. 2002–06)

This form is most probably etymologically related to Rama *paun* ‘to cry’ (cf. Grinevald et al. 2002–06).

Tunebo ***kon****inro* ‘to ask, pray’, in Cobaría also ‘to cry’ (Headland 1997: 109–10)

The vowel *i* may recur in *raʔku**i**nro* ‘to listen, hear’ (Headland 1997: 158); *-n* indicates intention and *-ro* is a declarative marker (ibid.: 14). Two other Tunebo terms may be related: first, ***bok****unro* ‘to shout, whistle (the *gallineta del monte*, the oncilla, or humans)’ (ibid.: 90), with *-u* as a stem formative (cf. ibid.: 28), and, possibly, *onro* ‘to cry’ (cf. ibid.: 149).

Compare also:

Kogi <kaụla> ‘to scream, sing (of birds)’ (Holmer 1947: 28)

Pech *kus-t-* ‘to screech, shriek’ (Holt 1986: 150)

House *hu

*ˈhu ‘house’ (Constenla Umaña 1981: 390)

*hu ‘house’ (Holt 1986: 103)

Bocotá /hu/ ‘house’ (Margery Peña 1996: 24)

Proto-Chibchan *hu ‘house’ may also turn out to be reflected in Bocotá /gua/ ‘in the house’ (cf. Margery Peña 1996: 24).

Boruca *ú* ‘house’ (Quesada Pacheco & Rojas Chaves 1999: 127)

Bribri: Coroma [ú] ‘house’ (Chevrier 2017a: 102)

Compare also Amubre, Katsi, Salitre *ù* ‘house’ (Margery Peña 1982: 115).

Cabécar /hù/ [hù ~ ɸù] ‘house’ (Margery Peña 1989: xxi)

The corresponding form in San José Cabécar is *u* ~ *ũ* ‘house’ (cf. Margery Peña 1989: 399).

Chánguena <χu> ‘house’ (Pinart 1890: 8)

Dorasque: Chumulu, Gualaca <hu> ‘house’ (Pinart 1890: 8)

Guatuso /uː/ ‘house’ (Constenla Umaña 1981: 390)

Proto-Chibchan *hu ‘house’ is also reflected in Guatuso <uh> ‘house’ (cf. Lehmann 1920: 395), and probably in *ŋuti* ‘in the house of’ (cf. Constenla Umaña 1998: 111).

Guaymí /xu/ ‘house’ (Quesada Pacheco 2008: 31)

Kogi /**hu**ˈi/ ‘house’ (Ortiz Ricaurte 2000: 760)

Final /-i/ is a stem formative or fossilized possessive marker that recurs, for instance, in /kuˈ**i**/ [kuˈ**i**] ‘louse’ (Ortiz Ricaurte 2000: 779).

Kuna *uu* ‘house, nest’ (Holmer 1952: 178)

Muisca <**gu**e> ‘house’ (González de Pérez 1987: 210), <**ue-**na> ‘at home’ (ibid.: 254)

Final <-e> recurs, for instance, in <cu**e**> ‘louse of the head’ (González de Pérez 1987: 296). Note the similarities with Kogi above.

Rama *ŋuː* ‘house’ (Grinevald et al. 2002–06)

As in the case of Guatuso above, I have no explanation for the vowel length in the Rama form.

Térraba *u (ú)* ‘house’ (Constenla Umaña 2007: 219)

Compare also:

Chimila /**hu**kkaʔ/ [**hú**kːàʔ] ‘roof’ (Malone 2005: 204)

How much, how many *^{m}bi-

*ˈbi ‘how many’ (Constenla Umaña 1981: 391)

*^{m}bi- interrogative (Holt 1986: 91)

Elements reflecting Proto-Chibchan *^{m}bi-^{n}d recur in question words in different Chibchan languages from Colombia, for instance in Chimila /binniki/ [^{m}bínīˑkì ~ mínīˑkì] ‘how’ (Malone 2005: 211), Kogi <mit-sá> ‘when? how much? so much, always, with negation: never’ (Preuss 1927: 466), Tunebo *bir, bírara* ‘where?’ (Headland 1997: 88), Muisca <**bes**ua> ‘which ones?’ (Sp. *cuáles?*), <**fes**ua> ‘when? (talking about past events)’ (González de Pérez 1987: 305).

Bribri: Coroma [bí-k] ‘how much, how many (round entities)?’ (Chevrier 2017a: 69)

> The ending [-k] is a classifying element (Chevrier 2017a: 69). Margery Peña (1982: 118) gives the Amubre, Katsi, Salitre forms *bí-* ~ *bì-* ‘how many?’.

Duit <**bi**ia> ‘how many’ (Lehmann 1920: 53)

> I have no explanation for final <ia>; a similar element recurs in Tunebo, for instance in ***ri**ja* ‘day (used when counting)’ (cf. Headland 1997: 166), and in some Tunebo numerals.

Guatuso |pi-| element occurring in the question-word /piŋka/ ‘how many?’ (Constenla Umaña 1998: 48).

> Constenla Umaña (Constenla Umaña 1998: 48) identifies an interrogative root |m| in Guatuso.

Guaymí /-be/ ‘how much?’ (Quesada Pacheco 2008: 35)

Kogi **/mi**ˈza/ ‘how many?’ (Ortiz Ricaurte 2000: 771)

> Final /za/ is probably a stem formative in Kogi. Preuss (1927: 465) analyses <mi> as the root with the meaning ‘how much’ in this language.

Kuna ***pi**-k^{w}a* ‘how much?’ (Holmer 1947: 107)

> Final *-k^{w}a* is a frequently attested stem formative in Kuna (Holmer 1947: 54–6). In the context of *pi-k^{w}a* ‘how much?’, it may reflect a former use as a classifier indicating small/roundish/seedlike shape (cf. Pache 2016a).

Muisca <**fi**ua> ‘how many?’ (González de Pérez 1987: 306)

> Final <-ua> is an interrogative marker (Adelaar & Muysken 2004: 105). The Muisca form <ficua> ‘how much?’ (González de Pérez 1987: 306) might likewise be related.

Térraba *-bí* ‘how many’ (cf. Constenla Umaña 2007: 139).

> This form is attested, for instance, in Térraba *kʰɾɔ**bí*** ‘how many (longish objects)’ or *kʰuɔ**bí*** ‘how many (non-longish objects) (Constenla Umaña 2007: 239). The elements *-kʰɾɔ* and *-kʰuɔ* derive from *ka^{n}d- ~ *kat- ‘stick, bone, tree’ and *k^{w}a ‘seed, fruit’, respectively (cf. Pache 2016a).

Compare also:

Pech *píʃ* ‘how much, how many’ (Holt 1999a: 76), *pé꞉* ‘many, much’ (Holt 1986: 215)

Rama *pinkam* ‘how much’ (Grinevald et al. 2002–06)

Téribe *(o)bi* ‘how many’ (Quesada 2000a: 50-1)

Tunebo *bita* ‘how much, how many?’ (Headland 1997: 89)

Human being *^{m}ba^{n}di ~ *^{m}bai^{n}d

Barí [bːāˈɾì] ‘Barí, person’

Bribri [ˈbɾíbɾì] ‘Bribri’ (Chevrier 2017b)

> Margery Peña (1982: 21) gives the Amubre, Katsi, Salitre form *brìbri* ‘Bribri’.

Pech *pèʃ* ‘person’ (Holt 1999a: 39)

Muisca <**muys**ca> ‘man, person’ (Sp. *hombre*) (González de Pérez 1987: 271)

> Final <-ca> is probably a stem formative which recurs in <cuhu**ca**> ‘ear’ (cf. González de Pérez 1987: 286).

Hummingbird *^{m}bitsi ~ *^{m}bisi

Guatuso |piɬi| ‘hummingbird’ (Constenla Umaña 1998: 47)

Guaymí *miʧi* ‘hummingbird’ (Quesada Pacheco 2008: 26)

Pech *mìs* ‘hummingbird, penis’ (Holt 1999a: 78)

Compare also:

Barí [**bī**ˈtːù] ‘hummingbird’

Bocotá *ˈbĩʤi* ‘hummingbird’ (Margery Peña 1993: 83)

Bribri: Salitre *btsù̃* ‘hummingbird’ (Margery Peña 1982: 116)

Chimila /pittiʔ/ [pítːìʔ] ‘hummingbird’ (Malone 2005: 206)

Ika ***bisi*** *ˈʤungwe* ‘hummingbird’ (Huber & Reed 1992: 128)

Hunger *^{m}ba^{n}di

*bAˈLi ‘hunger’ (Constenla Umaña 1981: 392)

The falling tone in the Bribri (Coroma) form [bɽî] ‘hunger’ (Chevrier 2017a: 58) suggests the existence of a final *h in the Proto-Chibchan form.

Bocotá /ˈbli/ ‘hunger’ (Margery Peña 1996: 11)

Another meaning of this term is ‘food’ (Margery Peña 1993: 61); the meaning ‘food’ is also attested in the cognate Guaymí form (see below).

Boruca *bri* ‘hunger, to be hungry’ (Quesada Pacheco & Rojas Chaves 1999: 143, 151)

Bribri: Coroma [bɽî] ‘hunger’ (Chevrier 2017a: 58)

Margery Peña (1982: 130) gives the Amubre and Katsi form *baɽí* ‘hunger’.

Cabécar *baɽí* ‘hunger’ (Margery Peña 1989: 450)

Dorasque: Chumulu <**vali**água> ‘I am hungry’ (Pinart 1890: 16)

I have no explanation for the morphological elements that seem to follow the root.

Ika *mari* ‘hunger, hungry’ (Landaburu 2000a: 734, 736)

Kogi [ˈmaʌi] ‘hunger’ (Ortiz Ricaurte 2000: 763)

Térraba *ɸrí* ‘hunger’ (Constenla Umaña 2007: 250)

Compare also:

Atanques <marinamöri> ‘hunger’ (Celedón 1892a: 595)

Guaymí *bɤrɤ* ‘food’ (Quesada Pacheco 2008: 95); *mede*, *mɤrɤ* ‘to eat’ (ibid.: 105)

I$_1$ *^{n}daH(^{n}d)

*ˈda ‘I’ (Constenla Umaña 1981: 392)

*də̃- first person prefix (Constenla Umaña 1981: 382)

*ˈsɛ́ʔ ‘we (inclusive)” (Constenla Umaña 1981: 430)

*na-sV ‘I’ (Levinsohn 1975: 15)

Proto-Colombian Chibchan *na-sV/(-nV)-ya ‘I’ (Wheeler 1972: 106)

The first-person inclusive markers of the Talamancan languages suggest a possible alternation of Proto-Chibchan *^{n}daH(^{n}d) ‘I’ with a form *sa-. The matter requires further investigation.

Barí [nãɪ̀] ‘I’

I have no explanation for final [ɪ̀].

Bocotá /ˈʧa/ ‘I’ (Margery Peña 1996: 9)

Chimila **/naa**ɾiʔ/ [**ná**ːɾìʔ] ‘I’ (Malone 2005: 208)

Final /iʔ/ may be cognate with final <ji> in the corresponding Atanques form (see below).

Guatuso |toː|, /ton/ ‘I’ (Constenla Umaña 1998: 13)

Ika *naʔN ~ nən* ‘I’ (Landaburu 2000a: 740)

Kogi **/na**s/ [**na**s] ‘I’ (Ortiz Ricaurte 2000: 779)

I have no explanation for final /s/.

Pech ***tà****s* ‘I’ (Holt 1999a: 63)

I have no explanation for final *s* in this form.

Rama ***na****ːs*, *nah* ‘I’ (Craig 1989: 103)

Compare also:

Atanques <ránji> ‘my, mine’ (Celedón 1892a: 596)

Cabécar *ɟis* ‘I’ (Margery Peña 1989: 550), /sé/ ‘we (inclusive)’ (ibid.: xvi), /sá/ ‘we (exclusive)’ (ibid.: xvii)

Guaymí /ti/ ‘I’ (Quesada Pacheco 2008: 23)

Térraba *tʰa* ‘I’ (Constenla Umaña 2007: 259)

I_2

The forms given below seem to reflect Proto-Chibchan *La ‘I_2’. Further investigation is needed before firm statements can be made in this context.

Boruca *át* ‘I’ (Quesada Pacheco & Rojas Chaves 1999: 203)

Damana /ɾa/ ‘I’ (Trillos Amaya 2000: 753)

Muisca <hycha> ‘I’ (González de Pérez 1987: 335)

Compare also:

Tunebo: Tegría *aˈsa* [aása], Cobaría *asa* [asa] ‘I’ (Headland 1997: 74)

Information structure

The indication of information structure such as topic and focus marking plays an important role in several Chibchan languages (Quesada 2007: 194–223), and this may already have been a feature of Proto-Chibchan. In Kogi, a topic marker *-hã* has been observed, the use of which is illustrated in (1):

Kogi (Ortiz Ricaurte 2000: 772)

(1) *mitu-**hã*** *zabiˈʃi-hĩ*
Pig-**TOP** go.down-PROG
'The pig goes down.' ("El cerdo baja (el monte).")

Focus, in contrast, is indicated by an element *-ki* in Kogi, as shown in example (2).

Kogi (Ortiz Ricaurte 2000: 766)

(2) *nas-**ki*** *mi-gaˈpa*
I-**FOC** 2-behind
'I, I am behind you.' ("Yo, estoy detrás de tí.")

There might be a relation of cognacy between Kogi *-hã* topic and *-ki* focus and two formally similar elements in Boruca, *aŋ* and *ki* (cf. Quesada 2000b: 119–20). Whereas Boruca *aŋ* indicates focus, *ki* has different functions, for instance as a determiner (Quesada Pacheco & Rojas Chaves 1999: 15), marking new subjects (Quesada 2000b: 120) or topic (cf. Castro 2012: 6). The use of Boruca *ki* as a marker of definiteness is illustrated in (3).

Boruca (Quesada 2000b: 554)

(3) *Cuasrán* ***ki*** *kawíʔ-ra* *Brúnkahk* *tá*[18]
Cuasrán **DEF** live-PRES Boruca in
'Cuasrán lives in Boruca.'

[18] In this Boruca example, the acute accent may indicate either high tone or stress.

Instrumental/locative *^{n}di

*-ri ‘with, and’ (Holt 1986: 120)

Chimila *-ɾi* ergative–dative case marker (Adelaar & Muysken 2004: 79)

Guatuso *-ti* ergative suffix (Constenla Umaña 1998: 115)

> This element might be cognate with the derivational suffix *-ni* (location). The use of the latter element is illustrated in forms like *uˈhuɾoˈni* ‘above’ and *luˈɸaɾiˈni* ‘behind’ (Constenla Umaña 1998: 64).

Kogi /-li/ locative (Ortiz Ricaurte 2000: 772)

Kuna *ti*, instrumental/locative postposition (Holmer 1947: 63)

> More prescisely, this element indicates “locality or the place for an action, in some cases also the instrument” (Holmer 1947: 63).

Pech *-ɾi* mediative/instrumental (Holt 1999a: 35)

> A use of this morpheme may be illustrated by the construction *kàsa-ɾí* ‘with lies’ (Holt 1999a: 35).

Térraba *-lɪ* ~ *-ɬɪ* derivational suffix (location) (cf. Constenla Umaña 2007: 44)

> A use of this morpheme may be illustrated by the construction *násɔ-ɬɪ* ‘in the Térraba language’ (cf. Constenla Umaña 2007: 44). Whether or not this morpheme can be linked with the Teribe element *dí*, indicating the subject in inverse constructions (cf. Quesada 2000a: 63), remains to be established.

Compare also:

Bribri *di* ergative postposition used with third-person referents, in storytelling (Pacchiarotti 2016)

Cabécar /tì/ ergative case marker (Constenla Umaña 2012: 407)

Jealous *^{m}bau(^{n}d)

Térraba *imɔ́* ‘jealousy’ (Constenla Umaña 2007: 184)

> I have no explanation for the segment *i* in this form. The corresponding Teribe form is /mo/ ‘jealousy’ (cf. Quesada 2000a: 25).

Tunebo *boran abajro* ‘jealous, envious’ (Headland 1997: 91).

> The element *abajro* means ‘very (negative sense), too much’ (Headland 1997: 61–2).

Compare also:

Kogi <maụli> ‘envy, jealousy’ (Preuss 1927: 464)

Muisca <a**bosu**an mague> ‘envious’ (González de Pérez 1987: 252)

Kidney, heart, stomach

*kau ‘liver’ (Constenla Umaña 2005: 23)

Boruca *kúa* ‘stomach’ (Quesada Pacheco & Rojas Chaves 1993: 143)

Cabécar *kuɔ́* ‘kidney’ (Margery Peña 1989: 517)

Kuna ***k^{w}a**ke* ‘heart in the body; heart, mind’ (Holmer 1952: 62)

I have no explanation for final *ke*; it might be related to final <-quy> in the Muisca form below. A related form, in Kuna, is *k^{w}eki* ‘heart’ (cf. Holmer 1952: 64).

Muisca <**pquy**quy> ‘understanding, will’ (González de Pérez 1987: 257, 333)

Muisca <puyquy> ‘heart’ González de Pérez 1987: 220) is probably also related. Final <-quy> is a Muisca stem formative that recurs, for instance, in <tyhy**quy**> ‘gall’ (cf. ibid.: 270). The similarity between the Muisca and the Kuna ‘heart’ terms was pointed out by Adelaar and Muysken (2004: 85).

Compare also:

Atanques <kumáne> ‘belly’ (Sp. *barriga*), <kümöna> ‘belly’ (Sp. *vientre*) (Celedón 1892a: 592, 599)

Dorasque: Chumulu, Gualaca <bugú> ‘heart’ (Pinart 1890: 10), Gualaca <bugu> (Pinart 1882: 65)

Bocotá ***ku** ˈgadɛ* ‘chest’ (Margery Peña 1993: 81)

Térraba *uɔ* (<huɔ>) ‘liver’ (Constenla Umaña 2007: 250)

Tunebo *kuʔkuba* (Headland 1997: 116); *kukuba* ‘kidney’ (ibid.: 115)

To kill *ŋgua

*ˈguə ‘to kill’ (Constenla Umaña 1981: 393)

*ŋʷa ‘die’ (Holt 1986: 151–2)

Chimila /gwaʰ/ [ᵑgʷaʰ] ‘to kill’ (Malone 2005: 211)

Damana /gua/ ‘to kill’ (Trillos Amaya 2000: 755)

Guatuso /kua:/ ‘to kill’ (Constenla Umaña 1981: 393)

I have no explanation for the vowel length in this Guatuso form.

Guaymí ***ŋwa**ga* ‘cadaver’ (Quesada Pacheco 2008: 113)

Final *-ga* is a nominalizing element, most frequently used as an agentive nominalizer (cf. Quesada Pacheco 2008: 51). In this context, however, it seems to be used as a stative nominalizer.

Ika ***gwa**k* ‘to kill’ (Landaburu 2000a: 747)

Final *-k* is probably a stem formative element and not part of the root. It may recur in other verbs, such as, for instance, *nu**k**-* ‘to be’ (Sp. *estar*) (cf. Landaburu 2000a: 741, 743).

Kogi **/gu**ˈ**aʃi/** [**gu**ˈaʃi] (Ortiz Ricaurte 2000: 779)

Final *-ʃi* is a frequent ending in Kogi verbs (cf. Olaya Perdomo 2000: 781–2).

Compare also:

Muisca <b**gu**squa> ‘to kill’ (González de Pérez 1987: 278)

Knee, elbow

Dorasque: Gualaca <kulkonle> ‘elbow’ (Pinart 1890: 10)

Tunebo *kuskara* ‘knee’ (Headland 1997: 123)

To know *ᵑgʷ-

*wiš/wa(i)š ‘to know’ (Holt 1986: 136)

It is impossible for the moment to reconstruct any Proto-Chibchan vowel for this root, since the different forms in Chibchan languages seem to reflect both *ᵑgʷa and *ᵑgʷi.

Bocotá ***gũĩˈã*** ‘to know’ (Margery Peña 1993: 72)

Final *ˈã* probably does not belong to the root and recurs in ***hũˈã*** ‘to grab, take’ (cf. Margery Peña 1993: 78).

Boruca ***uí*** (<huí>) ‘to know’ (Quesada Pacheco & Rojas Chaves 1999: 132, 187)

This form is probably related to *uií* <huií> ‘wise, wisdom’ (cf. Quesada Pacheco & Rojas Chaves 1999: 187).

Chimila **/wi^{h}**ka˙**/** [^{g}**wī^{h}**ká˙̀] ‘to know’ (Malone 2005: 210)

Final /ka˙/ is probably not part of the Chimila root in question. The tonal pattern of this Chimila form is mid–high–low, according to Malone (2005: 210).

Kuna ***wisi*** ‘to know’ (Holmer 1952 186)

I have no explanation for final *-si* in this Kuna form; it may be related to *=si*, an enclitic form of the verb ‘to sit’ (cf. Holmer 1947: 153). A cognate element in Kogi might be the stem formative *-ʃi* (cf. Olaya Perdomo 2000: 781–2).

Rama ***ŋ^{w}****a* ‘to know’ (Grinevald et al. 2002–06)

Compare also:

Ika *ʤwaʔs* ‘to know’ (Landaburu 2000a: 474)

Lake, rain [*^{n}di-g^{w}a]

A glottal stop may be reconstructed here for analogy with *^{n}diʔ ‘water, river’, but there is no actual reflex of it in the Chibchan forms. The form underlying the derivational suffix [*-g^{w}a] of Proto-Chibchan [*^{n}di-g^{w}a] may have been /*-k^{w}a/, as in *siʔ-k^{w}a ‘pale’.

Atanques <díua> ‘rainshower’ (Sp. *aguacero*) (Celedón 1892a: 591)

Bocotá *ˈʧi guˈa* ‘lake’ (Margery Peña 1993: 64)

Damana *ˈʤiwa* ‘rain (noun)’ (Trillos Amaya 2000: 753)

Ika *ʤiwə* ‘lake, rain’ (Landaburu 2000a: 734, 747)

Kogi /niguˈa/ ‘swamp’ (Ortiz Ricaurte 2000: 768)

Huber and Reed (1992: 51) give the form *ˈniwa* ‘lake’.

Muisca <xiuâ> ‘lake’ (González de Pérez 1987: 273)

Tunebo *riwa* ‘lake, rain’ (Headland 1997: 165)

Compare also:
Teribe *diwa* ‘water’ (Quesada 2000a: 170)

To laugh$_1$ *ha^{n}d

*(h)ada ‘to laugh’ (Holt 1986: 87)

Pech *ar-kȍ* ‘to laugh’ (Holt 1986: 87)

The hyphenation is adopted from Holt (Holt 1986: 87).

Térraba *hár* ‘to laugh’ (Constenla Umaña 2007: 271)

Compare also Teribe *har* ‘to laugh’ (Quesada 2000a: 77).

Compare also:
Bribri: Coroma [**hɜ̃**ˈ**ɲ**-ű́kˇ] ‘to laugh’ (Chevrier 2017a: 69)

Hyphenation is adopted from Chevrier (Chevrier 2017a: 69).

Cabécar /ə̀ɟə̀/ ~ hə̀ɟə̀/ ‘to laugh’ (Margery Peña 1989: xxiii)
Chimila <jaara> ‘to laugh’ (Niño Vargas 2018: 465)
Kuna *alla* ‘to laugh’ (Holmer 1952: 13)

To laugh$_2$

Boruca *ʃit* ‘to laugh’ (Quesada Pacheco & Rojas Chaves 1999: 185), *ʃidí* ‘smiling’ (ibid.: 190)
Tunebo *sisinro* ‘to laugh’ (Headland 1997: 182)

Leaf *ka

*k'a ‘leaf’ (Holt 1986: 112)
*ˈkə́ ‘leaf’ (Constenla Umaña 1986: 395)
Pre-Muisca *kə- ‘leaf, grass’ (Holmer 1947: 208)
Some Chibchan languages seem to reflect a form *ka ‘stick’ which might be related, for instance Térraba ***kɔuɔ́*** (<kɔhuɔ́>) ‘branch’ (Constenla Umaña 2007: 271), Chimila /ka^{h}/ [ka^{h}]

'stick' **/ka**ka·ʔ/ [**kʌ**kà·ʔ] 'leaf of a tree' (Malone 2005: 207),[19] or Kuna *kaa* 'wood, stick, gunwale (of boat)' (Holmer 1952: 37). If cognate indeed, this would suggest that Proto-Chibchan *ka originally did not necessarily have the meaning 'leaf', but referred to the upper parts of a plant or tree, except the trunk.

Barí [kā̋ā̋ ā**qā**ˈʧ:ì] 'leaf (of a tree)'

The element [kā̋ā̋] means 'stick, tree'. Final [ˈʧ:ì] might recur in [bāˈ**ʧ:ì**] 'white'.

Bocotá /ga/ 'leaf' (Margery Peña 1996: 24)

This form recurs in Bocotá /ˈgli ka ~ ˈgli ga/ 'leaf' (cf. Margery Peña 1996 19).

Boruca *ká* 'leaf, wing' (Quesada Pacheco & Rojas Chaves 1999: 115, 152)

I have no explanation for the high tone.

Bribri: Coroma [ˈkáɽ-**kȍ**] 'leaf of a tree' (Chevrier 2017a: 468)

The element [ˈkáɽ] means 'tree' (Chevrier 2017a: 468), *kʊ* means 'leaf' (Margery Peña 1982: 130).

Cabécar *kó* 'leaf, feather' (Margery Peña 1989: 452, 504)

Related forms for 'leaf' are Cabécar *kā̋* ***gó***, *kā̋* ***kó***, *kō̋* ***gó***, *kō̋* ***kó***; northern dialects and Ujarrás *kʔó*, northern dialects *kā̋* ***kʔó***, *kʔā̋* ***kʔó***, *kʔā̋* ***gó*** (Margery Peña 1989: 452). The elements *kā̋*, *kʔā̋* and *kō̋* probably derive from an element meaning 'plant' in (Pre-) Cabécar. These forms are reminiscent of the Barí form cited above. The Cabécar form for 'leaf of a tree' is *kaɽ kó* (ibid.: 452). Other Cabécar forms which might reflect Proto-Chibchan *ka 'leaf' are *kʔó* in northern dialects and Ujarrás, *du kʔó* in northern dialects, and *du kó* in southern dialects, all with the meaning 'feather' (ibid.: 504).

Chimila /ka·ʔ/ [ká·ʔ] 'leaf of a tree' (Malone 2005: 207)

This form recurs in Chimila /ka**ka**·ʔ/ [kʌ**kà**·ʔ] 'leaf of a tree' (Malone 2005: 207), which strikingly resembles Cabécar *kā̋* ***kó*** and its cognate counterpart in Barí (see above).

Dorasque: Chumulu, Gualaca <kalá**ka**> (Pinart 1890: 17), Gualaca <cala**ca**> 'leaf' (Pinart 1882: 58)

For the first element <kalá ~ cala>, compare Proto-Chibchan *ka^{n}d- ~ *kat- 'stick, bone, tree' (cf. Pache 2016a).

[19] The phonetic form is given as such by Malone (2005: 207). She also states that the tonal pattern of this Chimila form is mid–high–low (ibid.).

Guaymí *kɔ* ‘leaf’ (Quesada Pacheco 2008: 55)

This form is most probably related to Guaymí *kɔ-*, numeral classifier for flat entities (cf. Quesada Pachecco 2008: 91).

Kuna *kaa* ‘plant, herb, grass, leaf’ (Holmer 1952: 37)

Muisca <**quy**e> ‘leaf of a tree’ (González de Pérez 1987: 270)

Final <-e> is a stem formative element in Muisca that recurs, for instance, in <cu**e**> ‘louse of the head’ (González de Pérez 1987: 296).

Rama *ka:* ‘leaf’ (Grinevald et al. 2002–06)

Térraba *kʰɔ́ɾ**ga*** ‘leaf of a tree’ (Constenla Umaña 2007: 250), *kʰɾɔ́**ga*** ‘leaf’ (ibid.: 250)

For the first element of these forms, compare Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a), and Térraba /kʰɔɾ/ ‘tree’ (Constenla Umaña 2007: 26). Parallel constructions are attested in Dorasque, Bribri and Cabécar (see above).

Tunebo ***ka**ja* ‘leaf (general term)’ (Headland 1997: 107)

Final *-ja* probably does not belong to the root in question. It recurs in several Tunebo numerals.

Compare also:

Kogi /aˈ**ke**/ [aˈ**xe**] ‘leaf’ (Ortiz Ricaurte 2000: 779); <akaị, kaị> ‘leaf (of a plant)’ (Preuss 1927: 419)

Lightning *Gu^{n}di ~ *GuiH^{n}d

Dorasque: Gualaca <**kúri**ga> ‘ray, bolt of lightning’ (Sp. *rayo*) (Pinart 1890: 28), <**kur*i***ba> ‘storm’ (Sp. *tormenta*) (ibid.: 31) <curiba> ‘ray, bolt of lightning’ (Sp. *rayo*), ‘storm’ (Sp. *tormenta*) (Pinart 1882: 53)

I have no explanation for final <ga> and <ba>. Final <ba> seems to have a counterpart in the Atanques, Damana, Ika, and Kogi forms below. Related forms are Gualaca <karibá> ‘thunder’ (Sp. *trueños*) (Pinart 1890: 32), <cariba> ‘thunder’ (Sp. *truenos*) (Pinart 1882: 53).

Muisca <**pquihiz**a> ‘ray of light’ (González de Pérez 1987: 310)

A related form is Muisca <**pquahaz**a> ‘lightning, thunderbolt’ cf. González de Pérez 1987: 310).

Nutabe <**uri**chiquisi> ‘lightning’ (Rivet 1943a: 26)

The element <chiqui> in <uri**chiqui**si> might have cognate counterparts in Nutabe <ma**chiquí**> ‘morning’ (Rivet 1943a: 26), Atanques <shigui> ‘morning’ (Celedón 1892a: 596).

Térraba ***kʰrík***, *ʒu.lɪŋ* ‘lightning, thunderbolt’, the second form also ‘flash of lightning’ (Constenla Umaña 2007: 271)

Final *k* is probably a stem formative element which recurs in ***ɸɾak*** ‘tail’ (cf. Constenla Umaña 2007: 238)

Tunebo ***kuir****a* ‘thunder, lightning (taboo), shotgun’ (Headland 1997: 119)

Final *a* probably does not belong to the root originally.

Compare also:

Atanques <güimángüi> ‘lightning’ (Sp. *rayo*) (Celedón 1892a: 598)

Boruca *kákdʒɾa*, *kueʔdráta* ‘lightning’ (Sp. *rayo*), the second form only according to one consultant (Quesada Pacheco & Rojas Chaves 1999: 184)

Damana *kwimangwi* (Huber & Reed 1992: 69)

Duit <pcuare> ‘lightning’ (Lehmann 1920: 53)

Ika *kwiʔˈmagwe* ‘thunder’ (Huber & Reed 1992: 69)

Kogi /kuiʃˈbangui/ ‘thunder’ (Ortiz Ricaurte 2000: 762)

Lip *uk-^{n}da

Boruca *úkɾa* ‘next to’ (Quesada Pacheco & Rojas Chaves 1999: 115)

Térraba *úkɾa* ‘next to’ (Constenla Umaña 2007: 115)

Compare also:

Bribri: Amubre, Katsi, Salitre *dʒík**uk*** ‘nostrils’ (Margery Peña 1982: 140)

Damana *ˈugla* ‘lip’ (Huber & Reed 1992: 3)

Muisca <ybza> ‘lip’ (González de Pérez 1987: 273)

Tunebo *uʔkara* ‘hole’ (Headland 1997: 210), *ukara* ‘cave, hole, hole in a tree’ (ibid.: 210)

Liquid *^{n}diʔ-a

*dí ‘liquid’ (Constenla Umaña 1981: 396)

This form derives from Proto-Chibchan *^{n}diʔ ‘water, river’ (cf. Constenla Umaña 1981: 396)

Barí, eighteenth century, <nonko**lía**> ‘fermented drink, *masato*’ (Rivet & Armellada 1950: 31)

> *Masato* is a fermented drink. The parallel of the element in question with other Chibchan languages is explicitly mentioned by Rivet and Armellada (1950: 26). No corresponding root could not be found in present-day Barí. I have no translation for the element <nonko>.

Cabécar *diʊ* ‘liquid (with the exclusion of water)’ (Margery Peña 1989: 468)

Ika *-ria* ‘water’ (Landaburu 2000a: 747)

Kogi *nia* (unbound morpheme), *-lia* (bound morpheme) ‘liquid’ (Ortiz Ricaurte 2000: 769)

Térraba *diɔ* ‘liquid’ (Constenla Umaña 2007: 256)

> This element recurs, for instance, in Térraba /bɔ́**riɔ̀**/ ‘tear’ (Constenla Umaña 2007: 19). The alternation with the liquid consonant resembles the situation attested in the Kogi case, and the situation in Rama: compare, in this language, *si:* ‘water’ versus *ari:* ‘liquid, juice, drink (noun), creek’ (Grinevald et al. 2002–06).

Tunebo ***ub riʔa**ra* (Headland 1997: 258)

> Final *ra* is probably a Tunebo stem formative recurring in *rénara* ‘leg (from the hip to the foot)’, ‘thigh’ in the Cobaría dialect (cf. Headland 1997: 160).

Compare also:

Bribri: Amubre, Katsi *mãlɛ́k**diò*** ‘sperm’ (Margery Peña 1982: 152); Amubre, Katsi, Salitre *wò**diʊ*** ‘tear’ (ibid.: 134)

Pech <tiá, atiá> ‘water, liquidity’ (Conzemius 1928: 277)

Dorasque: Gualaca <sú**tia**> ‘tears’ (Pinart 1890: 18)

Liver *hai^{n}d

*hɨd ‘liver, heart’ (Holt 1986: 102)

Bribri: Amubre [ɛ̂̃n], [ɛ̂̃ɽwʊ], Coroma [ɛ̂̃ɽ], [ɛ̂̃ɽwʊ] ‘liver’ (Chevrier 2017a: 595)

> Margery Peña (1982: 130) gives the Amubre, Katsi, Salitre form *ɛ́̃n* ‘liver’.

Rama ***air****bi* ‘blood’ (Grinevald et al. 2002–06)

Holt (1986: 102) analyses this term as *air-bi* ‘heart-liquid’.

Compare also:

Muisca <heczen mague, hiso> ‘red’ (Sp. *colorado*) (González de Pérez 1987: 214)[20]

Pech *-h(a)ɾá* ‘liver’ (Holt 1999a: 20)

Locative$_1$ *^{n}da ~ *ta

Boruca *ta* ‘in’ (Quesada Pacheco & Rojas Chaves 1999: 140)

Cabécar [nã] ‘in’ (Margery Peña 1989: cvi)

Guatuso *ta* ‘in’ (spatial or temporal) (Constenla Umaña 1998: 113)

Muisca <-na> locative (rest in location, source) (Ostler 1993: 9)

Compare also:

Bribri /tò/ ergative (Constenla Umaña 2012: 407)

Chimila /-la/ [-la] ‘in’ (Malone 2005: 212)

Guaymí *te* ‘in, inside, in the midst of, between’ (Quesada Pacheco 2008: 85)

Kogi /ˈhula/ ‘in the house’ (Ortiz Ricaurte 2000: 770)

Tunebo *-at* ergative (Headland 1997: 14)

Locative$_2$ *ki

*ki ‘at, in’ (Constenla Umaña 1981: 363)

*-ki locative (Holt 1986: 108)

A nasalized variant *kĩ seems to have acquired the meaning of ‘for, because’ in Proto-Chibchan, and may tentatively be reconstructed. Its reflexes are found, for instance, in Rama and Térraba (see below).

Bribri: Amubre, Coroma [kĩ́] ‘on’ (Chevrier 2017a: 125)

Cabécar *kĩ́* ‘in, to, because, on’ (Margery Peña 1989: 147)

[20] Holt (1986: 102) interprets the Chibcha form as *he:s-en* ‘red’. Indeed, one might speculate that <c> in <heczen> might refer to *e*. Also, González de Pérez (1987: 214) adds a footnote, stating that there is an element between <i> and <s> of Muisca <hiso> ‘red’ which is difficult to interpret, and which may be <j>.

Kuna *ki* postposition ‘in, with, at, about, like’ (Holmer 1947: 186, 1952: 52)
Rama *ki* postposition or relational preverb ‘in’, *kiŋ* benefactive postposition/relational preverb (Craig 1989: 114)
Térraba *kʰiŋ* postposition ‘for, because’ (Constenla Umaña 2007: 268)

Compare also:
Barí [ā**χkì**] ‘to’ which may follow the indirect object

Locative$_3$ *tsika ~ *tsaik

*skA ‘at, in’ (Constenla Umaña 1981: 363)

Cabécar *ska* postposition ‘in’ (Margery Peña 1989: 428)
Chimila /-sa/ [-sa] ‘in’ (Malone 2005: 212)
Ika *-seʔ* locative (source, goal), ergative (Frank 1985: 48)
Kuna *seka* postposition ‘to’ (Holmer 1947: 187)

> This form may be related to allative *se* (cf. ibid.: 186).

Muisca <-sa> postposition ‘path’ (Ostler 1993: 9)
Térraba *ʃkɔ́* ‘in’ (Constenla Umaña 2007: 244)

Compare also:
Bocotá *sɛˈgɛ* postposition ‘inside’ (Margery Peña 1993: 87)
Bribri: Amubre, Katsi, Salitre *ska* postposition ‘during’ (Margery Peña 1982: 72)
Guatuso *ła* postposition ‘on, to’ (implying movement) (Constenla Umaña 1998: 110)
Tunebo *sik* postposition ‘with’ (Headland 1997: 178)

> The use of this postposition seems to be restricted to the context of washing (e.g. ‘to wash something with soap/leaves/water’) (cf. Headland 1997: 178).

To look for, look after *^{n}di

*ˈdi ‘to seek’ (Constenla Umaña 1981: 410)

Boruca *dí* ‘to look for’ (Quesada Pacheco & Rojas Chaves 1999: 123)

Guatuso /tiː/ ‘to seek’ (Constenla Umaña 1981: 410)

Térraba *dí* ‘to look after’ (Sp. *cuidar*) (Constenla Umaña 1981: 240)

The Teribe counterpart of this form is /dɪ/ ‘to look after, raise’ (cf. Quesada 2000a: 16).

Compare also:

Kogi <nihi, lihi> ‘to look for’ (Preuss 1927: 522)

Louse *kũʔ

*ˈkṹ ‘louse’ (Constenla Umaña 1981: 397)

*k'u(N) (Holt 1986: 112)

The glottal stop is only tentatively reconstructed on the basis of the falling tone in the Bribri form. The nasality in this form might be related to the smallness of the referent – in several South American languages, nasality seems to indicate small size of the entity referred to (cf. Pache 2016b: 122).

Barí [kùùʔ] ‘louse’

Barí, eighteenth century, <kuu> ‘louse’ (Rivet & Armellada 1950: 40)

Bocotá /ˈkũ/ ‘louse’ (Margery Peña 1996: 10)

Margery Peña (1993: 81) gives Bocotá *ˈkũŋ* ‘louse’.

Boruca ***ku****a* ‘louse’ (Quesada Pacheco & Rojas Chaves 1999: 178)

I have no explanation for final *a* in this form.

Bribri: Coroma [kṹ] ‘louse’ (Chevrier 2017a: 160)

Margery Peña (1982: 145) gives Amubre, Katsi, Salitre *kṹ* ‘louse’.

Cabécar *kṹ* ‘louse’ (Margery Peña 1989: 502)

Chánguena <kū> ‘louse’ (Pinart 1890: 26)

Chimila /kuuʔ/ [kúːʔ] ‘louse’ (Malone 2005: 206)

The tonal pattern of this root is high–zero, according to Malone (2005: 206).

Dorasque: Chumulu, Gualaca <kū> ‘louse’ (Pinart 1890: 26), Gualaca <cu> (Pinart 1882: 58)

Guatuso /kuː/ ‘louse’ (Constenla Umaña 1981: 397)

Ika /ku/ ‘louse’ (Landaburu 2000a: 734, 747)

Kogi **/ku**ˈi/ [**ku**ˈi] ‘louse’ (Ortiz Ricaurte 2000: 779)

Final /-i/ is a stem formative element which seems to recur in /ˈnab**i/** ‘jaguar’ (ibid.: 768).

Kuna *kuu* ‘louse’ (Holmer 1952: 62)

Muisca <**cu**e> ‘louse of the head’ (González de Pérez 1987: 296)

Final <-e> is a stem formative that recurs, for instance, in <si**e**> ‘water’ (González de Pérez 1987: 178). Proto-Chibchan ‘louse’ is also reflected in Muisca <**cu**mne> ‘body louse’ (ibid.: 296). Final <-mne> in the latter expression may have a cognate counterpart in Kuna *kuu a**misa*** ‘louse’ (cf. Holmer 1952: 62).

Pech *ú* (Holt 1986: 112)

Rama *kuːŋ* ‘louse’ (Grinevald et al. 2002–06)

Térraba /kʰúŋ/ ‘louse’ (Constenla Umaña 2007: 14)

Compare also:

Tunebo ***kú**ria* ‘louse (head)’ (Headland 1997: 122)

Lousy

Boruca *kuakráŋ* ‘lousy’ (Quesada Pacheco & Rojas Chaves 1999: 178)

Muisca <cuequyn> ‘lousy’ (González de Pérez 1987: 296)

Maize *aiB ~ aBi

Boruca ***ep**kuáʔs* ‘husk of maize’ (Quesada Pacheco & Rojas Chaves 1999: 142)

For the right-hand element *kuáʔs*, compare *kuáʔs* ‘bark’ (Quesada Pacheco & Rojas Chaves 1999: 132).

Guatuso /aːiŋ/ ‘maize’ (Constenla Umaña 1998: 15)

Kogi /ˈ**eib**i/ ‘maize’ (Ortiz Ricaurte 2000: 760)

Final /-i/ is a frequent stem formative in Kogi, it recurs, for instance, in /ˈnab**i/** ‘jaguar’ (Ortiz Ricaurte 2000: 768).

Muisca <aba> ‘maize’ (González de Pérez 1987: 277)

I have no explanation for final <a> in this Muisca form. Related forms may be <**ab**quye, **fi**ca> ‘husk’ (Sp. *hoja del maíz*) (González de Pérez 1987: 270), the elements <quye> and <ca> in the latter two terms are probably both derived from Proto-Chibchan *ka ‘leaf’.

Rama *ai* ‘corn’ (Grinevald et al. 2002–06)

Térraba *ɪb* ‘maize’ (Constenla Umaña 2007: 258)

Tunebo ***eb****a* ‘maize’ (Headland 1997: 132)

Final *a* is probably not part of the root, as in the Muisca term for ‘maiz’.

Compare also:

Bribri: Amubre, Katsi, Salitre ***i****kuò* (Margery Peña 1982: 137), Coroma [kwó ~ kwŏ] ‘maize’ (Chevrier 2017a: 94)

Cabécar ***i****kuó*, northern dialects *ikˀuó*, southern dialects *kuó* ‘maize’ (Margery Peña 1989: 472)

Guaymí /i/ ‘maize’ (Quesada Pacheco 2008: 24)

Ika /iʔəN/ [iʔŋ] ‘maize’ (Landaburu 2000a: 734)

Manioc *i(k)

*ˈik ‘yucca’ (Constenla Umaña 1981: 434)

The reflexes of this root in Chibchan languages of Colombia are not yet fully understood. This element is therefore only tentatively reconstructed for Proto-Chibchan.

Bocotá *ˈi* ‘manioc’ (Margery Peña 1993: 72)

Dorasque: Chumulu <ik>, Gualaca <**ig**á> (Pinart 1890: 33), <**ig**a> (Pinart 1882: 62)

I have no explanation for final <á ~ a> in the Gualaca form.

Guaymí /ɤ/ ‘manioc’ (Quesada Pacheco 2008: 24)

Rama *iːk* ‘manioc’ (Grinevald et al. 2002–06)

I have no explanation for the vowel length in this Rama form.

Compare also:

Chánguena <hi> ‘manioc’ (Pinart 1890: 33)

Teribe /ik/ ‘cassava’ (Quesada 2000a: 16)

Tunebo ***i**ʃa* ‘manioc’ (Headland 1997: 139)

Lenition of *g is found in Kuna and in several Chibchan languages of Costa Rica.

Kogi /ˈinʒi/ ‘manioc’ (Ortiz Ricaurte 2000: 760)

Meat, flesh$_1$ *ᵑgaʔⁿda ~ *ᵑgaʔta

*gAtA ‘flesh’ (Constenla Umaña 1986: 384)

*kas ‘tooth; eat; food’ (Holt 1986: 108)

*cata ‘body, flesh’ (Holt 1986: 143)

Boruca ***dʒaʔdé**ua* (<yaᵛdéhua>) ‘food (hard aliment), meat’ (Quesada Pacheco & Rojas Chaves 1999: 126)

Final *ua* (<hua>) is probably a stem formative and does not belong to the root in question.

Chimila /eʰ**ŋatta/** [ʔēʰ**ŋát·à**] ‘meat, flesh’ (Malone 2005: 210)

Initial /eʰ-/ is probably not part of the root. Compare also <ɡatta> ‘flesh of a fruit’ (Niño Vargas 2018: 381).

Kuna *sana* ‘body, person, flesh, meat, body (of anything), meat or interior soft part of plants or animals’ (Holmer 1952: 136)

Rama *kaːs* ‘meat, flesh’ (Grinevald et al. 2002–06)

Compare also:

Guaymí *ŋiɾi* ‘meat’ (Quesada Pacheco 2008: 154)

Kogi <gāta> ‘meat’ (Preuss 1927: 508)

Meat, flesh$_2$ *sih

Guatuso /**ɬi**ki/ ‘flesh’ (Constenla Umaña 1998: 10)

Final /ki/ is possibly a stem formative (cf. Constenla Umaña 1998: 57).

Muisca <**chihi**ca> ‘flesh’ (González de Pérez 1987: 210)

Final <ca> seems to be a frequently attested stem formative in Muisca, it recurs in <suhu**ca**> ‘tail of animal’ (cf. González de Pérez 1987: 214).

Compare also:
Teribe /sɪŋ/ ‘meat’ (Quesada 2000a: 38)

Metal, silver, iron

*tab(ɨ)(~*tap) ‘yellow, ripen, red’ (Holt 1986: 127)
Among the lookalikes in other Native American languages are Páez *tsam* ‘iron’ (Gerdel 2015), Proto-Panoan *jami ‘machete, ax, knife, metal, iron’ (Shell 1965: 257), and Purépecha *tiˈamu* ‘iron, metal’ (de Wolf 1991: 550).

Bribri: Coroma [tə̀ˈbɛ́ ~ tə̀ˈbɛ̃̌ ~ tə̀ˈbɛ̌] (Chevrier 2017a: 600); Amubre, Katsi *tabè* ‘machete’ (Margery Peña 1982: 137)
Muisca <tyba> ‘silversmith’ (González de Pérez 1987: 296)

Compare also:
Kogi <sábali, sávali> ‘machete’ (Ger. *Buschmesser*) (Preuss 1927: 504)

Monkey *huⁿdĩ ~ uⁿdĩʔ

*ˈuriʔ ‘howler monkey’ (Constenla Umaña 1981: 399)
*uli/*ulu ‘monkey’ (Holt 1986: 135)
The Rama form seems to reflect old vowel nasality (compare also the Bocotá and Guaymí reflexes of Proto-Chibchan ‘monkey’).

Bocotá *huˈlĩŋ* ‘howler monkey’ (Margery Peña 1993: 77)
Boruca *úriʔ* Sp. *mono congo* (Quesada Pacheco & Rojas Chaves 1999: 165)
Chánguena <uli> ‘spider monkey’ (Sp. *mono prieto*) (Pinart 1890: 21)
Dorasque: Chumulu <uli> ‘spider monkey’ (Sp. *mono prieto*) (Pinart 1890: 21)
Guatuso /uːɾiuːɾi/ ‘howler monkey’ (Constenla Umaña 1981: 399)
Guaymí *xuɾĩ* ‘monkey’ (Quesada Pacheco 2008: 67)
Rama *uliŋuliŋ* ‘howler monkey’ (Grinevald et al. 2002–06)

Moon *siʔ

*siˈhíʔ ‘moon’ (Constenla Umaña 1981: 399)

*sib(a) ‘white’ (Holt 1986: 121)

The glottal stop is tentatively reconstructed on the basis of the reflex in Bribri.

Duit <**ti**a> ‘moon’ (Lehmann 1920: 53)

> Final <-a> is probably a stem formative which may be cognate with Muisca <-e> in <chie> ‘moon’.

Guatuso /**ɬi**xi/ ‘moon’ (Constenla Umaña 1998: 9)

> I have no explanation for final /-xi/.

Guaymí /sɤ/ ‘moon’ (Quesada Pacheco 2008: 25)

Ika ***tiʔma*** ‘moon’ (Landaburu 2000a: 747)

> The right-hand element *ma* in this form probably derives from *^{m}baʔ ‘beam of light, heat’ (see above). A parallel construction is attested in Barí [cɪ̄ˈbːáɨ́] ‘moon’.

Kuna *nii* ‘moon, month’ (Holmer 1952: 94–5)

Muisca <**chi**e> ‘moon, month, light, shine, brightness’ (González de Pérez 1987: 275, 279)

> Final <-e> is a frequent stem formative in Muisca, recurring, for instance, in <si**e**> ‘water’ (cf. González de Pérez 1987: 178).

Compare also

Bribri: Amubre, Katsi, Salitre ***si****wɔ̀* ‘moon’ (Margery Peña 1982: 135), *siʔ* ‘month’ (ibid.: 138)

Cabécar: San José Cabécar *sí wó* ‘moon’ (Margery Peña 1989: 470), and, rarely used, San José Cabécar *sí* ‘month’ (ibid.: 247)

Pech *jìwi/jùwi* ‘moon, month’ (Holt 1986: 100)

Mosquito$_1$ *tsui^{n}d

Dorasque: Chumulu <θūil> ‘mosquito’ (Pinart 1890: 22)

Kuna *k^{w}i* ***suit*** ‘malaria-transmitting mosquito’ (Holmer 1952: 66)

> For the first element of this construction, compare Kuna *kwii* ‘mosquito’ (Holmer 1952: 65). The sibilant *s* in *suit*, instead of expected *n** as a reflex of *^{n}d before the outcome of *u may be due to the fact that the reflex of *^{n}d is not in initial position in this morphologically complex construction.

Muisca <chue> a mosquito (Sp. *mosquito zancudo*) (González de Pérez 1987: 280)

Térraba ***ʒuíɾua*** (<zhuírhua>) a mosquito (Sp. *mosquito de las frutas*) (Constenla Umaña 2007: 260)

> Fnal *-ua* is a stem formative that recurs in *kʰuɻí*, ***kʰuɻíua*** (<khuɻíhua>) 'domestic rabbit' (cf. Constenla Umaña 2007: 238).

Compare also:

Chánguena <**súir**it> 'mosquito' (Pinart 1890: 22)

Mosquito$_2$

Kuna *kʷiː* 'mosquito' (Holmer 1952: 65)

Térraba *kʰuískuiŋ* 'fly, mosquito' (Constenla Umaña 2007: 260)

Mother, woman

Cabécar *mĩ́ñã* 'mother' (Margery Peña 1989: 193)

Damana *ˈmena* 'woman' (Trillos Amaya 2000: 753)

Mother-in-law, daughter-in-law *ŋgak

*ˈgAkA 'mother-in-law' (Constenla Umaña 1981: 399)

*kak(i) 'mother' (Holt 1986: 107)

Bribri: Coroma [ɟák] 'mother-in-law, daughter-in-law' (Chevrier 2017a: 100)

> Margery Peña (1982: 153) gives the Amubre, Katsi, Salitre form *ɟak* 'mother-in-law'.

Cabécar *ɟak* 'mother-in-law, daughter-in-law' (Margery Peña 1989: 487, 530)

Kogi /ˈ**gag**i/ 'mother-in-law' (Ortiz Ricaurte 2000: 764)

> Final /-i/ is a frequent stem formative in this language; it is attested, for instance, in /ˈnab**i**/ 'jaguar' (cf. Ortiz Ricaurte 2000: 768).

Kuna ***sak***ka 'parent-in-law' (Holmer 1952: 134)

> Final *ka* is probably a stem formative in Kuna which recurs in *kak**ka*** 'mouth, lip, language, word, side, edge' (Holmer 1952: 41).

Muisca <**gy**i> ‘mother-in-law of a female ego, daughter-in-law of a male ego’ (González de Pérez 1987: 321).

> Final <i> might be a variant of final <e> which is more frequently attested in Muisca, for instance in words like <si**e**> ‘water’ and <cu**e**> ‘louse of the head’. Alternatively, final <i> in this Muisca form is an old possessive marker derived from *i (compare *^{n}dŭ(-i) ‘father, uncle, ancestor’ above). A related form is probably <**gy**eca> ‘daughter-in-law of a female ego’ (cf. González de Pérez 1987: 284).

Compare also:
Chimila <**gag**gra> ‘mother-in-law’ (Niño Vargas 2018: 476)
Pech ***kà:ki*** ‘mother’ (Holt 1999a: 33)

Mountain, volcano

Chimila **/ittiko**gɾaʔ/ [**ʔit˖ikò**^{ŋ}gɾaʔ] [sic] ‘hill, mountain’ (Malone 2005: 206, 211)

> This morphologically complex form seems to contain the form /itti/ [ʔítːìʔ] ‘earth’ (Malone 2005: 204).

Dorasque: Gualaca <idígu> ‘volcano’ (Pinart 1890: 33)

Mouth *kah-ka

*ˈkahkə ‘mouth’ (Constenla Umaña 1981: 400)
*kɨhka ‘mouth’ (Holt 1986: 248)
*kə’ka(y) ‘mouth’ (Holmer 1947: 207)
This form seems to be derived from Proto-Chibchan *kah ‘open’ (see below). It is unclear whether the derivational element *-ka is related to Proto-Chibchan *ka ‘leaf’ (see above) or to the nominalizing element *ka (see below).

Dorasque: Chumulu <kagué> ‘mouth’, Gualaca <kaga> (Pinart 1890: 6), <caga> (Pinart 1882: 65)
Ika *kəkə* [kʌk^{k}ə] ‘mouth’ (Landaburu 2000a: 736, 747)
Kogi /ˈkaka/ [ˈkaxa] ‘mouth’ (Ortiz Ricaurte 2000: 779)
Kuna *kakka* ‘mouth, lip, language, word, side, edge’ (Holmer 1952: 41)

Rama *kaka:* ‘mouth’ (Grinevald et al. 2002–06)

Tunebo *kaka* ‘mouth’ (Headland 1997: 100)

Muisca <guyhica> ‘mouth’ (González de Pérez 1987: 198)

The <i> in <guyhica> is probably a variant of <y>, compare <pihigua> versus <pyhygua> ‘hole’ (Constenla Umaña 1984: 96). I have no explanation for <g> instead of expected <c*>.

Mouth, vagina *tsipi

Barí [**ʃībī**ˈbì] ‘vagina’

I have no explanation for the ending [-ˈbì] in this form.

Cabécar *ʦípɪ* ‘animal’s vagina’ (Margery Peña 1989: 542)

Chánguena <***s*emé**n> ‘mouth’ (Pinart 1890: 6)

I have no explanation for final <n>. It may be the reflex of older vowel nasalization.

Compare also:

Muisca <**xi**gua> ‘vagina’ (Sp. *vergüenzas de mujer*) (González de Pérez 1987: 332)

Mud, dirt

*oˈr̄i ‘mud’ (Constenla Umaña 1981: 401)

Dorasque: Chumulu <**kóri**o> ‘dirty’ (Pinart 1890: 30), Gualaca <θábi**kula**> ‘mud’ (Pinart 1890: 19), <kório> ‘dirty’ (Pinart 1890: 30), <corio> ‘dirt’ (Pinart 1882: 55)

Final <o> might be derived from Proto-Chibchan *uˈa ‘with’.

Guatuso /laka:**ori/** (Constenla Umaña 1981: 401)

The element /laka:/ means ‘earth, ground, soil’ (Constenla Umaña 1981: 401).

Kuna *olli* ‘earth, mud’ (Holmer 1952: 103)

Muisca <**us**ua> ‘clay’ (Sp. *lodo*) (González de Pérez 1987: 274)

Final <ua> is probably a stem formative and does not belong to the root.

Rama *u:la* ‘mud’ (Grinevald et al. 2002–06)

Compare also *u:la-wa* ‘dirty (= with mud)’ (Grinevald et al. 2002–06)

Teribe /wɭíwɭí/ ‘dirty’ (Quesada 2000: 38)

Térraba *guɭíguɭí* ‘dirty’ (Constenla Umaña 2007: 275)

Name *haka ~ *aka**ʔ**

*ˈhaká ‘name’ (Constenla Umaña 1981: 401)

Proto-Colombian Chibchan *a-hi-ka ‘name’ (Wheeler 1972: 106)

I tentatively follow Constenla Umaña (1981: 401–2) in reconstructing *haka ‘name’ instead of ahka*, notwithstanding the reflexes in Bribri and Tunebo (see below).

Bocotá *kã* ‘name’ (Margery Peña 1993: 78)

Boruca *káʔ* ‘name’ (Quesada Pacheco & Rojas Chaves 1999: 169)

Bribri [ká] ‘name’ (Chevrier 2017b)

> Constenla Umaña (1981: 402) gives Bribri /axká/ ‘name’.

Chimila **/ka**kkeʔ/ [**ká**kˑèʔ] ‘name’ (Malone 2005: 211)

> Final /keʔ/ is probably not part of the root and may recur in /tak**keʔ/** [tá**k**ˑ**èʔ**] ‘new’ (cf. Malone 2005: 211).

Guaymí *kɔ* ‘name’ (Quesada Pacheco 2008: 72)

Muisca <hyca> ‘name’ (González de Pérez 1987: 284)

Rama *aːk* ‘name’ (Grinevald et al. 2002–06)

Térraba *kɔ (kɔ́)* ‘name’ (Constenla Umaña 2007: 159)

Tunebo *ahka* ‘language, tongue, voice, soul, spiritual power’ (Headland 1997: 68)

> The Tunebo form implies a metathesis, as it seems to be attested in the Bribri form /axká/ ‘name’ above (cf. Constenla Umaña 1981: 402).

Compare also:

Atanques <kaká> ‘word’ (Celedón 1892a: 597)

Kogi /akaˈʒuka/ [axaˈsuka] ‘name’ (Ortiz Ricaurte 2000: 779)

Nape$_1$ *^{n}du-ku^{n}d(a) / *^{n}du-kus(a)

*duka ‘head’ (Holt 1986: 146–7)

*kut ‘neck, nape’ (Holt 1986: 111)

*duˈkurə ‘nape, neck’ (Constenla Umaña 1981: 403)

This form may be analyzed as consisting of different morphemes: the first element *^{n}du may have reflexes in Chumulu (Dorasque) <**du**kú>, Changuena <du> ‘head’ (Pinart 1890: 7), Bocotá /**ʧu**gá/ ‘head’ (Margery Peña 1996: 11).

Guatuso /tukuːɾa/ ‘nape’ (Constenla Umaña 1981: 403)
Kuna *tukkur* ‘neck’ (Holmer 1952: 165)
Térraba *dugúŋsɔ* ‘nape’ (Constenla Umaña 2007: 262)

Nape$_2$

Kogi <šu(r)lú> ‘nape’ (Preuss 1927: 516)
Kuna ***tun****jala* ‘neck’ (Holmer 1952: 167).

The element *-jala* has the meaning ‘side’, among others (cf. Holmer 1952: 188).

Guaymí *dɤrɤ* ‘neck’ (Quesada Pacheco 2008: 52)

Navel

Atanques <möna> ‘navel’ (Celedón 1892a: 597)
Bribri: Amubre, Katsi, Salitre *mɔ̃̀wʊ* ‘navel’ (Margery Peña 1982: 142)
Cabécar: San José Cabécar and La Estrella *mɔ̃́wʊ́* ‘navel’ (Margery Peña 1989: 490)
Ika [mʌna] ‘navel’ (Landaburu 2000: 735)
Kogi /ˈmala/ ‘navel’ (Ortiz Ricaurte 2000: 765)
Pech <mako> ‘navel’ (Conzemius 1928: 324)

Neck *ᵑga^{n}da

*ˈgala ‘neck’ (Constenla Umaña 1981: 403)
Proto-Colombian Chibchan *ga-de-(-N) ‘neck’ (Wheeler 1972: 106)
Proto-Chibchan ‘neck’ as reconstructed here might be etymologically related to Proto-Chibchan *ᵑga(^{n}da) ‘back$_2$’ (see above).

Bocotá *gda* ‘neck’ (Levinsohn 1975: 15)
Guatuso /koːlo/ ‘neck’ (Constenla Umaña 1981: 403)

Compare also:
Atanques <ganakúsha> ‘nape’ (Celedón 1892a: 597)
Damana *gana* ‘the neck region’ (Huber & Reed 1992: 231)

Net *ka^{n}daʔ

*kAˈLáʔ ‘net’ (Constenla Umaña 1981: 403)

*k'ala ‘net’ (Holt 1986: 112)

The final glottal stop is tentatively reconstructed on the basis of the Bribri form.

Bocotá *gɛˈdɛ* ‘bag’ (Sp. *bolsa*) (Margery Peña 1993: 69)

Muisca <quyne> ‘hunting net’ (González de Pérez 1987: 311)

> Final <e> might be related to <y> in the form <quyn**y**goscua> ‘to hunt with a net’ (cf. Constenla Umaña 1981: 403).

Pech *àːɾa* ‘net’ (Holt 1986: 112)

> I have no explanation for the fact that the vowel length and the low tone are found in the first syllable and not in the second syllable.

Térraba *kʰɾa* ‘big carrying net, spider web’ (Constenla Umaña 2007: 165), *kɾa* ‘big carrying net’ (ibid.: 271)

Compare also:

Bribri: Amubre, Katsi *kaɽaʔ* a small netbag (Margery Peña 1982: 113), Salitre *kɽaʔ* ‘fishing net’ (ibid.: 148),

Cabécar: San José Cabécar *kɽá* ‘net, spider web’ (Margery Peña 1989: 514, 532)

Rama *maukala* ‘net, netbag, uterus’ (Grinevald et al. 2002–06)

New *(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht-

*bihtsi/bihtsa ‘new’ (Constenla Umaña 2005: 17)

*(a)bica ~ *pica ‘new’ (Holt 1986: 92)

Proto-Colombian Chibchan *a-bi-so ‘new’ (Wheeler 1972: 106)

Ika [**abitˤ**i] ‘new’ (Landaburu 2000a: 736)

Kogi **/a**ˈ**bis**a/ [**a**ˈ**bis**a] ‘new’ (Ortiz Ricaurte 2000: 779)

Kuna ***pin****i* ‘new, fresh’ (Holmer 1952: 122)

> A related form recurs in Kuna *opina* ‘to renew, win (with *ki*), turn’ (Sp. *girar*) (cf. Holmer 1952: 108).

Muisca <**fihiz**a> ‘new’ (González de Pérez 1987: 284)

Rama ***abiːsa*** ‘new’ (Grinevald et al. 2002–06)

Térraba ***mítʰe*** ‘new, young’ (Constenla Umaña 2007: 254, 262)

Compare also:

Tunebo *íbsoja* ‘new’ (Headland 1996: 138), *umisro* ‘new (for a pot)’ (ibid.: 213)

Night, dark *tsii

Constenla Umaña (1981: 375) juxtaposes the Bribri and Guaymí (Movere) forms without reconstructing a Proto-Chibchan root.

Proto-Colombian Chibchan *cai ‘night’ (Wheeler 1972: 106)

Pre-Muisca *ca-(y) ‘night’ (Holmer 1947: 208)

Proto-Chibchan *ʦii ‘night, dark’ might be connected with Proto-Chibchan *ʦãĩh ‘cold’ (see above).

Atanques <**chin**ke> ‘night’ (Celedón 1892a: 596)

> The <n> may be the reflex of vowel nasality. Final <ke> is probably a stem formative which has a cognate counterpart in Kuna *kʷa**ke*** ‘heart in the body; heart, mind’, *kʷe**ki*** ‘heart’ (cf. Holmer 1952: 62, 64).

Barí [sə́ə́] ‘night’

Barí, eighteenth century, <čen> ‘night, by night’ (Rivet & Armellada 1950: 39)

> Final <n> might be a reflex of vowel nasality.

Bribri: Coroma [ʦɛ̀ʦɛ́] ‘dark’ (Chevrier 2017a: 66)

> Margery Peña (1982: 154) gives Katsi *ʦɑ̃́ɽĩ*, Salitre *ʦɑ̃̀ɽĩ* ‘in the afternoon’.

Chimila **/siʰ**tuːʔ/ [**síʰ**tùːʔ] ‘black’ (Malone 2005: 209)

> Final /tuːʔ/ is probably not part of the root in question; a related element may be attested in other Chimila adjectives, for instance in /diːsu**tuːʔ**/ [ⁿdíːsū**tùːʔ**] ‘small’ (cf. Malone 2005: 209).

Damana *ˈʃe* ‘night’ (Trillos Amaya 2000: 752)

Guaymí /ʧɛ̃/ ‘black’ (Quesada Pacheco 2008: 31)

Ika *sei* ‘night’ (Landaburu 2000a: 736, 748)

Kogi /ˈ**sei**sɯn/ [ˈseisɯn] ‘night’ (Ortiz Ricaurte 2000: 779)

The final element seems to recur in /niuˈi**sɯn/** [ɲiuˈi**sɯn**] ‘day’ (Ortiz Ricaurte 2000: 778).

Muisca <za> ‘night’ (González de Pérez 1987: 284)

Térraba *sɨ́* ‘black’ (Constenla Umaña 2007: 261)

The Teribe counterpart of this form is /síŋ/ ‘late, evening’ (cf. Quesada 2000a: 38).

Tunebo ***ʃéj****kara* ‘night’ (Headland 1997: 126)

Final *-kara* is a stem formative that seems to be ultimately derived from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Nine, ten *uk(a)

*huk$^{(w)}$a ‘ten’ (Holt 1986: 147)

The Pech, Damana, and Kogi reflexes of this root are combined with a reflex of Proto-Chibchan *k^{w}a ‘seed, fruit’ (cf. Constenla Umaña 1988; Pache 2016a).

Damana [**u**ɣua] ‘ten’ (Trillos Amaya 2000: 751)

Guaymí *ugɔ̃* ‘nine’ (Quesada Pacheco 2008: 91)

Kogi /ˈ**u**gua/ [ˈ**u**gua] ‘ten’ (Ortiz Ricaurte 2000: 779)

Pech ***ùk****k^{w}a* ‘ten’ (Holt 1999a: 63)

I have no explanation for the low tone in this form.

Tunebo ***ukás****ia* ‘ten’ (Headland 1997: 210)

Final *sia* probably does not belong to the root; a related element may recur in ***usía*** ‘house, home’ (cf. Headland 1997: 216).

Nominalizer$_1$ *-^{m}ba

Constenla Umaña (2012: 410) identifies the reflex of a "participial suffix […] /*-ibã/" in Rama and Guatuso. In fact, it seems that the reflex of a nominalizing suffix *-^{m}ba is preceded, in different Chibchan languages, by the reflex of another suffix, which is, for instance, *-i in the case of Rama and Guatuso, or *-^{n}d in the case of Kuna.

Cabécar -***ebʊ*** derivational suffix (Margery Peña 1989: liv)

> This element be used to derive adjectives from nouns - as for instance, in *dajɪ-ébʊ* 'salty', from *dajɪ* 'salt'. It is attested, in some cases, as an agentive nominalizer, for instance in *tű̃nã-ébʊ* 'runner', from *tű̃nã* 'to run' (Margery Peña 1989: liv).

Damana ˈʒa***ma*** 'food' (Trillos Amaya 2000: 751)

> This form seems to be ultimately derived from *^{ŋ}ga or ***i**ˈa**ʔ** 'to consume' (see above).

Guatuso -*su*ˈ***ɸa***, -ˈ***iɸa*** nominalizing suffixes (cf. Constenla Umaña 1998: 134)

> The derivational suffix -*su*ˈ***ɸa*** encodes the notion of realizing an action, underoing a process or having a certain condition; instead, -ˈ*iɸa* instead encodes a notion of undertaking an activity with a lot of endeavour and in an excessive way. Examples for these uses are *łaik-su*ˈ*ɸa* 'speaker' (Sp. *hablante*) and *łaiŋ-*ˈ*iɸa* 'someone who speaks a lot' (Sp. *hablador*). The use of -*su*ˈ*ɸa* as a stative nominalizer is illustrated in *ta*ˈ*ta-su*ˈ*ɸa* 'one who has died, dead person' (Constenla Umaña 1998: 134).

Ika *za**mə*** 'food' (Landaburu 2000a: 734)

> The first element of this form seems to derive from a Proto-Chibchan form *^{ŋ}ga or ***i**ˈa**ʔ** 'to consume' (see above).

Kuna -***rpa*** nominalizer encoding notions of intensity (cf. Holmer 1947: 58–9)

> The element -*pa* is mostly attested following an element -*r*: compare *ue**rpa*** 'hot, derived from *ue* 'burn', or *koper**pa*** 'drunkard', derived from *kopa* 'to drink' (Holmer1947: 58–9).

Rama -***ima*** stative nominalizer (Craig 1989: 68)

> The use of -*ima* as a stative nominalizer is illustrated in *auk-**ima*** 'roasted', derived from *auk* 'to roast'. Rama -*ba*, suffix deriving adjectives, may eventually turn out to belong here, too. Sometimes, this element expresses notions of high intensity – compare *supka-**ba*** 'over-sour', derived from *supka* 'sour' (Craig 1989: 71).

Térraba *-mɔ* non-productive derivational suffix (cf. Constenla Umaña 2007: 41)

This element might eventually turn out to be attested, for instance, in *k^hámɔ* 'mouth', which is ultimately derived from Proto-Chibchan *kah 'open' (cf. Constenla Umaña 2007: 41).

Nominalizer$_2$ *-^{n}d-

Some languages seem to reflect a form *-^{n}di (Boruca, Térraba), others reflect *-^{n}da (Damana, Kuna), or *-^{n}dai (Kuna, Kogi). Whether or not this nominalizing element is related to Proto-Chibchan *^{n}da(i) 'be' remains to be established.

Boruca *-**ní*** stative nominalizer (cf. Quesada Pacheco & Rojas Chaves 1999: 114)

The use of this suffix is illustrated in *uní* 'lying down' (Sp. *acostado*), derived from *úŋ* 'to lie down' (Sp. *acostarse*) (Quesada Pacheco & Rojas Chaves 1999: 114).

Damana *-**n**a* stative nominalizer (cf. Trillos Amaya 2000: 750–1)

The use of this element is illustrated in forms such as *buˈ**n**a* 'grown', *ˈpa**n**a* 'begun' (Sp. *comenzado*), or *zi**n**a* 'set fire' (Sp. *prendió fuego*) (ibid.: 750–1).

Kogi **/-ne/** perfective aspect marker (cf. Ortiz Ricaurte 2000: 773)

This suffix seems to be used as a stative nominalizer in the construction /guibu ˈeizua dusˈbe-**ne/** 'one (*ˈeizua*) of the eggs (*guibu*) is broken (*dusˈbe-**n**e*)' (cf. Ortiz Ricaurte 2000: 773).

Kuna *-**l**a ~ -r* (cf. Holmer 1946: 188), *-**l**e* stative nominalizer (Holmer 1947: 170–1)

The use of the first suffix is illustrated in *ima-**l**a* 'thing' which is derived from *ima-* 'to make, do' (Holmer 1946: 188); the use of *-le* is illustrated in *saa-**l**e* 'made, done', derived from *saa-* 'to make, do' (Holmer 1947: 171).

Térraba *-**ɾ**e* (after *ɔ*), else: *-**ɾ**i* 'stative nominalizer' (Constenla Umaña 2007: 44)

Constenla Umaña (ibid.) describes the function of this suffix as deriving adjectives; its use is illustrated in *ʃɾikʃɾíg-**ɾ**i* 'fried', from *ʃɾík* 'to fry' (Constenla Umaña 2007: 44).

Compare also:

Bocotá *-lɛ ~ -ɾɛ* suffix deriving adjectives from nouns (cf. Margery Peña 1993: 81, 87)

Muisca <-ne> stative nominalizer (Adelaar & Muysken 2004: 95)

Tunebo *ʃéi**n**a* 'dead' (Sp. *muerto, difunto*) (Headland 1997: 126)

Nominalizer$_3$ *-ka

*-ka nonfinite form (Constenla Umaña 2012: 406)

Atanques <ka> agentive nominalizer in <mó**ka**> ‘weepy, weeper’ (Sp. *llorón*) (Celedón 1892a: 596)

> The element <mo> derives from Proto-Chibchan *^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ (see above).

Bocotá *-ŋ͡gã* agentive nominalizer (Margery Peña 1993: 86)

> This morpheme is attested, for instance, in the form *deˈgã**ŋ͡gã*** ‘fortune teller’ (Sp. *adivinador*), derived from *deˈgã* ‘to predict’ (Sp. *adivinar*) (Margery Peña 1993: 86).

Boruca *-ká* suffix deriving adjectives from verbs (Rojas Chaves 1992: 50), stative nominalizer

> The use of this suffix is illustrated by the Boruca form *ʦom**ká*** ‘swollen, inflamed’, derived from *ʦom* ‘to swell’ (cf. Quesada Pacheco & Rojas Chaves 2008: 152), or *bauʔká* ‘born’, derived from *bauʔ* ‘to be born’ (ibid.: 168).[21]

Guatuso *-ko* ~ *-ˈko* nominalizer (cf. Constenla Umaña 1998: 92)

> This element is labelled as an infinitve marker by Constenla Umaña (1998: 92); an example illustrating its use is *ma-ˈʧa-**ka*** ‘drink (noun)’, derived from *ˈʧa* ~ *ˈʧia* ‘to drink’ (ibid.).

Guaymí *-ga* ~ *-gɔ* agentive nominalizer (Quesada Pacheco 2008: 51)

> Compare for instance *tua**ga*** ‘observer’, derived from *tuĩ* ‘to see’ (Quesada Pacheco 2008: 51).

Kogi /-ka/ agentive nominalizer (cf. Ortiz Ricaurte 2000: 773)

> Compare, for instance, /tuˈʃi-**ka/** ‘thief’, derived from *tuˈʃi* ‘to steal’ (cf. Ortiz Ricaurte 2000: 773).

Térraba *-gà* agentive nominalizer (compare Constenla Umaña 2012: 406)

> The use of this morpheme may be illustrated by the form *píŋ**ga*** ‘teacher’, derived from *píŋ* ‘to teach’ (Constenla Umaña 2007: 244; 268). The counterpart of the Térraba form discussed here is *-ga* in Teribe; its use is illustrated by the form *kimta**ga*** ‘helper, assistant' (Quesada 2000a: 21), derived from *kimtɪ* ‘to help’ (cf. ibid.: 12).

[21] In some cases, an element *-ká* element is also attached to the root without any clear derivational function in this language, for instance in *sexká* ‘cold (adj.)’ (cf. Quesada Pacheco & Rojas Chaves 1999: 146).

Nose *^{n}dii(k)

*dəˈIkI ‘nose’ (Constenla Umaña 1981: 403)

*taka ‘point’ (Holt 1986: 128)

*dɨk' ~ *dik' ‘nose’ (Holt 1986: 146)

Bocotá /ˈse/ ‘nose’ (Margery Peña 1996: 11)

Margery Peña (1993: 88) gives Bocotá *ˈsɛ* ‘nose’.

Chimila /da/ [^{n}da·^{h}] ‘nose’ (Malone 2005: 202)

Malone (2010: 9) gives [^{n}da^{h} ~ na^{h}] ‘nose’.

Dorasque: Chumulu <**ne**kó>, Gualaca <**ne**gú> (Pinart 1890: 22), <**ne**gú> ‘nose’ (Pinart 1882: 65)

Final <-kó> and <-gú> are frequently attested stem formatives in Dorasque. They are probably derived from Proto-Chibchan *k^{w}a ‘seed, fruit’ (cf. Pache 2016a).

Muisca <**sa**ca> ‘nose’ (González de Pérez 1987: 282)

The element <ca> is a frequently attested stem formative in Muisca. It recurs, for instance, in <suhu**ca**> ‘tail of animal’ (González de Pérez 1987: 214).

Pech ***tã́j****sá* (Holt 1986: 146)

I have no explanation for final *sá*. It may be a stem formative which has a cognate counterpart in the Tunebo term for ‘nose’ ***reʃa*** (see below).

Rama *taik* ‘nose, end, point, edge’ (Grinevald et al. 2002–06)

Térraba ***nɛ́****kuɔ* ‘nose’ (Constenla Umaña 2007: 261)

The element *-kuɔ* is a frequently attested stem formative in Térraba (cf. Constenla Umaña 2007: 34). The Teribe counterpart of this form is /nẽ/ ‘nose’ (Quesada 2000a: 17).

Tunebo ***reʃa*****, *reha*** ‘nose’ (Headland 1997: 160)

Final *-ʃa* in Tunebo *reʃa* ‘nose’ may have a cognate counterpart in Pech ***tã́j****sá*** (Holt 1986: 146).

Compare also:

Bribri: Coroma [ɟíkˇ] ‘nose’ (Chevrier 2017a: 468)

Margery Peña (1982: 140) gives Amubre, Katsi, Salitre *ɟík* ‘nose’.

Cabécar *ɟík* ‘nose’ (Margery Peña 1989: 485)

Chánguena <**θa**kai> ‘nose’ (Pinart 1890: 22)

Old

*šɨl (~*sɨl) ‘old’ (Holt 1986: 125)

Dorasque: Chumulu <kal**sén**> Sp. ‘monte viejo’ (Pinart 1890: 21)

Kuna *sele* ‘old’ (Holmer 1952: 138), *sere* ‘old, old person’ (ibid.: 139)

(Older) sibling, (older) sister *^{ŋ}g^{w}i

Damana [ˈ**gwi**a] ‘brother’ (Trillos Amaya 2000: 752)

> Final [a] is probably a stem formative that does not belong to the root. It may have a cognate counterpart in Muisca <gui**a**> ‘older sibling, older brother’ (cf. González de Pérez 1987: 259, 269).

Dorasque: Chumulu <gué> ‘older sister’ (Pinart 1890: 17)

Muisca <**gui**a> ‘older sibling, older brother’ (González de Pérez 1987: 259, 269)

> Final <a> is probably a stem formative element which recurs, for instance, in <su**a**> ‘sun’ (González de Pérez 1987: 320).

Rama ***kwi**ːma* ‘relative, friend, partner, brother, sister’ (Grinevald et al. 2002–06)

> Final *ma* might be derived from the Proto-Chibchan nominalizer *-^{m}ba.

Térraba *uí* (<huí>) ‘older sister’ (Constenla Umaña 2007: 250)

Compare also:

Atanques <ne**ngüia**> ‘brother’ (Celedón 1892a: 595)

Boruca *suí?* ‘sister’ (Quesada Pacheco & Rojas Chaves 1999: 151)

Chimila <guuri’> ‘older sibling (same sex of ego)’ Sp. *persona de mayor edad dentro de una serie de hermanos del mismo sexo* (Niño Vargas 2018: 158)

Guaymí *ŋwai* ‘sister’ (Quesada Pacheco 2008: 52)

Tunebo ***wi**ra* [wiíra] ‘brother-in-law (brother of wife, husband of sister (of a man) (Headland 1997: 224)

One$_1$

*ɨc ‘one’ (Holt 1986: 105)

Muisca <ata> ‘one’ (González de Pérez 1987: 333)

Pech *ás* ‘one’ (Holt 1999a: 63)

Térraba *ná* ‘one’ (Constenla Umaña 2007: 279)

Compare also Térraba *-ara* ‘one’ (Quesada 2000a: 11)

One$_2$

*ˈéʔ ‘one’ (Constenla Umaña 1981: 404)

*ɨc ‘one’ (Holt 1986: 105)

Cabécar *é-* ‘one’ (cf. Margery Peña 1989: xlvi–xlvii)

Boruca *éʔʦe*, *éʔʦi* ‘one’ (Quesada Pacheco & Rojas Chaves 1999: 197)

Kogi <eižua> ‘one’ (Preuss 1927: 432)

Only *^{m}bii

*pai/*pi ‘other(s), more, many, very’ (Holt 1986: 117)

Kuna *pii* ‘only’ (Holmer 1952: 121)

Rama *biː* ‘only, too’ (Grinevald et al. 2002–06)

Compare also:

Kogi <meį̂, veį̂> ‘only’ (Preuss 1927: 516)

Térraba *ɸí* ‘every, all’ (Constenla Umaña 2007: 277)

Open *kah

Atanques <**koh**kába> ‘mouth’ (Celedón 1892a: 592)

Final <kába> may be a stem formative element that recurs in <duabi**kaba**> ‘stomach, liver’ (cf. Celedón 1892a: 594–5).

Bocotá /ˈka/ ‘mouth’ (Margery Peña 1996: 9)

This term seems to recur in *huˈ**ga*** ‘door’ (Margery Peña 1993: 77) which would have the literal meaning ‘mouth of the house’.

Boruca ***káx**k* ‘to open’ (Quesada Pacheco & Rojas Chaves 1999: 113)

Final *k* probably does not belong to the root, as in ***buk*** ‘to braid, twist, spin’ (Quesada Pacheco & Rojas Chaves 1999: 152, 194, 195). The corresponding adjective is ***kaxk**ĭ* ‘open (adjective)’ (ibid.: 113). Boruca ‘mouth’ is *kása* (ibid.: 122).

Bribri: Amubre [kó] ‘mouth’ (Chevrier 2017a: 94)

A related element is attested in Coroma [ˈ**kó**kːwo̰] ‘mouth’ (Chevrier 2017a.: 71). The element [-kːwo̰] may have the meaning ‘skin’ (ibid.).

Cabécar /kó/ ‘mouth’ (Margery Peña 1989: xvi)

The corresponding form in northern dialects of Cabécar is *k^{h}ó́* ‘mouth’ (Margery Peña 1989: 390).

Chimila /**ka**kkwa/ [**kák**$^{\cdot w}$à] ‘mouth’ (Malone 2005: 202)

Final /**-**kwa/ is a stem formative and not part of the root in question (cf. Pache 2016a).

Kuna ***ekaa*** ‘to open’ (Holmer 1952: 22)

The prefix *e-* indicates transitivity in Kuna (Adelaar & Muysken 2004: 64).

Térraba /**k^{h}á**pkuɔ̀/ ‘lip’ (Constenla Umaña 2007: 41)

The element /-pkuɔ̀/ in /k^{h}á**pkuɔ̀**/ ‘lip’ is probably an allomorph of the stem formative *-kuɔ* (cf. Constenla Umaña 2007: 34–5); however, note also the similarity of final /-pkuɔ̀/ in /k^{h}á**pkuɔ̀**/ ‘lip’ with ***kuɔ́**ta* ‘skin’ (cf. ibid.: 267).

Compare also:

Muisca <**quyhy**cas biasqua> ‘I open’ (González de Pérez 1987: 168), <**quyhy**c btasqua> ‘to cover’, and <quyhyne> ‘cover’ (Sp. *tapadera*) (ibid.: 322).

Other

Cabécar, southern varieties *sigá* ‘other’ (Margery Peña 1989: 491)

Tunebo *ˈsikora* ‘another time’ (Headland 1997: 178)

Pale *siʔ-k^{w}a

*sib(a) ‘white’ (Holt 1986: 121)

This term ultimately derives from *siʔ ‘moon’.

Boruca *síʔkua* ‘stranger (non-indigenous, of Spanish or mestizo origin)’ (Quesada Pacheco & Rojas Chaves 1999: 144)

Cabécar *síkua*, *sígua* ‘stranger’ (Margery Peña 1989: 437)

Dorasque: Chumulu <sigua> ‘white people> (Pinart 1890: 15)

Pech ***síwa***-*ɾa* ‘pale’ (Holt 1986: 121)

Térraba *síua* <síhua> ‘non-indigenous person’ (Constenla Umaña 2007: 205)

> Térraba *síua* <síhua> ‘non-indigenous person’ might also recur in Térraba *síua duɔ* <síhua duo> ‘cigarillo’ (cf. Constenla Umaña 2007: 205) – the second element derives from Proto-Chibchan *^{n}dua ‘tobacco’ (see below). The Teribe counterpart of Térraba *síua* <síhua> ‘non-indigenous person’ is *siwa* ‘white (person)’ (cf. Quesada 2000a: 58).

Compare also:

Bribri: Amubre, Katsi, Salitre *sìkua*, Salitre *sìwa* ‘foreigner’ (Margery Peña 1982: 125)

Palm *huka

*ˈsúbaʔ ‘peachpalm (*Guilielma utilis*)’ (Constenla Umaña 1981: 405)

Constenla Umaña (1981: 405) reconstructs Proto-Chibchan *ˈsúbaʔ ‘peachpalm (*Guilielma utilis*)’ on the basis of Central American Chibchan languages. It remains to be investigated whether this form can be connected to *huka ‘palm’, reconstructed here. As to an alternation or correspondence of glottal and postalveolar fricatives in Chibchan, compare, for instance, Cabécar ***h***ãmẽ̃ĩ̃, northern dialects ***ʃ***ãmẽ̃ĩ̃ ‘vein’ (Margery Peña 1989: 543); for variation between velar and bilabial stops in Proto-Chibchan, compare subsection 2.4.3.1.

Lehmann (1910: 713) observes that the peachpalm is a widespread cultivar among the indigenous peoples of the Atlantic coast of Panama, Costa Rica, and Nicaragua. It originates in South America according to Lehmann (ibid.), and he considers the distribution of the peachpalm in eastern Central America to be an important argument for a South American origin of the indigenous peoples living in this area.

Bocotá *huˈgã* 'palm tree, general term' (Margery Peña 1993: 77)
Cabécar: southern dialects [ukó], San José Cabécar [úgó] 'a palm' (Margery Peña 1989: 493)

Compare also:
Boruca *ókra* 'palm', *ók* Sp. 'palma real (*Oreodoxa regia*)' (Quesada Pacheco & Rojas Chaves 1999: 173)
Dorasque (Chumulu) <*s*upá> 'peach palm (*pijibay*)' (Pinart 1890: 25)
Chánguena <*s*upá> 'peach palm (*pijibay*)' (Pinart 1890: 25)
Kogi <huká> 'a palm from the lowlands (Sp. *palma real*); a skirt made of its leaves' (Preuss 1927: 443)
Térraba *fugɔ́* Sp. 'palma real (*Scheela rostrata*)' (Constenla Umaña 2007: 265)

Parent-in-law

Atanques <guáse> 'aunt' (Celedón 1892a: 598)
Kogi *wazi* 'son-in-law' (Olaya Perdomo 2000: 781)
Bocotá *guˈadi* 'son-in-law' (Margery Peña 1993: 70

Compare also:
Ika <guáti> 'aunt' (Celedón 1892b: 609)

Parrot (*Amazona* sp.)

Cabécar *kũɽɛ́* 'green parrot' (Margery Peña 1989: 469)
Kuna *k*^{w}*ili* name of a bird, a kind of parrot or parrakeet (Holmer 1952: 65)

Parrot (*Ara* sp.)

Chimila **/kwa**ˑkɾa/ [**kʷá**ˑkɾà] ‘scarlet macaw’ (Malone 2005: 206)

Final /kɾa/ is probably etymologically related to the right-hand element /kɾa/ in /bitta**kɾa/** [ᵐbítˑā**kɾà**] ‘chest’ (cf. Malone 2005: 202)

Dorasque: Chumulu <kobá> ‘scarlet macaw’ (Sp. *guacamayo colorado*) (Pinart 1890: 16)

Path *hi

Constenla Umaña (1981: 405) juxtaposes the Guaymí (Movere), Muisca, and Chimila forms, without reconstructing a Proto-Chibchan term for ‘path’, however.

Cabécar *hãmẽ̃* ‘artery’ (Margery Peña 1989: 382), *hm̃ẽ̃* ‘vein’ (ibid.: 543)

The element *hãmẽ* or *hm̃ẽ* seems to derive from Proto-Chibchan *hapi ~ *apiʔ ‘blood’.

Chimila /hiiʔ/ [híːʔ] ‘path, gauge’ (Malone 2005: 204)

The tonal pattern of this root is high–zero, according to Malone (2005: 204).

Guaymí /xi/ ‘path’ (Quesada Pacheco 2008: 24)

Kuna ***i****kala* ‘way, road’ (Holmer 1952: 26)

Final *-kala* as in ***i****kala* ‘way, road’ is a frequent stem formative in Kuna (cf. Pache 2016a).

Muisca <**i**e> ‘path’ (González de Pérez 1987: 207)

Final <-e> is a frequently attested stem formative in Muisca, and recurs, for instance, in <cu**e**> ‘louse of the head’ (González de Pérez 1987: 296).

To peel *suʔ

*ˈsu ‘to peel, undress’ (Constenla Umaña 1981: 405)

The glottal stop is very tentatively reconstructed here on the basis of the Barí and Guatuso forms. Proto-Chibchan *suʔ ‘to peel’ is very similar to the Proto-Chibchan terms for ‘to scratch, rub’, and ‘to wash’ (see below).

Barí [ʃúʔʃúʔ] ‘to scrape, peel’

Guatuso /**ɬu**:ki/ ‘to peel, skin’ (Constenla Umaña 1981: 405)

Final /ki/ is probably a stem formative and not part of the root in question (cf. Constenla Umaña 1998: 33).

Muisca <b**chu**squa> ‘to peel’ (González de Pérez 1987: 280)

The prefix <b-> indicates transitivity, final <-squa> indicates imperfective aspect (Adelaar & Muysken 2004: 90–1).

Tunebo ***su****kinro* ‘gather (and peel corn), peel’ (Headland 1997: 188)

The element *ki* is probably a stem formative. The suffix *-n* indicates intention and *-ro* is a declarative marker (Headland 1997: 14, 28).

Compare also:

Rama *suk* ‘to wash, peel’ (Grinevald et al. 2002–06)

Possessed -*i

Guaymí *-e* (after high vowels) or *-i* (elsewhere) (Quesada Pacheco 2008: 73)

This suffix is attached to the head in certain possessive constructions, as shown in (4) and (5).

Guaymí (Quesada Pacheco 2008: 74)

(4) *ti* *hu-**e***
I house-**PSD**
‘my house’

Guaymí (Quesada Pacheco 2008: 74)

(5) *Choli* *hu-**e***
Choli house-**PSD**
‘Choli’s house’ (Quesada Pacheco 2008: 75)

Compare also:

Kogi *-i* in <ugaka**i**> ‘door (mouth of the house)’ versus <kaka> ‘mouth’ (Holmer 1953: 325)

Kuna *-i* in <kāka, kāka**i̯**> ‘mouth’ or in *kala*, *kal**e*** ‘leg’ (< *kala-i) Holmer (1947: 85)

People

Guaymí /ŋɔbe/ ‘people’ (Quesada Pacheco 2008: 15)

Kogi /ˈkag**gaba/** ‘people’ (Ortiz Ricaurte 2000: 770)

The first element of this form might eventually turn out to be related to /ˈkagi/ [ˈkagi] ‘earth’ (cf. Ortiz Ricaurte 2000: 766, 778).

Post, pole *tsau^{n}d ~ *tsu^{n}da

Kuna *u**sol**a* ‘house post’ (Holmer 1952: 178)

The element *u* means ‘house’ (cf. Holmer 1952: 178). I have no explanation for final *a*.

Muisca <chune> ‘pilgrim’s staff’ (Sp. *bordón*) (González de Pérez 1987: 198)

Térraba *ʃra* ‘rod, bar’ (Sp. *varilla [para techo de casa]*) (Constenla Umaña 2007: 280)

The cognate counterpart in Teribe is *ʃw.le* ‘pole’ (cf. Quesada 2000a: 170).

Compare also:

Tunebo ***fón**ota* ‘stick’ (Sp. *palo*), specific term. Used as a post/pole or as firewood. The plant has big, oval leaves and a big trunk’ (Headland 1997: 131)

Dorasque: Chumulu <kuló**sol**>, Gualaca <kulukó ***s*ol**> ‘finger’ (Pinart 1890: 12)

Pot *hũ

*ˈũ ‘pot, vessel, jar’ (Constenla Umaña 1981: 407)

Bocotá /ˈũ/ [ʔũŋ] ‘pot’ (Margery Peña 1996: 12)

Bribri: Amubre, Coroma [ű] ‘pot’ (Chevrier 2017a: 159)

Margery Peña (1982: 142) gives Amubre, Katsi, Salitre *ű̀* ‘pot’.

Cabécar *hű́*, *ű́* ‘pot’ (Margery Peña 1989: 490)

Chánguena <hu> ‘pot’ (Pinart 1890: 24), <u> ‘jar’ (Pinart 1890: 31)

Dorasque: Chumulu <hu> ‘pot’ (Pinart 1890: 24), Gualaca <u> ‘jar’ (ibid.: 31)

Guaymí ***u**gwẽ* ‘pot’ (Quesada Pacheco 2008: 135)

Final *gwẽ* is probably a stem formative and does not belong to the root in question.

Rama *uːŋ* ‘pot’ (Grinevald et al. 2002–06)

Prick, sting, point *^{n}duk / *suk

*suk(u) ‘point(ed)’ (Holt 1986: 122)

Whether or not this Proto-Chibchan form is ultimately connected with Proto-Chibchan *^{n}duʔ ‘tooth’ is yet to be demonstrated.

Boruca *suk* ‘to sting’ (Quesada Pacheco & Rojas Chaves 1999: 178)

Kuna ***tuk****kua* ‘point in general, top of tree or plant, edge (of garment)’ (Holmer 1952: 165)

I have no explanation for final *kua*.

Muisca <**su**pqua> ‘spear’ (González de Pérez 1987: 273)

The ending <-pqua> is frequently attested in Muisca, for instance in <quy**pqua**> ‘place, occasion’ (cf. González de Pérez 1987: 274).

Pech ***suk****-uk* ‘porcupine’ (Holt 1986: 283)

Morphological analysis adopted from Holt (1986: 283). For the right-hand element *uk*, compare Proto-Chibchan *huka ~ *huBa ~ kuaʔ ‘skin’.

Tunebo ***ruk****sojá* ‘porcupine’ (Headland 1997: 168)

The second element *sojá* means ‘bowl, small pot’ (cf. Headland 1997: 185)

Compare also:

Bribri: Amubre, Katsi, Salitre *sú* ‘porcupine’ (Margery Peña 1982: 146)

Pot, calabash

Térraba *kuɾé* ‘pot’ (Constenla Umaña 2007: 171)

Kuna *kurkur* ‘a kind of calabash’ (Holmer 1952: 61)

To pour

The similarity between the Huetar and Bribri form was first noticed by Constenla Umaña (1984a: 15).

Atanques <din**gúna**> ‘brook, rivulet’ (Sp. *arroyo*) (Celedón 1892a: 592)

Boruca *díʔ* ***ʤuʔ****krá* ‘well’ (Sp. *pozo*) (Quesada Pacheco & Rojas Chaves 1999: 180)

Bribri (Coroma variety) [ɟóɽ] ‘current, fountain’ (Chevrier 2017a: 469)

Huetar <yurro> ‘spring, source, slope’ (Constenla Umaña 1984a: 15)
Kuna *e-joka* ‘to pour out’ (cf. Holmer 1947: 119).

Pumpkin, squash *apii(s)

*Apì ‘pumpkin, squash’ (Constenla Umaña 1981: 407)
*api ‘squash’ (Holt 1986: 89)

Bribri: Amubre, Coroma [pí] ‘pumpkin (*ayote*)’ (Chevrier 2017a: 590)

Margery Peña (1982: 111) gives Amubre, Katsi, Salitre *api* ‘pumpkin (*ayote*)’.

Rama *abi꞉s* ‘squash, calabaza, ayote’ (Grinevald et al. 2002–06)

I have no explanation for voiced *b* instead of expected *p** in this form.

Compare also:
Kogi <abeiži, aveiži, abeizi> ‘pumpkin’ (Preuss 1927: 513)
Cabécar *pís* ‘pumpkin (*ayote*)’ (Margery Peña 1989: 385)

To put *eʔ

This root is only tentatively proposed for Proto-Chibchan. I found no reflexes in any Chibchan language that would suggest an origin of the mid vowel *e* in a Proto-Chibchan diphthong or vowel sequence *ai. I do not further discuss this form and its reflexes in subsection 2.3., but in subsection 2.4.1.

Boruca *éʔ* ‘to put’ (Sp. *meter*) (Quesada-Pacheco & Rojas Chaves 1999: 164)
Térraba ***iɨ*** ‘to put, to place’ (Sp. *poner*), ***tʰiɪ*** ‘to put’ (Sp. *meter*) (Constenla Umaña 2007: 259, 268)

The elements *i-* and *tʰ-* are probably not part of the root in question; a possible origin of *tʰ-* is discussed in subsection 3.3.2.3.

Kuna *e-* transitive (Adelaar & Muysken 2004: 64)

Raptor *pũʔ

*ˈpṹ ‘eagle, hawk’ (Constenla Umaña 1981: 377)

Barí [bːúú] ‘raptor’

Bocotá /ˈbũ/ [ˈmũŋ] ‘sparrowhawk’ (Margery Peña 1996: 13)

Bribri: Amubre, Coroma [pṹ] ‘sparrowhawk’ (Chevrier 2017a: 593)

Margery Peña (1982: 68) gives Amubre, Katsi, Salitre *pṹ* ‘sparrowhawk’.

Térraba *ɸúŋ* ‘hawk, eagle, sparrowhawk’ (Constenla Umaña 2007: 231, 248, 250)

Cabécar *pṹ* ‘sparrowhawk, hawk, eagle’ (Margery Peña 1989: 234)

Northern dialects and Ujarrás p^{h}*ṹ* ‘eagle, hawk, sparrowhawk’ (Margery Peña 1989: 372, 443).

Chánguena <bu-ō> ‘sparrowhawk’ (Pinart 1890: 15)

The hyphen may indicate a glottal stop between <u> and <ō>, but this interpretation is purely tentative.

Dorasque: Chumulu <bu> ‘eagle’ (Pinart 1890: 4), Gualaca <mū> ‘hawk’ (ibid.: 16), <bū> (ibid.: 4, 15), <buu> ‘eagle, sparrowhawk’ ‘(Pinart 1882: 56)

Guaymí *mu* ‘eagle’ (Quesada Pacheco 2008: 69)

Tunebo ***bu****á* ‘sparrow-hawk’ (Headland 1997: 93)

Final *á* in this form probably does not belong to the root originally. A cognate element may be attested in Tunebo *eb****a*** ‘maize’ (cf. ibid.: 132)

Compare also:

Boruca *búʔsa* ‘zopilote (*Sarcoramphus papa*)’ (Quesada Pacheco & Rojas Chaves 1999: 204)

Rama *puŋkit* ‘hawk’ (Grinevald et al. 2002–06)

Rattle *taʔ

*ˈtã́ ‘rattle, maraca, colander, gourd cup (= object elaborated from a gourd)’ (Constenla Umaña 1981: 408)

One may tentatively reconstruct vowel nasality for this Proto-Chibchan form, given the reflexes in Bocotá, Guaymí, Bribri, Cabécar, and Kogi.

Bocotá *ˈdã* ‘gourd rattle’ (Margery Peña 1993: 84)

Boruca *táʔ* ‘gourd rattle’ (Quesada Pacheco & Rojas Chaves 1999: 163)

Bribri: Amubre, Coroma [tə̂ ~ tə̂] ‘gourd rattle, sieve, a plant’ (Chevrier 2017a: 160)

Margery Peña (1982: 138) gives Amubre, Katsi, Salitre *tə́* ‘gourd rattle’.

Cabécar *tə́* ‘gourd rattle’ (Margery Peña 1989: 475)

The corresponding form in northern Cabécar dialects is *t^{h}ə́* ‘gourd rattle’ (Margery Peña 1989: 475).

Kuna *naa* ‘gourd rattle’ (Holmer 1952: 82)

Compare also:

Kogi ˈ*tãi* ‘rattle’ (Huber & Reed 1992: 187)

Guaymí *tõ* ‘gourd rattle’ (Quesada Pacheco 2008: 130)

Chimila /tooʔ/ [toːˀ] ‘rattle’ (Malone 2005: 208)

Raw *tah(-ka)

*capa ‘green, unripe’ (Holt 1986: 246)

Several forms given below under the category ‘compare also’ suggest the existence of a related Proto-Chibchan form *saʔ(-pa) which may have had the meaning ‘green, unripe’ rather than ‘raw’. Also, there is a certain similarity with the term *taʔBa ‘ripe’. These three terms may eventually turn out to be related; however, more research is needed before firm statements can be made.

Barí [ˈ**tāīʔ**tà] ‘unripe’

The element [tà] may be a stem formative and not belong to the root.

Bari, eighteenth-century, <**tak**ta> ‘raw’ (Rivet & Armellada 1950: 33)

Final <ta> may be a stem formative which does not belong to the root in question.

Boruca *taxká* ‘ raw’ (Quesada Pacheco & Rojas Chaves 1999: 133)

It is unclear whether or not the element *ká* is inherited from Proto-Chibchan in this word. Final *-ká* is a frequently attested stem formative/derivational suffix in Boruca adjectives; compare, for instance, *sexká* ‘cold (adj.)’ (Quesada Pacheco & Rojas Chaves 1999: 146).

Chimila /takkeʔ/ [tákˑèʔ] ‘new’ (Malone 2005: 211)

Final /keʔ/ may or not be derived from final *-ka of the Proto-Chibchan root. A similar element seems to recur in /kak**keʔ**/ [ká**k**ˑ**èʔ**] ‘name’ (Malone 2005: 211).

Muisca <tyhyca> ‘raw, new’ (González de Pérez 1987: 222, 317)

Final <ca> may or not be a later addition, as this is probably the case in Muisca <chih**ica**> ‘meat’ (González de Pérez 1987: 210) (see above). Alternatively, <ca> is inherited from Proto-Chibchan in this form.

Pech ***sáʔ**-ka* ‘green, unripe, raw’ (Holt 1986: 246)

Hyphenation is proposed as such by Holt (1986: 246).

Compare also:

Cabécar *spa̋*, *spő*, ‘unripe’ (Margery Peña 1989: 461)

Guatuso |ɬaŋa| ‘green, tender (Sp. *tierno*), unripe’ (Constenla Umaña 1998: 64)

Kogi /aˈtaʃi/ [aˈtaʃi] ‘green’ (Ortiz Ricaurte 2000: 778)

Kuna *sapkaleti* ‘green (like leaves)’ (Holmer 1952: 136)

Rama *saba:* ‘wet, raw’ (Grinevald et al. 2002–06)

Tunebo *saʔa* ‘child (sg.), small (of person or animal)’ (Headland 1997: 173)

To reach, arrive

Kuna *ali* ‘to reach, be insufficient’ (Holmer 1952: 13)

Teribe /ɑr/ ‘to arrive’ (Quesada 2000a: 16)

Red$_1$

*bal ‘colored, dark, black’ (Holt 1986: 90)

Barí, eighteenth century <bati> ‘color’ (Rivet & Armellada 1950: 32)

Cabécar *batsí* ‘red (neutral term)’ (Margery Peña 1989: 518)

Red$_2$

Dorasque: Gualaca <**salisáli**ke> ‘purple’ (Pinart 1890: 22)

Térraba *sɾírín* ‘red’ (Constenla Umaña 2007: 272), *sɾíŋ* ‘blood’ (ibid.: 273)

Kogi <zēle> ‘ripe’ (Preuss 1927: 518)

Red, yellow, ripe *taʔBa

*tab(ɨ) (~ *tap) ‘yellow, ripen, red’ (Holt 1986: 127)

This root resembles Proto-Chibchan *tah(-ka) ‘raw’ (see above); this similarity requires further investigation. The glottal stop of the Proto-Chibchan form is tentatively reconstructed on the basis of the Boruca reflex.

Barí [ˈdāābà] ‘ripe’

Barí, eighteenth century, <taba-r> ‘to ripen’ (Rivet & Armellada 1950: 38)

> Alfario’s (1788) manuscript, cited in Villamañán (1978: 10, 37), gives the forms <**daaba**rione> ‘yellow’ and <borupa**taba**> ‘ripe’ (<borupa> means ‘banana’, ibid.: 47).

Bocotá /ˈdabɛ/ ‘red’, /daˈbɛ/ ‘ripe’ (Margery Peña 1996: 23)

Boruca ***taʔp****ká* ‘to ripen’ (Quesada Pacheco & Rojas Chaves 1999: 162)

> I have no explanation for final *ká* in this verb. A suffix *-ká* is attested as a nominalizing and derivational suffix in Boruca (cf. Rojas Chaves 1992: 50).

Ika ***ʧəm****i* [**ʧʌm**^{m}i] ‘yellow’ (Landaburu 2000a: 736, 748)

> I have no explanation for final *i*.

Muisca <a**tyba**nsuca> ‘to become yellow’ (González de Pérez 1987: 185)

> The prefix <a-> may indicate intransitivity, whereas <-n> is a stative nominalizer and <-suca> indicates imperfective aspect (cf. Adelaar & Muysken 2004: 91, 94–5).

Tunebo ***tam*** *bihija* ‘yellow’ (Headland 1997: 191)

> Headland (1997: 245) translates *bihija* as ‘having the quality of’. The reflex of the glottal stop in the proto-form is probably zero in ***tam*** *bihija* ‘yellow’ (ibid.: 191) in order to avoid a too complex consonant cluster. A related Tunebo form might be ***tawãja*** ‘ripe (banana), yellow’ (ibid.: 195). Final *ja* in ***tawãja*** is probably not part of the root. It might be cognate with the stem formative *-ja* which is attested in some numerals such as *está**ria*** ‘nine’ (cf. ibid.: 264).

Compare also:

Dorasque: Gualaca <arabába> ‘red’ (Sp. *colorado*) (Pinart 1890: 10)

Guaymí *ton* ‘ripe’ (Quesada Pacheco 2008: 54)

Reflexive, ‘self’, ‘own’

Kuna *na-*, encodes the meaning ‘own’ and notions of reflexivity (Holmer 1947: 95, 125–6)

Compare also *te-* ‘this (the same)’ (Holmer 1946: 190).

Guatuso *ɾa-* ~ *ɾi-*, encodes notions of reciprocity or reflexivity (Constenla Umaña 1998: 126)

Relational element$_1$ *^{n}d(i)-

This element may also be called an “unspecified possessor marker” (cf. Campbell 2012: 297). It is attested in several Chibchan languages, in the reflex of *(^{n}d-)umba ‘brother-in-law’ (see above). Kogi /ˈneuma/ ‘brother-in-law’ (Ortiz Ricaurte 2000: 761) suggests that the Proto-Chibchan element may have been followed by a vowel *i* in some cases.

Boruca *ɾunkáx*, *unká?* ‘father-in-law’ (Quesada Pacheco & Rojas Chaves 1999: 191)

The relational element in question might recur in Boruca ***ɾá****ʤaba* ‘nephew, niece’ (Quesada Pacheco & Rojas Chaves 1999: 190), derived from *^{ŋ}ga^{m}ba ‘son, child’. I have no explanation for the vowel *á* in ***ɾá****ʤaba* ‘nephew, niece’.

Damana *-n* connective element (Trillos Amaya 1999: 26–8)

The use of this element is illustrated in subsection 3.3.4.3. In fossilized form, a related element may be attested in Damana ***ni****kuma* ‘egg’ (cf. Huber & Reed 1992: 260) – the element *kuma* in the latter form seems to have a cognate in Boruca *kúp* ‘egg, testicle’ (cf. Quesada Pacheco & Rojas Chaves 1999: 153, 193).

Muisca <**n**iomy> ‘testicle’ (ibid.: 331)

The element <iomza> means ‘potato’ (ibid.: 210, 271, 331).

Compare also:

Atanques <uma**n**júma> ‘eyelid’ (Celedón 1892a: 597)

“‘Ancient Talamanca’ or Guetar” <**t**u> ‘house’ (Brinton 1897: 498)

Chimila: In serial verb constructions, verbs are linked by an element *ni* (Malone 2010: 19).

Ika <**na**güía> ‘brother’, <**nö**gama> ‘son’ (Celedón 1892b: 605)

Kogi /ˈ**ne**uma/ ‘brother-in-law’ (Ortiz Ricaurte 2000: 761)

Nutabe <**t**anâ> ‘egg’ (Rivet 1943a: 26)

The element <t-> was identified as a separate affix by Rivet (1943a: 29).

Relational element$_2$ *ʦ(i)-

The reflex of this element is followed by the reflex of Proto-Chibchan *i in Rama and Kogi. It links two contiguous consituents in certain possessive constructions.

Boruca *kúʔ**s**kua* ‘finger’ (Quesada Pacheco & Rojas Chaves 1999: 136)

The first constituent of this construction derives from Proto-Chibchan *kuuʔ ‘hand, finger’, and the root probably meant, originally, ‘seed/fruit (*k^{w}a) of the hand (*k[a]uʔ)’.

Bribri: Coroma [ù̱ˈɽá**ʦ**kà ~ ù̱ˈɽá**ʦ**kà] ‘finger’ (Chevrier 2017a: 592)

Margery Peña (1982: 120) gives Amubre, Katsi, Salitre *uɽâtska* ‘finger’. Originally, this root is probably made up by a reflex of *^{ŋ}gu^{n}daʔ ‘hand, arm’ and *ka ‘leaf’, a finger being conceived of as a ‘leaf of the hand’. The Bribri forms [ù̱ˈɽá**ʦ**kwò, ú̱ˈɽá**ʦ**kwò] ‘fingernail’ and [ˈkɽá**ʦ**kò, ˈkɽá**ʦ**kwò] ‘nail of the foot’ (Chevrier 2017b) may likewise contain a reflex of *ʦ(i)-.

Cabécar *huɽa**s** kó* ‘finger’ (Margery Peña 1989: 419)

For the etymology of this Cabécar form, compare the Bribri case above.

Kuna *pina**s**kala* ‘chest’ (= ‘bone of the liver’) (Holmer 1952: 122)

The first element of this form is *pina* ‘core (of plant), liver’ (Holmer 1952: 122). Another term where relational *s* is attested in Kuna is *niis*k^{w}*a*, *nis*k^{w}*a* ‘star’ (= ‘seed of the moon’) (ibid.: 95), derived from *nii* ‘moon, month’ (ibid.: 94–5) and a reflex of Proto-Chibchan *k^{w}a ‘seed, fruit’.

Rama *up**s**i-ri* ‘tears’ (Craig 1989: 66)

For first element *up*, compare Rama *u:p* ‘eye, seed, fruit’ (Grinevald et al. 2002–06). The element *-ri* is a derivational element or class term used with liquids (cf. Craig 1989: 66).

Compare also:

Damana *-ʒe* possessive marker (Trillos Amaya 2000: 753)

Ika *kən ˈzaʧi* ‘tree leaf’ (Huber & Reed 1992: 154)

Kogi /ci/ ‘genitive marker’, /kaliˈ**ʒi**gula/ ‘branch’ /tagbiˈ**ʒ**uba/ a certain star (= ‘eye of the snake’) (Ortiz Ricaurte 2000: 768, 772)

Muisca <cha-**s** gue> ‘the man’s house’ (González de Pérez 1987: 137, cited in Adelaar & Muysken 2004: 102)

Residue

This form may tentatively be reconstructed on tbe basis of reflexes in Huetar, Guatuso, and Kuna, pointed out by Quesada Pacheco (1992: 96). The forms given below are also reminiscent of Proto-Chibchan ‘trace’ (see below).

Guatuso /**ɬoro**:ki ~ ɬoɾoŋ/ ‘fat’ (Sp. *manteca*, *grasa*, *medulla*) (Quesada Pacheco 1992: 96)

Huetar <soró, soroca, soroco> ‘residue, sediment, what remains of a product (maize, coffee, chicha)’ (Quesada Pacheco 1992: 96)

> Quesada Pacheco (1992: 96) connects this Huetar form with Guatuso /ɬoɾo:ki ~ ɬoɾoŋ/ ‘fat’ (Sp. *manteca*, *grasa*, *medulla*), and (p.c.), with Guaymí *ŋwɔrɔ* ‘fat, residue’ (Sp. *grasa*, *residuo*).

Kuna *sola* ‘sediment’ (Holmer 1952: 145)

> The correspondence with the Huetar form is discussed by Quesada Pacheco (1992: 96).

Rib

Dorasque: Chumulu <sikli> ‘rib’, Gualaca <*c*ikrigala> (Pinart 1890: 11), <chicrigala> ‘rib’ (Pinart 1882: 66)

Kuna *tikkala* ‘rib, side of anything, interior sides (ribs) of boat’ (Holmer 1952: 159)

Teribe /ʒgɾiŋ/ [ʒgɾiŋ] ‘rib’ (Quesada 2000: 28)

Térraba *ʒgɾímkuɔ* ‘rib’ (Constenla Umaña 2007: 239)

Rodent, large *ku^{n}di ~ *kui^{n}d

*kudɑ́ ‘squirrel’ (Constenla Umaña 1981: 416)

*ˈkuri ‘paca (*Agouti paca*)’ (Constenla Umaña 1981: 405)

*k^{w}it ‘squirrel’ (Holt 1986: 150)

In most languages, the reflex of this Proto-Chibchan term has the meaning ‘squirrel’; however, in Térraba, it is used to refer to the rabbit or to the agouti. A related term for ‘rabbit’, <curi> may have existed in the Arhuacan languages of northern Colombia, as suggested by the following observation of de Laet (1625: 279): “The meat that they eat is venison, which is abundant, and *fricos*, which are wild rabbits, called *curies* by those [peoples] from [the cordillera of] Santa Marta.” (“Vleesch dat zy eeten is wildt, daer zy groote menighten van hebben; ende *fricos*, welck zijn Conÿnen, de welcke die van *Santa Martha* noemen *Curies*; [...]”).

Proto-Chibchan *kui^{n}d ~ *ku^{n}di is reminiscent of the second element of Proto-Chibchan *suh(-kui) ‘rodent, small’.

Bocotá ***gũ ˈĩdɛ̃*** ‘squirrel’ (Margery Peña 1993: 72)

I have no explanation for final *ɛ̃*.

Dorasque: Chumulu <kúit> (Chumulu); Gualaca <kúi> (Pinart 1890: 5), <cui> ‘squirrel’ (Pinart 1882: 57)

It remains to be established whether or not Chumulu <*s*ole> ‘red rabbit’ (Sp. *conejo colorado*) (Pinart 1890: 10) also belongs here.

Guatuso /kuːɾi/ ‘agouti’ (Constenla Umaña 1981: 405)

Rama *kuliː* ‘paca’ (Grinevald et al. 2002–06)

It remains to be investigated whether or not Rama *tkustkus* ‘rabbit’ (Grinevald et al. 2002–06) belongs here, too.

Térraba *k^{h}u.lí*, ***k^{h}u.lí****ua* (<khu.líhua>) ‘tepezcuinte (*Cuniculus paca*), domestic rabbit’ (Constenla Umaña 2007: 168)

The cognate counterpart in Teribe is /kw.li/ ‘rabbit’ (Quesada 2000a: 28).

Tunebo ***kuis****taramá*, ***kui****taramá* ‘squirrel’ (Headland 1997: 237)

Final *ta* is probably a stem formative that recurs, for instance, in *súri****ta*** ‘grasshopper, lobster’ (Headland 1997: 88) or *sic****ta*** ‘beetle’ (ibid.: 178). Final *-rama* might recur in *ruʔ****rama*** (ibid.: 169), *ru****rama*** ‘small armadillo’ (ibid.: 171), and might be related to the Waunana (Chocoan) diminutive suffix *-dama* (cf. Holmer 1963: 108).

Compare also:

Atanques <kuindumaka> ‘squirrel’ (Celedón 1892a: 592)

Cabécar *ʃũlɛ́̃* ‘agouti’ (Sp. *guatusa*) (Margery Peña 1989: 447)

Chimila <**kwit**ta’> ‘squirrel’ (*Sciurus granatensis*) (Niño Vargas 2018: 229)

Guaymí /kɤ̃dɔ̃/ ‘squirrel’ (Quesada Pacheco 2008: 26)

Kogi <kuteñku> ‘squirrel’ (Preuss 1927: 505)

Kuna *k*^{w}*ini* ‘squirrel’ (Holmer 1952: 66)

Muisca <chuengi, cuhupquy> different kinds of rabbits (González de Pérez 1987: 220)

Rodent, small *suh(-kui)

*ˈsuhkÌ ‘mouse’ (Constenla Umaña 1981: 400)

*tuc(a) ‘mammal (sp.)’ (Holt 1986: 133)

The second part of this proto-form proposed here might be related to *ku^{n}di ~ *kui^{n}d ‘rodent, large’ (see above). The reflexes in Atanques and Muisca suggest the existence of Proto-Chibchan *suh- instead of su* as a first element of this form.

Atanques <**túhku**a> ‘mouse’ (Celedón 1892a: 598)

I have no explanation for final <a> in this form.

Bocotá *sɔgũ ˈɛ̃* ‘mouse’ (Margery Peña 1993: 89)

I have no explanation for *ɔ* instead of expected *u** in this form.

Dorasque: Chumulu, Gualaca <**so**gé> (Pinart 1890: 28), <**so**gue> ‘mouse’ (Pinart 1882: 57)

Guaymí *tugwe* ‘mouse’ (Quesada Pacheco 2008: 135)

Ika *ʧukwi* [ʧuk^{k}wi] ‘mouse’ (Landaburu 2000a: 736)

Rama *suːk* ‘rat’ (Grinevald et al. 2002–06)

It is difficult to decide whether or not final *k* is part of the root or not.

Térraba *ʃkuɪ* ‘mouse’ (Constenla Umaña 2007: 271)

Compare also:

Boruca *kuí* ‘murine, general term for mouse and rat’ (Quesada Pacheco & Rojas Chaves 1999: 166)

Bribri: Amubre, Katsi, Salitre *skuì* ‘mouse’ (Margery Peña 1982: 148)

Damana *tiu ˈkwi* ‘mouse’ (Huber & Reed 1992: 118)

Kuna *nusa* ‘rat, part of the hammock loom’ (Holmer 1952: 100)

Muisca <**chuhui**a> ‘mouse’ (González de Pérez 1987: 310); the Muisca forms given by Constenla Umaña (1981: 400) are <chuhuca> and <chuhuta>.

Rope, string$_1$ *ki

Bocotá /ˈgi/ ‘rope’ (Margery Peña 1996: 11)

Guatuso /kiː/ ‘liana’ (Constenla Umaña 1998: 9)

Guaymí /kɤ/ ‘cord’ (Quesada Pacheco 2008: 24)

*ki ‘rope, string$_1$’ > /kɤ/ ‘cord’ (Quesada Pacheco 2008: 24)

Compare also:

Teribe /kʰi/ ‘reed, cord’ (Quesada 2000: 16), ‘thread’ (Quesada 2000: 69)

Rope, string$_2$

Ika *ˈʧuma* ‘rope’ (Huber & Reed 1992: 366)

Térraba ***zboŋ****kɾɔ* ‘bowstring’ (Constenla Umaña 2007: 240)

Rotten

*ˈdṹ (Constenla Umaña 1981: 408)

Bribri: Coroma /dṹ/ [nṹ] ‘rotten, cadaver’ (Chevrier 2017a: 87)

> Margery Peña (1982: 60–1) gives Amubre, Katsi, Salitre *nṹ* ‘cadaver, carrion’ and *nṹnnṹ* ‘fetid, rotten’.

Kuna *nunu* ‘rotten’ (Holmer 1952: 100)

Round *^{m}bi^{n}d(i)

*bɨt or *bɨd ‘bent, curved’ (Holt 1986: 141)

Dorasque: Gualaca <vidi> ‘round’ (Pinart 1890: 28)

Ika *miN* ‘round’ (Landaburu 2000a: 748)

Kuna *pili* ‘curved’ (Holmer 1952: 12)

Compare also:

Térraba /ɸɾibɾí/ ‘round’ (Constenla Umaña 2007: 271)

Kogi <veı̯ža, meı̯ža> ‘bent’ (Preuss 1927: 493), <arveı̯ši, aḳveı̯ši> ‘stir’ (ibid.: 524)

Salt *^{n}da^{ŋ}g

*dAgÌ ‘sea’ (Constenla Umaña 1981: 410)

*dahg ‘salt, sea’ (Constenla Umaña 2012: 405)

*dakɨ́ ‘salt, sea’ (Holt 1986: 145)

Related forms may also exist in other Native American languages. Compare, for instance, Xinka *naki* ‘chili pepper’ (Sachse 2010: 896; Sachse identifies this term as a borrowing from Mayan), Proto-Huave *ndɨ́kɪ ‘sea’ (Noyer 2012: 457), and Páez *nega* ‘salt’ (Gerdel 2015). The Cabécar and Nutabe words for ‘chili pepper’ (see above) may derive from a form *^{n}dap, which may eventually turn out to be related to Proto-Chibchan *^{n}da^{ŋ}g ‘salt’.

Bribri: Amubre [**dàˈɟ**í], Coroma [**ɖɟ**í] ‘salt, sea’ (Chevrier 2017a: 69, 75)

> Final [í] is probably the reflex of a stem formative which was not originally part of the root (cf. Constenla Umaña 2012: 405). Margery Peña (1982: 138) gives the Amubre and Katsi form *daɟì* ‘sea’.

Cabécar /daɟì/ [dəɟî] ‘salt, sea’ (Margery Peña 1989: xxxiii)

> Final /ì/ in this Cabécar root corresponds with Bribri [í] above. A related form in northern dialects of Cabécar may be *ʃkóo* ‘sour, acid’ (cf. Margery Peña 1989: 371).

Ika [**nʌg**^{ɰ}u] ‘salt’ (Landaburu 2000a: 735)

> Final *u* is probably the reflex of a stem formative which was not originally part of the root (cf. Constenla Umaña 2012: 405).

Muisca <**nyg**ua> ‘salt’ (González de Pérez 1987: 316)

Muisca <ua> is probably a stem formative, related to <-gua> in Muisca <a**gua**> ‘maize grain’ (cf. González de Pérez 1987: 266). Muisca <**nyg**ua> ‘salt’ might be related to Muisca <a**ty**-**hy**zyn mague> ‘sour, bitter’ (cf. ibid.: 177).

Nutabe <**nac**ú> ‘salt’ (Rivet 1943a: 26)

For final <ú>, compare the discussion of the Ika cognate above.

Pech ***tak****é* ‘salt, sea’ (Holt 1986: 145)

For final *é*, compare the Bribri case above. A related form may be Pech ***tè?****wa* ‘chili pepper’ (cf. Holt 1986: 10).

Compare also:

Atanques <nöngüi> ‘salt’ (Celedón 1892a: 598), <**né**ua> ‘chili pepper’ (ibid.: 591)

Barí, eighteenth century, <čaue> ‘salt’ (Rivet & Armellada 1950: 41)

Bocotá /ˈʧɔ/ ‘salt’ (Margery Peña 1996: 11), *ˈ**dag**ɛ* ‘bitter, acid’ (Margery Peña 1993: 66), *ˈ**da**gi* ‘ginger’ (ibid.: 66)

Damana *ˈnungu* ‘salt’ (Trillos Amaya 2000: 751)

Kogi /ˈnaku/ ‘salt’ (Ortiz Ricaurte 2000: 770)

Guatuso /toŋ/ ‘tamarind’ (Constenla Umana 1998: 9)

Rama *tauli* ‘salt’ (Grinevald et al. 2002–06)

Térraba *ʃpá* ‘sour, acid’ (Constenla Umaña 2007: 231), *ʃpágrɔ* ‘lemon’ (ibid.: 256)

Tunebo *rauwa* ‘salt’ (Headland 1997: 159)

Sand *uB(V)(-ta)

*u.. ‘sand’ (Holt 1986: 134)

*ˈu ‘sand’ (Constenla Umaña 1981: 409)

*ˈuBA ‘sand’ (Constenla Umaña 1981: 409)

Proto-Colombian Chibchan *u-ba-ni-ta/-sa ‘sand’ (Wheeler 1972: 107)

Final *-ta which is reflected in the ‘sand’ terms of some Chibchan languages might likewise have a reflex in Muisca <e**ta**> ‘foundation’ (Sp. *cimiento*) (cf. González de Pérez 1987: 22) and Duit <i**ta**> ‘earth, land’ (cf. Lehmann 1920: 53).

Barí [ˈũ̄ŋdà] ‘sand’

Boruca *up* ‘sand’ (Quesada Pacheco & Rojas Chaves 1999: 118)

Guaymí *umã* ‘sand’ (Quesada Pacheco 2008: 81)

Kuna *upi* ‘dust (of anything)’ (Holmer 1952: 176)

Rama ***unta****s* ‘sand’ (Grinevald et al. 2002–06)

I have no explanation for final *s*.

Tunebo *úmita*, *umta* ‘sand’ (Headland 1997: 213)

Compare also:

Atanques <unyu> ‘sand’ (Celedón 1892a: 592)

Kogi <ui> ‘sand’ (Preuss 1927: 519)

Pech *ú-ʔu* ‘sand’ (Holt 1986: 134)

To say, do

*ˈguA- ‘to say’ (Constenla Umaña 1981: 410)

*gI ‘to say’ (Constenla Umaña 1981: 410)

*gU ‘to make’ (Constenla Umaña 1981: 398)

*ˈgU ‘to give birth’ (Constenla Umaña 1981: 385)

It is difficult to reconstruct the vowel(s) of these Proto-Chibchan forms which all seem to be related.

Boruca ***ʤ****uaguá* ‘named’ (Quesada Pacheco & Rojas Chaves 1999: 169)

Cabécar ***ɟ****ɪɻ* ‘to say’ (Margery Peña 1989: 419)

Remotospective perfective form (cf. Margery Peña 1989: 419); *-ɪɻ* does not belong to the root in question but indicates this aspect (cf. ibid.: lxxiii).

Guatuso |**k**iː| ‘to say, think’ (Constenla Umaña 1998: 28)

Ika [**ʒ**ɪn] ‘s/he says’ (Landaburu 2000a: 737)

Kogi /**g**u/ ‘to do, make’ (Ortiz Ricaurte 2000: 773)

Kuna ***s****aa* ‘to do, make, perform’ (Holmer 152: 133)

Muisca <ze**g**usqua> ‘to tell’ (González de Pérez 1987: 220)

Pech ***k****àʔ*, ***k****ìʔ* ‘to make’ (Holt 1999a: 74)

Rama ***k****uŋ* ‘to make’ (Grinevald et al. 2002–06)

Térraba *ʃĩ̃* ***ʃ****ĩk* ‘to tell’ (Constenla Umaña 2007: 261)

Tunebo *wakinro* ‘to say’ (Headland 1997: 221)

Compare also:
Bribri: Amubre, Katsi, Salitre *ɲɪʔ* ‘to say’ (Margery Peña 1982: 120)
Guaymí *ɲe* ‘to say’ (Quesada Pacheco 2008: 107)

To scratch, rub *ʦuH

Proto-Chibchan *ʦuh ‘to scratch, rub’ is very similar both to *suʔ ‘to peel’ (see above) and to *suh ‘to wash’ (see below). All three terms might be cognate and may originally derive from the same form.

Boruca *ʧux* ‘to scratch’ (Quesada Pacheco & Rojas Chaves 1999: 184)

Boruca *ʃúʔs* ‘to scratch’ (Quesada Pacheco & Rojas Chaves 1999: 184) may eventually turn out to belong here, too.

Dorasque: Gualaca <**θu**gé> (Pinart 1890: 14), <**zu**ge> ‘to scrub’ (Pinart 1882: 62)

I have no explanation for final <gé ~ ge>.

Muisca <b**chuhu**squa> ‘to rub, rub with water’ (González de Pérez 1987: 264)

The element <b-> indicates transitivity, <-squa> indicates imperfective aspect (cf. Adelaar & Muysken 2004: 90–1).

Tunebo ***suʔ****kinro* ‘to sharpen (a machete)’ (Headland 1997: 187)

Final *k* is probably a stem formative. The element *-n* indicates intention and *-ro* is a declarative marker (Headland 1997: 14).

Compare also:
Bribri: Coroma [ìˈsíʉ̋kˀ ~ ìˈsìʉ̋kˀ] ‘to scrape’ (Sp. *raspar*) (Chevrier 2017a: 608)
Térraba *zgók* ‘to scratch’ (Sp. *rascar*) (Constenla Umaña 2007: 270)

To see *su

One may tentatively reconstruct vowel nasality in this Proto-Chibchan form, given the reflexes in Rama, Cabécar, Bribri, and Kogi.

Cabécar **/sù̀ũà̰/** [**sù̀ṵã̰** ~ **sù̀ṵõ̰**] ‘to see, watch’ (Margery Peña 1989: xxix)

> The ending *-ũà̰* does not belong to the root (cf. Margery Peña 1989: lvii). The remotospective perfective form of this verb is *sṹr̃* (cf. ibid.: 543).

Damana *ˈtua* ‘seen’ (Trillos Amaya 2000: 752)

> Final *-a* indicates perfective aspect in Damana (Trillos Amaya 1999: 126).

Guaymí *tu* ‘to see’ (Quesada Pacheco 2008: 104)

Ika *ʧw* ‘to see’ (Landaburu 2000a: 747)

Kogi ***tu*** *ˈĩ̃* ‘to see’ (Ortiz Ricaurte 2000: 767)

> Related Kogi forms are *ˈtuĩ̃* [tũĩ̃] and [cuˈi] ‘to see’ (cf. Ortiz Ricaurte 2000: 760, 763). Final *-i* is a frequent ending in Kogi verbs (cf. Olaya Perdomo 2000: 781–2).

Rama *suŋ* ‘to see’ (Grinevald et al. 2002–06)

> Rama *tauli* ‘to see’ (Grinevald et al. 2002–06) may eventually turn out to belong here, too.

Compare also:

Bribri: Coroma [ìˈsɔ́ʔ] ‘to see’ (remotospective perfective form) (Chevrier 2017a: 198)

Chimila *túu* ‘to see’ (Huber & Reed 1992: 269)

Seed *^{n}du^{n}d-

*dur ‘to grow, live’ (Holt 1986: 101)

Constenla Umaña (1981: 411) juxtaposes the Guaymí (Movere), Bocotá, and Tunebo reflexes without reconstructing the Proto-Chibchan root.

Bocotá **/ʧuˈdɛ/** ‘seed’ (Margery Peña 1996: 11)

Kogi *-(l)ula* collective suffix (Ortiz Ricaurte 200: 770)

> The use of this suffix may be illustrated by the forms *kat-ula* ‘trees’, *hag-lula* ‘stones’, or *ni-lula* ‘rivers’ (ibid.). Huber and Reed (1997: 159) give Kogi *ˈzula* ‘seed’, which likewise derives from Proto-Chibchan *^{n}du^{n}d- ‘seed’.

Kuna ***nul****u* ‘almond, guava’ (Holmer 1952: 100)

Térraba ***duɬ****a* ‘seed’ (Constenla Umaña 2007: 274)

Tunebo ***rur****a* ‘seed, descendant (few generations)’ (Headland 1997: 170–1)

Compare also:

Bribri: Katsi *dùɽa* ‘egg’ (Margery Peña 1982: 131)

Chimila /ɾuuʔ/ ‘seed’ (Malone 2005: 207)

> This term tends to be used more frequently by younger speakers; older speaker prefer /kiɾiwaʔɾuuʔ/ [kīrìᵍwàʔɾúːʔ] ‘seed’. The tonal pattern of the latter form has been identified as mid–low–low–high–low (Malone 2005: 207).

Muisca <ab**sun**> ‘maize seed’, <iom**sun**> ‘potato seed’ (González de Pérez 1987: 319)

Damana *ʒan****duna*** ‘seed’ (Huber & Reed 1992: 159)

Rama *-lut* ~ *-dut* plural marker (Craig 1989: 91)

Seed, fruit *k^{w}a

*ˈpkua ‘seed, plant’ (Constenla Umaña 1981: 411)

Bocotá *ga ˈba* ‘fruit’ (Margery Peña 1993: 68)

> Related Bocotá forms may be *gaba-*, the numeral classifier for roundish objects (cf. Margery Peña 1993: 68), and the element /ɡaba/ in /ɡuˈa**gaba/** [ɡwˈa**ɣəba**] ‘eye’ (cf. Margery Peña 1996: 12). The element *guˈa* means ‘face’ (Margery Peña 1993: 70), eyes are thus conceived of as ‘seeds of the face’ in this language.

Guaymí *kwɔ-* numeral classifier for roundish entities and years (Quesada Pacheco 2008: 91)

> Guaymí /ŋwɔ/ ‘seed’ (Quesada Pacheco 2008: 28) probably belongs here, too.

Kuna *k^{w}ak^{w}a* ‘seed, kernel, meat (of fruit)’ (Holmer 1952: 63)

Muisca <u**pqua**> ‘eyes’ (González de Pérez 1987: 285)

> The element <u> or <up> derives from Proto-Chibchan *u^{m}ba ‘face, eye, fruit’. The element <-gua> in <a**gua**> ‘maize grain’ (González de Pérez 1987: 266) may have the same origin as the Muisca stem formative <-pqua>.

Térraba *kʰuɔ-* numeral classifier round entities (Constenla Umaña 2007: 87)

Related elements recur in Térraba *kʰuɔ́ria* ‘grain of a cereal’ (Constenla Umaña 2007: 248) and *kʰɔ́ɾ**kuɔ*** ‘fruit’ (ibid.: 247). The first element of the latter form, /kʰɔ́ɾ/, means ‘tree’ (ibid.: 26).

Compare also:

Bribri *kwâ* ‘plant (in the sense of a young tree, vine, etc., planted or suitable for planting)’ (Constenla Umaña 1981: 411)

Chimila **/waa**ruːʔ/ [ᵍ**wā**́ːɾùˑʔ] ‘fruit’ (Malone 2005: 207)

The tonal pattern of this form has been identified as mid–high–low by Malone (2005: 207).

Seven *kuh

*ˈkúh ‘seven’ (Constenla Umaña 1981: 411)

Atanques <**kú**ga> ‘seven’ (Celedón 1892a: 598)

Final <ga> is probably an old numeral classifier (cf. Pache 2016a).

Bocotá ***gu****gɛ* ‘seven’ (Margery Peña 1993: 71)

Final *gɛ* might be a fossilized numeral classifier (cf. Pache 2016a).

Boruca *kúx* ‘seven’ (Quesada Pacheco & Rojas Chaves 1999: 189)

Bribri: Amubre [**kû**ɽ] ‘seven’ (Chevrier 2017a: 232)

Final [-ɽ] does not belong to the root – compare Amubre, Katsi, Salitre *kú-/kù-* ‘seven’, the forms given by Margery Peña (1982: 152). The closely related Cabécar language does not seem to have a related term for ‘seven’ but instead uses a construction like ‘our (excl.) hand plus two’ (cf. Margery Peña 1989: xlvii–xlviii).

Guaymí ***ku****gu* ‘seven’ (Quesada Pacheco 2008: 91)

I have no explanation for final *gu*. It may be a fossilized numeral classifier, derived from Proto-Chibchan *kʷa ‘seed, fruit’.

Kogi /ˈ**ku**gua/ [ˈ**ku**gua] ‘seven’ (Ortíz Ricaurte 2000: 779)

Final /gua/ is probably a fossilized numeral classifier (cf. Pache 2016a).

Muisca <**qhu**pqua> ‘seven’ (González de Pérez 1987: 162)

Final <pqua> is probably a fossilized numeral classifier (cf. Pache 2016a).

To shine, shimmer

Bribri: Amubre, Katsi *daɽò*; Salitre *dɽò* ‘light’ (Margery Peña 1982: 135)

Bocotá *ʧaˈra* ‘light’ (Margery Peña 1993: 63)

Boruca *dat* ‘glitter (noun)’ (Sp. *relumbre*) (Quesada Pacheco & Rojas Chaves 1999: 185), *draxká* ‘sparkly, reflecting light’ (ibid.: 52), *draʔé* ‘brilliant’ (Sp. *brillante*) (ibid.: 123

Cabécar ***daɽó***ʊ, southern dialects: *dʊ**ɽó***ʊ ‘brilliant’ (Sp. *brillante*) (Margery Peña 1989: 425)

Muisca <achinan mague> ‘shimmery’ (González de Pérez 1987: 312)

Rama ***da:ra****tuk* ~ ***ja:ra****tuk* ‘lightning’ (Grinevald et al. 2002–06)

For the final element, compare Rama *tu**k*** ‘tail’ (Grinevald et al. 2002–06).

Térraba *ʒér* ‘flash, lightning’ (Constenla Umaña 2007: 271); *ʒeɾʒeɾ* ‘shiny, to shine’ (Sp. *brillante*, *brillar*) (ibid.: 235)

Shoulder

The forms given below seem to reflect *k^{w}ik ‘arm, wing, shoulder’ and *^{n}da(ki^{n}d) ~ *ta(ki^{n}d) ‘back$_1$’.

Barí [kɯ̃ˈɪ̃^{n}dà] ‘back’

Boruca *kuíktaŋ* ‘shoulder’ (Quesada Pacheco & Rojas Chaves 1999: 152)

Guaymí ***kɤdɔ****rɔ* ‘shoulder’ (Quesada Pacheco 2008: 52)

Final *rɔ* probably does not belong to the root in question.

Tunebo *kuistoka* (Headland 1997: 120), *k^{w}ik-toka* ‘shoulder’ (Huber & Reed 1992: 19)

Hyphenation in the second form is adopted from Huber and Reed (1992: 19).

Side *suu^{n}d

*sul(u) ‘side, flank, edge’ (Holt 1986: 122)

Boruca *sut* ‘side’ (Quesada Pacheco & Rojas Chaves 1999: 158)

Térraba ***sɔ́****rgɔ* ‘next to, behind, around’ (Constenla Umaña 2007: 206)

A related form in Teribe is /sɻoŋ/ ‘next to’ (cf. Quesada 2000a: 23).

Tunebo *riʔ **a∫óra*** ‘shore of the river, riverside (scree)’ (Headland 1997: 163)

I have no explanation for final *a*. For the element *riʔ*, compare ***riʔa*** ‘water, river’ (Headland 1997: 163).

Compare also:

Dorasque: Gualaca <**θaú**gua> ‘lips’ (Pinart 1890: 18); Dorace <shur> (Constenla Umaña 1984: 84)

Ika [**tun**ə] ‘lips’ (Landaburu 2000a: 735), [**tʰun**ə] ‘lips’ (ibid.: 736)

I have no explanation for final [ə]. The initial consonant *t* instead of expected *ʧ** might be due to the long vowel in the proto-form.

Kogi <avīta**suna**> ‘lung’ (Preuss 1927: 514)

The lung might be conceived of as the organ ‘next to the liver’ in Kogi: compare the form <avīta> ‘liver’ (Preuss 1927: 514).

Kuna ***sul**le* ‘edge’ (Holmer 1952: 149)

Final *-le* is not part of the root in question. According to Holmer (1947: 62), this suffix indicates meanings such as ‘made into’, ‘made like’, or ‘connected with’. The initial consonant *s* instead of expected *n** might be due to the long vowel in the proto-form.

Pech <surú> ‘side’ (Sp. *costado*) (Conzemius 1928: 293)

To sing, song

*ˈtA ‘to sing’ (Constenla Umaña 1981: 412)

*ti (or *tɨ) ‘to say, tell’ (Holt 1986: 129)

Kuna ***na**makka* ‘to sing’ (Holmer 1952: 86)

The right-hand element in this form, *makka*, does not belong to the root in question but is related to the verb *i-makka-* ‘make, do’ (Holmer 1947: 160).

Muisca <ty> ‘song’ (González de Pérez 1987: 208)

Térraba *tí* ‘to sing’ (Constenla Umaña 2007: 237)

Tunebo ***ta**nro* ‘to sing’, ***te**nanro* ‘to sing (a cricket or a bird)’ (Headland 1997: 241)

Sister-in-law

Boruca *dai* ‘sister-in-law’ (Quesada Pacheco & Rojas Chaves 1999: 134)

Guatuso /ɬoːi/ ‘sister-in-law’ (Constenla Umaña 1998: 15)

To sit (singular) *ʦaʔ

*ˈʦã ‘to stick (a spear), insert, put in’ (Constenla Umaña 1981: 417)

*ši-k-/*ša-k- ‘to set, put’ (Holt 1986: 124)

The reflexes in Muisca and in Bribri suggest that this Proto-Chibchan verb originally was used with singular subjects.

Ika *sa* ‘sitting’ (Sp. *sentado*) (Landaburu 2000a: 747)

Muisca <b**za**squa> ‘to put (one thing)’ (González de Pérez 1987: 299)

> The element <b-> indicates transitivity, <-squa> indicates imperfect aspect (Adelaar & Muysken 2004: 90–1).

Pech *ʃà-* ‘to be, live, be born, inhabit’ (Holt 1999a: 46).

> Pech *ʃàh-* ‘to sit’ (Holt 1999a: 46) might be related. I have no explanation for final *h* in this form.

Rama *-sai* ‘persisting aspect’ (Craig 1989: 157–158)

> Final *i* might be derived from the Proto-Chibchan imperfective marker *-e (see above).

Compare also:

Boruca *ʦáŋ* ‘to put’ (Quesada Pacheco & Rojas Chaves 1999: 164)

Bribri: Amubre, Coroma [ʧĩɾ] ‘to be sitting (sg.)’ (Chevrier 2017a: 593); Amubre, Katsi, Salitre *ʦoʔ* ‘to be’ (Sp. *estar*) (Margery Peña 1982: 124)

Teribe /sʊk/ ‘to sit’ (Quesada 2000a: 10)

Térraba *su*, *sʊ* ‘to live, dwell’ (Constenla Umaña 2007: 281)

Tunebo ***ʃá****kinro* ‘to put, keep’ (Headland 1997: 124)

Six *tai^{n}d-

*ˈted ‘six’ (Constenla Umaña 1981: 412)

*tɨr ‘six’ (Holt 1986: 132)

*tai(-da) ‘six’ (Levinsohn 1975: 16)

Proto-Colombian Chibchan *tai ‘six’ (Wheeler 1972: 107)

Bocotá ***tɛ***ˈ***ɾ***ɛgɛ ‘six’ (Margery Peña 1993: 91)

Bribri: Amubre [ˈ**tɛ́r**ò] ‘six’ (Chevrier 2017a: 610)

> Final [ò] probably is not part of the root in question. Margery Peña (1982: 151) gives Amubre, Katsi, Salitre *tèr-* ‘six’.

Kuna ***ner****k^{w}a* (Holmer 1947: 99)

Muisca <taa> ‘six’ (González de Pérez 1987: 162)

> I have no explanation for the vowel gemination in this form.

Pech ***sèr****a* ‘six’ (Holt 1999a: 63)

> I have no explanation for the falling tone.

Térraba *t^{h}ɛɾ* ‘six, without class indication’ (Constenla Umaña 2007: 273)

> Teribe *ter* ‘six’ (Quesada 2000a: 49)

Tunebo ***tér****aja* ‘six’ (Headland 1997: 199)

> Final *-ja* or *-ia* recurs in other Tunebo numerals, for instance *kuku****ia*** ‘seven’ (cf. ibid.: 115).

Compare also:

Atanques <jín-ua> ‘six’ (Celedón 1892a: 598)

Boruca *téʃaŋ* ‘six’ (Quesada Pacheco & Rojas Chaves 1999: 188)

Ika <chíngua> ‘six’ (Constenla Umaña 1981: 318)

Skin *huka ~ *huBa ~ kuaʔ

*hukə́ ‘skin, bark’ (Constenla Umaña 1981: 413)

*huk$^{(w)}$a ‘skin, hide, bark’ (Holt 1986: 103)

*u’ka ‘hide, skin’ (Holmer 1947: 207)

The ‘skin’ terms in most Chibchan languages from Central America reflect a form *kuaʔ. This is the case in Bribri, Cabécar, Térraba, Bocotá, Guaymí and Boruca. The ‘skin’ terms of several Chibchan languages from Colombia reflect *huBa. This is the case in Atanques, Kogi, and Tunebo. Finally, the reflex of *huka is attested in Rama (eastern Nicaragua), Dorasque (western Panama), and some Chibchan languages from Colombia. Whether or not this latter form comes closest to the original Proto-Chibchan form remains to be established.

Atanques <uman**júma**> ‘eyelid’ (Celedón 1892a: 597)

The first element <uma> derives from *u^{m}ba ‘fruit, seed, face’.

Bocotá **/ku**ˈ**a**ɾa ~ **gu**ˈ**a**ɾa/ ‘skin’ (Margery Peña 1996: 19)

Final /ɾa/ might be a stem formative. The Bocotá ‘skin’ term recurs in *ˈka **gu**ˈ**a**ɾa* ‘lips’ (cf. Margery Peña 1993: 78).

Boruca ***kuáʔs*** ‘bark, husk, skin’ (Quesada Pacheco & Rojas Chaves 1999: 127, 312, 178)

I have no explanation for final *s* in this form.

Bribri: Amubre, Coroma [ˈ**kwô**-ʈ̀ìt] ‘skin, leather’ (Chevrier 2017a: 473)

Hyphenation is adopted from Chevrier (Chevrier 2017a: 473).

Cabécar /kuó/ [kʉ̟́] ‘skin, bark’ (Margery Peña 1989: xl)

The corresponding form in northern dialects and Ujarrás is /k^{h}uó/ [q^{h}ʉ̟́] ‘skin’ (Margery Peña 1989: xx).

Dorasque: Chumulu, Gualaca <ugá> (Pinart 1890: 11, 26), Gualaca <uga> ‘skin’ (Pinart 1882: 66)

Guaymí ***kwa**ta* ‘bark’ (Quesada Pacheco 2008: 50)

A related Guaymí form is probably ***kwɔs***- ‘to peel’ (Quesada Pacheco 2008: 102). Final *ta* in *kwata* ‘bark’ might be a stem formative (compare the corresponding form in Bocotá).

Kogi /aˈ**huba**/ [aˈ**huba**] ‘skin’ (Ortiz Ricaurte 2000: 779)

A related form may be /tuˈba/ ‘naked’ (cf. Ortiz Ricaurte 2000: 767). Initial /a-/ in /aˈhuba/ ‘skin’ is a fossilized possessive element; it recurs in **/a**ˈke/ [**a**ˈxe] ‘leaf’ (cf. ibid.).

Kuna *ukka* ‘skin, bark, shell, scales (of fish)’ (Holmer 1952: 172)

Muisca <huca> ‘skin of an animal, bark’ (González de Pérez 1987: 221, 223)

Pech *suk-**uk*** ‘porcupine’ (Holt 1986: 283)

> Morphological analysis adapted from Holt (1986: 283). I have no explanation for the absence of a reflex of final *a in the Pech form. The element *suk* in *suk-**uk*** ‘porcupine’ may derive from *^{n}duk / *suk ‘prick, sting, point’.

Rama *uːk* ‘skin’ (Grinevald et al. 2002–06)

Térraba ***kuɔ́**ta* ‘skin’ (Constenla Umaña 2007: 267)

> I have no explanation for final *ta*. This form is strikingly reminiscent of its Guaymí counterpart (see above).

Tunebo *umá* ‘skin’ (Headland 1997: 269)

> Tunebo *ohka* ‘body’ (Headland 1997: 148), might ultimately belong here, too. Like Kuna *ukka* (see above) it may derive from a form *uhka.

Compare also:

Pech *kə̰ːwa* ‘bark’ (Holt 1986: 103, 106)

Teribe ***po**gro* ‘skin’ (Quesada 2000a: 169)

Ika z**omə** ‘bark, leather, skin’ (Landaburu 2000a: 734)

To sleep *kap-

*kAp- ‘to sleep’(Constenla Umaña 1981: 414)

*k'ap ‘to sleep’(Holt 1986: 112)

Pre-Muisca *kəp- ‘to close eyes, sleep’ (Holmer 1947: 208)

Barí [**kāb**ˈɾūmī] ‘you sleep’

> The element [-ɾ(ū)] seems to indicate the involvement of a speech-act participant, whereas [-mi] indicates the second person singular subject.

Barí, eighteenth century, <koba> ‘to sleep’ (Rivet & Armellada 1950: 33)

Bocotá *gɛˈbɛ* ‘to sleep’ (Margery Peña 1993: 69)

Boruca *kap* ‘to sleep’ (Quesada Pacheco & Rojas Chaves 1999: 138)

Cabécar ***kapíɣ*** ‘to sleep’ (Margery Peña 1989: 425)

Remotospective perfective form; *-ɣ* is a morpheme indicating this aspect (Margery Peña 1989: lxxiii).

Dorasque: Chumulu <**káb**iya> ‘sleep (noun)’, <**χáb**era> (Chumulu) ‘to go to bed’ (Pinart 1890: 4, 30); Gualaca <**káb**iya> ‘sleep (noun)’ (ibid.: 30), <**kab**igal> ‘to sleep’ (ibid.: 12), <**cab**iya> ‘sleep (noun)’, <**cab**igal> ‘to sleep’, <c**ab**ical> ‘to dream’ (Pinart 1882: 62)

I have no explanation for the morphological elements that follow the roots.

Guaymí *kubu* ‘to sleep’ (Quesada Pacheco 2008: 107)

A related Guaymí form is *kɤbɤ* ‘to dream’ (cf. Quesada Pacheco 2008: 105).

Ika **/kəmə**N/ [**qɒm**ʌŋ] ‘to sleep’ (Landaburu 2000a: 736)

Landaburu (2000a: 747) gives Ika *kəm-* ‘to sleep’.

Kogi **/ka**ˈ**b**aʃi/ [**ka**ˈ**b**aʃi] ‘to sleep’ (Ortiz Ricaurte 2000: 779)

Final *-ʃi* is a frequent ending in Kogi verbs (cf. Olaya Perdomo 2000: 781–2).

Kuna ***kap****a* ‘to sleep’ (Holmer 1952: 47)

Muisca <z**quyb**ysuca, a**quyb**a> ‘to sleep’ (González de Pérez 1987: 243)

The element <z-> is a first-person marker, <-suca> indicates imperfective aspect (Adelaar & Muysken 2004: 90–1).

Pech ***ò:****k-* ‘to sleep’ (Holt 1999a: 44)

The element *-k* does not belong to the root but is a semelfactive/punctual marker (Holt 1999a: 44). Holt (ibid.) proposes that Pech *ò̀:n-* ‘to die’ contains the same root, which is combined with an iterative/durative suffix *-n* (‘to die’ = ‘to sleep for a long time’).

Rama ***kam****i:* ‘to sleep’ (Grinevald et al. 2002–06)

I have no explanation for the vowel length in final *i:*.

Tunebo ***kám****inro* ‘to sleep’ (Headland 1997: 102)

The element *i* might recur in *rihk**i**nro* ‘to sow’ (cf. Headland 1997: 164). The element *-n* indicates intention and *-ro* is a declarative marker (ibid.: 14).

Compare also:

Atanques <kamam pariáo> ‘to sleep’ (Celedón 1892a: 593)

Bribri: Amubre, Katsi *kapɪ* ‘to sleep’ (remotospective perfective form) (Margery Peña 1982: 47)

Térraba *pí* ‘to sleep’ (Constenla Umaña 2007: 243)

Slope, mountain

Barí [ˈɟɛ̃ɛ̃ɾɑ̃̀] ‘mountain, hill’

Cabécar: northern dialects *ʤɐɽɪ* ‘mountain range’ (Sp. *sierra*) (Margery Peña 1989: 355)

Damana [siˈɾ̥i] ‘top of a hill’ (Trillos Amaya 2000: 751)

Dorasque: Gualaca <tiani> ‘ravine’ (Sp. *quebrada*) (Pinart 1890: 27)

Ika /ʤirigakə/ [ʤiɾiɢɒkə] ‘hill’ (Landaburu 2000: 736)

> Final [gɒkə] is probably derived from Proto-Chibchan *kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’.

Kuna *jala* ‘side, hill, mountain, plain, valley, the world’ (Holmer 1952: 188)

Tunebo *terá* ‘hill’ (Sp. *loma (de un alto)*) (Headland 1997: 199)

> Compare also *jira* ‘slope, belly’ (Sp. *lado (del cerro, falda); barriga, vientre*’ (Headland 1997: 230).

Small$_1$ *Bu^{n}d-

*pulu (or *bulu ?) ‘round’ (Holt 1986: 155)

Chánguena <**bur**i> ‘little’ (Sp. *poco*) (Pinart 1890: 27)

Guaymí ***bu*ɾ*e*** ‘tiny’ (Quesada Pacheco 2008: 51)

Kogi /aˈ**bul**u/ ‘small’ (Ortiz Ricaurte 2000: 768)

> Ortíz Ricaurte (2000: 765) also proposes the existence of a suffix /-bulu/ in terms that refer to small entities.

Kuna ***pur****wik^{w}at* ‘small’ (Holmer 1952: 132)

> Holmer (1952: 132) also gives the Kuna form *purik^{w}at* ‘small’. The element *(i)k^{w}at* is probably not part of the root. A similar element recurs in *nappik^{w}ak^{w}at* ‘last’, derived from *nappi* ‘enough, more, last, finally’ (cf. ibid.: 87–8).

Compare also:

Damana -ˈ***bur****u* plural/diminutive (Trillos Amaya 2000: 753)

Small$_2$ *tsi^{n}d(a)

*ˈ¢id ‘small’ (Constenla Umaña 1981: 415)

*ci(n) ‘thin, small’ (Holt 1986: 143)

Bribri: Amubre [tsíɾ] ‘small’ (Chevrier 2017a: 167)

Damana /gəmuˈ**ʃina/** ‘children’ (Trillos Amaya 2000: 754)

The first element derives from Proto-Chibchan *^{ŋ}ga^{m}ba ‘son, child’. Related forms are -*ʤina* ‘plural’ (Trillos Amaya 2000: 753) and *sin* in Damana ***sin****duʒi* ‘hummingbird’ (Huber & Reed 1992: 128).

Ika *gəmə**(sinə)*** [gʌmə-**sinə**] ‘son, generation’ (Landaburu 2000a: 734, 737)

The first element derives from Proto-Chibchan *^{ŋ}ga^{m}ba ‘son, child’.

Rama *urmut* ***siːra*** ‘small guts’ (Grinevald et al. 2002–06).

The first element *urmut* means ‘guts’ (Grinevald et al. 2002–06). I have no explanation for the vowel length in *siːra*.

Compare also:

Cabécar: northern dialects [tsi̋ndàɽâ] ‘small’ (Margery Peña 1989: xxviii)

Chánguena <***c*itran**-biá> ‘daughter’, <*c*itran> ‘son’ (Pinart 1890: 17)

Dorasque: Chumulu <*c*itriga> ‘small’ (Pinart 1890: 9, 26)

Kogi **/sin**ˈduli/ ‘hummingbird’ (Ortiz Ricaurte 2000: 762)

The right-hand element in **/sin**ˈduli/ ‘hummingbird’ seems to derive from Proto-Chibchan *^{n}du(^{n}d) ‘bird, dove’. The order of head and modifier in **/sin**ˈduli/ ‘hummingbird’ is somewhat unexpected; normally, the order is the other way around in Kogi (cf. Ortiz Ricaurte 2000: 768).

Kuna *seni* ‘little’, especially in compound forms (Holmer 1952: 139)

Teribe /tsiɾa/ [tsiˈɾa ~ siˈɾa] ‘a little, some’, /ʧiɾa/ [ˈʧiɾa] ‘small’ (Quesada 2000a: 24), *kwo**zir***, *kwo**zir**wa* ‘child’ (ibid.: 47, 53)

Térraba *kʰuɔtíɾa* ‘small (for non-longish objects)’ (Constenla Umaña 2007: 267)

Tunebo: Tegría ***sin****jará* ‘banana (small, the last that remain in the bunch), youngest child’ (Headland 1997: 180), *buk**ʧira*** ‘guts, small guts’ (ibid.: 94, 218)

Small guts, small intestine

Rama *urmut siːra* ‘small guts’ (Grinevald et al. 2002–06)

Tunebo *buktʃira* ‘small intestine’ (Headland 1997: 218)

Smell *Laʔ

*hALÀ ‘smell, odor’ (Constenla Umaña 1981: 415)

Cabécar *haɻar* ‘smell (noun)’ (Margery Peña 1989: 490)

> In southern dialects, the respective form is *aɻar* ‘smell (noun)’ (Margery Peña 1989: 490). I have no explanation for final *r*.

Dorasque: Chumulu, Gualaca <**aná***oca*> ‘smelly’ (Pinart 1890: 16), Gualaca <**ana**ocha> ‘stink, smelliness’ (Pinart 1882: 55)

> I have no explanation for final <o*c*a ~ ocha>.

Guaymí *rɔ* ‘smell (noun)’ (Quesada Pacheco 2008: 88)

Térraba /Iɔ́/ [I̤ɔ́ʔ] ‘smell (noun)’ (Constenla Umaña 2007: 21)

> The counterpart of this form, in Teribe, is /nõ/ ‘bad smell’ (cf. Quesada 2000a: 17).

Compare also:

Bribri: Amubre, Katsi, Salitre *aɻaʔ* ‘smell (noun)’ (Margery Peña 1982: 142)

Kogi <hala, halala> ‘smell (noun)’ (Preuss 1927: 509)

Muisca <a> ‘smell (noun)’ (González de Pérez 1987: 286)

Snake *taka^{m}b- ~ *ta^{m}bak

*tAkAbÌ ‘snake’ (Constenla Umaña 1981: 415)

*tɨkub ‘snake’ (Holt 1986: 269)

In some Chibchan languages, the terms for ‘snake’ and ‘bow’ or ‘rainbow’ seem to be related, for instance in Rama: compare *sarkin* ‘boa’ and *sarkiŋmaŋkat* ‘rainbow’ (old term) (Grinevald et al. 2002–06). A similar semantic association between the snake and the rainbow is found in Taruma (isolate) where *báhũ* may both refer to ‘snake’ and to ‘rainbow’ (cf. Meira 2015).

Boruca *tebek* ‘snake’ (Quesada Pacheco & Rojas Chaves 1999: 189)

Bribri /tkaˈbí/, Amubre [kʲìˈbí ~ kʲàˈbí], Coroma and Amubre [ʧəˈbí ~ ʧìˈbí] ‘snake’ (Chevrier 2017a: 422)

The similarity with Coroma [tkàˈbíʔ ~ kkàˈbíʔ ~ káˈbíʔ] ‘dragonfly’ (Chevrier 2017a: 123) is striking; I have no explanation for this phenomenon. A semantic connection might also exist between the ‘snake’ concept and Amubre [[tʲə̀ˈβí-kòɽ ~ ʧə̀ˈbí-kòɽ] ‘rainbow’ (ibid.: 326) or Coroma [ʃkə́ˈmɛ́ʔ ~ ʃkə̰́ˈmɛ́ʔ] ‘bow’ (ibid.: 110).

Cabécar /tkabì/ [tkəbî] ‘snake’ (Margery Peña 1989: xviii)

Cabécar *dikabá* ‘eel’ (Margery Peña 1989: 376) may belong here, too; the same is true for *ʃkabéi ~ ʃikabá* (northern dialects), *ʃkabá* ‘rainbow’ (southern dialects), and *ʃkẽmẽ* (southern dialects) ‘bow’ (ibid.: 381).

Guaymí *tibi* a snakelike supernatural being (cf. Quesada Pacheco 2008: 56)

Kogi /ˈtagbi/ [ˈtaʁbi] ‘snake’ (Ortiz Ricaurte 2000: 779)

Kuna *nakpe* ‘snake’ (Holmer 1952: 84)

Compare also the lenited form *naipe* (Holmer 1952: 83), and *tappa* ‘boa’ (ibid.: 154). Whether or not the latter form belongs here, too, still needs to be worked out.

Compare also:

Dorasque: Gualaca <daibíke> ‘caiman’ (Pinart 1890 7)

Térraba *ɸʊkɾɔ́* ‘eel’ (Constenla Umaña 2007: 232)

Tunebo *ricumá* ‘snake’ (Headland 1997: 246)

Soft *ʦsi^{n}di

*cidi ‘inside(s)’ (Holt 1986: 97)

Pech *sə̀-**sirí*** ‘brain’ (Holt 1986: 97)

The first element *sə̀* derives from Proto-Chibchan *ʦsa ‘hair, head’.

Rama ***si:rka*** ‘soft, lazy’ (Grinevald et al. 2002–06)

Final *ka* is probably not part of the root.

Compare also:

Cabécar: northern dialects *tsĩnĩ* ‘rubber’ (Margery Peña 1989: 320)

Soil

Cabécar ***hĺ́ʃo****kó*, ***hĺ́s****kĩ* ‘soil’ (Margery Peña 1989: 530)

Final *kó* is a frequently attested stem formative in Cabécar; it recurs, for instance, in /ɟò**kó**/ ‘fire, fireplace’ (cf. Margery Peña 1989: xix)

Barí, eighteenth century, <**is**ta> ‘ashes’ (Rivet & Armellada 1950: 32)

Barí [**ɪç**tã̀] ‘soil’

Bribri: Amubre, Coroma [ĺ́s] ‘soil’ (Chevrier 2017a: 102)

Compare also Amubre, Katsi, Salitre *ĺ́s* ‘soil’ (Margery Peña 1982: 42)

Muisca <**hich**ac izone> ‘to be buried’ (González de Pérez 1987: 258)

Muisca <izone> is translated as ‘to be’ (Sp. *estar*) in González de Pérez (1987: 261); final <-c> is a locative case marker (Adelaar & Muysken 2004: 99). Compare also Muisca <eta> ‘foundation’ (Sp. *cimiento*) (González de Pérez 1987: 225).

Compare also:

Chimila /itti/ [ʔítːìʔ] ‘earth’ (Malone 2005: 204)

Duit <ita> ‘earth, land’ (Lehmann 1920: 53)

Son, child *^{ŋ}ga^{m}ba

*dawa (~ *daba) ‘man, person, boy, enemy’ (Holt 1986: 98)

*gAbÀ ‘son’ (Constenla Umaña 1981: 416)

Atanques <göma> ‘son’ (Celedón 1892a: 595)

Barí [ˈābà] ‘chick’

Barí, eighteenth century, <aba> ‘son’ (Rivet & Armellada 1950: 35)

Boruca *ɾá****ʤaba*** ‘nephew, niece’ (Quesada Pacheco & Rojas Chaves 1999: 190)

Initial *ɾá* is probably a relational element.

Cabécar *ɟaba* ‘child, son, daughter, nephew, niece, godchild, grandchild’ (Margery Peña 1989: 452)

Damana *gəma* ‘child’ (Trillos Amaya 2000: 753)

Guaymí /ŋobo/ ‘son’ (Quesada Pacheco 2008: 24)

The velar nasal probably reflects old vowel nasality. In several South American languages, nasality may indicate affection (cf. Pache 2016b: 122).

Ika /gəmə/ ‘son’ (Landaburu 2000a: 734)

Compare also:
Bribri: Amubre *ɟabé* ‘small’ (Margery Peña 1982: 145)

Soul, spirit

Kuna *nia* ‘spirit, evil spirit, devil’ (Holmer 1952: 94)

Cabécar, San José Cabécar dialect [**dió**kʊɽ] ‘shadow, picture, photo’ (Margery Peña 1989: 59)

The element [kʊɽ] is probably a stem formative, derived from Proto-Chibchan *ka^{n}d- ~ *kat-.

Térraba ***dió****gɾɔ* ‘soul’ (Constenla Umaña 2007: 232), ‘spirit’ (ibid.: 245)

Final *-gɾɔ* has the same origin as its counterpart in the Cabécar form (see above).

Compare also:
Bribri: Amubre, Katsi, Salitre ***dió****kʊɽ* ‘photo’ (Margery Peña 1982: 126)

Soup

Boruca *ʃuxdíʔ*, *ʃúxt* ‘soup’ (Quesada Pacheco & Rojas Chaves 1999: 190)

The element *díʔ* in Boruca *ʃuxdíʔ* ‘soup’ may derive from Proto-Chibchan *^{n}diʔ ‘water, river’.

Chánguena <suvá> ‘porridge’ (Sp. *mazamorra*) (Pinart 1890: 21)

Dorasque: Chumulu <subá>, Gualaca <θubá> ‘porridge’ (Sp. *mazamorra*) (Pinart 1890: 21)

Muisca <suque> ‘porridge’ (Sp. *mazamorra*) (González de Pérez 1987: 276)

Tunebo *sukua* ‘soup’ (Headland 1997: 186)

To sow *^{n}dihk-

*ˈdi ‘to plant’ (Constenla Umaña 1981: 407)

*ˈdihke ‘to sow’ (Constenla Umaña 2012: 420)

*di꞉k ‘to sow, plant’ (Holt 1986: 100)

Barí, eighteenth century, <**dig**a-r> ‘to sow’ (Rivet & Armellada 1950: 41)

Final <-r> is analyzed as an ending by Rivet and Armellada (1950: 41).

Térraba ***dɪgí*** ‘to sow’ (Constenla Umaña 2007: 274)

Tunebo ***rihk****inro* ‘to sow’ (Headland 1997: 164)

Final *i* in this form may be related to *i* in *kám**i**nro* ‘to sleep’ (cf. Headland 1997: 102). The element *-n* indicates intention and *-ro* is a declarative marker (ibid.: 14)

Compare also:

Cabécar *tkʊ* ‘to sow’ (Margery Peña 1989: 525)

Guaymí *nugara* ‘in order to sow’ (Quesada Pacheco 2008: 176)

Kuna *tika* ‘to put down (especially into the earth), sow, bury’ (Holmer 1952: 159)

Muisca <b**xi**squa ‘to sow’ (González de Pérez 1987: 318)

Pech ***tì****:ʃ-* ‘to sow, plant’ (Holt 1986: 100)

Spoon, ladle *tsui^{n}d ~ *tsu^{n}di

Kuna *noi**sui*** ‘calabash with handle for dipping’ (Holmer 1952: 97)

The first element of this compound forms is *noka* ‘calabash, drinking vessel, cup, *totuma*’ (cf. Holmer 1952: 97).

Muisca <**chui**a> ‘spoon’ (González de Pérez 1987: 223)

Final <a> might be a later addition and not inherited from Proto-Chibchan.

Térraba /ʒuíŋ/ [ʒwíŋ ~ ʒ^{u}wíŋ] ‘spoon’ (Constenla Umaña 2007: 21)

Voicing of the initial affricate in this Térraba form probably reflects (former) nasality of the following vowel.

Compare also:

Rama <**sulín**up> ‘pot spoon’ (Rigby & Schneider 1989: 166)

To stand (singular) *^{n}du-

Reflexes of this form in Bribri and Muisca suggest that this Proto-Chibchan form was used with singular subjects.

Bribri: Coroma [**dú**ɾ] ‘to stand (singular)’ (Chevrier 2017a: 594)

Final [ɾ] is probably not part of the root in question.

Cabécar ***dúɾ*** ‘to stand’ (Margery Peña 1989: 435)

Similar to the situation in Bribri, final *-ɾ* is probably not part of the root in question.

Damana *nu* ‘to be’ (Sp. *estar*) (Trillos Amaya 2000: 753)

Duit <a-**su**gu-nu> ‘he is’ (Lehmann 1920: 54)

The morpheme boundaries are adopted from Lehmann (1920: 54). The element <sugu> has a parallel in Muisca <i**sucu**n> ‘to be, singular’ (Sp. *estar*) (cf. González de Pérez 1987: 261).

Guaymí *nũ* ‘to live’ (Quesada Pacheco 2008: 106)

Ika ***nu-****k-* ‘to be’ (Sp. *estar*) (Landaburu 2000a: 741, 743)

Final *-k* is a stem formative and does not belong to the root (Landaburu 2000a: 741). It might be derived from a Proto-Chibchan nominalizer (see above).

Muisca <-**su**ca> imperfective aspect marker in finite verbs (González de Pérez 1987: 84; Adelaar & Muysken 2004: 91)

Final <ca> is probably cognate with final *-k* in Ika ***nu-****k-* ‘to be’ (Sp. *estar*) (cf. Landaburu 2000a: 741, 743) and may derive from a Proto-Chibchan nominalizer *-ka (see above). In Muisca, a reflex of Proto-Chibchan *-^{n}du is also found in <i**sucu**n> ‘to be, singular’ (Sp. *estar*) (González de Pérez 1987: 261).

To stand

Boruca *kuiní* ‘to exist’ (Quesada Pacheco & Rojas Chaves 1999: 144, 150)

Kuna *k^{w}itfi* ‘to stand’ (Holmer 1952: 65)

Star, Pleiades

Dorasque: Chumulu <uχúse> ‘star’ (Pinart 1890: 14)

Ika <ukus> ‘Pleiades’ (Celedón 1892b: 602)

Kogi <uká> ‘Pleiades’ (Preuss 1927: 492), [ˈuχa] a certain star (Ortiz Ricaurte 2000: 763)

Stick, bone, tree *ka^{n}d- ~ *kat-

*ˈkàrə ‘bone’ (Constenla Umaña 1981: 367)

*ˈkər ‘tree’ (Constenla Umaña 1981: 425)

*kaˈri ‘tree’ (Constenla Umaña 1981: 426)

*ˈkarə́ ‘tree, trunk of a tree, wood’ (Constenla Umaña 1981: 426)

*kad(a) (~ *kal) ‘tree, stick’ (Holt 1986: 106)

*kada ‘bone’ (Holt 1986: 106)

*pan ‘stick, bone’ (Holt 1986: 117) may likewise belong here.

Proto-Colombian Chibchan *kai-de ‘bone’ (Wheeler 1972: 105)

*kəla(y) ‘bone, leg’ (Holmer 1947: 207)

In some cases, Chibchan languages have a form reflecting final *i: Guaymí *kɾi* ‘tree’ (Quesada Pacheco 2008: 51), Bocotá /ˈgli/ ‘tree (generic), stick’ (cf. Margery Peña 1996: 11), eighteenth-century Barí <kanī> ‘bow’ (Rivet & Armellada 1950: 30). In some cases *ka^{n}di may have metathesized to *kai^{n}d; this seems to be reflected, for instance, in Dorasque (Chumulu, Gualaca) <**kel**á> ‘fence’ (Pinart 1890: 9) and Tunebo ***ker**á* ‘wall, fence, generally made from upright sticks’ (Headland 1997: 154).

Considering the variation between Proto-Chibchan *ka^{n}d- and *kat-, it is interesting to observe a similar alternation in Qawasqar *q^{h}ar* ‘bone, tree’ and *q^{h}at* ‘leg’ (cf. Clairis & Viegas Barros 2015).

Atanques <**kán**e> ‘stick’ (Celedón 1892a: 597)

Atanques <**kandi**na> ‘tree’ (Celedón 1892a: 592) reflects the same proto-root. Final <na> is probably a stem formative. A cognate ending may be attested in <kumá**ne**> ‘belly’ (cf. ibid.).

Barí [ā**q**:**ā**ˈ**ɾà**] ‘bone’

Barí [kɜ̃ɾɪ̃ɪ̀] ‘bow’ may also belong here.

Barí, eighteenth century, <a**kar**à> ‘bone’ (Rivet & Armellada 1950: 39)

The prefixed element <a-> may be a possessive marker; the form <kanī> ‘bow’ (Rivet & Armellada 1950: 30) may belong here, too.

Bocotá /gaˈda/ [gəˈða] ‘bone’ (Margery Peña 1996: 16)

This form is related to Bocotá *gada-* numeral classifier for longish entities (Margery Peña 1993: 68), *ˈka**gada*** ‘jaw, cheek’ (ibid.: 78); *ˈhẽ**gra*** ‘intestines, guts’ (ibid.: 74); *ʧiˈga**gata*** ‘skull’ (ibid.: 65); /ˈgli/ ‘tree (generic), stick’ (cf. ibid.: 70, 1996: 11).

Boruca *kráŋ* ‘stick, tree’ (Quesada Pacheco & Rojas Chaves 1999: 118, 178)

Bribri: Amubre, Coroma [káɽ] ‘tree’ (Chevrier 2017a: 167)

Coroma [ktáʔ] a tree species (Chevrier 2017a: 118). Margery Peña (1982: 110, 143) gives Amubre, Katsi, Salitre *kàɽ* ‘tree, stick’.

Cabécar *kaɽ* ‘tree’ (Margery Peña 1989: 379)

Cabécar *kɽó* ‘tree, foot, leg’ (Margery Peña 1989: 379, 496, 502) and *kata* northern dialects ‘stick’, southern dialects ‘handle’ (ibid.: 133) also belong here.

Chimila /-kɾa(ʔ)/ stem formative (cf. Malone 2005)

This element is attested in several body-part terms, for instance in /kiˑ**kɾaʔ**/ [kíˑ**kràʔ**] ‘bone’ (Malone 2005: 203) or /bitta**kɾa**/ [ᵐbítˑā**krà**] ‘chest’ (ibid.: 202). For initial /kiː/ in Chimila ‘bone’, compare Damana ***ki**-kɨra* ‘bone’ (Huber & Reed 1992: 32) which seems to contain a cognate element. Chimila /bitta/ in the ‘chest’ term derives from Proto-Chibchan ᵐbihⁿda ~ ᵐbihta ‘heart, liver, center$_1$’ (see above). Malone (2004: 189) gives *kɾa-* as a numeral classifier for corn cobs, which likewise derives from Proto-Chibchan *kaⁿd- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Damana /kən/ ‘firewood’ (Trillos Amaya 2000: 753)

Huber and Reed (1992) give *kɨn* ‘stick’ (p. 160) or ‘tree’ (p. 152), *ki-kɨra* ‘bone’ (p. 32), and *kɨna* ‘leg’ (p. 25), which all belong here.

Dorasque: Chumulu kal**kála** ‘stick, wall’ (Pinart 1890: 25)

Other, related forms, or forms containing related elements are Chumulu, Gualaca <sér**gala**> (Pinart 1890: 26), Gualaca <ser**gala**> ‘leg’ (Pinart 1882: 66), Chumulu <konl*i*>, Gualaca <koné> ‘bone’ (Pinart 1890: 17) and Chumulu, Gualaca <**kel**á> ‘fence’ (Pinart 1890: 9), Gualaca <**quel**a> (Pinart 1882: 61).

Guatuso /koːɾa/ ‘tree, trunk of a tree, wood’ (Constenla Umaña 1981: 426)

Guaymí *krɔ*- numeral classifier for longish entities (Quesada Pacheco 2008: 91)

A related element may recur in Guaymí ***ŋoto****gwɔ* ‘leg’ (cf. Quesada Pacheco 2008: 52); Guaymí *krɨ* ‘tree’ (ibid.: 51) likewise belongs here.

Huetar <cracrá ~ **cara**cá> ‘corn cob with very few kernels’ (Quesada Pacheco 1992: 94)

I have no explanation for final <cá> in this form.

Ika *kəN* [kʰʌŋ] ‘tree’ (Landaburu 2000a: 736, 747)

Kogi /kaˈla/ ‘leg’ (Ortiz Ricaurte 2000: 760)

Kogi /ˈkali/ [ˈkaʃi] ‘stick, tree’ (Ortiz Ricaurte 2000: 779, 780) belongs here, too. Other, related forms are probably Kogi /kaˈla/ [kaˈɮa] ‘grass’ (Sp. *hierba*) (ibid.: 778), /ˈkala/ ‘straw’ (ibid.: 760), and /nuˈba**kala**/ [nuˈba**xaɮa**] ‘feather’ (ibid.: 778).

Kuna *kala* ‘bone, pipe, whistle, flute, music, teeth, necklace made of certain bones’ (Holmer 1952: 41)

Kuna ***kar****pii* ‘(human) bones, skeleton’ (Holmer 1952: 50) contains a related element. Final *pii* in this form is probably cognate with Boruca *abí* ‘person’ (cf. Quesada Pacheco & Rojas Chaves 1999: 177).

Muisca <quyty> ‘loom’ (González de Pérez 1987: 322)

Muisca <cata> ‘trap’ (González de Pérez 1987: 330), <guyne> ‘grill’ (Sp. *barbacoa*) (ibid.: 197), and possibly also <**quy**e> ‘tree, stick’ (ibid.: 193, 288) may all belong here. Final <-e> in the latter form is a stem formative, recurring, for instance, in <cu**e**> ‘louse of the head’ (cf. ibid.: 296).

Rama *kat*, *kaːt* ‘foot, handle, leg, log, penis, post, stick’ (Grinevald et al. 2002–06)

Related elements are probably also attested in Rama ***kal****ka* ‘limb (body, plant); thatch’ and in *ka****kat*** ‘branch, limb’ (cf. Grinevald et al. 2002–06).

Térraba /kʰɔ́ɾ/ ‘stick, tree’ (cf. Constenla Umaña 2007: 12, 233, 265)

Related forms recur in Térraba *dɔbɔ́****gɾɔ*** ‘bone’, ***kʰɾɔ́****ga* ‘leaf’, ***kʰɔ́ɾ****ga* ‘leaf of a tree’, ***kʰɾɔ****bɔ́* ‘two, class of longish objects’ (cf. Constenla Umaña 2007: 243, 250–1). A cognate form in Teribe is /kʰor/ ‘tree’ (cf. Quesada 2000a: 18).

Tunebo ***kára****ra* ‘bone, shinbone’, in Cobaría also ‘lower leg’ (Headland 1997: 105)

Final *ra* was probably added later in Tunebo; a cognate ending may recur in *íja****ra*** ‘smoke (noun)’ (cf. Headland 1997: 146). A related form may recur in Tunebo ***ker****á* ‘wall, fence, generally made from upright sticks’ (cf. ibid.: 154).

Stomach *^{n}dua^{m}bih

Atanques <**duabi**kaba> ‘stomach, liver’ (Celedón 1892a: 594–5)

Final <kaba> may have a related counterpart in Atanques <koh**kába**> ‘mouth’ (cf. Celedón 1892a: 592).

Boruca *ráuabíx* ‘belly, stomach’ (Quesada Pacheco & Rojas Chaves 1999: 199)

Ika ***ʤwawi**ka* ‘heart’ (Landaburu 2000a: 747)

The term ***ʤwa*** ‘blood’ (Landaburu 2000a: 747) is strikingly similar. The nature of the relationship of this form with ***ʤwawi**ka* ‘heart’ remains to be established.

Compare also:

Bribri: Amubre, Katsi, Salitre *ɲãũ̀kibi* ‘stomach’, ‘belly of an animal’ (Margery Peña 1982: 62), Amubre, Coroma /ɟã́-wĩ/ [ˈɲã́w̃ḭ̀] ‘ventre, panza’ (Chevrier 2017b)

Chevrier (2017a: 165) identifies the first element of the latter form as meaning ‘excrement’ (<*^{ŋ}ga, see above).

Cabécar *ɲãẃí*, San José Cabécar *ɲõẃã́* ‘belly’ (Margery Peña 1989: 388)

Damana ***doabi**ga* ‘belly, abdomen’ (Huber & Reed 1992: 16)

Stone *hak ~ *kaʔ

*ˈhákI ‘stone’ (Constenla Umaña 1981: 417)

Proto-Colombian Chibchan *hai-ka (Wheeler 1972: 107)

Pre-Muisca *ək-, *ə’-k(w)a ‘stone’ (Holmer 1947: 208)

The glottal stop in *kãʔ is tentatively added here for the variation between Proto-Chibchan *#h and *ʔ# (see subsection 2.4.3.4 above).

Bocotá /ˈke/ ‘stone’ (Margery Peña 1996: 9)

Boruca /káŋ/ ‘stone’ (Quesada Pacheco & Rojas Chaves 1999: 178)

Bribri: Coroma [âk ~ ˈ**âk**wò] ‘stone’ (Chevrier 2017a: 127)

Margery Peña (1982: 145) gives the form *ák* ‘stone’.

Cabécar /hák/ [hákˀ] ‘stone’ (Margery Peña 1989: xix)

In San José Cabécar, the corresponding form is *ák* ‘stone’ (Margery Peña 1989: 502).

Chánguena <hak> ‘bun’ (Sp. *bollo*), <**hag**á> ‘stone’ (Pinart 1890: 6, 26)

Dorasque: Chumulu <hak, **hag**à> ‘stone’; Gualaca <**ag**á> (Pinart 1890: 26), <**ag**a> ‘stone, rock’ (Pinart 1882: 55)

Guaymí /xɔ/ ‘stone’ (Quesada Pacheco 2008: 24)

Kogi /ˈ**hag**i/ [ˈ**hag**i] ‘stone’ (Ortiz Ricaurte 2000: 779)

Final /-i/ is a frequently attested stem Kogi stem formative, compare /ˈnab**i**/ ‘jaguar’ (Ortiz Ricaurte 2000: 768).

Kuna ***ak***$k^{w}a$ ‘stone, rock, quern’ (Holmer 1952: 12)

Final -$k^{w}a$ is a fossilized noun classifier (cf. Holmer 1946: 188).

Muisca <**hy**ca> ‘stone’ (González de Pérez 1987: 295)

It is not clear, in this case, whether <-a> or <-ca> has been added as a stem formative.

Pech *áʔ* ‘egg, testicle’ (Holt 1986: 89, 102)

Térraba *ak (ák)* ‘stone, rock, metate’ (Constenla Umaña 2012: 153).

The Teribe is /ak/ ‘stone’ (cf. Quesada 2000a: 16)

Tunebo ***ak****á* [aaká] ‘stone’ (Headland 1997: 63)

Final *a* is probably a later addition; a cognate ending might be attested in *bu****á*** ‘sparrowhawk’ (cf. Headland 1997: 93)

Compare also:

Atanques <aguína> ‘stone’ (Celedón 1892a: 597)

I have no explanation for final <na>.

Barí [ǎǎŋ] ‘stone’

Guatuso **/ok**taɾ/ ‘stone’ (Constenla Umaña 1998: 13)

I have no explanation for the element /taɾ/.

Stranger, Spaniard

Of course, Proto-Chibchan had no word for 'Spaniard', and the original meaning of a Proto-Chibchan form that might eventually be reconstructed on the basis of the words below is unknown. It may have been related to the word for 'sun' or 'silver' (cf. Urban, forthc.b), compare Proto-Chibchan *^{n}du- 'sun, year' below, and the terms for 'silver' in Atanques – <düi> 'silver' (Sp. *plata*) (Celedón 1892a: 598) – and Ika – <zuí> 'silver' (Sp. *plata*) (Celedón 1892b: 608). Lehmann (1920: 49) connects Muisca <sue> 'Spaniard' with the 'sun' term of this language, <sua>.

Guaymí *ʧui* 'stranger' (Quesada Pacheco 2008: 81)
Muisca <sue> 'Spaniard' (González de Pérez 1987: 260)

Sun, day *^{n}di

*dì 'sun' (Constenla Umaña 1981: 418)
*dɨw (~ *dɨb) 'sun' (Holt 1986: 100)
This root is strikingly similar to *siʔ 'moon' (see above). For the alternation *^{n}d/*s, see subsection 2.4.3.2.

Barí, eighteenth century, <**dí**a> 'sun' (Rivet & Armellada 1950: 42)

> Final <a> is probably not part of the root. A related form might be <yà> 'sky' (cf. Rivet & Armellada 1950: 32). In present-day Barí from Venezuela, the corresponding form is [**ɲ**ãã̰] 'sun'.

Cabécar ***dí****wó* 'sun' (Margery Peña 1989: 527)

> The element *wó* may be related to the Cabécar term for 'eye' and recurs in Cabécar /kã́ wó/ 'sun' (Margery Peña 1989: xl).

Chimila **/di**ŋŋaʔ/ [^{n}**dí**ŋːàʔ] 'sun' (Malone 2005: 204)

> I have no explanation for the consonant gemination and for final /ŋaʔ/.

Tunebo ***ri****ja* 'day (used when counting)' (Headland 1997: 166)

> Final *-ja* is an ending attested in several Tunebo numerals, for instance in *baka****ja*** 'four' (cf. Headland 1997: 78).

Compare also:

Bribri: Amubre, Katsi, Salitre *jñ̃wo* ‘at daytime’ (Margery Peña 1982: 121), *dìwʊ* ‘sun’ (ibid.: 152)

Kogi /ˈniui/ [ˈŋiwi] ‘sun’ (Ortiz Ricaurte 2000: 779), <niuva> ‘gold, golden’ (Ger. *Gold*, *Goldgeräte*, *golden*) (Preuss 1927: 509), <nyui ~ nui> ‘sun’ (ibid.: 521)

Muisca <nyia> ‘gold’ (González de Pérez 1987: 286); <neia nza> ‘false gold’ (ibid.: 262)

Rama *al**si*** ‘sunbathe’ (Grinevald et al. 2002–06)

Sun, year *^{n}du-

*dui ‘sun’ (Constenla Umaña 1981: 418)

*ˈduá- ‘dry season’ (Constenla Umaña 1981: 377)

*diw (~ *dib) ‘sun’ (Holt 1986: 100)

The reflexes of Proto-Chibchan *^{n}du- ‘sun, year’ suggest the existence of two forms, *^{n}dui and *^{n}dua. This term might be related to Proto-Chibchan *^{n}di ‘sun, day’.

Atanques <**du**iku> ‘noon’ (Celedón 1892a: 596)

> Final <ku> probably does not belong to the root and recurs in Atanques <ché**ku**> ‘midnight’ (cf. Celedón 1892a: 596).

Bocotá /**ʧu**ˈi/ [ˈ**ʧw**i] ‘sun’ (Margery Peña 1996: 12)

> The same proto-root may also be reflected in the second element of Bocotá *ʧuˈi* ***su***ˈ***a****li* ‘noon’ (cf. Margery Peña 1993: 65).

Cabécar ***duw****ás*, ***duw****áska* ‘summer’ (Margery Peña 1989: 544)

> I have no explanation for final *ás* and *áska*.

Damana ˈ***ʤu****i*, ˈ***ʤu****ia* ‘day’ (Trillos Amaya 2000: 751)

Ika ***ʤw****i* ‘sun’ (Landaburu 2000a: 747)

Muisca <**su**a> ‘sun’ (González de Pérez 1987: 320)

> Proto-Chibchan *^{n}du- ‘sun, year’ also has a reflex in <suaty> ‘summer, dry season’ (cf. González de Pérez 1987: 332).

Rama ***nuːnu****k* ‘day’ (Grinevald et al. 2002–06)

> Final *k* is probably a stem formative that recurs, for instance, in ***siː****k* ‘tooth’ (cf. Grinevald et al. 2002–06).

Térraba *ɬú* ‘year’ (Constenla Umaña 2007: 232)

Compare also:

Bribri: Amubre, Katsi ***dawá**ska*, Salitre ***duá**ska* ‘summer’ (Margery Peña 1982: 158)

Guaymí *ŋwiana* ‘sun’ (Quesada Pacheco 2008: 150)

Kogi <nyui ~ nui> ‘sun’ (Preuss 1927: 521)

Pech *jìwi ~ jùwi* ‘moon, month’ (Holt 1986: 100)

To swallow, drink, eat *-hu ~ *-uʔ

*tuk ‘to drink’ (Holt 1986: 133)

In most cases, reflexes of this Proto-Chibchan root are combined with reflexes of preverbal elements *k(a) or *^{n}d(a) ~*t(a).

Boruca ***túʔ*** ‘to eat’ (Quesada Pacheco & Rojas Chaves 1999: 131)

Chimila /u/ [ʔu] ‘to drink’ (Malone 2005: 210)

Dorasque: Gualaca <**o**i> ‘to drink’ (Pinart 1890: 6)

I have no explanation for final <i> in this form.

Kogi /ˈt**u**ʃi/ [ˈ**tu**ʃi] ‘to drink’ (Ortiz Ricaurte 2000: 778)

Final *-ʃi* is a frequent ending in Kogi verbs (cf. Olaya Perdomo 2000: 781–2). This is also suggested by the Kogi forms <tu**ka** ~ tu**ga**> ‘to drink’ (cf. ibid.: 785).

Rama ***tu**k* ‘to eat, drink, swallow, suck’ (Grinevald et al. 2002–06).

Final *k* is probably not part of the root. It recurs in other verbs, such as, for instance, *su**k*** ‘to wash, peel’ (Grinevald et al. 2002–06). Other Rama verbs which may belong here are *altuŋwa* ‘to eat’ and *ŋ^{w}u* ‘to drink’ (ibid.).

Compare also:

Bocotá ***ʧo*** *ˈgɛga* ‘to swallow’ (Margery Peña 1993: 64)

Kuna ***to**a* ‘to eat, swallow’ (Holmer 1952: 163)

Muisca <b**so**squa> ‘to eat, general term (“comer; [v]erbo acti[v]o general, pero no se di[c]e [s]ino es con nombres generales comunes a toda comida”)’ (González de Pérez 1987: 215); <b**so**squa> ‘to eat leaves and grass/herbs’ (ibid.)

Pech ***tó**k* ‘to drink’ (Holt 1999a: 74)

Térraba *duí* ‘to swallow’ (Constenla Umaña 2007: 277)

Sweet

Boruca *kí butká* ‘sweet’ (Quesada Pacheco & Rojas Chaves 1999: 120)

Rama *pulkaː* ‘sweet’ (Grinevald et al. 2002–06)

Sweet potato *Baiʔ

Barí [bːéé] ‘sweet potato’

Barí, eighteenth century, <bee> ‘sweet potato’ (Rivet & Armellada 1950: 40)

Chimila /maʔ/ [maʔ] ‘sweet potato’ (Malone 2005: 207)

Dorasque: Gualaca <be> (Pinart 1890: 6), <bé> ‘sweet potato’ (Pinart 1882: 61)

Rama ***pai****k* ‘sweet potato’ (Grinevald et al. 2002–06)

> Final *k* is a stem formative element that recurs, for instance, in *nuːnu****k*** ‘day’ (cf. Grinevald et al. 2002–06).

Tunebo ***beʔʃa***, ***beʃa*** ‘sweet potato’ (Headland 1997: 84)

> Final *ʃa* seems to recur in ***reʃa*** ‘nose’ (Headland 1997: 160).

Compare also:

Bocotá *bĩ* ‘potato’ (Margery Peña 1993: 82)

Kogi *meˈʒi* ‘sweet potato’ (Huber & Reed 1992: 169)

Ika *ˈmiʔi* ‘sweet potato’ (Huber & Reed 1992: 169)

Damana *mesu* ‘sweet potato’ (Huber & Reed 1992: 169)

Tail$_1$ *^{m}ba^{n}d(a)-

*bad(ɨ) ‘tail’ (Holt 1986: 139)

The Bribri, Cabécar and Kuna forms reflect a form *^{m}ba^{n}da-i ‘tail’. This final *-i may eventually turn out to be a fossilized possessive marker.

Bocotá ***ba****ˈ****da****gli* ~ ***ba****ˈ****ta****gli* ‘end’ (Margery Peña 1993: 59–60)

> Final *-gli* is a frequently attested stem formative in this language and may be a (fossilized) classifying element derived from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a). A reflex of Proto-Chibchan *^{m}ba^{n}d(a)- ‘tail$_1$’ is possibly

also attested in Bocotá *ˈgli**bada*** ‘branch’ (cf. Margery Peña 1993: 70), *glí* means ‘stick, tree’ (ibid.: 70).

Cabécar /bãɽɛ́k/ [məʔɛ́k] ‘tail, penis’ (cf. Margery Peña 1989: xx, 478)

Kuna *pane* ‘penis’ (Holmer 1952: 115)

Final *e* may be a reflex of *^{m}ba^{n}d(a)-i with a suffix *-i indicating possession.

Pech *pàr-* ‘tail’ (Holt 1986: 139)

Térraba ***ɸɾa**k* ‘tail’ (Constenla Umaña 2007: 238)

Final *k* is a frequently attested stem formative in Térraba. Compare, for instance, ***ɸó**k* ‘two, without any indication of class’ and *k^{h}robó* ‘two (longish objects)’ (Constenla Umaña 2007: 243).

Compare also:

Bribri: Amubre, Katsi *mãɽɛ́k* ‘tail’ (Margery Peña 1982: 56)

Tail$_2$ *^{n}duh(k)

*ˈduhkI ‘tail’ (Constenla Umaña 1981: 419)

*duk ‘tail, point, top’ (Holt 1986: 101)

Proto-Colombian Chibchan *du-ki ‘tail’ (Wheeler 1972: 107)

Bocotá ***su*** *ˈgɾa* ‘tail’ (Margery Peña 1993: 90)

Final -*ˈgɾa* is a stem formative/class noun derived from *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Dorasque: Chumulu, Gualaca <dugá> ‘tail’ (Pinart 1890: 10), <duga> (Pinart 1882: 58)

Guatuso |tu| /tuŋ/ ‘tail’ (Constenla Umaña 1998: 13, 55)

Ika *ʤoʔ* ‘tail’ (Landaburu 2000a: 734, 747)

Kogi /ˈ**nug**i/ [ˈ**nug**i] ‘tail’ (Ortiz Ricaurte 2000: 779)

Final /-i/ is a frequent stem formative in this language; it is likewise attested in /ˈnab**i**/ ‘jaguar’ (cf. Ortiz Ricaurte 2000: 768).

Muisca <**suhu**ca> ‘tail of animal’ (González de Pérez 1987: 214)

Final <-ca> is a frequently attested stem formative in Muisca. It recurs, for instance, in <sa**ca**> ‘nose’ (cf. González de Pérez 1987: 282).

Rama *tuk* ‘tail’ (Grinevald et al. 2002–06)

Pech *suk* ‘lower back, spine; behind’ (Holt 1986: 122)

Compare also:
Atanques <duchikána, duchiköna> ‘tail’ (Celedón 1892a: 593, 598)
Damana *duʃ-kɨna* ‘tail’ (Huber & Reed 1992: 121)
Tunebo *rustará* ‘tail’ (Headland 1997: 171)

To take *ŋgu

*ˈgúʔ ‘to take’ (Constenla Umaña 1981: 419)
*cu ‘to take, get, grab, hold’ (Holt 1986: 97)

Bocotá ***hũ***ˈ*ã* ‘to grab, take’ (Margery Peña 1993: 78)

> Final ˈ*ã* probably does not belong to the root. A similar ending is attested in the Kuna cognate (see below), and in Bocotá *gũĩˈ**ã*** ‘to know’ (Margery Peña 1993: 72).

Kuna ***su****a* ‘to take, fetch (e.g. water), get’ (Holmer 1952: 146–7)

> I have no explanation for final *a*. A similar element recurs in *kua-* ‘to come’ (cf. Holmer 1947: 113).

Muisca <b**gu**squa> ‘receive’ (González de Pérez 1987: 311)
Guatuso /kuː/ ‘to take’ (Constenla Umaña 1981: 419)
Rama *kuː* ‘to take, catch, get, scoop, bear’ (Grinevald et al. 2002–06)

Compare also:
Ika *guk* ‘bring’ (Landaburu 2000a: 741)
Kogi *gu* ‘to take’ (Olaya Perdomo 2000: 782)

To take out, pick up *hapi ~ *apiʔ

*pɨ(k) ‘to take off or away’ (Holt 1986: 119)

Damana ˈ*pe* ‘picked up’ (Trillos Amaya 2000: 751)
Rama *aːpi* ‘to find, take out’ (Grinevald et al. 2002–06)
Térraba *pí* ‘to take out’ (Constenla Umaña 2007: 273)

Tunebo *ˈ**abi**nro* ‘to take, pick up (coca, coffee, kernels from the floor); learn by heart the song of a dance or other ceremonies, messages; mend (a textile)’ (Headland 1997: 62)

The element *-n* indicates intention and *-ro* is a declarative marker (cf. Headland 1997: 14).

Compare also:
Kogi *habi* ‘to buy’ (Olaya Perdomo 2000: 781)

Tasty *^{m}ba^{n}d-

*bəˈlóʔ ‘sweet’ (Constenla Umaña 1981: 419)
*bal(i ~ u) ‘sea, salt; sweet’ (Holt 1986: 90)
The reflexes of Proto-Chibchan *^{m}ba^{n}d- ‘tasty’ suggest the existence of at least two forms, *^{m}ba^{n}d-i and *^{m}ba^{n}d-u. A similar alternation between forms ending in *-i and in *-u may have existed in the context of Proto-Chibchan *^{n}di ‘sun, day’, and *^{n}du ‘sun, year’ (see above).

Barí [**bàr**ú^{n}] ‘sweet’ (transcription from Chevrier 2017a: 388)
Bocotá *ˈ**bal**ɛ* ‘sweet’, *ˈ**bl**ɛ* ‘sea’ (Margery Peña 1993: 60–1)

In Veraguas and Bocas del Toro, Margery Peña (1993: 60–1) also finds the form *ˈbali* ‘sea’.

Chánguena <báli> ‘salt, sea’ (Pinart 1890: 21, 29)
Dorasque: Chumulu, Gualaca <báli> ‘salt’ (Pinart 1890: 29), Chumulu ‘sea’ (ibid.: 21), Gualaca <vále> ‘sea’ (ibid.: 21, Pinart 1882: 54), <vale> ‘salt’ (Pinart 1882: 64)
Guaymí /mane/ [ˈmane] ‘sweet’ (Quesada Pacheco 2008: 34)

Related Guaymí forms are *mɔne* ‘sweet’ (cf. Quesada Pacheco 2008: 55) and /merẽ/ [mɾẽ] ‘sea’ (cf. ibid.: 29).

Kogi /maˈlu/ ‘*guineo* (a banana), sweet (metaforical)’ (Ortiz Ricaurte 2000: 768)
Kuna *palu* ‘salt’ (Holmer 1952: 114)
Pech *parè-wa* ‘sweet’ (Holt 1986: 211)

Conzemius (1928: 336) gives <**pări**wa> ‘salted’.

Térraba *ɸrɪbrí* ‘sweet’ (Constenla Umaña 2007: 243)

Compare also:
Barí, eighteenth century, <batin> ‘sugar cane’ (Rivet & Armellada 1950: 31)
Bribri: Amubre, Coroma [ˈbɽɔ́bɽɔ̀] ‘sugar’ (Chevrier 2017a: 128)
Chimila <maari’> ‘sweet, salty’ (Niño Vargas 2018: 245)
Guatuso /**palo**:xa/ ‘sweet’ (Constenla Umaña 1981: 419)
Muisca <abasen mague> ‘sweet’ (Gonzálea de Pérez 1987: 244)
Tunebo *basiro* ‘sweet, good taste’ (Headland 1997: 83)
Rama *mali:ka* ‘nice in the sense of tasting nice’ (Grinevald et al. 2002–06)

Tear *u^{m}ba ^{n}diʔa

Literally, this term means ‘eye-liquid’. A similar, complex term for ‘tear’, ‘eye-water’ is found in Tupí–Guaraní languages (Urban 2012: 336) and several other language groups (ibid.: 686).

Kogi /ubaliˈa/ ‘tear’ (Ortiz Ricaurte 2000: 769)
Térraba /bɔ́ɾiə̀/ ‘tear’ (Constenla Umaña 2007: 19)
Tunebo ***ub riʔa****ra* (Headland 1997: 258)

> Final *ra* is probably a Tunebo stem formative recurring in *rénа**ra*** ‘leg (from the hip to the foot)’, ‘thigh’ in the Cobaría dialect (cf. Headland 1997: 160).

Compare also:
Bribri: Amubre, Katsi, Salitre *wòdiʊ* ‘tear’ (Margery Peña 1982: 134), ***mə̀́wóaɽi***, Amubre, Katsi ***mə̀́wʊɽi*** ‘dew (= ‘tears of the clouds’)’ (ibid.: 149)
Cabécar *wó diʊ* ‘tear’ (Margery Peña 1989: 466)
Muisca <opquasiu> ‘tear’ (González de Pérez 1987: 273)
Pech *wa-(a)-tia* ‘tear’ (Holt 1986: 160)
Rama *upsi-ri* ‘tears’ (Craig 1989: 66)

That *a

*A ‘third person’ (Constenla Umaña 1981: 421)

*ha ‘third person’ (Constenla Umaña 2012: 408)

*a(N)- ‘that’ (Holt 1986: 87)

Damana *a-* third person object (Trillos Amaya 2000: 755)

Duit <a-> ‘he, his’ (Lehmann 1920: 54)

Guatuso /oː/ relative pronoun (Constenla Umaña 2012: 408)

> The Guatuso third-person absolutive prefix *a-* (Constenla Umaña 1998: 70) might also belong here.

Kogi *a-* third person possessor (Ortiz Ricaurte 2000: 771)

Kuna *a* ‘that’ (cf. Holmer 1947: 106)

Muysca <a-> third person marker (Adelaar & Muysken 2004: 97)

Pech *ã* ‘that, those (distal)’ (Holt 1999a: 62)

Compare also:

Barí *ʔa* ‘he, she’ (Huber & Reed 1992: 197)

Bribri: Amubre, Katsi, Salitre *ãwĺ* ‘that’ (Sp. *aquel*, *aquella*) (Margery Peña 1981: 15)

Rama *an=* clitic third person plural subject pronoun (Craig 1989: 104)

Thigh

Atanques <**duk**ökána> ‘thigh’ (Celedón 1892a: 596), <**duka**kána> ‘leg’ (ibid.: 597)

Boruca *kráŋ* ***túx*** ‘stick’ (Quesada Pacheco & Rojas Chaves 1999: 174)

Bribri: Katsi, Salitre *tuʔ*, Katsi ***tû****kaɣʊ* ‘thigh’ (Margery Peña 1982: 139)

Cabécar: San José Cabécar [tú] ‘thigh’ (Margery Peña 1989: 484)

Chimila **/duk**kwa/ [^{n}**dúk**:^{w}à] ‘thigh’ (Malone 2005: 202)

Dorasque: Chumulu <dusú>, Gualaca <duságala> (Pinart 1890: 22), <dusagala> ‘thigh’ (Pinart 1882: 65); Dorasque: Gualaca <kal**θó**> (Pinart 1890: 32), <cal**zo**> ‘trunk’ (Pinart 1882: 58)

Ika ***ʤu****kwi* ‘thigh’ (Landaburu 2000a: 736)

Kogi **/nu**ˈ**ga**kala/ ‘thigh’ (Ortiz Ricaurte 2000: 769)

> Huber and Reed (1992: 26) give Kogi ***nug***ˈ*ga-xəldə* ‘thigh’ and ˈ***nuk****ldia* ‘sap’ (ibid.: 157) which likewise belong here.

Kuna *tua* ‘thigh’ (Holmer 1952: 164)

Rama *tkua* ‘leg’, *aːluk* ‘bone’ (Grinevald et al. 2002–06)

This *hi ~ *iʔ

*i- ‘third person’ (Constenla Umaña 1981: 420)

*ˈhiʔ ‘this’ (Constenla Umaña 1981: 421)

*hi ‘third person’ (Constenla Umaña 2012: 408)

Boruca *i*, *iʔ* ‘s/he’ (Quesada Pacheco & Rojas Chaves 1999: 140)

This form is probably related to Boruca *í* ‘what, which’ (cf. Quesada Pacheco & Rojas Chaves 1999: 133, 181).

Cabécar *hí* ‘this’ (Margery Peña 1989: 436)

In San José Cabécar, the corresponding form is *í* ‘this’ (cf. Margery Peña 1989: 436). Cabécar *hiɾʊ* ‘what?’ (ibid.: 510) may also belong here. Final *-ɾʊ* in the latter form may be related to final *-nə* in Ika *inə* ‘who?, what?’ (cf. Landaburu 2000a: 747)

Kuna *i* ‘this’ (Holmer 1947: 106)

Pech *ĩ* ‘this, these (proximal)’ (Holt 1999a: 62)

Pech *ĩ-* ‘what’ (Holt 1999a: 75) and *ĩ-ɾa* ‘what?’ (ibid.: 76) probably belong here, too. The latter form contains a final element *-ɾa* that Holt (ibid.: 34, 76) seems to analyze as an object-marker (compare its counterparts in Cabécar above and in Ika below). I have no explanation for the nasality of the vowel *ĩ*; also, one might expect the glottal consonant of the Proto-Chibchan form to be reflected in Pech tone. Analogy with Pech *ã* ‘that, those (distal)’ (Holt 1999a: 62) may be an explanation for the apparent irregularities in the context of Pech *ĩ* ‘this, these (proximal)’.

Rama *i=*, *j=* clitic third person subject pronoun (Craig 1989: 104)

Compare also:

Bribri: Amubre, Katsi, Salitre *iʔ* ‘this’, *ì* ‘what?’ (Margery Peña 1982: 124, 147)

Guatuso *i-* third person absolutive prefix (Constenla Umaña 1998: 70)

Ika ***i****nə* ‘who?, what?’ (Landaburu 2000a: 747)

Kogi /hi/ ‘what?’ (Ortiz Ricaurte 2000: 771)

Muisca <**i**pquo> ‘what’ (González de Pérez 1987: 306)

Tunebo *ikrák* ‘why?’ (Headland 1997: 139)

Three *^{m}bãʔ(ĩ)

*ˈbai ‘three’ (Constenla Umaña 1981: 421)

*bai(N) ‘three’ (Holt 1986: 90)

Atanques <**mé**na> ‘three’ (Celedón 1892a: 599)

Final <na> might be cognate with /naʔ/ in Chimila /**ma**^{h}naʔ/ [**má**^{h}nàʔ] ‘three’ (cf. Malone 2005: 208).

Bocotá *ˈbãĩ̃* ‘three’ (Margery Peña 1993: 82)

Boruca *máŋ* ‘three’ (Quesada Pacheco & Rojas Chaves 1999: 195)

Chimila /**ma**^{h}naʔ/ [**má**^{h}nàʔ] ‘three’, referring to human beings (Malone 2005: 208)

Final /naʔ/ recurs in Chimila /bu^{h}naʔ/ [bú^{h}nàʔ] ‘two’ (cf. Malone 2005: 208) and is possibly a fossilized classifying element.

Dorasque: Chumulu <kú**ma***s*>; Gualaca <kalá**bá***c*> (Pinart 1890: 31), <cala**ba**ch> ‘three’ (Pinart 1882: 52)

The elements <kú-> and <kalá- ~ cala-> are prefixed numeral classifiers. I have no explanation for the word-final fricatives/affricates.

Duit <**mei**a> ‘three’ (Lehmann 1920: 54)

Final <a> may be a later addition. Alternatively, the sequence <ia> of Duit <meia> ‘three’ may be related to final *ja* in Tunebo *baja* ‘three’ (see below).

Guatuso |poi| ‘three’ (Constenla Umaña 1998: 48)

Guaymí *mɔ* ‘three’ (Quesada Pacheco 2008: 91)

Kogi /ˈ**mai**gua/ [ˈ**mai**gua] ‘three’ (Ortiz Ricaurte 2000: 779)

Final /-gua/ is probably a fossilized numeral classifier (cf. Constenla Umaña 1988; Pache 2016a).

Pech ***mɛ̀ɛ̀j****h* (Holt 1999a: 63), ***mɛ̃́ɛ̃j****h* ‘three’ (Holt 1986: 89)

I have no explanation for final *h* in this form.

Rama ***paŋ****sak* ‘three’ (Grinevald et al. 2002–06)

Final *-sak* may recur in Rama *puk****sak*** ‘two’.

Tunebo ***baj****a* ‘three’ (Headland 1997: 279)

Final *-(j)a* probably does not belong to the root; it recurs, for instance, in *kuku****ia*** (<cucuia>) ‘seven’ (cf. Headland 1997: 115).

Compare also:

Bribri: Amubre, Coroma /bVɲa-/ [mə̰ˈɲɑ́-] ‘three’ (Chevrier 2017a: 424)

Muisca <**mi**ca> ‘three’ (González de Pérez 1987: 161)

This numerical term may be related to Muisca <mica> ‘different’ (cf. González de Pérez 1987: 241). Indeed, according to Wheeler (1972: 107), Muisca <mica> ‘three’ is not a reflex of Proto-Chibchan ‘three’.

Térraba *mia* ‘three’ (Constenla Umaña 2007: 277)

Throat *^{m}bi-^{n}daʔ

*pita ‘liver, chest’ (Holt 1986: 154)

The Térraba form *bɪŋdɔ́* ‘neck, throat’ (Constenla Umaña 2007: 240, 248) is not monomorphemic, since the word for ‘dewlap’ in Térraba is ***bɪm****kuɔ́* (cf. ibid.: 40).

Cabécar *biɾó* ‘throat’ (Margery Peña 1989: 443)

The form [bís] ‘nape of neck’, recorded in the La Estrella river valley (Margery Peña 1989: 443), might belong here, too. I have no explanation for final *o* in Cabécar *biɾó* ‘throat’, instead of expected *a**.

Muisca <fiza> ‘throat’ (González de Pérez 1987: 266)

Muisca <bizequyne> ‘throat’ (González de Pérez 1987: 266) contains a related element. The morpheme <quyne> derives from Proto-Chibchan *kã^{n}d- ‘bone, strong, hard’ (see above). Final <e> in <bize> might be explained by an underlying possessive construction such as (unattested) <biza i-quyne*> ‘long/stick-like part of the neck’.

Térraba *bɪŋ-dɔ́* ‘neck, throat’ (Constenla Umaña 2007: 240; 248)

The root is *bɪŋ*, according to Constenla Umaña (2007: 40), who gives the form *bɪmkuó* ‘dewlap, jowl’ (see above).

Compare also:

Bribri: Amubre, Katsi, Salitre *biroʔ* ‘throat’ (Margery Peña 1982: 19)

Throat, hole *kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di

*kut ‘neck, nape’ (Holt 1986: 111)

Barí [būˈrì] ‘throat’

In Alfaro’s (1788) Barí data, there is a form <vore> ‘throat’ (Villamañán 1978: 28).

Cabécar *kuɽí* ‘neck’ (Margery Peña 1989: 413)

Kogi /ˈ**mul**ua/ ‘throat’ (Ortiz Ricaurte 2000: 765)

Final /ua/ is probably a stem formative element/fossilized noun classifier (cf. Constenla Umaña 1988; Pache 2016a).

Rama ***puːl**-up* ‘throat’ (Grinevald et al. 2002–06)

Whether or not Rama *ŋuriː* ‘dig, hole’ (Grinevald et al. 2002–06) belongs here, too, remains to be investigated.

Compare also:

Boruca *kux* ‘uvula, throat’ (Quesada Pacheco & Rojas Chaves 1999: 147)

Chimila /itti kwitta/ [ʔitˑi kʷìtːa] [sic] ‘dig’ (Malone 2005: 213)

Dorasque: Gualaca <polé> ‘neck, throat’ (Pinart 1890: 11), <pole> ‘neck, throat’ (Pinart 1882: 64)

Kuna ***k^{w}is**a* ‘dig’ (Holmer 1952: 66), *k^{w}innik^{w}a* ‘open, small hole or chink’ (ibid.: 66).

Muisca <b**quyhyu**suca> ‘dig’ (González de Pérez 1987: 211)

Térraba *ɸrí* ‘hole’ (Constenla Umaña 2007: 251)

Tunebo ***kuíʔ**inro* ‘dig (also in the sense of taking of the earth around a plant, in order to take out tubers), to open (ditches)’ (Headland 1997: 117), *kukuá* ‘throat’ (ibid.: 254), *kujitá* ‘caries’ a worm that eats maize kernels (ibid.: 123).

Tobacco *^{n}dua

*ˈdu, *ˈduə̀ ‘tobacco’ (Constenla Umaña 1981: 423)

*du(wa) ‘tobacco’ (Holt 1986: 146)

Bocotá *ʧuˈa* ‘tobacco’ (Margery Peña 1993: 64)

Boruca *dua* ‘tobacco’ (Quesada Pacheco & Rojas Chaves 1999: 192)

Bribri: Coroma [dwă] ‘tobacco, cigaret’ (Chevrier 2017a: 59)

Margery Peña (1982: 116, 154) gives Amubre *dawà* ‘tobacco, cigaret’ with epenthetic vowel and Salitre *duà* ‘tobacco, cigaret’.

Cabécar *duwa* ‘tobacco’ (Margery Peña 1989: 531)

Compare also *dawa* ‘tobacco’ (Margery Peña 1989: 531), with epenthetic *a*.

Dorasque: Chumulu <dúa> ‘tobacco’ (Pinart 1890: 30)

Guatuso |tua|, /tuːa/ ‘tobacco’ (Constenla Umaña 1998: 15, 44)

I have no explanation for the vowel length in the form /tuːa/ ‘tobacco’.

Muisca <**sua**guaia> ‘cigar’ (González de Pérez 1987: 225)

Uhle (1890: 468) compares the element <guaia> with ‘tobacco’ terms in Cariban languages such as Makushi <kawai>, Chaima <caguay>, and Akawaio <tamai>.

Rama *tuː* ‘tobacco’ (Grinevald et al. 2002–06)

Térraba *duɔ* (*duɔ́*) ‘tobacco’ (Constenla Umaña 2007: 173)

Compare also:

Kogi <**no**-kái̯> ‘tobacco plant’ (Preuss 1927: 473)

Compare <akai̯, kai̯> ‘leaf (of a plant)’ (Preuss 1927: 419)

Tongue *kuʔ(-Ba)

*pkúʔ, *ˈpkuə́ ‘tongue’ (Constenla Umaña 1986: 423)

*k'up(a) ‘tongue’ (Holt 1986: 113)

Barí [ā**q**ː**ō**ˈ**b**ɛ̀ɛ̀] ‘tongue’

Boruca *kuátkua* ‘tongue’ (Quesada Pacheco & Rojas Chaves 1999: 159)

I have no explanation for the intercalated element *t*. It may be the reflex of Proto-Chibchan *^{n}d and may have cognate counterparts in Kogi /huˈa**n**gala/ ‘tongue’ (cf. Ortiz Ricaurte 2000: 770) and in Muisca <gua**s**gua> ‘child’ (cf. González de Pérez 1987: 283).

Bribri: Coroma [kúʔ] ‘tongue’ (Chevrier 2017a: 103)

Margery Peña (1982: 54) gives Amubre, Katsi, Salitre *kuʔ* ‘tongue’.

Chimila /kwaaʔ/ [k^{w}aːʔ] ‘tongue’ (Malone 2005: 202)

Dorasque: Chumulu, Gualaca <kúba> (Chumulu, Gualaca) (Pinart 1890: 19), Gualaca <cuba> ‘tongue’ (Pinart 1882: 65)

Guatuso /kuː/ ‘tongue’ (Constenla Umaña 1981: 423)

Kuna ***k*^{w}*a****pinni*** ‘tongue, language’ (Holmer 1952: 63)

I have no explanation for the element *pinni* in this form. A cognate element may recur in Kuna *sinta****pilli*** ‘tongue’ (cf. Holmer 1952: 142), it may be related to *pilli* ‘point’ (cf. ibid.: 121).

Muisca <pqua> ‘tongue’ (González de Pérez 1987: 273)

Muisca <**cub**un> ‘language’ (González de Pérez 1987: 273) may also belong here.

Pech *(ʔ)ùːwa*, *(ʔ)uːwa* ‘tongue’ (Holt 1986: 113, 206)

Rama *kuːp* ‘tongue’ (Grinevald et al. 2002–06)

Tunebo *kuwa* ‘tongue, language’ (Headland 1997: 123)

Compare also:

Bocotá ***ki*ˈ*bi****gua*** ‘tongue’ (Margery Peña 1993: 79)

Final *gua* is probably a stem formative that recurs in *ˈ****ta****gua* ‘liver’ (cf. Margery Peña 1993: 90).

Cabécar: San José Cabécar [kú] ‘tongue’ (Margery Peña 1989: 467)

Tooth (molar) *haka

*aˈkə ‘tooth$_2$’ (Constenla Umaña 1981: 424)

*(h)aka ‘sharp, tooth’ (Holt 1986: 88)

This Proto-Chibchan form may have alternated with *akaʔ. A reflex of the latter form is not clearly attested, however.

Atanques <akó> ‘wisdom tooth’ (Celedón 1892a: 596)

Bribri: Coroma [ká] ‘tooth’ (Chevrier 2017a: 99)

The meaning of this term can also be ‘beak’ or ‘blade’ (Chevrier 2017b). Margery Peña (1982: 121) gives Amubre, Katsi, Salitre *akà* ‘tooth’.

Cabécar *ka* ‘tooth’ (Margery Peña 1989: 424)

Guatuso /oka/ ‘tooth’ (Constenla Umaña 1998: 12)

Muisca <hyco> ‘molar’ (González de Pérez 1987: 281)

I have no explanation for the initial <h>.

Térraba ***kɔuɔ́*** (<kohuó>) ‘tooth, molar, beak’ (Constenla Umaña 2997: 243, 260, 267)

Final *-uɔ́* is a frequent stem formative in this language and is mostly attested in body part terms and animal/plant terms (Constenla Umaña 2007: 36).

Compare also:

Kogi <akaụi> ‘molar’ (Preuss 1927: 527)

Kuna *akke* ‘native hook, prongs of harpoon, fork, forked stick’ (Holmer 1952: 11)

Tunebo *akiʃá*, *akʃá* ‘wisdom tooth’ (Headland 1997: 72)

Tooth *^{n}duʔ

*ˈtu ‘tooth$_1$’ (Constenla Umaña 1981: 424)

*duk ‘tail, point, top’ (Holt 1986: 101)

Whether or not this Proto-Chibchan form is ultimately connected with Proto-Chibchan *^{n}duk / *suk ‘prick, sting, point’, remains to be established.

Atanques <**sun**köna> ‘beak’ (Celedón 1892a: 597)

Final <köna> may derive from Proto-Chibchan *ka^{n}d- ~ *kat ‘stick, bone, tree’ (cf. Pache 2016a). The element <n> in <sunköna> may be the reflex of vowel nasalization.

Guaymí /tu/ ‘tooth’ (Quesada Pacheco 2008: 24)

Kuna ***nu****kar* ‘tooth, point of weapon or instrument’ (Holmer 1952: 100)

Final *-kar* derives from Proto-Chibchan *ka^{n}d- ~ *kat- ‘stick, bone, tree’ (cf. Pache 2016a).

Tunebo ***ruʔ****ra* ‘tooth’ (Headland 1997: 169)

Final *ra* is probably a stem formative element that recurs in *kára****ra*** ‘bone, shinbone’ (cf. Headland 1997: 105).

Compare also:

Barí [**ārūˈrùù**] ‘tooth’

Bocotá *ˈtɔu* ‘tooth’ (Margery Peña 1993: 91)

Chánguena <su> ‘tooth’ (Pinart 1890: 12)

Dorasque: Chumulu <su> ‘tooth, beak’ (Pinart 1890: 12, 26), <sogú> ‘fishhook’ (Pinart 1890: 5); Gualaca <θut, θu> (Pinart 1890: 12), <zut> ‘tooth’ (Pinart 1882: 58), <su> ‘beak’ (Pinart 1890: 26), <soú> ‘fishhook’ (ibid.: 5).

Muisca <**su**pqua> ‘spear’ (González de Pérez 1987: 273)

Turkey, large galliform bird *(ᵑg)uⁿd-

Dorasque: Chumulu <úla> ‘peacock’ (Pinart 1890: 25)

Térraba ***gul****niá* ‘turkey’ (Sp. *pava*, *pava negra*, *pava granadera*) (Constenla Umaña 2007: 266)

I have no explanation for final *niá*.

Compare also:

Kogi <uli> ‘red turkey’ (Ger. *rote Truthenne*) (Preuss 1927: 492), *ˈuldi* ‘guan’ (Sp. *pava de mont*e) (Huber & Reed 1992: 136)

Ika ***un*** *ˈture* ‘guan’ (Sp. *pava de mont*e) (Huber & Reed 1992: 136)

The element *ˈture* probably derives from Proto-Chibchan *ⁿdu(ⁿd) ‘bird’ (see above).

To turn around *ᵐbuⁿd- ~ *kuⁿd-

This verb is probably derived from Proto-Chibchan *ᵐbu ‘to twist’ (see below).

Ika *ˈ****kur****kənə* ‘spindle’ (Landaburu 2000a: 734)

The element *kənə* probably derives from Proto-Chibchan *kaⁿd- ~ *kat- ‘stick, bone, tree’ (see above).

Rama *aː****bur****n*, *al****bur****n* ‘to twirl, twist, stir’ (Grinevald et al. 2002–06)

I have no explanation for final *n*. The prefix *aː*- or *al*- are derivational prefixes, the latter deriving intransitive verbs (Craig 1989: 74–8).

Tunebo ***bur****inro* ~ ***bur****unro* ‘to wrap, fold’ (Headland 1997: 97)

The segments *u* and *i* may be of later origin and not belong to the original root (cf. Headland 1997: 27). The element *-n* indicates intention and *-ro* is a declarative marker (ibid.: 14).

Compare also:
Barí [būˈrɾíʔ ~ bəˈrɾíʔ] ‘to hug’
Cabécar: northern dialects ***buɽ̃****wã*, ***buɽ́****ɔ̃ɽ* ‘push rolling objects (tr.)’ (Margery Peña 1989: 37)
Kogi <múlihi, vúlihi> ‘to spin’ (Preuss 1927: 467)
Pech /brìː/ ‘to roll up’ (Holt 1999a: 60)
Térraba ***ɸrígrɔ*** ‘belt’ (Constenla Umaña 2007: 247

Turtle *k^{w}i

*kuÌ ‘turtle’ (Constenla Umaña 1981: 426)

Bocotá *gɔˈbi* ‘turtle’ (Margery Peña 1993: 70)
Cabécar *kuí* ‘turtle’ (Margery Peña 1989: 536)
Muisca <**cue**gui> ‘turtle’ (González de Pérez 1987: 329)

> Final <gui> is frequently attested in Muisca animal terms and not part of the root in question (Constenla Umaña 1981: 426–7).

Térraba ***k^{h}uɛ́uɔ*** <k^{h}uéhuo> ‘tortoise’ (Constenla Umaña 2007: 277)

> Final *-uɔ* is mainly attested in body part terms and animal/plant terms (Constenla Umaña 2007: 36). The corresponding form in Teribe is **/kwe**gwo/ ‘turtle’ (Quesada 2000: 22)

Compare also:
Bribri: Amubre, Katsi, Salitre *kuì* ‘turtle’ (Margery Peña 1982: 155)
Gualaca <que> ‘turtle’ (Pinart 1882: 56)

To twist *^{m}bu

*bi(k) ‘to turn, revolve; wrap’ (Holt 1986: 141)

The Tunebo form suggests Proto-Chibchan *^{m}buʔ ‘to twist’. However, there is no reflex of a glottal stop in the Boruca and Rama forms.

Boruca ***bu****k* ‘to braid, twist, spin’ (Quesada Pacheco & Rojas Chaves 1999: 152, 194, 195)

> Final *k* probably does not belong to the root. It may recur, for instance, in ***káx****k* ‘to open’ (Quesada Pacheco & Rojas Chaves 1999: 113).

Cabécar ***bu****ɻ* ‘to twist (tr.)’ (Margery Peña 1989: 536)

> Final *-ɻ* indicates the remotospective perfective aspect (Margery Peña 1989: lxxiii)

Muisca <ze**mu**squa> ‘to spin’ (González de Pérez 1987: 270)

> The element <ze-> indicates first person singular subject, whereas <-squa> indicates imperfective aspect (Adelaar & Muysken 2004: 91, 97).

Rama *kal****bu****k* ‘wall’ (Grinevald et al. 2002–06)

> The element *kal* might be cognate with *kat* ‘stick, post’. Final *k* could be a stem formative, recurring in *pai****k*** ‘sweet potato’

Compare also:

Ika [**bu**ŋow] ‘spin!’ (Landaburu 2000a: 737)

Tunebo ***buʔ****winro* ‘to twist’ (Headland 1997: 95)

Two *^{m}buuʔ

*bu(k)/*bo(k) ‘two’ (Holt 1986: 93)

*ˈbU ‘two’ (Constenla Umaña 1981: 427)

*bau-ka/-sa ‘two’ (Levinsohn 1975: 17)

Proto-Colombian Chibchan *bau-sua (Wheeler 1972: 108)

Pre-Muisca *paw- ‘two’ (Holmer 1947: 208)

Atanques <**mo**ga> ‘two’ (Celedón 1892a: 593)

> Final <ga> is probably an old numeral classifier derived from Proto-Chibchan *ka ‘leaf’ (cf. Pache 2016a). Proto-Chibcha *^{m}buuʔ ‘two’ may also be reflected in Atanques <búa> ‘half’ (Celedón 1892a: 596).

Bocotá /goˈ**bɔu/** ‘two’ (Margery Peña 1996: 21)

In this form, /go/ may be compared with its counterparts in Dorasque (see below) and is possibly a classifying element. Margery Peña (1993: 70) gives *gɔˈbɔu* ‘two’.

Boruca ***búʔk*** ‘two’ (Quesada Pacheco & Rojas Chaves 1999: 138)

As in other Western Isthmic languages (Bribri, Térraba), final *k* probably does not belong to the root originally.

Bribri: Amubre, Coroma [**bǒ**-kˀ] ‘two (round entities)’ (Chevrier 2017a: 68)

Final [-kˀ] is a numeral classifier indicating round shape (Chevrier 2017a: 68). Margery Peña (1982: 122) gives Amubre, Katsi, Salitre *bǒ-/bò-* ‘two’.

Cabécar ***bóɾ*** ‘two (referring to humans)’ (Margery Peña 1989: 425)

Final *-ɾ* is a stem formative in numerals (Margery Peña 1989: xlv).

Chimila **/bu^{h}**naʔ/ [**bú^{h}**nàʔ] ‘two’, referring to human beings (Malone 2005: 208)

Final /naʔ/ recurs in /ma^{h}**naʔ/** [má^{h}**nàʔ**] ‘three’ (see above).

Dorasque: Gualaca <ko**mó**> (Pinart 1890: 12), <co**mo**> ‘two’ (Pinart 1882: 52)

The element <ko> may be a prefixed classifier (compare the Bocotá counterpart above).

Guatuso |pauKi ~ paKi| **/pauŋ**ka/ ‘two’ (Constenla Umaña 1998: 15, 24)

Final /-ka/ is a frequent stem formative in Guatuso (Constenla Umaña 1998: 61–2). It is also attached, for instance, to the question word for ‘how many?’.

Guaymí *bu* ‘two’ (Quesada Pacheco 2008: 91)

Ika **mou**ga ‘two’ (Landaburu 2000a: 738, 747).

Final *ga* is probably a fossilized numeral classifier, derived from Proto-Chibchan *ka ‘leaf’ (cf. Pache 2016a).

Kogi /ˈ**mou**ʒua/ [ˈ**mou**ʒua] ‘two’ (Ortiz Ricaurte 2000: 780)

I have no explanation for final *ʒua*. It might be a variant of a fossilized classifier *-gua*.

Kuna *poo* ‘two’ (Holmer 1952: 126)

Muisca <**bo**za> ‘two’ (González de Pérez 1987: 161)

Final <za> is probably a stem formative/fossilized numeral classifier; it may be related to final <za> in <iom**za**> ‘potato’ (González de Pérez 1987: 331). Proto-Chibchan *^{m}buuʔ ‘two’ may also be reflected in Muisca <mona> ‘the day before yesterday’ (ibid.: 188).

Pech ***póːk*** ‘two’ (Holt 1999a: 63)

I have no explanation for final *k* in this form.

Rama ***pu****ksak* (Grinevald et al. 2002–06)

The segment *k* might be a later addition (compare its counterparts in Pech and some Western Isthmic languages). Final *-sak* recurs in *paŋ****sak*** 'three' (Grinevald et al. 2002–06). One might tentatively propose that there is a relation of cognacy with the element /naʔ/ attested in some Chimila numerals (see above).

Térraba *ɸók ~ -bó* 'two' (Constenla Umaña 2007: 86)

Final *-k* in the unbound form is probably a stem formative: the bound form, as attested in *kʰrɔ****bó*** 'two (longish objects)' (Constenla Umaña 2007: 243), lacks this final element. Térraba *kʰrɔ-* is a numeral classifier for small, sticklike entities (cf. ibid. 86).

Tunebo ***bu****kaja* 'two' (Headland 1997: 94).

I have no explanation for final *kaja* (or *-ka-ja*).

Up, sky *^{m}bii

*bÌ- 'star' (Constenla Umaña 1981: 416)

*bi(ri) 'top, sky' (Holt 1986: 91)

Bocotá ***bé****gaba* 'star' (Margery Peña 1993: 60)

Final *gaba* is probably a stem formative element, derived from Proto-Chibchan *k^{w}a 'seed, fruit' (cf. Pache 2016a).

Dorasque: Gualaca <**vi**u> (Pinart 1890: 14), <**vi**uú> 'star' (Pinart 1882: 50)

Pinart (1992: 50) gives the plural form <viuse>. I have no explanation for final <u ~ uú> in the Gualaca forms. These elements may be related to Rama *up* in *piup* 'star' (see below).

Kuna ***pi****ri* 'top, handle, on top, top (of loom)' (Holmer 1952: 124)

Final *ri* may be derived from the Proto-Chibchan instrumental/locative marker *-^{n}di. Kuna *pirka* 'year' (Holmer 1952: 124) and *pilli* 'top, point, story (of house)' (ibid.: 121) might be related. I have no explanation for the consonant gemination in the latter form.

Muisca <**fa**gua> 'star' (González de Pérez 1987: 262)

Final <-gua> is a stem formative that seems to recur, for instance, in <a**gua**> 'maize grain' (González de Pérez 1987: 266).

Pech ***pi**ri* ‘sky’ (Holt 1986: 91)

The element *-ri* may have the same origin as in Kuna (see above). Pech *piri* ‘sky’ recurs in *pirí-wa* ‘star’ which, according to Holt’s (1999a: 78) interpretation, means ‘sky-eye’.

Rama ***pi**up* ‘star’ (Grinevald et al. 2002–06)

The class term *up* derives from Proto-Chibchan *u^{m}ba ‘face, eye, fruit’ (see above). Holt (1986: 91) proposes the interpretation of ‘star’ as ‘sky-eye’ in Rama.

Tunebo ***bé**bohoa* ‘star’ (Headland 1997: 252)

The element *bohoa* may recur in *ku**bohoá***, a term which refers to a supernatural being related to maize (cf. Headland 1997: 114).

Compare also:

Bribri: Amubre, Katsi, Salitre ***bì**kwʊ* ‘star’ (Margery Peña 1982: 125)

Cabécar: northern dialects *béi wó*, *bɪi bó*, southern dialects *bíg wó*, *bék wó* ‘star’ (Constenla Umaña 1989: 436)

Guaymí /mugue/ ‘star’ (Quesada Pacheco 2008: 25)

Urine *hutsi ~ *huits

Boruca *uiʃ* (<huish>) ‘urine’ (Quesada Pacheco & Rojas Chaves 1999: 172)

Guatuso ***u** ˈ**ʧu*** ‘to urinate’ (Constenla Umaña 1998: 119)

I have no explanation for final *u*.

Kuna ***win**naa* ‘to urinate’ (Holmer 1952: 186)

Final *naa* is probably related to the Kuna verb *naa* ‘to go’ (cf. Holmer 1947: 155).

Rama ***ŋus**ti* ‘to piss’ (Grinevald et al. 2002–06)

I have no explanation for final *ti*. It may be related to a verbalizing suffix *-tiŋ* (cf. Craig 1989: 81).

Térraba *ʧĩ* ‘urine’ (Constenla Umaña 2007: 264)

The corresponding verb is *ʧĩiɪ* (<chíyë>) ‘to urinate’ (cf. Constenla Umaña 2007: 264). As in the case of Térraba *kɔ (kɔ́)* ‘name’ (ibid.: 159), derived from Proto-Chibchan *haka ~ *akaʔ ‘name’, the first syllable was probably lost in the Térraba reflex of Proto-Chibchan *hutsi ~ *huits ‘urine’.

Compare also:
Kogi <huizi> ‘urine’ (Preuss 1927: 443)
Muisca <hisu> ‘urine’ (González de Pérez 1987: 286)
Pech ***í:ʃi*** ‘urine’ (Holt 1999a: 38)

Valency-reducer$_1$ *a-

Chibchan languages basically reflect three Proto-Chibchan prefixes reducing verbal valency, namely *a-, *a^{n}d-, and *aʔ-. In those Chibchan languages where the outcome of *ʔ is zero, it is not easy to decide whether a valency-reducing prefix derives from *a- or *aʔ-. This is the case, for instance, for Ika *a-*, a reflexive, impersonal prefix (cf. Landaburu 1992: 17). Proto-Chibchan *a- as a separate, independent prefix reducing verbal valency is reflected in Kuna and Pech. Thus, it is only tentatively reconstructed here.

Kuna *a-* valency-reducing prefix (Holmer 1947: 117)

> A use of this prefix is illustrated in Kuna ***a****-purra* ‘to become angry’ (Holmer 1947: 117), contrasting with *o-purra* ‘to tangle, mix’; *o-* is a causative prefix (ibid.: 117, 121). In Kuna, reflexes of both *a- and *aʔ- may be combined with the same root, resulting in the same meaning. This is the case, for instance, in *a-takka* and *at-takka* ‘to look, wake up’, both derived from *takka* ‘to see’ (ibid.: 118).

Pech *a-* valency-reducing prefix (cf. Holt 1999a: 60)

> The use of this prefix is illustrated by Pech ***a****-pìʃ-k* ‘to lie down’, derived from *pìʃ-k* ‘to lay’ (cf. Holt 1999a: 60).

Valency-reducer$_2$ *aʔ-

The second valency-reducing prefix that can be reconstructed for Proto-Chibchan is *aʔ-. Ika *a-*, a reflexive, impersonal prefix (Landaburu 1992: 10–11, 16–17) might either be derived from Proto-Chibchan *a- or *aʔ- (see above).

Kogi *a-* valency-reducing prefix (Adelaar & Muysken 2004: 73)

> Preuss (1925: 355) mentions the existence of a prefix <aḳ-> which is attested in <aḳšihi> ‘to lie down’ (Ger. *Liegen)*, derived from <šihi> ‘to lie down, lay down’ (Ger.

liegen, *legen*). In fact, Preuss (ibid.) identifies <a-> as the original prefix, to which linking elements <r> or <ķ> can be added ("*a*, das öfters durch ķ oder r mit dem Grundwort verbunden wird").

Kuna *a-* valency-reducing prefix (cf. Holmer 1947: 72–3)

The origin of Kuna *a-* in *aʔ- is suggested for the morphophonemic changes that the following consonants undergo (cf. Holmer 1947: 72): compare Kuna *enukke* 'to wash (transitive)' and *annukke* 'to wash oneself', the latter with gemination after of the *n* (Constenla Umaña 2012: 406).

Rama *aː-* derivational verbal prefix (Craig 1989: 77–8)

The semantics added by this non-productive prefix are difficult to pinpoint (Craig 1989: 77–8). Its use is attested, for instance ***aːburn*** 'to twirl, twist, stir' (Grinevald et al. 2002–06); the Rama form ***al****burn* has the same meaning (ibid.).

Compare also:

Bribri: Coroma [ɛ́ʔ–] reflexive (Chevrier 2017a: 132)

Valency-reducer$_3$ *a^{n}d-

*aL- (Constenla Umaña 2012: 406)

Muisca <(a)n-> passive (cf. Adelaar & Muysken 2004: 95–6)

Rama *al-* anticausative, intransitive (Craig 1989: 74–6)

In several cases, this prefix has a transparent derivational function, compare, for instance, *al-malŋi* 'to die' from *malŋi* 'to kill' (Craig 1989: 74). In some instances, it seems to be interchangeable with its counterpart *aː-* (< *aʔ-), for instance in ***aːburn***, ***al****burn* 'to twirl, twist, stir' (Grinevald et al. 2002–06) – a similar variation is found in Kogi <**aķ**veį̇ši, **ar**veį̇ši> 'to stir' (cf. Preuss 1927: 524).

Compare also:

Kogi <**ar**veį̇hi> 'to say', derived from <meį̇hi> 'to sing, tell' (Preuss 1925: 355)

To walk *^{n}dai

*daik ‘to pass’ (Holt 1986: 144)

It remains to be established whether or not final *i in *^{n}dai ‘to walk’ is related to the imperfective aspect marker *-e (see above).

Boruca ***de****k* ‘to walk’ (Quesada Pacheco & Rojas Chaves 1999: 125)

> Final *k* is probably a stem formative and recurs in *káx****k*** ‘to open’ (Quesada Pacheco & Rojas Chaves 1999: 113)

Guatuso |**toi**+Ki| ‘to pass’ (Constenla Umaña 1998: 26)

Kogi /ˈ**nei**hĩ/ [ˈ**nei**hĩ] ‘to walk’ (Ortiz Ricaurte 2000: 780)

> Final /-hĩ/ recurs in several Kogi verbs (cf. Ortiz Ricaurte 2000: 781).

Pech ***te****ʃ*- ‘to go, leave, wander, disappear’ (Holt 1986: 144)

> Final *-ʃ* might recur in ***tiːʃ***- ‘to sow, plant’ (Holt 1986: 100).

To wash *suh(k)

*suk ‘to wash’ (Holt 1986: 157)

*suhk- ‘to wash’ (Constenla Umaña 2012: 413)

Constenla Umaña (1981: 429) juxtaposes Bribri, Cabécar, Rama and Térraba forms without reconstructing any Proto-Chibchan root. Compare also the Proto-Chibchan rots *tsuH ‘to scratch, rub’, and *suʔ ‘to peel’ above, which might ultimately be related.

Chimila **/tu**kwa/ [**tú**kˑʷà] ‘to wash hands, dishes or other objects, but not clothes’ (Malone 2005: 212)

> Final /kwa/ probably does not belong to the root. Huber and Reed (1992: 305) give the form ˈ*tukkua* ‘to wash’. Constenla Umaña (2012: 413) proposes that *w* is inserted after the reflex of an *uhk sequence in Atanques, Barí, Chimila, Damana, Ica, and Tunebo.

Kuna *apa****nuk****ka* ‘to wash body, bathe’ (Holmer 1952: 16)

> The first element of this form, *apa*, is probably related to *apa* ‘body’ (Holmer 1947: 75). Final *ka* is probabbly a later addition (cf. ibid.: 131–2).

Muisca <b**chuhu**squa> ‘to wash’ (González de Pérez 1987: 273)

> The prefix <b> indicates transitivity, whereas <squa> indicates imperfective aspect (Adelaar & Muysken 2004: 90–1).

Pech *suk* ‘to wash’ (Holt 1986: 157)

Rama *suk* ‘to wash, peel’ (Grinevald et al. 2002–06)

Rama *al**suk*** ‘to wash’ (Grinevald et al. 2002–06) belongs here, too.

Tunebo ***su**kuinro* ‘to wash, bathe’ (Headland 1997: 186)

The element *-kui* is a Tunebo stem formative, *-n* indicates intention and *-ro* is a declarative marker (Headland 1997: 14, 28). Huber and Reed (1992: 305) give *suk^{w}í-n-ro* ‘to wash’.

Compare also:

Boruca *túxk* ‘to wash’ (Quesada Pacheco & Rojas Chaves 1999: 158)

To watch *ŋgu^{n}da ~ *ŋg^{w}a^{n}d

Boruca ***uad**áʔ* (<huadá^{v}>) ‘to watch’ (Sp. *acechar*) (Quesada Pacheco & Rojas Chaves 1999: 113)

I have no explanation for final *áʔ*. Other Boruca reflexes of Proto-Chibchan *ŋgu^{n}da ~ *ŋg^{w}a^{n}d might be *uatéŋ* <huatén> ‘to watch’ (Sp. *acechar*) (Quesada Pacheco & Rojas Chaves 1999: 113) and *kúŋ* ‘to find’ (ibid.: 141).

Térraba ***hũɻ**ẽ́k* ‘to look for, find’ (Constenla Umaña 2007: 235, 244)

Related forms may be Térraba ***wo**rií* <huoriẽ́> ‘to like’ (Sp. *gustar*) (Constenla Umaña 2007: 249), Teribe *wɻẽk* ‘to find, meet’ (Quesada 2000a: 77), and **/wojd**ɪ**/** ‘to want’ (ibid.: 31).

Tunebo ***úr**onro* ‘to look out (thieves), watch, to spy, observe, look for’ (Headland 1997: 215)

The *o* in *-onro* can be explained by merger of root-final *a* plus *-u-n-ro*. Final *-u* might be a thematic vowel, whereas *-n* indicates intention and *-ro* is a declarative marker (Headland 1997: 14, 28). A related form might be *waʔitinro* ‘to see, watch, look for, find out’ (ibid.: 220).

Compare also:

Bribri: Amubre, Katsi, Salitre *ɟuɽóʔ* ‘to look for’ (remotospective perfective form) (Margery Peña 1982: 103), /kũ/ ‘to find’ (Constenla Umaña 1981: 381)

Guatuso /kua:ki/ ‘to see’ (Constenla Umaña 1981: 410)

Water, river *^{n}diʔ

*ˈdiʔ ‘water’ (Constenla Umaña 1981: 429)

*dí ‘liquid’ (Constenla Umaña 1981: 396)

*ˈli ‘liquid’ (Constenla Umaña 1981: 396)

*di ‘water’ (Holt 1986: 99)

Atanques <**di**ta> ‘water, river’ (Celedón 1892a: 591, 598)

> Final <ta> in <dita> ‘water, river’ is probably a stem formative which is cognate with its Damana counterpart *ɾa* in *ˈʤiɾa* ‘water’ (Trillos Amaya 2000: 751). An Atanques form derived from *^{n}diʔ may also be attested in <köhkö**rín**> ‘saliva’ (Celedón 1892a: 598). Final <n> in the latter form is probably the reflex of vowel nasality. For the element <köhkö>, compare Proto-Chibchan *kah-ka ‘mouth’.

Bocotá *ˈʧi* ‘water’ (Margery Peña 1993: 63)

Boruca *díʔ* ‘water’ (Quesada Pacheco & Rojas Chaves 1999: 114)

Bribri: Coroma [díʔ] ‘water, river’ (Chevrier 2017a: 56)

> A related form may recur in Coroma [ˈpâɽ̀] ‘sweat’ (Chevrier 2017a: 610) which contains reflexes of *apa ‘body’ and *^{n}diʔ ‘water, river’. Margery Peña (1982: 108) gives Amubre, Katsi, Salitre *diʔ* ‘water’, which also means ‘river’ in Amubre and Katsi (ibid.: 149); a related element may recur in Katsi and Salitre *bùɽa**ɽi*** ‘honey’ (cf. ibid.: 139).

Cabécar /díkɽó/ [díkɽó ~ díkɽ́] ‘water, river’ (Margery Peña 1989: xviii)

Chánguena <*j*i> ‘water’ (Pinart 1890: 4)

Chimila **/di**ˑtakeʔ/ [^{n}**dí**ˑtākèʔ] ‘water’ (Malone 2005: 203)

> Final /takeʔ/ probably does not belong to the root – compare Chimila **/di**ˑjoʔ/ [^{n}**dí**ˑ^{d}jòʔ] ‘rain (noun)’ (Malone 2005: 204).

Damana *ˈ**ʤi**ɾa* ‘water’ (Trillos Amaya 2000: 751)

> Final *ɾa* is probably a stem formative which does not belong to the root. A cognate element might recur in Kogi *ˈni-**na*** ‘river’ (cf. Ortiz Ricaurte 2000: 770).

Dorasque: Chumulu <*j*i, *s*i>, Gualaca <ti> (Pinart 1890: 4), <ti> ‘water’ (Pinart 1882: 54); Chumulu <*s*i>, Gualaca <*c*i> ‘river’ (Pinart 1890: 28)

Guatuso /tiː/ ‘water’ (Constenla Umaña 1998: 9)

> This root may be related to *-li*, a suffix attested in words referring to a liquid (Constenla Umaña 1998: 61).

Guaymí *ɲɤ* ‘water’ (Quesada Pacheco 2008: 50)

Guaymí *ɲɯ* ‘rain’ (Quesada Pacheco 2008: 178) and /dɤ/ ‘chicha’ (ibid.: 31) may belong here, too.

Ika /dʒe/ [dʒɛ] ‘water’ (Landaburu 2000a: 735)

Kogi /ni/ [ɲi] ‘water’ (Ortiz Ricaurte 2000: 780)

This root recurs in *ˈni-**na*** ‘river’ (Ortiz Ricaurte 2000: 770)

Kuna *tii* ‘water, especially fresh or river water’ (Holmer 1952: 159)

Muisca <**si**e> ‘water’ (González de Pérez 1987: 178)

Final <e> is probably a stem formative that recurs, for instance, in <**cu**e> ‘louse of the head’ (González de Pérez 1987: 296)

Nutabe <ni> ‘water> (Rivet 1943a: 26)

Pech ***tì**-sa* ‘bog, ditch’ (Holt 1986: 99)

Note the similarity with Kogi *ˈni-na* ‘river’, derived from *ni* ‘water’ (Ortiz Ricaurte 2000: 770).

Rama *siː* ‘water’ (Grinevald et al. 2002–06)

A related element may recur in Rama ***ariː*** ‘liquid, juice, drink (noun), creek’ (Grinevald et al. 2002–06)

Térraba *dí* ‘water’ (Constenla Umaña 2007: 231)

The corresponding Teribe form is /di/ ‘water, river’ (cf. Quesada 2000a: 36).

Tunebo ***riʔa*** ‘water, river’ (Headland 1997: 163)

Final *a* probably does not belong to the root. Tunebo *riʔˈma* ‘pus’ (Headland 1997: 164) may contain the reflexes of Proto-Chibchan *^{n}diʔ ‘water, river’ and *apa ‘body’. Other reflexes of Proto-Chibchan ‘water, river’ are probably attested in Cobaría *anub **reʔna*** and in Tegría *anub **siʔka*** ‘honey’ (ibid.: 72)

To wear *(^{n}d)iˈa

This form is only tentatively reconstructed as such, and further investigation is needed.

Dorasque: Chumulu <**θá**gu> ‘blanket’ (Pinart 1890: 20), Gualaca <**θá**gua> ‘shirt’ (ibid.: 8), <zagu> ‘sail’ (Pinart 1882: 54)

Final <gua> and <gu> might be stem formatives and not belong to the roots in question.

Guatuso **|tio**ka| ‘clothes’ (Constenla Umaña 1998: 44)

Final *-ka* is a common stem formative element in Guatuso (Constenla Umaña 1998: 61–2).

Kogi **/ʒa**kuˈa/ [**ʒa**kuˈa] ‘clothes’ (Ortíz Ricaurte 2000: 778)

Final /-kuˈa/ is probably a stem formative, ultimately derived from *k^{w}a ‘seed, fruit’ (cf. Pache 2016a).

Muisca **<io**que> ‘leather, tanned skin, paper’ (González de Pérez 1987: 139, 223)

I have no explanation for final <que>; it probably does not belong to the root in question and may derive from Proto-Chibchan *ka ‘leaf’ (cf. Pache 2016a).

Compare also:

Cabécar *iǿ*, remotospective perfective forms *iéɽ* ~ *iíɽ* ‘to dress’ (Sp. *vestir* (tr.)) (Margery Peña 1989: 546)

Guaymí *dã* ‘clothes’ (Quesada Pacheco2008: 51)

Kuna *joa* ‘to put, put on, wear’ (Holmer 1952: 192) and *jokala* ‘shirt’ (ibid.: 192)

Térraba *pǿ**jɪ*** ‘to dress, wear’ (Sp. *vestir*), *pǿ**jɔ**krɔ* ‘shirt’ (Constenla Umaña 2007: 236, 280)

Teribe *djok.lo* ‘shirt’ (Quesada 2000a: 77)

White, morning *^{m}bu^{n}d(u)

*bun ‘white, gray’ (Holt 1986: 94)

It remains to be established to what extent this Proto-Chibchan form can be connected to *^{m}ba- ‘cloud, fog’ (see above).

Barí, eighteenth century, <**buru**kta> ‘cloud’ (Rivet & Armellada 1950: 39)

Final <ta> is probably a stem formative; <k> is probably the reflex of consonant length/gemination which is attested at morpheme boundaries in Barí.

Rama ***plu**ːma* ‘white’ (Grinevald et al. 2002–06)

Final *ma* might be related to the stative nominalizer *-ima* (cf. Craig 1989: 68). I have no explanation for the vowel length.

Térraba ***ɸrubrún***, ***ɸrurún*** ‘white’ (Constenla Umaña 2007: 235)

Reduplication is also attested in other Térraba color terms (cf. Constenla Umaña 2007: 53–4). I have no explanation for final *n*, it might be the reflex of old vowel nasality. The corresponding Teribe form is *p.lú.lún* ‘white’ (cf. Quesada 2000a: 38).

Compare also:

Atanques <bunchikönke> ‘white’ (Celedón 1892a: 592)

Bribri: Coroma [ˈbɽáʔmḭ̃, ˈbɽámḭ̃] ‘morning’ (Chevrier 2017a: 601), Amubre, Katsi, Salitre *buɽé* ‘tomorrow’ (Margery Peña 1982: 22)

Ika *bunsi* ‘white’ (Landaburu 2000a: 748)

Kogi /aˈbuci/ ‘white’ (Ortiz Ricaurte 2000: 768)

Who, someone *^{n}di

Constenla Umaña (1981: 432) juxtaposes the Boruca, Move and Muisca forms without reconstructing a Proto-Chibchan root in this case.

Boruca *di* ‘someone’ (Quesada Pacheco & Rojas Chaves 1999: 115)

A related form may be *dí* ‘who?; who’ (Quesada Pacheco & Rojas Chaves 1999: 183).

Guaymí *ni* ‘person’ (Quesada Pacheco 2008: 51)

This element is also used as a numeral classifier for persons (Quesada Pacheco 2008: 91).

Muisca <**xi**e ~ **si**e> ‘who’ (Adelaar & Muysken 2004: 105)

The element <e> is a frequent stem formative and recurs, for instance, in <cue> ‘louse of the head’ (Adelaar & Muysken 2004: 296).

Compare also:

Cabécar *ɟí* ‘who?’ (Margery Peña 1989: 358)

Wind *^{m}bu^{n}d-ka^{n}d(a)

This Proto-Chibchan term is probably made up of Proto-Chibchan *^{m}bu^{n}d- 'breath, wind', and a form related to *kã^{n}d- 'bone, strong, hard'.

Kogi /mulˈkala/ [mulˈkaɮa] 'wind' (Ortiz Ricaurte 2000: 780)
Kuna ***pur****kala* 'breath, voice, the hissing, vigor' (Holmer 1952: 130)
Rama *pulkat* 'wind'

Compare also:
Ika ˈ*buntikəni* 'wind' (Huber & Reed 1992: 63)

Woman (adult) *^{m}bu^{n}di ~ *^{m}bui^{n}d ~ *^{ŋ}gu^{n}di ~ *^{ŋ}gui^{n}d

*bun(~*pun) 'female, wife' (Holt 1986: 94
Pre-Muisca *p'un- (?) 'woman, girl' (Holmer 1947: 208)
On a deeper level, there may be a relation of cognacy with Proto-Chibchan *^{m}bus- 'woman (young)' (see below).

Bocotá **/bũˈĩrɛ/ [mw̃ˈĩrɛ]** 'woman' (Margery Peña 1996: 14).
I have no explanation for final *ɛ* in this form.
Guatuso /kuɾi/ 'wife' (Constenla Umaña 1998: 10)
Muisca <gui> 'wife' (González de Pérez 1987: 281)
A related form may be <guaia> 'woman' (Sp. *señora*) (González de Pérez 1987: 318), with epenthetic <a> between <u> and <i>.

Compare also:
Atanques <**bun**göma> 'daughter' (Celedón 1892a: 595)

Woman (young) *^{m}bus-

*bun(~*pun) ‘female, wife’ (Holt 1986: 94)

The Atanques and Kogi forms suggest the possibility of old vowel nasalization, which might be explained by the fact that nasality seems to indicate notions of smallness and affection in several American Indian languages (cf. Pache 2016b: 122) The fricative *s, contrasting with *^{n}d in Proto-Chibchan form for ‘woman (adult)’ below, may likewise reflect sound symbolism (see also subsection 3.1.1.1.5).

Boruca *buʃ* ‘adolescent girl’ (Quesada Pacheco & Rojas Chaves 1999: 166)

Cabécar ***busí*** ‘girl’ (Margery Peña 1989: 483)

Kogi /ˈ**munʒi**/ [ˈ**muɲʒi**], [ˈ**muɲʤi**] ‘woman’ (Ortiz Ricaurte 2000: 763, 780)

> The /n/ may be an old reflex of vowel nasalization.

Kuna ***puna*** ‘chiefly in plural: girl(s), women; sister, female cousin’ (Holmer 1952: 128)

Muisca <**fuhuch**a> ‘female’ (González de Pérez 1987: 269); <muysca **fuch**a> ‘woman’ (ibid.: 281)

> I have no explanation for the aspirated vowel attested in some forms. The element <muysca> means ‘man, person’ (Sp. *hombre*) (González de Pérez 1987: 271).

Compare also:

Bribri: Amubre, Katsi, Salitre ***bùsi*** ‘girl’ (Margery Peña 1982: 139)

Guaymí *bũ* ‘granddaughter’ (Quesada Pacheco 2008: 125)

Worm *^{ŋ}gi

*ˈgɪ́ ‘worm’ (Constenla Umaña 1981: 433)

*šin ‘worm’ (Holt 1986: 125)

One might tentatively reconstruct a nasal vowel on the basis of data from Boruca, Bribri, Cabécar, and Pech.

Atanques <ji> ‘worm’ (Celedón 1892a: 595)

Boruca *ʤíŋ* ‘worm’ (Quesada Pacheco & Rojas Chaves 1999: 149)

Cabécar /hĩ́/ ‘worm (generic term)’ (Margery Peña 1989: xvi)

The corresponding form in the San José Cabécar variety is *ĩ́* ‘worm (generic term)’ (Margery Peña 1989: 447).

Damana *ˈʒi* ‘worm’ (Trillos Amaya 2000: 753)

Ika *zi* ‘worm’ (Landaburu 2000a: 737)

Kogi /ʒi/ ‘worm’ (Ortíz Ricaurte 2000: 769)

Muisca ***zi****na* ‘worm, general term’ (González de Pérez 1987: 267)

A related form may be <zisa> ‘worm that the indigenous people (that is, the Muisca?) eat’ (González de Pérez 1987: 267). A stem formative which might be related to <-na> and <-sa> occurs in <muy**za**> ‘flea’ (cf. ibid.: 305).

Pech */ɛ́/* ‘worm’ (Holt 1986: 125)

Compare also:

Bribri: Amubre, Katsi, Salitre *ĩ* ‘worm’ (Margery Peña 1982: 129)

Rama *sar****kin*** ‘boa, whale’ (Grinevald et al. 2002–06)

Wound, trace *sa^{n}da

Atanques <sána> ‘wound’ (Celedón 1892a: 596)

Guatuso |ɬoːlo| ‘trace’ (Constenla Umaña 1998: 47)

Rama ***sal****iːba* ‘sore, boil’ (Grinevald et al. 2002–06)

Final *iːba* might be related to the Rama stative nominalizer *-ima* (cf. Craig 1989: 68; 71).

Compare also:

Boruca *ros*, *roská* ‘wound’ (Quesada Pacheco & Rojas Chaves 1999: 159)

To wrap *^{m}baʔk

Boruca *baʔk* ‘to hug, wrap’ (Quesada Pacheco & Rojas Chaves 1999: 113)

Rama *al****paːk***, *a****paːk*** ‘to sew, meet’ (Grinevald et al. 2002–06)

The transitive form of this verb is *aː****pak*** (Grinevald et al. 2002–06). A related form may be *al****park*** ‘to hold on, peg, paste, hug, embrace, have sex’ (ibid.). The latter form

suggests that a possible reflex of the stop *ʔ may be *r* in Rama. In Kogi, a similar development (stop > rhotic) is attested in /ˈtagbi/ [ˈtaʁbi] 'snake' (Ortiz Ricaurte 2000: 779; this phenomenon had already been observed by Holmer 1953: 317). The element *al-* is an element which normally derives intransitive verbs (cf. Craig 1989: 74).

Tunebo ***bak****onro* [bahkonro] [sic] 'to wrap' (Headland 1997: 78)

I have no explanation for *o* in *bak-o-*. The element *-n* indicates intention and *-ro* is a declarative marker (Headland 1997: 14).

Compare also:

Kogi <mañgui> 'to wrap' (Preuss 1927: 463)

Kuna ***mak****ka* 'sew, mend' (Holmer 1952: 69),

Muisca <**muyhy**ca> 'braid' (González de Pérez 1987: 330)

Yam

*ˈtuˀ 'tuber' (Constenla Umaña 1981: 426)

Bribri: Coroma [túʔ] 'yam' (Chevrier 2017a: 53)

Cabécar: San José Cabécar variety *tú* 'yam' (Margery Peña 1989: 488)

Chánguena <tu> 'yam' (Pinart 1890: 23)

Dorasque: Chumulu, Gualaca <tu> 'yam' (Pinart 1890: 23)

Guatuso *ˈ**tu**ˈkuru* a tuber (Sp. *papa del monte*) (Constenla Umaña 1998: 55)

Compare *ˈkuru* 'fruit' (Constenla Umaña 1998: 55).

Teribe /tu/ 'yam' (Quesada 2000a: 16)

You *^{m}baʔ

*bi- second person prefix (Constenla Umaña 1981: 410)

*ˈbáʔ 'you (sg.)' (Constenla Umaña 1981: 433)

Barí [ˈbːàì] 'you'

I have no explanation for final [ì]. This element is also attested in the Barí term for 'I'.

Bocotá /ˈba/ 'you' (Margery Peña 1996: 24)

Boruca *ba*, *baʔ* ‘you’ (Quesada Pacheco & Rojas Chaves 1999: 196)

Cabécar /bá/ ‘you’ (Margery Peña 1989: xxiii)

Dorasque: Chumulu, Gualaca <ba> ‘you’ (Pinart 1890: 32)

Guatuso |poː| ‘you’ (Constenla Umaña 1998: 43)

Guaymí /mɔ/ ‘you’ (Quesada Pacheco 2008: 31)

Ika *ma* ‘you’ (Landaburu 2000a: 740)

Kogi /ma/ [ma] ‘you’ (Oritz Ricaurte 2000: 779)

Muisca <mue> ‘you’ (González de Pérez 1987: 330)

> An element <u> is regularly inserted between Muisca <b>, <f>, or <m> and <ɣ> or <y> (Adelaar & Muysken 2004: 84).

Rama *maː* ‘you’ (Craig 1989: 103)

Térraba /ɸá/ ‘you’ (Constenla Umaña 2007: 26)

Tunebo ***baʔa*** ‘you’ (Headland 1997: 80)

> Final *a* is probably secondary.

Compare also:

Bribri *béʔ* (Chevrier 2017a: 129), [bà] / [mə̀] ‘you (sg.)’ (ibid.: 197)

> Margery Peña (1982: 156) gives Amubre, Katsi, Salitre *beʔ*, *mã* ‘you’.

Chimila /ammaʔ/ [ʔámːàʔ] ‘you’ (Malone 2005: 208)

Young, sprout *pu

*ˈpú ‘egg, sprout, suckling’

Cabécar *pupú* ‘young’ (Margery Peña 1989: 464)

Guatuso /puː/ ‘egg’ (Constenla Umaña 1981: 379)

Rama ***puk****siːk* ‘milk teeth’ (Grinevald et al. 2002–06)

> The element *siːk* means ‘tooth’ (Grinevald et al. 2002–06). I have no explanation for final *k* in the first element *puk*; a cognate element may recur in Rama *pai****k*** ‘sweet potato’ (cf. ibid.)

Compare also:

Bribri: Amubre, Katsi, Salitre *púpu* ‘young (ref. to an animal)’, Amubre, Katsi *pú* ‘sprout’ (Sp. *retoño*) (Margery Peña 1981: 68, 133)

Index of Proto-Chibchan forms

all$_1$ 36
all$_2$ 37
allative/dative 38
angry 38
arm, wing, shoulder 39
armadillo 40
ashes 41
aspect, imperfective 42
aspect, perfective 43

back$_1$ 43
back$_2$ 44
bad$_1$ 45
bad$_2$ 45
basket, *mochila* 46
bat 46
to bathe, swim 47
to be 48
beam of light, heat 48
beautiful 49
bee, honey 50
bee, wasp 51
to begin, start, first 51
belly 52
big$_1$ 52
big$_2$ 53
bird, dove 54
blood 56
to blow, fly 57
body 57
bone, strong, hard 59
bone, hard 59
breast, teat$_1$ 61
breast, teat$_2$ 61
breath, wind 62
brother$_1$ 63
brother$_2$ 64
brother$_3$ 64
brother-in-law 64
butterfly, hat 65

calabash$_1$ 66
calabash$_2$ 67
to catch, grasp 67
cedar 68
chicha$_1$ 69
chicken 69
child 70
child, small 70
clay, mud 72
cloud, fog 72
coal, hot coal 74
cold, cold substance 74
cold 75
to come 76
comitative$_1$ 77
comitative$_2$ 77
comitative$_3$ 78
to cook$_1$ 79
to cook$_2$ 80
cosmos (sky, day, time, space, earth, place) 81
creeping animal 82
to dance 83
dark 83
dative 84
diarrhea 85
to do, make 86
dog 86
door 87
dove 87
dry$_1$ 88
dry$_2$ 88
dust 89

earth, floor, mud 89
to eat 90
egg, offspring 90
eight 91
to enter 92
excrement 93
exterior 94

face 94
face, eye, fruit 96
father 98
father, uncle, ancestor 99
feather, wing, arm, hand 100
feline$_1$ 100
feline$_2$ 101
field for cultivation 102
fireplace 104
firewood 105
fish 106
flea 107
foot, root 108
four 109
full$_1$ 111

to go$_1$ 112
to go$_2$ 113
God, wind 114
to grow 114
hair, head 115
hand 117
hand, arm 118
hand, finger 120
to hear$_2$ 122
heart, liver, center$_1$ 123
heart, liver, center$_2$ 124
to holler 125
house 127
how much, how many 128
human being 129
hummingbird 129
hunger 130

I$_1$ 130

jealous 133

to know 135

lake, rain 136
to laugh$_1$ 137
leaf 137
lightning 139
lip 140
liquid 141
liver 141
locative$_1$ 142
locative$_2$ 142
locative$_3$ 143
to look for, look after 144
louse 144

maize 145
manioc 146
meat, flesh$_1$ 147
meat, flesh$_2$ 147
monkey 148
moon 149
mosquito$_1$ 149
mother-in-law, daughter-in-law 150
mouth 151
mouth, vagina 152

name 153
nape$_1$ 153
neck 154
net 155
new 155
night, dark 156
nine, ten 157
nominalizer$_1$ 158
nominalizer$_2$ 159
nominalizer$_3$ 160
nose 161

(older) sibling, (older) sister 162
only 163
open 164

pale 165
palm 165
path 167
to peel 167
possessed 168
post, pole 169
pot 169
prick, sting, point 170
pumpkin, squash 171
to put 171

raptor 172
rattle 172
raw 173
red, yellow, ripe 175
relational element$_1$ 176
relational element$_2$ 177
rodent, large 179
rodent, small 180
rope, string$_1$ 181

salt 182
sand 183
to scratch, rub 185
to see 186
seed 186
seed, fruit 187
seven 188
side 189
to sit (singular) 191
six 192
skin 193
to sleep 194
small$_1$ 196
small$_2$ 197
smell 198
snake 198
soft 199
son, child 200
to sow 202
spoon, ladle 202
to stand (singular) 203
stick, bone, tree 204
stomach 207
stone 207
sun, day 209
sun, year 210
to swallow, drink, eat 211
sweet potato 212

tail$_1$ 212
tail$_2$ 213
to take 214
to take out, pick up 214
tasty 215
tear 216
that 217
this 218
three 219
throat 220
throat, hole 221
tobacco 221
tongue 222
tooth (molar) 223
tooth 224
turkey, large galliform bird 225
to turn around 225
turtle 226
to twist 227
two 227

up, sky 229
urine 230

valency-reducer$_1$ 231
valency-reducer$_2$ 231
valency-reducer$_3$ 232

to walk 233
to wash 233
to watch 234
water, river
to wear *(nd)iʻa
white, morning 237
who, someone 238
wind 239
woman (adult) 239
woman (young) 240
worm 240
wound, trace 241
to wrap 241

yam 242
you 242
young, sprout 24

2.3 Reflexes of Proto-Chibchan phonemes in Chibchan languages

This subsection presents the different reflexes of Proto-Chibchan phonemes in 23 different Chibchan languages. It also provides some introductory information on the languages in question and, as far as possible, on their phonemes, their phonetic realization and allophones. It goes without saying that in some cases, such as Duit, Nutabe, and Huetar, available materials are very few.

In most cases, the sound changes postulated in the present subsection concur with those proposed in earlier works by Constenla Umaña (1981, 2012) in the domain of consonants. Concerning Proto-Chibchan vowels (except for vowel nasality), the reflexes observed here tend to be in line with those proposed by Holt (1986).

The sound changes are presented as follows: In the context of vowels, I first discuss the reflexes of Proto-Chibchan *a and of vowel sequences containing *a, followed by reflexes of *i, *ii and of *u and *uu. Reflexes of Proto-Chibchan consonants are discussed in the following order: labial, dental/alveolar, velar, and glottal stops, affricates, fricatives and the liquid archiphoneme *L.

The lexical and grammatical elements from the different daughter languages are presented in alphabetical order.

The language data used in the present subsection come from heterogenous sources, modern and premodern. Forms from indigenous languages are presented in phonemic or phonetic transcriptions here if they are also explicitly given as such in the respective source. In every case, except for data given between pointed brackets, I adapted the transcriptions to IPA symbols. For details, see the section on data presentation at the beginning of this thesis. Additional information on orthographic conventions can also be found in the respective subsections below.

2.3.1 Atanques

Kankuí or Kakatukua, the language of the Kankuama, is also known under the names of Atanques or Atanquez (Adelaar & Muysken 2004: 67). The only source on this barely known Chibchan language is a wordlist of nine pages, published in 1892 by Rafael Celedón. This author (p. 591) informs the reader that Atanques was spoken, at the time of his investigation, in the townhip of Atanques (department of César), in the Sierra Nevada de Santa Marta of northern Colombia. During the first half of the twentieth century, the language of Atanques disappeared (Constenla Umaña 2012: 394). Notwithstanding, some people may still remember single words or phrases of it (Ortiz Ricaurte 2000: 759). Adelaar and Muysken (2004: 67) consider the possibility that Atanques was the closest relative of Damana, and so does Constenla Umaña (2012: 417), who groups both languages together. On a higher level, Constenla Umaña (ibid.) links Atanques with Ika and Chimila among the Eastern Arhuacic languages, in the subgroup of Magdalenic Chibchan languages.

2.3.1.1 The sounds of Atanques

Some information on the sounds of Atanques can be gleaned from Celedón's (1892a) vocabulary. It is discussed in the following two subsections.

2.3.1.1.1 Atanques vowels and suprasegmental features[22]

Table 14 illustrates Celedón's (1892a) inventory of graphemes representing Atanques vowels.

TABLE 14
ATANQUES VOWELS

	Front	Central	Back
High	<i>	<ü>	<u>
Near high			<ö>
High–mid	<e>		<o>
Low		<a>	

Based on Celedón (1892a).

[22] In several Chibchan languages, such as Cabécar or Ika, there seems to be an interaction between vowel quality and stress or tone. For this reason, features such as stress and tone are dealt with in the subsections on vowels, although they are suprasegmental features.

Some vowels bear an acute accent such as <chú> ‘calabash’ (Celedón 1892a: 592). It is not clear what this diacritic refers to, it may be stress or tone. As to the sounds referred to by <ü> and <ö>, Celedón (ibid.) informs the reader that they are pronounced as in German. Whereas <ü> seems to refer to a variant of *u*, <ö> probably refers to a variant of *a*, for instance in <kum**á**ne> ‘belly’ (Sp. *barriga*), <küm**ö**na> ‘belly’ (Sp. *vientre*). Word-finally, it seems that <a> is realized as <e> in some cases, given the alternation of <a> and <e> in <kumán**e**> ‘belly’ (Sp. *barriga*) and <kümön**a**> ‘belly’ (Sp. *vientre*) (cf. Celedón 1892a: 592, 599).

2.3.1.1.2 Atanques consonants

Table 15 illustrates the graphemes used by Celedón (1892a) in order to represent Atanques consonants.

TABLE 15
ATANQUES CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar	Glottal
Voiceless stops	<p>	<t>		<k>	
Voiced stop	<b>			<g>	
Voiceless affricate			<ch>		
Voiceless fricatives	<f>	<s>	<sh>		<h>
Voiced fricative			<j>		
Nasals	<m>	<n>			
Vibrant		<r, rr>			
(Glides)	<u>		<y>		

Based on Celedón (1892a).

Consonant gemination or length seems to have existed in Atanques – compare <suggajéna> ‘sour, bitter’ (Sp. *agrio*) (Celedón 1892a: 591), or <kukkuá> ‘ear’ (ibid.: 597); it is not clear to what extent this phenomenon has a phonemic status in the language.

In cases such as <díua> ‘rainshower’ (Sp. *aguacero*) (Celedón 1892a: 591), the element <u> is tentatively interpreted as a glide. The same is true for <y> in a word such as <yámi> ‘there’ (ibid.).

In the term for ‘hair of the head’, <**lhan**göne> (Celedón 1892a: 592), it is difficult to determine what <lh> may have referred to. Atanques <lh> may represent [ɬ], a sound that is also attested in Guatuso (cf. Constenla Umaña 1998: 8). But whereas Guatuso *ɬ* is a reflex of Proto-Chibchan *s, Atanques <lh> derives from Proto-Chibchan *ʦ.

Celedón (1892a: 591) states that <ch> is pronounced as in Spanish, <sh> as in English, and <j> as in French, which implies that the represented sounds are *ʧ*, *ʃ*, and *ʒ*. The letter <h>, in Celedón’s orthography, symbolizes a *h*-like fricative: he describes <h> as referring to the sound represented by the <j> in Spanish. However, the Atanques fricative in question is not found in word-initial position in Spanish loans: compare Spanish *jabón* ‘soap’ which corresponds to Atanques <abóne> ‘soap’ (cf. ibid.: 594).

The sound referred to by the letter <f>, for instance in <faki> ‘scorpion’ (Celedón 1892a: 591) was probably distinct from the labiodental fricative *f*. This is suggested by the observation that Spanish *f* gives *p* in Atanques <piéto> (cf. ibid.: 594), a form which probably reflects Spanish *fiesta*. Instead, Atanques <f> may have represented a voiceless bilabial fricative [ɸ] – this would not be surprising, given the fact that this sound is widely attested in other Chibchan languages, such as Guatuso, Térraba, and probably also Muisca (see the corresponding subsections below).

2.3.1.2 Reflexes of Proto-Chibchan phonemes in Atanques

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.1.2.1) and of Proto-Chibchan consonants (2.3.1.2.2) in Atanques.

2.3.1.2.1 Reflexes of Proto-Chibchan vowels in Atanques (cf. also Constenla Umaña 1981: 320–2)

***a > {<a>, <o>, <ö>}**

*^{m}bahka(i) ‘four’ > <**maké**ua> ‘four’ (Celedón 1892a: 593)

*^{m}bak- ‘flea’ > <**máh**chi> ‘jigger’ (Celedón 1892a: 596)

*^{n}da^{m}ba- ‘cold, cold substance’ > <**damön**gána> ‘snow’ (Celedón 1892a: 596)

[*^{n}di-g^{w}a] ‘lake, rain’ > <díua> ‘rainshower’ (Sp. *aguacero*) (Celedón 1892a: 591)

*^{ŋ}ga^{m}ba ‘son, child’ > <göma> ‘son’ (Celedón 1892a: 595)

*ŋgu^{n}daʔ ‘hand, arm’ > <**günah**káne> ‘arm’ (Celedón 1892a: 592), <gúna> ‘hand’ (ibid.: 596)

*ŋg^{w}a ~ *u^{ŋ}g ‘fish’ > <**uá**ka> ‘fish’ (Celedón 1892a: 597)

*haka ‘tooth (molar)’ > <akó> ‘wisdom tooth’ (Celedón 1892a: 596)

*hap- ‘eight’ <**amb**igua> ‘eight’ (Celedón 1892a: 597)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > <uman**júma**> ‘eyelid’ (Celedón 1892a: 597)

*-ka nominalizer$_3$ > <ka> agentive nominalizer in <mó**ka**> ‘weepy, weeper’ (Sp. *llorón*) (Celedón 1892a: 596)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > <**kán**e> ‘stick’ (Celedón 1892a: 597)

*kah ‘open’ > <**koh**kába> ‘mouth’ (Celedón 1892a: 592)

*ka(ka) ‘father’ > <káke> ‘father’ (Celedón 1892a: 597)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > <**kög**ui> ‘year’ (Celedón 1892a: 592)

*La ‘bee, honey’ > <**ná**nga> ‘wax’ (Celedón 1892a: 592)

*sa^{n}da ‘wound, trace’ > <sána> ‘wound’ (Celedón 1892a: 596)

*ʦa ‘hair, head’ > <**cha**kúku> ‘head’, <**lhan**göne> ‘hair of the head’ (Celedón 1892a: 592), <shá> ‘hair’ (Sp. *pelo*) (ibid.: 597)

*u^{m}ba ‘face, eye, fruit’ > <úma> ‘eye’ (Celedón 1892a: 597)

***ai > <e>**

*^{m}bahka(i) ‘four’ > <**maké**ua> ‘four’ (Celedón 1892a: 593)

*^{m}bãʔ(ĩ) ‘three’ > <**mé**na> ‘three’ (Celedón 1892a: 599)

{*au, *uu} > <o>

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > <**mo**ka> ‘weepy, weeper (Sp. *llorón*)’ (Celedón 1892a: 596)

*^{m}buuʔ ‘two’ > <**mo**ga> ‘two’ (Celedón 1892a: 593)

*kuuʔ ‘hand, finger’ > <**ko**göna> ‘wrist’ (Celedón 1892a: 596)

{*i, *ii} > <i>

*^{n}diʔ ‘water, river’ > <**di**ta> ‘water, river’ (Celedón 1892a: 591, 598)

[*^{n}di-g^{w}a] ‘lake, rain’ > <díua> ‘rainshower’ (Sp. *aguacero*) (Celedón 1892a: 591)

*ŋgi ‘firewood’ > <**gui**é> ‘fire’ (Celedón 1892a: 594)

*ŋgi ‘worm’ > <ji> ‘worm’ (Celedón 1892a: 595)

*ʦii ‘night, dark’ > <**chin**ke> ‘night’ (Celedón 1892a: 596)

{*u, *ũ} > {<u>, <ü>}

*ᵐbũⁿd(ũ) ‘ashes’ > <bun> ‘ashes’ (Celedón 1892a: 593)

*ⁿdu ‘beautiful’ > <**zu**kánka> ‘beautiful’ (Celedón 1892a: 592)

*ⁿdu- ‘sun, year’ > <**du**iku> ‘noon’ (Celedón 1892a: 596)

*ⁿdu(ⁿd) ‘bird, dove’ > <**súr**i> ‘bird’ (Celedón 1892a: 592)

*(ⁿdu-)ku(ⁿd) ‘bat’ > <dúngu> ‘bat’ (Celedón 1892a: 596)

*ⁿduʔ ‘tooth’ > <**sun**köna> ‘beak’ (Celedón 1892a: 597)

*ᵑguⁿdaʔ ‘hand, arm’ > <**günah**káne> ‘arm’ (Celedón 1892a: 592), <gúna> ‘hand’ (ibid.: 596)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > <uman**júma**> ‘eyelid’ (Celedón 1892a: 597)

*kuh ‘to hear$_2$’ > <**kuk**kuá> ‘ear’ (Celedón 1892a: 597)

*kuh ‘seven’ > <**kú**ga> ‘seven’ (Celedón 1892a: 598)

*suh(-kui) ‘rodent, small’ > <**túhku**a> ‘mouse’ (Celedón 1892a: 598)

*ʦuʔ ‘breast, teat$_2$’ > <tútu> ‘breast, teat, udder’ (Celedón 1892a: 597–9)

*uᵐba ‘face, eye, fruit’ > <úma> ‘eye’ (Celedón 1892a: 597)

2.3.1.2.2 Reflexes of Proto-Chibchan consonants in Atanques (cf. also Constenla Umaña 1981: 322–5)

***p > <mb>**

*hap- ‘eight’ <**amb**igua> ‘eight’ (Celedón 1892a: 597)

***ᵐb > <b> / #__<u>**

***ᵐb > <m> / elsewhere**

*ᵐbak- ‘flea’ > <**máh**chi> ‘jigger’ (Celedón 1892a: 596)

*ᵐbahka(i) ‘four’ > <**maké**ua> ‘four’ (Celedón 1892a: 593)

*ᵐbau(ⁿd) ~ *kau(ⁿd) ‘to holler’ > <**mo**ka> ‘weepy, weeper’ (Sp. *llorón*) (Celedón 1892a: 596)

*ᵐbãʔ(ĩ) ‘three’ > <**mé**na> ‘three’ (Celedón 1892a: 599)

*ᵐbũⁿd(ũ) ‘ashes’ > <bun> ‘ashes’ (Celedón 1892a: 593)

*ᵐbuuʔ ‘two’ > <**mo**ga> ‘two’ (Celedón 1892a: 593)

*ⁿdaᵐba- ‘cold, cold substance’ > <**damön**gána> ‘snow’ (Celedón 1892a: 596)

*ᵑgaᵐba ‘son, child’ > <göma> ‘son’ (Celedón 1892a: 595)

*uᵐba ‘face, eye, fruit’ > <úma> ‘eye’ (Celedón 1892a: 597)

***^{n}d > {<d>, <z>, <s>} / #__<u>**

***^{n}d > <d> / #__V$_{[other]}$**

***^{n}d > <n> /elsewhere**

*^{m}bũ^{n}d(ũ) ‘ashes’ > <bun> ‘ashes’ (Celedón 1892a: 593)

*^{n}da^{m}ba- ‘cold, cold substance’ > <**damön**gána> ‘snow’ (Celedón 1892a: 596)

*^{n}diʔ ‘water, river’ > <**di**ta> ‘water, river’ (Celedón 1892a: 591, 598)

[*^{n}di-g^{w}a] ‘lake, rain’ > <díua> ‘rainshower’ (Sp. *aguacero*) (Celedón 1892a: 591)

*^{n}du ‘beautiful’ > <**zu**kánka> ‘beautiful’ (Celedón 1892a: 592)

*^{n}du- ‘sun, year’ > <**du**iku> ‘noon’ (Celedón 1892a: 596)

*^{n}du(^{n}d) ‘bird, dove’ > <**súr**i> ‘bird’ (Celedón 1892a: 592)

*(^{n}du-)ku(^{n}d) ‘bat’ > <dúngu> ‘bat’ (Celedón 1892a: 596)

*^{n}duʔ ‘tooth’ > <**sun**köna> ‘beak’ (Celedón 1892a: 597)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > <**günah**káne> ‘arm’ (Celedón 1892a: 592), <gúna> ‘hand’ (ibid.: 596)

*sa^{n}da ‘wound, trace’ > <sána> ‘wound’ (Celedón 1892a: 596)

***k > <k> / #__**

***k > {<h>, Ø} / __C**

***k > {<k>, <g>} / elsewhere**

*^{m}bahka(i) ‘four’ > <**maké**ua> ‘four’ (Celedón 1892a: 593)

*^{m}bak- ‘flea’ > <**máh**chi> ‘jigger’ (Celedón 1892a: 596)

*(^{n}du-)ku(^{n}d) ‘bat’ > <dúngu> ‘bat’ (Celedón 1892a: 596)

*haka ‘tooth (molar)’ > <akó> ‘wisdom tooth’ (Celedón 1892a: 596)

*-ka nominalizer$_{3}$ > <ka> agentive nominalizer in <mó**ka**> ‘weepy, weeper’ (Sp. *llorón*) (Celedón 1892a: 596)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > <**káne**> ‘stick’ (Celedón 1892a: 597)

*kah ‘open’ > <**koh**kába> ‘mouth’ (Celedón 1892a: 592)

*ka(ka) ‘father’ > <káke> ‘father’ (Celedón 1892a: 597)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > <**kög**ui> ‘year’ (Celedón 1892a: 592)

*kuh ‘to hear$_{2}$’ > <**kuk**kuá> ‘ear’ (Celedón 1892a: 597)

*kuh ‘seven’ > <**kú**ga> ‘seven’ (Celedón 1892a: 598)

*kuuʔ ‘hand, finger’ > <**ko**göna> ‘wrist’ (Celedón 1892a: 596)

*suh(-kui) ‘rodent, small’ > <**túhku**a> ‘mouse’ (Celedón 1892a: 598)

***ŋg > <j> / #__*ĩ**

***ŋg > <g> / elsewhere**

*ŋga^{m}ba ‘son, child’ > <göma> ‘son’ (Celedón 1892a: 595)

*ŋgi ‘firewood’ > <**gui**é> ‘fire’ (Celedón 1892a: 594)

*ŋgi ‘worm’ > <ji> ‘worm’ (Celedón 1892a: 595)

*ŋgu^{n}daʔ ‘hand, arm’ > <**günah**káne> ‘arm’ (Celedón 1892a: 592), <gúna> ‘hand’ (ibid.: 596)

***ŋg^{w} > <u>**

[*^{n}di-g^{w}a] ‘lake, rain’ > <díua> ‘rainshower’ (Sp. *aguacero*) (Celedón 1892a: 591)

*ŋg^{w}a ~ *uŋg ‘fish’ > <**uá**ka> ‘fish’ (Celedón 1892a: 597)

***ʔ > <h> / __<k>**

***ʔ > Ø / elsewhere**

*^{m}buuʔ ‘two’ > <**mo**ga> ‘two’ (Celedón 1892a: 593)

*^{n}diʔ ‘water, river’ > <**di**ta> ‘water, river’ (Celedón 1892a: 591, 598)

[*^{n}di-g^{w}a] ‘lake, rain’ > <díua> ‘rainshower’ (Sp. *aguacero*) (Celedón 1892a: 591)

*^{n}duʔ ‘tooth’ > <**sun**köna> ‘beak’ (Celedón 1892a: 597)

*ŋgu^{n}daʔ ‘hand, arm’ > <**günah**káne> ‘arm’ (Celedón 1892a: 592), <gúna> ‘hand’ (ibid.: 596)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > <**kög**ui> ‘year’ (Celedón 1892a: 592)

*kuuʔ ‘hand, finger’ > <**ko**göna> ‘wrist’ (Celedón 1892a: 596)

*tsuʔ ‘breast, teat$_2$’ > <túu> ‘breast, teat, udder’ (Celedón 1892a: 597–9)

***ts > <t> / __<u>**

***ts > <ch>, <lh>, <sh> / elsewhere**

*tsa ‘hair, head’ > <**cha**kúku> ‘head’, <**lhan**göne> ‘hair of the head’ (Celedón 1892a: 592), <shá> ‘hair’ (Sp. *pelo*) (ibid.: 597)

*tsii ‘night, dark’ > <**chin**ke> ‘night’ (Celedón 1892a: 596)

*tsuʔ ‘breast, teat$_2$’ > <túu> ‘breast, teat, udder’ (Celedón 1892a: 597–9)

***s > <t> / __<u>**

***s > <s> / elsewhere**

*sa^{n}da ‘wound, trace’ > <sána> ‘wound’ (Celedón 1892a: 596)

*suh(-kui) ‘rodent, small’ > <**túhku**a> ‘mouse’ (Celedón 1892a: 598)

***h > <j> / __<u>**

***h > {<h>, <k>, Ø} / __<k>**

***h > Ø / elsewhere**

*^{m}bahka(i) ‘four’ > <**maké**ua> ‘four’ (Celedón 1892a: 593)

*hap- ‘eight’ <**amb**igua> ‘eight’ (Celedón 1892a: 597)

*huka ~ *huBa ~ *kua**ʔ** ‘skin’ > <uman**júma**> ‘eyelid’ (Celedón 1892a: 597)

*kah ‘open’ > <**koh**kába> ‘mouth’ (Celedón 1892a: 592)

*kuh ‘to hear$_2$’ > <**kuk**kuá> ‘ear’ (Celedón 1892a: 597)

*kuh ‘seven’ > <**kú**ga> ‘seven’ (Celedón 1892a: 598)

*suh(-kui) ‘rodent, small’ > <**túhku**a> ‘mouse’ (Celedón 1892a: 598)

***#L > <n>**

*La ‘bee, honey’ > <**ná**nga> ‘wax’ (Celedón 1892a: 592)

2.3.2 Barí

Barí, one of the easternmost Chibchan languages, is spoken by some 5,000 people in the Sierra de Perijá, on both sides of the Venezuelian–Colombian border. In Venezuela, the language is spoken in the state of Zulia, and in Colombia, in the department of Norte de Santander. The Barí have often been confused with their Cariban-speaking neighbors, the Yukpa; both have been referred to as *Motilones* 'shaven heads' in the literature (Adelaar & Muysken 2004: 80). In colonial times, the *Motilones* were feared greatly by the Spaniards (cf. e.g. Gilij 1784: 430–1; Julian 1787: 176–86).

At present, Barí is the least-known of the still-spoken Chibchan languages. Studies on the phoneme inventory of Barí have been undertaken by Mogollón Pérez (1989, 2000). Some core features of Barí morphosyntax were described by Rincón and Quesada (2001/02) and Quesada (2004, 2007). The most exhaustive Barí word lists so far have been prepared by Villamañán (1978) and Lizarralde et al. (2015).

Barí is exceptional within the Chibchan family in terms of possible comparisons between language data from the present and language data from colonial times: two different wordlists from the eighteenth century – compiled by the clergymen Catarroja (1730) and Alfaro (1788) – have survived to the present day and have been juxtaposed with modern Barí data by Villamañán (1978). The Barí vocabulary of Catarroja (1730) seems to belong to a dialect which is different both from the dialect recorded by Alfaro (1788) and from present-day Barí (Pache 2018a): Compare, for instance <borogua> 'banana, plantain' in Catarroja's list versus <borupa> in Alfaro's 1788 wordlist (Villamañán 1978: 47) and [bõɾõˈʔbà] in present-day Barí (except if indicated otherwise, modern Barí data are from my own fieldwok, Pache 2014–16). Barí terms recorded by Catarroja (1730) and Alfaro (1788) have been juxtaposed with their counterparts in present-day Barí by Villamañán (1978). Some examples are shown in table 16.

TABLE 16
COMPARISON OF SOME TERMS IN AN 18TH-CENTURY BARÍ DIALECT AND MODERN BARÍ

English	18th-century Barí	Modern Barí
'arrow'	<tiy>	<chi>
'moon'	<tiba>	<chibáig>
'water'	<chimara>	<síma, símara>

Sources: Catarroja (1730, cited in Villamañán 1978) and Villamañán (1978).

In some instances, the eighteenth-century wordlists of Barí contain terms that have cognates in other Chibchan languages, but that have no cognate reflex in present-day Barí, for instance in the case <taba> 'mud' (Catarroja 1730, cited in Villamañán 1978: 13) – compare Proto-Chibchan *taB(a) 'earth, floor, mud' in subsection 2.2. As to Barí numeral terms, all Proto-Chibchan numerals seem to have been replaced by new forms in this language. In the numeral for 'four', [ās:ã̄ã̄ɾĩˈd:ǻǻ^{ŋ}], the element [ās:ã̄ã̄ɾĩ], seems to be related to the term for 'brother' (Pache 2014–16). Such a link between the term for 'four' and 'brother' (also 'friend' or 'other') is relatively widespread in several Lowland South American languages (Pache 2018).

2.3.2.1 The sounds of Barí

This subsection discusses the sounds of present-day Barí. If not indicated otherwise, all data from modern Barí proposed here are from my own fieldwork among speakers of the community of Aruutatakae, in the state of Zulia, in Venezuela. The words analyzed here were recorded with Héctor Achirabú (*1968) and Ada Aciboroco (*1992), both fluent speakers of Barí, during two trips in 2014 and 2016. As presented below, the Barí data discussed here are from Héctor Achirabú. More investigation of this language is needed, both in terms of phonology and of morphosyntax.

2.3.2.1.1 Barí vowels and suprasegmentals

Table 17 gives an overview of oral vowel phonemes in present-day Barí, as proposed by Mogollón Pérez (2000).

TABLE 17
BARÍ PHONEMES: ORAL VOWELS

	Front	Central	Back
High	i	ɨ	u
High–mid	e		o
Low		a	

Source: Mogollón Pérez (2000: 721).

Vowel nasality is distinctive in Barí (Mogollón Pérez 1989, 2000). Mogollón Pérez (2000: 721) identifies the same number of oppositions in oral and nasal consonants, which implies the inventory illustrated in table 18.

TABLE 18
BARÍ PHONEMES: NASAL VOWELS

	Front	Central	Back
High	ĩ	ɨ̃	ũ
High–mid	ẽ		õ
Low		ã	

Source: Mogollón Pérez (2000: 721).

The high central vowels *ɨ* and *ɨ̃* have a limited distribution, since they are only attested in diphtongs, in syllable coda, following *a* (for instance in [cīˈbáɨ́] 'moon'). The high central vowel in Barí seems to reflect, at least in the latter case, a Proto-Chibchan glottal stop (see 2.3.2.2.2). Sequences of distinct vowels, in Barí, always consist of a high–mid or low vowel and a high vowel. The high vowel, which can be *i*, *u*, or *ɨ*, is never stressed: compare, for instance, [cīˈbáɨ́] 'moon', [ˈtāɨ̄ʔtà] 'unripe', [bīˈsːòù] 'wild pig'. In other cases, vowel sequences consist of two identical vowels, as in [bīˈòò] 'woman' or in [bɛ́ɛ́] 'dark'. Stress is often found on the last syllable of a word in Barí; it is not distinctive (Mogollón Pérez 2000: 723). Barí has lexical tone (high, mid, low), as illustrated by the forms [bàɾúⁿ] 'sweet' (transcription from Chevrier 2017a: 388), [īk̄ˈbːé] 'many', or [ããʃ̃ˈʃì̀ì] 'root, vein'. Barí has tonal sandhi, that is, the tone pattern of isolated forms may change if they are part of a more complex construction, a phenomenon which was already observed by Mogollón Pérez (2000: 723–4): the forms [bōɾōʔbà] 'plantain' versus [bōɾōˈʔbá bːáˈɾűⁿ][23] 'sweet banana' may illustrate this phenomenon. Possible grammatical functions of tone in Barí, pointed out by Adelaar and Muysken (2004: 80), remain to be investigated.

In roots with a CVCV structure, the first vowel is sometimes syncopated, as for instance in [ãʃˈdːòò] 'fingernail' – in eighteenth-century Barí, compare <tiro> (Catarroja 1730) and <tictu> (Alfaro 1788) 'fingernail', both cited in Villamañán (1978: 57).

2.3.2.1.2 Barí consonants

The phoneme inventory of Barí is remarkable insofar as there seem to be as many vowel as consonant phonemes in the language – the number of consonant phonemes, in other words, appears to be relatively small, and table 19 proposes a preliminary interpretation of Barí phonemes and their allophones.

[23] In this construction, high tone on [ű] appears to be a third higher than high tone on [á].

TABLE 19
BARÍ PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Velar	Glottal
Voiceless stops		t [t, c]	k	ʔ [ʔ, h]
Voiced stops	b	d [d, ɟ, ɲ]		
Affricate				
Fricatives		s [s, ʃ]		
Nasals	(m)	n [n, ɾ]		
Vibrant		r [ɾ, l]		

Based on Mogollón Pérez (2000: 719) and Pache (2014–16).

Modern Barí distinguishes between voiced and voiceless stops only in the case of *t* and *d*. The voiced bilabial stop *b* does not have a voiceless counterpart in present-day Barí, and *k* has no voiced counterpart. Some consonantal phonemes are realized in a specific way in certain environments. The segments *d* and *s* are realized as [ɟ] and [ʃ], respectively, before high vowels (Mogollón Pérez 2000: 720). The reflex of *d* before (old) high nasal vowel is [ɲ], compare, for instance, [ɲáą́] ‘sun’ in modern Barí and <dia> ‘sun’ in eighteenth-century Barí (Rivet & Armellada 1950: 42). The segment *t* is realized as [c] or [tʲ] before *i* (Mogollón Pérez 2000: 720), as in [cīˈbáɨ́] ‘moon’.

The phonemic status of *ʔ* is still unclear. This segment is only found in root-final position, for instance in [būˈɾíʔ ~ bəˈɾíʔ] ‘to hug’, and it might turn out to be an allophone of /k/ in this position (a similar situation is attested in Ika, see below). The voiceless glottal fricative *h* is only found in morphemes pertaining to information structure, such as focus *-hũ*, topic *-hã* and contrast *-hĩ* (cf. Mogollón Pérez 2000: 720–1; Quesada 2004: 365).

As a difference with Chibchan languages from Central America, such as Bribri and Cabécar, and with other languages from South America, a voiced oral stop may be followed by a nasal vowel in Barí, compare, for instance [dákù] ‘pot’, or [dáɲ̃ũ̀] ‘turtle’ (both transcribed as such by Chevrier 2017a: 387), or in [d̃ˈbːáɨ́] ‘he, she’.

Some stem formative elements of Barí seem to be quite specific for this language, for instance the final element [-ˈmīmī] or [-ˈbīmī] which might originally encode notions of smallness or roundness and which is attested in the words for ‘teat’, ‘louse’, and ‘eye’.

2.3.2.2 Reflexes of Proto-Chibchan phonemes in Barí

This subsection presents the reflexes of Proto-Chibchan vowels and consonants in present-day Barí from Venezuela (2.3.2.2.1 and 2.3.2.2.2) and from a Barí dialect from the eighteenth-century dialect that was recorded by Catarroja (1730, cited in Rivet & Armellada 1950) (2.3.2.2.3 and 2.3.2.2.4). In some cases, the sound changes attested in the dialect recorded by Catarroja (1730) differ from those found in present-day Barí (see above).

2.3.2.2.1 Reflexes of Proto-Chibchan vowels in present-day Barí (cf. also Constenla Umaña 1981: 329–30)

***a > [a]**

*^{m}ba^{n}d- ‘tasty’ > [**bàrű**^{n}] ‘sweet’ (transcription from Chevrier 2017a: 388)

*^{m}ba^{n}di ~ *^{m}bai^{n}d ‘human being’ > [bːāˈɾì] ‘Barí, person’

*^{m}baʔ ‘beam of light, heat’ > [cīˈ**báɨ́**] ‘ moon’

*^{m}baʔ ‘you’ > [ˈbːàì] ‘you’

*^{m}ba- ‘cloud, fog’ > [**bā**ˈʧːì] ‘white’

*^{n}da^{m}ba ‘feline$_1$’ > [ˈlāābà] ‘jaguar’

*^{n}daH(^{n}d) ‘I$_1$’ > [nɜ̀ɜ̄̀] ‘I’

*^{ŋ}ga^{m}ba ‘son, child’ > [ˈààbà] ‘cub, chick’

*hapi ~ *apiʔ ‘blood’ > [āˈbːì] ‘blood’

*ka ‘leaf’ > [kɜ́ɜ́ ā**qā**ˈʧːì] ‘leaf (of a tree)’

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > [ā**q**ː**ā**ˈ**ɾ**à] ‘bone’

*kap- ‘to sleep’ > [**kāb**ˈɾūmī] ‘you sleep’

*tah(-ka) ‘raw’ > [ˈ**tāīʔ**tà] ‘unripe’

*taʔBa ‘red, yellow, ripe’ > [ˈdāābà] ‘ripe’

*ʦa ‘hair, head’ > [āˈsːáɨ́] ‘head’

*uB(V)(-ta) ‘sand’ > [ˈũ̃ŋdà] ‘sand’

{*ai, *ii} > {[éé], [ɜ́ɜ́]}

*Baiʔ ‘sweet potato’ > [bːéé] ‘sweet potato’

*ʦii ‘night, dark’ > [sɜ́ɜ́] ‘night’

***au > [o]**

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > [**kō**ˈ**ɾȭȭ** ɟːì] ‘s/he is weeping’

***i > [i]**

*^{m}ba^{n}di ~ *^{m}bai^{n}d ‘human being’ > [bːāˈɾì] ‘Barí, person’

*hapi ~ *apiʔ ‘blood’ > [āˈbːì] ‘blood’

*kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di ‘throat, hole’ > [būˈɾì] ‘throat’

*k^{w}ik ‘arm, wing, shoulder’ > [kū̃ˈ**ɪ́ɪ́**] ‘upper back’

*si ‘basket, *mochila*’ > [**ʃɪ̄ʃɪ̄**ˈbãɪ̃^{n}dá] ‘bag’

*ʦipi ‘mouth, vagina’ > [**ʃɪ̄bɪ̄**ˈbì] ‘vagina’

***u > {[u], [ũ], [o]}**

***ũ > [u]**

*kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di ‘throat, hole’ > [būˈɾì] ‘throat’

*kuʔ(-Ba) ‘tongue’ > [ā**q**ː**ō**ˈ**b**ɛ̀ɛ̀] ‘tongue’

*kũʔ ‘louse’ > [kùùʔ] ‘louse’

*pũʔ ‘raptor’ > [bːúú] ‘raptor’

*pu^{n}d- ‘dry$_{2}$’ > [būˈɾú] ‘dry’

*suʔ ‘to peel’ > [ʃúʔʃúʔ] ‘to scrape, peel’

*ʦuʔ ‘breast, teat$_{2}$’ > [tːúʔ] ‘nipple, teat’

*uB(V)(-ta) ‘sand’ > [ˈũ̃ŋdà] ‘sand’

2.3.2.2.2 Reflexes of Proto-Chibchan consonants in present-day Barí (cf. also Constenla Umaña 1981: 330–2)

***^{m}b > [b]**

*^{m}ba^{n}d- ‘tasty’ > *^{m}ba^{n}d- ‘tasty’ > [**bàɾ**ú^{n}] ‘sweet’ (transcription from Chevrier 2017a: 388)

*^{m}ba^{n}di ~ *^{m}bai^{n}d ‘human being’ > [bːāˈɾì] ‘Barí, person’

*^{m}baʔ ‘beam of light, heat’ > [cīˈ**báɨ́**] ‘ moon’

*^{m}baʔ ‘you’ > [ˈbːàì] ‘you’

*^{m}ba- ‘cloud, fog’ > [**bā**ˈʧːì] ‘white’

*^{n}da^{m}ba ‘feline$_{1}$’ > [ˈlāābà] ‘jaguar’

*^{ŋ}ga^{m}ba ‘son, child’ > [ˈààbà] ‘cub, chick’

***p > [b]**

*hapi ~ *apiʔ ‘blood’ > [ā˧bːì] ‘blood’

*kap- ‘to sleep’ > [**kāb**˧ɾūmī] ‘you sleep’

*pu^{n}d- ‘dry$_2$’ > [bū˧ɾú] ‘dry’

*pũʔ ‘raptor’ > [bːúú] ‘raptor’

*ʦipi ‘mouth, vagina’ > [**ʃībī**˧bì] ‘vagina’

***t > {[t], [d]}**

*tah(-ka) ‘raw’ > [˧**tāīʔ**tà] ‘unripe’

*taʔBa ‘red, yellow, ripe’ > [˧dāābà] ‘ripe’[24]

*uB(V)(-ta) ‘sand’ > [˧ũŋdà] ‘sand’

***^{n}d > {[n], [l]} / #__**

***^{n}d > [ɾ] / V__V**

*^{m}ba^{n}d- ‘tasty’ > *^{m}ba^{n}d- ‘tasty’ > [**bàɾ**ú^{n}] ‘sweet’ (transcription from Chevrier 2017a: 388)

*^{m}ba^{n}di ~ *^{m}bai^{n}d ‘human being’ > [bːā˧ɾì] ‘Barí, person’

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > [**kō**˧**ɾ**õ̃õ̃ ɟːì] ‘s/he is weeping’

*^{n}da^{m}ba ‘feline$_1$’ > [˧lāābà] ‘jaguar’

*^{n}daH(^{n}d) ‘I$_1$’ > [nãĩ̀] ‘I’

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > [ā**q**ː**ā**˧**ɾ**à] ‘bone’

*kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di ‘throat, hole’ > [bū˧ɾì] ‘throat’

*pu^{n}d- ‘dry$_2$’ > [bū˧ɾú] ‘dry’

***k > [k] / #__**

***k > [q] / V$_{[-front]}$__V$_{[-front]}$**

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > [**kō**˧**ɾ**õ̃õ̃ ɟːì] ‘s/he is weeping’

*ka ‘leaf’ > [káá āq**ā**˧ʧːì] ‘leaf (of a tree)’

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > [ā**q**ː**ā**˧**ɾ**à] ‘bone’

*kap- ‘to sleep’ > [**kāb**˧ɾūmī] ‘you sleep’

*kuʔ(-Ba) ‘tongue’ > [ā**q**ː**ō**˧**b**ɛ̀ɛ̀] ‘tongue’

[24] Alfaro’s (1788) manuscript, cited in Villamañán (1978: 10, 37) gives <**daaba**rione> ‘yellow’ and <borupa**taba**> ‘ripe’ (the first element in the latter form means ‘banana’). Both forms reflect Proto-Chibchan *taʔBa ‘red, yellow, ripe’.

*kũʔ ‘louse’ > [kùùʔ] ‘louse’

***ᵑg > Ø / #__**

*ᵑgaᵐba ‘son, child’ > [ˈààbà] ‘cub, chick’

***k^{w} > [ku] / #__**

*k^{w}ik ‘arm, wing, shoulder’ > [kũ̄ˈĩ́ĩ́] ‘upper back’

***ʔ > {[ʔ], [i], Ø}**

*Baiʔ ‘sweet potato’ > [bːéé] ‘sweet potato’

*ᵐbaʔ ‘you’ > [ˈbːàì] ‘you’

*ᵐbaʔ ‘beam of light, heat’ > [cīˈ**báí**] ‘ moon’

*suʔ ‘to peel’ > [ʃúʔʃúʔ] ‘to scrape, peel’

*taʔBa ‘red, yellow, ripe’ > [ˈdāābà] ‘ripe’

*ʦuʔ ‘breast, teat$_2$’ > [tːúʔ] ‘nipple, teat’

***ʦ > [ʃ] / __[i]**

***ʦ > [t] / __[u]**

***ʦ > [s] / __V$_{[other]}$**

*ʦii ‘night, dark’ > [sɛ́ɛ́] ‘night’

*ʦa ‘hair, head’ > [āˈsːáɨ́] ‘head’

*ʦipi ‘mouth, vagina’ > [**ʃībī**ˈbì] ‘vagina’

*ʦuʔ ‘breast, teat$_2$’ > [tːúʔ] ‘nipple, teat’

***s > [ʃ]**

*si ‘basket, *mochila*’ > [**ʃīʃī**ˈbɛ̃ɛ̃̄ⁿdá] ‘bag’

*suʔ ‘to peel’ > [ʃúʔʃúʔ] ‘to scrape, peel’

***h > [iʔ] / __$**

*tah(-ka) ‘raw’ > [ˈ**tāīʔ**tà] ‘unripe’

2.3.2.2.3 Reflexes of Proto-Chibchan vowels in eighteenth-century Barí (cf. also Constenla Umaña 1981: 329–30)

***a > {<a>, <o>}**

*^{n}di?-a ‘liquid’ > <nonko**lía**> a fermented drink (*masato*) (Rivet & Armellada 1950: 31)

*^{ŋ}ga^{m}ba ‘son, child’ > <aba> ‘son’ (Rivet & Armellada 1950: 35)

*hapi ~ *api? ‘blood’ > <abiy> ‘blood’ (Rivet & Armellada 1950: 41)

*ka ‘to catch, grasp’ > <kaa> ‘to have’ (Sp. *tener*) (Rivet & Armellada 1950: 30)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > <a**kar**à> ‘bone’ (Rivet & Armellada 1950: 39)

*kap- ‘to sleep’ > <koba> ‘to sleep’ (Rivet & Armellada 1950: 33)

*sa^{n}d(a) ‘bad$_2$’ > <sala> ‘bad’ (Rivet & Armellada 1950: 37)

*taB(a) ‘earth, floor, mud’ > <taba> ‘mud, clay’ (Rivet & Armellada 1950: 30)

*tah(-ka) ‘raw’ > <**tak**ta> ‘raw’ (Rivet & Armellada 1950: 33)

*ta?Ba ‘red, yellow, ripe’ > <taba-r> ‘to ripen’ (Rivet & Armellada 1950: 38)

*ʦa ‘hair, head’ > <ča> ‘head’ (Rivet & Armellada 1950: 42)

{*ai, *ii} > {<e>, <ee>}

*Bai? ‘sweet potato’ > <bee> ‘sweet potato’ (Rivet & Armellada 1950: 40)

*ʦii ‘night, dark’ > <čen> ‘night, by night’ (Rivet & Armellada 1950: 39)

***au > <o>**

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > <**kor**a-r> ‘to weep’ (Rivet & Armellada 1950: 40)

***i > <i>**

*^{n}di ‘sun, day’ > <**dí**a> ‘sun’ (Rivet & Armellada 1950: 42)

*^{n}dihk- ‘to sow’ > <**dig**a-r> ‘to sow’ (Rivet & Armellada 1950: 41)

*^{n}di?-a ‘liquid’ > <nonko**lía**> a fermented drink (*masato*) (Rivet & Armellada 1950: 31)

*hapi ~ *api? ‘blood’ > <abiy> ‘blood’ (Rivet & Armellada 1950: 41)

*k^{w}ik ‘arm, wing, shoulder’ > <kuix> ‘back’ (Rivet & Armellada 1950: 33)

*si ‘basket, *mochila*’ > <**sisi**bey-ta> ‘bag’ (Rivet & Armellada 1950: 41)

***u > <u>**

*^{m}bu^{n}d(u) ‘white, morning’ > <**buru**kta> ‘cloud’ (Rivet & Armellada 1950: 39)

*kũʔ ‘louse’ > <kuu> ‘louse’ (Rivet & Armellada 1950: 40)

*ʦuʔ ‘breast, teat$_2$’ > <tu> ‘nipple’ (Rivet & Armellada 1950: 37)

2.3.2.2.4 Reflexes of Proto-Chibchan consonants in eighteenth-century Barí (cf. also Constenla Umaña 1981: 330–2)

***p > <b>**

*hapi ~ *apiʔ ‘blood’ > <abiy> ‘blood’ (Rivet & Armellada 1950: 41)

*kap- ‘to sleep’ > <koba> ‘to sleep’ (Rivet & Armellada 1950: 33)

***^{m}b > <b>**

*^{m}bu^{n}d(u) ‘white, morning’ > <**buru**kta> ‘cloud’ (Rivet & Armellada 1950: 39)

*^{ŋ}ga^{m}ba ‘son, child’ > <aba> ‘son’ (Rivet & Armellada 1950: 35)

***t > <t> / #__**

*taB(a) ‘earth, floor, mud’ > <taba> ‘mud, clay’ (Rivet & Armellada 1950: 30)

*tah(-ka) ‘raw’ > <**tak**ta> ‘raw’ (Rivet & Armellada 1950: 33)

*taʔBa ‘red, yellow, ripe’ > <taba-r> ‘to ripen’ (Rivet & Armellada 1950: 38)

***^{n}d > <d> / #__**

***^{n}d > <l> / V__<i>**

***^{n}d > {<r>, <l>} / elsewhere**

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > <**kor**a-r> ‘to weep’ (Rivet & Armellada 1950: 40)

*^{m}bu^{n}d(u) ‘white, morning’ > <**buru**kta> ‘cloud’ (Rivet & Armellada 1950: 39)

*^{n}di ‘sun, day’ > <**dí**a> ‘sun’ (Rivet & Armellada 1950: 42)

*^{n}dihk- ‘to sow’ > <**dig**a-r> ‘to sow’ (Rivet & Armellada 1950: 41)

*^{n}diʔ-a ‘liquid’ > <nonko**lía**> a fermented drink (*masato*) (Rivet & Armellada 1950: 31)

*sa^{n}d(a) ‘bad$_2$’ > <sala> ‘bad’ (Rivet & Armellada 1950: 37)

***k > <k> / #__**

***k > {<k>, <g>} / V__V**

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > <**kor**a-r> ‘to weep’ (Rivet & Armellada 1950: 40)

*^{n}dihk- ‘to sow’ > <**dig**a-r> ‘to sow’ (Rivet & Armellada 1950: 41)

*ka ‘to catch, grasp’ > <kaa> ‘to have’ (Sp. *tener*) (Rivet & Armellada 1950: 30)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > <a**kar**à> ‘bone’ (Rivet & Armellada 1950: 39)

*kap- ‘to sleep’ > <koba> ‘to sleep’ (Rivet & Armellada 1950: 33)

*kũʔ ‘louse’ > <kuu> ‘louse’ (Rivet & Armellada 1950: 40)

*k^{w}ik ‘arm, wing, shoulder’ > <kuix> ‘back’ (Rivet & Armellada 1950: 33)

***^{ŋ}g > Ø / #__**

*^{ŋ}ga^{m}ba ‘son, child’ > <aba> ‘son’ (Rivet & Armellada 1950: 35)

***k^{w} > <ku>**

*k^{w}ik ‘arm, wing, shoulder’ > <kuix> ‘back’ (Rivet & Armellada 1950: 33)

***ʔ > Ø**

*Baiʔ ‘sweet potato’ > <bee> ‘sweet potato’ (Rivet & Armellada 1950: 40)

*^{n}diʔ-a ‘liquid’ > <nonko**lía**> a fermented drink (*masato*) (Rivet & Armellada 1950: 31)

*kũʔ ‘louse’ > <kuu> ‘louse’ (Rivet & Armellada 1950: 40)

*taʔBa ‘red, yellow, ripe’ > <taba-r> ‘to ripen’ (Rivet & Armellada 1950: 38)

*tsuʔ ‘breast, teat$_2$’ > <tu> ‘nipple’ (Rivet & Armellada 1950: 37)

***ts > <t> / #__<u>**

***ts > <č> / elsewhere**

*tsa ‘hair, head’ > <ča> ‘head’ (Rivet & Armellada 1950: 42)

*tsii ‘night, dark’ > <čen> ‘night, by night’ (Rivet & Armellada 1950: 39)

*tsuʔ ‘breast, teat$_2$’ > <tu> ‘nipple’ (Rivet & Armellada 1950: 37)

***s > <s>**

*sa^{n}d(a) ‘bad$_2$’ > <sala> ‘bad’ (Rivet & Armellada 1950: 37)

*si ‘basket, *mochila*’ > <**sisi**bey-ta> ‘bag’ (Rivet & Armellada 1950: 41)

***h > Ø**

*^{n}dihk- ‘to sow’ > <**dig**a-r> ‘to sow’ (Rivet & Armellada 1950: 41)

2.3.3 Bocotá

The Bocotá or Buglere language was spoken by some 2,500 people in the last quarter of the twentieth century; the language must nowadays be considered as heavily endangered (cf. Quesada 2007: 35; Sánchez Avendaño 2013). Its area of distribution is western Panama, more specifically, certain areas of the provinces of Veraguas, Bocas del Toro and Chiriquí (Margery Peña 1996: 7). This distribution pattern reflects a westward migration of Bocotá speaking groups, from Veraguas province to Bocas del Toro, and later to Chiriquí provinces. Additionally, there are also some 400 speakers of Bocotá in eastern Costa Rica, in the province of Puntarenas. The latter migrated there from Panama in the second half of the twentieth century, together with Guaymí-speaking groups. Being in a constant diaspora, and living, as a minority group, among outnumbering speakers of Guaymí, Bocotá-speaking populations lost a great deal of their original cultural traits, for instance in the domains of religion and social organization (Quesada 2008: 40–3). The Bocotá variety referred to in this subsection is Bocotá from Chiriquí (Margery Peña 1993: 53). Its speakers lived, in the 1990's, amidst some 52,000 speakers of Guaymí (Margery Peña 1996: 7).

Based on shared innovations, Constenla Umaña (2012: 417) groups Bocotá together with Guaymí in the Guaymiic subgroup of the Eastern Isthmic branch of Chibchan languages.

An overview of Bocotá (Chiriqui) phonology is given by Margery Peña (1996), and an overview of Bocotá morphosyntax is given by Quesada (2012). The Bocotá vocabulary compared in the present work is from Margery Peña (1993, 1996).

In Bocotá (as in Guaymí), some body part terms bear no similarities with their counterparts in other Chibchan languages, for instance, *u'da* 'meat', and *'olo* 'ear' (cf. Margery Peña 1993). The fact that the reflex of Proto-Chibchan *$^{\eta}$g is *h* in some Bocotá terms is to a certain extent paralleled in Chocoan languages (cf. Pache 2016b: 116; subsection 3.2.3.2).

2.3.3.1 The sounds of Bocotá

Data on the phoneme inventory of Chiriquí Bocotá are from Margery Peña (1996). In what follows, I give an overview of the vowel phonemes and their realization, and then of the consonant phonemes and their realization.

2.3.4.1.1 Bocotá vowels and suprasegmentals

As Guaymí, Bocotá has a series of oral and one of nasal vowels (cf. Chevrier 2017a: 369). The oral vowels of this language are shown in table 20.

TABLE 20
BOCOTÁ PHONEMES: ORAL VOWELS

	Front	Central	Back
High	i		u
High–mid	e		o
Low-mid	ɛ		ɔ
Low		a	

Source: Margery Peña (1996: 9).

The set of nasal vowels is somewhat smaller, as illustrated in table 21.

TABLE 21
BOCOTÁ PHONEMES: NASAL VOWELS

	Front	Central	Back
High tense	ĩ		ũ
Low-mid	ɛ̃		ɔ̃
Low		ã	

Source: Margery Peña (1996: 9–10).

Chevrier's (2017a: 369–73) analysis of Bocotá vowel nasality is followed here; note, however, that Margery Peña (1996: 23) interprets nasality as a suprasegmental feature in this language.

Stress is indicated by an acute accent in the orthography/transcription of Margery (1993, 1996) and represented by <ˈ> in the present work. Its status is phonemic in Bocotá, as illustrated by pairs such as /ˈdabɛ/ 'red' versus /daˈbɛ/ 'ripe' (Margery Peña 1996: 23), or /ˈdagɛ/ 'bitter, sour' versus /daˈgɛ/ 'royal palm (*Roystonea regia*)' (ibid.). Stress is also distinctive in monosyllabic forms, for instance in /ˈba/ 'you' versus /ba/ 'shape, appearance'. In cases like these, stress is only perceptible when the lexical element in question is embedded in a clause (ibid.: 24). In certain contexts, stressed vowels in polysyllabic words are realized as long vowels (ibid.: 12–3).

Nasal vowels are followed by a velar nasal in certain contexts: in stressed syllables, before a word-boundary. This is illustrated by the form /ʧuˈdũ/ [ʧuˈnũŋ] ‘pig’ (Margery Peña 1996: 13). If the syllable containing the nasal vowel is followed by another syllable (instead of being followed by a word boundary), the nasal coda consonant assimilates to the following consonant, as in /ˈbĩdu/ [ˈmĩndu] ‘to see’ (ibid.: 13–4).

The vowel /a/ is realized as [ə] in some cases, for instance in certain unstressed syllables: compare /saˈɾa/ [səˈɾa] ‘foot’, /daˈgɛ/ [dəˈgɛ/] ‘royal palm (*Roystonea regia*)’, /guˈagaba/ [gwˈaɣəba] ‘eye’, and /hãˈlĩgada/ [hãˈlĩŋgəda] ‘ant’ (Margery Peña 1996: 12).

Any vowel can be the nucleus of a syllable (Margery Peña 1996: 20). There are also vowel sequences in Bocotá, except the following impossible sequences: /ii*/, /ĩĩ*/, /uu*/, /ũũ*/, /iɔ*/, /ĩõ*/, /ũõ*/, and /ũõ*/ (ibid.: 20).

2.3.3.1.2 Bocotá consonants

The consonant inventory of Bocotá is illustrated in table 22.

TABLE 22
BOCOTÁ PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Postalveolar	Velar	Glottal
Voiceless stops		t		k	
Voiced stops	b	d		g	
Prenasalized stops	(m͡b)	(n͡d)		(ŋ͡g)	
Voiceless affricate			ʧ		
Voiced affricate			ʤ		
Fricatives		s			h
Lateral		l			
Vibrant		ɾ			

Sources: (Margery Peña 1988, 1996: 10). Prenasalized stops are not postulated as Bocotá phonemes by Margery Pena (1988).

Margery Peña (1996) postulates the existence of prenasalized stops as Bocotá phonemes, whereas Margery Peña (1988) does not. According to the latter publication, prenasalized stops would be allophones of the voiced oral stops. This interpretation is also preferred by Chevrier (2017a: 369–73). Depending on nasality of the following

vowel, voiced stops and affricates, such as Bocotá /b/, /d/, /ʤ/ and /g/ are realized as [m], [mb], [n], [ɲ] and [ŋ], respectively. Examples are /bũĩɾɛ/ [mw̃ĩ̃ɾɛ] ‘woman’, /bɾɛ̃/ [mbr̃ɛ̃ŋ] ‘Pleiades’, and /ʤãˈbã/ [ɲəmãŋ] ‘calabash’ (Margery Peña 1996: 14–8). Alternatively, one might also argue that we are dealing with voiced stop archiphonemes, unspecified in terms of nasality (Willem Adelaar, p.c.). Between two vowels, or between a vowel and a non-nasalized sibilant, /b/, /d/ and /g/ are lenited and are realized as [β], [ð], and [ɣ], respectively, for instance in /gaˈda/ [gəˈða] ‘bone’. In word-final position, /b/, /d/, and /g/ are also realized as nasal consonants [m], [n], and [ŋ], for instance in /kũĩˈõb/ [kũjˈõm] ‘two (referring to human beings)’, in /kuˈadɾad/ [kwˈaðɾan] ‘suddenly’, and in /bɔləˈgag/ [bɔləˈgaŋ] ‘volcano’ (ibid.: 15–7). Generally speaking, consonants are rarely found in coda position, since Chiriquí Bocotá has a tendency for open syllables (ibid.: 22). The prenasalized stops /m͡b/, /n͡d/, and /ŋ͡g/ are realized as [mm], [nn] and [ŋŋ] if followed by a nasal vowel, according to the interpretation of Margery Peña (ibid.: 17).

In intervocalic position, there seems to be free variation between *t* and *d*, between *k* and *g*, and between *ʧ* and *ʤ*. The consonant undergoing variation is either the onset consonant of the last syllable (be it stressed or unstressed) or of a stressed syllable (ibid.: 18); compare, for instance, /ˈbatɛ ~ ˈbadɛ/ ‘outside’, /bliˈtɛga ~ bliˈdɛga/ ‘to forget’, /ˈkagata ~ ˈkagada/ ‘cheekbone’, /ˈʧage ~ ˈʤage/ ‘to walk’ (Sp. *andar*) (ibid.: 19). Additionally, *k* and *ʧ* can occur in variation with *g* and *ʤ*, respectively, in word-initial position, compare /ˈklɛ ~ ˈglɛ/ ‘to be’ (Sp. *estar*), /ˈgli ka ~ ˈgli ga/ ‘leaf’, /kuˈaɾa ~ guˈaɾa/ ‘skin’ (ibid.: 19), /buˈʧu ~ buʤu/ ‘a class of small bananas’, /ˈʧagɛ ~ ˈʤagɛ/ ‘to walk’, /ˈʧuʧu ~ ˈʧuʤu/ ‘nipple, teat’ (ibid.: 19).

The sonants /ɾ/ and /l/ are nasalized if followed by a nasal vowel, as illustrated in /ˈbɾɛ̃/ [ˈmbr̃ɛ̃ŋ] ‘Pleiades’ (cf. Margery Peña 1996: 16). In onset position, /ɾ/ is realized as a vibrant [r] (ibid.: 18); alternatively, the underlying phoneme would be /r/, and it would be lenited between two vowels, being realized as [ɾ] in this position.

In clusters of different consonants, the second consonant is always a sonant. In case the sonant is /l/, C_1 can be /k/, /b/, /g/, /mb/, /ŋ͡g/, or /h/. In case C_2 is /ɾ/, C_1 can be /t/, /k/, /b/, /d/, /g/, /m͡b/, /ŋ͡g/, /s/, or /h/ (Margery Peña 1996: 22).

2.3.3.2 Reflexes of Proto-Chibchan phonemes in Bocotá

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.3.2.1) and of Proto-Chibchan consonants (2.3.3.2.2) in Bocotá.

2.3.3.2.1 Reflexes of Proto-Chibchan vowels in Bocotá (cf. also Constenla Umaña 1981: 286–9)

***a > {*a*, *ã*, *ɛ*, *e*}**[25]

*apa ‘body’ > /ba/ ‘shape, appearance’ (Margery Peña 1996: 24)

*^{m}ba^{n}d- ‘all$_1$’ > ***bã*** ˈ***l****ɛ* ‘completely’ (Margery Peña 1993: 82)

*^{m}ba^{n}d- ‘tasty’ > ˈ***bal****ɛ* ‘sweet’, ˈ***bl****ɛ* ‘sea’ (Margery Peña 1993: 60–1)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > ***ba*** ˈ***da****gli* ~ ***ba*** ˈ***ta****gli* ‘end’ (Margery Peña 1993: 59–60)

*^{m}bahka(i) ‘four’ > ˈ*baga* ‘four’ (Margery Peña 1993: 60)

*^{m}baʔ ‘you’ > /ˈba/ ‘you’ (Margery Peña 1996: 24)

*^{n}da^{m}ba ‘brother$_1$’ > ***da*** ˈ***ba****ia* ‘sister (said by a man); brother (said by a woman)’ (Margery Peña 1993: 65)

*^{n}daH(^{n}d) ‘I$_1$’ > /ˈʧa/ ‘I’ (Margery Peña 1996: 9)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > ˈ***ʧa****gɛ* ‘to go’ (Margery Peña 1993: 63)

*^{n}di^{n}da / *^{n}disa ‘dry$_1$’ > ˈ***ɾa****lɛ* ‘dry’ (Margery Peña 1993: 67)

[*^{n}di-g^{w}a] ‘lake, rain’ > ˈ*ʧi guˈa* ‘lake’ (Margery Peña 1993: 64)

*^{n}dua ‘tobacco’ > *ʧu*ˈ*a* ‘tobacco’ (Margery Peña 1993: 64)

*^{ŋ}ga ‘excrement’ > /ˈhɛ̃/ ‘excrement’ (Margery Peña 1996: 9)

*^{ŋ}ga(^{n}da) ‘back$_2$’ > ***hɛ****gɛ* ˈ*tɛ* ‘back’ (Margery Peña 1993: 74)

*^{ŋ}ga^{n}da ‘neck’ > *gda* ‘neck’ (Levinsohn 1975: 15)

*^{ŋ}g^{w}a ~ *u^{ŋ}g ‘fish’ > /ũˈɛ̃/ [ˈw̃ɛ̃ŋ] ‘fish (generic term)’ (Margery Peña 1996: 12)

*^{ŋ}g^{w}a(k) ‘face’ > *gu*ˈ*a* ‘face’ (Margery Peña 1993: 70), ***o*** ˈ***a****gli* ‘temple’ (ibid.: 86)

*hak ~ *kaʔ ‘stone’ > /ˈke/ ‘stone’ (Margery Peña 1996: 9)

*haka ~ *akaʔ ‘name’ > *kã* ‘name’ (Margery Peña 1993: 78)

*hap- ‘eight’ > ˈ***hab****a* ‘eight’ (Margery Peña 1993: 73)

*(hi-)i^{n}da ~ *(hi-)ita ‘full$_1$’ > /ˈɛdɛ/ ‘full’ (Margery Peña 1996: 12)

*huka ‘palm’ > *hu*ˈ*gã* ‘palm tree, general term’ (Margery Peña 1993: 77)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > **/ku**ˈ**a**ɾa ~ **gu**ˈ**a**ɾa/ ‘skin’ (Margery Peña 1996: 19)

*ka allative/dative > /kɛ ~ gɛ/ dative postposition (Margery Peña 1996: 19)

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[25] In certain contexts, the reflex of *a is different in Bocotá, notably in the environment of *^{m}b: If separated by a reflex of this consonant, the reflex of *a is *i* in Bocotá *ki*ˈ*bigua* ‘tongue’ (cf. Margery Peña 1993: 79), from *kuʔ(-Ba) ‘tongue’) or in Bocotá *tibi* ‘supernatural being with a snake-like aspect’ (cf. ibid.: 91), from *takamb- ~ *tambak ‘snake’. A similar phenonmenon is attested in Guaymí (see below, subsection 2.3.13). The matter requires further investigation.

*ka ‘leaf’ > /ga/ ‘leaf’ (Margery Peña 1996: 24)

*-ka nominalizer$_3$ > -*ŋ͡gã* agentive nominalizer (Margery Peña 1993: 86)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > **/ga**ˈ**da/** [**gə**ˈ**ð**a] ‘bone’ (Margery Peña 1996: 16)

*ka^{n}daʔ ‘net’ > *gɛˈdɛ* ‘bag’ (Sp. *bolsa*) (Margery Peña 1993: 69)

*kah ‘open’ > /ˈka/ ‘mouth’ (Margery Peña 1996: 9)

*kap- ‘to sleep’ > *gɛˈbɛ* ‘to sleep’ (Margery Peña 1993: 69)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > ˈ***gã*** ‘time, space, world’ (Margery Peña 1993: 85)

*k^{w}a ‘seed, fruit’ > *gaˈba* ‘fruit’ (Margery Peña 1993: 68)

*taB(a) ‘earth, floor, mud’ > *daˈba* ‘earth, floor’ (Margery Peña 1993: 65)

*taH(^{m}ba) ‘heart, liver, center$_2$’ > ˈ***ta****gua* ‘liver’ (Margery Peña 1993: 90)

*taʔBa ‘red, yellow, ripe’ > /ˈdabɛ/ ‘red’, /daˈbɛ/ ‘ripe’ (Margery Peña 1996: 23)

*taʔ ‘rattle’ > ˈ*dã* ‘gourd rattle’ (Margery Peña 1993: 84)

ã > *ã

*^{m}bãʔ(ĩ) ‘three’ > ˈ*bãĩ* ‘three’ (Margery Peña 1993: 82)

*^{n}dã^{m}bã / *sã^{m}bã ‘calabash$_1$’ > /ʤãˈbã/ [ɲ̃ˈmãŋ] ‘calabash’ (Margery Peña 1996: 16)

{*ai, *ii} > {*e*, *ɛ*}

*^{m}bii ‘up, sky’ > ***bɛ́****gaba* ‘star’ (Margery Peña 1993: 60)

*^{n}dii(k) ‘nose’ > /ˈse/ ‘nose’ (Margery Peña 1996: 11)

*tai^{n}d- ‘six’ > ***tɛ***ˈ***ɾ****ɛgɛ* ‘six’ (Margery Peña 1993: 91)

{*au, *uu} > {*ɔu*, *ɔ*, *o*}

*hau^{m}b ~ *a^{m}buʔ ‘to bathe, swim’ > ˈ***hɔb***ɛ* ‘to bathe’ (Margery Peña 1993: 76)

*^{m}buuʔ ‘two’ > /goˈ**bɔu/** ‘two’ (Margery Peña 1996: 21)

*kuuʔ ‘hand, finger’ > /ˈko/ ‘hand’ (Margery Peña 1996: 9)

*tau ‘dog’ > /ˈtɔ/ ‘dog’ (Margery Peña 1996: 10)

***i > {*i*, *ĩ*, *ɛ*, *ɛ̃*}**

*^{m}ba^{n}di ‘hunger’ > /ˈbli/ ‘hunger’ (Margery Peña 1996: 11)

*^{m}bu^{n}di ~ *^{m}bui^{n}d ~ *^{ŋ}gu^{n}di ~ *^{ŋ}gui^{n}d ‘woman (adult)’ > **/bũ**ˈ**ĩrɛ/** [**mw̃**ˈ**ĩr**ɛ] ‘woman’ (Margery Peña 1996: 14)

*ᵐbuⁿdi ~ *kuⁿdi ~ *kuiⁿd(i) ‘big$_1$’ > /kuˈɛri ~ guˈɛri/ ‘big’ (Margery Peña 1996: 19)

*ⁿdiʔ ‘water, river’ > *ˈʧi* ‘water’ (Margery Peña 1993: 63)

[*ⁿdi-gʷa] ‘lake, rain’ > *ˈʧi guˈa* ‘lake’ (Margery Peña 1993: 64)

*ᵑgi ‘firewood’ > /ˈhi/ ‘firewood’ (Margery Peña 1996: 11)

*(hi-)iⁿda ~ *(hi-)ita ‘full$_1$’ > /ˈɛdɛ/ ‘full’ (Margery Peña 1996: 12)

*i(k) ‘manioc’ > *ˈi* ‘manioc’ (Margery Peña 1993: 72)

*ki ‘rope, string$_1$’ > /ˈgi/ ‘rope’ (Margery Peña 1996: 11)

*kuⁿdi ~ *kuiⁿd ‘to eat’ > ***ˈgud****ɛ* ~ ***ˈgut****ɛ* ‘to eat’ (Margery Peña 1993: 71)

*kuⁿdi ~ *kuiⁿd ‘rodent, large’ > ***gũ ˈĩd****ɛ̃* ‘squirrel’ (Margery Peña 1993: 72)

*kʷi ‘turtle’ > *gɔˈbi* ‘turtle’ (Margery Peña 1993: 70)

*Li ‘to cook$_1$’ > /a**lí**ɛ́/ [ʔa**lí**ɛ] ‘to cook’ (Margery Peña 1996: 12)

*suh(-kui) ‘rodent, small’ > *sɔgũˈɛ̃* ‘mouse’ (Margery Peña 1993: 89)

ĩ > *ĩ

*ᵐbãʔ(ĩ) ‘three’ > *ˈbãĩ* ‘three’ (Margery Peña 1993: 82)

*huⁿdĩ ~ uⁿdĩʔ ‘monkey’ > *huˈlĩŋ* ‘howler monkey’ (Margery Peña 1993: 77)

***u > {*u*, *ũ*, *ɔ*}**

*ᵐbuⁿdi ~ *ᵐbuiⁿd ~ *ᵑguⁿdi ~ *ᵑguiⁿd ‘woman (adult)’ > **/bũˈĩrɛ/** [**mw̃ˈĩrɛ**] ‘woman’ (Margery Peña 1996: 14)

*ᵐbuⁿdi ~ *kuⁿdi ~ *kuiⁿd(i) ‘big$_1$’ > /kuˈɛri ~ guˈɛri/ ‘big’ (Margery Peña 1996: 19)

*ᵐbuⁿd(u) ‘bee, wasp’ > ***bu ˈdu*** *ˈbõsaga* ‘drone’ (Margery Peña 1993: 62)

*ⁿdu- ‘sun, year’ > **/ʧuˈi/** [**ˈʧwi**] ‘sun’ (Margery Peña 1996: 12)

*ⁿdu ‘beautiful’ > /dũ/ [nũ] ‘good, beautiful’ (Margery Peña 1996: 15)

*ⁿdua ‘tobacco’ > *ʧuˈa* ‘tobacco’ (Margery Peña 1993: 64)

*ⁿduⁿd- ‘seed’ > **/ʧuˈdɛ/** ‘seed’ (Margery Peña 1996: 11)

*(ⁿdu-)ku(ⁿd) ‘bat’ > ***sugu***ˈ*gɛ* ‘bat’ (Margery Peña 1993: 90)

*ⁿduh(k) ‘tail$_2$’ > ***su***ˈ*gra* ‘tail’ (Margery Peña 1993: 90)

*ⁿduʔ ‘armadillo’ > /ʧu/ ‘armadillo’ (Margery Peña 1996: 24)

*ᵑgu ‘to take’ > ***hũ***ˈ*ã* ‘to grab, take’ (Margery Peña 1993: 78)

*hu ‘house’ > /hu/ ‘house’ (Margery Peña 1996: 24)

*huⁿdĩ ~ uⁿdĩʔ ‘monkey’ > *huˈlĩŋ* ‘howler monkey’ (Margery Peña 1993: 77)

*huka ‘palm’ > *huˈgã* ‘palm tree, general term’ (Margery Peña 1993: 77)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > **/ku**ˈ**a**ɾa ~ **gu**ˈ**a**ɾa/ ‘skin’ (Margery Peña 1996: 19)

*ku^{n}di ~ *kui^{n}d ‘to eat’ > ˈ***gud***ɛ ~ ˈ***gut***ɛ ‘to eat’ (Margery Peña 1993: 71)

*kuh ‘seven’ > ***gu****gɛ* ‘seven’ (Margery Peña 1993: 71)

*suh(-kui) ‘rodent, small’ > *sɔgũ*ˈ*ɛ̃* ‘mouse’ (Margery Peña 1993: 89)

*ʦuʔ ‘breast, teat$_2$’ > ***ʧu***ˈ***ʧu*** ‘teat’ (Margery Peña 1993: 64)

*u^{n}du ‘cedar’ > ˈ*du* ‘canoe’ (Margery Peña 1993: 67)

ũ > *ũ

*^{m}bũ^{n}d(ũ) ‘ashes’ > /bũˈdũ/ [mũˈnũŋ] (Margery Peña 1996: 15)

*kũʔ ‘louse’ > /ˈkũ/ ‘louse’ (Margery Peña 1996: 10)

*pũʔ ‘raptor’ > /ˈbũ/ [ˈmũŋ] ‘sparrowhawk’ (Margery Peña 1996: 13)

2.3.3.2.2 Reflexes of Proto-Chibchan consonants in Bocotá (cf. also Constenla Umaña 1981: 289–94)

p > *b

*apa ‘body’ > /ba/ ‘shape, appearance’ (Margery Peña 1996: 24)

*hap- ‘eight’ > ˈ***hab***a* ‘eight’ (Margery Peña 1993: 73)

*kap- ‘to sleep’ > *gɛ*ˈ*bɛ* ‘to sleep’ (Margery Peña 1993: 69)

*pũʔ ‘raptor’ > /ˈbũ/ [ˈmũŋ] ‘sparrowhawk’ (Margery Peña 1996: 13)

^{m}b > *b

*hau^{m}b ~ *a^{m}buʔ ‘to bathe, swim’ > ˈ***hɔb***ɛ* ‘to bathe’ (Margery Peña 1993: 76)

*^{m}b- ‘to go$_1$’ > **/b**ɛ/ auxiliary indicating future tense (Margery Peña 1996: 35)

*^{m}ba- ‘cloud, fog’ > ***bo***ˈ*ga* ‘cloud, mist’ (Margery Peña 1993: 62)

*^{m}ba^{n}d- ‘tasty’ > ˈ***bal***ɛ ‘sweet’, ˈ***bl***ɛ ‘sea’ (Margery Peña 1993: 60–1)

*^{m}ba^{n}d- ‘all$_1$’ > ***bã***ˈ***l***ɛ ‘completely’ (Margery Peña 1993: 82)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > ***ba***ˈ***da****gli* ~ ***ba***ˈ***ta****gli* ‘end’ (Margery Peña 1993: 59–60)

*^{m}ba^{n}di ‘hunger’ > /ˈbli/ ‘hunger’ (Margery Peña 1996: 11)

*^{m}bahka(i) ‘four’ > ˈ*baga* ‘four’ (Margery Peña 1993: 60)

*^{m}baʔ ‘you’ > /ˈba/ ‘you’ (Margery Peña 1996: 24)

*^{m}bãʔ(ĩ) ‘three’ > ˈ*bãĩ* ‘three’ (Margery Peña 1993: 82)

*ᵐbii ‘up, sky’ > ***bɛ́****gaba* ‘star’ (Margery Peña 1993: 60)

*ᵐbuⁿd- ‘breath, wind’ > ***blĩ***ˈ*ɛ̃* ‘wind’ (Margery Peña 1993: 83)

*ᵐbuⁿdi ~ *ᵐbuiⁿd ~ *ᵑguⁿdi ~ *ᵑguiⁿd ‘woman (adult)’ > **/bũˈĩrɛ/** [**mw̃ˈĩrɛ**] ‘woman’ (Margery Peña 1996: 14)

*ᵐbuⁿd(u) ‘bee, wasp’ > ***bu***ˈ***du*** *ˈbõsaga* ‘drone’ (Margery Peña 1993: 62)

*ᵐbũⁿd(ũ) ‘ashes’ > /bũˈdũ/ [mũˈnũŋ] (Margery Peña 1996: 15)

*ᵐbuuʔ ‘two’ > /goˈ**bɔu/** ‘two’ (Margery Peña 1996: 21)

*ⁿdaᵐba ‘brother$_1$’ > ***da***ˈ***ba****ia* ‘sister (said by a man); brother (said by a woman)’ (Margery Peña 1993: 65)

*ⁿdãᵐbã / *sãᵐbã ‘calabash$_1$’ > /ʤãˈbã/ [ɲəˈmãŋ] ‘calabash’ (Margery Peña 1996: 16)

***t > {*t*, *d*}**

*taB(a) ‘earth, floor, mud’ > *da*ˈ*ba* ‘earth, floor’ (Margery Peña 1993: 65)

*taH(ᵐba) ‘heart, liver, center$_2$’ > *ˈ**ta**gua* ‘liver’ (Margery Peña 1993: 90)

*taiⁿd- ‘six’ > ***tɛ***ˈ***rɛgɛ*** ‘six’ (Margery Peña 1993: 91)

*tau ‘dog’ > /ˈtɔ/ ‘dog’ (Margery Peña 1996: 10)

*taʔ ‘rattle’ > *ˈdã* ‘gourd rattle’ (Margery Peña 1993: 84)

*taʔBa ‘red, yellow, ripe’ > /ˈdabɛ/ ‘red’, /daˈbɛ/ ‘ripe’ (Margery Peña 1996: 23)

***ⁿd > {*d*, *ʧ*, *ʤ*, *s*} /#__**

*ⁿdaᵐba ‘brother$_1$’ > ***da***ˈ***ba****ia* ‘sister (said by a man); brother (said by a woman)’ (Margery Peña 1993: 65)

*ⁿdãᵐbã / *sãᵐbã ‘calabash$_1$’ > /ʤãˈbã/ [ɲəˈmãŋ] ‘calabash’ (Margery Peña 1996: 16)

*ⁿdaH(ⁿd) ‘I$_1$’ > /ˈʧa/ ‘I’ (Margery Peña 1996: 9)

*ⁿdaʔ ~ *taʔ ‘to go$_2$’ > *ˈ***ʧa***gɛ* ‘to go’ (Margery Peña 1993: 63)

*ⁿdiⁿda / *ⁿdisa ‘dry$_1$’ > *ˈ***dra***lɛ* ‘dry’ (Margery Peña 1993: 67)

[*ⁿdi-gʷa] ‘lake, rain’ > *ˈʧi guˈa* ‘lake’ (Margery Peña 1993: 64)

*ⁿdii(k) ‘nose’ > /ˈse/ ‘nose’ (Margery Peña 1996: 11)

*ⁿdiʔ ‘water, river’ > *ˈʧi* ‘water’ (Margery Peña 1993: 63)

*ⁿdu ‘beautiful’ > /dũ/ [nũ] ‘good, beautiful’ (Margery Peña 1996: 15)

*ⁿdu- ‘sun, year’ > **/ʧu**ˈi/ [ˈ**ʧw**i] ‘sun’ (Margery Peña 1996: 12)

*ⁿdua ‘tobacco’ > *ʧu*ˈ*a* ‘tobacco’ (Margery Peña 1993: 64)

*ⁿduⁿd- ‘seed’ > **/ʧu**ˈ**d**ɛ/ ‘seed’ (Margery Peña 1996: 11)

*ⁿduh(k) ‘tail$_2$’ > ***su*** ˈ*gɾa* ‘tail’ (Margery Peña 1993: 90)

*(ⁿdu-)ku(ⁿd) ‘bat’ > ***sugu*** ˈ*gɛ* ‘bat’ (Margery Peña 1993: 90)

*ⁿduʔ ‘armadillo’ > /ʧu/ ‘armadillo’ (Margery Peña 1996: 24)

***ⁿd > *l* / *V__V$_{[+front]}$**

***ⁿd > {*t*, *d*, *ɾ*} / V$_{[other]}$__V$_{[other]}$**

*ᵐbaⁿd- ‘tasty’ > ***ˈbal****ɛ* ‘sweet’, ***ˈbl****ɛ* ‘sea’ (Margery Peña 1993: 60–1)

*ᵐbaⁿd- ‘all$_1$’ > ***bã ˈl****ɛ* ‘completely’ (Margery Peña 1993: 82)

*ᵐbaⁿd(a)- ‘tail$_1$’ > ***ba*** ˈ***da****gli* ~ ***ba*** ˈ***ta****gli* ‘end’ (Margery Peña 1993: 59–60)

*ᵐbaⁿdi ‘hunger’ > /ˈbli/ ‘hunger’ (Margery Peña 1996: 11)

*ᵐbuⁿd- ‘breath, wind’ > ***blĩ*** ˈ*ɛ̃* ‘wind’ (Margery Peña 1993: 83)

*ᵐbuⁿdi ~ *ᵐbuiⁿd ~ *ᵑguⁿdi ~ *ᵑguiⁿd ‘woman (adult)’ > **/bũ**ˈ**ĩrɛ/** [**mw̃**ˈ**ĩr**ɛ] ‘woman’ (Margery Peña 1996: 14)

*ᵐbuⁿdi ~ *kuⁿdi ~ *kuiⁿd(i) ‘big$_1$’ > /kuˈɛri ~ guˈɛri/ ‘big’ (Margery Peña 1996: 19)

*ᵐbuⁿd(u) ‘bee, wasp’ > ***bu*** ˈ***du*** ˈ*bõsaga* ‘drone’ (Margery Peña 1993: 62)

*ᵐbũⁿd(ũ) ‘ashes’ > /bũˈdũ/ [mũˈnũŋ] (Margery Peña 1996: 15)

*ⁿdiⁿda / *ⁿdisa ‘dry$_1$’ > ˈ***dra****lɛ* ‘dry’ (Margery Peña 1993: 67)

*ᵑgaⁿda ‘neck’ > *gda* ‘neck’ (Levinsohn 1975: 15)

*huⁿdĩ ~ uⁿdĩʔ ‘monkey’ > *hu* ˈ*lĩŋ* ‘howler monkey’ (Margery Peña 1993: 77)

*kaⁿdaʔ ‘net’ > *gɛ* ˈ*dɛ* ‘bag’ (Sp. *bolsa*) (Margery Peña 1993: 69)

*kuⁿdi ~ *kuiⁿd ‘to eat’ > ˈ***gud****ɛ* ~ ˈ***gut****ɛ* ‘to eat’ (Margery Peña 1993: 71)

*kuⁿdi ~ *kuiⁿd ‘rodent, large’ > ***gũ*** ˈ***ĩd****ɛ̃* ‘squirrel’ (Margery Peña 1993: 72)

*taiⁿd- ‘six’ > ***tɛ*** ˈ*ɾɛgɛ* ‘six’ (Margery Peña 1993: 91)

*uⁿdu ‘cedar’ > ˈ*du* ‘canoe’ (Margery Peña 1993: 67)

***k > {*k*, *g*, *k* ~ *g*} / #__**[26]

***k > {*g*, *ŋ͡g*} / V__V**

*ᵐbahka(i) ‘four’ > ˈ*baga* ‘four’ (Margery Peña 1993: 60)

*ᵐbuⁿdi ~ *kuⁿdi ~ *kuiⁿd(i) ‘big$_1$’ > /kuˈɛri ~ guˈɛri/ ‘big’ (Margery Peña 1996: 19)

*(ⁿdu-)ku(ⁿd) ‘bat’ > ***sugu*** ˈ*gɛ* ‘bat’ (Margery Peña 1993: 90)

*hak ~ *kaʔ ‘stone’ > /ˈke/ ‘stone’ (Margery Peña 1996: 9)

[26] Bocotá /#k/ is a more frequent reflex in monosyllabic roots, whereas /#g/ is more frequent reflex in polysyllabic roots.

*haka ~ *akaʔ ‘name’ > *kã̀* ‘name’ (Margery Peña 1993: 78)

*huka ‘palm’ > *huˈgã̀* ‘palm tree, general term’ (Margery Peña 1993: 77)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > **/ku**ˈ**a**ɾa ~ **gu**ˈ**a**ɾa/ ‘skin’ (Margery Peña 1996: 19)

*ka allative/dative > /kɛ ~ gɛ/ dative postposition (Margery Peña 1996: 19)

*ka ‘leaf’ > /ga/ ‘leaf’ (Margery Peña 1996: 24)

*-ka nominalizer$_3$ > *-ŋ͡gã̀* agentive nominalizer (Margery Peña 1993: 86)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > **/ga**ˈ**d**a/ [**gə**ˈ**ð**a] ‘bone’ (Margery Peña 1996: 16)

*ka^{n}daʔ ‘net’ > *gɛˈdɛ* ‘bag’ (Sp. *bolsa*) (Margery Peña 1993: 69)

*kah ‘open’ > /ˈka/ ‘mouth’ (Margery Peña 1996: 9)

*kap- ‘to sleep’ > *gɛˈbɛ* ‘to sleep’ (Margery Peña 1993: 69)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > ***ˈgã̀*** ‘time, space, world’ (Margery Peña 1993: 85)

*ki ‘rope, string$_1$’ > /ˈgi/ ‘rope’ (Margery Peña 1996: 11)

*ku^{n}di ~ *kui^{n}d ‘to eat’ > ***ˈgud***ɛ ~ ***ˈgut***ɛ ‘to eat’ (Margery Peña 1993: 71)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > ***gũ̀ ˈĩ̀d***ɛ̃́ ‘squirrel’ (Margery Peña 1993: 72)

*kuh ‘seven’ > ***gu****gɛ* ‘seven’ (Margery Peña 1993: 71)

*kuuʔ ‘hand, finger’ > /ˈko/ ‘hand’ (Margery Peña 1996: 9)

*kũʔ ‘louse’ > /ˈkũ/ ‘louse’ (Margery Peña 1996: 10)

*suh(-kui) ‘rodent, small’ > *sɔgũ̀ˈɛ̃́* ‘mouse’ (Margery Peña 1993: 89)

***ᵑg > {*h*, *g*} / #__**

*ᵑga ‘excrement’ > /ˈhɛ̃/ ‘excrement’ (Margery Peña 1996: 9)

*ᵑga(^{n}da) ‘back$_2$’ > ***h****ɛgɛˈtɛ* ‘back’ (Margery Peña 1993: 74)

*ᵑga^{n}da ‘neck’ > *gda* ‘neck’ (Levinsohn 1975: 15)

*ᵑgi ‘firewood’ > /ˈhi/ ‘firewood’ (Margery Peña 1996: 11)

*ᵑgu ‘to take’ > ***hũ̀*** *ˈã̀* ‘to grab, take’ (Margery Peña 1993: 78)

k^{w}V > *gV*ˈ*bV

*k^{w}a ‘seed, fruit’ > *gaˈba* ‘fruit’ (Margery Peña 1993: 68)

*k^{w}i ‘turtle’ > *gɔˈbi* ‘turtle’ (Margery Peña 1993: 70)

***ŋgʷ > {*gu*, *u*, *o*}**

[*ⁿdi-gʷa] ‘lake, rain’ > *ʧi guˈa* ‘lake’ (Margery Peña 1993: 64)

*ŋgʷ- ‘to know’ > ***gũĩ***ˈ*ã* ‘to know’ (Margery Peña 1993: 72)

*ŋgʷa ~ *uŋg ‘fish’ > /ũˈɛ̃/ [ˈw̃ɛ̃ŋ] ‘fish (generic term)’ (Margery Peña 1996: 12)

*ŋgʷa(k) ‘face’ > *guˈa* ‘face’ (Margery Peña 1993: 70), ***o***ˈ***a****gli* ‘temple’ (ibid.: 86)

***ʔ > Ø**

*ᵐbaʔ ‘you’ > /ˈba/ ‘you’ (Margery Peña 1996: 24)

*ᵐbuuʔ ‘two’ > /goˈ**bɔu/** ‘two’ (Margery Peña 1996: 21)

*ⁿdaʔ ~ *taʔ ‘to go$_2$’ > ***ʧa****gɛ* ‘to go’ (Margery Peña 1993: 63)

*ⁿdiʔ ‘water, river’ > *ʧi* ‘water’ (Margery Peña 1993: 63)

[*ⁿdi-gʷa] ‘lake, rain’ > *ʧi guˈa* ‘lake’ (Margery Peña 1993: 64)

*ⁿduʔ ‘armadillo’ > /ʧu/ ‘armadillo’ (Margery Peña 1996: 24)

*hak ~ *kaʔ ‘stone’ > /ˈke/ ‘stone’ (Margery Peña 1996: 9)

*haka ~ *akaʔ ‘name’ > *kã* ‘name’ (Margery Peña 1993: 78)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > **/ku**ˈ**a**ɾa ~ **gu**ˈ**a**ɾa**/** ‘skin’ (Margery Peña 1996: 19)

*kaⁿdaʔ ‘net’ > *gɛˈdɛ* ‘bag’ (Sp. *bolsa*) (Margery Peña 1993: 69)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > ***gã*** ‘time, space, world’ (Margery Peña 1993: 85)

*kũʔ ‘louse’ > /ˈkũ/ ‘louse’ (Margery Peña 1996: 10)

*kuuʔ ‘hand, finger’ > /ˈko/ ‘hand’ (Margery Peña 1996: 9)

*pũʔ ‘raptor’ > /ˈbũ/ [ˈmũŋ] ‘sparrowhawk’ (Margery Peña 1996: 13)

*taʔ ‘rattle’ > *dã* ‘gourd rattle’ (Margery Peña 1993: 84)

*taʔBa ‘red, yellow, ripe’ > /ˈdabɛ/ ‘red’, /daˈbɛ/ ‘ripe’ (Margery Peña 1996: 23)

*ʦuʔ ‘breast, teat$_2$’ > *ʧu*ˈ*ʧu* ‘teat’ (Margery Peña 1993: 64)

ʦ > *ʧ

*ʦuʔ ‘breast, teat$_2$’ > *ʧu*ˈ*ʧu* ‘teat’ (Margery Peña 1993: 64)

s > *s

*suh(-kui) ‘rodent, small’ > *sɔgũ*ˈ*ɛ̃* ‘mouse’ (Margery Peña 1993: 89)

***h > *h* / #__*a**

***h > {Ø, *h*} / #__*V$_{[+high]}$**

***h > Ø / elsewhere**

*hau^{m}b ~ *a^{m}buʔ ‘to bathe, swim’ > ˈ***hɔbɛ*** ‘to bathe’ (Margery Peña 1993: 76)

*^{m}bahka(i) ‘four’ > ˈ*baga* ‘four’ (Margery Peña 1993: 60)

*^{n}duh(k) ‘tail$_2$’ > ***su*** ˈ*gɾa* ‘tail’ (Margery Peña 1993: 90)

*hap- ‘eight’ > ˈ***hab****a* ‘eight’ (Margery Peña 1993: 73)

*(hi-)i^{n}da ~ *(hi-)ita ‘full$_1$’ > /ˈɛdɛ/ ‘full’ (Margery Peña 1996: 12)

*hu ‘house’ > /hu/ ‘house’ (Margery Peña 1996: 24)

*****hũ ‘pot’ > /ˈũ/ [ʔũŋ] ‘pot’ (Margery Peña 1996: 12)

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > *hu* ˈ*lĩŋ* ‘howler monkey’ (Margery Peña 1993: 77)

*huka ‘palm’ > *hu* ˈ*gã* ‘palm tree, general term’ (Margery Peña 1993: 77)

*kah ‘open’ > /ˈka/ ‘mouth’ (Margery Peña 1996: 9)

*kuh ‘seven’ > ***gu****gɛ* ‘seven’ (Margery Peña 1993: 71)

*suh(-kui) ‘rodent, small’ > *sɔgũ* ˈ*ɛ̃* ‘mouse’ (Margery Peña 1993: 89)

#L > *l

*Li ‘to cook$_1$’ > /a**lí**ɛ́/ [ʔa**lí**ɛ] ‘to cook’ (Margery Peña 1996: 12)

2.3.4 Boruca

Boruca (sometimes also called Brunca) is a moribund Chibchan language of southeastern Costa Rica (Sánchez Avendaño 2013). At the end of the twentieth century, only five people were considered to be bilingual speakers of Boruca and Spanish by Quesada Pacheco and Rojas Chaves (1999: 11). According to Constenla Umaña (2012: 392), the last fluent speakers died in 2004, and at present some semi-speakers remain, with a passive command of the language.

The few remaining semi-speakers of the language inhabit indigenous territories in the District of Buenos Aires, province of Puntarenas, in southeastern Costa Rica (Quesada Pacheco & Rojas Chaves 1999: 11). Originally, Boruca had also been spoken by two neighboring groups, namely the Quepo in the northwest and the Coto in the southeast (Lehmann 1920: 154; Quesada Pacheco 1996a; Constenla Umaña 2012: 392). In former times, the Boruca traded salt with peoples from the tropical forest since they had access to natural salt pans (Johnson 1948: 233).

The Boruca language was classified by Constenla Umaña (2012: 417) as belonging to the western Isthmic branch of the Isthmic Chibchan languages. Other languages of Constenla Umaña's western Isthmic branch are Viceitic (Cabécar, Bribri) and Teribe/Térraba. Castro (2012: 3) has a different opinion, proposing that Boruca is relatively isolated within Chibchan.

The main source for Boruca used in this thesis is a dictionary compiled by Quesada Pacheco and Rojas Chaves (1999). Other sources on this language are Boruca texts published by Constenla Umaña and Maroto Rojas (1979) and a Boruca class book (Quesada Pacheco 1995). There are several papers dealing with specific topics, such as Boruca word formation (Rojas Chaves 1992; Quesada Pacheco 1997/98), verbal morphology (Castro 2012), and syntax (Castro 2010). Recently, a publication on Boruca grammar has been prepared by Quesada Pacheco (2018a).

Within Chibchan, Boruca is among the languages that preserve distinct consonantic reflexes of both Proto-Chibchan *h and *ʔ, in certain environments (see below). A peculiarity of Boruca is the etymon for the first person singular, *at*, which seems to be unparalleled in Central American Chibchan languages.

2.3.4.1 The sounds of Boruca

Based on information from Quesada Pacheco and Rojas Chaves (1999: 13–5), I briefly present the phoneme inventory of Boruca in the next two subsections.

2.3.4.1.1 Boruca vowels and suprasegmentals

The Boruca vowel phonemes are illustrated in table 23.

TABLE 23
BORUCA PHONEMES: VOWELS

	Front	Central	Back
High	i		u
High-mid	e		o
Low		a	

Source: Quesada Pacheco and Rojas Chaves (1999: 15).

The vowel /u/ has an asyllabic allophone which is represented by <hu> in the orthography of Quesada Pacheco and Rojas Chaves (1999: 14) and interpreted as *w* in the present thesis. It is attested in initial position (ibid.), but also between two vowels, as in <cahuíˀ> 'to live' (ibid.: 199; upper case <ˀ> represents a glottal stop). In the case of <hu>, the form in the original orthography is always provided here, in order to avoid any misunderstandings.

There is no phonemic distinction between nasal and oral vowels, or between high-mid and near high or low-mid vowels in this language. Boruca has a high tone with phonemic value (Quesada Pacheco & Rojas Chaves 1999: 15). This may be illustrated by the opposition between *bɾi* 'hunger, to be hungry' (ibid.: 143, 151) and *bɾí* a small fish (Sp. *olomina*) (ibid.: 27). Low tone also exists in this language (Constenla Umaña 1981: 128) and seems to be indicated by the absence of tone marking by Quesada Pacheco and Rojas Chaves (1999). Tone can occur both on the first or on the second syllable of a polymorphemic word, as, for instance, in *bekrá* 'hiding place' and *békra* 'a plant, *Trichilia anisolpleura*' (ibid.: 24). In monomorphemic words, there is a clear tendency for tone to be associated with the last syllable. Also, there is tonal harmony in Boruca. If the base to which a suffix is attached bears high tone, the suffix has low tone, and vice versa (ibid.: 16). Tonal sandhi patterns or grammatical functions of tone which might, for instance, explain the tonal difference in *díʔ sá* 'headwaters' and *sa* 'head' (ibid.: 124) still need to be worked out.

2.3.4.1.2 Boruca consonants

Table 24 illustrates the consonant phonemes of Boruca.

TABLE 24
BORUCA PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar	Glottal
Voiceless stops		t		k	ʔ
Voiced stops	b	d		g	
Voiceless affricate		ʦ	ʧ		
Voiced affricate			ʤ		
Fricatives		s	ʃ	x	
Nasals	m	n	ɲ	ŋ	
Vibrant		ɾ			

Source; Quesada Pacheco and Rojas Chaves (1999: 13–4).

In final position, /t/ and /k/ are realised as implosives (Quesada Pacheco & Rojas Chaves 1999: 13). The voiceless velar fricative /x/ is realized as a voiceless palatal fricative [ç] after /i/, as [h] after other vowels, and as a voiced velar fricative [ɣ] if followed by a voiced consonant (ibid.: 14). In all these cases, as in the context of /t/ and /k/ above, the orthography used by Quesada Pacheco and Rojas Chaves (1999) is phonemic.

The phonemes /b/, /d/, and /g/ are realized as [p], [t], and [k] in final position or before a voiceless consonant (Quesada Pacheco & Rojas Chaves 1999: 13). This phonetic realization is reflected in the orthography of Quesada Pacheco and Rojas Chaves (1999) and adopted as such in the Boruca data provided in the present thesis.

The Boruca dental nasal /n/ has no velarized allophone, not even before velar consonants (Quesada Pacheco & Rojas Chaves 1999: 14). The velar nasal /ŋ/ and the palatal nasal /ɲ/ do not occur in root-initial position. The bilabial and alveolar nasals /m/ and /n/ are also relatively rare, in this position.

Consonant clusters can occur in word-final position, as, for instance, in *súʔk* ‘field, camp’ (Quesada Pacheco & Rojas Chaves 1999: 125) or *boʔk* ‘sister-in-law’, which might be derived from *bo* ‘brother-in-law’ (cf. ibid.: 134). A more complex cluster of three consonants is attested in *taʔpká* ‘to ripen’ (cf. ibid.: 162).

2.3.4.2 Reflexes of Proto-Chibchan phonemes in Boruca

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.4.2.1) and of Proto-Chibchan consonants (2.3.4.2.2) in Boruca.

2.3.4.2.1 Reflexes of Proto-Chibchan vowels in Boruca (cf. also Constenla Umaña 1981: 192–211)

{*a, *ã} > {*a*, *e*}

*hau^{m}b ~ *a^{m}buʔ ‘to bathe, swim’ > *abuʔ* ‘to swim’ (Quesada Pacheco & Rojas Chaves 1999: 168)

*^{m}ba comitative$_3$ > *maŋ* ‘with, and’ (Quesada Pacheco & Rojas Chaves 1999: 131, 203)

*^{m}ba- ‘cloud, fog’ > *baʔ* ‘dawn’ (Quesada Pacheco & Rojas Chaves 1999: 116, 119)

*^{m}bahka(i) ‘four’ > *báxkaŋ* ‘four’ (Quesada Pacheco & Rojas Chaves 1999: 133)

*^{m}baʔ ‘you’ > *ba*, *baʔ* ‘you’ (Quesada Pacheco & Rojas Chaves 1999: 196)

*^{m}bãʔ(ĩ) ‘three’ > *máŋ* ‘three’ (Quesada Pacheco & Rojas Chaves 1999: 195)

*^{m}baʔk ‘to wrap’ > *baʔk* ‘to hug, wrap’ (Quesada Pacheco & Rojas Chaves 1999: 113)

*^{n}da ~ *ta locative$_1$ > *ta* ‘in’ (Quesada Pacheco & Rojas Chaves 1999: 140)

*^{n}da(ki^{n}d) ~ *ta(ki^{n}d) ‘back$_1$’ > *ú* ***táŋ*** ‘roof’ (Quesada Pacheco & Rojas Chávez 1999: 193)

*^{n}dua ‘tobacco’ > *dua* ‘tobacco’ (Quesada Pacheco & Rojas Chaves 1999: 192)

*(^{n}d-)u^{m}ba ‘brother-in-law’ > *duá* ‘brother-in-law (husband of the sister or cousin)’ (Quesada Pacheco & Rojas Chaves 1999: 134)

*^{ŋ}ga^{m}ba ‘son, child’ > *rá****ʤaba*** ‘nephew, niece’ (Quesada Pacheco & Rojas Chaves 1999: 190)

*^{ŋ}gak ‘feather, wing, arm, hand’ > ***ʤék****sa* ‘arm’ (Quesada Pacheco & Rojas Chaves 1999: 123)

*^{ŋ}gaʔ^{n}da ~ *^{ŋ}gaʔta ‘meat, flesh$_1$’ > ***ʤaʔdé****ua* (<ya^{v}déhua>) ‘food (hard aliment), meat’ (Quesada Pacheco & Rojas Chaves 1999: 126)

*^{ŋ}gu^{n}da ~ *^{ŋ}g^{w}a^{n}d ‘to watch’ > ***uad****áʔ* (<huadá^{v}>) ‘to watch’ (Sp. *acechar*) (Quesada Pacheco & Rojas Chaves 1999: 113)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > *ʤuréʔ* ‘hand’ (Quesada Pacheco & Rojas Chaves 1999: 163)

*^{ŋ}g^{w}aʔ ‘child’ > Boruca *uáʔ* (<huáʔ>) ‘child; son, daughter’ (Quesada Pacheco & Rojas Chaves 1999: 151, 168)

*hak ~ *kaʔ ‘stone’ > *káŋ* ‘stone’ (Quesada Pacheco & Rojas Chaves 1999: 178)

*haka ~ *akaʔ ‘name’ > *káʔ* ‘name’ (Quesada Pacheco & Rojas Chaves 1999: 169)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > ***kuáʔs*** ‘bark, husk, skin’ (Quesada Pacheco & Rojas Chaves 1999: 127, 312, 178)

*ka allative/dative > *-ka* dative, allative, ablative, locative (Quesada Pacheco & Rojas Chaves 1999: 140)

*ka ‘leaf’ > *ká* ‘leaf, wing’ (Quesada Pacheco & Rojas Chaves 1999: 115, 152)

*-ka nominalizer$_3$ > *-ká* suffix deriving adjectives from verbs (Rojas Chaves 1992: 50), stative nominalizer

*kah ‘open’ > ***káx****k* ‘to open’ (Quesada Pacheco & Rojas Chaves 1999: 113)

*kap- ‘to sleep’ > *kap* ‘to sleep’ (Quesada Pacheco & Rojas Chaves 1999: 138)

*kãʔ ‘breast, teat$_1$’ > *kaʔ* ‘teat, udder’ (Quesada Pacheco & Rojas Chaves 1999: 194, 196–7)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > *kak* ‘place’ (Quesada Pacheco & Rojas Chaves 1999: 160, 190), *kák* ‘day, sun, thunder, sky’ (ibid.: 115, 129, 190, 196)

*kuʔ(-Ba) ‘tongue’ > ***kuá****tkua* ‘tongue’ (Quesada Pacheco & Rojas Chaves 1999: 159)

*k^{w}a ‘kidney, heart, stomach’ > *kúa* ‘stomach’ (Quesada Pacheco & Rojas Chaves 1993: 143)

*k^{w}ahk^{w}ah ‘butterfly’ > *kuaxkuáx* ‘butterfly’ (Quesada Pacheco & Rojas Chaves 1999: 163)

*siʔ-k^{w}a ‘pale’ > *síʔkua* ‘stranger (non-indigenous, of Spanish or mestizo origin)’ (Quesada Pacheco & Rojas Chaves 1999: 144)

*taB(a) ‘earth, floor, mud’ > *táp* ‘floor’ (Quesada Pacheco & Rojas Chaves 1999: 191)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > *tebek* ‘snake’ (Quesada Pacheco & Rojas Chaves 1999: 189)

*tah(-ka) ‘new, raw’ > *taxká* ‘ raw’ (Quesada Pacheco & Rojas Chaves 1999: 133)

*taʔBa ‘red, yellow, ripe’ > **taʔp**ká ‘to ripen’ (Quesada Pacheco & Rojas Chaves 1999: 162)

*taʔ ‘rattle’ > *táʔ* ‘gourd rattle’ (Quesada Pacheco & Rojas Chaves 1999: 163)

*ʦa ‘hair, head’ > *sa* ‘head’ (Quesada Pacheco & Rojas Chaves 1999: 124)

*uk-^{n}da ‘lip’ > *úkra* ‘next to’ (Quesada Pacheco & Rojas Chaves 1999: 115)

ai > *e

*aBi ~ aiB ‘maize’ > ***ep****kuáʔs* ‘husk of maize’ (Quesada Pacheco & Rojas Chaves 1999: 142)

*^{n}da^{n}di ~ ^{n}dai^{n}d- / sa^{n}di ~ *sai^{n}d- ‘bone, hard’ > ***det****kra* ‘bone’ (Quesada Pacheco & Rojas Chaves 1999: 153)

*^{n}dai ‘to walk’ > ***de****k* ‘to walk’ (Quesada Pacheco & Rojas Chaves 1999: 125)

*ʦãĩh ‘cold’ > ***sex****ká* ‘cold (adj.)’ (Quesada Pacheco & Rojas Chaves 1999: 146)

{*i, ĩ} > *i*

*^{m}ba^{n}di ‘hunger’ > Boruca *bɾi* ‘hunger, to be hungry’ (Quesada Pacheco & Rojas Chaves 1999: 143, 151)

*^{n}di ‘who, someone’ > *di* ‘someone’ (Quesada Pacheco & Rojas Chaves 1999: 115)

*^{n}diʔ ‘water, river’ > *díʔ* ‘water’ (Quesada Pacheco & Rojas Chaves 1999: 114)

*^{ŋ}gi ‘firewood’ > *ʤí* ‘firewood’ (Quesada Pacheco & Rojas Chaves 1999: 146)

*^{ŋ}gi ‘worm’ > *ʤíŋ* ‘worm’ (Quesada Pacheco & Rojas Chaves 1999: 149)

*hi ~ *iʔ ‘this’ > *i*, *iʔ* ‘s/he’ (Quesada Pacheco & Rojas Chaves 1999: 140)

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > *úɾiʔ* Sp. *mono congo* (Quesada Pacheco & Rojas Chaves 1999: 165)

*hutsi ~ *huiʦ ‘urine’ > *uiʃ* (<huish>) ‘urine’ (Quesada Pacheco & Rojas Chaves 1999: 172)

*k^{w}i ‘to dance’ > ***kui****k* ‘to dance’ (Quesada Pacheco & Rojas Chaves 1999: 121)

*k^{w}ik ‘arm, wing, shoulder’ > ***kuík****taŋ* ‘shoulder’ (Quesada Pacheco & Rojas Chaves 1999: 152)

*siʔ-k^{w}a ‘pale’ > *síʔkua* ‘stranger (non-indigenous, of Spanish or mestizo origin)’ (Quesada Pacheco & Rojas Chaves 1999: 144)

*tu^{n}di ~ *tui^{n}d ‘dark’ > *tuɾíŋ* ‘dark’ (Quesada Pacheco & Rojas Chaves 1999: 172)

*ʦiʔ(-ki) ‘tooth (incisor), thorn’ > *síʔ* ‘tooth’ (Quesada Pacheco & Rojas Chaves 1999: 138)

au > *o

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > *bo* ‘to weep’ (Quesada Pacheco & Rojas Chaves 1999: 160)

{*u, *ũ, *uu} > *u*

*hau^{m}b ~ *a^{m}buʔ ‘to bathe, swim’ > *abuʔ* ‘to swim’ (Quesada Pacheco & Rojas Chaves 1999: 168)

*^{m}bu ‘to twist’ > ***bu****k* ‘to braid, twist, spin’ (Quesada Pacheco & Rojas Chaves 1999: 152, 194, 195)

*^{m}bu^{n}d(u) ‘bee, wasp’ > *bút* ‘wax’ (Quesada Pacheco & Rojas Chaves 1999: 127)

*^{m}bu^{n}d(ũ) ‘ashes’ > *bɾúŋ* ‘ashes’ (Quesada Pacheco & Rojas Chaves 1999: 127)

*^{m}bus- ‘woman (young)’ > *buʃ* ‘adolescent girl’ (Quesada Pacheco & Rojas Chaves 1999: 166)

*^{m}buuʔ ‘two’ > ***búʔ****k* ‘two’ (Quesada Pacheco & Rojas Chaves 1999: 138)

*^{n}dua ‘tobacco’ > *dua* ‘tobacco’ (Quesada Pacheco & Rojas Chaves 1999: 192)

*^{n}du(^{n}d) ‘bird, dove’ > *du*, *dut* ‘bird’ (Quesada Pacheco & Rojas Chaves 1999: 119)

*^{n}dũ(-i) ‘father, uncle, ancestor’ > ***dú*** *ʦit* ‘father’ (Quesada Pacheco & Rojas Chaves 1999: 174)

*^{n}duk / *suk ‘prick, sting, point’ > *suk* ‘to sting’ (Quesada Pacheco & Rojas Chaves 1999: 178)

*ŋgu^{n}da ~ *^{ŋ}g^{w}a^{n}d ‘to watch’ > ***uad**á?* (<huadá^{v}>) ‘to watch’ (Sp. *acechar*) (Quesada Pacheco & Rojas Chaves 1999: 113)

*^{ŋ}gu^{n}da? ‘hand, arm’ > *ʤuré?* ‘hand’ (Quesada Pacheco & Rojas Chaves 1999: 163)

*hu ‘house’ > *ú* ‘house’ (Quesada Pacheco & Rojas Chaves 1999: 127)

*-hu ~ *-u? ‘to swallow, drink, eat’ > ***tú?*** ‘to eat’ (Quesada Pacheco & Rojas Chaves 1999: 131)

*hu^{n}dĩ ~ u^{n}dĩ? ‘monkey’ > *úri?* Sp. *mono congo* (Quesada Pacheco & Rojas Chaves 1999: 165)

*huka ~ *huBa ~ *kua? ‘skin’ > ***kuá?***s* ‘bark, husk, skin’ (Quesada Pacheco & Rojas Chaves 1999: 127, 312, 178)

*hutsi ~ *huits ‘urine’ > *uiʃ* (<huish>) ‘urine’ (Quesada Pacheco & Rojas Chaves 1999: 172)

*ku(n-) ‘feline$_2$’ > ***kuɾá?*** ‘jaguar’ (Quesada Pacheco & Rojas Chaves 1999: 194)

*kuh ‘seven’ > *kúx* ‘seven’ (Quesada Pacheco & Rojas Chaves 1999: 189)

*kuu? ‘hand, finger’ > ***kú?***skua* ‘finger’ (Quesada Pacheco & Rojas Chaves 1999: 136)

*ku? ‘to blow, fly’ > *kuŋ* ‘to fly’ (Quesada Pacheco & Rojas Chaves 1999: 199)

*ku?(-Ba) ‘tongue’ > ***kuá***tkua* ‘tongue’ (Quesada Pacheco & Rojas Chaves 1999: 159)

*kũ? ‘louse’ > ***ku***a* ‘louse’ (Quesada Pacheco & Rojas Chaves 1999: 178)

*suu^{n}d ‘side’ > *sut* ‘side’ (Quesada Pacheco & Rojas Chaves 1999: 158)

*tu^{n}di ~ *tui^{n}d ‘dark’ > *turíŋ* ‘dark’ (Quesada Pacheco & Rojas Chaves 1999: 172)

*tsuH ‘to scratch, rub’ > *ʧux* ‘to scratch’ (Quesada Pacheco & Rojas Chaves 1999: 184)

*tsu? ‘breast, teat$_2$’ > *ʧuʧú?* ‘woman’s breast’ (Quesada Pacheco & Rojas Chaves 1999: 189)

*uB(V)(-ta) ‘sand’ > *up* ‘sand’ (Quesada Pacheco & Rojas Chaves 1999: 118)

*u^{n}du ‘cedar’ > *rú* ‘boat’ (Quesada Pacheco & Rojas Chaves 1999: 123, 140)

*uk-^{n}da ‘lip’ > *úkra* ‘next to’ (Quesada Pacheco & Rojas Chaves 1999: 115)

2.3.4.2.2 Reflexes of Proto-Chibchan consonants in Boruca (cf. also Constenla Umaña 1981: 219–43)

p > *p

*kap- ‘to sleep’ > *kap* ‘to sleep’ (Quesada Pacheco & Rojas Chaves 1999: 138)

^{m}b, *B > Ø / {*u, *u?} __*a

***^{m}b > {*b, m*} / elsewhere**

*hau^{m}b ~ *a^{m}bu? ‘to bathe, swim’ > *abu?* ‘to swim’ (Quesada Pacheco & Rojas Chaves 1999: 168)

*ᵐba comitative$_3$ > *maŋ* ‘with, and’ (Quesada Pacheco & Rojas Chaves 1999: 131, 203)

*ᵐba- ‘cloud, fog’ > *baʔ* ‘dawn’ (Quesada Pacheco & Rojas Chaves 1999: 116, 119)

*ᵐbaⁿdi ‘hunger’ > Boruca *bɾi* ‘hunger, to be hungry’ (Quesada Pacheco & Rojas Chaves 1999: 143, 151)

*ᵐbahka(i) ‘four’ > *báxkaŋ* ‘four’ (Quesada Pacheco & Rojas Chaves 1999: 133)

*ᵐbau(ⁿd) ~ *kau(ⁿd) ‘to holler’ > *bo* ‘to weep’ (Quesada Pacheco & Rojas Chaves 1999: 160)

*ᵐbaʔ ‘you’ > *ba*, *baʔ* ‘you’ (Quesada Pacheco & Rojas Chaves 1999: 196)

*ᵐbãʔ(ĩ) ‘three’ > *máŋ* ‘three’ (Quesada Pacheco & Rojas Chaves 1999: 195)

*ᵐbaʔk ‘to wrap’ > *baʔk* ‘to hug, wrap’ (Quesada Pacheco & Rojas Chaves 1999: 113)

*ᵐbu ‘to twist’ > ***bu****k* ‘to braid, twist, spin’ (Quesada Pacheco & Rojas Chaves 1999: 152, 194, 195)

*ᵐbuⁿd(u) ‘bee, wasp’ > *bút* ‘wax’ (Quesada Pacheco & Rojas Chaves 1999: 127)

*ᵐbuⁿd(ũ) ‘ashes’ > *bɾúŋ* ‘ashes’ (Quesada Pacheco & Rojas Chaves 1999: 127)

*ᵐbus- ‘woman (young)’ > *buʃ* ‘adolescent girl’ (Quesada Pacheco & Rojas Chaves 1999: 166)

*ᵐbuuʔ ‘two’ > ***búʔ****k* ‘two’ (Quesada Pacheco & Rojas Chaves 1999: 138)

*(ⁿd-)uᵐba ‘brother-in-law’ > *duá* ‘brother-in-law (husband of the sister or cousin)’ (Quesada Pacheco & Rojas Chaves 1999: 134)

*ᵑgaᵐba ‘son, child’ > *ɾá****ʤaba*** ‘nephew, niece’ (Quesada Pacheco & Rojas Chaves 1999: 190)

*kuʔ(-Ba) ‘tongue’ > ***kuá****tkua* ‘tongue’ (Quesada Pacheco & Rojas Chaves 1999: 159)

*takaᵐb- ~ *taᵐbak- ‘snake’ > *tebek* ‘snake’ (Quesada Pacheco & Rojas Chaves 1999: 189)

t > *t

*taB(a) ‘earth, floor, mud’ > *táp* ‘floor’ (Quesada Pacheco & Rojas Chaves 1999: 191)

*takaᵐb- ~ *taᵐbak- ‘snake’ > *tebek* ‘snake’ (Quesada Pacheco & Rojas Chaves 1999: 189)

*tah(-ka) ‘new, raw’ > *taxká* ‘ raw’ (Quesada Pacheco & Rojas Chaves 1999: 133)

*taʔBa ‘red, yellow, ripe’ > **taʔp**ká ‘to ripen’ (Quesada Pacheco & Rojas Chaves 1999: 162)

*taʔ ‘rattle’ > *táʔ* ‘gourd rattle’ (Quesada Pacheco & Rojas Chaves 1999: 163)

*tuⁿdi ~ *tuiⁿd ‘dark’ > *tuɾíŋ* ‘dark’ (Quesada Pacheco & Rojas Chaves 1999: 172)

***^{n}d > *d* /VV__V**

***^{n}d > {*ɾ, n*} / V__V**

***^{n}d > *t* / __$**

***^{n}d > *d* / elsewhere**

*^{m}ba^{n}di ‘hunger’ > Boruca *bɾi* ‘hunger, to be hungry’ (Quesada Pacheco & Rojas Chaves 1999: 143, 151)

*^{m}bu^{n}d(u) ‘bee, wasp’ > *bút* ‘wax’ (Quesada Pacheco & Rojas Chaves 1999: 127)

*^{m}bu^{n}d(ũ) ‘ashes’ > *brúŋ* ‘ashes’ (Quesada Pacheco & Rojas Chaves 1999: 127)

*-^{n}d- nominalizer$_2$ > ***-ní*** stative nominalizer (cf. Quesada Pacheco & Rojas Chaves 1999: 114)

*^{n}da^{n}di ~ ^{n}dai^{n}d- / sa^{n}di ~ *sai^{n}d- ‘bone, hard’ > ***det****kɾa* ‘bone’ (Quesada Pacheco & Rojas Chaves 1999: 153)

*^{n}dai ‘to walk’ > ***de****k* ‘to walk’ (Quesada Pacheco & Rojas Chaves 1999: 125)

*^{n}di ‘who, someone’ > *di* ‘someone’ (Quesada Pacheco & Rojas Chaves 1999: 115)

*^{n}diʔ ‘water, river’ > *díʔ* ‘water’ (Quesada Pacheco & Rojas Chaves 1999: 114)

*^{n}dua ‘tobacco’ > *dua* ‘tobacco’ (Quesada Pacheco & Rojas Chaves 1999: 192)

*(^{n}d-)u^{m}ba ‘brother-in-law’ > *duá* ‘brother-in-law (husband of the sister or cousin)’ (Quesada Pacheco & Rojas Chaves 1999: 134)

*^{n}du(^{n}d) ‘bird, dove’ > *du*, *dut* ‘bird’ (Quesada Pacheco & Rojas Chaves 1999: 119)

*^{n}dũ(-i) ‘father, uncle, ancestor’ > ***dú*** *ʦit* ‘father’ (Quesada Pacheco & Rojas Chaves 1999: 174)

*^{ŋ}gaʔ^{n}da ~ *^{ŋ}gaʔta ‘meat, flesh$_1$’ > ***ʤaʔdé****ua* (<ya^{v}déhua>) ‘food (hard aliment), meat’ (Quesada Pacheco & Rojas Chaves 1999: 126)

*^{ŋ}gu^{n}da ~ *^{ŋ}g^{w}a^{n}d ‘to watch’ > ***uad****áʔ* (<huadá^{v}>) ‘to watch’ (Sp. *acechar*) (Quesada Pacheco & Rojas Chaves 1999: 113)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > *ʤuréʔ* ‘hand’ (Quesada Pacheco & Rojas Chaves 1999: 163)

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > *úriʔ* Sp. *mono congo* (Quesada Pacheco & Rojas Chaves 1999: 165)

*ku(^{n}d-) ‘feline$_2$’ > ***kuɾ****áʔ* ‘jaguar’ (Quesada Pacheco & Rojas Chaves 1999: 194)

*suu^{n}d ‘side’ > *sut* ‘side’ (Quesada Pacheco & Rojas Chaves 1999: 158)

*tu^{n}di ~ *tui^{n}d ‘dark’ > *turíŋ* ‘dark’ (Quesada Pacheco & Rojas Chaves 1999: 172)

*u^{n}du ‘cedar’ > *ɾú* ‘boat’ (Quesada Pacheco & Rojas Chaves 1999: 123, 140)

*uk-^{n}da ‘lip’ > *úkɾa* ‘next to’ (Quesada Pacheco & Rojas Chaves 1999: 115)

k > *k

*^{m}bahka(i) ‘four’ > *báxkaŋ* ‘four’ (Quesada Pacheco & Rojas Chaves 1999: 133)

*^{m}baʔk ‘to wrap’ > *baʔk* ‘to hug, wrap’ (Quesada Pacheco & Rojas Chaves 1999: 113)

*^{n}duk / *suk ‘prick, sting, point’ > *suk* ‘to sting’ (Quesada Pacheco & Rojas Chaves 1999: 178)

*^{ŋ}gak ‘feather, wing, arm, hand’ > ***ʤék**sa* ‘arm’ (Quesada Pacheco & Rojas Chaves 1999: 123)

*hak ~ *kaʔ ‘stone’ > *káŋ* ‘stone’ (Quesada Pacheco & Rojas Chaves 1999: 178)

*haka ~ *akaʔ ‘name’ > *káʔ* ‘name’ (Quesada Pacheco & Rojas Chaves 1999: 169)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > ***kuáʔ**s* ‘bark, husk, skin’ (Quesada Pacheco & Rojas Chaves 1999: 127, 312, 178)

*ka allative/dative > *-ka* dative, allative, ablative, locative (Quesada Pacheco & Rojas Chaves 1999: 140)

*ka ‘leaf’ > *ká* ‘leaf, wing’ (Quesada Pacheco & Rojas Chaves 1999: 115, 152)

*-ka nominalizer$_3$ > *-ká* suffix deriving adjectives from verbs (Rojas Chaves 1992: 50), stative nominalizer

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > ***kɾáŋ*** ‘stick, tree’ (Quesada Pacheco & Rojas Chaves 1999: 118, 178)

*kah ‘open’ > ***káx**k* ‘to open’ (Quesada Pacheco & Rojas Chaves 1999: 113)

*kap- ‘to sleep’ > *kap* ‘to sleep’ (Quesada Pacheco & Rojas Chaves 1999: 138)

*kãʔ ‘breast, teat$_1$’ > *kaʔ* ‘teat, udder’ (Quesada Pacheco & Rojas Chaves 1999: 194, 196–7)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > *kak* ‘place’ (Quesada Pacheco & Rojas Chaves 1999: 160, 190), *kák* ‘day, sun, thunder, sky’ (ibid.: 115, 129, 190, 196)

*ku(^{n}d-) ‘feline$_2$’ > ***kuɾ**áʔ* ‘jaguar’ (Quesada Pacheco & Rojas Chaves 1999: 194)

*kuh ‘seven’ > *kúx* ‘seven’ (Quesada Pacheco & Rojas Chaves 1999: 189)

*kuuʔ ‘hand, finger’ > ***kúʔ**skua* ‘finger’ (Quesada Pacheco & Rojas Chaves 1999: 136)

*kuʔ ‘to blow, fly’ > *kuŋ* ‘to fly’ (Quesada Pacheco & Rojas Chaves 1999: 199)

*kũʔ ‘louse’ > ***ku**a* ‘louse’ (Quesada Pacheco & Rojas Chaves 1999: 178)

*kuʔ(-Ba) ‘tongue’ > ***kuá**tkua* ‘tongue’ (Quesada Pacheco & Rojas Chaves 1999: 159)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > *tebek* ‘snake’ (Quesada Pacheco & Rojas Chaves 1999: 189)

*uk-^{n}da ‘lip’ > *úkɾa* ‘next to’ (Quesada Pacheco & Rojas Chaves 1999: 115)

ŋg > *ʤ

*ŋga^{m}ba ‘son, child’ > *rá**ʤaba*** ‘nephew, niece’ (Quesada Pacheco & Rojas Chaves 1999: 190)

*ŋgak ‘feather, wing, arm, hand’ > ***ʤék**sa* ‘arm’ (Quesada Pacheco & Rojas Chaves 1999: 123)

*ŋgaʔ^{n}da ~ *ŋgaʔta ‘meat, flesh$_{1}$’ > ***ʤaʔdé**ua* (<ya^{v}déhua>) ‘food (hard aliment), meat’ (Quesada Pacheco & Rojas Chaves 1999: 126)

*ŋgi ‘firewood’ > *ʤí* ‘firewood’ (Quesada Pacheco & Rojas Chaves 1999: 146)

*ŋgi ‘worm’ > *ʤíŋ* ‘worm’ (Quesada Pacheco & Rojas Chaves 1999: 149)

*ŋgu^{n}daʔ ‘hand, arm’ > *ʤuréʔ* ‘hand’ (Quesada Pacheco & Rojas Chaves 1999: 163)

k^{w} > *ku

*k^{w}a ‘kidney, heart, stomach’ > *kúa* ‘stomach’ (Quesada Pacheco & Rojas Chaves 1993: 143)

*k^{w}ahk^{w}ah ‘butterfly’ > *kuaxkuáx* ‘butterfly’ (Quesada Pacheco & Rojas Chaves 1999: 163)

*k^{w}i ‘to dance’ > ***kui**k* ‘to dance’ (Quesada Pacheco & Rojas Chaves 1999: 121)

*k^{w}ik ‘arm, wing, shoulder’ > ***kuík**taŋ* ‘shoulder’ (Quesada Pacheco & Rojas Chaves 1999: 152)

*siʔ-k^{w}a ‘pale’ > *síʔkua* ‘stranger (non-indigenous, of Spanish or mestizo origin)’ (Quesada Pacheco & Rojas Chaves 1999: 144)

ŋg^{w} > *u

*ŋgu^{n}da ~ *ŋg^{w}a^{n}d ‘to watch’ > ***uad**áʔ* (<huadá^{v}>) ‘to watch’ (Sp. *acechar*) (Quesada Pacheco & Rojas Chaves 1999: 113)

*ŋg^{w}- ‘to know’ > *uí* (<huí>) ‘to know’ (Quesada Pacheco & Rojas Chaves 1999: 132, 187)

*ŋg^{w}aʔ ‘child’ > Boruca *uáʔ* (<huáʔ>) ‘child; son, daughter’ (Quesada Pacheco & Rojas Chaves 1999: 151, 168)

***ʔ > {*ʔ*, Ø}**

*hau^{m}b ~ *a^{m}buʔ ‘to bathe, swim’ > *abuʔ* ‘to swim’ (Quesada Pacheco & Rojas Chaves 1999: 168)

*^{m}baʔ ‘you’ > *ba*, *baʔ* ‘you’ (Quesada Pacheco & Rojas Chaves 1999: 196)

*^{m}bãʔ(ĩ) ‘three’ > *máŋ* ‘three’ (Quesada Pacheco & Rojas Chaves 1999: 195)

*^{m}baʔk ‘to wrap’ > *baʔk* ‘to hug, wrap’ (Quesada Pacheco & Rojas Chaves 1999: 113)

*^{m}buuʔ ‘two’ > ***búʔ**k* ‘two’ (Quesada Pacheco & Rojas Chaves 1999: 138)

*^{n}diʔ ‘water, river’ > *díʔ* ‘water’ (Quesada Pacheco & Rojas Chaves 1999: 114)

*ŋgaʔⁿda ~ *ŋgaʔta ‘meat, flesh$_1$’ > ***ʤaʔdé**ua* (<yaᵛdéhua>) ‘food (hard aliment), meat’ (Quesada Pacheco & Rojas Chaves 1999: 126)

*ŋguⁿdaʔ ‘hand, arm’ > *ʤuréʔ* ‘hand’ (Quesada Pacheco & Rojas Chaves 1999: 163)

*ŋgʷaʔ ‘child’ > Boruca *uáʔ* (<huáʔ>) ‘child; son, daughter’ (Quesada Pacheco & Rojas Chaves 1999: 151, 168)

*hak ~ *kaʔ ‘stone’ > *káŋ* ‘stone’ (Quesada Pacheco & Rojas Chaves 1999: 178)

*haka ~ *akaʔ ‘name’ > *káʔ* ‘name’ (Quesada Pacheco & Rojas Chaves 1999: 169)

*hi ~ *iʔ ‘this’ > *i*, *iʔ* ‘s/he’ (Quesada Pacheco & Rojas Chaves 1999: 140)

*-hu ~ *-uʔ ‘to swallow, drink, eat’ > ***túʔ*** ‘to eat’ (Quesada Pacheco & Rojas Chaves 1999: 131)

*huⁿdĩ ~ uⁿdĩʔ ‘monkey’ > *úriʔ* Sp. *mono congo* (Quesada Pacheco & Rojas Chaves 1999: 165)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > ***kuáʔs*** ‘bark, husk, skin’ (Quesada Pacheco & Rojas Chaves 1999: 127, 312, 178)

*kãʔ ‘breast, teat$_1$’ > *kaʔ* ‘teat, udder’ (Quesada Pacheco & Rojas Chaves 1999: 194, 196–7)

*kuuʔ ‘hand, finger’ > ***kúʔs**kua* ‘finger’ (Quesada Pacheco & Rojas Chaves 1999: 136)

*kuʔ ‘to blow, fly’ > *kuŋ* ‘to fly’ (Quesada Pacheco & Rojas Chaves 1999: 199)

*kũʔ ‘louse’ > ***ku**a* ‘louse’ (Quesada Pacheco & Rojas Chaves 1999: 178)

*kuʔ(-Ba) ‘tongue’ > ***kuá**tkua* ‘tongue’ (Quesada Pacheco & Rojas Chaves 1999: 159)

*siʔ-kʷa ‘pale’ > *síʔkua* ‘stranger (non-indigenous, of Spanish or mestizo origin)’ (Quesada Pacheco & Rojas Chaves 1999: 144)

*taʔ ‘rattle’ > *táʔ* ‘gourd rattle’ (Quesada Pacheco & Rojas Chaves 1999: 163)

*taʔBa ‘red, yellow, ripe’ > **taʔp**ká ‘to ripen’ (Quesada Pacheco & Rojas Chaves 1999: 162)

*ʦiʔ(-ki) ‘tooth (incisor), thorn’ > *síʔ* ‘tooth’ (Quesada Pacheco & Rojas Chaves 1999: 138)

*ʦuʔ ‘breast, teat$_2$’ > *ʧuʧúʔ* ‘woman’s breast’ (Quesada Pacheco & Rojas Chaves 1999: 189)

ʦ > *ʧ* / __*u

***ʦ > *ʃ* / __#**

***ʦ > *s* / elsewhere**

*huʦi ~ *huiʦ ‘urine’ > *uiʃ* (<huish>) ‘urine’ (Quesada Pacheco & Rojas Chaves 1999: 172)

*ʦ(i)- relational element$_2$ > *kúʔskua* ‘finger’ (Quesada Pacheco & Rojas Chaves 1999: 136)

*ʦa ‘hair, head’ > *sa* ‘head’ (Quesada Pacheco & Rojas Chaves 1999: 124)

*ʦãĩh ‘cold’ > ***sex**ká* ‘cold (adj.)’ (Quesada Pacheco & Rojas Chaves 1999: 146)

*ʦiʔ(-ki) ‘tooth (incisor), thorn’ > *síʔ* ‘tooth’ (Quesada Pacheco & Rojas Chaves 1999: 138)

*ʦuH ‘to scratch, rub’ > *ʧux* ‘to scratch’ (Quesada Pacheco & Rojas Chaves 1999: 184)

*tsuʔ ‘breast, teat$_2$’ > *ʧuʧúʔ* ‘woman’s breast’ (Quesada Pacheco & Rojas Chaves 1999: 189)

***s > *ʃ* / __#**

***s > *s* / elsewhere**

*^{m}bus- ‘woman (young)’ > *buʃ* ‘adolescent girl’ (Quesada Pacheco & Rojas Chaves 1999: 166)

*^{n}duk / *suk ‘prick, sting, point’ > *suk* ‘to sting’ (Quesada Pacheco & Rojas Chaves 1999: 178)

*siʔ-k^{w}a ‘pale’ > *síʔkua* ‘stranger (non-indigenous, of Spanish or mestizo origin)’ (Quesada Pacheco & Rojas Chaves 1999: 144)

*suu^{n}d ‘side’ > *sut* ‘side’ (Quesada Pacheco & Rojas Chaves 1999: 158)

***h > Ø / #__**

***h > *x* / elsewhere**

*^{m}bahka(i) ‘four’ > *báxkaŋ* ‘four’ (Quesada Pacheco & Rojas Chaves 1999: 133)

*hu ‘house’ > *ú* ‘house’ (Quesada Pacheco & Rojas Chaves 1999: 127)

*hutsi ~ *huits ‘urine’ > *uiʃ* (<huish>) ‘urine’ (Quesada Pacheco & Rojas Chaves 1999: 172)

*kah ‘open’ > ***káx****k* ‘to open’ (Quesada Pacheco & Rojas Chaves 1999: 113)

*kuh ‘seven’ > *kúx* ‘seven’ (Quesada Pacheco & Rojas Chaves 1999: 189)

*k^{w}ahk^{w}ah ‘butterfly’ > *kuaxkuáx* ‘butterfly’ (Quesada Pacheco & Rojas Chaves 1999: 163)

*tah(-ka) ‘new, raw’ > *taxká* ‘ raw’ (Quesada Pacheco & Rojas Chaves 1999: 133)

*tsãĩh ‘cold’ > ***sex****ká* ‘cold (adj.)’ (Quesada Pacheco & Rojas Chaves 1999: 146)

***#L > *t* / __#**

*La ‘bee, honey’ > ***át*** a kind of bee (Sp. *cantarria*) (Quesada Pacheco & Rojas Chaves 1999: 126)

2.3.5 Bribri

The Bribri language is spoken by 6,000 to 11,000 people in southeastern Costa Rica, on both sides of the Cordillera de Talamanca (Jara Murillo 2013: 95). Notwithstanding its relatively high number of speakers, the language is considered endangered (Chevrier 2017a: 35–6). There are three different Bribri dialects, namely Amubre, Coroma (both spoken north of the Cordillera de Talamanca), and Salitre (spoken south of the Cordillera de Talamanca) (Jara Murillo 2014: 90; Chevrier 2017a: 31–2). In colonial times, Bribri was also called *Viceíta*. The slopes on the Pacific side were populated by the Bribri only relatively recently, namely in the nineteenth century (Constenla Umaña 2012: 392).

The Bibri language is very closely related to Cabécar, and both are grouped together under the label 'Viceitic languages' by Constenla Umaña (2012: 417). Together with Teribe/Térraba and Boruca, the Viceitic languages belong to the Western Isthmic group of the Isthmic Chibchan languages (ibid.). Notwithstanding the similarities between Cabécar and Bribri, both are treated as different languages, not as two dialects of a single language.

My main sources for Bribri are Chevrier's (2017) Ph.D. dissertation which deals with the phonology of the language, especially of the Coroma variety, and a Bribri dictionnary compiled by Margery Peña (1982). Other sources on Bribri are papers on specific topics, such as verbal morphology (e.g. Jara Murillo 2013; Pacchiarotti 2016) or numeral classifiers (Krohn 2014). A Bribri course based on the Amubre dialect was prepared by Constenla Umaña and Margery Peña (1978, 1979). Diachronic syntax of Bribri has been investigated by Pachiarotti (e.g., 2013).

A specific central feature of Bribri – and Cabécar and Bocotá – is that vowel nasality prevails over consonant nasality. In other words, in Bribri, there are no phonemic nasal/oral distinctions in consonants, but only in vowels (e.g., Chevrier 2017a: 146). Bribri thus contradicts two universals that Ferguson (1963, cited in Constenla Umaña 1985a) proposed in the context of nasality, namely (1) that there is at least one phonemic nasal consonant in every language, and (2) that there is no language that has phonemic vowel nasality but no nasal consonant phonemes (Constenla Umaña 1985a: 375). Similar phenomena have been observed in other Native American languages of South America, for instance in Tucano, Guanano (both Tucanoan languages), and Maxakalí (Macro-Jê) (ibid.).

2.3.5.1 The sounds of Bribri

The following two subsection aims to give a brief overview of Bribri phonemes and allophones. It is based on the work of Chevrier (2017a).

2.3.5.1.1 Bribri vowels and suprasegmentals

The vowel inventory of Bribri (Coroma dialect) is illustrated in table 25.

TABLE 25
BRIBRI PHONEMES: ORAL VOWELS

	Front		Back
High	i		u
Near high	ɪ		ʊ
High-mid	e		o
Low-mid	ɛ		ɔ
Low		a	

Source: Chevrier (2017a: 56).

There are fewer phonemic contrasts in nasal vowels in Bribri, as shown in table 26.

TABLE 26
BRIBRI PHONEMES: NASAL VOWELS

	Front		Back
High	ĩ		ũ
Low-mid	ɛ̃		ɔ̃
Low		ã [ɔ̃]	

Source: Chevrier (2017a: 56).

Nasality in Bribri is a feature of the vowel (cf. Chevrier 2017a: 56). In terms of suprasegmentals, Bribri has stress and tone. Stress (in terms of intensity and length) always falls on the last syllable of a morpheme (ibid.: 93). Tone as a contrastive feature always falls on the stressed last syllable of a monomorphemic word (Constenla Umaña 1981: 171). There are two phonemic tones in Bribri, namely high (represented by <◌́>) and falling (represented by <◌̂>). High tone in Bribri can, in certain contexts, be realized as rising (represented by <◌̌>), with possible exceptions in the Amubre dialect. The

default tone in unstressed syllables is always low (cf. Chevrier 2017a: 94). A glottal stop in the syllable coda neutralizes tone oppositions: the preceding vowel is automatically realized with a high tone (ibid.: 95–6). There are processes of vowel, nasal and tonal harmony in Bribri (ibid.: 107–9).

Variation between [a], [i], [u] on the one hand and [ə] on the other hand, that is, weakening of /a/, /i/, /u/, is attested only in unstressed syllables, for instance in Amubre [kàˈɽó ~ kə̀ˈɽó] 'foot' (Chevrier 2017a: 107) or in Coroma [tàˈbîkʧà ~ təˈbîkʧà] a kind of liana (ibid.: 110). The same is true for syncope which can, in fact, often be regarded as the last phase of weakening /a/, /i/, or /u/ in an unstressed syllable (ibid.: 110–1). Whether syncope is possible or not depends on the preceding and following consonants, and of the consonant cluster that would result from this process (ibid.: 112–23).

2.3.5.1.2 Bribri consonants

Bribri consonant phonemes are illustrated in table 27.

TABLE 27
BRIBRI PHONEMES: CONSONANTS

	Labial	Dental/ alveolar	Postalveolar/ palatal	Velar	Glottal
Voiceless stops short	p	t	tk	k	ʔ
Voiceless stops long[27]	p:	t:		k:	
Voiced stops	b [b, β, m]	d [d, n, ɾ, ɾ̃]	ɟ [ɟ, ɲ]		
Voiceless affricates short		ʦ	ʧ		
Voiceles affricates long		t͡:s	t͡:ʃ		
Fricatives		s	ʃ		h
Vibrant		ɾ [ɾ, r, n][28]			
Glides	w [w, w̃]		j [j, j̃]		

Based on Chevrier (2017a: 60).

As already mentioned above, vowel nasality is phonemic in Bribri and determines consonant nasality. In other words, consonant nasality is predictable in Bribri, whereas vowel nasality is not. In line with that, it has been proposed that Bribri /b/, /d/, and /ɟ/ are realized as [m], [n], and [ɲ], for instance if followed by a nasal vowel (Constenla Umaña 1981: 112, 1985a; Chevrier 2017a: 158–79).[29] Alternatively, one might tentatively propose the existence of archiphonemes which are unspecified for nasality and that can be realized either as nasal or oral, depending on the context (see subsection 2.3.3.1.2 above). Postulating that the phonemes underlying Bribri [b], [d] and [ɟ] are

[27] Gemination/length can appear in free variation with preaspiration in consonants (Chevrier 2017a: 72).
[28] A discussion on phonemic oppositions and complementary distribution in the coronals [d, n, r, ɾ, ɾ, ɾ̃] can be found in Chevrier (2017aa: 72–90).
[29] In fact, rules for consonant nasality and nasal spread in Bribri are more complex. For more information, compare Constenla Umaña (1985a), and, above all, Chevrier (2017aa).

/m/, /n/, and /ɲ/ which are denasalized in certain contexts, is problematic, as demonstrated by Chevrier (2017a: 169–79). In syllable coda, /p/, /t/, and /k/ are not released in Bribri, whereas /b/ and /d/ are realized as [m] and [n, ɾ], respectively (Chevrier 2017a: 105). Morpheme-internally, /d/ is realized as [ɾ] or [r̃] (ibid.: 88).

It is not always easy to differentiate between the dento-velar consonant *t̲k̲* and a sequence *tk* in Bribri. The dento-velar is realized as [kʲ] or [ʧ] in initial position (as in /t̲k̲ãʔ/ [kʲǎʔ ~ ʧǎʔ] 'calabash'). Instead, the sequence *tk*, underlyingly /dVk/, is realized as such, [tk] in initial position, as in /dVkaʔ/ [tkáʔ] 'thorn' (Chevrier 2017a: 452).

In word-initial position, Chevrier (2017a: 82) observes a free variation between [#ɾ] and [#V̗ɾ], for instance in Amubre [ɾír ~ a̗ˈɾír] 'ant' or in Amubre [ɾî ~ i̗ˈɾî] 'ripe'.

In word-onset, any phoneme may occur, except the vibrant and /ʔ/. Word-internally, in syllable onset, any phoneme may occur, except the glottal consonants /ʔ/ and /h/, the fricatives /s/ and /ʃ/, and probably the glide /j/. In coda position, any phoneme is allowed, except the glides /w/ and /j/, the glottal fricative /h/, and /ʧ/ and /ʝ/ (cf. Chevrier 2017a: 82–5, 89, 103–5). The simplification of consonant clusters is a frequent phenomenon in Bribri; this might be illustrated by the alternating forms for 'dragonfly' [tkàˈbíʔ ~ kkàˈbíʔ ~ káˈbíʔ] (ibid.: 123). On the other hand, in word-initial position complex consonant clusters have also been attested, for instance [#ʧpkɾ] in [ʧpkɾóʔ] 'my fish hooks' (Chevrier 2016: 110).

There might also be sound symbolism in Bribri. Compare, for instance, Bribri <kūdžā> 'to eat or suck juicy things, as oranges' versus <kŏtā> 'to eat maize' (Lehmann 1920: 296, cited in Holmer 1947: 50–1). Holmer (1947: 51) remarks that "[t]he same use of forms with prepalatal consonants […] to express actions connected with liquid (as opposed to dry) substances has been noted by [Franz] Boas in the Siouan languages."

2.3.5.2 Reflexes of Proto-Chibchan phonemes in Bribri

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.5.2.1) and of Proto-Chibchan consonants (2.3.5.2.2) in Bribri.

2.3.5.2.1 Reflexes of Proto-Chibchan vowels in Bribri (cf. also Constenla Umaña 1981: 192–211)

***a > {*a*, *ã*, *ɔ̃*, *ʊ*}**

*apa 'body' > Coroma [pá ~ pă] 'body' (Chevrier 2017a: 590)

*ⁿda ~ *ta comitative$_1$ > [tà] comitative (Chevrier 2017a: 200)

*ⁿdaᵑg ‘salt’ > Amubre [**dàˈɟí**], Coroma [**ɽɟ**í] ‘salt, sea’ (Chevrier 2017a: 69, 75)

*ⁿdua ‘tobacco’ > Coroma [dwă] ‘tobacco, cigaret’ (Chevrier 2017a: 59)

*ⁿdu-ᵐba(ⁿd) ‘dove’ > Amubre, Coroma [ˈnǔ-bòɽ] ‘dove’ (Chevrier 2017a: 85)

*ᵑga ‘excrement’ > Amubre [ɲá̋], [ɲâ] ‘excrement’ (Chevrier 2017a: 358, 594)

*ᵑga-ⁿdi(a) ‘diarrhea’ > Coroma [ˈɲá̋ɽ̃ì] ‘diarrhea’ (Chevrier 2017a: 592)

*ᵑgak ‘feather, wing, arm, hand’ > Amubre [ˈkó-**ɟòk**ˇ] ‘plumage’ (Chevrier 2017a: 58)

*ᵑgak ‘mother-in-law, daughter-in-law’ > Coroma [ɟák] ‘mother-in-law, daughter-in-law’ (Chevrier 2017a: 100)

*ᵑguⁿdaʔ ‘hand, arm’ > Coroma [ùˈɽá] ‘hand’ (Chevrier 2017a: 164)

*hak ~ *kaʔ ‘stone’ > Coroma [âk ~ ˈ**âk**wò] ‘stone’ (Chevrier 2017a: 127)

*haka ‘tooth (molar)’ > Coroma [ká] ‘tooth’ (Chevrier 2017a: 99)

*haka ~ *akaʔ ‘name’ > [ká] ‘name’ (Chevrier 2017b)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > Amubre, Coroma [ˈ**kwô**-ɽìt] ‘skin, leather’ (Chevrier 2017a: 473)

*ka ‘leaf’ > Coroma [ˈkáɽ-**kò**] ‘leaf of a tree’ (Chevrier 2017a: 468)

*kaⁿd- ~ *kat- ‘stick, bone, tree’ > Amubre, Coroma [káɽ] ‘tree’ (Chevrier 2017a: 167)

*kah ‘open’ > Amubre [kó] ‘mouth’ (Chevrier 2017a: 94)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > Amubre, Coroma [kẫ ~ kɔ̃̂] ‘place, time, field’ (Chevrier 2017a: 67)

*La ‘egg, offspring’ > Amubre, Coroma [ɽá] ‘child, offspring’ (Chevrier 2017a: 84)

*siᵐba ‘God, wind’ > Coroma [sìˈbŏ ~ səˈbŏ] ‘God’ (Chevrier 2017a: 111)

*takaᵐb- ~ *taᵐbak- ‘snake’ > /**tkabí**/, Amubre [kʲìˈbí ~ kʲàˈbí], Amubre, Coroma [ʧəˈbí ~ ʧìˈbí] ‘snake’ (Chevrier 2017a: 422)

*(taBi-)ⁿda ‘clay, mud’ > Amubre, Coroma [dô] ‘mud’ (Chevrier 2017a: 58)

*tauka ‘calabash$_2$’ > /tkãʔ/, Amubre [kʲá̋ʔ], Amubre, Coroma [ʧá̋ʔ] ‘calabash’ (Chevrier 2017a: 422)

*taʔ ‘rattle’ > Amubre, Coroma [tẫ ~ tɔ̃̂] ‘gourd rattle, sieve, a plant’ (Chevrier 2017a: 160)

*ʦa ‘hair, head’ > Amubre [ʦá̋], Coroma [ʦɔ̃́], [ˈʦɔ̃́-kò] ‘hair (head or body)’ (Chevrier 2017a: 589)

{*ai, *ii} > {*ɛ, ɛ̃*}

*hai^{n}d ‘liver’ > Amubre [ɛ̃̂n], [ɛ̂ɽwʊ], Coroma [ɛ̂ɽ], [ɛ̂ɽwʊ] ‘liver’ (Chevrier 2017a: 595)

*tai^{n}d- ‘six’ > Amubre [ˈ**tɛ́r**ò] ‘six’ (Chevrier 2017a: 610)

*ʦii ‘night, dark’ > Coroma [ʦɛ̀ʦɛ́] ‘dark’ (Chevrier 2017a: 66)

{*i, *ii} > {*i, ɪ*}

*apii(s) ‘pumpkin, squash’ > Amubre, Coroma [pí] ‘pumpkin’ (Sp. *ayote*) (Chevrier 2017a: 590)

*^{m}ba^{n}di ‘hunger’ > Coroma [bɽî] ‘hunger’ (Chevrier 2017a: 58)

*^{m}ba^{n}di ~ *^{m}bai^{n}d ‘human being’ > [ˈbɾíbɾì] ‘Bribri’ (Chevrier 2017b)

*^{m}bi- ‘how much, how many’ > Coroma [bí-k] ‘how much, how many (round entities)?’ (Chevrier 2017a: 69)

*^{n}diʔ ‘water, river’ > Coroma [díʔ] ‘water, river’ (Chevrier 2017a: 56)

*^{ŋ}ga-^{n}di(a) ‘diarrhea’ > Coroma [ˈɲɑ̃́ɽ̃ɪ̀] ‘diarrhea’ (Chevrier 2017a: 592)

*hapi ~ *apiʔ ‘blood’ > Amubre, Coroma [pî] ‘blood’ (Chevrier 2017a: 68)

*ki locative$_2$ > Amubre, Coroma [kɪ́] ‘on’ (Chevrier 2017a: 125)

*si^{m}ba ‘God, wind’ > Coroma [sìˈbŏ ~ səˈbŏ] ‘God’ (Chevrier 2017a: 111)

*ʦi^{n}d(a) ‘small$_2$’ > Amubre [ʦíɾ] ‘small’ (Chevrier 2017a: 167)

***u > {*u, ũ, w*}**

*^{n}du- ‘to stand (singular)’ > Coroma [**dú**ɾ] ‘to stand (singular)’ (Chevrier 2017a: 594)

*^{n}dua ‘tobacco’ > Coroma [dwă] ‘tobacco, cigaret’ (Chevrier 2017a: 59)

*^{n}du-^{m}ba(^{n}d) ‘dove’ > Amubre, Coroma [ˈnŭ̂-bòɽ] ‘dove’ (Chevrier 2017a: 85)

*^{n}du(^{n}d) ‘bird, dove’ > Coroma [dŭ] ‘bird’ (Chevrier 2017a: 58)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > Coroma [ùˈɽá] ‘hand’ (Chevrier 2017a: 164)

*hu ‘house’ > Coroma [ú] ‘house’ (Chevrier 2017a: 102)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > Amubre, Coroma [ˈ**kwô**-ɽìt] ‘skin, leather’ (Chevrier 2017a: 473)

*kuh ‘seven’ > Amubre [**kû**ɽ] ‘seven’ (Chevrier 2017a: 232)

*kuʔ(-Ba) ‘tongue’ > Coroma [kúʔ] ‘tongue’ (Chevrier 2017a: 103)

*u^{n}du ‘cedar’ > Coroma [**ɽú**k] ‘cedar’ (Chevrier 2017a: 84)

***ũ > {*ũ, ə̃*}**

*^{m}bũ^{n}d(ũ) ‘ashes’ > Amubre, Coroma [mɜ̰̃ʈ̰ṹ-ʧkɜ̰̀] ‘ashes’ (Chevrier 2017a: 188)

*hũ ‘pot’ > [ṹ] Amubre, Coroma ‘pot’ (Chevrier 2017a: 159)

*kũʔ ‘louse’ > Coroma [kṹ] ‘louse’ (Chevrier 2017a: 160)

*pũʔ ‘raptor’ > Amubre, Coroma [pṹ] ‘sparrowhawk’ (Chevrier 2017a: 593)

***uu > ʊ**

*^{m}buuʔ ‘two’ > Amubre, Coroma [**bʊ́**-kˇ] ‘two (round entities)’ (Chevrier 2017a: 68)

2.3.5.2.2 Reflexes of Proto-Chibchan consonants in Bribri (cf. also Constenla Umaña 1981: 219–43)

p > *p

*apa ‘body’ > Coroma [pá ~ pă] ‘body’ (Chevrier 2017a: 590)

*apii(s) ‘pumpkin, squash’ > Amubre, Coroma [pí] ‘pumpkin’ (Sp. *ayote*) (Chevrier 2017a: 590)

*hap- ‘eight’ > Amubre, Coroma [ˈ**p**á-kʊ̀ɽ] ‘eight’ (Chevrier 2017a: 94)

*hapi ~ *apiʔ ‘blood’ > Amubre, Coroma [pî] ‘blood’ (Chevrier 2017a: 68)

*pũʔ ‘raptor’ > Amubre, Coroma [pṹ] ‘sparrowhawk’ (Chevrier 2017a: 593)

***^{m}b > [b] / __*V$_{[-nasal]}$**

***^{m}b > [m] / __*V$_{[+nasal]}$**

*^{m}b- ‘to go$_{1}$’ > [ˈ**m**ḿnṵ̀k] ‘to go’ (Chevrier 2017b)

*^{m}ba- ‘cloud, fog’ > Amubre, Coroma [mɔ́] ‘cloud’ (Chevrier 2017a: 158)

*^{m}ba^{n}di ‘hunger’ > Coroma [bɽî] ‘hunger’ (Chevrier 2017a: 58)

*^{m}ba^{n}di ~ *^{m}bai^{n}d ‘human being’ > [ˈbríbrì] ‘Bribri’ (Chevrier 2017b)

*^{m}bi- ‘how much, how many’ > Coroma [bí-k] ‘how much, how many (round entities)?’ (Chevrier 2017a: 69)

*^{m}bũ^{n}d(ũ) ‘ashes’ > Amubre, Coroma [mɜ̰̃ʈ̰ṹ-ʧkɜ̰̀] ‘ashes’ (Chevrier 2017a: 188)

*^{n}du-^{m}ba(^{n}d) ‘dove’ > Amubre, Coroma [ˈnṹ-bʊ̀ɽ] ‘dove’ (Chevrier 2017a: 85)

*si^{m}ba ‘God, wind’ > Coroma [sìˈbʊ̌ ~ sə̀ˈbʊ̌] ‘God’ (Chevrier 2017a: 111)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > /**tkab**í/, Amubre [kʲìˈbí ~ kʲàˈbí], Amubre, Coroma [ʧə̂ˈbí ~ ʧîˈbí] ‘snake’ (Chevrier 2017a: 422)

t > *t

*^{n}da ~ *ta comitative$_1$ > [tà̰] comitative (Chevrier 2017a: 200)

*tai^{n}d- ‘six’ > Amubre [ˈ**tɛ́r**ò] ‘six’ (Chevrier 2017a: 610)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > **/tkab**í/, Amubre [kʲìˈbí ~ kʲàˈbí], Amubre, Coroma [ɟə̀ˈbí ~ ɟɪ̀ˈbí] ‘snake’ (Chevrier 2017a: 422)

*tauka^{ʔ} ‘calabash$_2$’ > /tkã^{ʔ}/, Amubre [kʲã́^{ʔ}], Amubre, Coroma [ɟã́^{ʔ}] ‘calabash’ (Chevrier 2017a: 422)

*ta^{ʔ} ‘rattle’ > Amubre, Coroma [tã̂ ~ tõ̂] ‘gourd rattle, sieve, a plant’ (Chevrier 2017a: 160)

***^{n}d > {[d], [n]} / #__**

***^{n}d > [ɽ] / V__V$_{[-nasal]}$; > [ɽ̃] / V__V$_{[+nasal]}$**

***^{n}d > {[n], [ɾ], [r], [ɽ]} / elsewhere**

*^{m}ba^{n}di ‘hunger’ > Coroma [bɽî] ‘hunger’ (Chevrier 2017a: 58)

*^{m}ba^{n}di ~ *^{m}bai^{n}d ‘human being’ > [ˈbríbrì] ‘Bribri’ (Chevrier 2017b)

*^{m}bũ^{n}d(ũ) ‘ashes’ > Amubre, Coroma [mɟ̃ɽ̃ṹ-ɟkɟ̀] ‘ashes’ (Chevrier 2017a: 188)

*^{n}da^{ŋ}g ‘salt’ > Amubre [**dà**ˈɟí], Coroma [**ɽɟ**í] ‘salt, sea’ (Chevrier 2017a: 69, 75)

*^{n}di^{ʔ} ‘water, river’ > Coroma [dí^{ʔ}] ‘water, river’ (Chevrier 2017a: 56)

*^{n}du- ‘to stand (singular)’ > Coroma [**dú**ɾ] ‘to stand (singular)’ (Chevrier 2017a: 594)

*^{n}dua ‘tobacco’ > Coroma [dwă] ‘tobacco, cigaret’ (Chevrier 2017a: 59)

*^{n}du-^{m}ba(^{n}d) ‘dove’ > Amubre, Coroma [ˈnṹ-bòɽ] ‘dove’ (Chevrier 2017a: 85)

*^{n}du(^{n}d) ‘bird, dove’ > Coroma [dŭ] ‘bird’ (Chevrier 2017a: 58)

*^{ŋ}ga-^{n}di(a) ‘diarrhea’ > Coroma [ˈŋɑ̃́ɽ̃ɪ̀] ‘diarrhea’ (Chevrier 2017a: 592)

*^{ŋ}gu^{n}da^{ʔ} ‘hand, arm’ > Coroma [ùˈɽá] ‘hand’ (Chevrier 2017a: 164)

*hai^{n}d ‘liver’ > Amubre [ɛ̃̂n], [ɛ̃̂ɽwʊ], Coroma [ɛ̃̂ɽ], [ɛ̃̂ɽwʊ] ‘liver’ (Chevrier 2017a: 595)

*La ‘egg, offspring’ > Amubre, Coroma [ɽá] ‘child, offspring’ (Chevrier 2017a: 84)

*(taBi-)^{n}da ‘clay, mud’ > Amubre, Coroma [dô] ‘mud’ (Chevrier 2017a: 58)

*tai^{n}d- ‘six’ > Amubre [ˈ**tɛ́r**ò] ‘six’ (Chevrier 2017a: 610)

*ʦi^{n}d(a) ‘small$_2$’ > Amubre [ʦíɾ] ‘small’ (Chevrier 2017a: 167)

*u^{n}du ‘cedar’ > Coroma [**ɽú**k] ‘cedar’ (Chevrier 2017a: 84)

k > *k

*haka ‘tooth (molar)’ > Coroma [ká] ‘tooth’ (Chevrier 2017a: 99)

*^{ŋ}gak ‘feather, wing, arm, hand’ > Amubre [ˈkó-**ɟòk**ˀ] ‘plumage’ (Chevrier 2017a: 58)

*ŋgak ‘mother-in-law, daughter-in-law’ > Coroma [ɟák] ‘mother-in-law, daughter-in-law’ (Chevrier 2017a: 100)

*hak ~ *kaʔ ‘stone’ > Coroma [âk ~ ˈ**âk**wò] ‘stone’ (Chevrier 2017a: 127)

*haka ~ *akaʔ ‘name’ > [ká] ‘name’ (Chevrier 2017b)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > Amubre, Coroma [ˈ**kwô**-ɽìt] ‘skin, leather’ (Chevrier 2017a: 473)

*ka ‘leaf’ > Coroma [ˈkáɽ-**kò**] ‘leaf of a tree’ (Chevrier 2017a: 468)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > Amubre, Coroma [káɽ] ‘tree’ (Chevrier 2017a: 167)

*kah ‘open’ > Amubre [kó] ‘mouth’ (Chevrier 2017a: 94)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > Amubre, Coroma [kâ̰ ~ kô̰] ‘place, time, field’ (Chevrier 2017a: 67)

*ki locative$_2$ > Amubre, Coroma [kǐ] ‘on’ (Chevrier 2017a: 125)

*kuh ‘seven’ > Amubre [**kû**ɽ] ‘seven’ (Chevrier 2017a: 232)

*kũʔ ‘louse’ > Coroma [kṵ̂] ‘louse’ (Chevrier 2017a: 160)

*kuʔ(-Ba) ‘tongue’ > Coroma [kúʔ] ‘tongue’ (Chevrier 2017a: 103)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > /**tkab**í/, Amubre [kʲìˈbí ~ kʲàˈbí], Amubre, Coroma [ʮəˈbí ~ ʮìˈbí] ‘snake’ (Chevrier 2017a: 422)

*taukaʔ ‘calabash$_2$’ > /tkãʔ/, Amubre [kʲã́ʔ], Amubre, Coroma [ʮã́ʔ] ‘calabash’ (Chevrier 2017a: 422)

***ŋg > Ø / __*u**

***ŋg > [ɟ] / __V$_{[other, -nasal]}$**

***ŋg > [ɲ] / __V$_{[other, +nasal]}$**

*ŋga ‘excrement’ > Amubre [ɲá̰], [ɲâ̰] ‘excrement’ (Chevrier 2017a: 358, 594)

*ŋga-^{n}di(a) ‘diarrhea’ > Coroma [ˈɲá̰ɽ̀ì] ‘diarrhea’ (Chevrier 2017a: 592)

*^{n}da^{ŋ}g ‘salt’ > Amubre [**dà**ˈ**ɟ**í], Coroma [**ɽɟ**í] ‘salt, sea’ (Chevrier 2017a: 69, 75)

*ŋgak ‘feather, wing, arm, hand’ > Amubre [ˈkó-**ɟòk**ˈ] ‘plumage’ (Chevrier 2017a: 58)

*ŋgak ‘mother-in-law, daughter-in-law’ > Coroma [ɟák] ‘mother-in-law, daughter-in-law’ (Chevrier 2017a: 100)

*ŋgu^{n}daʔ ‘hand, arm’ > Coroma [ùˈɽá] ‘hand’ (Chevrier 2017a: 164)

***#C(V)Vʔ# > CV̂ / *C$_{[-voiced]}$**

***Vʔ+ > V́(ʔ) / elsewhere**

*^{m}buuʔ ‘two’ > Amubre, Coroma [**bó**-kˉ] ‘two (round entities)’ (Chevrier 2017a: 68)

*^{n}diʔ ‘water, river’ > Coroma [díʔ] ‘water, river’ (Chevrier 2017a: 56)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > Coroma [ùˈɽá] ‘hand’ (Chevrier 2017a: 164)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > Amubre, Coroma [ˈ**kwô**-ɽìt] ‘skin, leather’ (Chevrier 2017a: 473)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > Amubre, Coroma [kə̂ ~ kɔ̂] ‘place, time, field’ (Chevrier 2017a: 67)

*kuʔ(-Ba) ‘tongue’ > Coroma [kúʔ] ‘tongue’ (Chevrier 2017a: 103)

*kũʔ ‘louse’ > Coroma [kṵ̂] ‘louse’ (Chevrier 2017a: 160)

*pũʔ ‘raptor’ > Amubre, Coroma [pṵ̂] ‘sparrowhawk’ (Chevrier 2017a: 593)

*taʔ ‘rattle’ > Amubre, Coroma [tə̂ ~ tɔ̂] ‘gourd rattle, sieve, a plant’ (Chevrier 2017a: 160)

ʦ > *ʦ

*ʦa ‘hair, head’ > Amubre [ʦə́], Coroma [ʦɔ́], [ˈʦɔ́-kʊ̀] ‘hair (head or body)’ (Chevrier 2017a: 589)

*ʦii ‘night, dark’ > Coroma [ʦɛ̀ʦɛ́] ‘dark’ (Chevrier 2017a: 66)

*ʦ(i)- relational element$_2$ > Coroma [ɻ̩́ˈɽá**ʦ**kà ~ ɻ̩̀ˈɽá**ʦ**kà] ‘finger’ (Chevrier 2017a: 592)

*ʦi^{n}d(a) ‘small$_2$’ > Amubre [ʦíɾ] ‘small’ (Chevrier 2017a: 167)

s > *s

*si^{m}ba ‘God, wind’ > Coroma [sìˈbʊ̌ ~ səˈbʊ̌] ‘God’ (Chevrier 2017a: 111)

***hV > V́ / #_V$_{[+high, +back]}$#**

***hV, *Vh > V̂ / elsewhere**

*hai^{n}d ‘liver’ > Amubre [ə̂n], [ə̂ɽwʊ], Coroma [ə̂ɽ], [ə̂ɽwʊ] ‘liver’ (Chevrier 2017a: 595)

*hak ~ *kaʔ ‘stone’ > Coroma [âk ~ ˈ**âk**wʊ̀] ‘stone’ (Chevrier 2017a: 127)

*hu ‘house’ > Coroma [ú] ‘house’ (Chevrier 2017a: 102)

*hũ ‘pot’ > [ṵ́] Amubre, Coroma ‘pot’ (Chevrier 2017a: 159)

*kuh ‘seven’ > Amubre [**kû**ɽ] ‘seven’ (Chevrier 2017a: 232)

2.3.6 Cabécar

There are some 2,000 to 2,500 native speakers of Cabécar (mostly bilingual with Spanish) scattered across four areas of Costa Rica. Two main dialects of the language exist, the southern dialect, spoken in the areas of Ujarrás and San José Cabécar, and the northern dialect, spoken in the areas of Chirripó and La Estrella. The southern- and westernmost dialect of Cabécar is the variety of Ujarrás, spoken in the cantón of Buenos Aires, province of Puntarenas, on the Pacific slopes. The other three varieties of Cabécar are spoken on the Atlantic slopes, namely in the areas of Chirripó, La Estrella, and San José Cabécar, all three situated in the province of Limón (Margery Peña 1989: ix).

The closest relative of the Cabécar language is Bribri. Both languages are classified together in the Viceitic subgroup of the Western Isthmic Chibchan languages. Other Western Isthmic languages are Térraba and Boruca, according to Constenla Umaña (2012: 417).

The lexical Cabécar data used in the present study are all from Margery Peña's (1989) dictionary. This work also contains a sketch of Cabécar phonology and morphosyntax.

Compared with closely related Bribri, there are relatively few materials on Cabécar morphosyntax. Among the publications on Cabécar morphosyntax are González Campos (2012, 2015), dealing with verbal or evaluative morphology, and Aguilar García (n.d.) on the morphosyntax of the Ujarrás dialect.

Whenever provided by Margery Peña (1989), I use the phonemic and phonetic transcriptions of Cabécar forms. Otherwise, Cabécar data are given as in this author's orthography, which is adapted to IPA symbols, but not to phonemic transcription in the present work. For instance, Margery Peña's (1989) orthography indicates low and falling tone by the absence of tone marking, and uses nasal consonants.

In some cases, Cabécar tone seems to be the result of relatively recent developments in this language. This is illustrated, for instance, by a term like Cabécar /kóʧì/ 'pig' (cf. Margery Peña 1989: xxxiv), which has high tone on the first syllable and is a borrowing from Old Spanish (*coche*). Tone in this form may reflect the stress pattern of the Spanish word. In the domain of morphosyntax, a noticeable feature of Cabécar is that it has two plural markers: in nouns, plural number is indicated by a suffix *-wã*, as in *busí-wã* 'young women', from *busí* 'young woman' (Aguilar García, n.d.). Instead, in the second person pronoun, plural is indicated by final *-s*: compare *bá* 'you (sg.)', *bás* 'you (pl.)' (ibid.).

2.3.6.1 The sounds of Cabécar

The following subsections present and discuss the phoneme inventory of Cabécar (cf. Margery Peña 1989: xiv-xv) and the realization of the different phonemes.

2.3.6.1.1 Cabécar vowels and suprasegmentals

Tables 28 and 29 illustrate Cabécar vowel phonemes. Oral vowels are illustrated in table 28.

TABLE 28
CABÉCAR PHONEMES: ORAL VOWELS

	Front	Central	Back
High	i [i, i̯]		u [u, u̯]
Near high	ɪ		ʊ [ʊ, ɤ]
High-mid	e		o
Low		a [a, ə]	

Source: Margery Peña (1989: xxxviii–xxxix).

There are some fewer phonemic contrasts in nasal vowels, as illustrated in table 29.

TABLE 29
CABÉCAR PHONEMES: NASAL VOWELS

	Front	Central	Back
High	ĩ [ĩ, ĩ̯]		ũ [ũ, ũ̯]
High-mid	ẽ		õ
Low		ã [ã, ə̃]	

Source: Margery Peña (1989: xxxix).

The vowels /a/ or /ã/ may undergo different realizations. They become [ə] or [ə̃] if they bear no tone and if they are followed by a syllable that has tone.[30] Examples are for this phenomenon are /tkabì/ [tkəbî] ‘snake’, and /dãbắ/ [nə̃mắ] ‘jaguar’ (Margery Peña 1989: xviii). Additionally, there is a tendency to realize /ã/ as [õ], independently of tone. Compare, for instance, /sù̃ũã/ [sṵ̀ṵ̃ã̰ ~ sṵ̀ṵ̃õ̰] ‘to see, look’, or /ʃkãɽắ/ [ʃkə̃ɽắ ~ ʃkõɽő] ‘smoke’ (ibid.: xxix). Finally, /ʊ/ has the allophones [ʊ] and [ɤ] (ibid.: xxxix).

Sequences of two vowels always contain at least one high vowel /i/, /ĩ/, /u/ or /ũ/. In this context, and if non-nuclear, /i/, /u/, /ĩ/, and /ũ/ are realized as short or asyllabic (Margery Peña 1989: xviii). The asyllabic allophone of /u/ is written <w> by Margery Peña (1989) in syllable onset (cf. ibid.: xxxix). In sequences of three vowels of the types /uuV/ or /ũũṼ/, the second vowel is often deleted, as in /duuá ~ duá/ ‘brother-in-law’ or /duuás ~ duás/ ‘year’ (both terms from northern dialects) (ibid.: xxxi).

Cabécar has two phonemic tones, namely high and low, represented here by <◌́> and <◌̀>, respectively, as in /bí/ ‘devil’ and /bì/ ‘*Brosimun costaricanum*’ (Sp. *ojoche*) (Margery Peña 1989: xxxii). In final syllables, the low tone is sometimes also realized as a falling tone <◌̂>, for instance if preceded by a ‘weak’ syllable,[31] as in /daɟì/ [dəɟî] ‘salt, sea’ (ibid.: xxxiii), or by a syllable bearing low tone. In monomorphemic Cabécar words, tone contrasts are only attested in the last syllable, as in Bribri (Constenla Umaña 1981: 171).

Vowel nasality is phonemic in Cabécar and may spread leftwards. The situation in this language is very similar to what is found in Bribri (see above, subsection 2.3.5).

[30] “Los fonemas /a/ y /ã/ con tono neutro, es decir en las sílabas débiles que son las que se disponen en las palabras antes de la primera sílaba que tiene tono alto, o bien que preceden a la última sílaba si ésta tiene tono bajo, se realizan respectivamente como [ə] y [ə̃].” (Margery Peña 1989: xviii)

[31] The ‘weak’ syllable of a word is the syllable that precedes the first syllable with a high tone, or the penultimate syllable if the final syllable bears low tone (Margery Peña 1989: xviii).

2.3.6.1.2 Cabécar consonants

Table 30 illustrates the consonant phonemes of Cabécar.

TABLE 30
CABÉCAR PHONEMES: CONSONANTS

	Labial	Dental/ alveolar	Postalveolar/ palatal	Velar	Glottal
Voiceless stops	p	t	tk	k [k, kˀ, q]	
Voiced stops	b [b, β_w, m]	d [d, n, r, ɾ]	ɟ[32] [ɟ, ɲ]		
Voiceless affricates		ʦ[33]	ʧ		
Fricatives		s [s, z]	ʃ		h [h, x, ɸ]
Nasal				ŋ	
Vibrant			ɽ [ɽ, ɽ̃, l]		

Source: Margery Peña (1989: xxxix).

According to the interpretation adopted by Margery Peña (1989), Cabécar voiced stops such as /b/, /d/, and /ɟ/ are realized as [m], [n], and [ɲ] if followed by a nasal vowel, and as [b], [d], and [ɟ] if followed by an oral vowel (cf. Margery Peña 1989: xx).[34] The situation in Cabécar is thus very reminiscent of the situation found in Bribri. The only difference, in this context, is that in the northern dialects of Cabécar, the leftward spread of nasality is not stopped by certain voiceless consonants (which is is the case in Bribri and in Southern Cabécar): the word for 'hummingbird', for instance, is realized as [bə̀ʦṹ] in the southern dialects, and as [mə̀ʦṹ] in northern Cabécar (Constenla Umaña 1985a: 375). The voiceless stops through which nasality may spread in northern Cabécar dialects are /t/, /k/, /ʦ/, and /ʧ/. This leaves /p/ as the only voiceless stop in Cabécar that inhibits leftward nasal spread in all varieties (Margery Peña 1989: xxx–xxxi). As another difference to Bribri, Cabécar has a nasal consonant with a phonemic status, namely the velar nasal /ŋ/, and there is no glottal stop /ʔ*/. If Margery Peña

[32] /j́/ in the notation of Margery Peña (1989: xv).
[33] /ȼ/ in the notation of Margery Peña (1989: xv).
[34] Alternatively, one may postulate the existence of archiphonemes in this context, which are unspecified for nasality; see also the discussion in subsections 2.3.3.1.2 and 2.3.5.1.2 above, on possible Bocotá and Bribri archiphonemes.

(1989) does use the symbols <ɾ>, <r>, they represent allophones of /d/ (ibid.: xxxix). Voiceless aspirated stops are attested in some cases in northern dialects of the language (Chirripó and Ujarrás varieties) (ibid.), for instance in *t^{h}ǎ́* ‘gourd rattle’ (ibid.: 475).

In several contexts, the voiceless velar stop /k/ is realized as [g]: if it is in contact with a voiced consonant – for instance in /díkɽó/ [díkɽó ~ dígɽó] ‘water, river’ – if it occurs in word-initial position – for instance, in /kìʧà/ [kìʧà ~ gìʧà] ‘root, liana’ – in the onset of a final syllable – for instance, in /ɟòkó/ [ɟòkó ~ ɟògó] ‘fireplace’ – and word-internally if preceded by a syllable with a high tone and if followed, simultaneously, by a syllable with a low tone – as in /bĭ́kà̀dà̀/ [mĭ́kà̀nà̀ ~ mĭ́gà̀nà̀] ‘when?’ (Margery Peña 1989: xix). In final position, in a syllable with high tone, voiceless velar stops are unreleased, as in /hák/ [hák˺] ‘stone’ or /sábák/ [sábák˺] ‘drum’ (Sp. *tambor*) (ibid.: xix).[35] If followed by aspiration or *h* and a back vowel, *k* is realized as uvular *q* in Cabécar, for instance in /k^{h}uó/ [q^{h}u̟ó] ‘skin, bark’, /k^{h}ós/ [q^{h}ós] ‘oak’ (both from northern dialects, Ujarrás) (ibid.: xx).

The voiced bilabial stop /b/ is realized as [β$_{w}$] if it is preceded by the retroflex vibrant *ɾ* or by *r*, for instance in /bùɽbí/ [bùɽβ$_{w}$í] ‘toad’ (Margery Peña 1989: xx). The voiced alveolar stop /d/ is realized as [ɾ] intervocalically before oral vowels, in alternation with [r] before a syllable with high tone, and as [r] in syllable coda (ibid.).

The voiceless and the voiced postalveolar affricates alternate – mostly in the southern dialects – in word-initial position, for instance in /ɟaka ~ ʧaka/ ‘meat’, or in /ɟakí ~ ʧakí/ ‘yesterday’ (Margery Peña 1989: xxxii). Only in southern, but not in northern dialects of Cabécar, there are also alternations between *#ʧi* and *#da*: compare, for instance, /ʧìʧǎ ~ daʧǎ/ ‘bone’ (southern dialects), and /ʧìʧéi/ ‘bone’ (northern dialects) and /daʧéi/ ‘bone’ (southern dialects) (ibid.).

The voiceless alveolar fricative /s/ is realized as voiced alveolar sibilant, if in contact with a voiced consonant, even across word boundaries: /ɟís bĭ́dà̀/ [ɟíz mĭ́nà̀] ‘my mother’ (Margery Peña 1989: xxi).

The voiceless glottal fricative /h/, is sometimes realized as a voiceless velar fricative [x], namely in word-initial position and if followed by a nasal vowel, for instance in /hãbő́/ [hə̃mő́ ~ xə̃mő́] ‘avocado (*Persea americana*)’ (Margery Peña 1989: xxi). In the northern dialects, and in the Cabécar variety spoken in San José Cabécar (a southern dialect), /h/ can be realized as a voiceless bilabial fricative [ɸ] in word-initial position if followed by [u ~ u̟]. Examples for this realization are /hù/ [hù ~ ɸù] ‘house’ or /hùɽâ/ [hùɽâ ~ ɸùɽâ] ‘hand, arm’ (ibid.: xxi). Word-initial /#hV/ often alternates with /#V/ in free variation, for instance in /ɛ́d ~ hɛ́d/ ‘liver’, or in /ói ~ hói/ ‘acid, sour’

[35] Margery Peña (1989: xix) speaks of an implosive realization (“realización implosiva”) of /k/ in this position.

(southern dialects) (ibid.: xxiii). In Ujarrás, there is also variation with [#ʔV], for instance in /ũ̀/ [ʔũ̀ ~ hũ̀] ‘pot’ (ibid.: xxii–xxiii).

The sonant /ɽ/ is nasalized if followed by a nasal vowel – for instance in /kãɽ́ĩ/ [kə̃ɽ̃ĩ́] ‘rain’ – and it is realized as a retroflex lateral approximant [ɭ] in word-final position, for instance in /kàɽ/ [kàɭ] ‘tree’ (northern dialects) (Margery Peña 1989: xxii). Chevrier (2017a: 358) hypothesizes that the retroflex *ɾ* in Cabécar is not a phoneme, but an allophone of /d/, and that [r ~ ɾ] are allophones of a phoneme /ɾ/.

The velar nasal /ŋ/ cannot occur in word-initial position in Cabécar (Margery Pena 1989: xxiii).

Geminated or long consonants are attested in Cabécar; Margery Peña seems to interpret them as geminated, for instance in /ppò/ ‘to hit with a longish object’, /ttò/ ‘to speak’, and in /pákkò/ (northern dialects) ‘to send’ (cf. Margery Peña 1989: xxiv–xxv). Sequences of two distinct consonants in Cabécar mostly include either a stop followed by a sonant /ɽ/, or a sibilant /s/ or /ʃ/ followed by a stop (ibid.: xxiv), which is similar to the situation found in other Chibchan languages. Some sequences are restricted to specific dialects of Cabécar, for instance the sequence *pk* which has only been recorded in the La Estrella river valley in word-initial position, for instance in /pkíɽ/ ‘four, referring to human beings’ (Margery Peña 1989: xxiv). Considering cognate forms in other Chibchan languages, it seems that these consonant sequences are the result of syncope in some cases (for instance in the La Estrella term for ‘four’ shown above), changing the original structure of the root in question from CVCV to CCV. Sequences of three consonants are occasionally also found in Cabécar, for instance in *ʃkɽí ~ ʃikɽí* ‘mosquito’ (southern dialects) (ibid.: xxvi).

2.3.6.2 Reflexes of Proto-Chibchan phonemes in Cabécar

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.6.2.1) and of Proto-Chibchan consonants (2.3.6.2.2) in Cabécar.

2.3.6.2.1 Reflexes of Proto-Chibchan vowels in Cabécar (cf. also Constenla Umaña 1981: 192–211)

***a > {*a*, *ã*, *ʊ*, *o*}**

*apa ‘body’ > *pá* ‘body’ (Margery Peña 1989: 413)

*atsa-ka^{n}da ‘chicken’ > /ójʃkòdò/ [ójʃkórô] ‘chicken’ (Margery Peña 1989: xx)

*-^{m}ba nominalizer$_1$ > ***-ebʊ*** derivational suffix (Margery Peña 1989: liv)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > **/bãɽ́ék/** [**mə̃ɽ̃́ék**] ‘tail, penis’ (cf. Margery Peña 1989: xx, 478)

*^{m}ba^{n}d(a) ~ *^{m}bat(a) ‘exterior’ > ***bata*** ‘mouth, lips’ (Margery Peña 1989: 161)

*^{m}ba^{n}di ‘hunger’ > *baɽí* ‘hunger’ (Margery Peña 1989: 450)

*^{m}baʔ ‘beam of light, heat’ > ***díbá*** ‘heat of the sun, sunbeam’ (Margery Peña 1989: 54)

*^{m}baʔ ‘you’ > /bá/ ‘you’ (Margery Peña 1989: xxiii)

*^{m}bi-^{n}daʔ ‘neck, throat’ > *biɾó* ‘throat’ (Margery Peña 1989: 443)

*^{n}da ~ *ta comitative$_{1}$ > *da ~ ɾa* comitative (Margery Peña 1989: cvix)

*^{n}da ~ *ta locative$_{1}$ > [nã] ‘in’ (Margery Peña 1989: cvi)

*^{n}da^{m}ba ‘brother$_{1}$’ > ***dabái*** ‘paternal uncle’ (Margery Peña 1989: 535)

*^{n}da^{m}ba ‘feline$_{1}$’ > /dãbɑ́/ [nə̃mɑ́] ‘jaguar’ (Margery Peña 1989: xxx)

*^{n}da^{ŋ}g ‘salt’ > /daɟì/ [dəɟî] ‘salt, sea’ (Margery Peña 1989: xxxiii)

*^{n}da(i) ~ *ta(i) ‘to be’ > *dʊ* (after consonant), *ɾʊ* (after vowel) ‘to be’, copula (Margery Peña 1989: lxvi)

*^{n}diʔ-a ‘liquid’ > *diʊ* ‘liquid (with the exclusion of water)’ (Margery Peña 1989: 468)

*^{n}dua ‘tobacco’ > *duwa* ‘tobacco’ (Margery Peña 1989: 531)

*(^{n}d-)u^{m}ba ‘brother-in-law’ > *duwá* ‘brother-in-law, term used by male speakers’ (Margery Peña 1989: 414)

*^{ŋ}ga ‘excrement’ > /ɟɑ́/ [ɲɑ́] ‘excrement’ (Margery Peña 1989: xx)

*^{ŋ}ga^{m}ba ‘son, child’ > *ɟaba* ‘child, son, daughter, nephew, niece, godchild, grandchild’ (Margery Peña 1989: 452)

*^{ŋ}ga-^{n}di(a) ‘diarrhea’ > *ɲɑ̃ɽí* ‘diarrhea’ (Margery Peña 1989: 424)

*^{ŋ}gak ‘mother-in-law, daughter-in-law’ > Coroma *ɟak* ‘mother-in-law, daughter-in-law’ (Margery Peña 1989: 487, 530)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > /hùɽà/ [hùɽâ ~ ɸùɽâ] ‘hand, arm’ (Margery Peña 1989: xxi)

*hak ~ *kaʔ ‘stone’ > /hák/ [hák˺] ‘stone’ (Margery Peña 1989: xix)

*haka ‘tooth (molar)’ > *ka* ‘tooth’ (Margery Peña 1989: 424)

*huka ‘palm’ > southern dialects *ukó*, San José Cabécar *úgó* ‘a palm’ (Margery Peña 1989: 493)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > /kuó/ [kʊ̯ó] ‘skin, bark’ (Margery Peña 1989: xl)

*ia dative > *ĩã* dative postposition, ‘for’ (Margery Peña 1989: 494)

*ka ‘leaf’ > *kó* ‘leaf, feather’ (Margery Peña 1989: 452, 504)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > *kaɽ* ‘tree’ (Margery Peña 1989: 379)

*kah ‘open’ > /kó/ ‘mouth’ (Margery Peña 1989: xvi)

*kap- ‘to sleep’ > ***kap**íɽ* ‘to sleep’ (Margery Peña 1989: 425)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > /ká/ ‘time, place’ (Margery Peña 1989: xvii)

*kihʦa ~ *kihsa ‘foot, root’ > /kìʧà/ [kìʧâ ~ gìʧâ] ‘root, liana (generic term)’ (Margery Peña 1989: xix)

*k^{w}a ‘kidney, heart, stomach’ > *kuó* ‘kidney’ (Margery Peña 1989: 517)

*k^{w}ahk^{w}ah ‘butterfly, hat’ > *kuákua* ‘butterfly’ (Margery Peña 1989: 475)

*Laʔ ‘smell’ > *haɽar* ‘smell (noun)’ (Margery Peña 1989: 490)

*si^{m}ba ‘god, wind’ > *sibʊ* ‘god’ (Margery Peña 1989: 425)

*siʔ-k^{w}a ‘pale’ > *síkua*, *sígua* ‘stranger’ (Margery Peña 1989: 437)

*(taBi-)^{n}da ‘clay, mud’ > /dó/ ‘mud’ (Margery Peña 1989: xvi)

*taH(^{m}ba) ‘heart, liver, center$_2$’ > *tabó* ‘pulp of fruit or cane, edible part of a plant, palm heart’ (Margery Peña 1989: 290)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > **/tkabì/** [**tkəbî**] ‘snake’ (Margery Peña 1989: xviii)

*taukaʔ ‘calabash$_2$’ > /tkǻ/ [tkǻ ~ tkő] ‘calabash (*guacal*)’ (Margery Peña 1989: xxix)

*taʔ ‘rattle’ > *tǻ* ‘gourd rattle’ (Margery Peña 1989: 475)

*ʦa ‘hair, head’ > **/ʦǻkű/** [**ʦǻkű**] ‘head’ (Margery Peña 1989: xl)

*ʦika ~ *tsaik locative$_3$ > *ska* postposition ‘in’ (Margery Peña 1989: 428)

*u^{ˈ}a comitative$_2$ > *wa* ‘with’ (Margery Peña 1989: cviii)

ai > *ɪ

ãĩ > *ẽ

*tai ‘field for cultivation’ > /tì/ ‘cultivated field (*millpa*)’ (Margery Peña 1989: xxiii)

*ʦãĩh ‘cold’ > /ʦẽ́/ ‘cold (adj.)’ (Margery Peña 1989: xvi)

***i > {*i*, *ɪ*}**

*^{m}ba^{n}di ‘hunger’ > *baɽí* ‘hunger’ (Margery Peña 1989: 450)

*^{m}bu^{n}di ~ *ku^{n}di ~ *kui^{n}d(i) ‘big$_1$’ > *mũɽĩ́* ‘thick, fat, robust’ (Margery Peña 1989: 197)

*^{n}di ‘sun, day’ > ***dí**wó* ‘sun’ (Margery Peña 1989: 527)

*^{n}diʔ ‘water, river’ > /díkɽó/ [díkɽó ~ díkɽɤ́] ‘water, river’ (Margery Peña 1989: xviii)

*^{n}diʔ-a ‘liquid’ > *diʊ* ‘liquid (with the exclusion of water)’ (Margery Peña 1989: 468)

*^{n}du- ‘sun, year’ > ***duw**ás*, ***duw**áska* ‘summer’ (Margery Peña 1989: 544)

*^{ŋ}ga-^{n}di(a) ‘diarrhea’ > *ɲǻɽí* ‘diarrhea’ (Margery Peña 1989: 424)

*^{ŋ}gi ‘worm’ > /hĩ́/ ‘worm (generic term)’ (Margery Peña 1989: xvi)

*haki? 'bile, gall, bitter' > *kí* 'gall' (Margery Peña 1989: 452)

*hapi ~ *api? 'blood' > /pí/ 'blood' (Margery Peña 1989: xv)

*hi 'path' > *hãmḗĩ* 'artery' (Margery Peña 1989: 382), *hắmḗĩ* 'vein' (ibid.: 543)

*ia dative > *ĩã* dative postposition, 'for' (Margery Peña 1989: 494)

*ki locative$_2$ > *kḯ* 'in, on, to, because' (Margery Peña 1989: 147)

*kihtsa ~ *kihsa 'foot, root' > /kìʧà/ [kìʧâ ~ gìʧâ] 'root, liana (generic term)' (Margery Peña 1989: xix)

*kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di 'throat, hole' > *kuɽí* 'neck' (Margery Peña 1989: 413)

*k^{w}i 'turtle' > *kuí* 'turtle' (Margery Peña 1989: 536)

*Li 'to cook$_1$' > ***ɽíɔ̃ɽ ~ ɽíɔ̃ɽɪ*** 'to cook' (Margery Peña 1989: lxxvi)

*si^{m}ba 'god, wind' > *sibʊ* 'god' (Margery Peña 1989: 425)

*si?-k^{w}a 'pale' > *síkua*, *sígua* 'stranger' (Margery Peña 1989: 437)

*ʦipi 'mouth, vagina' > *ʦípɪ* 'animal's vagina' (Margery Peña 1989: 542)

*tu^{n}di ~ *tui^{n}d 'dark' > ***tuwínã*** 'dark, to darken' (Margery Peña 1989: 491)

*ʦipi 'mouth, vagina' > *ʦípɪ* 'animal's vagina' (Margery Peña 1989: 542)

u > *u

ũ > *ũ

*^{m}bu 'to twist' > ***buɽ*** 'to twist (tr.)' (Margery Peña 1989: 536)

*^{m}bu^{n}d- 'breath, wind' > ***buɽu*** 'spirit' (Margery Peña 1989: 434)

*^{m}bu^{n}di ~ *ku^{n}di ~ *kui^{n}d(i) 'big$_1$' > *mũɽḯ* 'thick, fat, robust' (Margery Peña 1989: 197)

*^{m}bus- 'woman (young)' > ***busí*** 'girl' (Margery Peña 1989: 483)

*^{n}du- 'to stand (singular)' > ***dúɽ*** 'to stand' (Margery Peña 1989: 435)

*^{n}dua 'tobacco' > *duwa* 'tobacco' (Margery Peña 1989: 531)

*(n^{n}d-)u^{m}ba 'brother-in-law' > *duwá* 'brother-in-law, term used by male speakers' (Margery Peña 1989: 414)

*^{n}du(^{n}d) 'bird, dove' > *du* 'bird (general term)' (Margery Peña 1989: 492)

*^{ŋ}gu^{n}da? 'hand, arm' > /hùɽà/ [hùɽâ ~ ɸùɽâ] 'hand, arm' (Margery Peña 1989: xxi)

*hu 'house' > /hù/ [hù ~ ɸù] 'house' (Margery Peña 1989: xxi)

*hũ 'pot' > *hṹ*, *ṹ* 'pot' (Margery Peña 1989: 490)

*huka 'palm' > southern dialects *ukó*, San José Cabécar *úgó* 'a palm' (Margery Peña 1989: 493)

*huka ~ *huBa ~ *kua? 'skin' > /kuó/ [kʊ̗ó] 'skin, bark' (Margery Peña 1989: xl)

*kuh 'to hear$_2$' > /**kú**kó/ 'ear' (Margery Peña 1989: xxiii)

*kũʔ ‘louse’ > *kṹ* ‘louse’ (Margery Peña 1989: 502)

*kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di ‘throat, hole’ > *kuɽí* ‘neck’ (Margery Peña 1989: 413)

*pu ‘young, sprout’ > *pupú* ‘young’ (Margery Peña 1989: 464)

*su ‘to see’ > **/sṵ̀**ũà/ [**sṵ̀**ṵ̃à̰ ~ sṵ̀ṵ̃ô̰] ‘to see, watch’ (Margery Peña 1989: xxix)

*tu^{n}di ~ *tui^{n}d ‘dark’ > ***tuwínã*** ‘dark, to darken’ (Margery Peña 1989: 491)

*ʦuʔ ‘breast, teat$_2$’ > *ʦú* ‘woman’s breast’ (Margery Peña 1989: 496)

*u^{ˈ}a comitative$_2$ > *wa* ‘with’ (Margery Peña 1989: cviii)

*u^{n}du ‘angry’ > **/ùɽú**dà̰/ [**ùɽú**nà̰] ‘to get angry’ (Margery Peña 1989: xx)

uu > *o

*^{m}buuʔ ‘two’ > ***bóɽ*** ‘two (referring to humans)’ (Margery Peña 1989: 425)

2.3.6.2.2 Reflexes of Proto-Chibchan consonants in Cabécar (cf. also Constenla Umaña 1981: 219–43)

p > *p

*apa ‘body’ > *pá* ‘body’ (Margery Peña 1989: 413)

*hapi ~ *apiʔ ‘blood’ > /pí/ ‘blood’ (Margery Peña 1989: xv)

*kap- ‘to sleep’ > ***kapíɽ*** ‘to sleep’ (Margery Peña 1989: 425)

*pu ‘young, sprout’ > *pupú* ‘young’ (Margery Peña 1989: 464)

*ʦipi ‘mouth, vagina’ > *ʦípɪ* ‘animal’s vagina’ (Margery Peña 1989: 542)

^{m}b > *w* / *u*__*a

***^{m}b > [b] / __*V$_{[-nasal]}$**

***^{m}b > [m] / __*V$_{[+nasal]}$**

*^{m}b- ‘to go$_1$’ > ***mã*** auxiliary ‘to go’ (Margery Peña 1989: 462)

*-^{m}ba nominalizer$_1$ > *-ebʊ* derivational suffix (Margery Peña 1989: liv)

*^{m}ba- ‘cloud, fog’ > /bṍ/ ‘cloud’ (Margery Peña 1989: xvi)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > **/bãɽ́**k/ [**mə̃ɽ̃**ék] ‘tail, penis’ (cf. Margery Peña 1989: xx, 478)

*^{m}ba^{n}d(a) ~ *^{m}bat(a) ‘exterior’ > ***bata*** ‘mouth, lips’ (Margery Peña 1989: 161)

*^{m}ba^{n}di ‘hunger’ > *baɽí* ‘hunger’ (Margery Peña 1989: 450)

*^{m}baʔ ‘beam of light, heat’ > *díbá* ‘heat of the sun, sunbeam’ (Margery Peña 1989: 54)

*^{m}baʔ ‘you’ > /bá/ ‘you’ (Margery Peña 1989: xxiii)

*^{m}bi-^{n}daʔ ‘neck, throat’ > *birɔ́* ‘throat’ (Margery Peña 1989: 443)

*^{m}bu ‘to twist’ > ***buɽ*** ‘to twist (tr.)’ (Margery Peña 1989: 536)

*^{m}bu^{n}d- ‘breath, wind’ > ***buɽu*** ‘spirit’ (Margery Peña 1989: 434)

*^{m}bu^{n}di ~ *ku^{n}di ~ *kui^{n}d(i) ‘big$_1$’ > *mũɽɨ́* ‘thick, fat, robust’ (Margery Peña 1989: 197)

*^{m}bus- ‘woman (young)’ > ***busí*** ‘girl’ (Margery Peña 1989: 483)

*^{m}buuʔ ‘two’ > ***bóɽ*** ‘two (referring to humans)’ (Margery Peña 1989: 425)

*^{n}da^{m}ba ‘brother$_1$’ > ***dabái*** ‘paternal uncle’ (Margery Peña 1989: 535)

*^{n}da^{m}ba ‘feline$_1$’ > /dãbɑ́/ [nə̃mɑ́] ‘jaguar’ (Margery Peña 1989: xxx)

*(^{n}d-)u^{m}ba ‘brother-in-law’ > *duwá* ‘brother-in-law, term used by male speakers’ (Margery Peña 1989: 414)

*^{ŋ}ga^{m}ba ‘son, child’ > *ɟaba* ‘child, son, daughter, nephew, niece, godchild, grandchild’ (Margery Peña 1989: 452)

*si^{m}ba ‘god, wind’ > *sibʊ* ‘god’ (Margery Peña 1989: 425)

*taH(^{m}ba) ‘heart, liver, center$_2$’ > *tabó* ‘pulp of fruit or cane, edible part of a plant, palm heart’ (Margery Peña 1989: 290)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > **/tkabì/** [**tkəbî**] ‘snake’ (Margery Peña 1989: xviii)

t > *t

*^{m}ba^{n}d(a) ~ *^{m}bat(a) ‘exterior’ > ***bata*** ‘mouth, lips’ (Margery Peña 1989: 161)

*taH(^{m}ba) ‘heart, liver, center$_2$’ > *tabó* ‘pulp of fruit or cane, edible part of a plant, palm heart’ (Margery Peña 1989: 290)

*tai ‘field for cultivation’ > /tì/ ‘cultivated field (*millpa*)’ (Margery Peña 1989: xxiii)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > **/tkabì/** [**tkəbî**] ‘snake’ (Margery Peña 1989: xviii)

*taukaʔ ‘calabash$_2$’ > /tkɑ́/ [tkɑ́ ~ tkɔ́] ‘calabash (*guacal*)’ (Margery Peña 1989: xxix)

*taʔ ‘rattle’ > *tɑ́* ‘gourd rattle’ (Margery Peña 1989: 475)

*tu^{n}di ~ *tui^{n}d ‘dark’ > ***tuwínã*** ‘dark, to darken’ (Margery Peña 1989: 491)

***^{n}d > [d] / #__*V$_{[-nasal]}$**

***^{n}d > [n] / #__*V$_{[+nasal]}$**

***^{n}d > {ɾ, ɽ} / V__V**

*atsa-ka^{n}da ‘chicken’ > /ɔ́ʃkòdò/ [ɔ́ʃkórô] ‘chicken’ (Margery Peña 1989: xx)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > **/bãɽɛ́k/** [**mə̃ɽɛ́k**] ‘tail, penis’ (cf. Margery Peña 1989: xx, 478)

*^{m}ba^{n}di ‘hunger’ > *baɽí* ‘hunger’ (Margery Peña 1989: 450)

*^{m}bi-^{n}daʔ ‘neck, throat’ > *birɔ́* ‘throat’ (Margery Peña 1989: 443)

*^{m}bu^{n}d- ‘breath, wind’ > ***buɽu*** ‘spirit’ (Margery Peña 1989: 434)

*^{m}bu^{n}di ~ *ku^{n}di ~ *kui^{n}d(i) ‘big$_{1}$’ > *mũɽɪ́* ‘thick, fat, robust’ (Margery Peña 1989: 197)

*^{n}da ~ *ta locative$_{1}$ > [nã] ‘in’ (Margery Peña 1989: cvi)

*^{n}da^{m}ba ‘brother$_{1}$’ > ***dabái*** ‘paternal uncle’ (Margery Peña 1989: 535)

*^{n}da^{m}ba ‘feline$_{1}$’ > /dãbɐ́/ [nə̃mɐ́] ‘jaguar’ (Margery Peña 1989: xxx)

*^{n}da^{ŋ}g ‘salt’ > /daɟì/ [dəɟî] ‘salt, sea’ (Margery Peña 1989: xxxiii)

*^{n}da(i) ~ *ta(i) ‘to be’ > *dʊ* (after consonant), *rʊ* (after vowel) ‘to be’, copula (Margery Peña 1989: lxvi)

*^{n}di ‘sun, day’ > ***díwʊ́*** ‘sun’ (Margery Peña 1989: 527)

*^{n}diʔ ‘water, river’ > /díkɽʊ́/ [díkɽʊ́ ~ díkɽɤ́] ‘water, river’ (Margery Peña 1989: xviii)

*^{n}diʔ-a ‘liquid’ > *diʊ* ‘liquid (with the exclusion of water)’ (Margery Peña 1989: 468)

*^{n}du- ‘to stand (singular)’ > ***dúɽ*** ‘to stand’ (Margery Peña 1989: 435)

*^{n}du- ‘sun, year’ > ***duwás***, ***duwáska*** ‘summer’ (Margery Peña 1989: 544)

*^{n}dua ‘tobacco’ > *duwa* ‘tobacco’ (Margery Peña 1989: 531)

*(^{n}d-)u^{m}ba ‘brother-in-law’ > *duwá* ‘brother-in-law, term used by male speakers’ (Margery Peña 1989: 414)

*^{n}du(^{n}d) ‘bird, dove’ > *du* ‘bird (general term)’ (Margery Peña 1989: 492)

*^{ŋ}ga-^{n}di(a) ‘diarrhea’ > *ɲɐ̃ɽí* ‘diarrhea’ (Margery Peña 1989: 424)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > /hùɽà/ [hùɽâ ~ ɸùɽâ] ‘hand, arm’ (Margery Peña 1989: xxi)

*kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di ‘throat, hole’ > *kuɽí* ‘neck’ (Margery Peña 1989: 413)

*(taBi-)^{n}da ‘clay, mud’ > /dó/ ‘mud’ (Margery Peña 1989: xvi)

*tu^{n}di ~ *tui^{n}d ‘dark’ > ***tuwínã*** ‘dark, to darken’ (Margery Peña 1989: 491)

*u^{n}du ‘angry’ > **/ùɽú**dɐ̀/ [**ùɽú**nɐ̀] ‘to get angry’ (Margery Peña 1989: xx)

k > *k

*atsa-ka^{n}da ‘chicken’ > /ójʃkòdò/ [ójʃkóɾô] ‘chicken’ (Margery Peña 1989: xx)

*^{ŋ}gak ‘mother-in-law, daughter-in-law’ > Coroma *ɟak* ‘mother-in-law, daughter-in-law’ (Margery Peña 1989: 487, 530)

*hak ~ *kaʔ ‘stone’ > /hák/ [hák˺] ‘stone’ (Margery Peña 1989: xix)

*haka ‘tooth (molar)’ > *ka* ‘tooth’ (Margery Peña 1989: 424)

*hakiʔ ‘bile, gall, bitter’ > *kí* ‘gall’ (Margery Peña 1989: 452)

*huka ‘palm’ > southern dialects *ukɔ́*, San José Cabécar *úgɔ́* ‘a palm’ (Margery Peña 1989: 493)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > /kuó/ [kʉ́ó] ‘skin, bark’ (Margery Peña 1989: xl)

*ka ‘leaf’ > *kó* ‘leaf, feather’ (Margery Peña 1989: 452, 504)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > *kaɽ* ‘tree’ (Margery Peña 1989: 379)

*kah ‘open’ > /kó/ ‘mouth’ (Margery Peña 1989: xvi)

*kap- ‘to sleep’ > ***kapíɽ*** ‘to sleep’ (Margery Peña 1989: 425)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > /ká́/ ‘time, place’ (Margery Peña 1989: xvii)

*ki locative$_2$ > *kí́* ‘in, on, to, because’ (Margery Peña 1989: 147)

*kihtsa ~ *kihsa ‘foot, root’ > /kìʧà/ [kìʧâ ~ gìʧâ] ‘root, liana (generic term)’ (Margery Peña 1989: xix)

*kuh ‘to hear$_2$’ > **/kú**kó/ ‘ear’ (Margery Peña 1989: xxiii)

*kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di ‘throat, hole’ > *kuɽí* ‘neck’ (Margery Peña 1989: 413)

*kũʔ ‘louse’ > *kű́* ‘louse’ (Margery Peña 1989: 502)

*ʦika ~ *tsaik locative$_3$ > *ska* postposition ‘in’ (Margery Peña 1989: 428)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > **/tkabì/** [**tkəbî**] ‘snake’ (Margery Peña 1989: xviii)

*taukaʔ ‘calabash$_2$’ > /tḵá́/ [tḵá́ ~ tḵó́] ‘calabash (*guacal*)’ (Margery Peña 1989: xxix)

***ᵑg > *h* / __V$_{[+high]}$**

***ᵑg > [ɟ] / __V$_{[other, -nasal]}$**

***ᵑg > [ɲ] / __V$_{[other, +nasal]}$**

*^{n}da^{ŋ}g ‘salt’ > /daɟì/ [dəɟî] ‘salt, sea’ (Margery Peña 1989: xxxiii)

*ᵑga ‘excrement’ > /ɟá́/ [ɲá́] ‘excrement’ (Margery Peña 1989: xx)

*ᵑga^{m}ba ‘son, child’ > *ɟaba* ‘child, son, daughter, nephew, niece, godchild, grandchild’ (Margery Peña 1989: 452)

*ᵑga-^{n}di(a) ‘diarrhea’ > *ɲá́ɽí* ‘diarrhea’ (Margery Peña 1989: 424)

*ᵑgak ‘mother-in-law, daughter-in-law’ > Coroma *ɟak* ‘mother-in-law, daughter-in-law’ (Margery Peña 1989: 487, 530)

*ᵑgi ‘worm’ > /hḭ́/ ‘worm (generic term)’ (Margery Peña 1989: xvi)

*ᵑgu^{n}daʔ ‘hand, arm’ > /hùɽà/ [hùɽâ ~ ɸùɽâ] ‘hand, arm’ (Margery Peña 1989: xxi)

k^{w} > *ku

*k^{w}a ‘kidney, heart, stomach’ > *kuó* ‘kidney’ (Margery Peña 1989: 517)

*k^{w}ahk^{w}ah ‘butterfly, hat’ > *kuákua* ‘butterfly’ (Margery Peña 1989: 475)

*k^{w}i ‘turtle’ > *kuí* ‘turtle’ (Margery Peña 1989: 536)

*siʔ-k^{w}a ‘pale’ > *síkua*, *sígua* ‘stranger’ (Margery Peña 1989: 437)

***ʔ > Ø / V__V**

***Vʔ > V́ in a monosyllabic morpheme**

***Vʔ > V̀ in a polysyllabic morpheme**

*^{m}baʔ ‘you’ > /bá/ ‘you’ (Margery Peña 1989: xxiii)

*^{m}bi-^{n}daʔ ‘neck, throat’ > *biró* ‘throat’ (Margery Peña 1989: 443)

*^{m}buuʔ ‘two’ > ***bóɽ*** ‘two (referring to humans)’ (Margery Peña 1989: 425)

*^{n}diʔ ‘water, river’ > /díkɽó/ [díkɽó ~ díkɽɤ́] ‘water, river’ (Margery Peña 1989: xviii)

*^{n}diʔ-a ‘liquid’ > *diʊ* ‘liquid (with the exclusion of water)’ (Margery Peña 1989: 468)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > /hùɽà/ [hùɽâ ~ ɸùɽâ] ‘hand, arm’ (Margery Peña 1989: xxi)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > /kuó/ [kʊ̗ó] ‘skin, bark’ (Margery Peña 1989: xl)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > /ká́/ ‘time, place’ (Margery Peña 1989: xvii)

*kũʔ ‘louse’ > *kṹ* ‘louse’ (Margery Peña 1989: 502)

*siʔ-k^{w}a ‘pale’ > *síkua*, *sígua* ‘stranger’ (Margery Peña 1989: 437)

*taʔ ‘rattle’ > *tá́* ‘gourd rattle’ (Margery Peña 1989: 475)

*ʦuʔ ‘breast, teat$_{2}$’ > *ʦú* ‘woman’s breast’ (Margery Peña 1989: 496)

***ʦ > *ʦ* / #__**

ʦ > {*s*, *ʃ*} __*k

***ʦ > *ʧ* / V__V**

*atsa-ka^{n}da ‘chicken’ > /óʃkòdò/ [óʃkóɾô] ‘chicken’ (Margery Peña 1989: xx)

*kihʦa ~ *kihsa ‘foot, root’ > /kìʧà/ [kìʧâ ~ gìʧâ] ‘root, liana (generic term)’ (Margery Peña 1989: xix)

*ʦa ‘hair, head’ > /**ʦá́**kṹ/ [**ʦá́**kṹ] ‘head’ (Margery Peña 1989: xl)

*ʦãĩh ‘cold’ > /ʦḗ/ ‘cold (adj.)’ (Margery Peña 1989: xvi)

*ʦ(i)- relational element$_{2}$ > *huɽa**s** kó* ‘finger’ (Margery Peña 1989: 419)

*ʦika ~ *tsaik locative$_{3}$ > *ska* postposition ‘in’ (Margery Peña 1989: 428)

*ʦipi ‘mouth, vagina’ > *ʦípɪ* ‘animal’s vagina’ (Margery Peña 1989: 542)

*ʦuʔ ‘breast, teat$_2$’ > *ʦú* ‘woman’s breast’ (Margery Peña 1989: 496)

s > *s

*^{m}bus- ‘woman (young)’ > ***bus****í* ‘girl’ (Margery Peña 1989: 483)

*si^{m}ba ‘god, wind’ > *sibʊ* ‘god’ (Margery Peña 1989: 425)

*su ‘to see’ > **/sù**ũà/ [**sù**ṵ̃â ~ sṵ̀ṵ̃ô] ‘to see, watch’ (Margery Peña 1989: xxix)

***h > {*h*, Ø} / #__**

***h > Ø / elsewhere**[36]

*hak ~ *kaʔ ‘stone’ > /hák/ [hák˺] ‘stone’ (Margery Peña 1989: xix)

*hi ‘path’ > *hãmẽ́ĩ* ‘artery’ (Margery Peña 1989: 382), *hm̃ẽ́ĩ* ‘vein’ (ibid.: 543)

*hu ‘house’ > /hù/ [hù ~ ɸù] ‘house’ (Margery Peña 1989: xxi)

*hũ ‘pot’ > *hũ̋*, *ũ̋* ‘pot’ (Margery Peña 1989: 490)

*huka ‘palm’ > southern dialects *ukó*, San José Cabécar *úgó* ‘a palm’ (Margery Peña 1989: 493)

*kah ‘open’ > /kó/ ‘mouth’ (Margery Peña 1989: xvi)

*kihʦa ~ *kihsa ‘foot, root’ > /kìʧà/ [kìʧâ ~ gìʧâ] ‘root, liana (generic term)’ (Margery Peña 1989: xix)

*kuh ‘to hear$_2$’ > **/kú**kó/ ‘ear’ (Margery Peña 1989: xxiii)

*k^{w}ahk^{w}ah ‘butterfly, hat’ > *kuákua* ‘butterfly’ (Margery Peña 1989: 475)

*ʦãĩh ‘cold’ > /ʦẽ́/ ‘cold (adj.)’ (Margery Peña 1989: xvi)

#L > *ɽ

*Laʔ ‘smell’ > *haɽa˞* ‘smell (noun)’ (Margery Peña 1989: 490)

*Li ‘to cook$_1$’ > ***ɽí****õ̋****ɽ*** **~ ***ɽí****õ̋****ɽɪ*** ‘to cook’ (Margery Peña 1989: lxxvi)

[36] It remains to be established to what extent Cabécar tone reflects Proto-Chibchan *h.

2.3.7 Chánguena

Chánguena is an extinct Chibchan language closely related to Dorasque. Formerly, Chánguena had been grouped under the lable 'Dorasque' as well, namely by Pinart (1890) and Constenla Umaña (1981). Later, Constenla Umaña (1985b) argued that lexical differences between Chánguena on the one hand and the Dorasque dialects Gualaca and Chumulu/Dorace on the other hand were important enough to treat Chánguena as a distinct language, a decision which is also reflected in the last work on Chibchan languages by Constenla Umaña (2012). In line with that, I will also keep Chánguena apart from Dorasque here.

The homeland of the Chánguena people was the Atlantic watershed of the Sierra de Talamanca in northwestern Panama. More specifically, it was the area of the Changuinola (Constenla Umaña 2012: 392–3) or Changuinaula river; *aula* is the Mosquito word for 'river' (Pinart 1890: 1). In the eighteenth century, the Chánguena were moved to the Pacific side of Panama by the non-indigenous invaders, to an area north and west of David (capital of the Chiriquí province). The original homeland of the Chánguena and of the Dorasque had confined, in the north, with the area of distribution of other Chibchan peoples speaking, for instance, Teribe/Térraba and Cabécar (Pinart 1890: 1).

The only source on Chánguena is Pinart (1890), which amounts to a wordlist of Chánguena and the two Dorasque dialects Chumulu and Gualaca. It reveals much less data on Chánguena than on Dorasque.

Chánguena is grouped together with Dorasque in Doracic, as a separate subbranch of the Isthmic Chibchan languages (Constenla Umaña 2012: 417). Next to Doracic, the Isthmic branch of Chibchan includes Western Isthmic (Cabécar, Bribri, Teribe/Térraba, Boruca) and Eastern Isthmic (Guaymí, Bocotá, and, according to Constenla Umaña, Kuna).

Pinart (1890: 2–3) states that there were very few people belonging to the Dorasque/Chánguena groups in the early 1880's, during his fieldwork. He only met some three or four Chánguena speakers. They lived near Bugaba, in the province of Chiriquí, on the Pacific side of Panama (ibid.: 2).

2.3.7.1 The sounds of Chánguena

Some information on the sounds of Chánguena can be extracted from Pinart's (1890) vocabulary. It is discussed in the following two subsections.

2.3.7.1.1 Chánguena vowels and suprasegmentals

Table 31 gives an overview of Pinart's (1890) graphemes that refer to Chánguena vowels.

TABLE 31
CHÁNGUENA VOWELS

	Front	Central	Back
High	<i>		<u>
High-mid	<e>		<o>
Low		<a>	

Based on Pinart (1890).

Pinart (1890) also gives additional symbols such as the acute accent in several words. It may refer to stress and/or tone in Chánguena. The macron, attested in some cases on <ō> or <ū>, may have indicated vowel length in Chánguena. It is unclear whether or not italics in some Chánguena vowels may have referred to nasality, for instance in <m*a*> 'chicha' or to non-syllabic realization in <ke*u*> 'fire'.

2.3.7.1.2 Chánguena consonants

Table 32 gives an overview of possible Chánguena consonants, as inferred from the graphemes used by Pinart (1890).

TABLE 32
CHÁNGUENA CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar	Glottal
Voiceless stops	<p>	<t>		<k>	
Voiced stops	<b>	<d>			
Voiceless affricate			<*c*>		
Voiced affricate			<*j*>		
Fricatives	<v>	<θ, s>	<*s*>		<h, χ>
Nasals	<m>	<n>			
Lateral		<l>			
Vibrant		<r>			
Glides	<ω>		<y>		

Based on Pinart (1890).

The graphemes <b> and <v> may refer to allophones of the same underlying phoneme. The same might be true for <s> and <θ>, for instance in <sok, θok> '*totuma*' (Pinart 1890: 31), and for <h> and <χ>. Italics in consonant indicate a postalveolar pronounciation, as evidenced by <kó*c*i> 'pig' (cf. Pinart 1890: 27) (from Old Spanish *coche* 'pig'). The symbols <*j*>, and <*s*> if attested before <i>, probably refer to allophones of *d* and *s*, respectively. Chánguena <d> seems to occur only in morpheme-initial position. Intervocalically, the grapheme <g> might refer to an allophone of *k*. Tentatively, one might venture that a glottal stop was part of the Chánguena sound inventory; this is suggested by the spelling of <bu-ō> 'sparrow-hawk' (Pinart 1890: 15), derived from Proto-Chibchan *pũʔ 'raptor' (see subsection 2.2).

2.3.7.2 Reflexes of Proto-Chibchan phonemes in Chánguena

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.7.2.1) and of Proto-Chibchan consonants (2.3.7.2.2) in Chánguena.

2.3.7.2.1 Reflexes of Proto-Chibchan vowels in Chánguena (cf. also Constenla Umaña 1981: 268–70)

***a > <a>**

*^{m}ba 'chicha$_1$' > <m*a*> 'chicha' (Pinart 1890: 9)

*^{m}ba^{n}d- 'tasty' > <**bál**i> 'salt, sea' (Pinart 1890: 21, 29)

*^{m}bak- 'flea' > <bágue> 'flea' (Pinart 1890: 27)

*^{ŋ}g^{w}ah^{n}d 'bad$_1$' > <**gual**i> 'bad' (Pinart 1890: 20)

*hak ~ *kaʔ 'stone' > <hak> 'bun' (Sp. *bollo*), <**hag**á> 'stone' (Pinart 1890: 6, 26)

*ka(ka) 'father' > <kága> 'father' (Pinart 1890: 24)

***ai > <e>**

*^{n}da^{n}di ~ ^{n}dai^{n}d- / sa^{n}di ~ *sai^{n}d- 'bone, hard' > <séri> 'foot' (Pinart 1890: 26)

***au > <o>**

*taukaʔ 'calabash$_2$' > <sok, θok> '*totuma*' (Pinart 1890: 31)

{*i, *ĩ} > {<i>, <e>}

*^{n}diʔ 'water, river' > <*j*i> 'water' (Pinart 1890: 4)

*^{ŋ}gi 'firewood' > <ké> 'firewood' (Pinart 1890: 19)

*hu^{n}dĩ ~ u^{n}dĩʔ 'monkey' > <uli> 'spider monkey' (Sp. *mono prieto*) (Pinart 1890: 21)

*ʦipi 'mouth, vagina' > <***s*emé**n> 'mouth' (Pinart 1890: 6)

{*u, *ũ} > <u>

*Bu^{n}d- 'small$_1$' > <**bur**i> 'little' (Sp. *poco*) (Pinart 1890: 27)

*^{n}dũ(-i) 'father, uncle, ancestor' > <**tu**i> 'uncle' (Pinart 1890: 31)

*hu 'house' > <χu> 'house' (Pinart 1890: 8)

*hũ 'pot' > <hu> 'pot' (Pinart 1890: 24), <u> 'jar' (Pinart 1890: 31)

*hu^{n}dĩ ~ u^{n}dĩʔ 'monkey' > <uli> 'spider monkey' (Sp. *mono prieto*) (Pinart 1890: 21)

*kũʔ 'louse' > <kū> 'louse' (Pinart 1890: 26)

*pũʔ 'raptor' > <bu-ō> 'sparrow-hawk' (Pinart 1890: 15)

*u^{n}du 'cedar' > <ulú> 'canoe' (Pinart 1890: 8)

2.3.7.2.2 Reflexes of Proto-Chibchan consonants in Chánguena (cf. also Constenla Umaña 1981: 270–5)

***p > {<b>, <m>}**

*ʦipi 'mouth, vagina' > <***s*emé**n> 'mouth' (Pinart 1890: 6)

*pũʔ 'raptor' > <bu-ō> 'sparrow-hawk' (Pinart 1890: 15)

***^{m}b > {<b>, <m>}**

*^{m}ba^{n}d- 'tasty' > <**báli**> 'salt, sea' (Pinart 1890: 21, 29)

*^{m}bak- 'flea' > <bágue> 'flea' (Pinart 1890: 27)

*^{m}ba 'chicha$_1$' > <m*a*> 'chicha' (Pinart 1890: 9)

***t > {<s>, <θ>} / __<a>**

*tauka ʔ 'calabash$_2$' > <sok, θok> '*totuma*' (Pinart 1890: 31)

***^{n}d > <*j*> / #__<i>**

***^{n}d > <t> / #__<u>**

***^{n}d > {<r>, <l>} / V__V**

*^{m}ba^{n}d- 'tasty' > <**báli**> 'salt, sea' (Pinart 1890: 21, 29)

*Bu^{n}d- 'small$_1$' > <**bur**i> 'little' (Sp. *poco*) (Pinart 1890: 27)

*^{n}diʔ 'water, river' > <*j*i> 'water' (Pinart 1890: 4)

*^{n}dũ(-i) 'father, uncle, ancestor' > <**tu**i> 'uncle' (Pinart 1890: 31)

*^{ŋ}g^{w}ah^{n}d 'bad$_1$' > <**gual**i> 'bad' (Pinart 1890: 20)

*hu^{n}dĩ ~ u^{n}dĩʔ 'monkey' > <uli> 'spider monkey' (Sp. *mono prieto*) (Pinart 1890: 21)

*u^{n}du 'cedar' > <ulú> 'canoe' (Pinart 1890: 8)

***k > <g> / V__V**

***k > <k> / elsewhere**

*^{m}bak- 'flea' > <bágue> 'flea' (Pinart 1890: 27)

*hak ~ *kaʔ 'stone' > <hak> 'bun' (Sp. *bollo*), <**hag**á> 'stone' (Pinart 1890: 6, 26)

*ka(ka) 'father' > <kága> 'father' (Pinart 1890: 24)

*kũʔ 'louse' > <kū> 'louse' (Pinart 1890: 26)

*tauka ʔ 'calabash$_2$' > <sok, θok> '*totuma*' (Pinart 1890: 31)

***ŋg > <k>**

*ŋgi ‘firewood’ > <ké> ‘firewood’ (Pinart 1890: 19)

***ŋg^{w} > <gu>**

*ŋg^{w}ah^{n}d ‘bad$_{1}$’ > <**gual**i> ‘bad’ (Pinart 1890: 20)

***ʔ > <-> / V__V**

***ʔ > Ø / elsewhere**

*^{n}diʔ ‘water, river’ > <*j*i> ‘water’ (Pinart 1890: 4)

*kũʔ ‘louse’ > <kū> ‘louse’ (Pinart 1890: 26)

*pũʔ ‘raptor’ > <bu-ō> ‘sparrow-hawk’ (Pinart 1890: 15)

***ʦ > <s>**

*ʦipi ‘mouth, vagina’ > <***s*emé**n> ‘mouth’ (Pinart 1890: 6)

***s > <s>**

*^{n}da^{n}di ~ ^{n}dai^{n}d- / sa^{n}di ~ *sai^{n}d- ‘bone, hard’ > <séri> ‘foot’ (Pinart 1890: 26)

***h > {<h>, <χ>, Ø} / #__<u>**

***h > <h> /#__V$_{[other]}$**

***h > Ø / elsewhere**

*ŋg^{w}ah^{n}d ‘bad$_{1}$’ > <**gual**i> ‘bad’ (Pinart 1890: 20)

*hak ~ *kaʔ ‘stone’ > <hak> ‘bun’ (Sp. *bollo*), <**hag**á> ‘stone’ (Pinart 1890: 6, 26)

*hi ~ *iʔ ‘this’ > *hí* ‘this’ (Margery Peña 1989: 436)

*hu ‘house’ > <χu> ‘house’ (Pinart 1890: 8)

*hũ ‘pot’ > <hu> ‘pot’ (Pinart 1890: 24), <u> ‘jar’ (Pinart 1890: 31)

2.3.8 Chimila

Chimila, also known as *Ette Tara*, is a Chibchan language of northern Colombia. At present, it is spoken by some 1,600 people (Malone 2010: 1) living in reservations in the departments of Magdalena and Cesar, between the lower Magdalena river in the west and southwest, and the Cesar river and the Sierra Nevada de Santa Marta to the east (Trillos Amaya 1997: 21; Adelaar & Muysken 2004: 75; Constenla Umaña 2012: 393). In former times, Chimila territory extended from the Mompox depression in the south to the southern slopes of the Sierra Nevada de Santa Marta in the northeast (Constenla Umaña 2012: 393), and from Valledupar in the east to the Magdalena river in the west (Gilij 1784: 434). Like other peoples of the area, the Chimila were subject to the Tairona, a nearby Chibchan nation defeated in 1600 (Piedrahita 1688: 85; Adelaar & Muysken 2004: 67). Like them, the Chimila seem to have used poisoned darts (cf. Lehmann 1920: 57). During colonial times, the Chimila were feared by the Spaniards as a warlike tribe, and they are mentioned relatively frequently in the sources (cf. de Laet 1625: 272; Gilij 1784: 434; Julian 1787: 168–176). Conflicts between the Spaniards and the Chimila became particularly important during the eighteenth century (Adelaar & Muysken 2004: 75). At the beginning of the twentieth century, only a few Chimila families remained in the area of the Ariguaní river (Bolinder 1987).

Chimila is classified within the Magdalenic subgroup of the Chibchan family. More specifically, Constenla Umaña (2012: 417) groups it in the eastern Arhuacic branch of the Northern Magdalenic languages (together with Damana, Atanques and Ika), as opposed to Kogi. Notwithstanding, the exact subgrouping of Chimila, and the origin of its often deviant features need further investigation.

A brief description of the language is given by Trillos Amaya (1987). Other short overviews are provided by Reichel-Dolmatoff (1947) and Adelaar and Muysken (2004: 75–80). Aspects of Chimila phonology and phonetics have been treated by Malone (2006, 2010). Most Chimila lexical data compared in the present thesis are from Malone (2005). An extensive dictionary of the language has recently been published by Niño Vargas (2018).

Chimila morphosyntax differs in several respects from morphosyntax of other Chibchan languages. Besides Kuna, Chimila is the only Chibchan language of Colombia that has productive prefixed numeral classifiers (cf. Malone 2004). Elements indicating verbal person in Chimila are formally different from those found in other Chibchan languages, and verbal person is indicated exclusively by suffixes, as illustrated in (6):

(6) Chimila (Trillos Amaya 1997: 124)
kenne *ka-**uka**-tte*
eat AUX-**2SG.SBJ**-DECL
'you eat'

It is interesting to compare the Chimila second-person person-marking suffix *-uka*, illustrrated in (6), with Daman *-uga*, a portmanteau suffix indicating a present participle (cf. Constenla Umaña 2012: 406) and first person singular, illustrated in example (7).

(7) Damana (Trillos Amaya 2000: 755)
*nek-**uga***
go-**1SG.PTCP**
'I go'

Whether this parallel between Damana *-uga* and Chimila *-uka* is the result of cognacy, coincidence, or borrowing remains to be established.

2.3.8.1 The sounds of Chimila

Since the lexical data from Chimila used in this thesis are mainly drawn from Malone's (2005) work, I will mostly cite this author's interpretations of the Chimila sound system in what follows. There are certain differences between the interpretations provided by Malone and Trillos Amaya (1997).

2.3.8.1.1 Chimila vowels and suprasegmentals

The vowel system of Chimila, according to Malone (2006, 2010), is shown in table 33:

TABLE 33
CHIMILA PHONEMES: VOWELS

	Front	Central	Back
High	i		u
High-mid	e	ə	o
Low		a	

Source: Malone (2006: 4).

The phonetic realization of vowels in Chimila brings about phenomena similar to what can be observed in other Chibchan languages: Both in word-final position and in tone-neutral, non-stressed syllables, there is a tendency for /u/, /o/, and /e/ to lower somewhat, whereas in the same environments, /a/ tends to raise a bit and to be realized as unrounded [ʌ]. There is no lowering/raising of long/geminated vowels in word-final position (Malone 2006: 4).

A phonemic contrast exists between high tone and absence of high tone in Chimila, for instance in /kó·/ 'to pinch' versus /ko·/ 'to eat (something hard)' (Malone 2006: 16). Trillos Amaya (1997: 75–6) instead identifies rising and descending tone in Chimila. Primary stress of a word is predictable and is found on the first syllable (Malone 2006: 5).

In vowels, Trillos Amaya (1997: 66) finds phonemic oppositions between simple, long, glottalized and aspirated vowels. Malone (2006: 4) instead identifies short, medium long, and long vowels in Chimila.[37] The 'medium long' vowels are canonically long and monosyllabic, whereas the 'long' vowels are geminate, that is, disyllabic (Malone 2006: 4). The single vowel of a word that has a *CV*, *CV?*, or *CVN* structure is lengthened if the word occurs in isolation (Malone 2006: 6).

Vowel nasality seems to be contrastive in cases such as Chimila *kʉ̃ʉ̃ta* 'to milk' versus *kúúta* 'to get up from a lower position' (Malone 2006: 4). In other cases, vowel nasality appears to be determined by consonant nasality (progressive or regressive nasalization) (cf. Malone 2010: 5). It seems that vowel nasality in Chimila can also be triggered by glottal elements (cf. Chevrier 2017a: 377–8). Predictable cases of vowel nasalizality and lengthening are not indicated in phonetic transcriptions of the consulted main source (cf. Malone 2005: 201). The same is true for tone (ibid.). Information on this suprasegmental feature, however, has been included in the phonetic transcriptions given below, based on information from Malone (2005: 201–2).

[37] This is reminiscent of Kuna, which has 'short', 'long' and 'superlong' vowels, according to Holmer (1947: 7).

2.3.8.1.2 Chimila consonants

Table 34 gives an overview of Chimila consonant phonemes.

TABLE 34
CHIMILA PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Palatal	Velar	Glottal
Voiceless stops	p	t		k	ʔ
Voiced stop	b	d		g	
Voiceless fricative		s			h
Nasals	m	n		ŋ	
		l			
Vibrant		ɾ			
Glides	w		j		

Source: Malone (2010: 2).

Apart from the flap /ɾ/ and the glide /j/, the Chimila coronals are all dental. Voiced stops are phonetically prenasalized; /w/ is realized as [^{g}w], and /j/ as [^{d}j] (cf. Malone 2006: 3). In some words, there is free variation between voiced oral and nasal stops /m ~ b/, /n ~ d/, /ŋ ~ g/, as for instance in [^{m}bee ~ mee] 'where', and in [minˑiki ~ ^{m}binˑiki] 'how?' (the preferred/more frequent variant is given first) (Malone 2010: 9). In other cases, variation is impossible, for instance in [matˑaʔ] 'far' versus [^{m}batˑaʔ*] (ibid.: 10). An explanation for this phenomenon remains to be found (ibid.: 10).

According to the analysis of Malone (2010: 2–3), /h/ occurs both root-initially and root-finally. The voiceless glottal fricative is realized as [h] before /o/ and /a/, and as [x] before /e/, /i/, and /u/. Root-final /h/ is associated with nasality, according to Malone (2010: 18–20), and seems to have been interpreted in terms of vowel aspiration (breathy vowel) by Trillos (1997: 66).

Many (not all) consonants are realized as geminates in intervocalic position if they follow a vowel with high tone (Trillos Amaya 1997: 59–62). Consonant gemination is reflected in Malone's (2005) phonemic transcriptions of Chimila data. Malone (2006: 21) interprets geminated consonants as long. Three phonetic lengths can be distinguished in Chimila consonants: short, medium-long, and long (ibid.: 3); consonant length is not distinctive, according to Malone (2006: 3).

Consonant clusters in the onset position contain a stop followed by either a tap or a glide. The clusters /tj/, /dj/, and /nj/ are realized as [^{t}ʧ], [ndj], and [ɲ], respectively (Malone 2010: 3–4).

2.3.8.2 Reflexes of Proto-Chibchan phonemes in Chimila

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.8.2.1) and of Proto-Chibchan consonants (2.3.8.2.2) in Chimila.

2.3.8.2.1 Reflexes of Proto-Chibchan vowels in Chimila (cf. also Constenla Umaña 1981: 325–7)

{*a, *ã} > *a*

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_1$’ > **/bitta**kɾa/ [**^{m}bít·ā**kɾà] ‘chest’ (Malone 2005: 202)

*^{n}da(^{n}d) / *sa(^{n}d) ‘creeping animal’ > /saŋ/ [sa ŋ]· probably ‘lizard’ (Malone 2005: 205)

*^{n}daH(^{n}d) ‘I$_1$’ > **/naa**ri?/ [**ná**:**ɾ**ì?] ‘I’ (Malone 2005: 208)

*^{ŋ}gak ‘feather, wing, arm, hand’ > /ga/ [^{ŋ}gá^{h}] ‘feather’ (Malone 2006: 29)

*^{ŋ}ga?^{n}da ~ *^{ŋ}ga?ta ‘meat, flesh$_1$’ > /e^{h}**ŋatta**/ [?ē^{h}**ŋát·à**] ‘meat, flesh’ (Malone 2005: 210)

*^{ŋ}gua ‘to kill’ > /gwa^{h}/ [^{ŋ}g^{w}a^{h}] ‘to kill’ (Malone 2005: 211)

*^{ŋ}gu^{n}da? ‘hand, arm’ > /gaŋ**gwɾa**/ [^{ŋ}gáŋ**^{ŋ}g^{u}ɾà**] ‘arm’ (Malone 2005: 202)

*^{ŋ}g^{w}a ~ *u^{ŋ}g ‘fish’ > /waa? ~ **waa**gɾa/ [^{g}wa:? ~ **^{g}wa**:^{ŋ}gɾa] ‘fish’ (Malone 2005: 206)

*ha^{n}d- ~ *hat- ‘hand’ > **/hatt**akɾa?/ [**hát·**ākɾà?] ‘hand’ (Malone 2005: 202)

*haka ~ *aka? ‘name’ > **/ka**kke?/ [**ká**k·è?] ‘name’ (Malone 2005: 211)

*ka ‘to catch, grasp’ > /ka/ [ka] ‘to catch, grasp’ (Malone 2005: 213)

*ka ‘leaf’ > /ka·?/ [ká·?] ‘leaf of a tree’ (Malone 2005: 207)

*kah ‘open’ > **/ka**kkwa/ [**kák·**^{w}à] ‘mouth’ (Malone 2005: 202)

*kã? ‘breast, teat$_1$’ > /kaa?/ [ka:?] ‘breast’ (Malone 2005: 202)

*ku?(-Ba) ‘tongue’ > /kwaa?/ [k^{w}a:?] ‘tongue’ (Malone 2005: 202)

*La ‘egg, offspring’ > > /ɾaa?/ [ɾá:?] ‘egg’ (Malone 2005: 210)

*tah(-ka) ‘new, raw’ > /takke?/ [ták·è?] ‘new’ (Malone 2005: 211)

{*ai, *ii} > *a*

*Bai? ‘sweet potato’ > /ma?/ [ma?] ‘sweet potato’ (Malone 2005: 207)

*^{n}dii(k) ‘nose’ > /da/ [^{n}da·^{h}] ‘nose’ (Malone 2005: 202)

*ʦika ~ *tsaik locative$_3$ > /-sa/ [-sa] ‘in’ (Malone 2005: 212)

{*i, *ii} > {*í*, **e}**

*ᵐbihⁿda ~ *ᵐbihta ‘heart, liver, center$_1$’ > **/bitta**kɾa/ [**ᵐbít·ā**kɾà] ‘chest’ (Malone 2005: 202)

*ᵐbuⁿdi ~ *kuⁿdi ~ *kuiⁿd(i) ‘big$_1$’ > **/kwe·ɾi**tu·ʔ/ [**kʷé·ɾī**tù·ʔ] ‘big’ (Malone 2005: 209)

*ⁿdi instrumental/locative > *-ɾi* ergative–dative case marker (Adelaar & Muysken 2004: 79)

*ⁿdi ‘sun, day’ > **/di**ŋŋaʔ/ [ⁿ**dí**ŋːàʔ] ‘sun’ (Malone 2005: 204)

*ⁿdiʔ ‘water, river’ > **/di**·takeʔ/ [ⁿ**dí**·tākèʔ] ‘water’ (Malone 2005: 203)

*hi ‘path’ > /hiiʔ/ [híːʔ] ‘path, gauge’ (Malone 2005: 204)

*ʦii ‘night, dark’ > **/siʰ**tu·ʔ/ [**síʰ**tù·ʔ] ‘black’ (Malone 2005: 209)

{*u, *ũ} > {*u*, *w*}

*ᵐbuⁿdi ~ *kuⁿdi ~ *kuiⁿd(i) ‘big$_1$’ > **/kwe·ɾi**tu·ʔ/ [**kʷé·ɾī**tù·ʔ] ‘big’ (Malone 2005: 209)

*ᵑgua ‘to kill’ > /gwaʰ/ [ᵑgʷaʰ] ‘to kill’ (Malone 2005: 211)

*ᵑguⁿdaʔ ‘hand, arm’ > /gaŋ**gwɾa**/ [ᵑgáŋ**ᵑgᵘɾà**] ‘arm’ (Malone 2005: 202)

*-hu ~ *-uʔ ‘to swallow, drink, eat’ > /u/ [ʔu] ‘to drink’ (Malone 2005: 210)

*kũʔ ‘louse’ > /kuuʔ/ [kúːʔ] ‘louse’ (Malone 2005: 206)

*suh(k) ‘to wash’ > **/tu**kwa/ [**tú**kːʷà] ‘to wash hands, dishes or other objects, but not clothes’ (Malone 2005: 212)

uu > *o*, *u

*ᵐbuuʔ ‘two’ > **/buʰ**naʔ/ [**búʰ**nàʔ] ‘two’, referring to human beings (Malone 2005: 208)

*kuuʔ ‘hand, finger’ > **/ko**kkwa/ [**kó**kːʷà] ‘finger’ (Malone 2005: 202)

2.3.8.2.2 Reflexes of Proto-Chibchan consonants in Chimila (cf. also Constenla Umaña 1981: 327–9)

***ᵐb > {*b*, *m*}**

*ᵐba- ‘cloud, fog’ > **/mo·n**seʔ/ [**mó·n**sèʔ] ‘clouds’ (Malone 2005: 210)

*ᵐbaⁿd- ‘all$_1$’ > **/bɾ**ii/ [**ᵐbɾ**iː] ‘all, every’ (Malone 2005: 210)

*ᵐbãʔ(ĩ) ‘three’ > **/maʰ**naʔ/ [**máʰ**nàʔ] ‘three’, referring to human beings (Malone 2005: 208)

*ᵐbihⁿda ~ *ᵐbihta ‘heart, liver, center$_1$’ > **/bitta**kɾa/ [**ᵐbít·ā**kɾà] ‘chest’ (Malone 2005: 202)

*ᵐbuuʔ ‘two’ > **/buʰ**naʔ/ [**búʰ**nàʔ] ‘two’, referring to human beings (Malone 2005: 208)

uBa > *wa

*kuʔ(-Ba) ‘tongue’ > /kwaaʔ/ [kʷaːʔ] ‘tongue’ (Malone 2005: 202)

***t > {*t*, *tt*}**

*tah(-ka) ‘new, raw’ > /takkeʔ/ [tákˑèʔ] ‘new’ (Malone 2005: 211)

*ᵑgaʔⁿda ~ *ᵑgaʔta ‘meat, flesh$_1$’ > /eʰ**ŋatta/** [ʔēʰ**ŋátˑà**] ‘meat, flesh’ (Malone 2005: 210)

*haⁿd- ~ *hat- ‘hand’ > **/hatt**akɾaʔ/ [**hát**ˑākɾàʔ] ‘hand’ (Malone 2005: 202)

***ⁿd > {*n*, *d*} / #__**

***ⁿd > {*n*, *ɾ* } / elsewhere**

*ᵐbaⁿd- ‘all$_1$’ > **/bɾii/** [**ᵐbɾ**iː] ‘all, every’ (Malone 2005: 210)

*ᵐbuⁿdi ~ *kuⁿdi ~ *kuiⁿd(i) ‘big$_1$’ > **/kweˑɾi**tuˑʔ/ [**kʷéˑɾī**tùˑʔ] ‘big’ (Malone 2005: 209)

*ⁿdaH(ⁿd) ‘I$_1$’ > **/naaɾ**iʔ/ [**ná**ːɾìʔ] ‘I’ (Malone 2005: 208)

*ⁿdi instrumental/locative > *-ɾi* ergative–dative case marker (Adelaar & Muysken 2004: 79)

*ⁿdi ‘sun, day’ > **/di**ŋŋaʔ/ [ⁿ**dí**ŋːàʔ] ‘sun’ (Malone 2005: 204)

*ⁿdii(k) ‘nose’ > /da/ [ⁿdaˑʰ] ‘nose’ (Malone 2005: 202)

*ⁿdiʔ ‘water, river’ > **/di**ˑtakeʔ/ [ⁿ**dí**ˑtākèʔ] ‘water’ (Malone 2005: 203)

*ᵑguⁿdaʔ ‘hand, arm’ > /gaŋ**gwɾa/** [ᵑgáŋᵑ**gᵘɾà**] ‘arm’ (Malone 2005: 202)

***k > Ø / __#**

***k > *k* / elsewhere**

*ᵐbuⁿdi ~ *kuⁿdi ~ *kuiⁿd(i) ‘big$_1$’ > **/kweˑɾi**tuˑʔ/ [**kʷéˑɾī**tùˑʔ] ‘big’ (Malone 2005: 209)

*ᵑgak ‘feather, wing, arm, hand’ > /ga/ [ᵑgáʰ] ‘feather’ (Malone 2006: 29)

*haka ~ *akaʔ ‘name’ > **/ka**kkeʔ/ [**ká**kˑèʔ] ‘name’ (Malone 2005: 211)

*ka ‘to catch, grasp’ > /ka/ [ka] ‘to catch, grasp’ (Malone 2005: 213)

*ka ‘leaf’ > /kaˑʔ/ [káˑʔ] ‘leaf of a tree’ (Malone 2005: 207)

*kah ‘open’ > **/ka**kkwa/ [**kák**ˑʷà] ‘mouth’ (Malone 2005: 202)

*kaⁿd- ~ *kat- ‘stick, bone, tree’ > **/-kɾ**a(ʔ)/ stem formative (cf. Malone 2005)

*kãʔ ‘breast, teat$_1$’ > /kaaʔ/ [kaːʔ] ‘breast’ (Malone 2005: 202)

*kuuʔ ‘hand, finger’ > **/ko**kkwa/ [**kó**kːʷà] ‘finger’ (Malone 2005: 202)

*kuʔ(-Ba) ‘tongue’ > /kwaaʔ/ [kʷaːʔ] ‘tongue’ (Malone 2005: 202)

*kũʔ ‘louse’ > /kuuʔ/ [kúːʔ] ‘louse’ (Malone 2005: 206)

*ʦika ~ *tsaik locative$_3$ > /-sa/ [-sa] ‘in’ (Malone 2005: 212)

***ŋg > {*g*, *ŋ*}**

*ŋgak ‘feather, wing, arm, hand’ > /ga/ [ŋgáʰ] ‘feather’ (Malone 2006: 29)

*ŋgaʔⁿd-a ~ *ŋgaʔta ‘meat, flesh$_1$’ > /eʰ**ŋatta/** [ʔēʰ**ŋát·à**] ‘meat, flesh’ (Malone 2005: 210)

*ŋguⁿdaʔ ‘hand, arm’ > /gaŋ**gwɾa/** [ŋgáŋ**ᵑgᵘɾà**] ‘arm’ (Malone 2005: 202)

*ŋgua ‘to kill’ > /gwaʰ/ [ŋgʷaʰ] ‘to kill’ (Malone 2005: 211)

ŋgʷ > *w

*ŋgʷa ~ *uŋg ‘fish’ > /waaʔ ~ waagɾa/ [ᵍwaːʔ ~ **ᵍwa**ːᵑgɾa] ‘fish’ (Malone 2005: 206)

*ŋgʷ- ‘to know’ > **/wiʰ**ka·/ [**ᵍwīʰ**ká·̀] ‘to know’ (Malone 2005: 210)

***ʔ > *ʔ* in free, monosyllabic roots**

***ʔ > Ø / elsewhere**

*Baiʔ ‘sweet potato’ > /maʔ/ [maʔ] ‘sweet potato’ (Malone 2005: 207)

*ⁿdiʔ ‘water, river’ > **/di**·take**ʔ/** [**ⁿdí**·tākèʔ] ‘water’ (Malone 2005: 203)

*ŋgaʔⁿda ~ *ŋgaʔta ‘meat, flesh$_1$’ > /eʰ**ŋatta/** [ʔēʰ**ŋát·à**] ‘meat, flesh’ (Malone 2005: 210)

*haka ~ *akaʔ ‘name’ > **/ka**kke**ʔ/** [**ká**k·èʔ] ‘name’ (Malone 2005: 211)

*kãʔ ‘breast, teat$_1$’ > /kaaʔ/ [kaːʔ] ‘breast’ (Malone 2005: 202)

*kuuʔ ‘hand, finger’ > **/ko**kkwa/ [**kó**kːʷà] ‘finger’ (Malone 2005: 202)

*kũʔ ‘louse’ > /kuuʔ/ [kúːʔ] ‘louse’ (Malone 2005: 206)

*ŋguⁿdaʔ ‘hand, arm’ > /gaŋ**gwɾa/** [ŋgáŋ**ᵑgᵘɾà**] ‘arm’ (Malone 2005: 202)

ts > *s

*tsii ‘night, dark’ > **/siʰ**tu·ʔ/ [**síʰ**tù·ʔ] ‘black’ (Malone 2005: 209)

*tsika ~ *tsaik locative$_3$ > /-sa/ [-sa] ‘in’ (Malone 2005: 212)

***s > *t* / __u**

***s > *s* / elsewhere**

*ⁿda(ⁿd) / *sa(ⁿd) ‘creeping animal’ > /saŋ/ [sa ŋ] probably ‘lizard’ (Malone 2005: 205)

*suh(k) ‘to wash’ > **/tu**kwa/ [**tú**k·ʷà] ‘to wash hands, dishes or other objects, but not clothes’ (Malone 2005: 212)

***h > *h* / #__**

***h > Ø / elsewhere**

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_{1}$’ > **/bitta**kɾa/ [**^{m}bít·ā**kɾà] ‘chest’ (Malone 2005: 202)

*ha^{n}d- ~ *hat- ‘hand’ > **/hatt**akɾaʔ/ [**hát·**ākɾàʔ] ‘hand’ (Malone 2005: 202)

*hi ‘path’ > /hiiʔ/ [híːʔ] ‘path, gauge’ (Malone 2005: 204)

*kah ‘open’ > **/ka**kkwa/ [**kák·^{w}**à] ‘mouth’ (Malone 2005: 202)

*suh(k) ‘to wash’ > **/tu**kwa/ [**tú**k·^{w}à] ‘to wash hands, dishes or other objects, but not clothes’ (Malone 2005: 212)

*tah(-ka) ‘new, raw’ > /takkeʔ/ [ták·èʔ] ‘new’ (Malone 2005: 211)

#L > *ɾ

*La ‘egg, offspring’ > /ɾaaʔ/ [ɾáːʔ] ‘egg’ (Malone 2005: 210)

2.3.9 Damana

Damana is a Chibchan language spoken in the Colombian department of Cesar, northeast of the city of Valledupar, on the northeastern slopes of the Sierra Nevada de Santa Marta (Trillos Amaya 1999: 3, 2000: 749). The autodenomination of the Damana is *Wiwa*. Other names, possibly referring to specific groups among the Damana, are also found in anthropological literature: *Arsarios*, *Arzarios*, *Malayos*, *Marokaseros*, or *Guamakas*. The exact amount of Damana speakers is unknown. It possibly amounts to some 2,000 persons, and there are certainly less speakers of this language than of Kogi and Ika, the other two big Chibchan languages of the Sierra Nevada de Santa Marta. Some 3,000 people auto-identified as Wiwa at the end of the twentieth century (Trillos Amaya 1999: 3).

The verticality of the Sierra Nevada de Santa Marta provides the Damana with access to different resources; they undertake agricultural migrations during the course of the year (Trillos Amaya 1999: 3), like the Ika and the Kogi (cf. subsections 2.3.15 and 2.3.16). As among the Kogi, where some *mama* (a kind of priest) claim knowledge of a secret language, *teiʒua* (Ortiz Ricaurte 2000: 757–8), some Damana speakers would know a sacred language that they call *teruna ʃajama* (Landaburu 1994: 375, cited in Adelaar & Muysken 2004: 67).

Within Chibchan, Damana has been argued to be most closely related to Chimila, Ika, and especially Atanquez (Kankuí, Kakatukua). It has been grouped together with these languages into the Eastern Southern Arhuacic subbranch of Arhuacic (as opposed to Kogi), within the Magdalenic Chibchan languages (Constenla Umaña 2012: 417).

The Damana language has been described by Trillos Amaya (e.g. 1989, 1999, 2000).

Among the living Chibchan languages of the Sierra Nevada de Santa Marta, Damana is the only language to make a phonemic distinction between the flap /ɾ/ and the trill /r/. A similar phonemic distinction between a flap and a trill is attested in the neighboring Guajiro or Wayuunaiki language (cf. Adelaar & Muysken 2004: 68, 117), but also in Guatuso, a Chibchan language of northern Costa Rica (Constenla Umaña 1998: 8). Damana, like Chimila, has a dual number. It is indicated in unbound person markers in Damana (Trillos Amaya 1999: 76).

2.3.9.1 The sounds of Damana

The sounds of Damana as presented and discussed in the following subsections are based on the work of Trillos Amaya (1999: 17–31, 2000: 750–2).

2.3.9.1.1 Damana vowels and suprasegmentals

Table 35 illustrates Damana vowel phonemes.

TABLE 35
DAMANA PHONEMES: VOWELS

	Front	Central	Back
High	i		u, (ũ)
High-mid	e	ə	o
Low		a	

Source: Trillos Amaya (2000: 751).

In vowel sequences, unstressed /i/ is realized as a palatal approximant [j], for instance in [ˈjɨm] ‘maize’ and [ˈgaja] ‘girl’. Likewise, /u/ is realized as a glide [w] in similar contexts (Trillos Amaya 2000: 752). The existence of a phoneme /w/, but not of a phoneme /j*/ is postulated for Damana by Trillos Amaya (ibid.: 750).

Vowel nasality is not phonemic in Damana except for one possible exception: Trillos Amaya (2000: 752) reports the case of [tũa] ‘dark’ contrasting with *ˈtua* ‘seen’. The vowels *i*, *a*, *o*, and *u* are nasalized if they are stressed and in contact with a nasal consonant. In most cases, nasalization is regressive – that is, a vowel is nasalized if it is followed by a nasal consonant, as in [ˈkĩŋki] ‘only’ or [ˈsãŋkwi] ‘parrot’. There are also some cases of progressive nasalization, that is, of a vowel being nasalized if preceded by a nasal consonant, as in [təˈmĩʃki] name of a certain bird (*toche*). Vowel nasality is subject to individual variation; it is not systematic in Damana and needs further analysis (ibid.: 752).

There is neither tone nor vowel length in Damana. Stress lies mostly on the penultimate syllable of a word although there are exceptions, such as in [kə̨ˈsa] ‘foot’. Stress has no phonemic value in Damana (Trillos Amaya 2000: 752). As in other Chibchan languages, stress seems to have an impact on the tenseness/laxness of vowels: In final position, /u/ may also be realized as [o], for instance in [ˈbuku ~ ˈbuko] ‘clay cooking pot’. The mid central unrounded vowel /ə/ is lowered to [ə̨] in word-initial and word-final position, or in contact with nasal consonants, for instance in [konˈgiɬə̨] ‘tongue’. In contrast, if stressed, /ə/ is realized as a high central unrounded vowel [ɨ], for instance in [maˈgɨra] ‘sparrowhawk’. If it is both in contact with nasal consonants and stressed, /ə/ does not undergo any of these changes (ibid.: 752). If followed by a stressed syllable, /ə/ is syncopated in some cases, for instance in /təməˈzəra/ [təmˈzɨra] ‘porcupine’, or in /məˈla/ [ˈmla] ‘fast’ (ibid.). The vowels /i/, /ə/, and /u/ are realized as

voiceless [i̥], [ə̥], and [u̥] if following a voiceless obstruent and followed by a stressed syllable, for instance in [si̥ˈkɨna] ‘needle’, or in [kə̥ˈsa] ‘foot’ (ibid.).

2.3.9.1.2 Damana consonants

The consonant phonemes of Damana are illustrated in table 36.

TABLE 36
DAMANA PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar	Glottal
Voiceless stops	p	t		k	
Voiced stop	b	d		g	
Voiceless affricate			ʧ†		
Voiced affricate			ʤ†		
Voiceless fricatives		s	ʃ		h
Voiced fricatives		z	ʒ		
Nasals	m	n			
Lateral		l			
Tap		ɾ			
Trill		r			
Glide	w				

Source: Trillos Amaya (2000: 750).
† The affricates may be realized in a slightly retroflex way, given that Trillos Amaya (2000: 750) gives ‘post-palatal’ as the point of articulation.

The phonemes /p/, /t/, and /k/ can be realized as [p^{h}], [t^{h}], and [k^{h}], both in word-initial and in word-internal position; /p/, /t/, and /k/ are always realized as aspirated if followed by a phonetically voiceless vowel, for instance in [k^{h}ə̥ˈkosi] ‘to tell (a story)’ (Trillos Amaya 2000: 751). The voiced stops /b/ and /g/ are realized as fricatives [β] and [ɣ] in intervocalic position, for instance in [uɣua] ‘ten’ (ibid.). Intervocalically, it is impossible to distinguish between the outcome of /b/ and /w/ (Trillos Amaya 1999: 23). If in initial position of a stressed syllable, and followed by a front vowel, /g/ is

palatalized [gʲ], as in [iˈgʲisi] ‘hail’and [ˈgʲe] ‘fire’. Damana /kw/ and /gw/ are not interpreted as labialized velar phonemes k^w and g^w by Trillos Amaya (2000: 750) but as consonant clusters (Adelaar & Muysken 2004: 69).

According to Trillos Amaya (2000: 751), the voiceless glottal fricative /h/ has the allophones [θ], [ç], and [x], in different environments: /h/ is realized as a voiceless dental fricative [θ] if followed by a dentoalveolar consonant, for instance in [ˈməθta] ‘to enter’, or in [ˈuθta] ‘straw’. It is realized as a voiceless palatal fricative [ç] if followed by a palatal consonant, as in [ˈməçʧi] ‘flea’, or in [əçˈʧigwa] ‘five’. Finally, /h/ is realized as a voiceless velar fricative [x] if followed by a velar consonant, for instance in [ˈbuxka] ‘knee’ (ibid.). The other Damana fricatives do not have allophones (Trillos Amaya 1999: 23).

Assimilation is also attested in the context of /n/: this phoneme is realized as [ɲ] if followed by a palatal consonant or a high front vowel, as [ŋ] if followed by a velar consonant, and as [m] if followed by a bilabial consonant (Trillos Amaya 2000: 751).

The alveolar lateral approximant /l/ is realized as [ʎ] if followed by a high front vowel, and is velarized to [ɬ] if followed by a non-front vowel. The Damana tap and trill are realized as [ɾʲ] and [rʲ], respectively if followed by a high front vowel; the tap is velarized and realized as [ɾ] if in contact with back vowels (ibid: 751). Also, there is no distinction between tap and trill in certain positions; word-initially, they are both realized as *r*, whereas in final position, they are both realized as *ɾ* (Trillos Amaya 1999: 22).

2.3.9.2 Reflexes of Proto-Chibchan phonemes in Damana

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.9.2.1) and of Proto-Chibchan consonants (2.3.9.2.2) in Damana.

2.3.9.2.1 Reflexes of Proto-Chibchan vowels in Damana (cf. also Constenla Umaña 1981: 309–11)

***a > {*a*, *ə*}**

*a ‘that’ > *a-* third person object (Trillos Amaya 2000: 755)

*^{m}ba comitative$_3$ > *-mba* instrumental (Trillos Amaya 2000: 754)

*-^{m}ba nominalizer$_1$ > *ˈʒa**ma*** ‘food’ (Trillos Amaya 2000: 751)

*^{m}ba- ‘cloud, fog’ > *ˈbən* ‘dawn’ (Sp. *aurora*) (Trillos Amaya 2000: 751)

*^{m}bu-^{n}da ‘big$_2$’ > *buˈna* ‘grown’ (Trillos Amaya 2000: 750)

*ⁿda ‘to come’ > ***na****k* ‘to come’ (Trillos Amaya 2000: 754)

[*ⁿdi-gʷa] ‘lake, rain’ > *ˈʤiwa* ‘rain (noun)’ (Trillos Amaya 2000: 753)

*ⁿdu-ᵐba(ⁿd) ‘dove’ > [**du**ˈ**bəŋ**ʃi] a kind of dove, Sp. *paloma mona* (Trillos Amaya 2000: 751)

*ŋgaᵐba ‘son, child’ > *gəma* ‘child’ (Trillos Amaya 2000: 753)

*ŋgua ‘to kill’ > /gua/ ‘to kill’ (Trillos Amaya 2000: 755)

*hapi ~ *apiʔ ‘to take out, pick up’ > *ˈpe* ‘picked up’ (Trillos Amaya 2000: 751)

*ka allative/dative > *-ga* dative, allative (Trillos Amaya 1999: 36)

*kaⁿd- ~ *kat- ‘stick, bone, tree’ > /kən/ ‘firewood’ (Trillos Amaya 2000: 753)

*paHⁿd- ‘to begin, start, first’ > *ˈpana* ‘begun’ (Sp. *comenzado*) (Trillos Amaya 2000: 750)

*ʦa ‘hair, head’ > *ˈʃa* ‘hair of the head’ (Trillos Amaya 2000: 752)

{*ai, *ãĩ, *ii} > *e*

*tai ‘field for cultivation’ > ˈte ‘slash, clearance’ (Trillos Amaya 2000: 751)

*ʦii ‘night, dark’ > *ˈʃe* ‘night’ (Trillos Amaya 2000: 752)

*ʦãĩh ‘cold’ > *ˈse* ‘cold’ (Trillos Amaya 2000: 751)

au > *o

*hauᵐb ~ *aᵐbuʔ ‘to bathe, swim’ > *hom-* ‘to bathe’ (Trillos Amaya 2000: 754)

*ᵐbau(ⁿd) ~ *kau(ⁿd) ‘to holler’ > *mo-* ‘to weep’ (Trillos Amaya 2000: 752)

***i > {*i*, *e*}**

*ⁿdiʔ ‘water, river’ > *ˈ**ʤi**ɾa* ‘water’ (Trillos Amaya 2000: 751)

[*ⁿdi-gʷa] ‘lake, rain’ > *ˈʤiwa* ‘rain (noun)’ (Trillos Amaya 2000: 753)

*ŋgi ‘worm’ > *ˈʒi* ‘worm’ (Trillos Amaya 2000: 753)

*hapi ~ *apiʔ ‘to take out, pick up’ > *ˈpe* ‘picked up’ (Trillos Amaya 2000: 751)

*ŋgʷi ‘(older) sibling, (older) sister’ > [ˈ**gwi**a] ‘brother’ (Trillos Amaya 2000: 752)

*ʦiⁿd(a) ‘small$_2$’ > /gəmuˈ**ʃina/** ‘children’ (Trillos Amaya 2000: 754)

u > *u

*ᵐbu-ⁿda ‘big$_2$’ > *buˈna* ‘grown’ (Trillos Amaya 2000: 750)

*ⁿdu ‘beautiful’ > *ˈzu* ‘beautiful’ (Trillos Amaya 2000: 751)

*ⁿdu- ‘to stand (singular)’ > *nu* ‘to be’ (Sp. *estar*) (Trillos Amaya 2000: 753)

*ⁿdu- ‘sun, year’ > *ˈ**ʤu**i*, *ˈ**ʤu**ia* ‘day’ (Trillos Amaya 2000: 751)

*ⁿdu-ᵐba(ⁿd) ‘dove’ > [**du**ˈ**bəŋ**ʃi] a kind of dove, Sp. *paloma mona* (Trillos Amaya 2000: 751)

*(ⁿdu-)ku(ⁿd) ‘bat’ > ˈ*dungu* ‘bat’ (Trillos Amaya 2000: 751)

*ⁿduʔ ‘armadillo’ > ˈ*du* ‘armadillo’ (Trillos Amaya 2000: 751)

*ⁿdu(ⁿd) ‘bird, dove’ > /ˌ**dun**ˈzisi/ ‘dove’ (Trillos Amaya 2000: 752)

*ᵑgua ‘to kill’ > /gua/ ‘to kill’ (Trillos Amaya 2000: 755)

*su ‘to see’ > ˈ***tu***a* ‘seen’ (Trillos Amaya 2000: 752)

*uk(a) ‘nine, ten’ > [**u**ɣua] ‘ten’ (Trillos Amaya 2000: 751)

2.3.9.2.2 Reflexes of Proto-Chibchan consonants in Damana (cf. also Constenla Umaña 1981: 311–4)

p > *p

*hapi ~ *apiʔ ‘to take out, pick up’ > ˈ*pe* ‘picked up’ (Trillos Amaya 2000: 751)

*paHⁿd- ‘to begin, start, first’ > ˈ*pana* ‘begun’ (Sp. *comenzado*) (Trillos Amaya 2000: 750)

***ᵐb > {*b, mb*, *m*}**

*hauᵐb ~ *aᵐbuʔ ‘to bathe, swim’ > *hom-* ‘to bathe’ (Trillos Amaya 2000: 754)

*ᵐba comitative$_3$ > *-mba* instrumental (Trillos Amaya 2000: 754)

*-ᵐba nominalizer$_1$ > ˈ***ʒama*** ‘food’ (Trillos Amaya 2000: 751)

*ᵐba- ‘cloud, fog’ > ˈ*bən* ‘dawn’ (Sp. *aurora*) (Trillos Amaya 2000: 751)

*ᵐbau(ⁿd) ~ *kau(ⁿd) ‘to holler’ > *mo-* ‘to weep’ (Trillos Amaya 2000: 752)

*ᵐbu-ⁿda ‘big$_2$’ > *buˈna* ‘grown’ (Trillos Amaya 2000: 750)

*ⁿdu-ᵐba(ⁿd) ‘dove’ > [**du**ˈ**bəŋ**ʃi] a kind of dove, Sp. *paloma mona* (Trillos Amaya 2000: 751)

*ᵑgaᵐba ‘son, child’ > *gəma* ‘child’ (Trillos Amaya 2000: 753)

t > *t

*tai ‘field for cultivation’ > ˈte ‘slash, clearance’ (Trillos Amaya 2000: 751)

***ⁿd > {*d, ʤ, z, n*} / #__**

***ⁿd > *n* / V__V**

*ᵐbu-ⁿda ‘big$_2$’ > *buˈna* ‘grown’ (Trillos Amaya 2000: 750)

*-^{n}d- nominalizer$_2$ > ***-na*** stative nominalizer (cf. Trillos Amaya 2000)

*^{n}da ‘to come’ > ***nak*** ‘to come’ (Trillos Amaya 2000: 754)

*^{n}d(i)- relational element$_1$ > *-n* connective element (Trillos Amaya 1999: 26–8)

*^{n}diʔ ‘water, river’ > ˈ***ʤi****ra* ‘water’ (Trillos Amaya 2000: 751)

[*^{n}di-g^{w}a] ‘lake, rain’ > ˈ*ʤiwa* ‘rain (noun)’ (Trillos Amaya 2000: 753)

*^{n}du ‘beautiful’ > ˈ*zu* ‘beautiful’ (Trillos Amaya 2000: 751)

*^{n}du- ‘to stand (singular)’ > *nu* ‘to be’ (Sp. *estar*) (Trillos Amaya 2000: 753)

*^{n}du- ‘sun, year’ > ˈ***ʤu****i*, ˈ***ʤu****ia* ‘day’ (Trillos Amaya 2000: 751)

*^{n}du-^{m}ba(^{n}d) ‘dove’ > [**du**ˈ**bəɲ**ʃi] a kind of dove, Sp. *paloma mona* (Trillos Amaya 2000: 751)

*^{n}du(^{n}d) ‘bird, dove’ > /ˌ**dun**ˈzisi/ ‘dove’ (Trillos Amaya 2000: 752)

*(^{n}du-)ku(^{n}d) ‘bat’ > ˈ*dungu* ‘bat’ (Trillos Amaya 2000: 751)

*^{n}duʔ ‘armadillo’ > ˈ*du* ‘armadillo’ (Trillos Amaya 2000: 751)́

*paH^{n}d- ‘to begin, start, first’ > ˈ*pana* ‘begun’ (Sp. *comenzado*) (Trillos Amaya 2000: 750)

*ʦi^{n}d(a) ‘small$_2$’ > /gəmuˈ**ʃina/** ‘children’ (Trillos Amaya 2000: 754)

***k > *k* / #__**

***k > *g* / V__V**

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > /kən/ ‘firewood’ (Trillos Amaya 2000: 753)

*ka allative/dative > *-ga* dative, allative (Trillos Amaya 1999: 36)

^{ŋ}g > *ʒ* / __*i

***^{ŋ}g > *g* / elsewhere**

*^{ŋ}ga^{m}ba ‘son, child’ > *gəma* ‘child’ (Trillos Amaya 2000: 753)

*^{ŋ}gi ‘worm’ > ˈ*ʒi* ‘worm’ (Trillos Amaya 2000: 753)

*^{ŋ}gua ‘to kill’ > /gua/ ‘to kill’ (Trillos Amaya 2000: 755)

***^{ŋ}g^{w} > *gw* / #__**

***^{ŋ}g^{w} > *w* / V__V**

*^{ŋ}g^{w}i ‘(older) sibling, (older) sister’ > [ˈ**gwi**a] ‘brother’ (Trillos Amaya 2000: 752)

[*^{n}di-g^{w}a] ‘lake, rain’ > ˈ*ʤiwa* ‘rain (noun)’ (Trillos Amaya 2000: 753)

***ʔ > Ø**

*^{n}diʔ ‘water, river’ > ˈ***ʤi****ra* ‘water’ (Trillos Amaya 2000: 751)

[*^{n}di-g^{w}a] ‘lake, rain’ > *ˈʤiwa* ‘rain (noun)’ (Trillos Amaya 2000: 753)

*^{n}duʔ ‘armadillo’ > *ˈdu* ‘armadillo’ (Trillos Amaya 2000: 751)́

ʦ > *t* / __*u

***ʦ > {*s*, *ʃ*} / elsewhere**

*ʦa ‘hair, head’ > *ˈʃa* ‘hair of the head’ (Trillos Amaya 2000: 752)

*ʦãĩh ‘cold’ > *ˈse* ‘cold’ (Trillos Amaya 2000: 751)

*ʦii ‘night, dark’ > *ˈʃe* ‘night’ (Trillos Amaya 2000: 752)

*ʦi^{n}d(a) ‘small$_2$’ > /gəmuˈ**ʃina**/ ‘children’ (Trillos Amaya 2000: 754)

*ʦuʔ ‘breast, teat$_2$’ > /ˈtudu/ ‘teats’ Constenla Umaña (2012: 413)

s > *t* / __*u

*su ‘to see’ > *ˈtua* ‘seen’ (Trillos Amaya 2000: 752)

***h > *h* / #__**

***h > Ø / elsewhere**

*hau^{m}b ~ *a^{m}buʔ ‘to bathe, swim’ > *hom-* ‘to bathe’ (Trillos Amaya 2000: 754)

*paH^{n}d- ‘to begin, start, first’ > *ˈpana* ‘begun’ (Sp. *comenzado*) (Trillos Amaya 2000: 750)

*ʦãĩh ‘cold’ > *ˈse* ‘cold’ (Trillos Amaya 2000: 751)

2.3.10 Dorasque (Chumulu, Gualaca)

Dorasque is a Chibchan language formerly spoken in western Panama, comprising two varieties: Gualaca and Chumulu (Constenla Umaña 2012: 393). The Dorasque (also called Torasque, Torresque, and Dorace during colonial times) originally came from the area of Almirante Bay and Cristóbal Island in northwestern Panama, in the district of Bocas del Toro. In earlier works (Pinart 1890; Constenla Umaña 1981), Chumulu and Gualaca were grouped together with the Chánguena language. More recently however (Constenla Umaña 1985b, 2012: 392–3), lexical differences between Dorasque (Chumulu, Gualaca) and Chánguena have been considered important enough to treat Chánguena as a language apart. Like the Chánguena, but somewhat earlier, in the seventeenth century, the Dorasque were moved southwards, to the areas north and northeast of David, the capital of the Panamanian province of Chiriquí (Constenla Umaña 2012: 393). There was probably another Dorasque group in the area as well, the Chaliva (Pinart 1890: 2). Two other dialects or very closely related languages are also mentioned, Duy and Burica. However, there is hardly any information on them (Constenla Umaña 1985b: 81).

Within the Chibchan family, Constenla Umaña (2012: 417) groups both Dorasque and Chánguena together as a Doracic group in the Isthmic branch, where they form a subgroup apart, together with Western Isthmic and Eastern Isthmic.

Among the few existing sources on Dorasque are Pinart (1882, 1890) and Miranda de Cabal (1974). The data gathered by Miranda de Cabal are from a variety called ‘Dorace’ and do not always coincide with the Gualaca and Chumulu data published by Pinart (Constenla Umaña 1981: 266). Constenla Umaña (1985b) considers Chumulu to be the ancestor of Dorace. Pinart (1882: 50–73) contains a copy of the Gualaca data gathered by Blas José Franco in 1792 (cf. Quesada Pacheco 2008: 17). The Gualaca data published by Pinart (1890) are data from Blas José Franco’s 1792 work that Pinart had checked, in 1882, with the last speaker of the language (Pinart 1890: 2–3). This last speaker of Gualaca died in the same year in the township of Gualaca (ibid.: 2). Pinart (ibid.: 2–3) only met six Chumulu speakers in La Caldera and El Potrero de Vargas. Notwithstanding, Torres de Araúz (1980: 85, cited in Constenla Umaña 1985b: 81) states that it was still possible to compile an extensive Dorasque vocabulary in the first half of the twentieth century.

Personal pronouns in Dorasque differ from their counterparts in other Chibchan languages: Compare, for instance <kura> ‘I’ in Chumulu and Gualaca (Pinart 1890: 33); Gualaca <koné> ‘you’ (besides <ba> in Chumulu and Gualaca, Pinart 1890: 32), and <kúi> or <kúiyet> ‘he, she’ in Chumulu and Gualaca (ibid.: 13). These unbound person markers coincide in that they all contain an element <ku> (or <ko>, in one case), resembling the element <ku> (or <ko>) attested in numerals such as Chumulu <kúma*s*>

'three' (ibid.: 31), <kúpaki> 'four' (ibid.: 11), or <kumát> 'two', and Gualaca <komó> 'two' (ibid.: 12). In the context of numerals, the elements <ku> and <ko> seem to be classifying elements and may derive from Proto-Chibchan *k^{w}a 'seed, fruit'.

As to constituent order in Dorasque, the verb follows the noun, for instance in (8):

Chumulu (Pinart 1890: 30)
(8) <kerél sidí>
sun rise
'The sun is rising.'

A suffix <-ga> might have had a nominalizing function in Chumulu. In (9), it seems to be a stative nominalizer:

Chumulu (Pinart 1890: 30)
(9) <kerél sidí-**ga**>
sun rise-**NMLZ**
'The sun rose already.'

Instead, its use is rather reminiscent of an agent nominalizer in (10):

Chumulu (Pinart 1890: 19)
(10) <sirila sidi-**ga**>
moon crescent-**NMLZ**
'crescent moon'

In possessive constructions, the possessor precedes the possessed, for instance in Chumulu <*s*idugu> 'headwaters' (Sp. *cabecera del río*) (Pinart 1890: 7), which is made up of the elements <*s*i> 'river' (cf. ibid.: 28) and <dukú> 'head' (cf. ibid.: 7).

Since the Gualaca data in the original orthography of Father Franco (Pinart 1882) differ, to a certain extent, from the Gualaca data given by Pinart (1890), I consider both sources on this variety whenever possible.

2.3.10.1 The sounds of Dorasque

Some information on the sounds of Dorasque can be gleaned from Pinart's (1882, 1890) vocabularies.

2.3.10.1.1 Dorasque vowels and suprasegmentals

Table 37 gives an overview of the graphemes used by Pinart (1882, 1890) in order to represent Dorasque vowels.

TABLE 37
DORASQUE VOWELS

	Front	Central	Back
High	<i>		<u>
High-mid	<e>		<o>
Low		<a>	

Based on Pinart (1890).

In some cases, accents in the source orthography (Pinart 1890) suggest the existence of lexical stress or tone in Dorasque, for instance in Chumulu <hagà> 'stone' versus Gualaca <agá> 'stone, rock' (Pinart 1890: 25–6). The macron, in Pinarts (1890) orthography, seems to indicate vowel length or gemination in some cases – compare Gualaca <urlaa> 'summer' (Pinart 1882: 51) versus <urlā> 'summer' (Pinart 1890: 33). In other cases, vowel gemination indicated in Franco's 1792 data, for instance in <bee> 'night' (Pinart 1882: 51) is not reflected in Pinart's (1890) publication, where he gives Gualaca <be> 'night' (ibid.: 23), without a macron. There are also several cases of a circumflex, for instance in <pâ*i*> 'friend' (ibid.: 5). The meaning of this diacritic must remain open for the moment. Italics, as in <pâ*i*> 'friend', may indicate the non-syllabic realization of a vowel.

2.3.10.1.2 Dorasque consonants

Table 38 gives an overview of possible Dorasque consonants.

TABLE 38
DORASQUE CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar	Glottal
Voiceless stops	<p>	<t>		<k>	
Voiced stops	<b>	<d>			
Voiceless affricate			<*c*>		
Voiced affricate			<*j*>		
Fricatives	<v>	<θ, s>	<*s*>		<h> [38]
Nasals	<m>	<n>			
Lateral		<l>			
Vibrant		<r>			
Glides	<ω>		<y>		

Based on Pinart (1890).

Constenla Umaña (1981: 266) hypothesizes that in Pinart's (1890) orthography <b, v, ω>, and possibly also <p> are allophones of the same phoneme. The same would be true for <s> and <θ>, for <*j*> and <y> and for <h> and <χ>. In some cases, <que> and <gue> may possibly refer to [kue] or [k^{w}e] and [gue] or [g^{w}e], for instance in Gualaca <que> 'turtle' (Pinart 1882: 56, compare Proto-Chibchan *k^{w}i 'turtle') and in Chumulu <gué> 'older sister' (Pinart 1890: 17, compare *^{ŋ}g^{w}i '(older) sibling, (older) sister'). The voiced velar stop represented by <g> probably did not have a phonemic character in Dorasque but must be interpreted as referring to an allophone of *k*. Finally, <*j*, *s*> or <*c*>, followed by <i> might be allophones in some contexts: compare Chumulu <*j*i, *s*i> 'water' (Pinart 1890: 4); Gualaca <*c*i> 'river' (ibid.: 28), all derived from Proto-Chibchan *diʔ 'water, river'. The interpretation of <ω> as referring to a glide [w] in Pinart's (1890) orthography is tentative. It is corroborated by the Gualaca form <ωiá> 'woman', given by Pinart (1890: 22) versus <uia> 'woman', in Franco's 1792 orthography (cf. Pinart 1882: 64).

[38] <χ> seems to be an allophone (Constenla Umaña 1981: 266); the phonetic value of the segment represented by <χ> is not entirely clear.

2.3.10.2 Reflexes of Proto-Chibchan phonemes in Dorasque

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.10.2.1) and of Proto-Chibchan consonants (2.3.10.2.2) in Damana.

2.3.10.2.1 Reflexes of Proto-Chibchan vowels in Dorasque (cf. also Constenla Umaña 1981: 268–70)

{*a, *ã} > <a>

*^{m}ba^{n}d- ‘tasty’ > Chumulu, Gualaca <**bál**i> ‘salt’ (Pinart 1890: 29), Chumulu ‘sea’ (ibid.: 21), Gualaca <**vál**e> ‘sea’ (ibid.: 21, Pinart 1882: 54), <**val**e> ‘salt’ (Pinart 1882: 64)

*^{m}ba^{n}d(a) ~ *^{m}bat(a) ‘exterior’ > Chumulu <*s*i-**mal**> ‘shore of the river’, <báli-**mal**> ‘shore of the sea’ (Pinart 1890: 24)

*^{m}ba^{n}di ‘hunger’ > Chumulu <**vali**água> ‘I am hungry’ (Pinart 1890: 16)

*^{m}bahka(i) ‘four’ > Chumulu <kú**paki**>; Gualaca <kalá**paka**> (Pinart 1890: 11), <cala**capa**> ‘four’ (Pinart 1882: 52)

*^{m}bak- ‘flea’ > Chumulu, Gualaca <bágue> (Pinart 1890: 27), <bague> ‘flea, jigger’ (Pinart 1882: 54)

*^{m}baʔ ‘beam of light, heat’ > <*c*i**ba**gá> (Pinart 1890: 10), Gualaca <*c*i**bá**ga> ‘lightning, thunderbold’ (ibid.: 28), <ci**ba**ga> ‘lightning, thunderbold, comete’ (Pinart 1882: 54)

*^{m}baʔ ‘you’ > Chumulu, Gualaca <ba> ‘you’ (Pinart 1890: 32)

*^{m}bãʔ(ĩ) ‘three’ > Chumulu <kú**ma***s*>; Gualaca <kalá**bá***c*> (Pinart 1890: 31), <cala**ba**ch> ‘three’ (Pinart 1882: 52)

*^{n}da(^{n}d) / *sa(^{n}d) ‘creeping animal’ > Chumulu <**dár**ki> ‘caiman’ (Pinart 1890: 7), Gualaca <**sal**bó> (Pinart 1890: 16), <**sal**bo> ‘worm’ (Sp. *gusano*) (Pinart 1882: 57)

*(^{n}d)iˈa ‘to wear’ > Chumulu <**θá**gu> ‘blanket’ (Pinart 1890: 20), Gualaca <**θá**gua> ‘shirt’ (ibid.: 8), <zagu> ‘sail’ (Pinart 1882: 54)

*^{n}dua ‘ tobacco’ > Chumulu <dúa> ‘tobacco’ (Pinart 1890: 30)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > Chumulu <kulgúla> ‘arm’ (Pinart 1890: 7); <χūl> ‘feather’ (ibid.: 27), Gualaca <kulá> ‘hand’ (ibid.: 20), <**ulu**gála> ‘arm’ (ibid.: 7), <cula> ‘hands’, <ulugala> ‘arms’ (Pinart 1882: 65)

*hak ~ *kaʔ ‘stone’ > Chumulu <hak, **hag**à> ‘stone’; Gualaca <**ag**á> (Pinart 1890: 26), <**ag**a> ‘stone, rock’ (Pinart 1882: 55)

*hapi ~ *apiʔ ‘blood’ > Chumulu, Gualaca <havé> ‘blood’ (Pinart 1890: 29)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > Chumulu, Gualaca <ugá> (Pinart 1890: 11, 26), Gualaca <uga> ‘skin’ (Pinart 1882: 66)

*ita ~ *i^{n}da ~ *ia^{n}d ‘belly’ > Chumulu <irá> ‘belly’ (Pinart 1987: 6)

*ka ‘leaf’ > Chumulu, Gualaca <kalá**ka**> (Pinart 1890: 17), Gualaca <cala**ca**> ‘leaf’ (Pinart 1882: 58)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > Chumulu **kalkál**a ‘stick, wall’ (Pinart 1890: 25)

*kah-ka ‘mouth’ > Chumulu <kagué>, Gualaca <kaga> (Pinart 1890: 6), <caga> ‘mouth’ (Pinart 1882: 65)

*kap- ‘to sleep’ > Chumulu <**káb**iya> ‘sleep (noun)’, <**χáb**era> (Chumulu) ‘to go to bed’ (Pinart 1890: 4, 30); Gualaca <**káb**iya> ‘sleep (noun)’ (ibid.: 30), <**kab**igal> ‘to sleep’ (ibid.: 12), <**cab**iya> ‘sleep (noun)’, <**cab**igal> ‘to sleep’, <c**ab**ical> ‘to dream’ (Pinart 1882: 62)

*ku^{n}da coal, hot coal’ > Gualaca <kebu**kóna**> ‘hot coal’ (Pinart 1890: 7); <kebú **kóna>** ‘coal’ (ibid.: 8), <quebucona> ‘carbon, hot coal’ (Pinart 1882: 61)

*kuʔ(-Ba) ‘tongue’ > Chumulu, Gualaca <kúba> (Chumulu, Gualaca) (Pinart 1890: 19), Gualaca <cuba> ‘tongue’ (Pinart 1882: 65)

*k^{w}ahk^{w}ah ‘butterfly’ > Gualaca <koágua> (Pinart 1890: 21), <coagua> ‘butterfly’ (Pinart 1882: 56)

*La ‘bee, honey’ > Chumulu <χá**la**>; Gualaca <á**la**> (Pinart 1890: 21), <a**la**> ‘honey’ (Pinart 1882: 63)

*Laʔ ‘smell’ > Chumulu, Gualaca <**aná**o*c*a> ‘smelly’ (Pinart 1890: 16), Gualaca <**ana**ocha> ‘stink, smelliness’ (Pinart 1882: 55)

*siʔ-k^{w}a ‘pale’ > <sigua> ‘white people> (Pinart 1890: 15)

*taB(a) ‘earth, floor, mud’ > Dorasque: Chumulu <**sav**ikal> ‘mud’ (Sp. *fango*) (Pinart 1890: 14), <**sáv**ikal> ‘mud’ (Sp. *lodo*) (ibid.: 19); Gualaca <**θáb**ikula> (ibid.: 19), <zabicula> ‘mud’ (Sp. *lodo*) (Pinart 1882: 55)

{*ai, *ii} > <e>

*Baiʔ ‘sweet potato’ > Gualaca <be> (Pinart 1890: 6), <bé> ‘sweet potato’ (Pinart 1882: 61)

*^{n}da^{n}di ~ ^{n}dai^{n}d- / sa^{n}di ~ *sai^{n}d- ‘bone, hard’ > <ser> ‘foot’ (Pinart 1890: 26)

*^{n}dii(k) ‘nose’ > Chumulu <**ne**kó>, Gualaca <**ne**gú> (Pinart 1890: 22), <**ne**gú> ‘nose’ (Pinart 1882: 65)

*pai ‘friend, other’ > Gualaca <pâi> ‘friend’ (Pinart 1890: 5)

{*au, *uu} > <o>

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > <bo*s*> ‘to weep’ (Pinart 1890: 20)

*^{m}buuʔ ‘two’ > <ko**mó**> (Pinart 1890: 12), <co**mo**> ‘two’ (Pinart 1882: 52)

*taukaʔ ‘calabash$_2$’ > Chumulu, Gualaca <sok, θok> ‘*totuma*’ (Pinart 1890: 31), Gualaca <θok> (ibid.: 7), <zoc> ‘calabash’ (Pinart 1882: 59)

{*i, *ĩ, *ii} > {<i>, <é>}

*^{m}ba^{n}di ‘hunger’ > Chumulu <**vali**água> ‘I am hungry’ (Pinart 1890: 16)

*^{m}bi^{n}d(i) ‘round’ > Gualaca <vidi> ‘round’ (Pinart 1890: 28)

*^{m}bii ‘up, sky’ > Gualaca <**vi**u> (Pinart 1890: 14), <**vi**uú> ‘star’ (Pinart 1882: 50)

*^{n}diʔ ‘water, river’ > Chumulu <*j*i, *s*i>, Gualaca <ti> (Pinart 1890: 4), <ti> ‘water’ (Pinart 1882: 54); Chumulu <*s*i>, Gualaca <*c*i> ‘river’ (Pinart 1890: 28)

*^{ŋ}gi ‘firewood’ > Chumulu, Gualaca <ké> ‘firewood’ (Pinart 1890: 19)

*Gu^{n}di ~ *GuiH^{n}d ‘lightning’ > Gualaca <**kúri**ga> ‘ray, bolt of lightning’ (Sp. *rayo*) (Pinart 1890: 28), <**kuri***i*ba> ‘storm’ (Sp. *tormenta*) (ibid.: 31), <curiba> ‘ray, bolt of lightning’ (Sp. *rayo*), ‘storm’ (Sp. *tormenta*) (Pinart 1882: 53)

*^{ŋ}g^{w}i ‘(older) sibling, (older) sister’ > Chumulu <gué> ‘older sister’ (Pinart 1890: 17)

*hapi ~ *apiʔ ‘blood’ > Chumulu, Gualaca <havé> ‘blood’ (Pinart 1890: 29)

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > Chumulu <uli> ‘spider monkey’ (Sp. *mono prieto*) (Pinart 1890: 21)

*i(k) ‘manioc’ > Chumulu <ik>, Gualaca <**ig**á> (Pinart 1890: 33), <**ig**a> (Pinart 1882: 62)

*ita ~ *i^{n}da ~ *ia^{n}d ‘belly’ > Chumulu <irá> ‘belly’ (Pinart 1987: 6)

*ku^{n}di ~ *kui^{n}d ‘to eat’ > Chumulu, Gualaca <**kut**ái> ‘to eat’ (Pinart 1890: 10), Gualaca <**cut**ai> (Pinart 1882: 62)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > Chumulu <kúit> (Chumulu); Gualaca <kúi> (Pinart 1890: 5), <cui> ‘squirrel’ (Pinart 1882: 57)

*kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di ‘throat, hole’ > Gualaca <polé> ‘neck, throat’ (Pinart 1890: 11), <pole> ‘neck, throat’ (Pinart 1882: 64)

*k^{w}i ‘to dance’ > <kúyi> ‘to dance’ (Pinart 1890: 6), <cuyi> ‘dance (noun), to dance’ (Pinart 1882: 69)

*si ‘basket, *mochila*’ > Chumulu <si> ‘basket’ (Pinart 1890: 8)

*siʔ-k^{w}a ‘pale’ > <sigua> ‘white people> (Pinart 1890: 15)

*ʦui^{n}d ‘mosquito’ > Chumulu <θūil> ‘mosquito’ (Pinart 1890: 22)

***u > {<u>, <ū>, <v>, <o>}**

***ũ > {<u>, <ū>}**

*^{m}bũ^{n}d(ũ) ‘ashes’ > Chumulu <**bul**ku>; Gualaca <**bulu***c*u> (Pinart 1890: 9), <bulucu> ‘ashes’ (Pinart 1882: 61)

*^{n}dua ‘ tobacco’ > Chumulu <dúa> ‘tobacco’ (Pinart 1890: 30)

*^{n}du(^{n}d) ‘bird, dove’ > Chumulu <dul> ‘bird’ (Pinart 1890: 24)

*^{n}duh(k) ‘tail$_2$’ > Chumulu, Gualaca <dugá> ‘tail’ (Pinart 1890: 10), <duga> (Pinart 1882: 58)

*(^{n}du-)ku(^{n}d) ‘bat’ > Chumulu <**doku**kaska> ‘shaman’ (Pinart 1890: 16)

*(^{ŋ}g)u^{n}d- ‘turkey, large galliform bird’ > Chumulu <úla> ‘peacock’ (Pinart 1890: 25)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > Chumulu <kulgúla> ‘arm’ (Pinart 1890: 7); <χūl> ‘feather’ (ibid.: 27), Gualaca <kulá> ‘hand’ (ibid.: 20), <**ulu**gála> ‘arm’ (ibid.: 7), <cula> ‘hands’, <ulugala> ‘arms’ (Pinart 1882: 65)

*Gu^{n}di ~ *GuiH^{n}d ‘lightning’ > Gualaca <**kúri**ga> ‘ray, bolt of lightning’ (Sp. *rayo*) (Pinart 1890: 28), <**kuri***i*ba> ‘storm’ (Sp. *tormenta*) (ibid.: 31), <curiba> ‘ray, bolt of lightning’ (Sp. *rayo*), ‘storm’ (Sp. *tormenta*) (Pinart 1882: 53)

*hu ‘house’ > Chumulu, Gualaca <hu> (Pinart 1890: 8)

*-hu ~ *-uʔ ‘to swallow, drink, eat’ > Gualaca <**o**i> ‘to drink’ (Pinart 1890: 6)

*****hũ ‘pot’ > Chumulu <hu> ‘pot’ (Pinart 1890: 24); Gualaca <u> ‘jar’ (ibid.: 31), <ut> ‘pot’ (Pinart 1882: 61)

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > Chumulu <uli> ‘spider monkey’ (Sp. *mono prieto*) (Pinart 1890: 21)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > Chumulu, Gualaca <ugá> (Pinart 1890: 11, 26), Gualaca <uga> ‘skin’ (Pinart 1882: 66)

*kuh ‘to hear$_2$’ > Chumulu, Gualaca <**ku**gá> ‘ear’ (Pinart 1890: 24), Gualaca <**cu**ga> (Pinart 1882: 58)

*ku^{n}da coal, hot coal’ > Gualaca <kebu**kóna**> ‘hot coal’ (Pinart 1890: 7); <kebú **kóna>** ‘coal’ (ibid.: 8), <quebucona> ‘carbon, hot coal’ (Pinart 1882: 61)

*ku^{n}di ~ *kui^{n}d ‘to eat’ > Chumulu, Gualaca <**kut**ái> ‘to eat’ (Pinart 1890: 10), Gualaca <**cut**ai> (Pinart 1882: 62)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > Chumulu <kúit> (Chumulu); Gualaca <kúi> (Pinart 1890: 5), <cui> ‘squirrel’ (Pinart 1882: 57)

*kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di ‘throat, hole’ > Gualaca <polé> ‘neck, throat’ (Pinart 1890: 11), <pole> ‘neck, throat’ (Pinart 1882: 64)

*kũʔ ‘louse’ > Chumulu, Gualaca <kū> ‘louse’ (Pinart 1890: 26), <cu> (Pinart 1882: 58)

*kuʔ(-Ba) ‘tongue’ > Chumulu, Gualaca <kúba> (Chumulu, Gualaca) (Pinart 1890: 19), Gualaca <cuba> ‘tongue’ (Pinart 1882: 65)

*pũʔ ‘raptor’ > Chumulu <bu> ‘eagle’ (Pinart 1890: 4); Gualaca <mū> ‘hawk’ (ibid.: 16), <bū> (ibid.: 4, 15), <buu> ‘eagle, sparrowhawk’ ‘(Pinart 1882: 56)

*suh(-kui) ‘rodent, small’ > Chumulu, Gualaca <**so**gé> (Pinart 1890: 28), <**so**gue> ‘mouse’ (Pinart 1882: 57)

*tsuH ‘to scratch, rub’ > Gualaca <**θu**gé> (Pinart 1890: 14), <**zu**ge> ‘to scrub’ (Pinart 1882: 62)

*tsui^{n}d ‘mosquito’ > Chumulu <θūil> ‘mosquito’ (Pinart 1890: 22)

*u^{m}ba ‘face, eye, fruit’ > Gualaca <kala**óbe**> (Pinart 1890: 14), <cala**obe**> ‘fruit’ (Pinart 1882: 59)

*u^{n}du ‘cedar’ > Chumulu, Gualaca <ulú> ‘cedar’ (Sp. *cedro hediondo*) (Pinart 1890: 9), Gualaca <vlu> ‘cedar’ (Pinart 1882: 59); Chumulu, Gualaca <ulú> (Pinart 1890: 8), <vlu> ‘canoe’ (Pinart 1882: 54); Gualaca <ut> ‘pot’ (Pinart 1882: 61, 1890: 24)

2.3.10.2.2 Reflexes of Proto-Chibchan consonants in Dorasque (cf. also Constenla Umaña 1981: 270–5)

***p > {<p>, <b>, <v>, <m>}**

*hapi ~ *apiʔ ‘blood’ > Chumulu, Gualaca <havé> ‘blood’ (Pinart 1890: 29)

*kap- ‘to sleep’ > Chumulu <**káb**iya> ‘sleep (noun)’, <**χáb**era> (Chumulu) ‘to go to bed’ (Pinart 1890: 4, 30); Gualaca <**káb**iya> ‘sleep (noun)’ (ibid.: 30), <**kab**igal> ‘to sleep’ (ibid.: 12), <**cab**iya> ‘sleep (noun)’, <**cab**igal> ‘to sleep’, <c**ab**ical> ‘to dream’ (Pinart 1882: 62)

*pai ‘friend, other’ > Gualaca <pâi> ‘friend’ (Pinart 1890: 5)

*pũʔ ‘raptor’ > Chumulu <bu> ‘eagle’ (Pinart 1890: 4); Gualaca <mū> ‘hawk’ (ibid.: 16), <bū> (ibid.: 4, 15), <buu> ‘eagle, sparrowhawk’ ‘(Pinart 1882: 56)

***^{m}b > {<p>, <b>, <v>, <m>}**

*^{m}ba- ‘cloud, fog’ > Gualaca <**bo**kála> ‘dew’, <**bó**kala> ‘mist’ (Pinart 1890: 23, 28); <bocala> ‘fog’ (Pinart 1882: 53)

*^{m}ba^{n}d- ‘tasty’ > Chumulu, Gualaca <**báli**> ‘salt’ (Pinart 1890: 29), Chumulu ‘sea’ (ibid.: 21), Gualaca <**vál**e> ‘sea’ (ibid.: 21, Pinart 1882: 54), <**val**e> ‘salt’ (Pinart 1882: 64)

*^{m}ba^{n}d(a) ~ *^{m}bat(a) ‘exterior’ > Chumulu <*si*-**mal**> ‘shore of the river’, <báli-**mal**> ‘shore of the sea’ (Pinart 1890: 24)

*^{m}ba^{n}di ‘hunger’ > Chumulu <**vali**água> ‘I am hungry’ (Pinart 1890: 16)

*^{m}bahka(i) ‘four’ > Chumulu <kú**paki**>; Gualaca <kalá**paka**> (Pinart 1890: 11), <cala**capa**> ‘four’ (Pinart 1882: 52)

*^{m}bak- ‘flea’ > Chumulu, Gualaca <bágue> (Pinart 1890: 27), <bague> ‘flea, jigger’ (Pinart 1882: 54)

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > <bo*s*> ‘to weep’ (Pinart 1890: 20)

*^{m}baʔ ‘you’ > Chumulu, Gualaca <ba> ‘you’ (Pinart 1890: 32)

*^{m}bi^{n}d(i) ‘round’ > Gualaca <vidi> ‘round’ (Pinart 1890: 28)

*^{m}bii ‘up, sky’ > Gualaca <**vi**u> (Pinart 1890: 14), <**vi**uú> ‘star’ (Pinart 1882: 50)

*^{m}baʔ ‘beam of light, heat’ > <*c*i**ba**gá> (Pinart 1890: 10), Gualaca <*c*i**bá**ga> ‘lightning, thunderbold’ (ibid.: 28), <ci**ba**ga> ‘lightning, thunderbold, comete’ (Pinart 1882: 54)

*^{m}bãʔ(ĩ) ‘three’ > Chumulu <kú**ma***s*>; Gualaca <kalá**bá***c*> (Pinart 1890: 31), <cala**ba**ch> ‘three’ (Pinart 1882: 52)

*^{m}bũ^{n}d(ũ) ‘ashes’ > Chumulu <**bul**ku>; Gualaca <**bulu***c*u> (Pinart 1890: 9), <bulucu> ‘ashes’ (Pinart 1882: 61)

*^{m}buuʔ ‘two’ > <ko**mó**> (Pinart 1890: 12), <co**mo**> ‘two’ (Pinart 1882: 52)

*u^{m}ba ‘face, eye, fruit’ > Gualaca <kala**óbe**> (Pinart 1890: 14), <cala**obe**> ‘fruit’ (Pinart 1882: 59)

***t > {<s>, <z>, <θ>} / __*a**

*taB(a) ‘earth, floor, mud’ > Dorasque: Chumulu <**sa**vikal> ‘mud’ (Sp. *fango*) (Pinart 1890: 14), <**sá**vikal> ‘mud’ (Sp. *lodo*) (ibid.: 19); Gualaca <**θáb**ikula> (ibid.: 19), <zabicula> ‘mud’ (Sp. *lodo*) (Pinart 1882: 55)

*taukaʔ ‘calabash$_2$’ > Chumulu, Gualaca <sok, θok> ‘*totuma*’ (Pinart 1890: 31), Gualaca <θok> (ibid.: 7), <zoc> ‘calabash’ (Pinart 1882: 59)

***^{n}d > {<d>, <n>} / #__**

***^{n}d > {<t>, <*j*>, <*s*>, <*c*>, <t>} / #__<i>#**

***^{n}d > <θ> / __*iˈa**

***^{n}d > {<t>, <d>, <*s*>, <n>, <l>, <r>, Ø} / elsewhere**

*^{m}ba^{n}d- ‘tasty’ > Chumulu, Gualaca <**bál**i> ‘salt’ (Pinart 1890: 29), Chumulu ‘sea’ (ibid.: 21), Gualaca <**vál**e> ‘sea’ (ibid.: 21, Pinart 1882: 54), <**val**e> ‘salt’ (Pinart 1882: 64)

*^{m}ba^{n}d(a) ~ *^{m}bat(a) ‘exterior’ > Chumulu <*s*i-**mal**> ‘shore of the river’, <báli-**mal**> ‘shore of the sea’ (Pinart 1890: 24)

*^{m}ba^{n}di ‘hunger’ > Chumulu <**vali**água> ‘I am hungry’ (Pinart 1890: 16)

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > <bo*s*> ‘to weep’ (Pinart 1890: 20)

*^{m}bũ^{n}d(ũ) ‘ashes’ > Chumulu <**bul**ku>; Gualaca <**bulu***c*u> (Pinart 1890: 9), <bulucu> ‘ashes’ (Pinart 1882: 61)

*^{m}bi^{n}d(i) ‘round’ > Gualaca <vidi> ‘round’ (Pinart 1890: 28)

*^{n}da(^{n}d) / *sa(^{n}d) ‘creeping animal’ > Chumulu <**dár**ki> ‘caiman’ (Pinart 1890: 7), Gualaca <**sal**bó> (Pinart 1890: 16), <**sal**bo> ‘worm’ (Sp. *gusano*) (Pinart 1882: 57)

*^{n}da^{n}di ~ ^{n}dai^{n}d- / sa^{n}di ~ *sai^{n}d- ‘bone, hard’ > <ser> ‘foot’ (Pinart 1890: 26)

*(^{n}d)iˈa ‘to wear’ > Chumulu <**θá**gu> ‘blanket’ (Pinart 1890: 20), Gualaca <**θá**gua> ‘shirt’ (ibid.: 8), <zagu> ‘sail’ (Pinart 1882: 54)

*^{n}dii(k) ‘nose’ > Chumulu <**ne**kó>, Gualaca <**ne**gú> (Pinart 1890: 22), <**ne**gú> ‘nose’ (Pinart 1882: 65)

*^{n}diʔ ‘water, river’ > Chumulu <*j*i, *s*i>, Gualaca <ti> (Pinart 1890: 4), <ti> ‘water’ (Pinart 1882: 54); Chumulu <*s*i>, Gualaca <*c*i> ‘river’ (Pinart 1890: 28)

*^{n}dua ‘ tobacco’ > Chumulu <dúa> ‘tobacco’ (Pinart 1890: 30)

*^{n}du(^{n}d) ‘bird, dove’ > Chumulu <dul> ‘bird’ (Pinart 1890: 24)

*^{n}duh(k) ‘tail$_{2}$’ > Chumulu, Gualaca <dugá> ‘tail’ (Pinart 1890: 10), <duga> (Pinart 1882: 58)

*(^{n}du-)ku(^{n}d) ‘bat’ > Chumulu <**doku**kaska> ‘shaman’ (Pinart 1890: 16)

*(^{ŋ}g)u^{n}d- ‘turkey, large galliform bird’ > Chumulu <úla> ‘peacock’ (Pinart 1890: 25)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > Chumulu <kulgúla> ‘arm’ (Pinart 1890: 7); <χūl> ‘feather’ (ibid.: 27), Gualaca <kulá> ‘hand’ (ibid.: 20), <**ulu**gála> ‘arm’ (ibid.: 7), <cula> ‘hands’, <ulugala> ‘arms’ (Pinart 1882: 65)

*Gu^{n}di ~ *GuiH^{n}d ‘lightning’ > Gualaca <**kúri**ga> ‘ray, bolt of lightning’ (Sp. *rayo*) (Pinart 1890: 28), <**kuri**ba> ‘storm’ (Sp. *tormenta*) (ibid.: 31), <curiba> ‘ray, bolt of lightning’ (Sp. *rayo*), ‘storm’ (Sp. *tormenta*) (Pinart 1882: 53)

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > Chumulu <uli> ‘spider monkey’ (Sp. *mono prieto*) (Pinart 1890: 21)

*ita ~ *i^{n}da ~ *ia^{n}d ‘belly’ > Chumulu <irá> ‘belly’ (Pinart 1987: 6)

*ku^{n}da coal, hot coal’ > Gualaca <kebu**kóna**> ‘hot coal’ (Pinart 1890: 7); <kebú **kóna>** ‘coal’ (ibid.: 8), <quebucona> ‘carbon, hot coal’ (Pinart 1882: 61)

*ku^{n}di ~ *kui^{n}d ‘to eat’ > Chumulu, Gualaca <**kut**ái> ‘to eat’ (Pinart 1890: 10), Gualaca <**cut**ai> (Pinart 1882: 62)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > Chumulu <kúit> (Chumulu); Gualaca <kúi> (Pinart 1890: 5), <cui> ‘squirrel’ (Pinart 1882: 57)

*kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di ‘throat, hole’ > Gualaca <polé> ‘neck, throat’ (Pinart 1890: 11), <pole> ‘neck, throat’ (Pinart 1882: 64)

*Laʔ ‘smell’ > Chumulu, Gualaca <**aná***o*ca> ‘smelly’ (Pinart 1890: 16), Gualaca <**ana**ocha> ‘stink, smelliness’ (Pinart 1882: 55)

*ʦui^{n}d ‘mosquito’ > Chumulu <θūil> ‘mosquito’ (Pinart 1890: 22)

*u^{n}du ‘cedar’ > Chumulu, Gualaca <ulú> ‘cedar’ (Sp. *cedro hediondo*) (Pinart 1890: 9), Gualaca <vlu> ‘cedar’ (Pinart 1882: 59); Chumulu, Gualaca <ulú> (Pinart 1890: 8), <vlu> ‘canoe’ (Pinart 1882: 54); Gualaca <ut> ‘pot’ (Pinart 1882: 61, 1890: 24)

***k > {<k>, <c>, <χ>} / #__**

***k > {<k>, <c>, <g>} / elsewhere**

*^{m}bahka(i) ‘four’ > Chumulu <kú**paki**>; Gualaca <kalá**paka**> (Pinart 1890: 11), <cala**capa**> ‘four’ (Pinart 1882: 52)

*^{m}bak- ‘flea’ > Chumulu, Gualaca <bágue> (Pinart 1890: 27), <bague> ‘flea, jigger’ (Pinart 1882: 54)

*(^{n}du-)ku(^{n}d) ‘bat’ > Chumulu <**doku**kaska> ‘shaman’ (Pinart 1890: 16)

*hak ~ *kaʔ ‘stone’ > Chumulu <hak, **hag**à> ‘stone’; Gualaca <**ag**á> (Pinart 1890: 26), <**ag**a> ‘stone, rock’ (Pinart 1882: 55)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > Chumulu, Gualaca <ugá> (Pinart 1890: 11, 26), Gualaca <uga> ‘skin’ (Pinart 1882: 66)

*i(k) ‘manioc’ > Chumulu <ik>, Gualaca <**ig**á> (Pinart 1890: 33), <**ig**a> (Pinart 1882: 62)

*ka ‘leaf’ > Chumulu, Gualaca <kalá**ka**> (Pinart 1890: 17), Gualaca <cala**ca**> ‘leaf’ (Pinart 1882: 58)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > Chumulu **kalkál**a ‘stick, wall’ (Pinart 1890: 25)

*kah-ka ‘mouth’ > Chumulu <kagué>, Gualaca <kaga> (Pinart 1890: 6), <caga> ‘mouth’ (Pinart 1882: 65)

*kap- ‘to sleep’ > Chumulu <**káb**iya> ‘sleep (noun)’, <**χáb**era> (Chumulu) ‘to go to bed’ (Pinart 1890: 4, 30); Gualaca <**káb**iya> ‘sleep (noun)’ (ibid.: 30), <**kab**igal> ‘to sleep’ (ibid.: 12), <**cab**iya> ‘sleep (noun)’, <**cab**igal> ‘to sleep’, <c**ab**ical> ‘to dream’ (Pinart 1882: 62)

*ku^{n}da coal, hot coal’ > Gualaca <kebu**kóna**> ‘hot coal’ (Pinart 1890: 7); <kebú **kóna>** ‘coal’ (ibid.: 8), <quebucona> ‘carbon, hot coal’ (Pinart 1882: 61)

*ku^{n}di ~ *kui^{n}d ‘to eat’ > Chumulu, Gualaca <**kut**ái> ‘to eat’ (Pinart 1890: 10), Gualaca <**cut**ai> (Pinart 1882: 62)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > Chumulu <kúit> (Chumulu); Gualaca <kúi> (Pinart 1890: 5), <cui> ‘squirrel’ (Pinart 1882: 57)

*kuh ‘to hear$_2$’ > Chumulu, Gualaca <**ku**gá> ‘ear’ (Pinart 1890: 24), Gualaca <**cu**ga> (Pinart 1882: 58)

*kũʔ ‘louse’ > Chumulu, Gualaca <kū> ‘louse’ (Pinart 1890: 26), <cu> (Pinart 1882: 58)

*kuʔ(-Ba) ‘tongue’ > Chumulu, Gualaca <kúba> (Chumulu, Gualaca) (Pinart 1890: 19), Gualaca <cuba> ‘tongue’ (Pinart 1882: 65)

*taukaʔ ‘calabash$_2$’ > Chumulu, Gualaca <sok, θok> ‘*totuma*’ (Pinart 1890: 31), Gualaca <θok> (ibid.: 7), <zoc> ‘calabash’ (Pinart 1882: 59)

***^{ŋ}g> {<k>, <c>, <χ>, Ø} / #__<u>**

***^{ŋ}g > <k> / elsewhere**

*^{ŋ}gi ‘firewood’ > Chumulu, Gualaca <ké> ‘firewood’ (Pinart 1890: 19)

*(^{ŋ}g)u^{n}d- ‘turkey, large galliform bird’ > Chumulu <úla> ‘peacock’ (Pinart 1890: 25)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > Chumulu <kulgúla> ‘arm’ (Pinart 1890: 7); <χūl> ‘feather’ (ibid.: 27), Gualaca <kulá> ‘hand’ (ibid.: 20), <**ulu**gála> ‘arm’ (ibid.: 7), <cula> ‘hands’, <ulugala> ‘arms’ (Pinart 1882: 65)

***k^{w} > {<ku>, <cu>, <ko>, <co>} / #__**

***k^{w} > <gu> / V__V**

*k^{w}ahk^{w}ah ‘butterfly’ > Gualaca <koágua> (Pinart 1890: 21), <coagua> ‘butterfly’ (Pinart 1882: 56)

*k^{w}i ‘to dance’ > <kúyi> ‘to dance’ (Pinart 1890: 6), <cuyi> ‘dance (noun), to dance’ (Pinart 1882: 69)

*si?-k^{w}a ‘pale’ > <sigua> ‘white people> (Pinart 1890: 15)

***ŋg^{w} > <gu>**

*^{ŋ}g^{w}i ‘(older) sibling, (older) sister’ > Chumulu <gué> ‘older sister’ (Pinart 1890: 17)

***ʔ > Ø**[39]

*Baiʔ ‘sweet potato’ > Gualaca <be> (Pinart 1890: 6), <bé> ‘sweet potato’ (Pinart 1882: 61)

*^{m}baʔ ‘you’ > Chumulu, Gualaca <ba> ‘you’ (Pinart 1890: 32)

*^{m}buuʔ ‘two’ > <ko**mó**> (Pinart 1890: 12), <co**mo**> ‘two’ (Pinart 1882: 52)

*^{n}diʔ ‘water, river’ > Chumulu <*j*i, *s*i>, Gualaca <ti> (Pinart 1890: 4), <ti> ‘water’ (Pinart 1882: 54); Chumulu <*s*i>, Gualaca <*c*i> ‘river’ (Pinart 1890: 28)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > Chumulu <kulgúla> ‘arm’ (Pinart 1890: 7); <χūl> ‘feather’ (ibid.: 27), Gualaca <kulá> ‘hand’ (ibid.: 20), <**ulu**gála> ‘arm’ (ibid.: 7), <cula> ‘hands’, <ulugala> ‘arms’ (Pinart 1882: 65)

*kũʔ ‘louse’ > Chumulu, Gualaca <kū> ‘louse’ (Pinart 1890: 26), <cu> (Pinart 1882: 58)

*pũʔ ‘raptor’ > Chumulu <bu> ‘eagle’ (Pinart 1890: 4); Gualaca <mū> ‘hawk’ (ibid.: 16), <bū> (ibid.: 4, 15), <buu> ‘eagle, sparrowhawk’ ‘(Pinart 1882: 56)

*si?-k^{w}a ‘pale’ > <sigua> ‘white people> (Pinart 1890: 15)

***ts > {<θ>, <z>} / __<u>**

*ʦui^{n}d ‘mosquito’ > Chumulu <θūil> ‘mosquito’ (Pinart 1890: 22)

*ʦuH ‘ scratch, rub’ > Gualaca <**θu**gé> (Pinart 1890: 14), <**zu**ge> ‘to scrub’ (Pinart 1882: 62)

***s > <s>**

*^{n}da^{n}di ~ ^{n}dai^{n}d- / sa^{n}di ~ *sai^{n}d- ‘bone, hard’ > <ser> ‘foot’ (Pinart 1890: 26)

*si ‘basket, *mochila*’ > Chumulu <si> ‘basket’ (Pinart 1890: 8)

*si?-k^{w}a ‘pale’ > <sigua> ‘white people> (Pinart 1890: 15)

*suh(-kui) ‘rodent, small’ > Chumulu, Gualaca <**so**gé> (Pinart 1890: 28), <**so**gue> ‘mouse’ (Pinart 1882: 57)

[39] The reflex in the term for ‘rapace’ suggests the possibility that the reflex of *ũʔ may have been [uː] or [uu] in Dorasque.

***h > {<h>, Ø} / #__**

***h > Ø / elsewhere**

*^{m}bahka(i) ‘four’ > Chumulu <kú**paki**>; Gualaca <kalá**paka**> (Pinart 1890: 11), <cala**capa**> ‘four’ (Pinart 1882: 52)

*^{n}duh(k) ‘tail$_2$’ > Chumulu, Gualaca <dugá> ‘tail’ (Pinart 1890: 10), <duga> (Pinart 1882: 58)

*hak ~ *kaʔ ‘stone’ > Chumulu <hak, **hag**à> ‘stone’; Gualaca <**ag**á> (Pinart 1890: 26), <**ag**a> ‘stone, rock’ (Pinart 1882: 55)

*hapi ~ *apiʔ ‘blood’ > Chumulu, Gualaca <havé> ‘blood’ (Pinart 1890: 29)

*hu ‘house’ > Chumulu, Gualaca <hu> (Pinart 1890: 8)

*hũ ‘pot’ > Chumulu <hu> ‘pot’ (Pinart 1890: 24); Gualaca <u> ‘jar’ (ibid.: 31), <ut> ‘pot’ (Pinart 1882: 61)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > Chumulu, Gualaca <ugá> (Pinart 1890: 11, 26), Gualaca <uga> ‘skin’ (Pinart 1882: 66)

*kah-ka ‘mouth’ > Chumulu <kagué>, Gualaca <kaga> (Pinart 1890: 6), <caga> ‘mouth’ (Pinart 1882: 65)

*kuh ‘to hear$_2$’ > Chumulu, Gualaca <**ku**gá> ‘ear’ (Pinart 1890: 24), Gualaca <**cu**ga> (Pinart 1882: 58)

*k^{w}ahk^{w}ah ‘butterfly’ > Gualaca <koágua> (Pinart 1890: 21), <coagua> ‘butterfly’ (Pinart 1882: 56)

*suh(-kui) ‘rodent, small’ > Chumulu, Gualaca <**so**gé> (Pinart 1890: 28), <**so**gue> ‘mouse’ (Pinart 1882: 57)

***#L > {<l>, <n>}**

*La ‘bee, honey’ > Chumulu <χá**la**>; Gualaca <á**la**> (Pinart 1890: 21), <a**la**> ‘honey’ (Pinart 1882: 63)

*Laʔ ‘smell’ > Chumulu, Gualaca <**aná**o*c*a> ‘smelly’ (Pinart 1890: 16), Gualaca <**ana**ocha> ‘stink, smelliness’ (Pinart 1882: 55)

2.3.11 Duit

Duit is a Chibchan languages which is most closely related to Muisca. It was formerly spoken on the eastern slopes of the Colombian Andes in Tundama or Duitama (present-day department of Boyacá). It is not clear when exactly Duit ceased to be spoken, but it probably disappeared in the eighteenth century (Adelaar & Muysken 2004: 50). The only data on this language are available from Uricoechea's 1871 work on Muisca, where the author gives some questions from a confessionary in Duit, Muisca, and Spanish (ibid.: xli–xlii). The Duit text in question is analyzed by Uricoechea, who gives a translation for many terms (ibid.: xli). Lehmann (1920: 53–4) provides a revision of Uricoechea's translation and sometimes gives an alternative interpretation of the data. The original source of Uricoechea's (1871) data has never been found (Adelaar & Muysken 2004: 81–2).

The Duit interrogative suffix <-u>, used in polar questions, is most reminiscent of its Muisca counterpart <-ua> (cf. Lehmann 1920: 53). That both languages were very closely related indeed is also reflected in parallels such as Duit <a-sugu-na> 's/he is' versus Muisca <a-sucu-ne> 's/he is' (Lehmann 1920: 54); also, in both languages, the regular reflex of Proto-Chibchan *k^w is a coarticulated stop [pk] or [pk^w] (Adelaar & Muysken 2004: 85).

2.3.11.1 The sounds of Duit

The sounds of Duit are inferred from the graphemes used by Uricoechea (1871: xli–xlii); they are discussed in the following two subsections.

2.3.11.1.1 Duit vowels and suprasegmentals

Table 39 illustrates the graphemes used by Uricoechea (1871: xli–xlii) that refer to vowels.

TABLE 39
DUIT VOWELS

	Front	Central	Back
High	<i>		<u>
Mid	<e>		<o>
Low		<a>	

Based on Uricoechea (1871: xli–xlii).

The vowels <a>, <i>, and <u> are much more frequently attested in Uricoechea's Duit data than <e> and <o>. The high vowels may have had non-syllabic allophones such as <u> in <uequéneca> 'how (is it)?' and <i> in <meia> 'three' (cf. Lehmann 1920: 54).

2.3.11.1.2 Duit consonants

Table 40 illustrates the consonants of Duit, based on the Duit data pusblished by Uricoechea (1871):

TABLE 40
DUIT CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar	Labio-velar
Voiceless stops	<p>	<t>		<c, qui>	<pc>
Voiced stop	<b>			<g, gu>	
Voiceless affricate		<ch>			
Voiceless fricatives		<s>	<x>		
Nasals	<m>	<n>			
Vibrant		<r>			
(Glides)	<u>		<i>		

Based on Uricoechea (1871: xli–xlii).

Whereas the Muisca sources contain a grapheme <f> which may have referred to a voiceless bilabial fricative (see below), and <h> which may have indicated vowel aspiration or a glottal fricative in this language, there is no trace of these sounds in the very small corpus of available Duit data.

2.3.11.2 Reflexes of Proto-Chibchan phonemes in Duit

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.11.2.1) and of Proto-Chibchan consonants (2.3.11.2.2) in Duit.

2.3.11.2.1 Reflexes of Proto-Chibchan vowels in Duit

***a > {<a>, <o>}**

*a 'that' > <a-> 'he, his' (Lehmann 1920: 54)

*kaʔ(k) 'cosmos (sky, day, time, space, earth, place)' > <**co**ga> 'place' (cf. Uricoechea 1871: xli)

***i > <i>**

*^{m}bi- 'how much, how many' > <**bi**ia> 'how many' (Lehmann 1920: 53)

*siʔ 'moon' > <**ti**a> 'moon' (Lehmann 1920: 53)

***u > <u>**

*^{n}du- 'to stand (singular)' > <a-**su**gu-nu> 'he is' (Lehmann 1920: 54)

*ʦu 'child, small' > <**tú**tia> 'son' (Lehmann 1920: 53)

2.3.11.2.2 Reflexes of Proto-Chibchan consonants in Duit

***^{m}b > {<b>, <m>}**

*^{m}bãʔ(ĩ) 'three' > <**mei**a> 'three' (Lehmann 1920: 54)

*^{m}bi- 'how much, how many' > <**bi**ia> 'how many' (Lehmann 1920: 53)

***^{n}d > <s> / #__<u>**

*^{n}du- 'to stand (singular)' > <a-**su**gu-nu> 'he is' (Lehmann 1920: 54)

***k > <c>**

*kaʔ(k) 'cosmos (sky, day, time, space, earth, place)' > <**co**ga> 'place' (cf. Uricoechea 1871: xli)

***ʔ > Ø**

*^{m}bãʔ(ĩ) 'three' > <**mei**a> 'three' (Lehmann 1920: 54)

*siʔ 'moon' > <**ti**a> 'moon' (Lehmann 1920: 53)

***ʦ > <t> / __<u>**

*ʦu ‘child, small’ > <**tú**tia> ‘son’ (Lehmann 1920: 53)

***s > <t> /__<i>**

*siʔ ‘moon’ > <**ti**a> ‘moon’ (Lehmann 1920: 53)

2.3.12 Guatuso

At present, there are some 400 to 600 Guatuso, also known as Malecu, living in three small settlements, El Sol, Margarita, and Tonjibe, on the banks of the El Sol river in the cantón of Guatuso, province of Alajuela, Costa Rica (Sánchez Andenaño 2011: 12). Guatuso is the only indigenous language still spoken in the north of Costa Rica. Dwelling amidst densely forested plains, the Guatuso have had some sporadic contact with non-indigenous society only since the second half of the eighteenth century. Contact with the outside world became as intense as it was destructive for them in second half of the nineteenth century, when their territory was invaded by rubber tappers, killing a huge part of the population in the 1890's, and reducing their number from some 1500 to 150. The situation only changed with the intervention of the Bishop of Costa Rica, Bernhard August Thiel (Constenla Umaña 1998: 1), who was himself working on Chibchan languages of Costa Rica (cf. Thiel 1882).

The position of Guatuso within the Chibchan language family is difficult to determine. It has been grouped together with Rama (e.g. Lehmann 1914: 9, 1920: 457–61; Constenla Umaña 2012: 417). This connection within Chibchan may need to be carefully assessed in future studies, however. Some remarkable parallels of Guatuso are found in the extinct Huetar language (Constenla Umaña 1984a; Quesada Pacheco 1992: 86; see also the section 2.3.14 on Huetar below). A cultural element shared both by the Guatuso and Rama-speaking groups are wooden tongs used in the preparation of food on the fire and that are called *kiskis* (Rama) or *kaskas* (Guatuso). Similar tongs are also attested among groups speaking Misumalpan languages (cf. Lehmann 1920: 457–8). In the past, the Guatuso have sometimes been referred to as 'wild Rama' (ibid.: 375).

Main sources for the language are Thiel (1882), Lehmann (1914, 1920), and, above all, Constenla Umaña (1998). The latter work is also the main source of the Guatuso data discussed here. Sánchez Avendaño (2011) gives a detailed overview of language contact of Guatuso with Spanish and Guatuso sociolinguistics.

Within Chibchan, Guatuso stands out in that its ergative-absolutive alignment is clearly reflected in different sets of verbal person markers (cf. Constenla Umaña 1998: 69–73).

2.3.12.1 The sounds of Guatuso

Constenla Umaña (1998: 7–47) gives an extensive overview of the realization of different Guatuso phonemes and morphemes. In what follows, it is only possible to stick to some of them.

2.3.12.1.1 Guatuso vowels and suprasegmentals

The inventory of Guatuso vowel phonemes is shown in table 41.

TABLE 41
GUATUSO PHONEMES: VOWELS

	Front	Central	Back
High	i		u
High-mid	e		o
Low		a	

Source: Constenla Umaña (1998: 8).

The vowel /a/ is generally realized as central in Guatuso, but if followed by a front vowel (especially /i/) it is very often realized as near-low front unrounded [æ] (Constenla Umaña 1998: 11). There are also cases of vowel harmony in the context of person-marking elements, for instance in |mI+ŋa| /maŋaː/ 'for you' (ibid.: 38–9) (in this latter example, |I| is a morphophoneme which may be realized as either *a* or *i*, depending on the context, ibid.: 37).

Vowel length is phonemic in Guatuso. Long front or back vowels tend to be realized as sequences of two vowels, the first of which is more open and the second more closed: /iː/ is realized as [i̯i̯], /eː/ as [e̯e̯], /oː/ as [o̯o̯], and /uː/ as [u̯u̯]. Long /aː/, however, is realized as such and differs from /a/ only in terms of duration (Constenla Umaña 1998: 12). Long vowels only occur in open syllables (ibid.: 15). If /eː/ and /oː/ are preceded by either /p/ or /m/, they are realized as vowel sequences /ie/ and /uo/, respectively. Thus, |poː| 'you' yields /puːo/, and |meː| 'where?' yields /miːe/ (ibid.: 37). The language does not have nasal vowels nor tone (cf. Constenla Umaña 1998). Stress in Guatuso is phonemic, but cannot be determined with isolated words (Natacha Chevrier, p.c.).

Syncope is found in some Guatuso forms, for instance in |kaɾa+kaɾa| /karkaraː/ 'shoulder' (Constenla Umaña 1998: 35).

2.3.12.1.2 Guatuso consonants

Table 42 gives an overview of Guatuso consonant phonemes.

TABLE 42
GUATUSO PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar
Voiceless stops	p	t		k
Voiceless affricate (fortis)			ʧ	
Voiced affricate (lenis)			j[40] [ɟ ~ ʝ]	
Fricatives	ɸ	s		x
Voiceless lateral (fortis)		ɬ		
Voiceless lateral (lenis)		l		
Vibrant, trill (fortis)		r		
Vibrant, tap (lenis)		ɾ		
Nasals	m	n		ŋ

Source: Constenla Umaña (1998: 8).

The voiceless stops /p/, /t/, and /k/ are always realized as non-aspirated. Before a consonant, a pause, or word-internal boundaries, they are not released. In rapid speaking /p/, /t/, and /k/ may be realized with distension and voiced between two vowels or between a nasal consonant and a vowel (Constenla Umaña 1998: 10). The velar stop /k/ and the voiceless velar fricative /x/ tend to be realized as uvular stops between two non-front vowels, or if preceded by a non-front vowel and followed by a consonant or a pause, or if followed by a velar consonant (ibid.: 11).

The glide /j/ tends to be realized as voiced palatal stop [ɟ] if preceded by a nasal consonant or a pause, and as a fricative [ʝ] if preceded by a non-nasal consonant and in intervocalic position (Constenla Umaña 1998: 11).

[40] The phoneme is described as "/j/ (mediopalatal)" by Constenla Umaña (1998: 11).

The voiceless bilabial fricative /ɸ/ is realized as a voiced bilabial approximant [β] if followed by /j/ or /l/. If preceded by a nasal consonant or /r/, both realizations [β] or [ɸ] are possible. Elsewhere, /ɸ/ is realized as such (Constenla Umaña 1998: 11).

If /ɾ/ occurs in word-final position, it is followed by a very short paragogic high vowel, which is often realized as voiceless, for instance in /oktaɾ/ [ˈo̥ktaɾ̥ⁱ] 'stone' (Constenla Umaña 1998: 13).

Consonant dissimilation may occur in reduplicated forms, such as /kuɾiːxuɾiː/ 'woman', as compared to /kuɾiː/ 'wife' (Constenla Umaña 1998: 35).

In word onset, any consonant is attested, except vibrants. In syllable onset and in word-final position, any Guatuso consonant can occur. Word-internally, in syllable coda, the following consonants are found: /p/, /t/, /k/, /s/, /x/, /ɬ/, /r/, /m/, /n/, and /ŋ/ (Constenla Umaña 1998: 12–4). Consonant clusters can occur in the syllable onset or across syllable boundaries. Sequences of same consonants are extremely rare in Guatuso (ibid.: 12–4). On the phonemic level, clusters of two or three different consonants can occur in syllable onset: clusters containing two consonants are /mj/, /ml/ or /rɸ/, or /p/ plus a non-labial, voiceless stop or fricative, or a voiceless lateral. In syllable onset, clusters of three consonants may contain /rml/, /rmj/, or /t/, /ʧ/, /k/, /s/, /x/, /ɬ/ plus /rp/. In some consonant clusters /m/ can be replaced by /ɸ/ (Constenla Umaña 1998: 12–3). Across syllable boundaries other consonant sequences are possible.

Guatuso morphophonemes may vary in terms of consonants. Examples are |ŋaɾi ~ aɾi| 'to hide' (Constenla Umaña 1998: 25) or |ɬiɸi ~ siɸi| 'ant' (ibid.: 27). There are also suppletive allomorphs such as for the dative postposition |axa ~ ŋa| (ibid.: 28).

2.3.12.2 Reflexes of Proto-Chibchan phonemes in Guatuso

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.12.2.1) and of Proto-Chibchan consonants (2.3.12.2.2) in Guatuso.

2.3.12.2.1 Reflexes of Proto-Chibchan vowels in Guatuso (cf. also Constenla Umaña 1981: 192–211)

***a > {*a*, *o*}**

*apa 'body' > /ton**ɸa/** 'I myself' (Sp. *yo mismo*) (Constenla Umaña 1998: 14)

*atsa-ka^{n}da 'chicken' > |tʃakara| (Constenla Umaña 1998: 47)

*-^{m}ba nominalizer$_1$ > -*su* ˈ***ɸa***, -ˈ***iɸa*** nominalizing suffixes (cf. Constenla Umaña 1998: 134)

*^{m}bahka(i) 'four' > |pake| 'four' (Constenla Umaña 1998: 65)

*ⁿda ‘to come’ > |to| ‘to come’ (cf. Constenla Umaña 1998: 33)

*ⁿda ~ *ta locative$_1$ > *ta* ‘in’ (spatial or temporal) (Constenla Umaña 1998: 113)

*ⁿdaᵐba ‘feline$_1$’ > |taɸa| ‘feline’ (Constenla Umaña 1998: 44)

*ⁿda(ⁿd) / *sa(ⁿd) ‘creeping animal’ > **/ɬal**aŋ/ [ˈ**ɬal**aŋ] ‘snake’ (Constenla Umaña 1998: 41)

*ⁿdaka/*saka ‘brother$_2$’ > /ɬaka/ ‘brother’ (Constenla Umaña 1998: 9)

*(ⁿd)iˈa ‘to wear’ > |**tio**ka| ‘clothes’ (Constenla Umaña 1998: 44)

*ⁿdiⁿda / *ⁿdisa ‘dry$_1$’ > **/tiɬa**ːxa/ ‘dry’ (Constenla Umaña 1981: 376)

*ⁿdua ‘tobacco’ > |tua|, /tuːa/ ‘tobacco’ (Constenla Umaña 1998: 15, 44)

*(ⁿd-)uᵐba ‘brother-in-law’ > |uɸa| ‘brother-in-law’ (Constenla Umaña 1998: 43)

*ᵑgua ‘to kill’ > /kuaː/ ‘to kill’ (Constenla Umaña 1981: 393)

*ᵑgʷa(k) ‘face’ > *xua* ‘before, in front of’ (Constenla Umaña 1998: 109)

*haka ‘tooth (molar)’ > /oka/ (Constenla Umaña 1998: 12)

*ka allative/dative > *-ko* ‘in, inside, to, toward (locative, ilocative, alocative, temporal)’ (Constenla Umaña 1998: 107)

*-ka nominalizer$_3$ > Guatuso *-ko* ~ -ˈ*ko* nominalizer (cf. Constenla Umaña 1998: 92)

*kaⁿd- ~ *kat- ‘stick, bone, tree’ > **/ko**ːɾa/ ‘tree, trunk of a tree, wood’ (Constenla Umaña 1981: 426)

*La ‘egg, offspring’ > ˈ*o**ɾa*** ‘diminutive marker (Constenla Umaña 1998: 82)

*saⁿda ‘wound, trace’ > |ɬoːlo| 'trace' (Constenla Umaña 1998: 47)

*ʦa ‘hair, head’ > |ʧaː ~ ʃa|, /ʧĩːa/ ‘head, upper part’ (Constenla Umaña 1998: 9, 27)

{*ha, *aH, *ãʔ} > *o*

*ᵐbaʔ ‘you’ > |poː| ‘you’ (Constenla Umaña 1998: 43)

*ᵐbãʔ(ĩ) ‘three’ > |poi| ‘three’ (Constenla Umaña 1998: 48)

*ⁿdaH(ⁿd) ‘I$_1$’ > |toː|, /ton/ ‘I’ (Constenla Umaña 1998: 13)

*ⁿdaʔ ~ *taʔ ‘to go$_2$’ > |=to| future tense marker (Sp. *futuro mediato*) (Constenla Umaña 1998: 36)

*haka ‘tooth (molar)’ > /oka/ (Constenla Umaña 1998: 12)

*kãʔ ‘breast, teat$_1$’ > **/ko**ːɾi/ ‘teat’ (Constenla Umaña 1998: 10)

***ai > {*oi*, *ai*, *e*}**

*aBi ~ *aiB ‘maize’ > /aːiŋ/ ‘maize’ (Constenla Umaña 1998: 15)

*ᵐbahka(i) ‘four’ > |pake| ‘four’ (Constenla Umaña 1998: 65)

*ⁿdai ‘to walk’ > |**toi**+Ki| ‘to pass’ (Constenla Umaña 1998: 26)

{*i, *ĩ} > *i*

*ᵐbãʔ(ĩ) ‘three’ > |poi| ‘three’ (Constenla Umaña 1998: 48)

*ᵐbi- ‘how much, how many’ > |pi-| element ocuring in the question word /piŋka/ ‘how many?’ (Constenla Umaña 1998: 48)

*ᵐbitsi ~ *ᵐbisi ‘hummingbird’ > |piɬi| ‘hummingbird’ (Constenla Umaña 1998: 47)

*ᵐbuⁿdi ~ *ᵐbuiⁿd ~ *ᵑguⁿdi ~ *ᵑguiⁿd ‘woman (adult)’ > /kuɾi/ ‘wife’ (Constenla Umaña 1998: 10)

*ⁿdi instrumental/locative > *-ti* ergative suffix (Constenla Umaña 1998: 115)

*(ⁿd)iˈa ‘to wear’ > |**tio**ka| ‘clothes’ (Constenla Umaña 1998: 44)

*ⁿdiⁿda / *ⁿdisa ‘dry$_1$’ > **/tiɬa**:xa/ ‘dry’ (Constenla Umaña 1981: 376)

*ⁿdiʔ ‘water, river’ > /tiː/ ‘water’ (Constenla Umaña 1998: 9)

*huⁿdĩ ~ uⁿdĩʔ ‘monkey’ > /uːɾiuːɾi/ ‘howler monkey’ (Constenla Umaña 1981: 399)

*ki ‘rope, string$_1$’ > /kiː/ ‘liana’ (Constenla Umaña 1998: 9)

*kuⁿdi ~ *kuiⁿd ‘rodent, large’ > /kuːɾi/ ‘agouti’ (Constenla Umaña 1981: 405)

*kʷik ‘arm, wing, shoulder’ > |kuiKi ~ kuki | **/kuiŋ**ka/ ‘wing’ (Constenla Umaña 1998: 25)

*sih ‘meat, flesh$_2$’ > **/ɬi**ki/ ‘flesh’ (Constenla Umaña 1998: 10)

*siʔ ‘moon’ > **/ɬi**xi/ ‘moon’ (Constenla Umaña 1998: 9)

{*u, *ũ} > *u*

*ᵐbuⁿd- ‘breath, wind’ > **/pu**:**ɾ**a/ ‘wind’ (Constenla Umaña 1981: 432)

*ᵐbuⁿdi ~ *ᵐbuiⁿd ~ *ᵑguⁿdi ~ *ᵑguiⁿd ‘woman (adult)’ > /kuɾi/ ‘wife’ (Constenla Umaña 1998: 10)

*ᵐbuⁿd(ũ) ‘ashes’ > |puɾu| ‘ash’ (Constenla Umaña 1998: 44)

*ⁿdu ‘to cook$_2$’ > **/tu**:xe/ ‘to cook’ (Constenla Umaña 1981: 374)

*ⁿdua ‘tobacco’ > |tua|, /tuːa/ ‘tobacco’ (Constenla Umaña 1998: 15, 44)

*(ⁿd-)uᵐba ‘brother-in-law’ > |uɸa| ‘brother-in-law’ (Constenla Umaña 1998: 43)

*ⁿduh(k) ‘tail$_2$’ > |tu| /tuŋ/ ‘tail’ (Constenla Umaña 1998: 13, 55)

*ⁿdu-kuⁿd(a) / *ⁿdu-kus(a) ‘nape$_1$’ > /tukuːɾa/ ‘nape’ (Constenla Umaña 1981: 403)

*ᵑgu ‘to take’ > /kuː/ ‘to take’ (Constenla Umaña 1981: 419)

*ᵑgua ‘to kill’ > /kuaː/ ‘to kill’ (Constenla Umaña 1981: 393)

*hu ‘house’ > /uː/ ‘house’ (Constenla Umaña 1981: 390)

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > /uːɾiuːɾi/ ‘howler monkey’ (Constenla Umaña 1981: 399)

*hutsi ~ *huits ‘urine’ > ***u ˈʧu*** ‘to urinate’ (Constenla Umaña 1998: 119)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > /kuːɾi/ ‘agouti’ (Constenla Umaña 1981: 405)

*kuʔ(-Ba) ‘tongue’ > /kuː/ ‘tongue’ (Constenla Umaña 1981: 423)

***kũʔ** ‘louse’ > /kuː/ ‘louse’ (Constenla Umaña 1981: 397)

*pu ‘young, sprout’ > /puː/ ‘egg’ (Constenla Umaña 1981: 379)

*suʔ ‘to peel’ > **/ɬu**ːki/ ‘to peel, skin’ (Constenla Umaña 1981: 405)

***uu > au**

*^{m}buuʔ ‘two’ > |pauKi ~ paKi| **/pauŋ**ka/ ‘two’ (Constenla Umaña 1998: 15, 24)

2.3.12.2.2 Reflexes of Proto-Chibchan consonants in Guatuso (cf. also Constenla Umaña 1981: 219–43)

***p > *p* / #__**

***p > *ɸ* / elsewhere**

*apa ‘body’ > /ton**ɸa**/ ‘I myself’ (Sp. *yo mismo*) (Constenla Umaña 1998: 14)

*pu ‘young, sprout’ > /puː/ ‘egg’ (Constenla Umaña 1981: 379)

***^{m}b > *p* / #__**

***^{m}b > *ɸ* / V__V**

*-^{m}ba nominalizer$_{1}$ > *-su ˈ**ɸa***, *-ˈ*i**ɸa*** nominalizing suffixes (cf. Constenla Umaña 1998: 134)

*^{m}bahka(i) ‘four’ > |pake| ‘four’ (Constenla Umaña 1998: 65)

*^{m}baʔ ‘you’ > |poː| ‘you’ (Constenla Umaña 1998: 43)

*^{m}bãʔ(ĩ) ‘three’ > |poi| ‘three’ (Constenla Umaña 1998: 48)

*^{m}bi- ‘how much, how many’ > |pi-| element ocuring in the question word /piŋka/ ‘how many?’ (Constenla Umaña 1998: 48)

*^{m}bitsi ~ *^{m}bisi ‘hummingbird’ > |piɬi| ‘hummingbird’ (Constenla Umaña 1998: 47)

*^{m}bu^{n}d- ‘breath, wind’ > **/pu**ːɾa/ ‘wind’ (Constenla Umaña 1981: 432)

*^{m}bu^{n}d(ũ) ‘ashes’ > |puɾu| ‘ash’ (Constenla Umaña 1998: 44)

*^{m}buuʔ ‘two’ > |pauKi ~ paKi| **/pauŋ**ka/ ‘two’ (Constenla Umaña 1998: 15, 24)

*^{n}da^{m}ba ‘feline$_{1}$’ > |taɸa| ‘feline’ (Constenla Umaña 1998: 44)

*(ⁿd-)uᵐba ‘brother-in-law’ > |uɸa| ‘brother-in-law’ (Constenla Umaña 1998: 43)

***saⁿd(V) > {*ɬalV, ɬolV, ɬoɾV*}**

*ⁿda(ⁿd) / *sa(ⁿd) ‘creeping animal’ > **/ɬal**aŋ/ [ˈ**ɬal**aŋ] ‘snake’ (Constenla Umaña 1998: 41)

*saⁿda ‘wound, trace’ > |ɬo:lo| 'trace' (Constenla Umaña 1998: 47)

***ⁿd > *t* / +__**

***ⁿd > *ɾ* / V__V**

*ᵐbuⁿd- ‘breath, wind’ > **/pu**:**ɾ**a/ ‘wind’ (Constenla Umaña 1981: 432)

*ᵐbuⁿdi ~ *ᵐbuiⁿd ~ *ᵑguⁿdi ~ *ᵑguiⁿd ‘woman (adult)’ > /kuɾi/ ‘wife’ (Constenla Umaña 1998: 10)

*ᵐbuⁿd(ũ) ‘ashes’ > |puɾu| ‘ash’ (Constenla Umaña 1998: 44)

*ⁿda ‘to come’ > |to| ‘to come’ (cf. Constenla Umaña 1998: 33)

*ⁿdaᵐba ‘feline$_1$’ > |taɸa| ‘feline’ (Constenla Umaña 1998: 44)

*ⁿdaH(ⁿd) ‘I$_1$’ > |to:|, /ton/ ‘I’ (Constenla Umaña 1998: 13)

*ⁿdai ‘to walk’ > |**toi**+Ki| ‘to pass’ (Constenla Umaña 1998: 26)

*ⁿdaʔ ~ *taʔ ‘to go$_2$’ > |to| future tense marker (Sp. *futuro mediato*) (Constenla Umaña 1998: 36)

*ⁿdi instrumental/locative > *-ti* ergative suffix (Constenla Umaña 1998: 115)

*(ⁿd)iˈa ‘to wear’ > |**tio**ka| ‘clothes’ (Constenla Umaña 1998: 44)

*ⁿdiⁿda / *ⁿdisa ‘dry$_1$’ > **/tiɬa**:xa/ ‘dry’ (Constenla Umaña 1981: 376)

*ⁿdiʔ ‘water, river’ > /ti:/ ‘water’ (Constenla Umaña 1998: 9)

*ⁿdu ‘to cook$_2$’ > **/tu**:xe/ ‘to cook’ (Constenla Umaña 1981: 374)

*ⁿdua ‘tobacco’ > |tua|, /tu:a/ ‘tobacco’ (Constenla Umaña 1998: 15, 44)

*ⁿduh(k) ‘tail$_2$’ > |tu| /tuŋ/ ‘tail’ (Constenla Umaña 1998: 13, 55)

*ⁿdu-kuⁿd(a) / *ⁿdu-kus(a) ‘nape$_1$’ > /tuku:ɾa/ ‘nape’ (Constenla Umaña 1981: 403)

*huⁿdĩ ~ uⁿdĩʔ ‘monkey’ > /u:ɾiu:ɾi/ ‘howler monkey’ (Constenla Umaña 1981: 399)

*kuⁿdi ~ *kuiⁿd ‘rodent, large’ > /ku:ɾi/ ‘agouti’ (Constenla Umaña 1981: 405)

k > *k

*atsa-ka^{n}da ‘chicken’ > |tʃakara| (Constenla Umaña 1998: 47)

*^{m}bahka(i) ‘four’ > |pake| ‘four’ (Constenla Umaña 1998: 65)

*^{n}daka/*saka ‘brother$_2$’ > /ɬaka/ ‘brother’ (Constenla Umaña 1998: 9)

*^{n}du-ku^{n}d(a) / *^{n}du-kus(a) ‘nape$_1$’ > /tukuːɾa/ ‘nape’ (Constenla Umaña 1981: 403)

*haka ‘tooth (molar)’ > /oka/ (Constenla Umaña 1998: 12)

*ka allative/dative > *-ko* ‘in, inside, to, toward (locative, ilocative, alocative, temporal)’ (Constenla Umaña 1998: 107)

*-ka nominalizer$_3$ > Guatuso *-ko* ~ -ˈ*ko* nominalizer (cf. Constenla Umaña 1998: 92)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > /**ko**ːɾa/ ‘tree, trunk of a tree, wood’ (Constenla Umaña 1981: 426)

*kãʔ ‘breast, teat$_1$’ > /**ko**ːɾi/ ‘teat’ (Constenla Umaña 1998: 10)

*ki ‘rope, string$_1$’ > /kiː/ ‘liana’ (Constenla Umaña 1998: 9)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > /kuːɾi/ ‘agouti’ (Constenla Umaña 1981: 405)

*kuʔ(-Ba) ‘tongue’ > /kuː/ ‘tongue’ (Constenla Umaña 1981: 423)

*kũʔ ‘louse’ > /kuː/ ‘louse’ (Constenla Umaña 1981: 397)

*k^{w}ik ‘arm, wing, shoulder’ > |kuiKi ~ kuki | /**kuiŋ**ka/ ‘wing’ (Constenla Umaña 1998: 25)

k^{w} > *ku

*k^{w}ik ‘arm, wing, shoulder’ > |kuiKi ~ kuki | /**kuiŋ**ka/ ‘wing’ (Constenla Umaña 1998: 25)

^{ŋ}g > *k

*^{m}bu^{n}di ~ *^{m}bui^{n}d ~ *^{ŋ}gu^{n}di ~ *^{ŋ}gui^{n}d ‘woman (adult)’ > /kuɾi/ ‘wife’ (Constenla Umaña 1998: 10)

*^{ŋ}gu ‘to take’ > /kuː/ ‘to take’ (Constenla Umaña 1981: 419)

*^{ŋ}gua ‘to kill’ > /kuaː/ ‘to kill’ (Constenla Umaña 1981: 393)

g^{w} > *xu

*^{ŋ}g^{w}a(k) ‘face’ > *xua* ‘before, in front of’ (Constenla Umaña 1998: 109)

***ʔ > {ː, Ø}**[41]

*^{m}baʔ ‘you’ > |poː| ‘you’ (Constenla Umaña 1998: 43)

[41] For Guatuso *o* reflecting Proto-Chibchan *aʔ, see above.

*^{m}buuʔ ‘two’ > |pauKi ~ paKi| /**pauŋ**ka/ ‘two’ (Constenla Umaña 1998: 15, 24)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > |to| future tense marker (Sp. *futuro mediato*) (Constenla Umaña 1998: 36)

*^{n}diʔ ‘water, river’ > /ti:/ ‘water’ (Constenla Umaña 1998: 9)

*kãʔ ‘breast, teat$_1$’ > /**ko**:ri/ ‘teat’ (Constenla Umaña 1998: 10)

*kuʔ(-Ba) ‘tongue’ > /ku:/ ‘tongue’ (Constenla Umaña 1981: 423)

*kũʔ ‘louse’ > /ku:/ ‘louse’ (Constenla Umaña 1981: 397)

*siʔ ‘moon’ > /**ɬi**xi/ ‘moon’ (Constenla Umaña 1998: 9)

*suʔ ‘to peel’ > /**ɬu**:ki/ ‘to peel, skin’ (Constenla Umaña 1981: 405)

ts > *ʧ

*atsa-ka^{n}da ‘chicken’ > |tʃakara| (Constenla Umaña 1998: 47)

*hutsi ~ *huits ‘urine’ > ***u*** ˈ***ʧu*** ‘to urinate’ (Constenla Umaña 1998: 119)

*tsa ‘hair, head’ > |ʧa: ~ ʧa|, /ʧi:a/ ‘head, upper part’ (Constenla Umaña 1998: 9, 27)

s > *ɬ

*^{m}bitsi ~ *^{m}bisi ‘hummingbird’ > |piɬi| ‘hummingbird’ (Constenla Umaña 1998: 47)

*^{n}da(^{n}d) / *sa(^{n}d) ‘creeping animal’ > /**ɬal**aŋ/ [ˈ**ɬal**aŋ] ‘snake’ (Constenla Umaña 1998: 41)

*^{n}daka/*saka ‘brother$_2$’ > /ɬaka/ ‘brother’ (Constenla Umaña 1998: 9)

*^{n}di^{n}da / *^{n}disa ‘dry$_1$’ > /**tiɬa**:xa/ ‘dry’ (Constenla Umaña 1981: 376)

*sa^{n}da ‘wound, trace’ > |ɬo:lo| 'trace' (Constenla Umaña 1998: 47)

*siʔ ‘moon’ > /**ɬi**xi/ ‘moon’ (Constenla Umaña 1998: 9)

*sih ‘meat, flesh$_2$’ > /**ɬi**ki/ ‘flesh’ (Constenla Umaña 1998: 10)

*suʔ ‘to peel’ > /**ɬu**:ki/ ‘to peel, skin’ (Constenla Umaña 1981: 405)

h > *Ø

*^{m}bahka(i) ‘four’ > |pake| ‘four’ (Constenla Umaña 1998: 65)

*^{n}duh(k) ‘tail$_2$’ > |tu| /tuŋ/ ‘tail’ (Constenla Umaña 1998: 13, 55)

*hu ‘house’ > /u:/ ‘house’ (Constenla Umaña 1981: 390)

*hutsi ~ *huits ‘urine’ > ***u*** ˈ***ʧu*** ‘to urinate’ (Constenla Umaña 1998: 119)

*sih ‘meat, flesh$_2$’ > /**ɬi**ki/ ‘flesh’ (Constenla Umaña 1998: 10)

#L > *ɾ

*La ‘egg, offspring’ > ˈ***oɾa*** ‘diminutive marker (Constenla Umaña 1998: 82)

2.3.13 Guaymí

Guaymí (also known as Ngäbere or Movere) is spoken by some 163,000 people in Panama, and about 2,500 people in Costa Rica (cf. Quesada Pacheco 2008: 15). It is the Chibchan language with the largest number of speakers at present (see table 1 above). The autodenomination of the Guaymí is Ngäbe 'people'. The Guaymí language is spoken above all on the Atlantic side of western Panama, in the *Comarca Ngäbe-Buglé* (province of Chiriquí, districts of Baru, Boquete, Bugaba, David, Remedios, San Félix, San Lorenzo, and Tolé). On the Pacific side of Panama, Guaymí is spoken in the provinces of Veraguas (districts of Cañazas and Las Palmas) and Bocas del Toro (district of Changuinola). In Costa Rica, Guaymí is only spoken on the Pacific side, above all in the communities Coto Brus, Conte Burica, Abrojos-Montezuma and on the Osa peninsula (Quesada Pacheco 2008: 15).

The Guaymí people have been in contact with the Spanish invadors since the sixteenth century (Johnson 1948: 51) and have managed to maintain their language and central elements of their culture until the present day (Quesada Pacheco 2008). Jesuit missionaries tried to reduce the Guaymí population of Veraguas several times, but their efforts were interrupted by various uprisings in 1586, 1713, and in 1745 (Hervás y Panduro 1784: 71).

Constenla Umaña (2012: 417) classifies Guaymí within the Eastern Isthmic branch of the Isthmic languages. Other languages classified as Eastern Isthmic by this author are Bocotá and Kuna. Within Eastern Isthmic Chibchan languages, Guaymí and Bocotá form the Guaymiic subgroup.

Important publications on Guaymí are the vocabulary of Pinart (1892) and, above all, Quesada Pacheco's (2008) description of Guaymí morphosyntax. Other sources on Guaymí are, for instance, Kopesec and Kopesec (1974) on phonology and Payne (1982) on the subject concept in Guaymí. Recently, a Guaymí dictionary has been prepared by Quesada Pacheco (2018b). Along with Barí, Guaymí is possibly the only Chibchan language of which there are published data from the language as spoken at present, and from the eighteenth century: a Guaymí word list which had been compiled by Father Blas José Franco in 1792 was published by Pinart in 1882.

The counting system of Guaymí is vigesimal, as evidenced by *xɔtɔ* 'ten', *gɾe* 'twenty', *bu* 'two', and *gɾe-bu* 'fourty' (cf. Quesada Pacheco 2008: 91–2). As in Bocotá (see above), some Guaymí body-part terms have no apparent Chibchan etymology: *druẽ* 'hair', *olo* 'ear', *ison* 'nose', *buɾu* 'belly', and *xũʧi* 'leg, lower leg'. Whether these terms are the remnants of a substrate language, and if so, of which one, remains to be worked out.

2.3.13.1 The sounds of Guaymí

The following two subsections present and discuss Guaymí vowels and consonants, based on information from Quesada Pacheco (2008).

2.3.13.1.1 Guaymí vowels and suprasegmentals

Guaymí has a series of oral and one of nasal vowels. Both sets are the same size. Table 43 shows the oral vowel phonemes of Guaymí.

TABLE 43
GUAYMÍ PHONEMES: ORAL VOWELS

	Front/mid	Back, unrounded	Back, rounded
High	i	ɯ	u
High-mid	e	ɤ	o
Low	a		ɔ

Source: Quesada Pacheco (2008: 23).

Table 44 shows the nasal vowel phonemes of Guaymí.

TABLE 44
GUAYMÍ PHONEMES: NASAL VOWELS

	Front/mid	Back, unrounded	Back, rounded
High	ĩ	ɯ̃	ũ
High-mid	ẽ	ɤ̃	õ
Low	ã		ɔ̃

Source: Quesada Pacheco (2008: 23).

Vowel length is not contrastive in Guaymí (Quesada Pacheco 2008: 36). Sequences of same vowels do not occur, but there are sequences of different vowels which may both be either oral or, less frequently attested, nasal (ibid.: 28–9).

Guaymí has vowel harmony or assimilation which is progressive and regressive: *a* becomes *o* if followed by *u*, and *a* becomes *ɔ* if followed by *ɔ*. This may be illustrated

in the context of the numeral classifier for longish entities, /kɾa/: This element is realized as [kɾo] in [kɾo-bu] 'two longish objects', and as [kɾɔ] in [kɾɔ-xɔtɔ] 'ten longish objects' (Quesada Pacheco 2008: 26). Likewise, *e* becomes *i* if followed by *i*, and *ɤ* becomes *ɯ* if followed by *ɯ*. Progressive assimilation is attested, for instance, in the context of derivational /-gɔ/. In this case, there is a change *-gɔ* to *-ga* if this derivational suffix is preceded by *a*. Also, *i* becomes *ɯ* after *ɯ* or *ɤ* in certain contexts (ibid.: 27).

Progressive nasalization is also attested in Guaymí; nasality of the root vowel spreads rightwards to the possessive marker *-i* (~ *-e*), or to the dative postposition *-ie* in /ɾɯ̃/ 'father' [ɾɯẽ] 'of the father', and in /mũ/ 'you (pl.)' [muiẽ] 'for/to you (pl.)' (Quesada Pacheco 2008: 30). In other cases, nasal elements (vowels or consonants) of the host also affect consonant nasality in the suffix, for instance when initial *ɾ* of the suffix is realized as *n* and *b* as *m* (ibid.: 35). Vowel nasality due to progressive nasalization is frequently found before some specific morphological elements such as certain verbal suffixes and the plural marker /tɾe/; compare /tɔni-tɾe/ [tɔnĩ-tɾe] 'they were' (ibid.: 35).

Stress is phonemic in Guaymí. An exemplary minimal pair is /ˈnibi/ 's/he remained' versus /niˈbi/ 'cow' (Quesada Pacheco 2008: 37), another is /ˈkuɡwe/ 'word, problem' versus /kuˈɡwe/ 'to burn, roast' (ibid.: 42). Whenever the consulted source of Guaymí indicates stress, this is reproduced in the present work. In some cases, stress may change, depending on the suffixes that are attached to the root in question, as in /ˈetaba/ 'brother', /etaˈbaɾe/ 'great-grandson' (ibid.: 37), or depending on still unknown factors: for instance, the root /biʃo/ 'old woman' may be realized with stress on the first or on the second syllable in different contexts (ibid.: 40–1).

There is a tendency to lose the first vowel in a C_1VC_2V structure if C_2 is an dental/alveolar stop, a tap or a lateral, for instance in /biti/ [bti] 'soon', /mɤɾɤ/ [mɾɤ] 'food', or /bɯlɯ/ [blɯ] 'flower' (Quesada Pacheco 2008: 29).

Quesada Pacheco (2008) does not find tone in Guaymí to be contrastive at present, but this does not exclude the possibility that the language or some dialects had phonemic tone in the past (ibid.: 42). In fact, Abarca (1985: 18), cited in Quesada Pacheco (2008: 42), identifies high and low tone in Guaymí, for instance in /tù/ 'tooth', /kɾì/ 'tree', /kɾí/ 'tall', and /kɔ̀/ 'name'. These tones are not reproduced in the present work, which is based on Quesada Pacheco (2008), since the existence of lexical tone in the terms in question was not corroborated by the consultants in his study (ibid.: 42).

2.3.13.1.2 Guaymí consonants

Table 45 gives an overview of Guaymí consonant phonemes.

TABLE 45
GUAYMÍ PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar
Voiceless stops		t		k
Voiced stops	b	d		g
Voiceless affricate			ʧ	
Voiced affricate			ʤ	
Fricatives		s		x
Nasals	m	n	ɲ	ŋ
Lateral		l		
Vibrant		ɾ		

Source: Quesada Pacheco (2008: 30).

The voiceless stops and affricate /t/, /k/ and /ʧ/ are frequently realized as [ɡ], [d], and [ʤ] in rapid speech, for instance in /babiʧo/ [babiˈʤo] ‘turkey’. Voiced allophones of /t/ and /k/ are always found after a nasal vowel, as for instance in /medẽte/ [meˈdẽde] ‘where?’ (Quesada Pacheco 2008: 32–3). Instead, the voiced stops /b/, /d/, and /g/ are often realized, in rapid speech, as [β], [ð], and [ɣ], for instance in /bobota/ [boβoˈda] ‘toad’ (ibid.: 32).

The sequences *kw*, *gw* and *ŋw* are interpreted as labialized velars /k^{w}/, /g^{w}/ and /ŋ^{w}/ by Kopesec and Kopesec (1974, cited in Quesada Pacheco 2008: 30). I tentatively follow Quesada Pacheco’s interpretation in the present work. The question of labialized velar consonants in Guaymí requires further investigation. The glides *w* and *j* mostly occur in combination with other consonants, as in *kw*, *gw*, *tw*, or *sw* (ibid.: 30, 35–6).

The voiceless fricative /s/ may be realized as [θ] in some cases in Guaymí, for instance in /kɯse/ [ˈkɯθe] ‘hand’ (Quesada Pacheco 2008: 33).

The voiced velar stop /g/ and the tap /ɾ/ are realized as [ŋ] and [n] respectively, when found in the onset of a verbal root which is combined with a suffix containing nasality. For /ɾ/, this is illustrated with /ɾig/ ‘to go’ versus [ˈnigẽ] ‘s/he goes’ (Quesada Pacheco 2008: 34). In several suffixes, nasality depends on (vowel or consonant)

nasality of the host: /keɾẽ/ ‘lazyness’, combined with the derivational suffix /-ɾe/ gives [keˈɾene] ‘sloth’ (ibid.: 35). Nasal consonants in Guaymí are found in syllable onset (word-initially or word-medially), but not in syllable coda (cf. ibid.: 33–4). Both /ɾ/ and /l/ occur word-medially and -initially (ibid.: 34).

Gemination of consonants or long consonants do not exist in Guaymí (Quesada Pacheco 2008: 36).

2.3.13.2 Reflexes of Proto-Chibchan phonemes in Guaymí

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.13.2.1) and of Proto-Chibchan consonants (2.3.13.2.2) in Guaymí.

2.3.13.2.1 Reflexes of Proto-Chibchan vowels (cf. also Constenla Umaña 1981: 277–81)

***a > {*a*, *ɔ*, *e*}**

*apa ‘body’ > /bɔ/ ‘feature, trait’ (Quesada Pacheco 2008: 24)

*^{m}ba comitative$_3$ > *be* ‘with’ (Quesada Pacheco 2008: 64)

*^{m}ba^{n}d- ‘tasty’ > /mane/ [ˈmane] ‘sweet’ (Quesada Pacheco 2008: 34)

*^{m}bahka(i) ‘four’ > *bɔgɔ* ‘four’ (Quesada Pacheco 2008: 91)

*^{n}da(^{n}d) / *sa(^{n}d) ‘creeping animal’ > /sã/ ‘boa’ (Quesada Pacheco 2008: 26)

*^{ŋ}gua ‘to kill’ > ***ŋwa**ga* ‘cadaver’ (Quesada Pacheco 2008: 113)

*^{ŋ}g^{w}a ~ *u^{ŋ}g ‘fish’ > /gwa/ ‘fish’ (Quesada Pacheco 2008: 28)

*^{ŋ}g^{w}a(k) ‘face’ > ***ŋwɔ**ɾe* ‘face’ (Quesada Pacheco 2008: 71)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > ***kwa**ta* ‘bark’ (Quesada Pacheco 2008: 50)

*ia dative > /ie/ dative postposition (Quesada Pacheco 2008: 30)

*ka ‘to catch, grasp’ > *ka* ‘to grasp’ (Quesada Pacheco 2008: 104)

*ka ‘leaf’ > *kɔ* ‘leaf’ (Quesada Pacheco 2008: 55)

*-ka nominalizer$_3$ > *-ga* ~ *-gɔ* agentive nominalizer (Quesada Pacheco 2008: 51)

*k^{w}a ‘seed, fruit’ > *kwɔ-* numeral classifier for roundish entities and years (Quesada Pacheco 2008: 91)

*uk(a) ‘nine, ten’ > *ugɔ̃* ‘nine’ (Quesada Pacheco 2008: 91)

{*ha, *aH, *ãʔ} > ɔ, ɔ̃[42]

*ᵐbahka(i) ‘four’ > *bɔgɔ* ‘four’ (Quesada Pacheco 2008: 91)

*ᵐbaʔ ‘you’ > /mɔ/ ‘you’ (Quesada Pacheco 2008: 31)

*ᵐbãʔ(ĩ) ‘three’ > *mɔ* ‘three’ (Quesada Pacheco 2008: 91)

*ⁿdaʔ ~ *taʔ ‘to go$_2$’ > *nɔ̃* ‘to go, walk’ (Quesada Pacheco 2008: 107)

*hak ~ *kaʔ ‘stone’ > /xɔ/ ‘stone’ (Quesada Pacheco 2008: 24)

*haka ~ *akaʔ ‘name’ > *kɔ* ‘name’ (Quesada Pacheco 2008: 72)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place) > /kɔ/ ‘space, day’ (Quesada Pacheco 2008: 26, 50)

*Laʔ ‘smell’ > *ɾɔ* ‘smell (noun)’ (Quesada Pacheco 2008: 88)

***aBa > {*ibo*, *ɤbɤ*, *ubu*, *obo*}**

*ⁿdaᵐba- ‘cold, cold substance’ > *tibo* ‘cold’ (Quesada Pacheco 2008: 54)

*ᵑgaᵐba ‘son, child’ > /ŋobo/ ‘son’ (Quesada Pacheco 2008: 24)

*kap- ‘to sleep’ > ***kub****u* ‘to sleep’ (Quesada Pacheco 2008: 107), ***kɤbɤ*** ‘to dream’ (ibid.: 105)

***au > {*u*, *ɯ*}**

*hauᵐb ~ *aᵐbuʔ ‘to bathe, swim’ > *xub/xub* ‘to bathe’ (Quesada Pacheco 2008: 107)

*ᵐbau(ⁿd) ~ *kau(ⁿd) ‘to holler’ > *mu* ‘to weep’ (Quesada Pacheco 2008: 107)

*ᵑga-u (ka[k]) ‘fireplace’ > **/ŋu**bu/ ‘smoke (noun)’ (Quesada Pacheco 2008: 24)

*tau ‘dog’ > /nu/ ‘dog’ (Quesada Pacheco 2008: 25)

***i > {*i*, *e*, *ɤ*}**

*ᵐbi- ‘how much, how many’ > /-be/ ‘how much?’ (Quesada Pacheco 2008: 35)

*ᵐbitsi ~ *ᵐbisi ‘hummingbird’ > *mitʃi* ‘hummingbird’ (Quesada Pacheco 2008: 26)

*ⁿdi ‘who, someone’ > *ni* ‘person’ (Quesada Pacheco 2008: 51)

*ⁿdiʔ ‘water, river’ > *ɲɤ* ‘water’ (Quesada Pacheco 2008: 50)

*ᵑgi ‘firewood’ > *ŋi* ‘firewood’ (Quesada Pacheco 2008: 55)

*hi ‘path’ > /xi/ ‘path’ (Quesada Pacheco 2008: 24)

*-i possessed > *-e* (after high vowels) or *-i* (elsewhere) (Quesada Pacheco 2008: 73)

*ia dative > /ie/ dative postposition (Quesada Pacheco 2008: 30)

*i(k) ‘manioc’ > /ɤ/ ‘manioc’ (Quesada Pacheco 2008: 24)

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[42] A similar sound change has be observed in Guatuso above.

*ki ‘rope, string$_1$’ > /kɤ/ ‘cord’ (Quesada Pacheco 2008: 24)

*ku^{n}di ~ *kui^{n}d ‘to eat’ > *kwet-* ‘to eat’ (Quesada Pacheco 2008: 101)

*k^{w}ik ‘arm, wing, shoulder’ > **/ŋwi**je/ ‘wing’ (Quesada Pachco 2008: 157)

*siʔ ‘moon’ > /sɤ/ ‘moon’ (Quesada Pacheco 2008: 25)

*suh(-kui) ‘rodent, small’ > *tugwe* ‘mouse’ (Quesada Pacheco 2008: 135)

ĩ > *ĩ

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > *xurĩ* ‘monkey’ (Quesada Pacheco 2008: 67)

ii > *ẽ

*ʦii ‘night, dark’ > /ʧẽ/ ‘black’ (Quesada Pacheco 2008: 31)

{*u, *ũ, *uu} > {*u*, *w*, *ũ*}

*^{m}bu^{n}d- ‘breath, wind’ > **/bur**e/ ‘breath’ (Quesada Pacheco 2008: 32)

*Bu^{n}d- ‘small$_1$’ > ***bur****e* ‘tiny’ (Quesada Pacheco 2008: 51)

*^{m}buuʔ ‘two’ > *bu* ‘two’ (Quesada Pacheco 2008: 91)

*^{n}du- ‘to stand (singular)’ > *nũ* ‘to live’ (Quesada Pacheco 2008: 106)

*^{n}du(^{n}d) ‘bird, dove’ > **/nu**gwɔ/ ‘bird’ (Quesada Pacheco 2008: 31)

*^{n}dũ(-i) ‘father, uncle, ancestor’ > ***ɾu****a* ‘ancestor’ (Quesada Pacheco 2008: 74), ‘old man’ (Sp. *anciano*) (ibid.: 122), *ɾũ* ‘father’ (ibid.: 74)

*^{n}duʔ ‘armadillo’ > **/nu**si/ [ˈ**nu**si] ‘armadillo’ (Quesada Pacheco 2008: 34)

*^{n}duʔ ‘tooth’ > /tu/ ‘tooth’ (Quesada Pacheco 2008: 24)

*^{ŋ}gua ‘to kill’ > ***ŋwa****ga* ‘cadaver’ (Quesada Pacheco 2008: 113)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > **/gur**e/ ‘married’ (Quesada Pacheco 2008: 24)

*hu ‘house’ > /xu/ ‘house’ (Quesada Pacheco 2008: 31)

*hũ ‘pot’ > ***u****gwẽ* ‘pot’ (Quesada Pacheco 2008: 135)

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > *xurĩ* ‘monkey’ (Quesada Pacheco 2008: 67)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > ***kwa****ta* ‘bark’ (Quesada Pacheco 2008: 50)

*ku(^{n}d-) ‘feline$_2$’ > ***kuɾ****a* ‘jaguar’ (Quesada Pacheco 2008: 67)

*ku^{n}di ~ *kui^{n}d ‘to eat’ > *kwet-* ‘to eat’ (Quesada Pacheco 2008: 101)

*kuh ‘seven’ > ***ku****gu* ‘seven’ (Quesada Pacheco 2008: 91)

*pũʔ ‘raptor’ > *mu* ‘eagle’ (Quesada Pacheco 2008: 69)

*suh(-kui) ‘rodent, small’ > *tugwe* ‘mouse’ (Quesada Pacheco 2008: 135)

*su ‘to see’ > *tu* ‘to see’ (Quesada Pacheco 2008: 104)

*uB(V)(-ta) ‘sand’ > *umã* ‘sand’ (Quesada Pacheco 2008: 81)

*u^{n}du ‘cedar’ > /ɾu/ [ɾu] ‘boat’ (Quesada Pacheco 2008: 34)

*uk(a) ‘nine, ten’ > *ugɔ̃* ‘nine’ (Quesada Pacheco 2008: 91)

*u^{n}du ‘angry’ > *ɾɯ*, *ɾuɾɯ* ‘to fight’ (Sp. *pelear*, *guerrear*) (Quesada Pacheco 2008: 107)

2.3.13.2.2 Reflexes of Proto-Chibchan consonants in Guaymí (cf. also Constenla Umaña 1981: 281–4)

***p > {*b*, *m*}**

*apa ‘body’ > /bɔ/ ‘feature, trait’ (Quesada Pacheco 2008: 24)

*kap- ‘to sleep’ > ***kub****u* ‘to sleep’ (Quesada Pacheco 2008: 107), ***kɤbɤ*** ‘to dream’ (ibid.: 105)

*pũʔ ‘raptor’ > *mu* ‘eagle’ (Quesada Pacheco 2008: 69)

***^{m}b > {*b*, *m*}**

*hau^{m}b ~ *a^{m}buʔ ‘to bathe, swim’ > *xub/xuɯb* ‘to bathe’ (Quesada Pacheco 2008: 107)

*^{m}ba comitative$_3$ > *be* ‘with’ (Quesada Pacheco 2008: 64)

*^{m}ba^{n}d- ‘tasty’ > /mane/ [ˈmane] ‘sweet’ (Quesada Pacheco 2008: 34)

*^{m}bahka(i) ‘four’ > *bɔgɔ* ‘four’ (Quesada Pacheco 2008: 91)

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > *mu* ‘to weep’ (Quesada Pacheco 2008: 107)

*^{m}baʔ ‘you’ > /mɔ/ ‘you’ (Quesada Pacheco 2008: 31)

*^{m}bãʔ(ĩ) ‘three’ > *mɔ* ‘three’ (Quesada Pacheco 2008: 91)

*^{m}bi- ‘how much, how many’ > /-be/ ‘how much?’ (Quesada Pacheco 2008: 35)

*^{m}bitsi ~ *^{m}bisi ‘hummingbird’ > *mitʃi* ‘hummingbird’ (Quesada Pacheco 2008: 26)

*^{m}bu^{n}d- ‘breath, wind’ > **bur**e/ ‘breath’ (Quesada Pacheco 2008: 32)

*^{m}buuʔ ‘two’ > *bu* ‘two’ (Quesada Pacheco 2008: 91)

*^{n}da^{m}ba- ‘cold, cold substance’ > *tibo* ‘cold’ (Quesada Pacheco 2008: 54)

*^{ŋ}ga^{m}ba ‘son, child’ > /ŋobo/ ‘son’ (Quesada Pacheco 2008: 24)

t > *n

*tau ‘dog’ > /nu/ ‘dog’ (Quesada Pacheco 2008: 25)

***^{n}d > *n*, *t*, *ɲ*, *ɾ*/ #__**

***^{n}d > n /*a*__V$_{[front]}$**[43]

***^{n}d > *ɾ* / V$_{[other]}$__V$_{[other]}$**

***^{n}d > *t* / __#**

*^{m}ba^{n}d- ‘tasty’ > /mane/ [ˈmane] ‘sweet’ (Quesada Pacheco 2008: 34)

*^{m}bu^{n}d- ‘breath, wind’ > **/bu*ɾ*e/** ‘breath’ (Quesada Pacheco 2008: 32)

*Bu^{n}d- ‘small$_1$’ > ***bu**ɾe* ‘tiny’ (Quesada Pacheco 2008: 51)

*^{n}da^{m}ba- ‘cold, cold substance’ > *tibo* ‘cold’ (Quesada Pacheco 2008: 54)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > *nɔ̃* ‘to go, walk’ (Quesada Pacheco 2008: 107)

*^{n}di ‘who, someone’ > *ni* ‘person’ (Quesada Pacheco 2008: 51)

*^{n}diʔ ‘water, river’ > *ɲɤ* ‘water’ (Quesada Pacheco 2008: 50)

*^{n}du- ‘to stand (singular)’ > *nũ* ‘to live’ (Quesada Pacheco 2008: 106)

*^{n}du(^{n}d) ‘bird, dove’ > **/nu**gwɔ/ ‘bird’ (Quesada Pacheco 2008: 31)

*^{n}dũ(-i) ‘father, uncle, ancestor’ > ***ɾu**a* ‘ancestor’ (Quesada Pacheco 2008: 74), ‘old man’ (Sp. *anciano*) (ibid.: 122), *ɾũ* ‘father’ (ibid.: 74)

*^{n}duʔ ‘armadillo’ > **/nu**si/ [ˈ**nu**si] ‘armadillo’ (Quesada Pacheco 2008: 34)

*^{n}duʔ ‘tooth’ > /tu/ ‘tooth’ (Quesada Pacheco 2008: 24)

*ŋgu^{n}daʔ ‘hand, arm’ > **/gu*ɾ*e/** ‘married’ (Quesada Pacheco 2008: 24)

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > *xuɾĩ* ‘monkey’ (Quesada Pacheco 2008: 67)

*ku(^{n}d-) ‘feline$_2$’ > ***ku**ɾa* ‘jaguar’ (Quesada Pacheco 2008: 67)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > ***kɾɔ***- numeral classifier for longish entities (Quesada Pacheco 2008: 91)

*ku^{n}di ~ *kui^{n}d ‘to eat’ > *kwet*- ‘to eat’ (Quesada Pacheco 2008: 101)

*Laʔ ‘smell’ > *ɾɔ* ‘smell (noun)’ (Quesada Pacheco 2008: 88)

*u^{n}du ‘angry’ > *ɾɯ*, *ɾɯɾɯ* ‘to fight’ (Sp. *pelear*, *guerrear*) (Quesada Pacheco 2008: 107)

*u^{n}du ‘cedar’ > /ɾu/ [ɾu] ‘boat’ (Quesada Pacheco 2008: 34)

[43] Possibly only on the phonetic level: compare /aɾi/ ‘let’s go’ (Quesada Pacheco 2008: 23) versus *ani* ‘let’s go’ (ibid.: 71, 81).

***k > *k* / #__**

***k > *g* / V__V**

***k > Ø /__+**

*^{m}bahka(i) ‘four’ > *bɔgɔ* ‘four’ (Quesada Pacheco 2008: 91)

*hak ~ *kaʔ ‘stone’ > /xɔ/ ‘stone’ (Quesada Pacheco 2008: 24)

*haka ~ *akaʔ ‘name’ > *kɔ* ‘name’ (Quesada Pacheco 2008: 72)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > ***kwa**ta* ‘bark’ (Quesada Pacheco 2008: 50)

*ka ‘to catch, grasp’ > *ka* ‘to grasp’ (Quesada Pacheco 2008: 104)

*ka ‘leaf’ > *kɔ* ‘leaf’ (Quesada Pacheco 2008: 55)

*-ka nominalizer$_3$ > *-ga ~ -gɔ* agentive nominalizer (Quesada Pacheco 2008: 51)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > ***kɾɔ***- numeral classifier for longish entities (Quesada Pacheco 2008: 91)

*kap- ‘to sleep’ > ***kub**u* ‘to sleep’ (Quesada Pacheco 2008: 107), ***kɤb**ɤ* ‘to dream’ (ibid.: 105)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place) > /kɔ/ ‘space, day’ (Quesada Pacheco 2008: 26, 50)

*ki ‘rope, string$_1$’ > /kɤ/ ‘cord’ (Quesada Pacheco 2008: 24)

*ku(^{n}d-) ‘feline$_2$’ > ***kuɾ**a* ‘jaguar’ (Quesada Pacheco 2008: 67)

*kuh ‘seven’ > ***kɯ**gu* ‘seven’ (Quesada Pacheco 2008: 91)

*k^{w}ik ‘arm, wing, shoulder’ > ***ŋwi**je* ‘wing’ (Quesada Pachco 2008: 157)

*suh(-kui) ‘rodent, small’ > *tugwe* ‘mouse’ (Quesada Pacheco 2008: 135)

*uk(a) ‘nine, ten’ > *ugɔ̃* ‘nine’ (Quesada Pacheco 2008: 91)

***^{ŋ}g > {*g*, *ŋ*}**

*^{ŋ}ga^{m}ba ‘son, child’ > /ŋobo/ ‘son’ (Quesada Pacheco 2008: 24)

*^{ŋ}ga-u (ka[k]) ‘fireplace’ > **/ŋu**bu/ ‘smoke (noun)’ (Quesada Pacheco 2008: 24)

*^{ŋ}gi ‘firewood’ > *ŋi* ‘firewood’ (Quesada Pacheco 2008: 55)

*^{ŋ}gua ‘to kill’ > ***ŋwa**ga* ‘cadaver’ (Quesada Pacheco 2008: 113)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > **/gu**ɾe/ ‘married’ (Quesada Pacheco 2008: 24)

***k^{w} > {*kw*, *ŋw*}**

*k^{w}a ‘seed, fruit’ > *kwɔ*- numeral classifier for roundish entities and years (Quesada Pacheco 2008: 91)

*k^{w}ik ‘arm, wing, shoulder’ > ***ŋwi**je* ‘wing’ (Quesada Pachco 2008: 157)

***ᵑgʷ > {*ɠw*, *ŋw*}**

*ᵑgʷa(k) ‘face’ > ***ŋwɔre*** ‘face’ (Quesada Pacheco 2008: 71)

*ᵑgʷa ~ *uᵑg ‘fish’ > /ɠwa/ ‘fish’ (Quesada Pacheco 2008: 28)

***ʔ > Ø**[44]

*ᵐbaʔ ‘you’ > /mɔ/ ‘you’ (Quesada Pacheco 2008: 31)

*ᵐbuuʔ ‘two’ > *bu* ‘two’ (Quesada Pacheco 2008: 91)

*ⁿdaʔ ~ *taʔ ‘to go$_2$’ > *nã* ‘to go, walk’ (Quesada Pacheco 2008: 107)

*ⁿdiʔ ‘water, river’ > *ɲɤ* ‘water’ (Quesada Pacheco 2008: 50)

*ⁿduʔ ‘armadillo’ > /**nu**si/ [ˈ**nu**si] ‘armadillo’ (Quesada Pacheco 2008: 34)

*ⁿduʔ ‘tooth’ > /tu/ ‘tooth’ (Quesada Pacheco 2008: 24)

*ᵑguⁿdaʔ ‘hand, arm’ > /**gur**e/ ‘married’ (Quesada Pacheco 2008: 24)

*haka ~ *akaʔ ‘name’ > *kɔ* ‘name’ (Quesada Pacheco 2008: 72)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > ***kwa**ta* ‘bark’ (Quesada Pacheco 2008: 50)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place) > /kɔ/ ‘space, day’ (Quesada Pacheco 2008: 26, 50)

*pũʔ ‘raptor’ > *mu* ‘eagle’ (Quesada Pacheco 2008: 69)

*siʔ ‘moon’ > /sɤ/ ‘moon’ (Quesada Pacheco 2008: 25)

ʦ > *ʧ

*ᵐbiʦi ~ *ᵐbisi ‘hummingbird’ > *miʧi* ‘hummingbird’ (Quesada Pacheco 2008: 26)

*ʦii ‘night, dark’ > /ʧɛ̃/ ‘black’ (Quesada Pacheco 2008: 31)

s > *t* / *__u

***s > *s* / elsewhere**

*ⁿda(ⁿd) / *sa(ⁿd) ‘creeping animal’ > /sã/ ‘boa’ (Quesada Pacheco 2008: 26)

*siʔ ‘moon’ > /sɤ/ ‘moon’ (Quesada Pacheco 2008: 25)

*suh(-kui) ‘rodent, small’ > *tugwe* ‘mouse’ (Quesada Pacheco 2008: 135)

*su ‘to see’ > *tu* ‘to see’ (Quesada Pacheco 2008: 104)

[44] For effects of a Proto-Chibchan glottal stop on the reflex of Proto-Chibchan *a in Guaymí, see above.

***h > {*x*, Ø} / #__u**

***h > *x* / #__V$_{[other]}$**

***h > Ø / __$**

*hau^{m}b ~ *a^{m}buʔ ‘to bathe, swim’ > *xub/xɯb* ‘to bathe’ (Quesada Pacheco 2008: 107)

*^{m}bahka(i) ‘four’ > *bɔgɔ* ‘four’ (Quesada Pacheco 2008: 91)

*hak ~ *kaʔ ‘stone’ > /xɔ/ ‘stone’ (Quesada Pacheco 2008: 24)

*hi ‘path’ > /xi/ ‘path’ (Quesada Pacheco 2008: 24)

*hu ‘house’ > /xu/ ‘house’ (Quesada Pacheco 2008: 31)

*hũ ‘pot’ > ***u****gwẽ* ‘pot’ (Quesada Pacheco 2008: 135)

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > *xuɾĩ* ‘monkey’ (Quesada Pacheco 2008: 67)

*kuh ‘seven’ > ***kɯ****gɯ* ‘seven’ (Quesada Pacheco 2008: 91)

*suh(-kui) ‘rodent, small’ > *tugwe* ‘mouse’ (Quesada Pacheco 2008: 135)

2.3.14 Huetar

There is very little information on the Huetar or Güetar language, formerly spoken in central Costa Rica, in an area extending from the Atlantic watershed to the Pacific coast. An overview of what is known about the Huetar people can be found in Quesada Pacheco (1996b). Their language was used as a 'general language' by the Spaniards, and disappeared during the eighteenth century (Constenla Umaña 2012: 392). All remaining Huetar materials are toponyms, anthroponyms, and lexical elements surviving in the in the area where Spanish is presently spoken but where Huetar was originally spoken (Quesada Pacheco 1990: 10–1). Materials in Huetar elaborated during colonial times, such as catechisms, have not yet been discovered in any archive so far. Information on Huetar has been compiled and published by Lehmann (1920: 236–7), Constenla Umaña (1984a), and Quesada Pacheco (1990, 1992).

The classification of Huetar as a Chibchan language is not evident, given the small amount of lexical forms that have been preserved. The first author to identify Huetar as a Chibchan language was Brinton (1897) whose alleged Huetar materials seem to be Cabécar, however (Constenla Umaña 1984a: 10–1). Nonetheless, Brinton's conclusion was probably right, notwithstanding the incorrect premises: Lehmann (1920: 236–7), in his analysis of Huetar forms (toponyms, anthroponyms) of which he has no translation, connects these with with possible counterparts in different Chibchan languages. The first author to bring about reliable information on Huetar was Constenla Umaña (1984a). He based his conclusion on Huetar as a Chibchan language on only eight terms, however. Of these terms, six refer to plants or animals. Since plant and animal terms are easily borrowed between languages, the evidence for a Chibchan status of Huetar may still benefit from further substantiation. In the present work, only four Huetar terms are discussed as apparently deriving from Proto-Chibchan. A fifth potentially relevant lexical item of Huetar parallels Bribri as identified by Constenla Umaña (1984a: 15): he compared Huetar <yurro> 'spring, source, slope' with Bribri (Coroma) [ɟóɽ] 'current, fountain' (the latter form is from Chevrier 2017a: 469). Cognate forms in other Chibchan languages may be attested in Atanques <din**gúna**> 'brook, rivulet' (Sp. *arroyo*) (Celedón 1892a: 592), Boruca *díʔ* ***ʤuʔ****krá* 'well' (Sp. *pozo*) (Quesada Pacheco & Rojas Chaves 1999: 180) and in Kuna *e-joka* 'to pour out' (Holmer 1947: 119). As explicitly stressed by Constenla Umaña (1984a) and Quesada Pacheco (1992: 86), Huetar seems to share some innovations with Guatuso. In both languages, reduplication can be used to indicate plural number of nouns (Constenla Umaña 1984a: 4). A term which is exclusively shared by Huetar and Guatuso is Huetar <urás> 'youngest son', Guatuso /uraŋ/ 'son' (this parallel was identified by Constenla Umaña 1984a: 15). As a difference between both languages, however, the outcomes of Proto-Chibchan *p and *^{m}b seem to have merged in Guatuso, whereas the reflexes of

both proto-segments apparently remained distinct in Huetar (see below). Given the few data on Huetar so far, statements on this language must be taken with caution.

2.3.14.1 The sounds of Huetar

The following inventory of Huetar sounds is based on Constenla Umaña (1984a: 7) and Quesada Pacheco (1990: 21).

2.3.14.1.1 Huetar vowels

Table 46 shows the vowels of Huetar, based on the graphemes attested in the available sources, interpreted by Constenla Umaña (1984a).

TABLE 46
HUETAR VOWELS

	Front	Central	Back
High	<i, y>		<u, v>
High-mid	<e>		<o>
Low		<a>	

Based on Constenla Umaña (1984a: 7).

2.3.14.1.2 Huetar consonants

Concerning Huetar consonants, table 47 shows Quesada Pacheco's (1990: 21) interpretations of the graphemes attested in the sources.

TABLE 47
HUETAR CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar	Glottal
Voiceless stops	<p>	<t>		<c, qu>	
Voiced stops	<b>	<d>		<g>	
Affricate			<ch>		
Fricatives	<f>	<s>		<x>	<h>
Lateral		<l>			
Vibrant		<r, rr>			
Nasals	<m>	<n>			
Glides			<y>	<hu, gu>	

Source: Quesada Pacheco (1990: 21).

The interpretation of the Huetar sound system by Constenla Umaña (1984a: 7), shown in table 48, is slightly different.

TABLE 48
HUETAR CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar	Glottal
Voiceless stops	<p>, (<f>)	<t>		<c, qu>, (<g>)	
Voiced stops	<b>, (<v>)	(<d>)			
Affricate			<ch>		
Fricatives		<s>		<x>	(<h>)
Lateral		<l>			
Vibrant		<r, rr>			
Nasals	<m>	<n>			
Glides	<hu, gu>		<y>		

Source: Constenla Umaña (1984a: 7).

2.3.14.2 Reflexes of Proto-Chibchan phonemes in Huetar

This subsection presents reflexes of Proto-Chibchan vowels (2.3.14.2.1) and of Proto-Chibchan consonants (2.3.14.2.2) in Huetar.

2.3.14.2.1 Reflexes of Proto-Chibchan vowels in Huetar (cf. also Constenla Umaña 1984a)

***a > <a>**

*ka^{n}d- ~ *kat- 'stick, bone, tree' > <**cr**acrá ~ **car**acá> 'corn cob with very few kernels' (Quesada Pacheco 1992: 94)

***u > <u>**

*^{m}bu^{n}d(u) 'bee, wasp' > <burú> a black wasp (Quesada Pacheco 1992: 93)

*pu^{n}d- 'dry$_2$' > <es**pur**uro, es**purr**ú> 'crumbling, an object turning to dust' (Quesada Pacheco 1992: 94)

2.3.14.2.2 Reflexes of Proto-Chibchan consonants in Huetar (cf. also Constenla Umaña 1984a)

***p > <p>**

*pu^{n}d- 'dry$_2$' > <es**pur**uro, es**purr**ú> 'crumbling, an object turning to dust' (Quesada Pacheco 1992: 94)

***^{m}b > <b>**

*^{m}bu^{n}d(u) 'bee, wasp' > <burú> a black wasp (Quesada Pacheco 1992: 93)

***^{n}d > {<r>, <rr>} / V__V**

*^{m}bu^{n}d(u) 'bee, wasp' > <burú> a black wasp (Quesada Pacheco 1992: 93)

*pu^{n}d- 'dry$_2$' > <es**pur**uro, es**purr**ú> 'crumbling, an object turning to dust' (Quesada Pacheco 1992: 94)

***k > <c>**

*ka^{n}d- ~ *kat- 'stick, bone, tree' > <**cr**acrá ~ **car**acá> 'corn cob with very few kernels' (Quesada Pacheco 1992: 94)

2.3.15 Ika

The Ika language is also known as Bíntukua or Arhuaco. Whereas *ika* means 'people', the original meaning of 'Arhuaco' is unknown. This term seems to be an indigenous word which was widely used by the Spaniards in order to refer to several different peoples of northern South America (Landaburu 2000a: 733). It was already used by Piedrahita (1688, cf. Lehmann 1920: 57); also, the Guajiro (Maipuran) call the Yukpa (Cariban) <áruake>, according to Jahn (1927: 358).[45] 'Arhuacan' or 'Arhuacic' are also used as a more general term referring to the Chibchan languages of the Sierra Nevada de Santa Marta (e.g. Adelaar & Muysken 2004: 66, Constenla Umaña 2012: 414): Atanques, Damana, Ika, Kogi, sometimes also including Chimila (Constenla Umaña 2012: 417).

At present, some 8,000 to 14,000 Ika live on the southern slopes of the Sierra Nevada de Santa Marta, mainly in two sectors of the departments of Cesar and Magdalena. The eastern part of the distribution area includes settlements in the Guatapurí river valley, the western part includes settlements in the Ariguaní, Fundación, and Aracataca river valleys. The political center of the Ika, Nabusímake, is situated near Fundación river (Frank 1985: 1; Landaburu 2000a: 733; Adelaar & Muysken 2004: 614). Due to the verticality of their habitat comprising three different climatic zones, the Ika change their place of residence several times during the year, according to harvesting. Recently, they have achieved the recovery of parts of their original territory and have instituted a bilingual education program (Landaburu 2000a: 733). In present-day Colombia, the Ika are probably most well-known as the producers of shoulder bags or *mochilas* that are sold in the bigger cities of the country.

In the context of the Chibchan languages of the Sierra Nevada de Santa Marta, the Ika language has been grouped together with Atanques, Damana, and Chimila, in the subgroup of Eastern-southern Arhuacic languages (Constenla Umaña 2012: 417).

The Ika language has received attention from researchers since the nineteenth century (e.g., Celedón 1886, 1892b). A grammatical overview of the language is given by Frank (1985). Specific topics, such as phonology, verbal person marking and other issues in verbal morphology have been treated by Landaburu (1988, 1992, 1996, 2000a). The main source on Ika consulted in the context of the thesis is the work of the latter author.

As in several other Chibchan languages of Colombia, the indication of verbal person is particularly complex in Ika (e.g. Landaburu 1992: 18). A fundamental feature, in this context, is the differentiation between the speech-act participant (SAP) and the

[45] The ethnonym Arhuaco is etymologically opaque, but there is some formal similarity with Pech *arwã́* 'man' (cf. Holt 1999a: 34).

non-SAP (ibid.: 8–9). The Ika element indicating first person object is formally identical with the element indicating second person subject in a construction such as (11): both can be indicated by a preverbal element *nə=*.

(11) Ika (Landaburu 1992: 17)

nə=ʧwa	*u-ʤ-in*
1.SG.OBJ/2SG.SBJ=see	do-3-DECL

'he saw me', 'you saw him'

2.3.15.1 The sounds of Ika

The following two subsections present and discuss Ika vowels and consonants, based on information from Landaburu (2000a).

2.3.15.1.1 Ika vowels and suprasegmentals

The inventory of Ika vowel phonemes is shown in table 49.

TABLE 49
IKA PHONEMES: VOWELS

	Front	Central	Back
High	i		u
High-mid	e	ə	(o)
Low		a	

Source: Landaburu (2000a: 734).

Stress is not phonemic in this Chibchan language. It is placed on the penultimate of a polysyllabic word and on the only syllable of a monosyllabic word (Landaburu 2000a: 734). Stress affects vowel height in some cases: If stressed, the mid-front vowel /e/ is realized as [ɛ], for instance in /ʤe/ [ʤɛ] 'water', or in /nəteɡwe/ [nʌttɛɡwə] 'my uncle' (ibid.: 735). Likewise, Ika /o/ is realized as [ɔ] if stressed, for instance in /momə/ [mɔmɨ] 'fern', and before a glottal stop. An opposite tendency seems to exist in the context of high vowels: The high back vowel /u/ is realized as closed and tense if stressed, and if followed by a glottal stop. The high front vowel /i/ is realized as rather closed and tense if stressed (ibid.: 735).

The high front vowel /i/ appears as [ɪ] after /j/ and before the nasal archiphoneme /N/: /ɟʃonəjiN/ [ɟʃonəʒɪŋ] 'he enters', or /gajiN/ [gəʒɪŋ] 'he ate' (Landaburu 2000a: 735).[46]

The central vowel /ə/ may be realized as [ə], [ʌ], [ɯ], or [ɨ], depending on stress and preceding and following consonants (compare, for instance, /nəteɡwe/ [nʌttɛgwə] 'my uncle'). In word-final position, unstressed /ə/ is frequently realized as voiceless (ibid.: 735). The realization of /ə/ is very complex. More information can be found in Landaburu (2000a: 735).

The Ika vowel /a/ is realized as anterior and tense if followed by a glottal stop, for instance in [aʔnə] 'stone', but it is realized as a back vowel after the velar stops *k* and *g*, and after the archiphoneme /N/, for instance in /kaɟʃo/ [qɒɟʃo] 'trap' or in /gasiru/ [gɒsiɾu] 'intestine'. In final syllables, which are also unstressed, the outcome of underlying /a/ may resemble an allophone of /ə/, for instance in /bəkəna/ [bək^{k}ɒnʌ] 'center', or /ikəNa/ [ik^{h}ʌŋə] 'they' (ibid.: 735). If followed by a geminated or nasal consonant, /a/ and /ə/ may be realized as [ʌ ~ ə], which makes it difficult to determine the underlying Ika phoneme in cases such as [nʌg^{g}u] 'salt', [kʌt^{t}ə] 'foot' or [gʌŋ] 'to eat' (cf. ibid.).

Finally, there is neither contrastive vowel nasality nor tone, nor vowel length in Ika (Landaburu 2000a: 734).

[46] Generally speaking, before the nasal archiphoneme, there is less diversity of vowels: /e/ and /o/ do not occur, and /a/ only in the case of /aNga/ 'bee, wax' (Landaburu 2000a: 737).

2.3.15.1.2 Ika consonants

Table 50 illustrates the consonant phonemes of Ika.

TABLE 50
IKA PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar
Voiceless stops	p	t	c	k
Voiced stop	b	d		g
Voiceless fricative		s		
Voiced fricative		z		
Voiceless affricate			ʧ	
Voiced affricate			ʤ	
Nasals	m	n		
Vibrant		r		
Glides	w		j	

Source: Landaburu (2000a: 735).

Some speakers of Ika realize /p/, /t/, and /k/ as aspirated in initial position if followed by /ə/ or /u/, for instance in [k^{h}ʌk^{kh}ə] 'tooth' and [t^{h}unə] 'lip' (Landaburu 2000a: 736). The velar stops /k/ and /g/ are realized nearly as uvular stops [q] and [ɢ] if followed by /a/ or /ə/. This phenomenon is found, above all, in the eastern parts of the distribution area. Compare, for instance, /kəməN/ [qɒmʌŋ] 'to sleep', or /ʤirigakə/ '[ʤiɾiɢɒkə] 'hill'. Speakers in the eastern parts of the Ika area also palatalize /g/ before /e/, as in /aʔˈgekwəja/ [aʔˈg^{j}ekwəʒa] 's/he is lying down'. The voiceless velar stop *k* is aspirated in the onset of a word-final open syllable, for instance in [nəkak^{h}ə] 'my father' (ibid.). Although labialized velar consonants such as k^{w} and g^{w} may eventually turn out to exist in Ika, they have so far not been interpreted as separate phonemes (Adelaar & Muysken 2004: 69; cf. Landaburu 2000a). Gemination of consonants is found word-internally, after a stressed, non-low vowel (ˈ*i,* ˈ*u,* ˈ*ə*). Compare, for instance, [ʤug^{g}u] 'bat', [kʌk^{k}ə] 'mouth', [abit^{t}i] 'new', [mʌs^{s}i] 'flea', [gun^{n}ə] 'hand', [kʌm^{m}ʌŋ] 'to sleep', [ʌβ^{β}a] 'seed'. The more conservative, as it were, the speaker is, the more s/he uses geminate consonants in this position. There is more gemination of stops and /s/ than of affricates

or sonants like /m/, /n/, /j/, /w/, where gemination is most frequently used as a stylistic feature (Landaburu 2000a: 736). The glottal stop in Ika has a restricted distribution and occurs only in coda position, where it contrasts with zero in the following exemplary cases: *zi* 'worm' versus *ziʔ* 'red', *ga* 'excrement' versus *gaʔ* 'reason, message' (ibid.: 737). Landaburu (2000a) does not include the glottal stop in his phoneme inventory of Ika; [ʔ] has been interpreted as the allophone of /k/ in word-final position (Adelaar & Muysken 2004: 69).

Likewise, the archiphoneme /N/ is only found in coda position. In word-final position after /u/ and /ə/, it is always realized as [ŋ], as in [kʌŋ] 'stick, tree'. Word-finally after /i/, /N/ is realized as /n/, as in [ʒin] 's/he says'. Before a vowel, /N/ is always realized as [ŋ], and if followed by a consonant, it assimilates to it, as illustrated in /əNmawəN/ [ʌmmaβʌŋ] 'to start weeping'. However, there are exceptions to this rule, since /N/ is realized as [ŋ] before /w/ in [ʌŋβɨ] 'testicle' (ibid.: 737) – alternatively, *w* might be interpreted as an allophone of /u/, in which case /ŋ/ would be the regular outcome of /N/ in this position. Finally, some speakers realize /N/ as [ŋ] throughout before any consonant. Besides /N/, only /ʔ/, /r/, /j/ and /w/ may occur in syllable coda (ibid.: 737).

The glide /w/ is realized as such in initial position if followed by /a/, by some speakers of Nabusímake (central area). Otherwise, /w/ is realized as a voiced bilabial fricative, for instance in [βebɨ] 'egg' (Landaburu 2000a: 736), from Spanish *huevo* 'egg'. The realization of /j/ is variable, too. This phoneme is normally realized as [ʒ], for instance in /jə/ [ʒɨ] 'sloth', but speakers in the central region realize it as a palatal approximant [j] before /a/ or /e/, for example in [jən] 'to say' (ibid.: 736).

2.3.15.2 Reflexes of Proto-Chibchan phonemes in Ika

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.15.2.1) and of Proto-Chibchan consonants (2.3.15.2.2) in Ika.

2.3.15.2.1 Reflexes of Proto-Chibchan vowels in Ika (cf. also Constenla Umaña 1981: 315–7)

***a > {*a*, *ə*, *ʌ*, *i*}**

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- 'new' > [**abit^{t}i**] 'new' (Landaburu 2000a: 736)

*-^{m}ba nominalizer$_1$ > *za**mə*** 'food' (Landaburu 2000a: 734)

*^{m}ba^{n}di 'hunger' > *mari* 'hunger, hungry' (Landaburu 2000a: 734, 736)

*^{m}baʔ ‘beam of light, heat’ > ***tiʔma*** ‘moon’ (Landaburu 2000a: 747)

*^{m}baʔ ‘you’ > *ma* ‘you’ (Landaburu 2000a: 740)

*^{n}da ‘to come’ > ***na****k*- ‘to come’ (Landaburu 2000a: 747)

*^{n}da^{ŋ}g ‘salt’ > [**nʌg^{g}**u] ‘salt’ (Landaburu 2000a: 735)

*^{n}daH(^{n}d) ‘I$_1$’ > *naʔN*, *nəN* ‘I’ (Landaburu 2000a: 740)

*^{n}da(ki^{n}d) ~ *ta(ki^{n}d) ‘back$_1$’ > [tɨkiŋ] ‘behind’ (Landaburu 2000a: 735)

*^{n}diʔ-a ‘liquid’ > *-ria* ‘water’ (Landaburu 2000a: 747)

[*^{n}di-g^{w}a] ‘lake, rain’ > *ʤiwə* ‘lake, rain’ (Landaburu 2000a: 734, 747)

*^{ŋ}ga ‘excrement’ > *ga* ‘excrement’ (Landaburu 2000a: 737)

*^{ŋ}ga^{m}ba ‘son, child’ > ***gəmə****(sinə)* [gʌmə-sinə] ‘son, generation’ (Landaburu 2000a: 734, 737)

*^{ŋ}ga-^{n}di(a) ‘diarrhea’ > /garja/ ‘diarrhea’ (Landaburu 2000a: 737)

*^{ŋ}gua ‘to kill’ > ***gwa****k* ‘to kill’ (Landaburu 2000a: 747)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > *gunə* ‘hand’ (Landaburu 2000a: 747)

*^{ŋ}g^{w}a ~ *u^{ŋ}g ‘fish’ > ***wa****kə* ‘fish’ (Landaburu 2000a: 747)

*^{ŋ}g^{w}ah^{n}d ‘bad$_1$’ > ***waʔ****mə* ‘damage (noun)’ (Landaburu 2000a: 737)

*ka allative/dative > preverbal element *kə* (Frank 1985: 93)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > *kəN* [k^{h}ʌŋ] ‘tree’ (Landaburu 2000a: 736, 747)

*kah-ka ‘mouth’ > *kəkə* [kʌk^{k}ə] ‘mouth’ (Landaburu 2000a: 736, 747)

*ka(ka) ‘father’ > *kakə* ‘father’ (Landaburu 2000a: 734)

*kap- ‘to sleep’ > **/kəm**əN/ [**qɒm**ʌŋ] ‘to sleep’ (Landaburu 2000a: 736)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place) > *kaʔ* ‘earth’ (Landaburu 2000a: 736, 747)

*kaʔ(k)-pu^{n}d- ‘dust’ > [**kapɯɾ**o] ‘dust’ (Landaburu 2000a: 735)

*La ‘egg, offspring’ > ***aʔnə*** ‘stone’ (Landaburu 2000a: 747)

*paH^{n}d- ‘to begin, start, first’ > *-pan*, *-pən* ‘in’ (cf. Frank 1985: 19, 77–8); [pʌna] auxiliary indicating near future (Sp. *auxiliar de futuro cercano*) (Landaburu 2000a: 735)

*pii-^{n}da ‘all$_2$’ > *pinna* ‘all’ (Landaburu 2000a: 747)

*taʔBa ‘red, yellow, ripe’ > ***ʧəmi*** [**ʧʌm**^{m}i] ‘yellow’ (Landaburu 2000a: 736, 748)

*ʦa ‘hair, head’ > *sa* ‘hair of the head’ (Landaburu 2000a: 747)

*ʦaʔ ‘to sit (sg.)’ > *sa* ‘sitting’ (Sp. *sentado*) (Landaburu 2000a: 747)

*ʦi^{n}d(a) ‘small$_2$’ > ***gəmə****(**sinə**)* [gʌmə-sinə] ‘son, generation’ (Landaburu 2000a: 734, 737)

*u^{m}ba ‘face, eye, fruit’ > *umə* ‘eye’ (Landaburu 2000a: 747)

{*ai, *ii} > {*ei*, *e*}

*ʦii 'night, dark' > *sei* 'night' (Landaburu 2000a: 736, 748)

*ʦika ~ *tsaik locative$_3$ > *-seʔ* locative (source, goal), ergative (Frank 1985: 48)

{*au, *uu} > {*aw*, *ou*, *o*}

*hau^{m}b ~ *a^{m}buʔ 'to bathe, swim' > *oum-* 'to swim' (Landaburu 2000a: 747)

*^{m}bau(^{n}d) ~ *kau(^{n}d) 'to holler' > /**maw**ria/ 'tear' (Landaburu 2000a: 734)

*^{m}buuʔ 'two' > ***mou****ga* 'two' (Landaburu 2000a: 747)

{*i, *ii} > {*i*, *j*, *e*}

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- 'new' > [**abitʻ**i] 'new' (Landaburu 2000a: 736)

*^{m}ba^{n}di 'hunger' > *mari* 'hunger, hungry' (Landaburu 2000a: 734, 736)

*^{m}bi^{n}d(i) 'round' > *miN* 'round' (Landaburu 2000a: 748)

*^{n}da(ki^{n}d) ~ *ta(ki^{n}d) 'back$_1$' > [tɨkiŋ] 'behind' (Landaburu 2000a: 735)

*^{n}diʔ 'water, river' > /ʤe/ [ʤɛ] 'water' (Landaburu 2000a: 735)

*^{n}diʔ-a 'liquid' > *-ria* 'water' (Landaburu 2000a: 747)

[*^{n}di-g^{w}a] 'lake, rain' > *ʤiwə* 'lake, rain' (Landaburu 2000a: 734, 747)

*^{ŋ}ga-^{n}di(a) 'diarrhea' > /garja/ 'diarrhea' (Landaburu 2000a: 737)

*^{ŋ}gi 'worm' > *zi* 'worm' (Landaburu 2000a: 737)

*k^{w}ik 'arm, wing, shoulder' > *kwiʔ* 'feather' (Landaburu 2000a: 747)

*pii-^{n}da 'all$_2$' > *pinna* 'all' (Landaburu 2000a: 747)

*siʔ 'moon' > ***tiʔ****ma* 'moon' (Landaburu 2000a: 747)

*suh(-kui) 'rodent, small' > *ʧukwi* [ʧuk^{k}wi] 'mouse' (Landaburu 2000a: 736)

*tu^{n}di ~ *tui^{n}d 'dark' > /twi/ 'black' (Landaburu 2000a: 737)

*ʦi^{n}d(a) 'small$_2$' > *gəmə****(sinə)*** [gʌmə-sinə] 'son, generation' (Landaburu 2000a: 734, 737)

{*u, *ũ} > {*u*, *w*, *uu*, *o*}

*^{m}bu^{n}d- ~ *ku^{n}d- 'to turn around' > ***kur****kənə* 'spindle' (Landaburu 2000a: 734)

*^{m}bu^{n}d(u) 'bee, wasp' > *buN* 'wasp' (Landaburu 2000a: 736)

*^{m}bũ^{n}d(ũ) 'ashes' > ***buN****(səga)* 'ash' (Landaburu 2000a: 748)

*^{n}du 'beautiful' > *du* 'good' (Landaburu 2000a: 736, 747)

*^{n}du- 'to stand (singular)' > **nu-**k- 'to be' (Sp. *estar*) (Landaburu 2000a: 741, 743)

*^{n}du- 'sun, year' > ***ʤwi*** 'sun' (Landaburu 2000a: 747)

*ⁿduh(k) ‘tail$_2$’ > *ʤoʔ* ‘tail’ (Landaburu 2000a: 734, 747)

*(ⁿdu-)ku(ⁿd) ‘bat’ > [ʤugᵍu] ‘bat’ (Landaburu 2000a: 736)

*ᵑgua ‘to kill’ > ***gwa****k* ‘to kill’ (Landaburu 2000a: 747)

*ᵑguⁿdaʔ ‘hand, arm’ > *gunə* ‘hand’ (Landaburu 2000a: 747)

*kaʔ(k)-puⁿd- ‘dust’ > [**kapɯɾ**o] ‘dust’ (Landaburu 2000a: 735)

*kuh ‘to hear$_2$’ > ***ku****kwə* ‘ear’ (Landaburu 2000a: 747)

*kũʔ ‘louse’ > *ku* ‘louse’ (Landaburu 2000a: 734, 747)

*suh(-kui) ‘rodent, small’ > *ʧukwi* [ʧukᵏwi] ‘mouse’ (Landaburu 2000a: 736)

*su ‘to see’ > *ʧw* ‘to see’ (Landaburu 2000a: 747)

*tuⁿdi ~ *tuiⁿd ‘dark’ > /twi/ ‘black’ (Landaburu 2000a: 737)

*ʦuʔ ‘breast, teat$_2$’ > *tu* ‘woman’s breast’ (Landaburu 2000a: 736, 747)

*uᵐba ‘face, eye, fruit’ > *umə* ‘eye’ (Landaburu 2000a: 747)

2.3.15.2.2 Reflexes of Proto-Chibchan consonants in Ika (cf. also Constenla Umaña 1981: 317–20)

***p > *p* / +__**

***p > *m* / V__V**

*kap- ‘to sleep’ > **/kəmə**N/ [**qɒm**ʌŋ] ‘to sleep’ (Landaburu 2000a: 736)

*kaʔ(k)-puⁿd- ‘dust’ > [**kapɯɾ**o] ‘dust’ (Landaburu 2000a: 735)

*paHⁿd- ‘to begin, start, first’ > *-pan*, *-pən* inceptive (cf. Frank 1985: 19, 77–8); [pʌna] auxiliary indicating near future (Sp. *auxiliar de futuro cercano*) (Landaburu 2000a: 735)

*pii-ⁿda ‘all$_2$’ > *pinna* ‘all’ (Landaburu 2000a: 747)

***ᵐb > {*b*, *m*} / __*i**

***ᵐb > *b* / __*u**

***ᵐb > *m* / elsewhere**

*hauᵐb ~ *aᵐbuʔ ‘to bathe, swim’ > *oum-* ‘to swim’ (Landaburu 2000a: 747)

*(a-)ᵐbihⁿd- ~ *(a-)ᵐbiht- ‘new’ > [**abitʻ**i] ‘new’ (Landaburu 2000a: 736)

*ᵐbaʔ ‘beam of light, heat’ > *tiʔ**ma*** ‘moon’ (Landaburu 2000a: 747)

*-ᵐba nominalizer$_1$ > *za**mə*** ‘food’ (Landaburu 2000a: 734)

*ᵐbaⁿdi ‘hunger’ > *mari* ‘hunger, hungry’ (Landaburu 2000a: 734, 736)

*ᵐbau(ⁿd) ~ *kau(ⁿd) ‘to holler’ > **/maw**ria/ ‘tear’ (Landaburu 2000a: 734)

*ᵐbaʔ ‘you’ > *ma* ‘you’ (Landaburu 2000a: 740)

*ᵐba- ‘cloud, fog’ > **/mənj**ə/ ‘cloud’ (Landaburu 2000a: 737)

*ᵐbiⁿd(i) ‘round’ > *miN* ‘round’ (Landaburu 2000a: 748)

*ᵐbũⁿd(ũ) ‘ashes’ > ***buN****(səga)* ‘ash’ (Landaburu 2000a: 748)

*ᵐbuⁿd(u) ‘bee, wasp’ > *buN* ‘wasp’ (Landaburu 2000a: 736)

*ᵐbuuʔ ‘two’ > ***mou****ga* ‘two’ (Landaburu 2000a: 747)

*ᵑgaᵐba ‘son, child’ > ***gəmə****(sinə)* [gʌmə-sinə] ‘son, generation’ (Landaburu 2000a: 734, 737)

*uᵐba ‘face, eye, fruit’ > *umə* ‘eye’ (Landaburu 2000a: 747)

***t > {*t*, *ʧ*} / #__**

*taʔBa ‘red, yellow, ripe’ > ***ʧəm****i* [**ʧʌm**ᵐi] ‘yellow’ (Landaburu 2000a: 736, 748)

*tuⁿdi ~ *tuiⁿd ‘dark’ > /twi/ ‘black’ (Landaburu 2000a: 737)

***ⁿd > *n* / #__*a**

***ⁿd > {*d*, *n*, *ʤ*}/ #__{*u, *i}**

***ⁿd > *r* / V__{*i*, *j*}**

***ⁿd > *N* / V__#**

***ⁿd > *Ø* / *wV(ʔ)*__$**

***ⁿd > {*n*, *r*} / elsewhere**

*ᵐbaⁿdi ‘hunger’ > *mari* ‘hunger, hungry’ (Landaburu 2000a: 734, 736)

*ᵐbiⁿd(i) ‘round’ > *miN* ‘round’ (Landaburu 2000a: 748)

*ᵐbuⁿd- ~ *kuⁿd- ‘to turn around’ > ˈ***kur****kənə* ‘spindle’ (Landaburu 2000a: 734)

*ᵐbuⁿd(u) ‘bee, wasp’ > *buN* ‘wasp’ (Landaburu 2000a: 736)

*ᵐbũⁿd(ũ) ‘ashes’ > ***buN****(səga)* ‘ash’ (Landaburu 2000a: 748)

*ⁿdaH(ⁿd) ‘I_1’ > *naʔN*, *nəN* ‘I’ (Landaburu 2000a: 740)

*ⁿdaᵑg ‘salt’ > [**nʌgᵍ**u] ‘salt’ (Landaburu 2000a: 735)

*ⁿda ‘to come’ > ***na****k- ‘to come’ (Landaburu 2000a: 747)

*ⁿda(kiⁿd) ~ *ta(kiⁿd) ‘$back_1$’ > [tɨkiŋ] ‘behind’ (Landaburu 2000a: 735)

*ⁿdiʔ ‘water, river’ > /ʤe/ [ʤɛ] ‘water’ (Landaburu 2000a: 735)

*ⁿdiʔ-a ‘liquid’ > *-ria* ‘water’ (Landaburu 2000a: 747)

[*ⁿdi-gʷa] ‘lake, rain’ > *ʤiwə* ‘lake, rain’ (Landaburu 2000a: 734, 747)

*ⁿdu ‘beautiful’ > *du* ‘good’ (Landaburu 2000a: 736, 747)

*ⁿdu- ‘to stand (singular)’ > **nu-**k- ‘to be’ (Sp. *estar*) (Landaburu 2000a: 741, 743)

*ⁿdu- ‘sun, year’ > ***ʤwi*** ‘sun’ (Landaburu 2000a: 747)

*ⁿduh(k) ‘tail$_2$’ > *ʤoʔ* ‘tail’ (Landaburu 2000a: 734, 747)

*(ⁿdu-)ku(ⁿd) ‘bat’ > [ʤugᵍu] ‘bat’ (Landaburu 2000a: 736)

*ᵑga-ⁿdi(a) ‘diarrhea’ > /garja/ ‘diarrhea’ (Landaburu 2000a: 737)

*ᵑguⁿdaʔ ‘hand, arm’ > *gunə* ‘hand’ (Landaburu 2000a: 747)

*ᵑgʷahⁿd ‘bad$_1$’ > ***waʔmə*** ‘damage (noun)’ (Landaburu 2000a: 737)

*kaʔ(k)-puⁿd- ‘dust’ > [**kapɯɾo**] ‘dust’ (Landaburu 2000a: 735)

*paHⁿd- ‘to begin, start, first’ > *-pan*, *-pən* inceptive (cf. Frank 1985: 19, 77–8); [pʌna] auxiliary indicating near future (Sp. *auxiliar de futuro cercano*) (Landaburu 2000a: 735)

*pii-ⁿda ‘all$_2$’ > *pinna* ‘all’ (Landaburu 2000a: 747)

*tuⁿdi ~ *tuiⁿd ‘dark’ > /twi/ ‘black’ (Landaburu 2000a: 737)

*ʦiⁿd(a) ‘small$_2$’ > *gəmə****(sinə)*** [gʌmə-sinə] ‘son, generation’ (Landaburu 2000a: 734, 737)

***k > *k* / #__**

***k > {*k*, *g*} / V__V**

***k > *ʔ* / __#**

*ⁿda(kiⁿd) ~ *ta(kiⁿd) ‘back$_1$’ > [tɨkiŋ] ‘behind’ (Landaburu 2000a: 735)

*ⁿduh(k) ‘tail$_2$’ > *ʤoʔ* ‘tail’ (Landaburu 2000a: 734, 747)

*(ⁿdu-)ku(ⁿd) ‘bat’ > [ʤugᵍu] ‘bat’ (Landaburu 2000a: 736)

*ka allative/dative > preverbal element *kə* (Frank 1985: 93)

*kaⁿd- ~ *kat- ‘stick, bone, tree’ > *kəN* [kʰʌŋ] ‘tree’ (Landaburu 2000a: 736, 747)

*kah-ka ‘mouth’ > *kəkə* [kʌkᵏə] ‘mouth’ (Landaburu 2000a: 736, 747)

*ka(ka) ‘father’ > *kakə* ‘father’ (Landaburu 2000a: 734)

*kap- ‘to sleep’ > **/kəmə**N/ [**qɒmʌ**ŋ] ‘to sleep’ (Landaburu 2000a: 736)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place) > *kaʔ* ‘earth’ (Landaburu 2000a: 736, 747)

*kaʔ(k)-puⁿd- ‘dust’ > [**kapɯɾo**] ‘dust’ (Landaburu 2000a: 735)

*kuh ‘to hear$_2$’ > ***ku****kwə* ‘ear’ (Landaburu 2000a: 747)

*kũʔ ‘louse’ > *ku* ‘louse’ (Landaburu 2000a: 734, 747)

*kʷik ‘arm, wing, shoulder’ > *kwiʔ* ‘feather’ (Landaburu 2000a: 747)

*suh(-kui) ‘rodent, small’ > *ʧukwi* [ʧukᵏwi] ‘mouse’ (Landaburu 2000a: 736)

*ʦika ~ *tsaik locative$_3$ > *-seʔ* locative (source, goal), ergative (Frank 1985: 48)

ᵑg > *z* / *__i

***ᵑg > *g* / elsewhere**

*ᵑga^{m}ba ‘son, child’ > ***gəmə****(sinə)* [gʌmə-sinə] ‘son, generation’ (Landaburu 2000a: 734, 737)

*ᵑga ‘excrement’ > *ga* ‘excrement’ (Landaburu 2000a: 737)

*ᵑga-^{n}di(a) ‘diarrhea’ > /garja/ ‘diarrhea’ (Landaburu 2000a: 737)

*ᵑgi ‘worm’ > *zi* ‘worm’ (Landaburu 2000a: 737)

*ᵑgua ‘to kill’ > ***gwa****k* ‘to kill’ (Landaburu 2000a: 747)

*ᵑgu^{n}daʔ ‘hand, arm’ > *gunə* ‘hand’ (Landaburu 2000a: 747)

*^{n}daᵑg ‘salt’ > [**nʌg^{g}**u] ‘salt’ (Landaburu 2000a: 735)

k^{w} > *kw

*k^{w}ik ‘arm, wing, shoulder’ > *kwiʔ* ‘feather’ (Landaburu 2000a: 747)

ᵑg^{w} > *w

[*^{n}di-g^{w}a] ‘lake, rain’ > *ʤiwə* ‘lake, rain’ (Landaburu 2000a: 734, 747)

*ᵑg^{w}a ~ *uᵑg ‘fish’ > ***wa****kə* ‘fish’ (Landaburu 2000a: 747)

*ᵑg^{w}ah^{n}d ‘bad$_1$’ > ***waʔ****mə* ‘damage (noun)’ (Landaburu 2000a: 737)

***ʔ > {*ʔ*, Ø}**

*^{m}baʔ ‘you’ > *ma* ‘you’ (Landaburu 2000a: 740)

*^{m}buuʔ ‘two’ > ***mou****ga* ‘two’ (Landaburu 2000a: 747)

*^{n}diʔ ‘water, river’ > /ʤe/ [ʤɛ] ‘water’ (Landaburu 2000a: 735)

*^{n}diʔ-a ‘liquid’ > *-ria* ‘water’ (Landaburu 2000a: 747)

[*^{n}di-g^{w}a] ‘lake, rain’ > *ʤiwə* ‘lake, rain’ (Landaburu 2000a: 734, 747)

*ᵑgu^{n}daʔ ‘hand, arm’ > *gunə* ‘hand’ (Landaburu 2000a: 747)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place) > *kaʔ* ‘earth’ (Landaburu 2000a: 736, 747)

*kaʔ(k)-pu^{n}d- ‘dust’ > [**kapɯɾ**o] ‘dust’ (Landaburu 2000a: 735)

*kũʔ ‘louse’ > *ku* ‘louse’ (Landaburu 2000a: 734, 747)

*siʔ ‘moon’ > ***tiʔ****ma* ‘moon’ (Landaburu 2000a: 747)

*taʔBa ‘red, yellow, ripe’ > ***ʧəm****i* [**ʧʌm^{m}**i] ‘yellow’ (Landaburu 2000a: 736, 748)

*ʦaʔ ‘to sit (sg.)’ > *sa* ‘sitting’ (Sp. *sentado*) (Landaburu 2000a: 747)

*ʦuʔ ‘breast, teat$_2$’ > *tu* ‘woman’s breast’ (Landaburu 2000a: 736, 747)

s > *t* / __*i

***s > *ʧ* / __{*u, w*}**

*siʔ ‘moon’ > ***tiʔma*** ‘moon’ (Landaburu 2000a: 747)

*suh(-kui) ‘rodent, small’ > *ʧukwi* [ʧukᵏwi] ‘mouse’ (Landaburu 2000a: 736)

*su ‘to see’ > *ʧw* ‘to see’ (Landaburu 2000a: 747)

ʦ > *t* / __*u

***ʦ > *s* / elsewhere**

*ʦa ‘hair, head’ > *sa* ‘hair of the head’ (Landaburu 2000a: 747)

*ʦii ‘night, dark’ > *sei* ‘night’ (Landaburu 2000a: 736, 748)

*ʦaʔ ‘to sit (sg.)’ > *sa* ‘sitting’ (Sp. *sentado*) (Landaburu 2000a: 747)

*ʦiⁿd(a) ‘small$_2$’ > ***gəmə(sinə)*** [gʌmə-sinə] ‘son, generation’ (Landaburu 2000a: 734, 737)

*ʦika ~ *tsaik locative$_3$ > *-seʔ* locative (source, goal), ergative (Frank 1985: 48)

*ʦuʔ ‘breast, teat$_2$’ > *tu* ‘woman’s breast’ (Landaburu 2000a: 736, 747)

***h > {*ʔ*, Ø}**

*hauᵐb ~ *aᵐbuʔ ‘to bathe, swim’ > *oum-* ‘to swim’ (Landaburu 2000a: 747)

*ᵑgʷahⁿd ‘bad$_1$’ > ***waʔmə*** ‘damage (noun)’ (Landaburu 2000a: 737)

*kah-ka ‘mouth’ > *kəkə* [kʌkᵏə] ‘mouth’ (Landaburu 2000a: 736, 747)

*kuh ‘to hear$_2$’ > ***ku****kwə* ‘ear’ (Landaburu 2000a: 747)

#L > *n

*La ‘egg, offspring’ > *aʔnə* ‘stone’ (Landaburu 2000a: 747)

2.3.16 Kogi

Kogi, like Ika and Damana, is a Chibchan languages spoken in the Sierra Nevada de Santa Marta (department of Magdalena, Colombia). About 7,000 to 9,000 Kogi live on its northern slopes, in the valleys of the Ancho, Palomino, Don Diego, and Jerez rivers. Additionally, there is also some Kogi territory northeast, on the Barcino river, and in the south, on the Guatapurí river (Ortíz Ricaurte 2000: 757; Adelaar & Muysken 2004: 614). As for the Ika, who have been described as an agricultural people (Frank 1985: 1–2), Kogi economy is traditionally rather based on agriculture than on hunting or gathering. Due to the verticality of their habitat, a Kogi family may have cultivation fields on various altitude levels, where different crops are grown: *guineo* (a banana) and manioc in the lower parts, beans and potatoes in the higher parts. Kogi society is organized in a rather hierarchical way, with the *mama* (traditional authorities) exerting both religious and political power. Some of the *mama* also have knowledge of an otherwise vanished language, *ˈteiʒua* (Ortiz Ricaurte 2000: 757–8). This language might be a remnant of the language formerly spoken by the Tairona, an indigenous group from the area east of Santa Marta, defeated by the Spaniards in 1600 (Adelaar & Muysken 2004: 67). The Kogi are renowned for defending and maintaining their indigenous way of life and religion. In some Kogi communities it is not accepted for women to speak Spanish, according to Ortiz Ricaurte (2000: 758).

Within the Chibchan languages of the Sierra Nevada de Santa Marta, Kogi has been classified somewhat apart; Atanques, Damana, Ika, and Chimila are grouped together as Eastern-southern Arhuacic languages by Constenla Umaña (2012: 417).

Important sources on the Kogi language are Celedón (1886), Preuss (e.g., 1925, 1926, 1927), Holmer (1953), Ortiz Ricaurte (1989, 2000), and Olaya Perdomo (2000). Ortiz Ricaurte (2000) is the main source used here for this language. Her Kogi data seem to be mainly based on information from Juan Conchacala Díngula, her language consultant.

Kogi seems to be more conservative than the other Arhuacic languages (cf. Adelaar & Muysken 2004: 67) or Kuna, for instance in the domain of phonology (Holmer 1953: 320–1). Together with Rama, Kogi is among the Chibchan languages that preserved a great deal of Proto-Chibchan vowel sequences (cf. Holmer 1953: 320–1). The language also seems to be relatively conservative in its lexicon, and an exhaustive, modern study of it would be most desirable.

A detail of the Kogi language which may be mentioned here is the fact that *dueba* ‘old (masculine)’ is the general term used when referring to old men and old objects in general; its feminine counterpart, *ueiʒu* ‘old (feminine)’ is used when referring to old women, but also to objects which are considered as feminine, such as *mochila*-bags (cf. Ortiz Ricaurte 2000: 771).

2.3.16.1 The sounds of Kogi

The presentation and discussion of Kogi phonemes and their realization is based on data from Ortiz Ricaurte (2000), and, to a lesser extent, Holmer (1953).

2.3.16.1.1 Kogi vowels and suprasegmentals

Table 51 illustrates the Kogi vowel system.

TABLE 51
KOGI PHONEMES: VOWELS

	Front	Central	Back
High	i	ɯ	u
High-mid	e		(o)
Low		a	

Source: Ortiz Ricaurte (2000: 760).

The Kogi central vowel /a/ is realized as [ə] between two consonants, for instance in [ˈmənta] ‘banana’ or between *u* and a consonant, as in [huˈəŋgaɮa] ‘tongue’ (Ortiz Ricaurte 2000: 762) – compare the underlying form /huˈangala/ ‘tongue’ (ibid.: 780). Elsewhere, /a/ is realized as such (ibid.: 762). Holmer (1953: 315) observes that Kogi *a* may appear phonetically as sounds that he transcribes <ʌ>, <ɐ>, and <ø>.

The high vowels /i/ and /u/ are realized as glides [j] and [w] in syllable onset if followed by a syllabic vowel, as in [gaja] ‘adolescent woman’ or [ˈwawa] ‘baby’; additionally, /u/ is realized as [y] between two front vowels, for instance in [ˈniyi] ‘sun’ (Ortiz Ricaurte 2000: 762) – the underlying form is /ˈniui/ ‘sun’ (ibid.: 779). The central vowel /ɯ/ has a very restricted distribution; it occurs in /nɯˈgakala/ ‘leg’ and in *houleʃi* ‘to play’. In other forms, it always follows /s/ or /z/ and is frequently elided. The phonemic value of /ɯ/ is evident in /ˈsɯgi/ ‘deer’ versus /ˈsugi/ a small container for lime (*poporo*) versus /siˈgi/ ‘man’ (ibid. 761, 779).

The mid front vowel /e/ is realized as [ɛ] if followed by a stressed syllable or a high front vowel *i*, as in [kɛiˈʒa] ‘shore’, or in [hɛhĩˈẽ] ‘that’. Otherwise, it is realized as such. The vowel /o/ is realized as [ɔ] if followed by *u*, for instance in [sɔuˈma] ‘baby’. Otherwise, it is realized as such (Ortiz Ricaurte 2000: 762).

In vowel sequences across morpheme boundaries, several changes occur, if the final vowel of the first morpheme is *a*, and if a high vowel follows: for instance, the sequence of *a* and *u* becomes /ou/ in /kalouˈka/ ‘small bench’ |ˈkala+uˈka|, and /o/ in

/aluˈnoba/ ‘sky’ |aˈluna+ˈuba|. In a similar vein, a sequence of *a* and *i*, across morpheme boundaries, becomes /ei/ or /e/ (ibid.: 764). Indeed, one might argue that that the Kogi vowels *e* and *o* are the result of contraction, given the fact that they occur less frequently than *ei* and *au*, and that they often alternate with these vowel sequences (Holmer 1947: 27). The sequences *ai* and *au* in Spanish loans are realized as *e* and *o* (Holmer 1953: 315–6), for instance in *belar*, derived from Spanish *bailar* ‘to dance’, or in *botizar*, from Spanish *bautizar* ‘to baptise’ (ibid.). Instead, Spanish high-mid vowels are often realized as high vowels, for instance in *ˈg*^{w}*ibu* for Spanish *huevo* ‘egg’ (cf. Adelaar & Muysken 2004: 74). According to Holmer (1947: 29), the existence of non-phonemic vowel aspiration in Kogi is suggestive for the forms <hovēxu, hubēxu, huvēxu, hubia> that all derive from Spanish *oveja* ‘sheep’.

According to Holmer (1953: 319) stress tends to be on the final syllable in isolated words. Instead, in the context of more complex utterances containing several words, the first and penultimate syllables of the single lexical units seem to be more stressed than the final syllables.[47] Holmer (ibid.: 320) illustrates these phenomena with the following examples: <gúkse> ‘fire’ (as used in a complex utterance, the so-called ‘contextual’ form) versus <guksãĩ> (the same term in isolation, the so-called ‘emphatic’ form) or <sukua> ‘son, child’ (‘contextual’ form) versus <skua> (‘emphatic’ form). The emphatic form of the term for ‘son, child’ may also regularly occur in complex utterances such as <skua káikagace> ‘small’ (Sp. *chiquito*). Otherwise, non-isolated, emphatic forms are found in serious speech, and particularly in ceremonial speech, with the final vowel of the single words stressed, and usually nasalized and followed by aspiration (Holmer, ibid.). According to Ortiz Ricaurte (2000: 760), stress in Kogi most frequently is assigned to the first syllable of a monomorphemic, bisyllabic word.

In terms of syncope of an unstressed vowel, only /u/, /i/, and /ɯ/ tend to be deleted in the first syllable, and only if preceded by /n/ or a fricative (except *h*), and if followed by a stop, lateral, or /n/, as, for instance, in *sˈlakala ~ suˈlakala* ‘bone’ and *skuˈa ~ ˈsukua* ‘son’. In other words, such as *sˈgakala* ‘belt’, no vowel is ever pronounced between the first two consonants (Ortiz Ricaurte 2000: 761). Cases like the latter are probably meant by Holmer (1953: 319) when he states that there are many examples of words without any specific difference between the emphatic and a contextualized form (see above). In case the final syllable of a polysyllabic word is not stressed, it tends to be murmured (Holmer 1953: 319). In the context of certain suffixes

[47] “Cada palabra principal de la oración kággaba parece sujeta a una doble acentuación, según se use aísladamente o en contexto. En el primer caso, la última sílaba de la palabra se profiere con mucho énfasis, mientras que la que le precede pierde su acento y se reduce fuertemente en cuanto al timbre. Según la acentuación en contexto, todas las sílabas tienen casi la misma audibilidad, aunque la primera y la penúltima se acentúan un poco más que las otras. La última es la menos acentuada en contexto, y aun revela tendencia a suprimirse completamente.” (Holmer 1953: 319)

which are obligatorily stressed, the respective suffix is the only element of the resulting complex form which is stressed. In some cases, stress seems to be lexical and is contrastive, for instance in *ˈkala* 'straw' versus *kaˈla* 'leg'. Finally, stress also has a grammatical function in Kogi: on the last syllable of a verb, it indicates the preterit (Ortiz Ricaurte 2000: 760).

There are very few minimal pairs evidencing vowel nasality as a contrastive feature in Kogi. Among the few cases are *ˈmoui* 'cloud' versus *ˈmõũĩ̃* 'to weep' and *ˈsaĩ̃* 'hair of head' versus *ˈsai* 'how' (Ortiz Ricaurte 2000: 760). In certain contexts, vowel nasality is reflected by *n* in the coda, at a morpheme boundary, for instance in /ˈmon-ka/ 'whiner' which derives from /ˈmõũĩ/ 'to weep' (ibid.: 763), or /ˈsankala/ [ˈsaŋkaɮa] 'head' (ibid.: 779), derived from /ˈsãĩ/ [ˈsãĩ̃] 'hair' (ibid.: 778). There is neither contrastive tone nor vowel length in Kogi (Ortiz Ricaurte 2000).

2.3.16.1.2 Kogi consonants

The consonant phonemes of Kogi are illustrated in table 52.

TABLE 52
KOGI PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar	Glottal
Voiceless stops	p	t	c	k	(ʔ)
Voiced stop	b	d		g	
Voiceless fricatives		s	ʃ		h
Voiced fricatives		z	ʒ		
Nasals	m	n			
Lateral		l			

Source: Ortiz Ricaurte (2000: 759).

The Kogi voiceless stops /p/, /t/, and /k/ are realized as aspirated [p^h], [t^h] and [k^h] after open syllables, for instance in [ip^{h}a], [it^{h}a] both 'to bend, look to the ground' and in [ik^{h}aw̃ĩ̃] 'to carry' (Sp. *cargar*) (Ortiz Ricaurte 2000: 763). The phonemes /t/ and /k/ have further allophones in specific contexts: /t/ may be realized as a voiceless palatal stop [c] if followed by a high front vowel *i* or *ĩ*, even if another vowel is intercalated, as

in [cuˈi] ‘to see’ (ibid.) – possibly in alternation with [tũĩ], compare *tũˈĩ* ‘to see’ (ibid.: 760) – or in [aˈcĩw̃ã] ‘five’. The voiceless velar stop /k/ is realized as a fricative [x ~ χ] between two non-front vowels in monomorphemic words, such as in [ˈkuxa] ‘ear’ or in [ˈkaxa] ‘mouth’. In other contexts, /p/, /t/ and /k/ are realized as such (ibid.: 763).

The voiced velar stop /g/ is realized as [ʀ] if followed by a stop or a lateral consonant, as in [ˈhaʀbaɮa] ‘metate’ or [ˈhaʀligi] ‘ax’ (the first element of these two forms is /ˈhagi/ ‘stone, cf. Ortiz Ricaurte 2000: 769). As such, Kogi *d* is rarely found word-initially (ibid.: 761).

It is not clear to what extent labialized velars k^w and g^w are separate phonemes in Kogi (cf. Adelaar & Muysken 2004: 69). Ortiz Ricaurte (2000) interprets them as sequences of two distinct phonemes /ku/ and /gu/.

The fricative /z/ is devoiced and realized as [s] before a voiced stop, for instance in [nusgui] ‘kiss (noun)’, and as [ʦ] in intervocalic position if followed by a non-front vowel, as in [aˈʦuʃi] ‘red’ or [miˈʦa] ‘when?’. In all remaining contexts, Kogi /z/ appears as such. Likewise, Kogi /ʒ/ is realized as an affricate [ʤ] if preceded by an alveolar consonant, as in [ˈmuɲʤi] ‘woman’ or in [iɲʤi] ‘manioc’; in other contexts, Kogi /ʒ/ is realized as such (Ortiz Ricaurte 2000: 763).

The glottal fricative *h* may be reduced to zero if followed by two vowels, as in [huˈeswi ~ ueswi] ‘father-in-law’ (Ortiz Ricaurte 2000: 763). In other cases, *h* has a clearly phonemic value, for instance in <ui> ‘sand’ versus <hui> ‘house’, or in <uba> ‘eye’ versus <huba> ‘peel (noun)’ (Holmer 1953: 318). Kogi *h* is palatalized in the term /hiˈuɮa/ [ˈʃuɮa] ‘reed’. In other contexts, /h/ is realized as such (Ortiz Ricaurte 2000: 763). Talking about Kogi /h/, Holmer (1953: 318) observes that in loans, Spanish [χ] is not necessarily reflected in Kogi: compare Kogi <uticia> for Spanish *justicia* ‘justice’ (Holmer 1953: 318).[48]

The lateral *l* is never found in word-initial position in Kogi (Ortiz Ricaurte 2000: 761). It is palatalized and appears as [ʎ] before *i*, for instance in [ˈmaʎi] ‘hunger’ and [ˈmuʎi] ‘ashes’. The Kogi lateral is realized as [ɮ] between two non-front vowels, for instance in [ˈguɮa] ‘arm’, or after a consonant, as in [ˈgaʀɮa] ‘neck’ (ibid.: 763). Word-internally, /l/ and /n/ become /ʒ/ after a morpheme ending in *i*, as attested in |ˈtei-li| /ˈtei-ʒi/ ‘in the farm’ (ibid.: 764); *-li* is a Kogi locative marker (cf. ibid.: 772).

Nasality or orality of obstruents seems to depend on their position in Kogi: The nasal consonants /m/ and /n/ are denasalized and become /b/ and /l/, respectively if preceded by a morpheme ending in a vowel (remember that after *i*, Kogi *n* becomes *ʒ*):

[48] “Aunque la pronunciación castellana de los indios revela una tendencia fuerte a no distinguir entre vocales iniciales aspiradas (por ejemplo usando *harto* por ‘alto’, o *uticia* por ‘justicia’), en el Kággaba diferencia estrictamente entre *ui* ‘arena’ y *hui* ‘casa’, o entre *uba* ‘ojo’ y *huba* ‘cáscara’.” (Holmer 1953: 318) [Italics added by me.]

compare /ˈmaigua/ ‘three’ versus /kasaˈbaigua/ ‘thirteen’, or /niˈa/ ‘liquid’ versus /ˈubalia/ ‘tear’ (ibid.: 764). In these latter cases, denasalization occurs at morpheme boundaries; however, the matter needs more research before clear statements can be made. The nasal consonant /n/ is palatalized and realized as [ɲ] before *i*, as in [ˈɲi] ‘water’ (I have no explanation for plain *n* in /niˈa/ ‘liquid’), or before a palatal consonant, as in [ˈiɲʤi] ‘manioc’ (ibid.: 762).

Consonant gemination is found intervocalically on (old) morpheme boundaries, but only in the cases of *gg*, *kk*, and *nn*, for instance in /ˈkaggaba/ ‘people’, /nukˈka/ ‘to hear’, or /unni/ ‘there’ (Ortiz Ricaurte 2000: 761). The first consonant of the cluster belongs to another morpheme than the second consonant in /ˈkaggaba/ ‘people’, probably a possessive construction made up of Kogi /ˈkagi/ ‘earth’ (cf. ibid.: 778) and a reflex of Proto-Chibchan *^{ŋ}ga^{m}ba or a related form meaning ‘people’ (cf. subsection 2.2 above).

Word internally, in syllable onset, all consonants are attested. Word-internally, in syllable coda, the following consonants may be found: /m/, /n/, /k/, /g/, /s/, /z/, /ʃ/, /ʒ/, /l/, and /ʔ/. Word-finally, one may find /t/, /k/, /g/, /s/, /ʃ/, /m/, /n/, and /l/. In syllable coda, after two vowels, only /n/, /l/, /s/, /ʃ/, and /ʒ/ are allowed; after a sequence of three vowels, only /n/ is attested (Ortiz Ricaurte 2000: 761–2).

The possibility of sound-symbolism in Kogi remains to be investigated. The case of /ˈdue/ [ˈdue] ‘older brother’ versus /nu/ [nu] ‘older sister’ (Ortiz Ricaurte 2000: 778–9) might reflect an association of nasality with feminine gender and of orality with masculine gender (cf. also Pache 2016b: 122).

2.3.16.2 Reflexes of Proto-Chibchan phonemes in Kogi

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.16.2.1) and of Proto-Chibchan consonants (2.3.16.2.2) in Kogi.

2.3.16.2.1 Reflexes of Proto-Chibchan vowels in Kogi (cf. also Constenla Umaña 1981: 303–5)

{*a, *ã} > *a*

*a ‘that’ > *a-* third person possessor (Ortiz Ricaurte 2000: 771)

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > **/a**ˈ**bis**a/ [**a**ˈ**bis**a] ‘new’ (Ortiz Ricaurte 2000: 779)

*aH- valency-reducing prefix > *a-* prefix reducing verbal valency (Adelaar & Muysken 2004: 73)

*aʔ- valency-reducer$_2$ > *a-* valency-reducing verbal prefix (Adelaar & Muysken 2004: 73)

*ᵐbaⁿd- ‘tasty’ > **/ma**ˈ**l**u/ ‘*guineo* (a banana), sweet (metaforical)’ (Ortiz Ricaurte 2000: 768)

*ᵐbaⁿd(a) ~ *ᵐbat(a) ‘exterior’ > /kaˈka**bala/** ‘lips’ (Ortíz Ricaurte 2000: 770)

*ᵐbaⁿdi ‘hunger’ > [ˈmaʃi] ‘hunger’ (Ortiz Ricaurte 2000: 763)

*ᵐbahka(i) ‘four’ > **/ma**ˈ**ke**ua/ [**mã**ˈ**kẽ**wã] ‘four’ (Ortiz Ricaurte 2000: 778)

*ᵐbaʔ ‘you’ > /ma/ [ma] ‘you’ (Oritz Ricaurte 2000: 779)

*ᵐbãʔ(ĩ) ‘three’ > /ˈ**mai**gua/ [ˈ**mai**gua] ‘three’ (Ortiz Ricaurte 2000: 779)

*ᵐbihⁿda ~ *ᵐbihta ‘heart, liver, center$_1$’ > /aˈ**bita/** [aˈ**bita**] ‘liver’ (Ortíz Ricaurte 2000: 779)

*ᵐbuⁿd-kaⁿd(a) ‘wind’ > /mulˈkala/ [mulˈkaɮa] ‘wind’ (Ortiz Ricaurte 2000: 780)

*ⁿda ‘to come’ > /ˈ**na**ʃi/ [ˈ**na**ʃi] ‘to come’ (Ortiz Ricaurte 2000: 778)

*ⁿdaᵐba- ‘cold, cold substance’ > **/nab**ˈgala/ [**nab**ˈgaɮa] ‘ice’ (Ortiz Ricaurte 2000: 779)

*ⁿdaᵐba ‘feline$_1$’ > /ˈ**nab**i/ ‘jaguar’ (Sp. *tigre*) (Ortiz Ricaurte 2000: 768)

*ⁿdaH(ⁿd) ‘I$_1$’ > /nas/ [nas] ‘I’ (Ortiz Ricaurte 2000: 779)

*(ⁿd)iˈa ‘to wear’ > **/ʒa**kuˈa/ [**ʒa**kuˈa] ‘clothes’ (Ortíz Ricaurte 2000: 778)

*ⁿdiʔ-a ‘liquid’ > *nia* (unbound morpheme), *-lia* (bound morpheme) ‘liquid’ (Ortiz Ricaurte 2000: 769)

[*ⁿdi-gʷa] ‘lake, rain’ > /niguˈa/ ‘swamp’ (Ortiz Ricaurte 2000: 768)

*ŋga ‘excrement’ > /ˈ**ga**i/ ‘excrement’ (Oritz Ricaurte 2000: 768)

*ŋga(ⁿda) ‘back$_2$’ > /ˈ**ga**gla/ [ˈ**ga**ʁɮa] ‘neck’ (Ortiz Ricaurte 2000: 763, 779)

*ŋga-ⁿdi(a) ‘diarrhea’ > /ˈgania/ ‘diarrhea’ (Ortiz Ricaurte 2000: 769)

*ŋgak ‘mother-in-law, daughter-in-law’ > /ˈ**gag**i/ ‘mother-in-law’ (Ortíz Ricaurte 2000: 764)

*ŋgua ‘to kill’ > **/gu**ˈ**a**ʃi/ [**gu**ˈ**a**ʃi] ‘to kill’ (Ortiz Ricaurte 2000: 779)

*ŋguⁿdaʔ ‘hand, arm’ > /ˈgula/ [ˈguɮa] ‘arm’ (Ortiz Ricaurte 2000: 763, 768)

*ŋgʷa ~ *uŋg ‘fish’ > /ˈ**ua**ka/ [ˈ**wa**xa] ‘fish’ (Ortiz Ricaurte 2000: 778)

*ŋgʷa(k) ‘face’ > **/u**ˈ**a**ka/ ‘face’ (Ortíz Ricaurte 2000: 769)

*ŋgʷaʔ ‘child’ > Kogi [ˈwawa] ‘baby, offspring’ (Ortiz Ricaurte 2000: 762)

*hak ~ *kaʔ ‘stone’ > /ˈ**hag**i/ [ˈ**hag**i] ‘stone’ (Ortiz Ricaurte 2000: 779)

*hap- ‘eight’ > /ˈ**ab**igua/ [ˈ**ab**igua] ‘eight’ (Ortiz Ricaurte 2000 778)

*hapi ~ *apiʔ ‘blood’ > /ˈabi/ [ˈabi] ‘blood’ (Ortiz Ricaurte 2000: 778)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > /aˈ**huba/** [aˈ**huba**] ‘skin’ (Ortiz Ricaurte 2000: 779)

*-ka nominalizer$_3$ > /-ka/ agentive nominalizer (cf. Ortiz Ricaurte 2000: 773)

*kaⁿd- ~ *kat- ‘stick, bone, tree’ > **/ka**ˈ**l**a/ ‘leg’ (Ortiz Ricaurte 2000: 760)

*kah-ka ‘mouth’ > /ˈkaka/ [ˈkaxa] ‘mouth’ (Ortiz Ricaurte 2000: 779)

*kap- ‘to sleep’ > **/ka**ˈ**b**ąʃi/ [**ka**ˈ**b**ąʃi] ‘to sleep’ (Ortiz Ricaurte 2000: 779)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > /ˈ**kag**i/ [ˈ**kag**i] ‘earth’ (Ortiz Ricaurte 2000: 778)

*sa^{n}d(a) ‘bad$_2$’ > ˈ***ʃane*** ‘bad’ (Ortiz Ricaurte 2000: 768)

*taH(^{m}ba) ‘heart, liver, center$_2$’ > **/ta**ˈ**ba**kala/ [**ta**ˈ**ba**xaɮa] ‘chest’ (Ortiz Ricaurte 2000: 778)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > /ˈ**tagb**i/ [ˈ**taʁb**i] ‘snake’ (Ortiz Ricaurte 2000: 779)

*ʦa ‘hair, head’ > /ˈ**sãĩ**/ [ˈ**sãĩ**] ‘hair’ (Ortiz Ricaurte 2000: 778)

*u^{m}ba ‘face, eye, fruit’ > /ˈuba/ [ˈuba] ‘eye’ (Ortiz Ricaurte 2000: 778)

{*ai, *ii} > {*ei*, *e*}

*aBi ~ *aiB ‘maize’ > /ˈ**eib**i/ ‘maize’ (Ortiz Ricaurte 2000: 760)

*^{m}bahka(i) ‘four’ > **/ma**ˈ**ke**ua/ [**mã**ˈ**kẽ**wã] ‘four’ (Ortiz Ricaurte 2000: 778)

*^{n}dai ‘to walk’ > /ˈ**nei**hĩ/ [ˈ**nei**hĩ] ‘to walk’ (Ortiz Ricaurte 2000: 780)

*ʦii ‘night, dark’ > /ˈ**sei**sɯn/ [ˈ**sei**sɯn] ‘night’ (Ortiz Ricaurte 2000: 779)

{*i, *ĩ} > *i*

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > **/a**ˈ**bis**a/ [**a**ˈ**bis**a] ‘new’ (Ortiz Ricaurte 2000: 779)

*^{m}ba^{n}di ‘hunger’ > [ˈmaʎi] ‘hunger’ (Ortiz Ricaurte 2000: 763)

*^{m}bãʔ(ĩ) ‘three’ > /ˈ**mai**gua/ [ˈ**mai**gua] ‘three’ (Ortiz Ricaurte 2000: 779)

*^{m}bi- ‘how much, how many’ > **/mi**ˈza/ ‘how many?’ (Ortiz Ricaurte 2000: 771)

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_1$’ > /aˈ**bita**/ [aˈ**bita**] ‘liver’ (Ortíz Ricaurte 2000: 779)

*^{n}di instrumental/locative > /-li/ locative (Ortiz Ricaurte 2000: 772)

*^{n}diʔ ‘water, river’ > /ni/ [ɲi] ‘water’ (Ortiz Ricaurte 2000: 780)

*^{n}diʔ-a ‘liquid’ > *nia* (unbound morpheme), *-lia* (bound morpheme) ‘liquid’ (Ortiz Ricaurte 2000: 769)

[*^{n}di-g^{w}a] ‘lake, rain’ > /niguˈa/ ‘swamp’ (Ortiz Ricaurte 2000: 768)

*^{ŋ}ga-^{n}di(a) ‘diarrhea’ > /ˈgania/ ‘diarrhea’ (Ortiz Ricaurte 2000: 769)

*^{ŋ}gi ‘worm’ > /ʒi/ ‘worm’ (Ortíz Ricaurte 2000: 769)

*hapi ~ *apiʔ ‘blood’ > /ˈabi/ [ˈabi] ‘blood’ (Ortiz Ricaurte 2000: 778)

*k^{w}i ‘to dance’ > **/ku**ˈ**i**zihi/ [**ku**ˈ**i**zihĩ] ‘to dance’ (Ortiz Ricaurte 2000: 778)

*k^{w}ik ‘arm, wing, shoulder’ > **gu**ˈ**i**kala/ [**gu**ˈ**i**xaɮa] ‘wing’ (Ortiz Ricaurte 2000: 780)

{*u, *ũ} > *u*

*ᵐbuⁿd- ‘breath, wind’ > /ˈ**mul**o/ ‘air’ (Ortiz Ricaurte 2000: 768)

*Buⁿd- ‘small$_1$’ > /aˈ**bul**u/ ‘small’ (Ortiz Ricaurte 2000: 768)

*ᵐbuⁿd-kaⁿd(a) ‘wind’ > /mulˈkala/ [mulˈkaɬa] ‘wind’ (Ortiz Ricaurte 2000: 780)

*ᵐbũⁿd(ũ) ‘ashes’ > /ˈ**mul**i/ [ˈ**muʌ**i] ‘ash’ (Ortiz Ricaurte 2000: 778)

*ᵐbus- ‘woman (young)’ > /ˈmunʒi/ [ˈmuɲʒi], [ˈmuɲʤi] ‘woman’ (Ortiz Ricaurte 2000: 763, 780)

*ⁿdu ‘to cook$_2$’ > /ˈ**zu**ʃi/ [ˈ**zu**ʃi] ‘to cook’ (Ortiz Ricaurte 2000: 778)

*ⁿdu(ⁿd) ‘bird, dove’ > /sinˈ**duli**/ ‘hummingbird’ (Ortiz Ricaurte 2000: 762)

*ⁿduⁿd- ‘seed’ > *-(l)ula* collective suffix (Ortiz Ricaurte 200: 770)

*ⁿduh(k) ‘tail$_2$’ > /ˈ**nugi**/ [ˈ**nug**i] ‘tail’ (Ortiz Ricaurte 2000: 779)

*ᵑgua ‘to kill’ > /**gu**ˈ**a**ʃi/ [**gu**ˈ**a**ʃi] ‘to kill’ (Ortiz Ricaurte 2000: 779)

*ᵑguⁿdaʔ ‘hand, arm’ > /ˈgula/ [ˈguɬa] ‘arm’ (Ortiz Ricaurte 2000: 763, 768)

*hu ‘house’ > /**hu**ˈi/ ‘house’ (Ortiz Ricaurte 2000: 760)

*-hu ~ *-uʔ ‘to swallow, drink, eat’ > /ˈ**tu**ʃi/ [ˈ**tu**ʃi] ‘to drink’ (Ortiz Ricaurte 2000: 778)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > /aˈ**huba**/ [aˈ**huba**] ‘skin’ (Ortiz Ricaurte 2000: 779)

*kuh ‘to hear$_2$’ > /ˈ**ku**ka/ [ˈ**ku**xa] ‘ear’ (Ortiz Ricaurte 2000: 778)

*kuh ‘seven’ > /ˈ**ku**gua/ [ˈ**ku**gua] ‘seven’ (Ortíz Ricaurte 2000: 779)

*kuHⁿdi ~ *kuiHⁿd ~ *BuHⁿdi ‘throat, hole’ > /ˈ**mul**ua/ ‘throat’ (Ortiz Ricaurte 2000: 765)

*****kũʔ ‘louse’ > /**ku**ˈi/ [**ku**ˈi] ‘louse’ (Ortiz Ricaurte 2000: 779)

*su ‘to see’ > ***tu***ˈ*ĩ* ‘to see’ (Ortiz Ricaurte 2000: 767)

*ʦu ‘child, small’ > /ˈ**su**kua/ [ˈ**su**kua] ‘child’ (Ortiz Ricaurte 2000: 778)

*uᵐba ‘face, eye, fruit’ > /ˈuba/ [ˈuba] ‘eye’ (Ortiz Ricaurte 2000: 778)

*uⁿdu ‘cedar’ > /ˈulu/ ‘pot’ (Ortiz Ricaurte 2000: 768)

*uk(a) ‘nine, ten’ > /ˈ**u**gua/ [ˈ**u**gua] ‘ten’ (Ortiz Ricaurte 2000: 779)

uu > *ou

*ᵐbuuʔ ‘two’ > /ˈ**mou**ʒua/ [ˈ**mou**ʒua] ‘two’ (Ortiz Ricaurte 2000: 780)

*kuuʔ ‘hand, finger’ > /ˈkou/ ‘hand’ (Ortiz Ricaurte 2000: 769)

2.3.16.2.2 Reflexes of Proto-Chibchan consonants in Kogi (cf. also Constenla Umaña 1981: 305–8)

***p > *b* / V__V**

*hap- ‘eight’ > /ˈ**ab**igua/ [ˈ**ab**igua] ‘eight’ (Ortiz Ricaurte 2000 778)

*hapi ~ *apiʔ ‘blood’ > /ˈabi/ [ˈabi] ‘blood’ (Ortiz Ricaurte 2000: 778)

*kap- ‘to sleep’ > **/ka**ˈ**b**aʃi/ [**ka**ˈ**b**aʃi] ‘to sleep’ (Ortiz Ricaurte 2000: 779)

***^{m}b > *m* / #__**

***^{m}b > *b* / elsewhere**

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > **/a**ˈ**bis**a/ [**a**ˈ**bis**a] ‘new’ (Ortiz Ricaurte 2000: 779)

*^{m}ba- ‘cloud, fog’ > /ˈ**mou**i/ [ˈ**mow**i] ‘cloud’ (Ortiz Ricaurte 2000: 778)

*^{m}ba^{n}d- ‘tasty’ > **/ma**ˈ**l**u/ ‘*guineo* (a banana), sweet (metaforical)’ (Ortiz Ricaurte 2000: 768)

*^{m}ba^{n}d(a) ~ *^{m}bat(a) ‘exterior’ > /kaˈka**bala/** ‘lips’ (Ortíz Ricaurte 2000: 770)

*^{m}ba^{n}di ‘hunger’ > [ˈmaʌi] ‘hunger’ (Ortiz Ricaurte 2000: 763)

*^{m}bahka(i) ‘four’ > **/ma**ˈ**ke**ua/ [**mã**ˈ**kẽ**wã] ‘four’ (Ortiz Ricaurte 2000: 778)

*^{m}baʔ ‘you’ > /ma/ [ma] ‘you’ (Oritz Ricaurte 2000: 779)

*^{m}bãʔ(ĩ) ‘three’ > /ˈ**mai**gua/ [ˈ**mai**gua] ‘three’ (Ortiz Ricaurte 2000: 779)

*^{m}bi- ‘how much, how many’ > **/mi**ˈza/ ‘how many?’ (Ortiz Ricaurte 2000: 771)

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_1$’ > /aˈ**bita/** [aˈ**bita**] ‘liver’ (Ortíz Ricaurte 2000: 779)

*^{m}bu^{n}d- ‘breath, wind’ > /ˈ**mul**o/ ‘air’ (Ortiz Ricaurte 2000: 768)

*^{m}bu^{n}d-ka^{n}d(a) ‘wind’ > /mulˈkala/ [mulˈkaɮa] ‘wind’ (Ortiz Ricaurte 2000: 780)

*^{m}bũ^{n}d(ũ) ‘ashes’ > /ˈ**mul**i/ [ˈ**muʌ**i] ‘ash’ (Ortiz Ricaurte 2000: 778)

*^{m}bus- ‘woman (young)’ > /ˈmunʒi/ [ˈmuɲʒi], [ˈmuɲʤi] ‘woman’ (Ortiz Ricaurte 2000: 763, 780)

*^{m}buuʔ ‘two’ > /ˈ**mou**ʒua/ [ˈ**mou**ʒua] ‘two’ (Ortiz Ricaurte 2000: 780)

*^{n}da^{m}ba- ‘cold, cold substance’ > **/nab**ˈgala/ [**nab**ˈgaɮa] ‘ice’ (Ortiz Ricaurte 2000: 779)

*^{n}da^{m}ba ‘feline$_1$’ > /ˈ**nab**i/ ‘jaguar’ (Sp. *tigre*) (Ortiz Ricaurte 2000: 768)

*taH(^{m}ba) ‘heart, liver, center$_2$’ > **/ta**ˈ**ba**kala/ [**ta**ˈ**ba**xaɮa] ‘chest’ (Ortiz Ricaurte 2000: 778)

*u^{m}ba ‘face, eye, fruit’ > /ˈuba/ [ˈuba] ‘eye’ (Ortiz Ricaurte 2000: 778)

t > *t

*taH(ᵐba) ‘heart, liver, center$_2$’ > **/ta**ˈ**ba**kala/ [**ta**ˈ**ba**xaɮa] ‘chest’ (Ortiz Ricaurte 2000: 778)

*takaᵐb- ~ *taᵐbak- ‘snake’ > /ˈ**tagb**i/ [ˈ**taʁb**i] ‘snake’ (Ortiz Ricaurte 2000: 779)

ⁿd > *n*, *z* / #__*u

***ⁿd > *n* / #__V$_{[other]}$**

***ⁿd > {*n*, *l*} / V__V**

*ᵐbaⁿd- ‘tasty’ > **/ma**ˈ**l**u/ ‘*guineo* (a banana), sweet (metaforical)’ (Ortiz Ricaurte 2000: 768)

*ᵐbaⁿd(a) ~ *ᵐbat(a) ‘exterior’ > /kaˈka**bala/** ‘lips’ (Ortíz Ricaurte 2000: 770)

*ᵐbaⁿdi ‘hunger’ > [ˈmaʃi] ‘hunger’ (Ortiz Ricaurte 2000: 763)

*Buⁿd- ‘small$_1$’ > /aˈ**bul**u/ ‘small’ (Ortiz Ricaurte 2000: 768)

*ᵐbuⁿd- ‘breath, wind’ > /ˈ**mul**o/ ‘air’ (Ortiz Ricaurte 2000: 768)

*ᵐbuⁿd-kaⁿd(a) ‘wind’ > /mulˈkala/ [mulˈkaɮa] ‘wind’ (Ortiz Ricaurte 2000: 780)

*ᵐbũⁿd(ũ) ‘ashes’ > /ˈ**mul**i/ [ˈ**muʃ**i] ‘ash’ (Ortiz Ricaurte 2000: 778)

*-ⁿd- nominalizer$_2$ > /-**n**e/ perfective aspect marker (cf. Ortiz Ricaurte 2000: 773)

*ⁿda ‘to come’ > /ˈ**naʃ**i/ [ˈ**naʃ**i] ‘to come’ (Ortiz Ricaurte 2000: 778)

*ⁿdaᵐba- ‘cold, cold substance’ > **/nab**ˈgala/ [**nab**ˈgaɮa] ‘ice’ (Ortiz Ricaurte 2000: 779)

*ⁿdaᵐba ‘feline$_1$’ > /ˈ**nab**i/ ‘jaguar’ (Sp. *tigre*) (Ortiz Ricaurte 2000: 768)

*ⁿdaH(ⁿd) ‘I$_1$’ > /nas/ [nas] ‘I’ (Ortiz Ricaurte 2000: 779)

*ⁿdai ‘to walk’ > /ˈ**nei**hĩ/ [ˈ**nei**hĩ] ‘to walk’ (Ortiz Ricaurte 2000: 780)

*ⁿdi instrumental/locative > /-li/ locative (Ortiz Ricaurte 2000: 772)

*ⁿdiʔ ‘water, river’ > /ni/ [ɲi] ‘water’ (Ortiz Ricaurte 2000: 780)

*ⁿdiʔ-a ‘liquid’ > *nia* (unbound morpheme), *-lia* (bound morpheme) ‘liquid’ (Ortiz Ricaurte 2000: 769)

[*ⁿdi-gʷa] ‘lake, rain’ > /niguˈa/ ‘swamp’ (Ortiz Ricaurte 2000: 768)

*ⁿdu ‘to cook$_2$’ > /ˈ**zu**ʃi/ [ˈ**zu**ʃi] ‘to cook’ (Ortiz Ricaurte 2000: 778)

*ⁿduⁿd- ‘seed’ > *-(l)ula* collective suffix (Ortiz Ricaurte 200: 770)

*ⁿdu(ⁿd) ‘bird, dove’ > /sinˈ**duli/** ‘hummingbird’ (Ortiz Ricaurte 2000: 762)

*ⁿduh(k) ‘tail$_2$’ > /ˈ**nug**i/ [ˈ**nug**i] ‘tail’ (Ortiz Ricaurte 2000: 779)

*ᵑgaⁿdi(a) ‘diarrhea’ > /ˈgania/ ‘diarrhea’ (Ortiz Ricaurte 2000: 769)

*ᵑguⁿdaʔ ‘hand, arm’ > /ˈgula/ [ˈguɮa] ‘arm’ (Ortiz Ricaurte 2000: 763, 768)

*kuHⁿdi ~ *kuiHⁿd ~ *BuHⁿdi ‘throat, hole’ > /ˈ**mul**ua/ ‘throat’ (Ortiz Ricaurte 2000: 765)

*saⁿd(a) ‘bad$_2$’ > ˈ***ʃan**e* ‘bad’ (Ortiz Ricaurte 2000: 768)

*u^{n}du ‘cedar’ > /ˈulu/ ‘pot’ (Ortiz Ricaurte 2000: 768)

***H^{n}d > *s* / __#**

*^{n}daH(^{n}d) ‘I$_1$’ > /nas/ [nas] ‘I’ (Ortiz Ricaurte 2000: 779)

***k > *k* / #__**

***k > {*k*, *g*} / elsewhere**

*^{m}bahka(i) ‘four’ > /**ma**ˈ**ke**ua/ [**mã**ˈ**kẽ**wã] ‘four’ (Ortiz Ricaurte 2000: 778)

*^{m}bu^{n}d-ka^{n}d(a) ‘wind’ > /mulˈkala/ [mulˈkaɮa] ‘wind’ (Ortiz Ricaurte 2000: 780)

*^{n}duh(k) ‘tail$_2$’ > /ˈ**nug**i/ [ˈ**nug**i] ‘tail’ (Ortiz Ricaurte 2000: 779)

*^{ŋ}gak ‘mother-in-law, daughter-in-law’ > /ˈ**gag**i/ ‘mother-in-law’ (Ortíz Ricaurte 2000: 764)

*hak ~ *kaʔ ‘stone’ > /ˈ**hag**i/ [ˈ**hag**i] ‘stone’ (Ortiz Ricaurte 2000: 779)

*-ka nominalizer$_3$ > /-ka/ agentive nominalizer (cf. Ortiz Ricaurte 2000: 773)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > /**ka**ˈ**l**a/ ‘leg’ (Ortiz Ricaurte 2000: 760)

*kah-ka ‘mouth’ > /ˈkaka/ [ˈkaxa] ‘mouth’ (Ortiz Ricaurte 2000: 779)

*kap- ‘to sleep’ > /**ka**ˈ**b**aʃi/ [**ka**ˈ**b**aʃi] ‘to sleep’ (Ortiz Ricaurte 2000: 779)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > /ˈ**kag**i/ [ˈ**kag**i] ‘earth’ (Ortiz Ricaurte 2000: 778)

*kuh ‘to hear$_2$’ > /ˈ**ku**ka/ [ˈ**ku**xa] ‘ear’ (Ortiz Ricaurte 2000: 778)

*kuh ‘seven’ > /ˈ**ku**gua/ [ˈ**ku**gua] ‘seven’ (Ortíz Ricaurte 2000: 779)

*kuuʔ ‘hand, finger’ > /ˈkou/ ‘hand’ (Ortiz Ricaurte 2000: 769)

*kũʔ ‘louse’ > /**ku**ˈi/ [**ku**ˈi] ‘louse’ (Ortiz Ricaurte 2000: 779)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > /ˈ**tagb**i/ [ˈ**taʁb**i] ‘snake’ (Ortiz Ricaurte 2000: 779)

***^{ŋ}g > *ʒ* / __*ĩ**

***^{ŋ}g > *g* / elsewhere**

*^{ŋ}ga ‘excrement’ > /ˈ**ga**i/ ‘excrement’ (Oritz Ricaurte 2000: 768)

*^{ŋ}ga(^{n}da) ‘back$_2$’ > /ˈ**ga**gla/ [ˈ**ga**ʁɮa] ‘neck’ (Ortiz Ricaurte 2000: 763, 779)

*^{ŋ}ga-^{n}di(a) ‘diarrhea’ > /ˈgania/ ‘diarrhea’ (Ortiz Ricaurte 2000: 769)

*^{ŋ}gak ‘mother-in-law, daughter-in-law’ > /ˈ**gag**i/ ‘mother-in-law’ (Ortíz Ricaurte 2000: 764)

*^{ŋ}gi ‘worm’ > /ʒi/ ‘worm’ (Ortíz Ricaurte 2000: 769)

*^{ŋ}gua ‘to kill’ > /**gu**ˈ**a**ʃi/ [**gu**ˈ**a**ʃi] ‘to kill’ (Ortiz Ricaurte 2000: 779)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > /ˈgula/ [ˈguɮa] ‘arm’ (Ortiz Ricaurte 2000: 763, 768)

***k^{w} > *ku* / #__*V$_{[-nasal]}$**

***k^{w} > *gu* / #__*V$_{[+nasal]}$**

*k^{w}i ‘to dance’ > /**ku**ˈ**i**zihi/ [**ku**ˈ**i**zihĩ] ‘to dance’ (Ortiz Ricaurte 2000: 778)

*k^{w}ik ‘arm, wing, shoulder’ > /**gu**ˈ**i**kala/ [**gu**ˈ**i**xaɮa] ‘wing’ (Ortiz Ricaurte 2000: 780)

***ŋg^{w} > {*u*, *w*} / #__**

***ŋg^{w} > *gu* / V__V**

[*^{n}di-g^{w}a] ‘lake, rain’ > /niguˈa/ ‘swamp’ (Ortiz Ricaurte 2000: 768)

*ŋg^{w}a ~ *uŋg ‘fish’ > /ˈ**ua**ka/ [ˈ**wa**xa] ‘fish’ (Ortiz Ricaurte 2000: 778)

*ŋg^{w}a(k) ‘face’ > /**u**ˈ**a**ka/ ‘face’ (Ortíz Ricaurte 2000: 769)

*ŋg^{w}aʔ ‘child’ > Kogi [ˈwawa] ‘baby, offspring’ (Ortiz Ricaurte 2000: 762)

***ʔ > Ø**

*^{m}baʔ ‘you’ > /ma/ [ma] ‘you’ (Oritz Ricaurte 2000: 779)

*^{m}buuʔ ‘two’ > /ˈ**mou**ʒua/ [ˈ**mou**ʒua] ‘two’ (Ortiz Ricaurte 2000: 780)

[*^{n}di-g^{w}a] ‘lake, rain’ > /niguˈa/ ‘swamp’ (Ortiz Ricaurte 2000: 768)

*^{n}diʔ ‘water, river’ > /ni/ [ɲi] ‘water’ (Ortiz Ricaurte 2000: 780)

*^{n}diʔ-a ‘liquid’ > *nia* (unbound morpheme), *-lia* (bound morpheme) ‘liquid’ (Ortiz Ricaurte 2000: 769)

*ŋgu^{n}daʔ ‘hand, arm’ > /ˈgula/ [ˈguɮa] ‘arm’ (Ortiz Ricaurte 2000: 763, 768)

*ŋg^{w}aʔ ‘child’ > Kogi [ˈwawa] ‘baby, offspring’ (Ortiz Ricaurte 2000: 762)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > /ˈ**kag**i/ [ˈ**kag**i] ‘earth’ (Ortiz Ricaurte 2000: 778)

*kuuʔ ‘hand, finger’ > /ˈkou/ ‘hand’ (Ortiz Ricaurte 2000: 769)

*****kũʔ ‘louse’ > /**ku**ˈi/ [**ku**ˈi] ‘louse’ (Ortiz Ricaurte 2000: 779)

ʦ > *s

*ʦa ‘hair, head’ > /ˈ**sã**ĩ/ [ˈ**sã**ĩ] ‘hair’ (Ortiz Ricaurte 2000: 778)

*ʦii ‘night, dark’ > /ˈ**sei**sɯn/ [ˈ**sei**sɯn] ‘night’ (Ortiz Ricaurte 2000: 779)

*ʦu ‘child, small’ > /ˈ**su**kua/ [ˈ**su**kua] ‘child’ (Ortiz Ricaurte 2000: 778)

s > *t* / __*u

*su ‘to see’ > ***tu*** ˈ*ĩ* ‘to see’ (Ortiz Ricaurte 2000: 767)

***h > {*h*, Ø} / $__**

***h > Ø / other environments**

*^{m}bahka(i) ‘four’ > **/ma**ˈ**ke**ua/ [**mã**ˈ**kẽ**wã] ‘four’ (Ortiz Ricaurte 2000: 778)

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_1$’ > /aˈ**bita/** [aˈ**bita**] ‘liver’ (Ortíz Ricaurte 2000: 779)

*^{n}duh(k) ‘tail$_2$’ > /ˈ**nug**i/ [ˈ**nug**i] ‘tail’ (Ortiz Ricaurte 2000: 779)

*hak ~ *kaʔ ‘stone’ > /ˈ**hag**i/ [ˈ**hag**i] ‘stone’ (Ortiz Ricaurte 2000: 779)

*hap- ‘eight’ > /ˈ**ab**igua/ [ˈ**ab**igua] ‘eight’ (Ortiz Ricaurte 2000 778)

*hu ‘house’ > **/hu**ˈi/ ‘house’ (Ortiz Ricaurte 2000: 760)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > /aˈ**huba**/ [aˈ**huba**] ‘skin’ (Ortiz Ricaurte 2000: 779)

*kah-ka ‘mouth’ > /ˈkaka/ [ˈkaxa] ‘mouth’ (Ortiz Ricaurte 2000: 779)

*kuh ‘to hear$_2$’ > /ˈ**ku**ka/ [ˈ**ku**xa] ‘ear’ (Ortiz Ricaurte 2000: 778)

*kuh ‘seven’ > /ˈ**ku**gua/ [ˈ**ku**gua] ‘seven’ (Ortíz Ricaurte 2000: 779)

2.3.17 Kuna

With some 40,000 to 70,000 speakers, mostly in Panama, Kuna is among the largest Chibchan languages at present (cf. Adelaar & Muysken 2004: 62; Quesada 2007: 35). The Kuna of Panama live in autonomous *comarcas*, mostly in the San Blas archipelago on the Caribbean coast, and in parts of the Darien mainland (Adelaar & Muysken 2004: 62), along the Bayano, Tuira, Chucunaque and Pech rivers (Llerena Villalobos 2000: 59). In present-day Colombia, only few Kuna speakers live in the northwest of the country, near the Gulf of Urabá, in Caimán Nuevo (Antioquia) and in Arquía (Chocó) (Adelaar & Muysken 2004: 61–2). The Panamanian Kuna are newcomers in their present-day habitat, immigrating from the east: on their journey westwards, fleeing from the Emberá, the Kuna seem to have occupied the empty areas that had formerly been inhabited by the extinct Cueva, in the Darien region (Romoli 1987: 50; Adelaar & Muysken 2004: 62). Cueva, in turn, was probably a Chocoan language (Loewen 1954: 4–5; Constenla Umaña & Margery Peña 1991: 138–9). A place name on the coast of northern Chocó (Colombia), *Juradó*, means 'river of the Cuna' in Emberá. This suggests a former presence of the Kuna in this area (Adelaar & Muysken 2004: 49). Another piece of evidence substantiating a southeastern origin of the Cuna is Rivet's (1943a: 37) observation of two lexical parallels of Kuna in the indigenous languages formerly spoken in the Colombian towns of Arma and Pozo (department of Caldas, Cauca valley) (Adelaar & Muysken 2004: 49), and another parallel in the Nore or Nori language of the Sierra de Abibe in Colombia (for the terms in question see below, subsection 2.3.19 on Nutabe).

The position of Kuna within the Chibchan family still needs to be worked out in detail. Constenla Umana (2012: 413) groups it together with Guaymiic, into the subgroup of Eastern Isthmic languages, stating that Kuna "shows a very weak relationship with all the other languages" of the Isthmian subgroup (that is, Bribri, Cabécar, Teribe/Térraba). Instead, Holmer (1947: 205–6) argues that Kogi is the closest relative of Kuna. He considers the relationship of Kuna with Muisca, Bribri and Rama to be much more distant. In terms of potentially relevant sound changes undergone both by Kuna and Kogi, Holmer (1947: 41) observes that in both Kuna and Kogi, *n* replaces *l* in word-initial position. A shared lexical innovation shared by both languages seems to be Kogi /ˈsankala/ [ˈsaŋkaɮa] 'head' (Ortiz Ricaurte 2000: 779), Kuna *sakla* [saila] 'head, hair of the head, chief' (Holmer 1952: 133).

Sources on Kuna are comparatively comprehensive. Holmer (1946, 1947) has published grammatical overviews, often embellished with comparative information. Holmer's 1947 grammar is based mainly on information from one single consultant, Rubén Pérez Kantule (cf. ibid.: 1). Holmer's 1952 dictionary of the Kuna language is based on fieldwork in Panama and Colombia (cf. ibid.: 5). A recent publication on

Panamanian Kuna by Smith (2014) includes information on syntax. Information on Kuna from the Colombian side can be found in the works of Llerena Villalobos (1987, 2000). A sketch of the language is also given by Adelaar and Muysken (2004: 61–6).

Compared with other Chibchan languages of Colombia, such as Kogi and Muisca, the structure of Kuna seems relatively straightforward. The consonant inventory of Kuna has probably undergone more changes than that of any other Chibchan language (see below). In terms of grammaticalization, it is interesting to observe that in Kuna, the Proto-Chibchan term for 'stick, bone, tree' has a reflex in the term *kala* 'stick, bone', but also in a suffix *-kala*, which may indicate possessive, benefactive and purposive meanings (cf. Pache 2016a). This is reminiscent to the grammaticalization chain undergone by the term for 'stick, wood, firewood', which became a purpose marker in adverbial clauses in Hup, a Nadahup language of the Brazil–Columbia border region (cf. Epps 2008a).

2.3.17.1 The sounds of Kuna

The following two subsections present and discuss the sounds of Kuna, mostly based on the interpretations proposed by Holmer (1947, 1952) and, to a lesser extent, Llerena Villalobos (2000). In his transcriptions of Kuna data, Holmer gives the underlying forms, which can be quite different from the phonetic realizations.

2.3.17.1.1 Kuna vowels and suprasegmentals

The vowel inventory of Kuna is illustrated in table 53, based on data from Llerena Villalobos (2000: 64).

TABLE 53
KUNA PHONEMES: VOWELS

	Front	Central	Back
High	i		u
High-mid	e		o
Low		a	

Source: Llerena Villalobos (2000: 64).

As a general rule, the penultimate syllable of a Kuna word is stressed (Smith 2014: 48–9). In stressed open syllables, vowels are automatically long (Llerena Villalobos 2000:

66; Adelaar & Muysken 2004: 62). Instead, vowels in the final open syllable of a polysyllabic word tend to be realized as relatively short. Vowel length is not phonemic in Kuna (Smith 2014: 43–4). Stress/vowel length may affect vowel quality in Kuna: Holmer (1947: 5–6, 20) speaks of short and slurred vowels in final syllables of polysyllabic words. In this position, short *a* and *e* are sometimes realized as *ə*, for instance in *akkitta* [ăˈkĭttə] 'to put out', or in *akke* [ˈăkkə] 'hook' (ibid.: 8).[49] Generally speaking, short *a* in Kuna is often realized as ʌ or ɐ.[50] If short, including in final position of a polysyllabic word, *u* and *i* tend to be lowered (cf. ibid.: 5–8).

Morpheme-finally, vowels are often deleted, for instance in *ur-mol* 'sail', from *ulu* 'ship' and *mola* 'cloth' (cf. Holmer 1947: 35). After consonant clusters, for instance, in *purpa* 'soul' or *purwa* 'wind', no apocope is possible however (ibid.: 22). Vowel loss depends on register and sex of the speaker: In ceremonial speech and songs, non-syncopated forms are frequent; men's speech contains more syncopated forms than womens' or children's speech; also, in some cases, vowel loss is obligatory, whereas in other cases, it is not (Holmer 1951: 41, cited in Adelaar & Muysken 2004: 64). Vowels are realized as short if followed by a geminated consonant, but they are realized as long if followed by the vibrant *r* (Holmer 1947: 21).

Besides short and long vowels, Kuna also has extra-long vowels, which may be analyzed as same-vowel sequences and are attested, above all, in roots with a CVV structure (cf. Holmer 1947: 30–1; Adelaar & Muysken 2004: 62).[51] An example is [tii] 'water', which loses vowel length if it is followed by another morpheme, as in *ti-war* 'river' (Smith 2014: 43–4). Sequences of identical, and sometimes also of different vowels, are realized as disyllabic (Holmer 1947: 7). There may be a link between same-vowel sequences in Kuna and aspiration. Similar phenomena seem to exist in Miskito and in Kogi (ibid.: 30–2), and probably also in other Chibchan languages, such as Muisca (see subsection 2.3.18 on this language).

The Kuna vowel *o* is frequently realized as "very open" (Holmer 1947: 6, the author probably refers to [ɔ]); and long *e* seems to be realized as an "open sound" (ibid.: 6, Holmer probably refer to [ɛ]). There are also sequences of non-identical vowels in Kuna (Holmer 1947: 9; Llerena Villalobos 2000: 66). In sequences such as for instance *ue*, *ua*, *io*, *ia*, and sometimes *ui*, the first element is realized as non-syllabic or short (cf. Llerena Villalobos 2000: 66). In certain cases, sequences such as *ai* and *au* can bring about *e* and *o*, respectively. In fact, in several cases, Kuna *e* and *o* are demonstrably the result of contraction (Holmer 1947: 25–8). An example for this phenomenon is attested in Kuna *mai* 'to be in a lying position' versus *meka* ~ *meke* 'to lie down' (cf. ibid.: 28).

[49] The phonetic transcriptions are given as such by Holmer (1947).
[50] Holmer's transcriptions. He describes the realization as being "like English short *u*" (Holmer 1947: 6).
[51] A similar situation may exist in Rama and in Chimila.

In the cases of causative *o-* (compare Kogi *u-*) and *e-*, it is impossible, however, to postulate an origin of the Kuna high-mid vowels in a vowel sequence or diphthong (ibid.: 28).

There is neither tone nor distinctive vowel nasality in Kuna.

2.3.17.1.2 Kuna consonants

Table 54 illustrates the consonant phonemes of Kuna.

TABLE 54
KUNA PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar	Labio-velar
Simple stops	p	t		k	k^w
Geminated stop	pp	tt		kk	kk^w
Affricate			ʧ		
Fricative		s			
Simple lateral		l			
Geminated lateral		ll			
Vibrant		r			
Glides	w		j		
Simple nasals	m	n			
Geminated nasals	mm	nn			

Source: Llerena Villalobos (2000: 64).

Several simple consonant phonemes have geminated or long counterparts in Kuna. Whereas simple consonants occur word-initially, -internally and -finally in Kuna, geminate or long consonants are restricted to intervocalic position, where they contrast with their simple counterparts: compare *take* 'to come' versus *takke* 'to see', or *inna* 'chicha' versus *ina* 'medicine' (Holmer 1947: 10). If a geminate consonant would come to occur in word-final position through vowel apocope, it is reduced to its simple counterpart (ibid.: 22). Sequences of distinct consonants in word-initial position are rarely found and are the result of syncope, as in *prua* ~ *purwa* 'wind' (ibid.: 21). The affricate *ʧ* is the geminate counterpart of *s*; in initial position, it is probably only found

in *ʧiʧitti* ‘black’, which is attested besides *siʧitti* ‘black’ (ibid.: 14). For the impact of consonant gemination or length on vowel length, compare subsection 2.3.17.1.1 above, on Kuna vowels. Consonant gemination seems to occur at (old) morpheme boundaries, compare, for instance, Proto-Chibchan *kah ‘open’ > Kuna ***ekaa*** ‘to open’ (Holmer 1952: 22) with a singleton stop, but Proto-Chibchan *^{n}du-ku^{n}d(a) / *^{n}du-kus(a) ‘nape$_1$’ > Kuna *tukkur* ‘neck’ (Holmer 1952: 165), with geminated *kk*. The matter requires further investigation.

The simple voiceless stops are usually voiced between vowels or when adjacent to a voiced consonant (Adelaar & Muysken 2004: 62), for instance in /kope/ [ˈkoːbe] ‘to drink’, or in /kukle/ [ˈkugl^{j}e] ‘seven’ (Llerena Villalobos 2000: 65). Simple voiceless stops may also be voiced in word-initial position if preceded by a word/morpheme ending in a vowel. In coda position, Kuna stops are realized as implosives (Holmer 1947: 11). On the other hand, geminate voiceless stops are realized as simple voiceless stops (Smith 2014: 38). A discussion of voiced and geminated stops in Kuna is provided by Sherzer (1970). In syllable coda, *p* and *t* assimilate to a following nasal consonant and become *m* and *n*, respectively (Holmer 1947: 12). In syllable coda and before a non-velar consonant, the velar stop *k* and its geminate counterpart *kk* are often lenited and realized as *j* (Adelaar & Muysken 2004: 64), for instance in /kukle/ [ˈkujl^{j}e] ‘seven’ (Llerena Villalobos 2000: 65).

If after apocope, Kuna *k^{w}* is found in coda position, it is realized as *k* or if followed by another consonant, it is lenited and realized as *j*. Before *o*, *k^{w}* loses its labial element (ibid.: 13). In intervocalic position, it seems that *k^{w}* is sometimes also realized as *w* (ibid.: 13–4).

The fricative *s* seems to alternate with *l* in *pilu* ~ *pisu* ‘circle, revolve’ (Holmer 1947: 50).[52]

Neither Kuna *r* nor *l* are attested word-initially. Whereas *l* is replaced by *n* in word-initial position – compare Kuna *nakrus* for Spanish *La Cruz* ‘the cross’ – a prothetic copy vowel is inserted before word-initial *r* – compare Kuna *irikardo* for Ricardo – (Holmer 1947: 40–1). Morpheme-initially however, Kuna *l* does exist: compare *nele* ‘sacred, chief’, *ipe-lele* ‘sun’ (ibid.: 40). Kuna *l* is described as resembling a tap, and intermediate between *l* and *r* (ibid.: 16). According to Holmer (1947: 16), *l* and *r* may alternate in syllable-coda, for instance in *lilba* and *lirba-tup* ‘cotton thread’. According to Llerena Villalobos (2000: 65), in morpheme-final position, the liquid is

[52] The case of *sulu* ‘monkey’ versus *tule* ‘man’ (Holmer 1947: 50) may either reflect variation or sound symbolism. Indeed, Holmer (1947: 37) observes more coincidences between ‘man’ and ‘monkey’ terms in Chibchan languages: Kogi <guivĺ> ‘monkey’ (Preuss 1927: 499) and Bribri [wím] ‘howler monkey’ (Chevrier 2017a: 166) versus Bribri [wîm] ‘man’ (Chevrier 2017a: 166), and Muisca <muysco> ‘monkey’ (González de Pérez 1987: 280) versus <muysca> ‘man’ (ibid.: 271).

realized as *l* if the following element begins with a vowel. Instead, it is realized as a *r* if the following element begins with a consonant, as, for instance, in *urmol* ‘sail’ (cf. Holmer 1952: 176).

The dentoalveolar nasal *n* is realized as [ŋ] before the velar stop, for instance in /inku/ [ˈiŋgu] ‘when?’, and as [ɲ] in /pinne/ [ˈpiɲe] ‘already’ and in /annire/ [aˈɲiɾe] ‘let pass’ (Llerena Villalobos 2000: 65).

The glide *w* seems to be distinct from *u* in Kuna, given the existence of minimal pairs such as *ua* ‘fish’ versus *wa* ‘smoke’. The glides *w* and *j* are not found in coda position (Holmer 1947: 19; Smith 2014: 37); the same is true for *m* (Llerena Villalobos 2000: 65).

2.3.17.2 Reflexes of Proto-Chibchan phonemes in Kuna

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.17.2.1) and of Proto-Chibchan consonants (2.3.17.2.2) in Kuna.

2.3.17.2.1 Reflexes of Proto-Chibchan vowels in Kuna (cf. also Constenla Umaña 1981: 260–2)

{*a, *ã} > *a*

*a ‘that’ > *a* ‘that’ (cf. Holmer 1947: 106)

*a- valency-reducer$_1$ > *a*- valency-reducing verbal prefix (Holmer 1947: 117)

*apa ‘body’ > *apa* ‘body’ (Holmer 1952: 16)

*aʔ- valency-reducer$_2$ > *a*- valency-reducing verbal prefix (cf. Holmer 1947: 72–3)

*^{m}ba comitative$_3$ > *pa* comitative, allative (Holmer 1947: 187)

*-^{m}ba nominalizer$_1$ > *-**rpa*** nominalizer encoding notions of intensity (cf. Holmer 1947: 58–9)

*^{m}ba^{n}d- ‘all$_1$’ > ***-mal**a* ‘plural’ (Holmer 1947: 86–8, 123–5)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > *pane* ‘penis’ (Holmer 1952: 115)

*^{m}bahka(i) ‘four’ > ***pakke**k^{w}a* ‘four’ (Holmer 1952: 113)

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_1$’ > *pina* ‘core (of plant), liver’ (Holmer 1952: 122)

*^{m}bu-^{n}da ‘big$_2$’ > *pula* ‘big’ (Holmer 1952: 128)

*^{m}bu^{n}d-ka^{n}d(a) ‘wind’ > *purkala* ‘breath, voice, the hissing, vigor’ (Holmer 1952: 130)

*^{n}da ‘to come’ > ***ta**ka* ‘to come’ (Holmer 1952: 152)

*^{n}dã^{m}bã / *sã^{m}bã ‘calabash$_1$’ > *napa* name of a tree and its fruit, a calabash of great importance to the Kuna (Holmer 1952: 87)

*ⁿda(kiⁿd) ~ *ta(kiⁿd) 'back$_1$' > ***naa***le* 'after' (Holmer 1952: 82)

*ⁿdaʔ ~ *taʔ 'to go$_2$' > *ta* 'to go' (Holmer 1952: 152)

*ⁿdiⁿda / *ⁿdisa 'dry$_1$' > ***tina***k^w*a* 'dry' (Holmer 1952: 160)

*(ⁿd-)uᵐba 'brother-in-law' > *upa* 'brother-in-law, wife's brother, male relation of a first wife's sister' (Holmer 1952: 176)

*ŋga 'excrement' > *saa* 'posterior, belly, stomach, excrement' (Holmer 1952: 133)

*ŋgak 'feather, wing, arm, hand' > ***sak***k^w*a* 'arm, sleeve, especially in plural: wing(s)' (Holmer 1952: 135)

*ŋgak 'mother-in-law, daughter-in-law' > ***sak***ka* 'parent-in-law' (Holmer 1952: 134)

*ŋga-u (ka[k]) 'fireplace' > *sou* 'kitchen' (Holmer 1952: 146), *soo* 'fire, fire wood, fireplace' (ibid.: 145), ***sokak***ka* 'kitchen, fireplace' (ibid.: 144)

*ŋgaʔⁿda ~ *ŋgaʔta 'meat, flesh$_1$' > *sana* 'body, person, flesh, meat, body (of anything), meat or interior soft part of plants or animals' (Holmer 1952: 136)

*ŋgʷa(k) 'face' > ***wa***kala* 'face, cheek' (Holmer 1952: 180)

*ŋgʷaʔ 'child' > ***wa***k^w*a* 'grandchild (boy or girl)' (Holmer 1952: 181)

*haⁿd- ~ *hat- 'hand' > ***ar***kana* 'hand' (Holmer 1952: 19), ***atta***le* 'five' (Holmer 1947: 99)

*hak ~ *kaʔ 'stone' > ***ak***k^w*a* 'stone, rock, quern' (Holmer 1952: 12)

*hapi ~ *apiʔ 'blood' > *ape* 'blood' (Holmer 1952: 16)

*(hi-)iⁿda ~ *(hi-)ita 'full$_1$' > ***ena***makka* 'to fill' (Holmer 1952: 23)

*huka ~ *huBa ~ *kuaʔ 'skin' > *ukka* 'skin, bark, shell, scales (of fish)' (Holmer 1952: 172)

*ka allative/dative > *ka* dative ('to, for, against') (Holmer 1947: 186)

*ka 'to catch, grasp' > *kaa* 'to catch, hold, inherit, marry' (Holmer 1952: 37)

*ka 'leaf' > *kaa* 'plant, herb, grass, leaf' (Holmer 1952: 37)

*kaⁿd- ~ *kat- 'stick, bone, tree' > ***kal***a* 'bone, pipe, whistle, flute, music, teeth, necklace made of certain bones' (Holmer 1952: 41)

*kãⁿd- 'bone, strong, hard' > ***kan***noa* 'to strengthen, be strong' (Holmer 1952: 47)

*kah 'open' > ***ekaa*** 'to open' (Holmer 1952: 22)

*kah-ka 'mouth' > *kakka* 'mouth, lip, language, word, side, edge' (Holmer 1952: 41)

*kap- 'to sleep' > ***kap***a* 'to sleep' (Holmer 1952: 47)

*kuʔ(-Ba) 'tongue' > ***k^{w}a***pinni* 'tongue, language' (Holmer 1952: 63)

*kʷa 'kidney, heart, stomach' > ***k^{w}a***ke* 'heart in the body; heart, mind' (Holmer 1952: 62, 64)

*kʷa 'seed, fruit' > *k^{w}ak^{w}a* 'seed, kernel, meat (of fruit)' (Holmer 1952: 63)

*pii-ⁿda 'all$_2$' > *pela* 'all, altogether, it is finished' (Holmer 1952: 118)

*La ‘egg, offspring’ > ***ana*** ‘sons, offspring, branch (as of tree or river)’ (Holmer 1952: 15)

*taB(a) ‘earth, floor, mud’ > ***nap****pa* ‘earth, land, ground, floor’ (Holmer 1952: 87)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > ***nakp****e* ‘snake’ (Holmer 1952: 84)

*tauka^{ʔ} ‘calabash$_2$’ > *noka* ‘calabash, drinking vessel, cup, *totuma*’ (Holmer 1952: 97)

*ta^{ʔ} ‘rattle’ > *naa* ‘gourd rattle’ (Holmer 1952: 82)

*ʦa ‘hair, head’ > ***sa****kla* ‘head, hair of the head, base/trunk of a tree, beginning, principal, captain’ (Holmer 1952: 135)

{*ai, *ii} > {*ai*, *e*}

*^{m}bahka(i) ‘four’ > ***pakke****k^{w}a* ‘four’ (Holmer 1952: 113)

*pai ‘friend, other’ > ***pai****tti* ‘other, else, next’ (Holmer 1952: 113)

*pii-^{n}da ‘all$_2$’ > *pela* ‘all, altogether, it is finished’ (Holmer 1952: 118)

*tai^{n}d- ‘six’ > ***ner****k^{w}a* (Holmer 1947: 99)

{*a(ʔ)u, *uu} > {*o, ou*}

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > ***ko****la* ‘to call, sound, say, awaken, announce, hear, listen’ (Holmer 1952: 55–56)

*^{m}buu^{ʔ} ‘two’ > *poo* ‘two’ (Holmer 1952: 126)

*^{n}da^{ʔ}-u ‘to enter’ > ***to****ka* ‘to enter, dive’ (Holmer 1952: 163)

*^{ŋ}ga-u (ka[k]) ‘fireplace’ > *sou* ‘kitchen’ (Holmer 1952: 146), *soo* ‘fire, fire wood, fireplace’ (ibid.: 145), ***sokak****ka* ‘kitchen, fireplace’ (ibid.: 144)

*kuu^{ʔ} ‘hand, finger’ > *koo* ‘finger’ (Holmer 1952: 56)

*tauka^{ʔ} ‘calabash$_2$’ > *noka* ‘calabash, drinking vessel, cup, *totuma*’ (Holmer 1952: 97)

*ʦau^{n}d ~ *tsu^{n}da ‘post, pole’ > ***u****sol****a*** ‘house post’ (Holmer 1952: 178)

{*i, *ii} > {*i*, *e*}

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > ***pin****i* ‘new, fresh’ (Holmer 1952: 122)

*^{m}bi- ‘how much, how many’ > ***pi****-k^{w}a* ‘how much?’ (Holmer 1947: 107)

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_1$’ > *pina* ‘core (of plant), liver’ (Holmer 1952: 122)

*^{m}bii ‘only’ > *pii* ‘only’ (Holmer 1952: 121)

*^{m}bii ‘up, sky’ > ***pi****ri* ‘top, handle, on top, top (of loom)’ (Holmer 1952: 124)

*^{n}di instrumental/locative > *ti* instrumental/locative (Holmer 1947: 63)

*^{n}di^{n}da / *^{n}disa ‘dry$_1$’ > ***tina****k^{w}a* ‘dry’ (Holmer 1952: 160)

*ⁿdiʔ ‘water, river’ > *tii* ‘water, especially fresh or river water’ (Holmer 1952: 159)

*hapi ~ *apiʔ ‘blood’ > *ape* ‘blood’ (Holmer 1952: 16)

*hi ‘path’ > ***i****kala* ‘way, road’ (Holmer 1952: 26)

*hi ~ *iʔ ‘this’ > *i* ‘this’ (Holmer 1947: 106)

*(hi-)iⁿda ~ *(hi-)ita ‘full$_1$’ > ***ena****makka* ‘to fill’ (Holmer 1952: 23)

*hutsi ~ *huits ‘urine’ > ***win****naa* ‘to urinate’ (Holmer 1952: 186)

*ki locative$_2$ > *ki* postposition ‘in, with, at, about, like’ (Holmer 1947: 186; 1952: 52)

*kʷi ‘to dance’ > ***kʷi****la* ‘to dance’ (Holmer 1952: 65)

*siʔ ‘moon’ > *nii* ‘moon, month’ (Holmer 1952: 94–5)

*tsuiⁿd ~ *tsuⁿdi ‘spoon, ladle’ > *noi****sui*** ‘calabash with handle for dipping’ (Holmer 1952: 97)

*tsuiⁿd ‘mosquito’ > *kʷi* ***suit*** ‘malaria-transmitting mosquito’ (Holmer 1952: 66)

{*u, *ũ} > *u*

*ᵐbuⁿd- ‘breath, wind’ > ***pur****wa* ‘wind’ (Holmer 1952: 131)

*Buⁿd- ‘small$_1$’ > ***pur****wikʷat* ‘small’ (Holmer 1952: 132)

*ᵐbu-ⁿda ‘big$_2$’ > *pula* ‘big’ (Holmer 1952: 128)

*ᵐbuⁿd-kaⁿd(a) ‘wind’ > *purkala* ‘breath, voice, the hissing, vigor’ (Holmer 1952: 130)

*ᵐbuⁿd(u) ‘bee, wasp’ > *pulu* ‘wasp’ (Holmer 1952: 128)

*ᵐbũⁿd(ũ) ‘ashes’ > *puru* ‘ashes’ (Holmer 1952: 131)

*ᵐbus- ‘woman (young)’ > ***pun****a* mostly in plural: ‘girl(s), women; sister, female cousin’ (Holmer 1952: 128)

*ⁿdu ‘to cook$_2$’ > ***tu****a* ‘to cook, boil’ (Holmer 1952: 164)

*ⁿdu ‘beautiful’ > ***nu****a* ‘good, well’ (Holmer 1952: 98)

*(ⁿd-)uᵐba ‘brother-in-law’ > *upa* ‘brother-in-law, wife’s brother, male relation of a first wife’s sister’ (Holmer 1952: 176)

*ⁿdu(ⁿd) ‘bird, dove’ > *nuu* ‘dove, term referring to comestible birds in general’ (Holmer 1952: 101)

*ⁿduⁿd- ‘seed’ > ***nul****u* ‘almond, guava’ (Holmer 1952: 100)

*ⁿduk / *suk ‘prick, sting, point’ > ***tuk****kua* ‘point in general, top of tree or plant, edge (of garment)’ (Holmer 1952: 165)

*ⁿdu-kuⁿd(a) / *ⁿdu-kus(a) ‘nape$_1$’ > *tukkur* ‘neck’ (Holmer 1952: 165)

*ⁿduʔ ‘tooth’ > ***nu****kar* ‘tooth, point of weapon or instrument’ (Holmer 1952: 100)

*ᵑgu ‘to take’ > ***su****a* ‘to take, fetch e.g. water, to get’ (Holmer 1952: 146–7)

*ŋgu^{n}daʔ ‘hand, arm’ > ***sur****kana* ‘arm’ (Holmer 1952: 151)

*ŋg^{w}a ~ *u^{ŋ}g ‘fish’ > *ua* ‘fish’ (Holmer 1952: 170), ***uk****ka* numeral classifier for fish (cf. ibid.: 172)

*hu ‘house’ > *uu* ‘house, nest’ (Holmer 1952: 178)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > *ukka* ‘skin, bark, shell, scales (of fish)’ (Holmer 1952: 172)

*hutsi ~ *huits ‘urine’ > ***win****naa* ‘to urinate’ (Holmer 1952: 186)

*ku^{n}di ~ *kui^{n}d ‘to eat’ > ***kun****na-* ‘to eat, bite’ (Holmer 1952: 60)

*kuʔ ‘to blow, fly’ > ***kuk****kua* ‘to fly, soar in air, let fly’ (Holmer 1952: 59)

*kũʔ ‘louse’ > *kuu* ‘louse’ (Holmer 1952: 62)

*kuʔ(-Ba) ‘tongue’ > ***k^{w}a****pinni* ‘tongue, language’ (Holmer 1952: 63)

*suh(k) ‘to wash’ > *apa****nuk****ka* ‘to wash body, bathe’ (Holmer 1952: 16)

*tsui^{n}d ~ *tsu^{n}di ‘spoon, ladle’ > *noi****sui*** ‘calabash with handle for dipping’ (Holmer 1952: 97)

*tsui^{n}d ‘mosquito’ > *k^{w}i* ***suit*** ‘malaria-transmitting mosquito’ (Holmer 1952: 66)

*tsuʔ ‘breast, teat$_2$’ > *nuu* ‘breast, milk’ (Holmer 1952: 101)

*uB(V)(-ta) ‘sand’ > *upi* ‘dust (of anything)’ (Holmer 1952: 176)

*u^{n}du ‘angry’ > ***ur****wa* ‘to become angry, be bad, be in commotion, fight, go to war, be infested with disease’ (Holmer 1952: 177)

*u^{n}du ‘cedar’ > *ulu* ‘boat, ship, canoe, box, trunk, chest’, also ‘pot’ in certain constructions (Holmer 1952: 174, 175)

uʔBa > *wa

*kuʔ(-Ba) ‘tongue’ > ***k^{w}a****pinni* ‘tongue, language’ (Holmer 1952: 63)

2.3.17.2.2 Reflexes of Proto-Chibchan consonants in Kuna (Constenla Umaña 1981: 262–5)

p > *p

*apa ‘body’ > *apa* ‘body’ (Holmer 1952: 16)

*hapi ~ *apiʔ ‘blood’ > *ape* ‘blood’ (Holmer 1952: 16)

*kap- ‘to sleep’ > ***kap****a* ‘to sleep’ (Holmer 1952: 47)

*pai ‘friend, other’ > ***pai****tti* ‘other, else, next’ (Holmer 1952: 113)

*pii-^{n}da ‘all$_2$’ > *pela* ‘all, altogether, it is finished’ (Holmer 1952: 118)

***^{m}b > {*p*, *m*}**

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > ***pin****i* ‘new, fresh’ (Holmer 1952: 122)

*^{m}ba comitative$_3$ > *pa* comitative, allative (Holmer 1947: 187)

*-^{m}ba nominalizer$_1$ > *-****rpa*** nominalizer encoding notions of intensity (cf. Holmer 1947: 58–9)

*^{m}ba- ‘cloud, fog’ > *poo* ‘mist, snow’ (Holmer 1952: 126)

*^{m}ba^{n}d- ‘all$_1$’ > ***-mal****a* ‘plural’ (Holmer 1947: 86–8, 123–5)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > *pane* ‘penis’ (Holmer 1952: 115)

*^{m}bahka(i) ‘four’ > ***pakke****k^{w}a* ‘four’ (Holmer 1952: 113)

*^{m}bi- ‘how much, how many’ > ***pi****-k^{w}a* ‘how much?’ (Holmer 1947: 107)

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_1$’ > *pina* ‘core (of plant), liver’ (Holmer 1952: 122)

*^{m}bii ‘only’ > *pii* ‘only’ (Holmer 1952: 121)

*^{m}bii ‘up, sky’ > ***pi****ri* ‘top, handle, on top, top (of loom)’ (Holmer 1952: 124)

*^{m}bu-^{n}da ‘big$_2$’ > *pula* ‘big’ (Holmer 1952: 128)

*^{m}bu^{n}d-ka^{n}d(a) ‘wind’ > *purkala* ‘breath, voice, the hissing, vigor’ (Holmer 1952: 130)

*^{m}bu^{n}d(u) ‘bee, wasp’ > *pulu* ‘wasp’ (Holmer 1952: 128)

*^{m}bũ^{n}d(ũ) ‘ashes’ > *puru* ‘ashes’ (Holmer 1952: 131)

*^{m}bus- ‘woman (young)’ > ***pun****a* mostly in plural: ‘girl(s), women; sister, female cousin’ (Holmer 1952: 128)

*^{m}buuʔ ‘two’ > *poo* ‘two’ (Holmer 1952: 126)

*^{n}dã^{m}bã / *sã^{m}bã ‘calabash$_1$’ > *napa* name of a tree and its fruit, a calabash of great importance to the Kuna (Holmer 1952: 87)

*(^{n}d-)u^{m}ba ‘brother-in-law’ > *upa* ‘brother-in-law, wife’s brother, male relation of a first wife’s sister’ (Holmer 1952: 176)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > ***nakp****e* ‘snake’ (Holmer 1952: 84)

t > *n

*taB(a) ‘earth, floor, mud’ > ***nap****pa* ‘earth, land, ground, floor’ (Holmer 1952: 87)

*tai^{n}d- ‘six’ > ***ner****k^{w}a* (Holmer 1947: 99)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > ***nakp****e* ‘snake’ (Holmer 1952: 84)

*taukaʔ ‘calabash$_2$’ > *noka* ‘calabash, drinking vessel, cup, *totuma*’ (Holmer 1952: 97)

*taʔ ‘rattle’ > *naa* ‘gourd rattle’ (Holmer 1952: 82)

^{n}d > {*n*, *t*} / #__*u

***^{n}d > *t* / #__V$_{[other]}$**

***^{n}d > {*t*, Ø} / VV__$**

***^{n}d > {*n*, *l*, *r*} / elsewhere**

*^{m}ba^{n}d- ‘all$_1$’ > -***mal****a* ‘plural’ (Holmer 1947: 86–8, 123–5)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > *pane* ‘penis’ (Holmer 1952: 115)

*^{m}bu^{n}d- ‘breath, wind’ > ***pur****wa* ‘wind’ (Holmer 1952: 131)

*Bu^{n}d- ‘small$_1$’ > ***pur****wik^{w}at* ‘small’ (Holmer 1952: 132)

*^{m}bu-^{n}da ‘big$_2$’ > *pula* ‘big’ (Holmer 1952: 128)

*^{m}bu^{n}d-ka^{n}d(a) ‘wind’ > *purkala* ‘breath, voice, the hissing, vigor’ (Holmer 1952: 130)

*^{m}bu^{n}d(u) ‘bee, wasp’ > *pulu* ‘wasp’ (Holmer 1952: 128)

*^{m}bũ^{n}d(ũ) ‘ashes’ > *puru* ‘ashes’ (Holmer 1952: 131)

*–^{n}d- nominalizer$_2$ > ***-l****a* / *-r* (cf. Holmer 1946: 188), ***-l****e* stative nominalizer (Holmer 1947: 170–1)

*^{n}da ‘to come’ > ***ta****ka* ‘to come’ (Holmer 1952: 152)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > *ta* ‘to go’ (Holmer 1952: 152)

*^{n}daʔ-u ‘to enter’ > ***to****ka* ‘to enter, dive’ (Holmer 1952: 163)

*^{n}di instrumental/locative > *ti* instrumental/locative (Holmer 1947: 63)

*^{n}di^{n}da / *^{n}disa ‘dry$_1$’ > ***tina****k^{w}a* ‘dry’ (Holmer 1952: 160)

*^{n}diʔ ‘water, river’ > *tii* ‘water, especially fresh or river water’ (Holmer 1952: 159)

*^{n}du ‘beautiful’ > ***nu****a* ‘good, well’ (Holmer 1952: 98)

*^{n}du ‘to cook$_2$’ > ***tu****a* ‘to cook, boil’ (Holmer 1952: 164)

*^{n}du(^{n}d) ‘bird, dove’ > *nuu* ‘dove, term referring to comestible birds in general’ (Holmer 1952: 101)

*^{n}du^{n}d- ‘seed’ > ***nul****u* ‘almond, guava’ (Holmer 1952: 100)

*^{n}duk / *suk ‘prick, sting, point’ > ***tuk****kua* ‘point in general, top of tree or plant, edge (of garment)’ (Holmer 1952: 165)

*^{n}du-ku^{n}d(a) / *^{n}du-kus(a) ‘nape$_1$’ > *tukkur* ‘neck’ (Holmer 1952: 165)

*^{n}duʔ ‘tooth’ > ***nu****kar* ‘tooth, point of weapon or instrument’ (Holmer 1952: 100)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > ***sur****kana* ‘arm’ (Holmer 1952: 151)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > ***kal****a* ‘bone, pipe, whistle, flute, music, teeth, necklace made of certain bones’ (Holmer 1952: 41)

*kã^{n}d- ‘bone, strong, hard’ > ***kan****noa* ‘to strengthen, be strong’ (Holmer 1952: 47)

*ku^{n}di ~ *kui^{n}d ‘to eat’ > ***kun****na-* ‘to eat, bite’ (Holmer 1952: 60)

*pii-^{n}da ‘all$_2$’ > *pela* ‘all, altogether, it is finished’ (Holmer 1952: 118)

*tai^{n}d- ‘six’ > ***ner****k^{w}a* (Holmer 1947: 99)

*ʦau^{n}d ~ *tsu^{n}da ‘post, pole’ > *u****sol****a* ‘house post’ (Holmer 1952: 178)

*ʦui^{n}d ~ *ʦu^{n}di ‘spoon, ladle’ > *noi****sui*** ‘calabash with handle for dipping’ (Holmer 1952: 97)

*ʦui^{n}d ‘mosquito’ > *k^{w}i* ***suit*** ‘malaria-transmitting mosquito’ (Holmer 1952: 66)

*u^{n}du ‘angry’ > ***ur****wa* ‘to become angry, be bad, be in commotion, fight, go to war, be infested with disease’ (Holmer 1952: 177)

*u^{n}du ‘cedar’ > *ulu* ‘boat, ship, canoe, box, trunk, chest’, also ‘pot’ in certain constructions (Holmer 1952: 174, 175)

k > *k

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > ***ko****la* ‘to call, sound, say, awaken, announce, hear, listen’ (Holmer 1952: 55–56)

*^{m}bu^{n}d-ka^{n}d(a) ‘wind’ > *purkala* ‘breath, voice, the hissing, vigor’ (Holmer 1952: 130)

*^{n}duk / *suk ‘prick, sting, point’ > ***tuk****kua* ‘point in general, top of tree or plant, edge (of garment)’ (Holmer 1952: 165)

*^{n}du-ku^{n}d(a) / *^{n}du-kus(a) ‘nape$_1$’ > *tukkur* ‘neck’ (Holmer 1952: 165)

*^{ŋ}gak ‘feather, wing, arm, hand’ > ***sak****k^{w}a* ‘arm, sleeve, especially in plural: wing(s)’ (Holmer 1952: 135)

*^{ŋ}gak ‘mother-in-law, daughter-in-law’ > ***sak****ka* ‘parent-in-law’ (Holmer 1952: 134)

*^{ŋ}ga-u (ka[k]) ‘fireplace’ > *sou* ‘kitchen’ (Holmer 1952: 146), *soo* ‘fire, fire wood, fireplace’ (ibid.: 145), ***sokak****ka* ‘kitchen, fireplace’ (ibid.: 144)

*hak ~ *kaʔ ‘stone’ > ***ak****k^{w}a* ‘stone, rock, quern’ (Holmer 1952: 12)

*ka allative/dative > *ka* dative (‘to, for, against’) (Holmer 1947: 186)

*ka ‘to catch, grasp’ > *kaa* ‘to catch, hold, inherit, marry’ (Holmer 1952: 37)

*ka ‘leaf’ > *kaa* ‘plant, herb, grass, leaf’ (Holmer 1952: 37)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > ***kal****a* ‘bone, pipe, whistle, flute, music, teeth, necklace made of certain bones’ (Holmer 1952: 41)

*kã^{n}d- ‘bone, strong, hard’ > ***kan****noa* ‘to strengthen, be strong’ (Holmer 1952: 47)

*kah ‘open’ > ***ekaa*** ‘to open’ (Holmer 1952: 22)

*kah-ka ‘mouth’ > *kakka* ‘mouth, lip, language, word, side, edge’ (Holmer 1952: 41)

*kap- ‘to sleep’ > ***kap****a* ‘to sleep’ (Holmer 1952: 47)

*ki locative$_2$ > *ki* postposition ‘in, with, at, about, like’ (Holmer 1947: 186; 1952: 52)

*ku^{n}di ~ *kui^{n}d ‘to eat’ > ***kun****na-* ‘to eat, bite’ (Holmer 1952: 60)

*kuuʔ ‘hand, finger’ > *koo* ‘finger’ (Holmer 1952: 56)

*kuʔ ‘to blow, fly’ > ***kuk****kua* ‘to fly, soar in air, let fly’ (Holmer 1952: 59)

*kũʔ ‘louse’ > *kuu* ‘louse’ (Holmer 1952: 62)

*kuʔ(-Ba) ‘tongue’ > ***k^{w}a****pinni* ‘tongue, language’ (Holmer 1952: 63)

*taka^{m}b- ~ *ta^{m}bak- ‘snake’ > ***nakp****e* ‘snake’ (Holmer 1952: 84)

*taukaʔ ‘calabash$_2$’ > *noka* ‘calabash, drinking vessel, cup, *totuma*’ (Holmer 1952: 97)

*ʦika ~ *tsaik locative$_3$ > *-seʔ* locative (source, goal), ergative (Frank 1985: 48)

ŋg > *s

*ŋga ‘excrement’ > *saa* ‘posterior, belly, stomach, excrement’ (Holmer 1952: 133)

*ŋgak ‘feather, wing, arm, hand’ > ***sak****k^{w}a* ‘arm, sleeve, especially in plural: wing(s)’ (Holmer 1952: 135)

*ŋgak ‘mother-in-law, daughter-in-law’ > ***sak****ka* ‘parent-in-law’ (Holmer 1952: 134)

*ŋga-u (ka[k]) ‘fireplace’ > *sou* ‘kitchen’ (Holmer 1952: 146), *soo* ‘fire, fire wood, fireplace’ (ibid.: 145), ***sokak****ka* ‘kitchen, fireplace’ (ibid.: 144)

*ŋgaʔ^{n}da ~ *ŋgaʔta ‘meat, flesh$_1$’ > *sana* ‘body, person, flesh, meat, body (of anything), meat or interior soft part of plants or animals’ (Holmer 1952: 136)

*ŋgu ‘to take’ > ***su****a* ‘to take, fetch e.g. water, to get’ (Holmer 1952: 146–7)

*ŋgu^{n}daʔ ‘hand, arm’ > ***sur****kana* ‘arm’ (Holmer 1952: 151)

k^{w} > *k^{w}

*k^{w}a ‘kidney, heart, stomach’ > ***k^{w}a****ke* ‘heart in the body; heart, mind’ (Holmer 1952: 62, 64)

*k^{w}a ‘seed, fruit’ > *k^{w}ak^{w}a* ‘seed, kernel, meat (of fruit)’ (Holmer 1952: 63)

*k^{w}i ‘to dance’ > ***k^{w}i****la* ‘to dance’ (Holmer 1952: 65)

***ŋg^{w} > {*u*, *w*}**

*ŋg^{w}- ‘to know’ > ***w****isi* ‘to know’ (Holmer 1952 186)

*ŋg^{w}a ~ *u^{ŋ}g ‘fish’ > *ua* ‘fish’ (Holmer 1952: 170), ***uk****ka* numeral classifier for fish (cf. ibid.: 172)

*ŋg^{w}a(k) ‘face’ > ***wa****kala* ‘face, cheek’ (Holmer 1952: 180)

*ŋg^{w}aʔ ‘child’ > ***wa****k^{w}a* ‘grandchild (boy or girl)’ (Holmer 1952: 181)

***ʔ > Ø**

*^{m}buuʔ ‘two’ > *poo* ‘two’ (Holmer 1952: 126)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > *ta* ‘to go’ (Holmer 1952: 152)

*^{n}daʔ-u ‘to enter’ > ***to**ka* ‘to enter, dive’ (Holmer 1952: 163)

*^{n}diʔ ‘water, river’ > *tii* ‘water, especially fresh or river water’ (Holmer 1952: 159)

*^{n}duʔ ‘tooth’ > ***nu**kar* ‘tooth, point of weapon or instrument’ (Holmer 1952: 100)

*^{ŋ}gaʔ^{n}da ~ *^{ŋ}gaʔta ‘meat, flesh$_1$’ > *sana* ‘body, person, flesh, meat, body (of anything), meat or interior soft part of plants or animals’ (Holmer 1952: 136)

*^{ŋ}g^{w}aʔ ‘child’ > ***wa**k^{w}a* ‘grandchild (boy or girl)’ (Holmer 1952: 181)

*kuuʔ ‘hand, finger’ > *koo* ‘finger’ (Holmer 1952: 56)

*kuʔ ‘to blow, fly’ > ***kuk**kua* ‘to fly, soar in air, let fly’ (Holmer 1952: 59)

*kũʔ ‘louse’ > *kuu* ‘louse’ (Holmer 1952: 62)

*siʔ ‘moon’ > *nii* ‘moon, month’ (Holmer 1952: 94–5)

*taʔ ‘rattle’ > *naa* ‘gourd rattle’ (Holmer 1952: 82)

*tsuʔ ‘breast, teat$_2$’ > *nuu* ‘breast, milk’ (Holmer 1952: 101)

ts > *n* / #__*u

***ts > *s* / #__ elsewhere**

*ts(i)- relational element$_2$ > *pinaskala* ‘chest’ (= ‘bone of the liver’) (Holmer 1952: 122)

*tsa ‘hair, head’ > ***sa**kla* ‘head, hair of the head, base/trunk of a tree, beginning, principal, captain’ (Holmer 1952: 135)

*tsau^{n}d ~ *tsu^{n}da ‘post, pole’ > *u**sol**a* ‘house post’ (Holmer 1952: 178)

*tsika ~ *tsaik locative$_3$ > *-se?* locative (source, goal), ergative (Frank 1985: 48)

*tsui^{n}d ~ *tsu^{n}di ‘spoon, ladle’ > *noi**sui*** ‘calabash with handle for dipping’ (Holmer 1952: 97)

*tsui^{n}d ‘mosquito’ > *k^{w}i **suit*** ‘malaria-transmitting mosquito’ (Holmer 1952: 66)

*tsuʔ ‘breast, teat$_2$’ > *nuu* ‘breast, milk’ (Holmer 1952: 101)

s > *n

*^{m}bus- ‘woman (young)’ > ***pun**a* mostly in plural: ‘girl(s), women; sister, female cousin’ (Holmer 1952: 128)

*^{n}dã^{m}bã / *sã^{m}bã ‘calabash$_1$’ > *napa* name of a tree and its fruit, a calabash of great importance to the Kuna (Holmer 1952: 87)

*^{n}di^{n}da / *^{n}disa ‘dry$_1$’ > ***tina**k^{w}a* ‘dry’ (Holmer 1952: 160)

*si? 'moon' > *nii* 'moon, month' (Holmer 1952: 94–5)

*suh(k) 'to wash' > *apa**nuk**ka* 'to wash body, bathe' (Holmer 1952: 16)

h > *k* / __*k

***h > Ø / elsewhere**

*^{m}bahka(i) 'four' > ***pakke***$k^{w}a$ 'four' (Holmer 1952: 113)

*^{m}bih^{n}da ~ *^{m}bihta 'heart, liver, center$_1$' > *pina* 'core (of plant), liver' (Holmer 1952: 122)

*ha^{n}d- ~ *hat- 'hand' > ***ar***kana* 'hand' (Holmer 1952: 19), ***atta***le* 'five' (Holmer 1947: 99)

*hak ~ *ka? 'stone' > ***ak***$k^{w}a$ 'stone, rock, quern' (Holmer 1952: 12)

*hi 'path' > ***i***kala* 'way, road' (Holmer 1952: 26)

*(hi-)i^{n}da ~ *(hi-)ita 'full$_1$' > ***ena***makka* 'to fill' (Holmer 1952: 23)

*hu 'house' > *uu* 'house, nest' (Holmer 1952: 178)

*hutsi ~ *huits 'urine' > ***win***naa* 'to urinate' (Holmer 1952: 186)

*kah 'open' > *e**kaa*** 'to open' (Holmer 1952: 22)

***#L > *n* / V__V**

*La 'egg, offspring' > *a**na*** 'sons, offspring, branch (as of tree or river)' (Holmer 1952: 15)

2.3.18 Muisca

At the arrival of the Spaniards, Muisca was spoken in an area mainly covering the altiplano of present-day departments of Cundinamarca and Boyacá. It was established as a *lengua general* by the Spaniards in 1580, that is, as a language that was used for missionary and administrative purposes in the New Kingdom of Granada (grossly covering present-day Panama, Colombia and Venezuela) (cf. Adelaar & Muysken 2004: 81). Soon after, however, Muisca vanished. Already in the first half of the eighteenth century, it was not widely spoken anymore (cf. Gumilla 1741: 315–6). Nevertheless, Jomard (1847: 87, cited in Lehmann 1920: 42) mentions later survival of Muisca, for instance among indigenous peoples of the Sierra Nevada de Santa Marta, but also among other indigenous populations of New Granada. Moncayo Rosales (1984) presents and discusses possible evidence for a relationship between Muisca and the extinct Guane language, formerly spoken in the southern parts of the department of Santander.

Within the Chibchan family, Constenla Umaña (2012: 417) groups the Muisca language together with its closest relative, Duit, as one of three subgroups of the Southern Magdalenic languages, within the Magdalenic branch of Chibchan. The other two subbranches of Southern Magdalenic Chibchan languages, that is, the two closest relatives of Muisca, are Tunebo and Barí, according to Constenla Umaña (ibid.).

Although only descriptions from colonial times are available for Muisca, the quality of these materials makes Muisca a well-described Chibchan language even today. The manuscript no. 158 from the National Library of Colombia, published in 1987 by María Stella González de Pérez, is the main source of the Muisca data discussed in the present thesis. Another Muisca description from colonial times is a manuscript which existed in two versions, one in Bogotá, one in Madrid. Both manuscripts eventually disappeared after they were published (Adelaar & Muysken 2004: 82–3). An elaborate summary and interpretation of the Muisca data available so far is given by Adelaar and Muysken (2004: 81–109). The first and only printed missionary grammar and confessionary of the language was written by the Dominican Bernardo de Lugo (1619). His work is remarkable in that he uses symbols or symbol combinations such as <cħ>, <ʒh>, and <ɣ> in order to represent certain sounds of Muisca (Stella González de Pérez, p.c.). Also, Lugo (1619: 91v–92r) provides a list of Muisca interjections expressing emotions such as love, contempt, abhorrence, fright, or sensation of pain. Finally, his work contains the only continuous non-religious Muisca texts that have survived – two sonnets, praising Lugo's knowledge of this intricate language (cf. Ostler 1995 for a translation). Some Muisca words can also be gleaned from parts of Piedrahita's (1688) and Simón's ([1626] 1882–92) works; a list of these Muisca terms is provided by Lehmann (1920: 50–2).

Archaeological findings suggest that in the areas populated by Muisca-speaking groups, new techniques and motives in ceramics and goldwork appeared after A.D. 600 (Bray 1997: 43). This may coincide with the arrival of some of the Muiscas' ancestors in the Colombian altiplano. Humboldt (1860: 281, cited in Uhle 1890: 488) hypothesized that the Muisca were originally a lowland people: The bath of El Dorado (that is, of a Muisca ruler covered with gold dust) in Lake Guatavita would hardly have developed as a rite in the cold highlands of Cundinamarca, and may, instead, reflect the Muiscas' former habitat in warmer regions.

A mixed language combining elements from Muisca and Spanish also seems to have existed at a certain time, it was called "lengua de jitanos" by the Spaniards. In this language, the word for 'horse' was <hicabai>, for instance – from Spanish *caballo* 'horse' (Uricoechea 1871: lxii; Adelaar & Muysken 2004: 82). The initial element <hi> in <hicabai> 'horse' must remain unexplained, for the moment. A specific detail of Muisca grammar is the existence of different forms of some question words, depending on tense considerations: <fesua> 'when? (talking about past events)' versus <fesnua> 'when? (talking about future events)' (González de Pérez 1987: 305) or <fiua> 'how many are they?' versus <finua> 'how many will they be?', <fienua> 'how much will it be?' (ibid.: 306). Future tense in these forms is indicated by an element < -n>. In verbs (indicative mood), future tense is indicated by a different suffix, namely <-nga> or <-nynga> (Adelaar & Muysken 2004: 92).

2.3.18.1 The sounds of Muisca

The following two subsections present and discuss the sounds of Muisca. Data of Muisca are given here in the original orthography, except for caps and lower case, and <ſ>, which is transcribed as <s> throughout. The phoneme inventory of Muisca has been discussed, for instance, by Constenla Umaña (1984b) and Adelaar and Muysken (2004: 83–8). Primary sources used here are Lugo (1619) and the anonymous National Library Grammar published by González de Pérez (1987).

2.3.18.1.1 Muisca vowels and suprasegmentals

Tables 55 and 56 illustrate the inventory of Muisca vowel graphemes and the phonemes that they probably referred to. Table 55 illustrates simple or plain vowels of Muisca.

TABLE 55
MUISCA PHONEMES: PLAIN VOWELS

	Front	Central	Back
High	i <i>	ɨ <y>	u <u>
Mid	e <e>		o <o>
Low		a <a>	

Sources: Constenla Umaña (1984b); Adelaar and Muysken (2004: 83–8).

Vowel aspiration (possibly breathy or murmured vowels) seems to have been contrastive in Muisca. It is indicted by a <h> inserted between two identical vowels, as in <tyhy-squa> 'to sit down' (González de Pérez 1987: 318). In Lugo's (1619) work, the first vowel of a <VhV> sequence is mostly deleted (Adelaar & Muysken 2004: 87). The anonymous author of the National Library Grammar explicitly presents some minimal pairs opposing <VhV> sequences to their single-vowel counterparts, providing evidence for their phonemic status: <vaya> 'mother' versus <vahaya> 'dead person', <chica> 'father-in-law of a man' versus <chihica> 'meat' (González de Pérez 1987: 72). I am not aware of any earlier source using minimal pairs for such a purpose in the context of Native American languages. A minimal pair opposing aspirated and non-aspirated vowels is also given by Lugo (1619: 70v) who explicitly refers to the feature in question as aspiration ("aspiración"), juxtaposing <chusquâ> ("sin aspiración") 'to skin' and <cħuhusquâ> ("con aspiración") 'to wash'. In other cases, aspirated and non-aspirated vowels seem to alternate freely, as in <fuhucha> 'female' (González de Pérez 1987: 269); <muysca fucha> 'woman' (ibid.: 281). Aspirated *e* (<ehe>) in Muisca is much less frequent than the aspirated counterparts of other vowels (cf. González de Pérez 1987: 165–335). Table 56 illustrates the Muisca inventory of aspirated vowels.

TABLE 56
MUISCA PHONEMES: ASPIRATED VOWELS

	Front	Central	Back
High	i̤ <ihi>	ɨ̤ <yhy>	ṳ <uhu>
High-mid	e̤ <ehe>		o̤ <oho>
Low		a̤ <aha>	

Based on Lugo (1619: 70v); González de Pérez (1987: 72); Adelaar and Muysken (2004: 86–7).

The value of the symbol <y> or <ɣ> (the latter in Lugo's 1619 orthography) is difficult to determine. According to the manuscript no. 158 from the National Library of Colombia, the grapheme <y> represents a sound between *e* and *i* (González de Pérez 1987: 71), suggesting a realization as *ɪ* – this may have been the case in the context of <yba> and <eba> both 'body' (cf. ibid.: 138, 223), of <nyia> 'gold' (ibid.: 286) and <neia nza> 'false gold' (ibid.: 262), or of the Muisca term for Bogotá, <muyquyta>,[53] which mostly appears, in colonial sources, as <muequetá>, according to Constenla Umaña (1984b: 95). Lugo instead (1619: 1, vs.) states that the sound represented by <ɣ> has to be pronounced with the teeth open, without closing the lips and the tongue not touching the palate. This suggests a realization as an unrounded back vowel (Constenla Umaña 1984b: 91), and the phoneme represented by <ɣ> and <y> has therefore been interpreted as /ɨ/ (ibid.: 93–7; Adelaar & Muysken 2004: 88). In other instances, <ɣ> or <y> probably referred to a high front or back vowel, for instance in <hytyco> 'thick' (compare <hutuco> 'thick'), in <pyhygua> 'hole' (compare <pihigua> 'hole') (Constenla Umaña 1984b: 96), and in <tybaxa> 'ray, beam, thunderbolt' (González de Pérez 1987: 310) – compare Dorasque (Chumulu) <*c*ibága> 'lightning, thunderbolt' (Pinart 1890: 28). A certain connection between <y> and <a> is evident in <quyty> 'loom' (González de Pérez 1987: 322) versus <cata> 'trap' (ibid.: 330), and in certain cases, <y> might therefore be regarded as referring to an allophone of *a*. If <ɣ> or <y> is preceded by a voiced labial consonant <b>, <f> or <m>, a non-syllabic element <u> is inserted after the bilabial consonant (as above, in <muyquyta> 'Bogotá') (Adelaar & Muysken 2004: 84).

Vowel sequences frequently occur in Muisca. They contain up to three vowels (cf. above, <nyia> 'gold' and <neia nza> 'false gold'). If they contain <u> or <i>, it is sometimes difficult to decide whether the sounds represented by these symbols represent a syllabic segment or a glide. An example is the root <iu-> 'to be ill'. In this specific case, a solution is provided by the morphophonological behavior of the imperfective suffix, which is either <-squa> or <-suca>, depending on the number of syllables of the preceding root. Whereas <-squa> is usually combined with monosyllabic roots ending in a vowel, <-suca> is attached to polysyllabic roots. The fact that the imperfective aspect <-suca> is attached to <iu-> 'to be ill' suggests that <iu> consists of two syllabic vowels (Adelaar & Muysken 2004: 87). If <i> represents a glide, this segment is lost in case the prefix <z-> (first person singular) precedes the sequence <ia> or <io>. This is illustrated by the forms <z-an-suca> 'I flee' (compare <ian> 'flee') (ibid.: 97), and <zoque> 'my paper' (compare <ioque> 'paper', González

[53] According to Lehmann (1920: 41) the old term for Bogotá was *Bacatá*, whereas *Muequeta* is the old name of Funza.

de Pérez 1987: 139). This phenomenon, however, does not seem to be very regular, given that the form <z-ian-suca> 'I am fleeing' (cf. <ian> 'flee') is also attested (cf. ibid.).

In the context of the third-person prefix *a-*, sequences such as *ai*, *au*, and *aɨ* are realized as *e*, *o*, and *a* in most cases (Adelaar & Muysken 2004: 97): for instance, *a-* plus a following syllabic segment *i* yield *e* in <epqua> 'his thing/belongings' (ibid.). Nonetheless, <a-ian-suca> 'he is fleeing' is not realized as <eansuca*> (González de Pérez 1987: 138), given that <i> represents a glide in this case.

Sequences of identical vowels also occur. One case is attested in the compound form <iiê, iie> 'chimney' (cf. González de Pérez 1987: 137; 225) – it is probably made up from Muisca <ie> 'smoke' and <ie> 'path' (cf. ibid.: 137, 207), the chimney being conceived of as the 'path of the smoke'

Finally, there is a tendency for syncope of the sound referred to by <y> after <ch> and before <c>, <p>, <q>, in word-medial position (González de Pérez 1987: 72); thus, <quychyquy> 'food' may have been pronounced *kɨtʲkɨ* or so. Likewise, in possessive constructions, final <a> or the stem formative element <-e> of the term referring to the possessor may be lost or otherwise modified (González de Pérez 1987: 72), as illustrated in examples (12) and (13).

(12) Muisca (González de Pérez 1987: 273)

<su	cubun>
Spaniard	language
'Spanish'	

The free form for 'Spaniard' is <sue> (González de Pérez 1987: 260).

(13) Muisca (González de Pérez 1987: 273)

<muysc	cubun>
Person	language
'Muisca'	

The free form for 'person, human being' is <muysca> (González de Pérez 1987: 72–3).

There are no indications that tone, stress, or vowel nasality were contrastive in Muisca. Although Lugo (1619) used diacritics in the context of vowels, there are too many irregularities to draw any firm conclusions in this matter. In Lugo's work, stress is mostly (in approximately 70 to 80% of the cases) indicated on the last syllable of a word, and less frequently on the penultimate (in approximately 13% of the cases) (Constenla Umaña 1984b: 103–6). Vowel length seems to have existed in Muisca, and

was possibly independent from vowel gemination: Lugo (1619: Prólogo al lector) explicitly mentions that he indicates vowel length with a circumflex. However, vowel length does not seem to have been phonemic (Constenla Umaña 1984b: 104). The circumflex is often found on the second vowel of a sequence of different vowels. In the National Library grammar, I could identify only very few instances of vowels with a circumflex; exceptions are a suffix or postposition <siê> indicating movement (González de Pérez 1987: 92), <iiê> 'chimney' (ibid.: 137), and <xiuâ> 'lake' (ibid.: 273). In Lugo's (1619) work, the circumflex occurs in the interrogative suffix <-guâ> (Adelaar & Muysken 2004: 86).

Morphophonemically, aspirated vowels (represented by <V_1hV_2> sequences with $V_1 = V_2$ in the National Library Grammar) behave like single vowels: the root <tyhy> 'to sit down' combines with the imperfective aspect marker <-squa>, which is usually attested after monosyllabic roots ending in a vowel (see above). In other cases, however, <V_1hV_2> sequences with $V_1 = V_2$ might in fact be polysyllabic, as for instance in <chahac> 'to me' (compare <chihac> 'to us') (cf. Adelaar & Muysken 2004: 99–100).

2.3.18.1.2 Muisca consonants

Table 57 illustrates the inventory of Muisca consonant graphemes and the phonemes that they probably referred to.

TABLE 57
MUISCA PHONEMES: CONSONANTS

	Labial	Dental/ alveolar	Postalveolar/ palatal	Velar	Labiovelar	Glottal
Voiceless stops	p <p>	t <t>		k <c, qu>	p͡kʷ, p͡k <pqu>	
Affricates		ʦ <z>	ʧ, tʲ <ch, cħ>			
Fricatives	β, ɸ <b, f>	s <s>	(ʃ) <x>	ɣ <g, gu>		h <h>
Vibrant		(r) <r>				
Nasals	m <m>	n <n>				
Glides	w <u>		j <i, y>			

Sources: Constenla Umaña (1984b); Adelaar and Muysken (2004: 83–8).

The graphemes <p>, <t>, and <c, qu > represent *p*, *t*, and *k* (Constenla Umaña 1984b: 74–88, Adelaar and Muysken 2004: 84–5). Muisca *k* is represented by <qu> before <i>, <y> and <e>, in line with Spanish orthographic conventions. A sequence <pc, pqu> represents a coarticulated labiovelar $\widehat{pk}$ or $\widehat{pk}^{w}$ (Adelaar & Muysken 2004: 85). The coarticulated labiovelar is listed among the particular pronunciations ("pronunçiaçiones particulares") in the National Library Grammar (González de Pérez 1987: 71). The graphemes <b ~ f> (the variation is illustrated in <fiza> and <bizequyne> both 'throat', ibid.: 266), and <g, gu> may have referred to fricatives, but possibly also to stops, in certain cases (cf. Adelaar & Muysken 2004: 85–6). The use of <f> is restricted to prevocalic positions, whereas <b> is found both before vowels and consonants (ibid.: 85). In Lugo's (1619) work, the use of <f> is restricted to the position before <u> (Adelaar & Muysken 2004: 85). In the case of <g, gu>, there is no orthographic variation. Hence, it is difficult to decide to what extent this grapheme represents a voiced velar stop or a fricative. A presumably fricative realization of the sounds symbolized by <b> and <g> in Muisca would be in line with the fact that Muisca <s> is a reflex of Proto-Chibchan *^{n}d (Constenla Umaña 1984b: 88). In line with Spanish orthographic conventions, the Muisca voiced velar obstruent is represented by <gu> before <i>, <e>, and <y>. Additionally, the sequence <gu> seems to have referred to a labialized velar or a glide *w* (Adelaar & Muysken 2004: 86–7), for instance in <gue> 'house' (González de Pérez 1987: 210) (compare <uena> 'at home', ibid.: 254)

The symbol <z> (<ʒh> in Lugo's 1619 orthography) represents a sound which is produced by bringing the tongue closer to the alveolar ridge all at once, and which is pronounced with strength ("se haze arrimando la lengua de golpe y p[ro]nunciando con fuerza", González de Pérez 1987: 71). According to Constenla Umaña (1984b: 80) the formulation 'all at once' excludes an interpretation of the sound in question as a continuant, and Muisca <z> probably refers to *ʦ* (Lehmann 1920: 53 seems to have been of a similar opinion). Alternatively, <z> has been interpreted as representing $\widehat{tʂ}$ (González de Pérez et al. 2006).

The sound represented by <ch> is pronounced only with the tip of the tongue (González de Pérez 1987: 71) and has been interpreted as t^{j} by Constenla Umaña (1984b: 77); it may also have referred to a postalveolar affricate *ʧ* (Adelaar & Muysken 2004: 84). Alternatively, <ch> has been interpreted as representing *ʂ* (González de Pérez et al. 2006).

The sound represented by <s> was probably *s* and was realized as *ʃ* before *i*, according to Constenla Umaña (1984b: 86). This is suggested by the alternating forms <sie ~ xie> 'river' and <sihua ~ xihua> 'female genitals'. In other cases, <s> and <x> seem to represent distinct phonemes, however. In the case of <xiu> 'juice' (González de Pérez 1987: 335) versus <siu> 'rain' (ibid.: 276), the meaning is different, although

both forms might be etymologically related. A minimal pair illustrating the opposition between *s* and *ʃ* in Muisca is <sua> ‘sun’ versus <xua> ‘dew’ (Adelaar and Muysken 2004: 85–6).

If referring to a consonant, the grapheme <h> is interpreted as representing a voiceless glottal fricative by Adelaar and Muysken (2004: 88), and by Constenla Umaña (1984b: 90–2).

There is no voiced alveolar stop *d* nor a lateral *l* in Muisca (González de Pérez 1987: 71). It is not clear to what extent *r* is part of the Muisca sound inventory. In the few cases where it is attested, the vibrant represented by <r> is pronounced in a soft way, not harsh (ibid.: 71). For that reason, Constenla Umaña (1984b: 86) interprets it as a tap, not as a trill. It occurs in some cases in Lugo’s (1619) work but is nearly absent in the National Library manuscript (Adelaar & Muysken 2004: 87). An exception mentioned by Constenla Umaña (1984b: 87) is <tybara, tybacha> ‘old (man)’ (cf. González de Pérez 1987: 333).

In Muisca, the nasal consonant *m* might have had an allophone *b*: The transitivity prefix <b- / m-> is <b-> before consonants and glides, and <m-> – but not <f-*> – before vowels and nasal consonants. The prefix <m->, indicating the second-person-singular, merges with the transitivity prefix <m- / b->, which results, for instance, in a form like <m-iohoty-suca> ‘you drink’, derived from <b-iohoty-> ‘to drink’ (Adelaar & Muysken 2004: 97).

Consonant clusters may both occur word-initially and word-finally in Muiscas. Word-initially, they are most frequently the result of a prefix indicating transitivity,[54] combining with a verbal root, as for instance in <b-to> ‘to split something’ (Adelaar & Muysken 2004: 90), but this is not always the case: compare Muisca <bgy> ‘to die’ (González de Pérez 1987: 280) and <psihipqua> ‘cacique’ (ibid.: 201). Word-final consonant clusters are the result of apocope in possessive constructions (see above, examples (12) and (13)) (Adelaar & Muysken 2004: 89–90). Muisca does not seem to have had any long or geminated consonants.

2.3.18.2 Reflexes of Proto-Chibchan phonemes in Muisca

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.18.2.1) and of Proto-Chibchan consonants (2.3.18.2.2) in Muisca. As mentioned above, in the section on *data presentation*, Muisca verbs are given as morphologically complex forms, marked, for instance, for first person singular subject and imperfective aspect by the

[54] In his analysis of Muisca morphosyntax, Quesada Pacheco (2012: 66) interprets the element in question as a suffix indicating ergative case.

anonymous author of the Muisca manuscript no. 158 from the National Library of Colombia (González de Pérez 1987). Below, these forms are cited as such; morphology not belonging to the roots in question is not translated.

2.3.18.2.1 Reflexes of Proto-Chibchan vowels in Muisca (cf. also Constenla Umaña 1981: 192–211)

{*a, *ã} > {<a>,[55] <e>, <y>,[56] <o>}

*a ‘that’ > <a-> third person marker (Adelaar & Muysken 2004: 97)

*apa ‘body’ > <yba, eba> ‘body’ (González de Pérez 1987: 138, 223)

*^{m}ba ‘chicha$_1$’ > <**fa**pqua> ‘chicha’ (González de Pérez 1987: 225)

*^{m}ba^{n}d- ‘all$_1$’ > <**fuyz**e> ‘all’ (cf. González de Pérez 1987: 327–328)

*^{m}ba^{n}di ~ *^{m}bai^{n}d ‘human being’ > <**muys**ca> ‘man, person’ (Sp. *hombre*) (González de Pérez 1987: 271)

*^{m}bak- ‘flea’ > <**muy**za> ‘flea’ (González de Pérez 1987: 305)

*^{m}baʔ ‘you’ > <mue> ‘you’ (González de Pérez 1987: 330)

*^{m}bi-^{n}daʔ ‘neck, throat’ > <fiza> ‘throat’ (González de Pérez 1987: 266)

*^{n}da ‘to come’ > <i**ny**squa> ‘to come’ (González de Pérez 1987: 332)

*^{n}da ~ *ta locative$_1$ > <-na> locative (rest in location, source) (Ostler 1993: 9)

*^{n}da^{m}ba ‘feline$_1$’ > <nymy> ‘wild cat’ (Sp. *gato montés*) (González de Pérez 1987: 266)

*^{n}da^{ŋ}g ‘salt’ > <**nyg**ua> ‘salt’ (González de Pérez 1987: 316)

*^{n}daka/*saka ‘brother$_2$’ > <nyquy> ‘brother of a female ego’ (González de Pérez 1987: 270)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > <ies i**na**squâ> ‘to walk’ (González de Pérez 1987: 207)

*(^{n}d)iˈa ‘to wear’ > <**io**que> ‘leather, tanned skin, paper’ (González de Pérez 1987: 139, 223)

[*^{n}di-g^{w}a] ‘lake, rain’ > <xiuâ> ‘lake’ (González de Pérez 1987: 273)

*^{n}dua ‘tobacco’ > <**sua**guaia> ‘cigar’ (González de Pérez 1987: 225)

*^{ŋ}ga ‘excrement’ > <**gy**e> ‘excrement’ (González de Pérez 1987: 261)

*^{ŋ}ga(^{n}da) ‘back$_2$’ > <gy, **gy**quyn> ‘neck’ (González de Pérez 1987: 295)

*^{ŋ}gak ‘feather, wing, arm, hand’ > <**ga**ca> ‘feather’ (González de Pérez 1987: 296)

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[55] In polysyllabic Muisca roots, this reflex seems to be more frequently attested in the second syllable than in the first syllable.

[56] This reflex is frequent in monosyllabic Muisca roots and in the first syllable of a bisyllabic Muisca root.

*ŋgak ‘mother-in-law, daughter-in-law’ > **gy**i> ‘mother-in-law of a female ego, daughter-in-law of a male ego’ (González de Pérez 1987: 321)

*ŋg^{w}a ~ *uŋg ‘fish’ > <gua> ‘fish’ (González de Pérez 1987: 295)

*ha^{n}d- ~ *hat- ‘hand’ > <**hys**ca> ‘five’ (González de Pérez 1987: 225), <yta> ‘hand’ (ibid.: 278)

*hak ~ *kaʔ ‘stone’ > <**hy**ca> ‘stone’ (González de Pérez 1987: 295)

*haka ~ *akaʔ ‘name’ > <hyca> ‘name’ (González de Pérez 1987: 284)

*haka ‘tooth (molar)’ > <hyco> ‘molar’ (González de Pérez 1987: 281)

*(hi-)i^{n}da ~ *(hi-)ita ‘full$_1$’ > <**ies** asucune, **yeta**n asucune> ‘to be full’ (González de Pérez 1987: 276)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > <huca> ‘skin of an animal, bark’ (González de Pérez 1987: 221, 223)

*ka allative/dative > <-c(a)> locative (goal) (Ostler 1993: 9)

*ka ‘to catch, grasp’ > <cam b**quy**squa> ‘to grasp, catch’ (González de Pérez 1987: 213)

*ka ‘leaf’ > <**quy**e> ‘leaf of a tree’ (González de Pérez 1987: 270)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > <**quyt**y> ‘loom’ (González de Pérez: 322)

*kã^{n}d- ‘bone, strong, hard’ > <quyne> ‘bone, strength’ (ibid.: 265, 267)

*ka^{n}daʔ ‘net’ > <quyne> ‘hunting net’ (González de Pérez 1987: 311)

*kah ‘open’ > <**guyhi**ca> ‘mouth’ (González de Pérez 1987: 198)

*kap- ‘to sleep’ > <z**quyb**ysuca, a**quyb**a> ‘to sleep’ (González de Pérez 1987: 243)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > <**quy**ca> ‘sky, earth, homeland, region’ (González de Pérez 1987: 225, 326)

*kihtsa ~ *kihsa ‘foot, root’ > <quihicha> ‘foot’ (González de Pérez 1987: 295)

*kuʔ(-Ba) ‘tongue’ > <pqua> ‘tongue’ (González de Pérez 1987: 273)

*k^{w}a ‘kidney, heart, stomach’ > <**pquy**quy> ‘understanding, will’ (González de Pérez 1987: 257, 333)

*k^{w}a ‘seed, fruit’ > <up**qua**> ‘eyes’ (González de Pérez 1987: 285)

*k^{w}ahk^{w}ah ‘butterfly, hat’ > <pquapqua> ‘hat’ (González de Pérez 1987: 320)

*(taBi-)^{n}da ‘clay, mud’ > <tybso> ‘clay for making pots’ (González de Pérez 1987: 197)

*taH(^{m}ba) ‘heart, liver, center$_2$’ > <tyhyba> ‘liver’ (González de Pérez 1987: 270)

*tah(-ka) ‘new, raw’ > <tyhyca> ‘raw’ (González de Pérez 1987: 222)

*taʔBa ‘ripe’ > <a**tyba**nsuca> ‘to become yellow’ (González de Pérez 1987: 185)

*tsa ‘hair, head’ > <**zy**e> ‘hair (of the head)’ (González de Pérez 1987: 200)

*tsau^{n}d ~ *tsu^{n}da ‘post, pole’ > <chune> ‘pilgrim’s staff’ (Sp. *bordón*) (González de Pérez 1987: 198)

*tsaʔ ‘to sit (sg.)’ > <b**za**squa> ‘to put (one thing)’ (González de Pérez 1987: 299)

*u^{m}ba ‘face, eye, fruit’ > <uba> ‘seed (general term), face’ (González de Pérez 1987: 209, 319)

{*ai, *ii} > <a>

*aBi ~ aiB ‘maize’ > <**ab**a> ‘maize’ (González de Pérez 1987: 277)

*^{m}bii ‘up, sky’ > <**fa**gua> ‘star’ (González de Pérez 1987: 262)

*^{n}dii(k) ‘nose’ > <**sa**ca> ‘nose’ (González de Pérez 1987: 282),

*tai ‘field for cultivation’ > <ta> ‘tillage’ (González de Pérez 1987: 273)

*tai^{n}d- ‘six’ > <taa> ‘six’ (González de Pérez 1987: 162)

*tsii ‘night, dark’ > <za> ‘night’ (González de Pérez 1987: 284)

*tsika ~ *tsaik locative$_{3}$ > <-sa> postposition ‘path’ (Ostler 1993: 9)

{*au, *uu} > <o>

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > <ze**con**suca> ‘to weep’ (González de Pérez 1987: 276)

*^{m}buuʔ ‘two’ > <**bo**za> ‘two’ (González de Pérez 1987: 161)

*kuuʔ ‘hand, finger’ > <**co**cua> ‘fingertip’ (González de Pérez 1987: 230)

***i > {<i>, <e>} / V$_{[+high]}$__**

***i > {<i>, <y>} / elsewhere**

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > <**fihiz**a> ‘new’ (González de Pérez 1987: 284)

*^{m}bi– ‘how much, how many’ > <**fi**ua> ‘how many?’ (González de Pérez 1987: 306)

*^{m}bi-^{n}daʔ ‘neck, throat’ > <fiza> ‘throat’ (González de Pérez 1987: 266)

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_{1}$’ > <**fihis**ta> ‘chest’ (González de Pérez 1987: 293)

*^{m}bu^{n}di ~ *^{m}bui^{n}d ~ *^{ŋ}gu^{n}di ~ *^{ŋ}gui^{n}d ‘woman (adult)’ > <gui> ‘wife’ (González de Pérez 1987: 281)

*^{n}di ‘who, someone’ > <**xi**e ~ **si**e> ‘who’ (Adelaar & Muysken 2004: 105)

*^{n}diʔ ‘water, river’ > <**si**e> ‘water’ (González de Pérez 1987: 178)

[*^{n}di-g^{w}a] ‘lake, rain’ > <xiuâ> ‘lake’ (González de Pérez 1987: 273)

*^{ŋ}gi ‘worm’ > ***zi**na* ‘worm, general term’ (González de Pérez 1987: 267)

*Gu^{n}di ~ *GuiH^{n}d ‘lightning’ > <**pquihiz**a> ‘ray of light’ (González de Pérez 1987: 310)

*ŋg^{w}i ‘(older) sibling, (older) sister’ > <**gui**a> ‘older sibling, older brother’ (González de Pérez 1987: 259, 269)

*hi ‘path’ > <**i**e> ‘path’ (González de Pérez 1987: 207)

*(hi-)i^{n}da ~ *(hi-)ita ‘full$_1$’ > <**ies** asucune, **yeta**n asucune> ‘to be full’ (González de Pérez 1987: 276)

*kihtsa ~ *kihsa ‘foot, root’ > <quihicha> ‘foot’ (González de Pérez 1987: 295)

*k^{w}i ‘turtle’ > <**cue**gui> ‘turtle’ (González de Pérez 1987: 329)

*si^{m}ba ‘god, wind’ > <**chib**san> ‘whirlwind’ (González de Pérez 1987: 312)

*sih ‘meat, flesh$_2$’ > <**chihi**ca> ‘flesh’ (González de Pérez 1987: 210)

*siʔ ‘moon’ > <**chi**e> ‘moon, month, light, shine, brightness’ (González de Pérez 1987: 275, 279)

*tsiʔ(-ki) ‘tooth (incisor), thorn’ > <**si**ca> ‘tooth, beak’ (González de Pérez 1987: 240, 295)

*tsui^{n}d ~ *tsu^{n}di ‘spoon, ladle’ > <**chui**a> ‘spoon’ (González de Pérez 1987: 223)

*tsui^{n}d ‘mosquito’ > <chue> a mosquito (Sp. *mosquito zancudo*) (González de Pérez 1987: 280)

{*u, *ũ} > <u>

*^{m}bu ‘to twist’ > <ze**mu**squa> ‘to spin’ (cf. González de Pérez 1987: 270)

*^{m}bu^{n}di ~ *^{m}bui^{n}d ~ *^{ŋ}gu^{n}di ~ *^{ŋ}gui^{n}d ‘woman (adult)’ > <gui> ‘wife’ (González de Pérez 1987: 281)

*^{m}bu^{n}d(u) ‘bee, wasp’ > <**busu**apquame> ‘bee’ (González de Pérez 1987: 166)

*^{m}bũ^{n}d(ũ) ‘ashes’ > <**fu**sque> ‘ash’ (González de Pérez 1987: 224)

*^{m}bus- ‘woman (young)’ > <fuhucha> ‘female’ (González de Pérez 1987: 269); <muysca fucha> ‘woman’ (ibid.: 281)

*^{n}du- ‘to stand (singular)’ > <-**su**ca> imperfective aspect marker in finite verbs (González de Pérez 1987: 84; Adelaar & Muysken 2004: 91)

*^{n}du- ‘sun, year’ > <**su**a> ‘sun’ (González de Pérez 1987: 320)

*^{n}dua ‘tobacco’ > <**sua**guaia> ‘cigar’ (González de Pérez 1987: 225)

*(^{n}d-)u^{m}ba ‘brother-in-law’ > <**ub**so> ‘brother-in-law’ (Sp. *cuñado respecto del otro cuñado*) (González de Pérez 1987: 223)

*^{n}du-^{m}ba(^{n}d) ‘dove’ > <**sum**gui> ‘turtledove’ (González de Pérez 1987: 329)

*^{n}du(^{n}d) ‘bird, dove’ > <**su**c> ‘bird’ (González de Pérez 1987: 292)

*^{n}duh(k) ‘tail$_2$’ > <**suhu**ca> ‘tail of animal’ (González de Pérez 1987: 214)

*^{n}duk / *suk ‘prick, sting, point’ > <**su**pqua> ‘spear’ (González de Pérez 1987: 273)

*ᵑgu ‘to take’ > <b**gu**squa> ‘receive’ (González de Pérez 1987: 311)

*Gu^{n}di ~ *GuiH^{n}d ‘lightning’ > <**pquihiz**a> ‘ray of light’ (González de Pérez 1987: 310)

*hu ‘house’ > <**gu**e> ‘house’ (González de Pérez 1987: 210), <**ue-**na> ‘at home’ (ibid.: 254)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > <huca> ‘skin of an animal, bark’ (González de Pérez 1987: 221, 223)

*kuH ~ *^{m}buH ‘to grow’ > <**cuhu**ma> ‘big’ (Sp. *grande*) (González de Pérez 1987: 266)

*kuh ‘to hear$_2$’ > <**cuhu**ca> ‘ear’ (González de Pérez 1987: 286)

*kuh ‘seven’ > <**qhu**pqua> ‘seven’ (González de Pérez 1987: 162)

*kuʔ ‘to blow, fly’ > <yc b**cu**squa> ‘to blow out a candle’ (González de Pérez 1997: 320)

*kũʔ ‘louse’ > <**cu**e> ‘louse of the head’ (González de Pérez 1987: 296)

*kuʔ(-Ba) ‘tongue’ > <pqua> ‘tongue’ (González de Pérez 1987: 273)

*suh(k) ‘to wash’ > <b**chuhu**squa> ‘to wash’ (González de Pérez 1987: 273)

*suʔ ‘to peel’ > <b**chu**squa> ‘to peel’ (González de Pérez 1987: 280)

*ʦau^{n}d ~ *ʦu^{n}da ‘post, pole’ > <chune> ‘pilgrim’s staff’ (Sp. *bordón*) (González de Pérez 1987: 198)

*ʦu ‘child, small’ > <**chu**ta> ‘son, daughter’ (González de Pérez 1987: 270)

*ʦuH ‘to scratch, rub’ > <b**chuhu**squa> ‘to rub, rub with water’ (González de Pérez 1987: 264)

*ʦui^{n}d ~ *ʦu^{n}di ‘spoon, ladle’ > <**chui**a> ‘spoon’ (González de Pérez 1987: 223)

*ʦui^{n}d ‘mosquito’ > <chue> a mosquito (Sp. *mosquito zancudo*) (González de Pérez 1987: 280)

*ʦuʔ ‘breast, teat$_2$’ > <**chu**e> ‘teat’ (González de Pérez 1987: 324)

*u^{m}ba ‘face, eye, fruit’ > <uba> ‘seed (general term), face’ (González de Pérez 1987: 209, 319)

2.3.18.2.2 Reflexes of Proto-Chibchan consonants in Muisca (cf. also Constenla Umaña 1981: 219–43)

***p > <b> / V__V**

*apa ‘body’ > <yba, eba> ‘body’ (González de Pérez 1987: 138, 223)

*kap- ‘to sleep’ > <z**quyb**ysuca, a**quyb**a> ‘to sleep’ (González de Pérez 1987: 243)

***^{m}b > {<b>,<f>, <m>} / #__**

***^{m}b > {<b>, <m>} / *V__*V**

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > <**fihiz**a> ‘new’ (González de Pérez 1987: 284)

*^{m}b- ‘to go$_1$’ > <**mi**> ‘to be in motion (singular)’ (Adelaar & Muysken 2004: 104)

*^{m}ba ‘chicha$_1$’ > <**fa**pqua> ‘chicha’ (González de Pérez 1987: 225)

*^{m}ba- ‘cloud, fog > <**fa**oa> ‘mist; cloud, cloudy’ (González de Pérez 1987: 282, 284)

*^{m}ba^{n}di ~ *^{m}bai^{n}d ‘human being’ > <**muys**ca> ‘man, person’ (Sp. *hombre*) (González de Pérez 1987: 271)

*^{m}bak- ‘flea’ > <**muy**za> ‘flea’ (González de Pérez 1987: 305)

*^{m}baʔ ‘you’ > <mue> ‘you’ (González de Pérez 1987: 330)

*^{m}bi- ‘how much, how many’ > <**fi**ua> ‘how many?’ (González de Pérez 1987: 306)

*^{m}bi-^{n}daʔ ‘neck, throat’ > <fiza> ‘throat’ (González de Pérez 1987: 266)

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_1$’ > <**fihis**ta> ‘chest’ (González de Pérez 1987: 293)

*^{m}bii ‘up, sky’ > <**fa**gua> ‘star’ (González de Pérez 1987: 262)

*^{m}bu ‘to twist’ > <ze**mu**squa> ‘to spin’ (cf. González de Pérez 1987: 270)

*^{m}bu^{n}d(u) ‘bee, wasp’ > <**busu**apquame> ‘bee’ (González de Pérez 1987: 166)

*^{m}bũ^{n}d(ũ) ‘ashes’ > <**fu**sque> ‘ash’ (González de Pérez 1987: 224)

*^{m}bus- ‘woman (young)’ > <fuhucha> ‘female’ (González de Pérez 1987: 269); <muysca fucha> ‘woman’ (ibid.: 281)

*^{m}buuʔ ‘two’ > <**bo**za> ‘two’ (González de Pérez 1987: 161)

*^{n}da^{m}ba ‘feline$_1$’ > <nymy> ‘wild cat’ (Sp. *gato montés*) (González de Pérez 1987: 266)

*(^{n}d-)u^{m}ba ‘brother-in-law’ > <**ub**so> ‘brother-in-law’ (Sp. *cuñado respecto del otro cuñado*) (González de Pérez 1987: 223)

*^{n}du-^{m}ba(^{n}d) ‘dove’ > <**sum**gui> ‘turtledove’ (González de Pérez 1987: 329)

*si^{m}ba ‘god, wind’ > <**chib**san> ‘whirlwind’ (González de Pérez 1987: 312)

*taH(^{m}ba) ‘heart, liver, center$_2$’ > <tyhyba> ‘liver’ (González de Pérez 1987: 270)

*u^{m}ba ‘face, eye, fruit’ > <uba> ‘seed (general term), face’ (González de Pérez 1987: 209, 319)

***t > <t>**

*ita ~ *i^{n}da ~ *ia^{n}d ‘belly’ > <ie, ieta> ‘belly’ (González de Pérez 1987: 197)

*(taBi-)^{n}da ‘clay, mud’ > <tybso> ‘clay for making pots’ (González de Pérez 1987: 197)

*taH(^{m}ba) ‘heart, liver, center$_2$’ > <tyhyba> ‘liver’ (González de Pérez 1987: 270)

*tah(-ka) ‘new, raw’ > <tyhyca> ‘raw’ (González de Pérez 1987: 222)

*tai ‘field for cultivation’ > <ta> ‘tillage’ (González de Pérez 1987: 273)

*tai^{n}d- ‘six’ > <taa> ‘six’ (González de Pérez 1987: 162)

*taʔBa ‘ripe’ > <a**tyba**nsuca> ‘to become yellow’ (González de Pérez 1987: 185)

***^{n}d > {<x>, <s>, <n>} / #__<i>**

***^{n}d > {<s>, <n>} / +__V$_{[other]}$**

***^{n}d > {<s>, <z>, <n>} / V__V**

***^{n}d > {<n>, Ø} / VV__$**

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > <**fihiz**a> ‘new’ (González de Pérez 1987: 284)

*a^{n}d- valency-reducer$_3$ > <(a)n-> passive (cf. Adelaar & Muysken 2004: 95–6)

*^{m}ba^{n}d- ‘all$_1$’ > <**fuyz**e> ‘all’ (cf. González de Pérez 1987: 327–328)

*^{m}ba^{n}di ~ *^{m}bai^{n}d ‘human being’ > <**muys**ca> ‘man, person’ (Sp. *hombre*) (González de Pérez 1987: 271)*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > <ze**con**suca> ‘to weep’ (González de Pérez 1987: 276)

*^{m}bi-^{n}da? ‘neck, throat’ > <fiza> ‘throat’ (González de Pérez 1987: 266)

*^{m}bu^{n}di ~ *^{m}bui^{n}d ~ *^{ŋ}gu^{n}di ~ *^{ŋ}gui^{n}d ‘woman (adult)’ > <gui> ‘wife’ (González de Pérez 1987: 281)

*^{m}bu^{n}d(u) ‘bee, wasp’ > <**busu**apquame> ‘bee’ (González de Pérez 1987: 166)

*^{n}da ‘to come’ > <i**ny**squa> ‘to come’ (González de Pérez 1987: 332)

*^{n}da ~ *ta locative$_1$ > <-na> locative (rest in location, source) (Ostler 1993: 9)

*^{n}da^{m}ba ‘feline$_1$’ > <nymy> ‘wild cat’ (Sp. *gato montés*) (González de Pérez 1987: 266)

*^{n}da^{ŋ}g ‘salt’ > <**nyg**ua> ‘salt’ (González de Pérez 1987: 316)

*^{n}daka/*saka ‘brother$_2$’ > <nyquy> ‘brother of a female ego’ (González de Pérez 1987: 270)

*^{n}da? ~ *ta? ‘to go$_2$’ > <ies i**na**squâ> ‘to walk’ (González de Pérez 1987: 207)

*^{n}d(i)- relational element$_1$ > <**n**iomy> ‘testicle’ (ibid.: 331)

*^{n}di ‘who, someone’ > <**xi**e ~ **si**e> ‘who’ (Adelaar & Muysken 2004: 105)

*^{n}dii(k) ‘nose’ > <**sa**ca> ‘nose’ (González de Pérez 1987: 282)

*^{n}di? ‘water, river’ > <**si**e> ‘water’ (González de Pérez 1987: 178)

[*^{n}di-g^{w}a] ‘lake, rain’ > <xiuâ> ‘lake’ (González de Pérez 1987: 273)

*^{n}du- ‘to stand (singular)’ > <-**su**ca> imperfective aspect marker in finite verbs (González de Pérez 1987: 84; Adelaar & Muysken 2004: 91)

*^{n}du- ‘sun, year’ > <**su**a> ‘sun’ (González de Pérez 1987: 320)

*^{n}dua ‘tobacco’ > <**sua**guaia> ‘cigar’ (González de Pérez 1987: 225)

*^{n}du-^{m}ba(^{n}d) ‘dove’ > <**sum**gui> ‘turtledove’ (González de Pérez 1987: 329)

*^{n}du(^{n}d) ‘bird, dove’ > <**su**c> ‘bird’ (González de Pérez 1987: 292)

*^{n}duh(k) ‘tail$_2$’ > <**suhu**ca> ‘tail of animal’ (González de Pérez 1987: 214)

*^{n}duk / *suk ‘prick, sting, point’ > <**su**pqua> ‘spear’ (González de Pérez 1987: 273)

*Gu^{n}di ~ *GuiH^{n}d ‘lightning’ > <**pquihiz**a> ‘ray of light’ (González de Pérez 1987: 310)

*kã^{n}d- ‘bone, strong, hard’ > <quyne> ‘bone, strength’ (ibid.: 265, 267)

*ka^{n}daʔ ‘net’ > <quyne> ‘hunting net’ (González de Pérez 1987: 311)

*(taBi-)^{n}da ‘clay, mud’ > <tybso> ‘clay for making pots’ (González de Pérez 1987: 197)

*tai^{n}d- ‘six’ > <taa> ‘six’ (González de Pérez 1987: 162)

*ʦau^{n}d ~ *tsu^{n}da ‘post, pole’ > <chune> ‘pilgrim’s staff’ (Sp. *bordón*) (González de Pérez 1987: 198)

*ʦui^{n}d ‘mosquito’ > <chue> a mosquito (Sp. *mosquito zancudo*) (González de Pérez 1987: 280)

***k > Ø / __$**

***k > {<c>, <qu>, <g>} / elsewhere**

*^{m}bak- ‘flea’ > <**muy**za> ‘flea’ (González de Pérez 1987: 305)

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > <ze**con**suca> ‘to weep’ (González de Pérez 1987: 276)

*^{n}daka/*saka ‘brother$_2$’ > <nyquy> ‘brother of a female ego’ (González de Pérez 1987: 270)

*^{n}duk / *suk ‘prick, sting, point’ > <**su**pqua> ‘spear’ (González de Pérez 1987: 273)

*^{ŋ}gak ‘mother-in-law, daughter-in-law’ > **gy**i> ‘mother-in-law of a female ego, daughter-in-law of a male ego’ (González de Pérez 1987: 321)

*haka ~ *akaʔ ‘name’ > <hyca> ‘name’ (González de Pérez 1987: 284)

*haka ‘tooth (molar)’ > <hyco> ‘molar’ (González de Pérez 1987: 281)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > <huca> ‘skin of an animal, bark’ (González de Pérez 1987: 221, 223)

*ka allative/dative > <-c(a)> locative (goal) (Ostler 1993: 9)

*ka ‘to catch, grasp’ > <cam b**quy**squa> ‘to grasp, catch’ (González de Pérez 1987: 213)

*ka ‘leaf’ > <**quy**e> ‘leaf of a tree’ (González de Pérez 1987: 270)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > <**quyt**y> ‘loom’ (González de Pérez: 322)

*ka^{n}daʔ ‘net’ > <quyne> ‘hunting net’ (González de Pérez 1987: 311)

*kah ‘open’ > <**guyhi**ca> ‘mouth’ (González de Pérez 1987: 198)

*kap- ‘to sleep’ > <z**quyb**ysuca, a**quyb**a> ‘to sleep’ (González de Pérez 1987: 243)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > <**quy**ca> ‘sky, earth, homeland, region’ (González de Pérez 1987: 225, 326)

*kihʦa ~ *kihsa ‘foot, root’ > <quihicha> ‘foot’ (González de Pérez 1987: 295)

*kuH ~ *^{m}buH ‘to grow’ > <**cuhu**ma> ‘big’ (Sp. *grande*) (González de Pérez 1987: 266)

*kuh ‘to hear$_2$’ > <**cuhu**ca> ‘ear’ (González de Pérez 1987: 286)

*kuh ‘seven’ > <**qhu**pqua> ‘seven’ (González de Pérez 1987: 162)

*kuuʔ ‘hand, finger’ > <**co**cua> ‘fingertip’ (González de Pérez 1987: 230)

*kuʔ ‘to blow, fly’ > <yc b**cu**squa> ‘to blow out a candle’ (González de Pérez 1997: 320)

*kũʔ ‘louse’ > <**cu**e> ‘louse of the head’ (González de Pérez 1987: 296)

*kuʔ(-Ba) ‘tongue’ > <pqua> ‘tongue’ (González de Pérez 1987: 273)

*tah(-ka) ‘new, raw’ > <tyhyca> ‘raw’ (González de Pérez 1987: 222)

*ʦika ~ *tsaik locative$_3$ > <-sa> postposition ‘path’ (Ostler 1993: 9)

***ŋg > <z> / __*ĩ**

***ŋg > {<g>, <gu>} / elsewhere**

*^{m}bu^{n}di ~ *^{m}bui^{n}d ~ *^{ŋ}gu^{n}di ~ *^{ŋ}gui^{n}d ‘woman (adult)’ > <gui> ‘wife’ (González de Pérez 1987: 281)

*^{n}da^{ŋ}g ‘salt’ > <**nyg**ua> ‘salt’ (González de Pérez 1987: 316)

*^{ŋ}ga ‘excrement’ > <**gy**e> ‘excrement’ (González de Pérez 1987: 261)

*^{ŋ}ga(^{n}da) ‘back$_2$’ > <gy, **gy**quyn> ‘neck’ (González de Pérez 1987: 295)

*^{ŋ}gak ‘feather, wing, arm, hand’ > <**ga**ca> ‘feather’ (González de Pérez 1987: 296)

*^{ŋ}gak ‘mother-in-law, daughter-in-law’ > **gy**i> ‘mother-in-law of a female ego, daughter-in-law of a male ego’ (González de Pérez 1987: 321)

*^{ŋ}gi ‘worm’ > ***zi**na* ‘worm, general term’ (González de Pérez 1987: 267)

*^{ŋ}gu ‘to take’ > <b**gu**squa> ‘receive’ (González de Pérez 1987: 311)

***k^{w} > {<pqu>, <cu>, <qu>}**

*k^{w}a ‘kidney, heart, stomach’ > <**pquy**quy> ‘understanding, will’ (González de Pérez 1987: 257, 333)

*k^{w}a ‘seed, fruit’ > <up**qua**> ‘eyes’ (González de Pérez 1987: 285)

*k^{w}ahk^{w}ah ‘butterfly, hat’ > <pquapqua> ‘hat’ (González de Pérez 1987: 320)

*k^{w}i ‘turtle’ > <**cue**gui> ‘turtle’ (González de Pérez 1987: 329)

***ŋg^{w} > <gu> / #__**

***ŋg^{w} > <u> / V__V**

[*^{n}di-g^{w}a] ‘lake, rain’ > <xiuâ> ‘lake’ (González de Pérez 1987: 273)

*^{ŋ}g^{w}a ~ *u^{ŋ}g ‘fish’ > <gua> ‘fish’ (González de Pérez 1987: 295)

*ŋgʷi ‘(older) sibling, (older) sister’ > <**gui**a> ‘older sibling, older brother’ (González de Pérez 1987: 259, 269)

***ʔ > Ø**

*ᵐbaʔ ‘you’ > <mue> ‘you’ (González de Pérez 1987: 330)

*ᵐbuuʔ ‘two’ > <**bo**za> ‘two’ (González de Pérez 1987: 161)

*ⁿdaʔ ~ *taʔ ‘to go$_2$’ > <ies i**na**squâ> ‘to walk’ (González de Pérez 1987: 207)

*ⁿdiʔ ‘water, river’ > <**si**e> ‘water’ (González de Pérez 1987: 178)

[*ⁿdi-gʷa] ‘lake, rain’ > <xiuâ> ‘lake’ (González de Pérez 1987: 273)

*kaⁿdaʔ ‘net’ > <quyne> ‘hunting net’ (González de Pérez 1987: 311)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > <**quy**ca> ‘sky, earth, homeland, region’ (González de Pérez 1987: 225, 326)

*kuuʔ ‘hand, finger’ > <**co**cua> ‘fingertip’ (González de Pérez 1987: 230)

*kuʔ ‘to blow, fly’ > <yc b**cu**squa> ‘to blow out a candle’ (González de Pérez 1997: 320)

*kũʔ ‘louse’ > <**cu**e> ‘louse of the head’ (González de Pérez 1987: 296)

*kuʔ(-Ba) ‘tongue’ > <pqua> ‘tongue’ (González de Pérez 1987: 273)

*siʔ ‘moon’ > <**chi**e> ‘moon, month, light, shine, brightness’ (González de Pérez 1987: 275, 279)

*suʔ ‘to peel’ > <b**chu**squa> ‘to peel’ (González de Pérez 1987: 280)

*taʔBa ‘ripe’ > <a**tyba**nsuca> ‘to become yellow’ (González de Pérez 1987: 185)

*ʦaʔ ‘to sit (sg.)’ > <b**za**squa> ‘to put (one thing)’ (González de Pérez 1987: 299)

*ʦiʔ(-ki) ‘tooth (incisor), thorn’ > <**si**ca> ‘tooth, beak’ (González de Pérez 1987: 240, 295)

*ʦuʔ ‘breast, teat$_2$’ > <**chu**e> ‘teat’ (González de Pérez 1987: 324)

***ʦ > <ch> / __<u>**

***ʦ > {<s>, <z>} /elsewhere**

*ʦa ‘hair, head’ > <**zy**e> ‘hair (of the head)’ (González de Pérez 1987: 200)

*ʦii ‘night, dark’ > <za> ‘night’ (González de Pérez 1987: 284)

*ʦauⁿd ~ *ʦuⁿda ‘post, pole’ > <chune> ‘pilgrim’s staff’ (Sp. *bordón*) (González de Pérez 1987: 198)

*ʦaʔ ‘to sit (sg.)’ > <b**za**squa> ‘to put (one thing)’ (González de Pérez 1987: 299)

*ʦika ~ *ʦaik locative$_3$ > <-sa> postposition ‘path’ (Ostler 1993: 9)

*ʦiʔ(-ki) ‘tooth (incisor), thorn’ > <**si**ca> ‘tooth, beak’ (González de Pérez 1987: 240, 295)

*tsu ‘child, small’ > <**chu**ta> ‘son, daughter’ (González de Pérez 1987: 270)

*tsuH ‘to scratch, rub’ > <b**chuhu**squa> ‘to rub, rub with water’ (González de Pérez 1987: 264)

*tsui^{n}d ~ *tsu^{n}di ‘spoon, ladle’ > <**chui**a> ‘spoon’ (González de Pérez 1987: 223)

*tsui^{n}d ‘mosquito’ > <chue> a mosquito (Sp. *mosquito zancudo*) (González de Pérez 1987: 280)

*tsuʔ ‘breast, teat$_2$’ > <**chu**e> ‘teat’ (González de Pérez 1987: 324)

***s > <ch>**

*^{m}bus- ‘woman (young)’ > <fuhucha> ‘female’ (González de Pérez 1987: 269); <muysca fucha> ‘woman’ (ibid.: 281)

*kihtsa ~ *kihsa ‘foot, root’ > <quihicha> ‘foot’ (González de Pérez 1987: 295)

*si^{m}ba ‘god, wind’ > <**chib**san> ‘whirlwind’ (González de Pérez 1987: 312)

*sih ‘meat, flesh$_2$’ > <**chihi**ca> ‘flesh’ (González de Pérez 1987: 210)

*siʔ ‘moon’ > <**chi**e> ‘moon, month, light, shine, brightness’ (González de Pérez 1987: 275, 279)

*suh(k) ‘to wash’ > <b**chuhu**squa> ‘to wash’ (González de Pérez 1987: 273)

*suʔ ‘to peel’ > <b**chu**squa> ‘to peel’ (González de Pérez 1987: 280)

***h > <h> / #__*a**

***h > Ø / #__<i>**

***h > {<h>, <g>, Ø> / #__<u>**

***h > Ø / VV__**

***h > <h> / elsewhere**

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > <**fihiz**a> ‘new’ (González de Pérez 1987: 284)

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_1$’ > <**fihis**ta> ‘chest’ (González de Pérez 1987: 293)

*^{n}duh(k) ‘tail$_2$’ > <**suhu**ca> ‘tail of animal’ (González de Pérez 1987: 214)

*ha^{n}d- ~ *hat- ‘hand’ > <**hys**ca> ‘five’ (González de Pérez 1987: 225), <yta> ‘hand’ (ibid.: 278)

*hak ~ *kaʔ ‘stone’ > <**hy**ca> ‘stone’ (González de Pérez 1987: 295)

*haka ~ *akaʔ ‘name’ > <hyca> ‘name’ (González de Pérez 1987: 284)

*hi ‘path’ > <**i**e> ‘path’ (González de Pérez 1987: 207)

*(hi-)i^{n}da ~ *(hi-)ita ‘full$_1$’ > <**ies** asucune, **yeta**n asucune> ‘to be full’ (González de Pérez 1987: 276)

*hu ‘house’ > <**gu**e> ‘house’ (González de Pérez 1987: 210), <**ue-**na> ‘at home’ (ibid.: 254)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > <huca> ‘skin of an animal, bark’ (González de Pérez 1987: 221, 223)

*kah ‘open’ > <**guyhi**ca> ‘mouth’ (González de Pérez 1987: 198)

*kihtsa ~ *kihsa ‘foot, root’ > <quihicha> ‘foot’ (González de Pérez 1987: 295)

*kuh ‘ear, hear’ > <**cuhu**ca> ‘ear’ (González de Pérez 1987: 286)

*kuh ‘seven’ > <**qhu**pqua> ‘seven’ (González de Pérez 1987: 162)

*k^{w}ahk^{w}ah ‘butterfly, hat’ > <pquapqua> ‘hat’ (González de Pérez 1987: 320)

*sih ‘meat, flesh$_2$’ > <**chihi**ca> ‘flesh’ (González de Pérez 1987: 210)

*suh(k) ‘to wash’ > <b**chuhu**squa> ‘to wash’ (González de Pérez 1987: 273)

*tah(-ka) ‘new, raw’ > <tyhyca> ‘raw’ (González de Pérez 1987: 222)

2.3.19 Nutabe and other extinct Chibchan languages of the Cauca valley

In different parts of Cauca valley, several Chibchan languages were spoken in the past. At present, we have only very limited knowledge of them. What is known of the Chibchan languages of the Cauca valley and adjacent areas will be presented and discussed in the present section, which is based on a paper of Rivet (1943a). Rivet (ibid.) provides a detailed discussion of materials gathered by authors such as for instance Vásquez de Espinoza ([1629] 1942) or Simón ([1626] 1882–92). The better-documented among the Chibchan languages of the Cauca valley are Catío and Nutabe (also called Natave, Nutaba, or Nutave), which became extinct in the eighteenth century (Constenla Umaña 2012: 393).[57] A group which spoke the same language as the Nutabe were the Tahami or Tagami (Rivet 1943a: 31–2). At the time of the conquest, the area populated by the Nutabe, the Tahami, and the Catío covered the Cauca valley from Anzá and Antioquia in the south to the Ituango river, the upper Sinú and the right banks of the upper León river in the north (Rivet 1943a: 33), that is, parts of the present-day department of Antioquia.[58] It is difficult to decide how closely Nutabe and Catío were related. Pairs such as Nutabe <ni>, Catío <nira> 'water', or Nutabe <quia> and Catío <quira> 'fire' (Sp. *lumbre*) suggest a relatively close relationship between both. However, there may have been some differences in the sound inventories of both languages (see below).

Rivet (1943a: 34) also postulates a Chibchan affiliation for the indigenous language formerly spoken in the valleys of Guaca and Nore or Nori, in the Sierra de Abibe (departments of Antioquia and Córdoba). Only one term of it is known from their language, namely <guaca> 'devil'. This term is linked by Rivet (ibid.) with the Kuna word for 'foreigner, stranger, white man', *waka* (Holmer 1952: 179–80).

Another extinct language from the Cauca valley (present-day Caldas department), for which Rivet (1943a: 37) postulates a Chibchan affiliation is the language of the Pozo and Arma peoples. The languages spoken by both were related. Whereas the Arma lived in the Poblanco basin, the Pozo inhabited the Pozo basin. Both rivers are eastern affluents of the Cauca. Only one word of the Pozo language is known at present, <ume> 'woman', which is related, according to Rivet (ibid.: 37), to the Kuna term for 'woman, wife', *ome* (Holmer 1952: 106–7).

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[57] At present, the terms 'Catío' or 'Emberá-Catío' refer to people speaking a Chocoan language (cf. Rivet 1943: 25) in the departments of Antioquia and Córdoba.

[58] Information on the Colombian departments mentioned in this subsection is from Adelaar and Muysken (2004: 623–4). Rivet (1943: 33) literally states: "En définitive, des peuples de parler čibča (Nutabé, Tahamí et Kato) occupaient, au moment de la découverte, la rive gauche du Cauca, depuis Anzá au Sud, la rive droite, depuis la hauteur d'Antioquia environ, jusqu'au Nord du río Ituango, le haut Sinú et la rive droite du haut río León."

Another language which is connected to Chibchan by Rivet (1943a: 35–6) is the language of the Yamesí. These people lived in the area of Zaragoza, on banks of the Porce river, in the present-day department of Antioquia. Again, only one word is known from their language, namely <guane> 'dead' (Fr. *morts*). Rivet (ibid.: 36) identifies parallels of this term in some Chibchan languages. Indeed, it seems to be related to Chibchan: whereas the first element <gua> may derive from Proto-Chibchan *ŋgua 'to kill', the element <-ne> (like the Damana stative nominalizer *-na* (cf. Trillos Amaya 2000: 750–1)) may derive from the Proto-Chibchan nominalizer *-ⁿd-. The hypothesis that Yamesí was a Chibchan language is to a certain extent further corroborated by the fact that the Spaniards had a Nutabe interpreter making communication with the Yamesí possible (Rivet 1943a: 36).

Finally, north of the area previously populated by the Catío, in the area of the lower Cauca and of the Nechi rivers, in the present-day department of Antioquia, there are several river names, affluents of the Cauca river in most cases, ending in *-ri* or *-rí*, such as *Negueri*, or *Purí*. This final element *-ri* or *-rí* may derive from Proto-Chibchan *ⁿdiʔ 'water, river' (cf. Rivet 1943a: 36).

The Chibchan affiliation of all these languages was first argued by Rivet (1943a), but in most cases, the evidence for their Chibchan status can probably not be considered to be more than suggestive, given the fact that only one or two words of the respective languages have been preserved (Adelaar & Muysken 2004: 49). Evidence for a Chibchan affiliation may be strong enough, however, in the case of Nutabe since the language materials are somewhat more comprehensive than in the case of the other languages mentioned above. Also, there are some basic vocabulary items for which a Chibchan origin can be proposed (terms for 'water' and for 'egg'). Therefore, in this thesis, I only discuss five basic Nutabe words and the sound changes that they reflect.

Among the features of Nutabe that may be mentioned in this introduction is the similarity of final <-scua> in Nutabe <sine manascua> 'I am leaving to my home country' with the the Muisca imperfective aspect marker <-suca / -squa> (cf. Adelaar & Muysken 2004: 91). This parallel was noticed by Rivet (1943a: 30). Counterparts of Nutabe elements in other Chibchan languages are mostly found in the languages of the Sierra Nevada de Santa Marta, Muisca, and Kuna: Compare, for instance, Nutabe <tobé> 'old man' (Rivet 1943a: 29) Kogi *duˈeba* 'old man' (Huber & Reed 1992: 47), and Muisca <tybara ~ tybacha> 'old (for a man)' (González de Pérez 1987: 333), or Nutabe <guacú> 'old woman' (Rivet 1943a: 29–30) versus Kogi *ˈweʒu* 'old woman' (Huber & Reed 1992: 240).

2.3.19.1 Ths sounds of Nutabe

The following two subsections present and discuss the sounds of Nutabe as they seem to be represented in the work of Rivet (1943a).

2.3.19.1.1 Nutabe vowels and suprasegmentals

Table 58 gives an overview of graphemes that represent Nutabe vowels.

TABLE 58
NUTABE VOWELS

	Front	Central	Back
High	<i>		<u>
High-mid	<e>		<o>
Low		<a>	

Based on Rivet (1943a: 25–6).

I have no explanation for the circumflex on final <â> in <tanâ> ‘egg’; it may eventually turn out to represent vowel length or nasality. If stress is indicated in the Nutabe (and Catío) data provided by Rivet, it is found on the final syllable throughout. The interpretation of <i>, <u>, and <gu> as referring to glides in certain words such as <ai> ‘Spaniard, devil’, <eua> ‘moon’, and <guacú> ‘old woman’, is purely tentative.

2.3.19.1.2 Nutabe consonants

Table 59 illustrates the graphemes referring to Nutabe consonants.

TABLE 59
NUTABE CONSONANTS

	Labial	Dental/alveolar	Palatal	Velar
Voiceless stops	<p>	<t>		<c, qu>
Voiced stop	<b>	<d>		
Voiceless affricate		<ch>		
Voiceless fricatives		<s>		
Nasals	<m>	<n>		
Vibrant		<r>		
(Glides)	<u, gu>		<i>	

Based on Rivet (1943a: 25–6).

The related Catío language may have had sounds, for instance fricatives, that were not present in Nutabe, and which are symbolized by the graphemes <v>, <g>, <x>, and <j> in the Catío data (cf. Rivet 1943a: 24–5).

2.3.19.2 Reflexes of Proto-Chibchan phonemes in Nutabe

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.19.2.1) and of Proto-Chibchan consonants (2.3.19.2.2) in Nutabe.

2.3.19.2.1 Reflexes of Proto-Chibchan vowels in Nutabe (cf. also Rivet 1943a)

***a > {<a>, <o>}**

*atsa-ka^{n}da ‘chicken’ > <otokaró> ‘chicken’ (Rivet 1943a: 26)

*^{n}da^{ŋ}g ‘salt’ > <**nac**ú> ‘salt’ (Rivet 1943a: 26)

*La ‘egg, offspring’ > <ta**nâ**> ‘egg’ (Rivet 1943a: 26)

***i > <i>**

*^{n}di? 'water, river' > <ni> 'water> (Rivet 1943a: 26)

*^{ŋ}gi 'firewood' > <**qui**a> 'fire' (Sp. *lumbre*) (Rivet 1943a: 26)

*Gu^{n}di ~ *GuiH^{n}d 'lightning' > <**uri**chiquisi> 'lightning' (Rivet 1943a: 29)

***u > <u>**

*Gu^{n}di ~ *GuiH^{n}d 'lightning' > <**uri**chiquisi> 'lightning' (Rivet 1943a: 26)

*u^{n}du 'cedar' > <ur> 'pot' (Rivet 1943a: 26)

2.3.19.2.2 Reflexes of Proto-Chibchan consonants in Nutabe (cf. also Rivet 1943a)

***^{n}d > <n> / #__**

***^{n}d > <r> / elsewhere**

*atsa-ka^{n}da 'chicken' > <otokaró> 'chicken' (Rivet 1943a: 26)

*^{n}da^{ŋ}g 'salt' > <**nac**ú> 'salt' (Rivet 1943a: 26)

*^{n}di? 'water, river' > <ni> 'water> (Rivet 1943a: 26)

*Gu^{n}di ~ *GuiH^{n}d 'lightning' > <**uri**chiquisi> 'lightning' (Rivet 1943a: 26)

*u^{n}du 'cedar' > <ur> 'pot' (Rivet 1943a: 26)

***k > <k> / V__V**

*atsa-ka^{n}da 'chicken' > <otokaró> 'chicken' (Rivet 1943a: 26)

***^{ŋ}g > {<c>, <qu>}**

*^{n}da^{ŋ}g 'salt' > <**nac**ú> 'salt' (Rivet 1943a: 26)

*^{ŋ}gi 'firewood' > <**qui**a> 'fire' (Sp. *lumbre*) (Rivet 1943a: 26)

***? > Ø**

*^{n}di? 'water, river' > <ni> 'water> (Rivet 1943a: 26)

***ts > <t> / V__V**

*atsa-ka^{n}da 'chicken' > <otokaró> 'chicken' (Rivet 1943a: 26)

***#L > <n>**

*La 'egg, offspring' > <ta**nâ**> 'egg' (Rivet 1943a: 26)

2.3.20 Pech

Pech, also called Paya or Pesh, is the northernmost Chibchan language. At the end of the twentieth century, it was still spoken by some 600 speakers in some settlements in the departments of Olancho and Colón, Honduras, near the Atlantic coast (Holt 1999a: 7). Holt (ibid.: 13) differentiates between three dialects, the varieties of Colón, El Carbón and Culmí. His data, which are used in the present thesis, come from the latter dialect unless indicated otherwise. Although the Pech may have been among the first Amerindians to come into contact with Europeans (ibid.: 8), our earliest explicit information on this group dates from the early nineteenth century. An overview of early accounts on the Pech and their language is provided by Lehmann (1920: 628–30).

As mentioned in subsection 1.2.1, Pech was the last Chibchan language to be demonstrated as a member of this family, namely by Holt (1975, cited in Campbell 1979: 942–4). The Chibchan status of Pech was later confirmed by Constenla Umaña (1981) and Holt (1986). A comparison with Chibchan languages of Colombia, for instance with Ika and Damana from the Sierra Nevada de Santa Marta, reveals the existence of shared innovations concerning specific sound changes or verbal person and aspect marking (Pache 2016c; see subsection 1.2.2).

The main sources so far on Pech are Conzemius (1928) and Holt (1986, 1999a). The language is currently being investigated by Chamoreau (e.g., 2017).

Except for vowel nasality, attested in Pech, the phoneme inventory of this language is relatively similar to the phoneme inventory of Tunebo (see below, subsection 2.3.23). In some cases, there is vocalic ablaut in Pech (*e* or *i* versus *a*), associated with verbal person marking. The more fronted vowel is associated with the third person, whereas *a* is attested in the first- and second-person forms (Holt 1999a: 29). Thus, this language seems to distinguish morphologically between speech-act participants (SAPs) and non-SAPs, a feature which is otherwise only attested in Chibchan languages of Colombia (for instance, Barí, Ika, and Muisca) and may be an innovative typological feature (Pache 2016c).

2.3.20.1 The sounds of Pech

The following two subsections present and discuss Pech sounds, based on Holt (1999a).

2.3.20.1.1 Pech vowels and suprasegmentals

Tables 60 and 61 illustrate the vowel phonemes of Pech. Oral vowels are shown in table 60.

TABLE 60
PECH PHONEMES: ORAL VOWELS

	Front	Central	Back
High	i		u
High-mid	e		o
Low		a	

Source: Holt (1999a: 17).

The inventory of Pech nasal vowel phonemes is illustrated in table 61. Nasal vowels tend to be realized as a bit more open, compared with their non-nasal counterparts (Holt 1999a: 18), and there can be progressive and regressive spread of nasality in Pech (ibid.: 22–3).

TABLE 61
PECH PHONEMES: NASAL VOWELS

	Front	Central	Back
High	ĩ		ũ
High-mid	ẽ		õ
Low		ã	

Source: Holt (1999a: 17).

In Pech, vowels *a*, *i*, and *u* and their nasal counterparts are somewhat more frequent than *e* and *o*. In rapid speech, the sequences *aj* or *ai* can be realized as *e*; *ãi* gives *æ̃*. Likewise, in rapid speech, the sequences *aw* and *wa* may be realized as *o*, whereas the sequence *awa* gives *o:* before a consonant. These latter contractions may also occur across word-boundaries (Holt 1999a: 21–2). The sequence *ej* can be difficult to distinguish from *e:*, for instance in [sɛ̀j̃w̃ã ~ sɛ̀:w̃ã] 'cold, flavorless' (ibid.: 21).

In some cases, there seems to be vowel assimilation (or vowel harmony) in Pech: *i*, for example, becomes *u* if followed by *w* – *jiwì* 'moon' is often realized as [juwì]) (ibid.: 22); a similar phenomenon might be attested in Kogi <nyui ~ nui> 'sun' (cf. Preuss 1927: 521). Between voiceless consonants and in unstressed syllables, Pech vowels can be realized as voiceless (Holt 1999a: 18).

Stress (two levels: primary and secondary stress) appears to be largely predictable, correlating with underlying tone. Primary stress typically falls on the last syllable of the verb stem. Some inflectional suffixes are associated with stress, which may be primary or secondary (Holt 1999a: 14, 19).

The distinction between long and short vowels is phonemic in Pech. Only in stressed, open syllables do long vowels occur with full length. If the syllable is closed or unstressed, long vowels are realized as "relatively short, but retain their close, tense quality" (Holt 1999a: 18): compare *òː* in *tòːkkawá* 'I enter' which is realized as [tòkkəwáʔ]. Instead, short, unstressed vowels in closed syllables are usually realized as open and lax, for instance *ò* in *tòkkawá* 'I drink it' which is realized as [tɔ̀kkəwáʔ]. Also, in rapid speech, *i* can be realized as a schwa [ə] if it is unstressed (ibid.: 18). In a nutshell, the phonetic contrast between long and short vowels is one of length in open syllables, whereas it is a contrast of closeness and tenseness versus openness and laxness in closed syllables (ibid.: 18). Metathesis of vowel length has been observed in some cases, for instance when *áːkwa* 'other' is realized as *ákkwa* (ibid.: 25).

In unstressed syllables, vowels can be syncopated, above all in fast speech, leading to consonant clusters in initial position (unstressed vowels are usually lost between a consonant and a following *ɾ*) (ibid.: 20; 23), also, between two stressed syllables, an unstressed vowel between two consonants is often lost, as in *wàɾuwàɾu* [wàɾwàɾu] (ibid.: 23).

Sequences of identical vowels are not frequent in Pech. If they occur at a phonetic level, they mostly originate in a reduction of a *VʔV* sequence and are realized with creaky voice. Also, on the phonetic level, same-vowel sequences are frequently realized as long vowels (Holt 1999a: 21–2, 26). In some cases, *VʔV* sequences are metathesized to a sequence *VVʔ*, with the resulting same-vowel sequence often being realized as a single long vowel (ibid.: 25). Holt (1999a: 25) also observes that a glottal stop is frequently inserted between two vowels, as in *nə̀-a-ɾìʔ* [nə̀ʔaɾíʔ] 'I went (earlier past)' or in *ta-e* [taʔe] 'mine'. Note that in these two cases given by Holt (ibid.), the glottal stop arises at the morpheme boundary.

Two or three pitch levels are contrastive in Pech, namely high tone (V́), low tone (V̀), and possibly an extra low tone, with little evidence for the latter, however. Pitch-distinctions can have both an inflectional function and distinguish between lexical items (Holt 1999a: 18–9). These tones occur in "certain marked syllables"; tone may spread via assimilation or prosodic tonal patterns to "unmarked syllables" (ibid.: 18).

2.3.20.1.2 Pech consonants

Table 62 illustrates the inventory of Pech consonant phonemes.

TABLE 62
PECH PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar	Labio-velar	Glottal
Voiceless stops	p	t		k	k^w	ʔ
Voiced stop	b					
Fricatives		s	ʃ			h
Nasals	m	n				
Lateral		l[59]				
Vibrant		ɾ, (r)[60]				
Glides	w		j			

Source: Holt (1999a: 15).

After long vowels, Pech *k* is sometimes realized as [g]. An analogous realization of k^w as [g^w] has not been observed, however (Holt 1999a: 15–6). In general terms, the voiceless stops are lenis and unaspirated (ibid.: 15).

The voiced bilabial stop *b* is realized as a voiced fricative [β] in intervocalic position (Holt 1999a: 16); it is never followed by a nasal vowel (ibid.: 21).

The Pech vibrant is often realized as partly voiceless in phrase-final position, or if followed by a voiceless consonant (Holt 1999a: 16–7). In syllable coda or syllable-final consonant clusters, the Pech vibrant is never preceded by a nasal vowel (ibid.: 21). The distribution of the tap *ɾ* and the trill *r* is mostly complementary, and they may both be allophones of /ɾ/. In Pech, the trill is attested word-initially in only one case, as Holt (ibid. 16) stresses. The trill also occurs intervocalically if followed by a consonant, and in final position. In contrast, the tap is attested intervocalically and if preceded by a consonant. In intervocalic position, a near-minimal pair is *warɾá* 'blue' versus *wàra* 'dirty'. Alternatively, intervocalic *r* may be analyzed as a sequence *ɾr* (ibid.: 16–7).

[59] More frequently found in loans, less frequent in native vocabulary. In the latter, it is replaced by *d* throughout in the Colón dialect (Holt 1999a: 15).
[60] Probably an allophone of the tap/flap, see below.

Likewise, the distribution of the vibrant and of the lateral *l* is nearly complementary, too: whereas *ɾ* is attested primarily between vowels and if followed by a consonant, *l* primarily occurs initially. However, the existence of several near-minimal pairs (for instance *arɾ̃́hwá* 'it reaches' versus *alúhwá* 'it dents (it)', ibid.: 17) suggests that *l* and *ɾ* must be considered as different phonemes (ibid.). In general terms, the lateral *l* is a relatively rare bird in Pech, mostly found in Spanish loanwords. The lateral *l* of the Culmí dialect corresponds to *d* in the Colón dialect, a sound otherwise not attested in this language (ibid.: 15).

The glottal consonants *ʔ* and *h* are attested in initial position only in the context of specific elements, such as *-ʔaʔa* 'leaf', and *-h(a)ɾá* 'liver'. Both are nouns referring to inalienably possessed entities and therefore require a prefixed possessive marker (Holt 1999a: 20).[61] (Compare the epenthetic glottal stop arising at morpheme boundaries between two vowels, discussed by Holt (1999a: 25) and in subsection 2.3.20.1.1 above.) Also, an excrescent final glottal stop is found in words having an underlying form ending in a vowel, as, for instance, *wìʔérawá* [wìʔérawáʔ]. It is less frequently found in rapid speech, above all before a consonant; it remains perceptible, however, before a vowel (Holt 1999a: 26). Finally, excrescent *ʔ* is also found between proclitics indicating person of the possessor and the noun indicating the possessed entity if it begins with a vowel (ibid.: 31–2).

There is some allophonic alternation in Pech fricatives: *s* may be realized as [h] in rapid speech and before a voiced consonant, for instance in *tàs-ma* [tàhma] 'I (emphatic)' (Holt 1999a: 26).

In word- or morpheme-initial position, the two glides *j* and *w* are often preceded by an element described as a "stop-like closure" and realized as [^{d}j] and [^{g}w] (Holt 1999a: 16) (compare Térraba below, where a somewhat similar situation is attested for the voiced velar stop). The two glides are nasalized if they are in direct contact with a nasal vowel. In word- or morpheme-initial position, and if followed by a nasal vowel, *j* and *w* are realized as [ɲ] and [^{ŋ}w̃], respectively (ibid.: 16).

Morphophonemic consonant alternation concerns *p*/*w*, *t*/*n*, and *k*/*h* (cf. Holt 1999a: 26–9). Consonant clusters occur in word-initial and -internal position. The sequence *nɾ* is realized as [ndɾ]: *arà:-n-ɾiʔ* [arà:ndɾiʔ] 'they made a noise'. The sequence *ɾʃ* is realized as [ɾsʧ]: *tòk-k-bar-ʃi* [tɔ̀kbʌɾsʧi] 'we drank it (recent past)' (ibid.: 25). In phonetically geminate consonant clusters, only the sequences *kk*, *ss*, and *ʃʃ* are attested (ibid.: 21), and, possibly, *ɾɾ* [r] (see above).

[61] Likewise, in Barí, the glottal fricative *h* never occurs word-initially; it is only attested in initial position in some suffixes (Mogollón Pérez 2000: 720–1) (see subsection 2.3.2 above).

2.3.20.2 Reflexes of Proto-Chibchan phonemes in Pech

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.202.1) and of Proto-Chibchan consonants (2.3.20.2.2) in Pech.

2.3.20.2.1 Reflexes of Proto-Chibchan vowels in Pech (cf. also Constenla Umaña 1981: 246–9)

a > *a

*a ‘that’ > *ã* ‘that, those (distal)’ (Holt 1999a: 62)

*a- valency-reducer$_1$ > *a-* valency-reducing verbal prefix (cf. Holt 1999a: 60)

*^{m}ba^{n}d- ‘tasty’ > ***par****è-wa* ‘sweet’ (Holt 1986: 211)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > *pàr-* ‘tail’ (Holt 1986: 139)

*^{n}da^{ŋ}g ‘salt’ > ***tak****é* ‘salt, sea’ (Holt 1986: 145)

*^{n}daH(^{n}d) ‘I$_1$’ > *tàs* ‘I’ (Holt 1999a: 63)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > *nã̀* ‘to go’ (Holt 1999a: 68)

*^{ŋ}g^{w}a ~ *u^{ŋ}g ‘fish’ > *w̃a* ‘fish’ (Holt 1986: 136)

*^{ŋ}g^{w}ah^{n}d ‘bad$_1$’ > ***war****-k^{w}a* ‘bad, evil’ (Holt 1986: 162)

*^{ŋ}g^{w}a(k) ‘face’ > *wàk* ‘face’ (Holt 1999a: 39)

*ha^{n}d ‘to laugh$_1$’ > *ar-kõ̀* ‘to laugh’ (Holt 1986: 87)

*hak ~ *kaʔ ‘stone’ > *áʔ* ‘egg, testicle’ (Holt 1986: 89, 102)

*ia dative > *-jã́* indicates locative relationships such as ‘in, on, at, to’ or the goal of motion verbs (Holt 1999a: 34, 37)

*ka allative/dative > *-ka* benefactive (Holt 1999a: 43)

*ka^{n}daʔ ‘net’ > *à:ɾa* ‘net’ (Holt 1986: 112)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > *ã̀:* ‘sun, day’ (Holt 1999a: 65)

*kaʔ(k)-pu^{n}d- ‘dust’ > ***aka-pur****ù-ʃ* ‘dust’ (Holt 1986: 95)

*kuʔ(-Ba) ‘tongue’ > *(ʔ)ù:wa*, *(ʔ)u:wa* ‘tongue’ (Holt 1986: 113, 206)

*paH^{n}d- ‘to begin, start, first’ > *-pár*, *-pír* preinceptive (Holt 1999a: 48)

*siʔ-k^{w}a ‘pale’ > ***síwa****-ɾa* ‘pale’ (Holt 1986: 121)

*taH(^{m}ba) ‘heart, liver, center$_2$’ > ***-sàʔa*** ‘inside(s)’ (Holt 1986: 96)

*tah(-ka) ‘new, raw’ > *sáʔ-ka* ‘green, unripe, raw’ (Holt 1986: 246)

*ʦa ‘hair, head’ > *sã́* ‘head’ (Holt 1986: 210)

*ʦaʔ ‘to sit (sg.)’ > *ʃà-* ‘to be, live, be born, inhabit’ (Holt 1999a: 46)

*uˈa comitative$_2$ > *-wa* ‘with, having its...’ (Holt 1986: 136)

***ap > {*ap*, *òː*}**

*hap- ‘eight’ > ***òː**wa* ‘eight’ (Holt 1999a: 63)

*hapi ~ *apiʔ ‘blood’ > *apé* ‘bile’ (Holt 1986: 89)

*kap- ‘to sleep’ **>** ***òː**k-* ‘to sleep’ (Holt 1999a: 44)

{*aʔu, *uuʔ} > {*óː*, *òː*}

*ᵐbuuʔ ‘two’ > ***póː**k* ‘two’ (Holt 1999a: 63)

*ⁿdaʔ-u ‘to enter’ > ***tòː**k-* ‘to enter’ (Holt 1999a: 18)

{*ã(ʔ)ĩ, *ai} > {*ãj*, *ẽj*, *e*}

*ᵐbaⁿdi ~ *ᵐbaiⁿd ‘human being’ > *pèʃ* ‘person’ (Holt 1999a: 39)

*ᵐbãʔ(ĩ) ‘three’ > ***mə̀̃j**h* (Holt 1999a: 63), ***mə́̃j**h* ‘three’ (Holt 1986: 90)

*ⁿdai ‘to walk’ > ***te**ʃ-* ‘to go, leave, wander, disappear’ (Holt 1986: 144)

*taiⁿd- ‘six’ > *sèɾa* ‘six’ (Holt 1999a: 63)

*ʦãĩh ‘cold’ > [**sə̀̃j**w̃ã ~ **sə̀̃**ːw̃ã] ‘cold, flavorless’ (Holt 1999a: 21)

{*ĩ, *i} > {*i*, *j*, *e*, *ẽ* }

*ᵐbãʔ(ĩ) ‘three’ > ***mə̀̃j**h* (Holt 1999a: 63), ***mə́̃j**h* ‘three’ (Holt 1986: 90)

*ᵐbiʦi ~ *ᵐbisi ‘hummingbird’ > *mìs* ‘hummingbird, penis’ (Holt 1999a: 78)

*ⁿdi locative/instrumental > *-ɾi* mediative/instrumental (Holt 1999a: 35)

*ⁿdiʔ ‘water, river’ > ***tì**-sa* ‘bog, ditch’ (Holt 1986: 99)

*ᵑgi ‘worm’ > *ʃə́̃* ‘worm’ (Holt 1986: 125)

*hapi ~ *apiʔ ‘blood’ > *apé* ‘bile’ (Holt 1986: 89)

*hi ~ *iʔ ‘this’ > *ĩ* ‘this, these (proximal)’ (Holt 1999a: 62)

*ia dative > *-jə́̃* indicates locative relationships such as ‘in, on, at, to’ or the goal of motion verbs (Holt 1999a: 34, 37)

*siʔ-kʷa ‘pale’ > ***síwa**-ɾa* ‘pale’ (Holt 1986: 121)

*ʦiⁿdi ‘soft’ > *sə̀̃-**siɾí*** ‘brain’ (Holt 1986: 97)

*ʦiʔ(-ki) ‘tooth (incisor), thorn’ > *síki* ‘thorn’ (Holt 1986: 121)

***ii > {*i*, *ãj*}**

*^{m}bii ‘up, sky’ > ***pi**ri* ‘sky’ (Holt 1986: 91)

*^{n}dii(k) ‘nose’ > ***tãj**sá* ‘nose’ (Holt 1986: 146)

{*u, *ũ} > *u*

*^{n}du ‘to cook$_2$’ > *tù*, *tu* ‘to cook’ (Holt 1986: 101, 265)

*^{n}duh(k) ‘tail$_2$’ > *suk* ‘lower back, spine; behind’ (Holt 1986: 122)

*^{n}duk / *suk ‘prick, sting, point’ > ***suk**-uk* ‘porcupine’ (Holt 1986: 283)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > *suk-**uk*** ‘porcupine’ (Holt 1986: 283)

*kaʔ(k)-pu^{n}d- ‘dust’ > *a**ka-pur**ù-ʃ*́ ‘dust’ (Holt 1986: 95)

*****kũʔ ‘louse’ > *ú* ‘louse’ (Holt 1986: 112)

*kuʔ(-Ba) ‘tongue’ > *(ʔ)ùːwa*, *(ʔ)uːwa* ‘tongue’ (Holt 1986: 113, 206)

*suh(k) ‘to wash’ > *suk* ‘to wash’ (Holt 1986: 157)

*ʦuʔ ‘breast, teat$_2$’ > *tùtu* ‘nipple’ (Holt 1986: 133)

*****uˈa comitative$_2$ > *-wa* ‘with, having its...’ (Holt 1986: 136)

*uk(a) ‘nine, ten’ > ***ùk**k^{w}a* ‘ten’ (Holt 1999a: 63)

2.3.20.2.2 Reflexes of Proto-Chibchan consonants in Pech (cf. also Constenla Umaña 1981: 249–52)

p > *p

*hapi ~ *apiʔ ‘blood’ > *apé* ‘bile’ (Holt 1986: 89)

*kaʔ(k)-pu^{n}d- ‘dust’ > *a**ka-pur**ù-ʃ*́ ‘dust’ (Holt 1986: 95)

*paH^{n}d- ‘to begin, start, first’ > *-pár*, *-pír* preinceptive (Holt 1999a: 48)

***^{m}b > {*p*, *m*}**

*^{m}ba^{n}d- ‘tasty’ > ***par**è-wa* ‘sweet’ (Holt 1986: 211)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > *pàr-* ‘tail’ (Holt 1986: 139)

*^{m}ba^{n}di ~ *^{m}bai^{n}d ‘human being’ > *pèʃ*́ ‘person’ (Holt 1999a: 39)

*^{m}bãʔ(ĩ) ‘three’ > ***mãj**h* (Holt 1999a: 63), ***mãj**h* ‘three’ (Holt 1986: 90)

*^{m}bii ‘up, sky’ > ***pi**ri* ‘sky’ (Holt 1986: 91)

*^{m}bitsi ~ *^{m}bisi ‘hummingbird’ > *mìs* ‘hummingbird, penis’ (Holt 1999a: 78)

*^{m}buuʔ ‘two’ > ***pó**ːk* ‘two’ (Holt 1999a: 63)

***t > *s* / #__*a**

*taH(^{m}ba) ‘heart, liver, center$_2$’ > ***-sàʔa*** ‘inside(s)’ (Holt 1986: 96)

*tah(-ka) ‘new, raw’ > *sáʔ-ka* ‘green, unripe, raw’ (Holt 1986: 246)

*tai^{n}d- ‘six’ > *sèɾa* ‘six’ (Holt 1999a: 63)

^{n}d > *t*, *s* / #__*u

***^{n}d > *t*, *n* / #__V$_{[other]}$**

***^{n}d > *ʃ* / VV__#**

***^{n}d > *ɾ* / elsewhere**

*^{m}ba^{n}d- ‘tasty’ > ***paɾè-wa*** ‘sweet’ (Holt 1986: 211)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > *pàɾ-* ‘tail’ (Holt 1986: 139)

*^{m}ba^{n}di ~ *^{m}bai^{n}d ‘human being’ > *pèʃ* ‘person’ (Holt 1999a: 39)

*^{n}da^{ŋ}g ‘salt’ > ***takέ*** ‘salt, sea’ (Holt 1986: 145)

*^{n}dai ‘to walk’ > ***teʃ-*** ‘to go, leave, wander, disappear’ (Holt 1986: 144)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > *nɑ̀* ‘to go’ (Holt 1999a: 68)

*^{n}daʔu ‘to enter’ > ***tò:k-*** ‘to enter’ (Holt 1999a: 18)

*^{n}di locative/instrumental > *-ɾi* mediative/instrumental (Holt 1999a: 35)

*^{n}dii(k) ‘nose’ > ***tɑ̃́jsá*** ‘nose’ (Holt 1986: 146)

*^{n}diʔ ‘water, river’ > ***tì-sa*** ‘bog, ditch’ (Holt 1986: 99)

*^{n}du ‘to cook$_2$’ > *tù*, *tu* ‘to cook’ (Holt 1986: 101, 265)

*^{n}duh(k) ‘tail$_2$’ > *suk* ‘lower back, spine; behind’ (Holt 1986: 122)

*^{ŋ}g^{w}ah^{n}d ‘bad$_1$’ > ***waɾ-k^{w}a*** ‘bad, evil’ (Holt 1986: 162)

*ha^{n}d ‘to laugh$_1$’ > *aɾ-kɔ̀̃* ‘to laugh’ (Holt 1986: 87)

*ka^{n}daʔ ‘net’ > *à:ɾa* ‘net’ (Holt 1986: 112)

*kaʔ(k)-pu^{n}d- ‘dust’ > ***aka-puɾù-ʃ*** ‘dust’ (Holt 1986: 95)

*paH^{n}d- ‘to begin, start, first’ > *-páɾ*, *-píɾ* preinceptive (Holt 1999a: 48)

*tai^{n}d- ‘six’ > *sèɾa* ‘six’ (Holt 1999a: 63)

*ʦi^{n}di ‘soft’ > *sɑ̃̀-**siɾí*** ‘brain’ (Holt 1986: 97)

***k > Ø / #__**

***k > *k* / elsewhere**

*^{n}duh(k) ‘tail$_2$’ > *suk* ‘lower back, spine; behind’ (Holt 1986: 122)

*^{n}duk / *suk ‘prick, sting, point’ > ***suk-uk*** ‘porcupine’ (Holt 1986: 283)

*hak ~ *kaʔ ‘stone’ > *áʔ* ‘egg, testicle’ (Holt 1986: 89, 102)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > *suk-**uk*** ‘porcupine’ (Holt 1986: 283)

*ka allative/dative > *-ka* benefactive (Holt 1999a: 43)

*ka^{n}daʔ ‘net’ > *à:ra* ‘net’ (Holt 1986: 112)

*kap- ‘to sleep’ **> *ò:k-*** ‘to sleep’ (Holt 1999a: 44)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > *ã̀:* ‘sun, day’ (Holt 1999a: 65)

*kaʔ(k)-pu^{n}d- ‘dust’ > ***aka-pur****ù-ʃ* ‘dust’ (Holt 1986: 95)

*ku(^{n}d-) ‘feline$_2$’ > *úʔ* ‘jaguar’ (Holt 1999a: 34)

***kũʔ ‘louse’ > *ú* ‘louse’ (Holt 1986: 112)

*kuʔ(-Ba) ‘tongue’ > *(ʔ)ù:wa*, *(ʔ)u:wa* ‘tongue’ (Holt 1986: 113, 206)

*suh(k) ‘to wash’ > *suk* ‘to wash’ (Holt 1986: 157)

*tah(-ka) ‘new, raw’ > *sáʔ-ka* ‘green, unripe, raw’ (Holt 1986: 246)

*uk(a) ‘nine, ten’ > ***ùk****k^{w}a* ‘ten’ (Holt 1999a: 63)

***^{ŋ}g > *ʃ* / __*ĩ**

***^{ŋ}g > *k* / elsewhere**

*^{n}da^{ŋ}g ‘salt’ > ***tak****é* ‘salt, sea’ (Holt 1986: 145)

*^{ŋ}gi ‘worm’ > *ʃẽ́* ‘worm’ (Holt 1986: 125)

k^{w} > *w

*siʔ-k^{w}a ‘pale’ > ***síwa****-ra* ‘pale’ (Holt 1986: 121)

***^{ŋ}g^{w} > {*w*, *w̃*}**

***^{ŋ}g^{w}a ~ *u^{ŋ}g ‘fish’ > *w̃a* ‘fish’ (Holt 1986: 136)

*^{ŋ}g^{w}ah^{n}d ‘bad$_1$’ > ***war****-k^{w}a* ‘bad, evil’ (Holt 1986: 162)

*^{ŋ}g^{w}a(k) ‘face’ > *wàk* ‘face’ (Holt 1999a: 39)

***VʔV > {*V́(ʔ)*, *V̀*}**

*^{m}bãʔ(ĩ) ‘three’ > ***mã̀j****h* (Holt 1999a: 63), ***mã́j****h* ‘three’ (Holt 1986: 90)

*^{m}buuʔ ‘two’ > ***pó:k*** ‘two’ (Holt 1999a: 63)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > *nã̀* ‘to go’ (Holt 1999a: 68)

*^{n}daʔu ‘to enter’ > ***tò:k-*** ‘to enter’ (Holt 1999a: 18)

*^{n}diʔ ‘water, river’ > ***tì****-sa* ‘bog, ditch’ (Holt 1986: 99)

*hak ~ *kaʔ ‘stone’ > *áʔ* ‘egg, testicle’ (Holt 1986: 89, 102)

*hapi ~ *apiʔ ‘blood’ > *apé* ‘bile’ (Holt 1986: 89)

*ka^{n}daʔ ‘net’ > *à:ɾa* ‘net’ (Holt 1986: 112)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > *a̰:* ‘sun, day’ (Holt 1999a: 65)

*kaʔ(k)-pu^{n}d- ‘dust’ > ***aka-pur****ù-ʃ* ‘dust’ (Holt 1986: 95)

***kũʔ** ‘louse’ > *ú* ‘louse’ (Holt 1986: 112)

*kuʔ(-Ba) ‘tongue’ > *(ʔ)ù:wa*, *(ʔ)u:wa* ‘tongue’ (Holt 1986: 113, 206)

*siʔ-k^{w}a ‘pale’ > ***síwa****-ɾa* ‘pale’ (Holt 1986: 121)

*ʦaʔ ‘to sit (sg.)’ > *ʃà-* ‘to be, live, be born, inhabit’ (Holt 1999a: 46)

*ʦiʔ(-ki) ‘tooth (incisor), thorn’ > *síki* ‘thorn’ (Holt 1986: 121)

*ʦuʔ ‘breast, teat$_2$’ > *tùtu* ‘nipple’ (Holt 1986: 133)

ʦ > *t* / __*u

***ʦ > {*s*, *ʃ*} / elsewhere**

*ʦa ‘hair, head’ > *sá̰* ‘head’ (Holt 1986: 210)

*ʦãĩh ‘cold’ > [**sɛ̀j̃**w̃ã ~ **sɛ̀**:w̃ã] ‘cold, flavorless’ (Holt 1999a: 21)

*ʦaʔ ‘to sit (sg.)’ > *ʃà-* ‘to be, live, be born, inhabit’ (Holt 1999a: 46)

*ʦi^{n}di ‘soft’ > *sà̰-****sirí*** ‘brain’ (Holt 1986: 97)

*ʦiʔ(-ki) ‘tooth (incisor), thorn’ > *síki* ‘thorn’ (Holt 1986: 121)

*ʦuʔ ‘breast, teat$_2$’ > *tùtu* ‘nipple’ (Holt 1986: 133)

s > *s

*siʔ-k^{w}a ‘pale’ > ***síwa****-ɾa* ‘pale’ (Holt 1986: 121)

*suh(k) ‘to wash’ > *suk* ‘to wash’ (Holt 1986: 157)

***H^{n}d > *s* / __#**

*^{n}daH(^{n}d) ‘I$_1$’ > *tàs* ‘I’ (Holt 1999a: 63)

ahk > *áʔk

{*hu, *uh} > *u*

***hV$_{[other]}$, *V$_{[other]}$h > {*V́*, *V̀*, *V*}**

*^{n}duh(k) ‘tail$_2$’ > *suk* ‘lower back, spine; behind’ (Holt 1986: 122)

*hap- ‘eight’ > ***ò****:wa* ‘eight’ (Holt 1999a: 63)

*ha^{n}d ‘to laugh$_{1}$’ > *ar-kɔ̀̃* ‘to laugh’ (Holt 1986: 87)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > *suk-**uk*** ‘porcupine’ (Holt 1986: 283)

*paH^{n}d- ‘to begin, start, first’ > *-pár*, *-pír* preinceptive (Holt 1999a: 48)

*suh(k) ‘to wash’ > *suk* ‘to wash’ (Holt 1986: 157)

*tah(-ka) ‘new, raw’ > *sáʔ-ka* ‘green, unripe, raw’ (Holt 1986: 246)

*ʦãĩh ‘cold’ > [**sɛ̀ɲ̃**wã̃ ~ **sɛ̀**:wã̃] ‘cold, flavorless’ (Holt 1999a: 21)

2.3.21 Rama

Rama is a moribund Chibchan language from eastern Nicaragua which still has some few semi-speakers (Chevrier 2017a: 19–20). The language had already been considered highly endangered at the end of the nineteenth century (cf. Brinton 1891a: 367).[62] The habitat of the Rama does not seem to have changed much since that period of time (cf. ibid.), and at present, most Rama live on the two islands of Rama Cay (Craig 1989: 6). During colonial times, the territory of the Rama probably covered larger areas, extending from Rio Escondido (north of the Bluefields lagoon) to Rio San Juan (present-day border between Nicaragua and Costa Rica) (Craig 1989: 5; Mueller Riverstone 2014: 7). In the past, Rama-speaking groups may have been referred to by different ethnonyms, such as Votos, Melchora, Aramas, and Arramas (Lehmann 1920: 416; Craig 1989: 5; Constenla Umaña 2012: 391). The latter two terms, Aramas and Arramas, seem to contain a prothetic vowel *a*.

That Rama is a Chibchan language was first observed by Brinton (1891a: 367). More precisely, Brinton (ibid.) identified Rama as "a branch of the Changuina or Dorasque stock". He also considered the Rama to form "the vanguard of the South American immigration into North America" (ibid.: 367–8). Lehmann (1914: 9, 1920: 457–61) and Constenla Umaña (2012: 409–10) both saw a relatively close connection between Rama and Guatuso. How closely both languages are actually related still remains to be established, however. There are several lexical parallels of Rama with Misumalpan languages, above all with Sumu and Miskito (Craig 1989: 271–3). The existence of only three phonemic vowels in Rama, /a/, /i/, and /u/, is another feature of Rama that might be due to contact with these languages (ibid.: 33). If Proto-Chibchan was indeed a trivocalic language before it spread over the Intermediate Area, contact with Misumalpan languages may have contributed to preserve this feature in Rama (cf. Campbell 1995: 165).

The main sources on Rama are Lehmann (1914, 1920: 416–61), Craig (1989), the Turkulka online dictionary (Grinevald et al. 2002–06), and a printed dictionary elaborated by Rigby and Schneider (1989). In the present work, I stick to the data provided by Craig (1989) and above all, Grinevald et al. (2002–06).

Some peculiar features of Rama are the ubiquity of the velar nasal in any position (root-initially, internally, and finally), the existence of various root-initial consonant clusters, and the fact that case-marking postpositions have been reassigned to preverbal position in several cases (Craig 1989: 39, 41, 114–5).

[62] Brinton (1891a: 367) stated that "[t]heir language will probably be extinct in a few years".

2.3.21.1 The sounds of Rama

The following two subsections present and discuss Rama phonemes and their realization, based on Craig (1989).

2.3.21.1.1 Rama vowels and suprasegmentals

Table 63 gives an overview of Rama vowel phonemes.

TABLE 63
RAMA PHONEMES: VOWELS

	Front	Central	Back
High	i		u
Low		a	

Source: Craig (1989: 37).

Rama has both short and long vowels, but it is not easy to find minimal pairs substantiating the phonemic character of vowel length in this language (Craig 1989: 33). In some cases, there is free variation between long vowels and *Vh* sequences, as in the negation marker *ta꞉ma* ~ *tahma* (ibid.: 59). Vowel nasality and tone do not seem to be contrastive at present. Whether or not Rama originally was a tonal language is difficult to determine even though Craig identifies high and low pitch as part of the Rama stress system (cf. ibid.: 41). Stress in Rama is metrical, but not dinstinctive (Grinevald et al. 2016).

Vowel deletion/syncope is a frequent phenomenon in Rama. It can be optional and may concern both the first or the second vowel of a polysyllabic form as, for instance, in *maliŋ* ~ *mliŋ* ~ *malŋ* ‘to kill’ (Craig 1989: 52–3). In *malima* ~ *mli꞉ma* ‘good’, the loss of *a* is compensated by lengthening of *i* (ibid.: 51). The resulting consonant cluster *ml* in these forms is similar to those attested in other Chibchan languages as well (see subsection 2.4.4.1). Vowel loss in Rama may also concern the vowel of a monosyllabic root, as shown in example (14):

(14) Rama (Craig 1989: 54)
su꞉li-ka꞉s *ni-**k^{w}s**-u*
animal-meat 1-eat-PFV
‘I ate the meat.’

The basic form of the verb is *k^{w}is* ‘to eat’ (Craig 1989: 54).

Metathesis of *u* and *k* is attested in Rama (as in the Muisca imperfective marker <suca> which alternates with <squa>, see below, subsection 2.4.4.5). For instance, the verb 'to wash', *suk*, is realized as such if followed by a consonant, but it is realized as *sku* if followed by a vowel. The same is true for the alternating forms *tuk* and *tku* 'to drink'. The sequence *aŋ* may alternate with the sequence *ŋa* (ibid.: 55–6). Finally, Rama seems to have metathesized Proto-Chibchan roots with a VCV structure, which have a reflex *V:C* in Rama, probably via an intermediary stage *VVC*. This may be illustrated by the exemplary cases of Rama *a:p* 'body' (Grinevald et al. 2002–06), which derives from Proto-Chibchan *apa 'body', and by the case of Rama *u:k* 'skin' (ibid.), derived from *huka ~ *huBa ~ kuaʔ 'skin'.

With Kogi (and, to a lesser extent, Ika and Damana), Rama is among the Chibchan language that preserved the diphthongs that are reconstructed for the proto-language in the present work. The Rama verb-final tense/aspect markers *-u* and *-i* are realized as [-ʊ ~ -o] and [-ɪ ~ -e] (Craig 1989: 44–5). I am not aware of other cases where Rama /i/ and /u/ are realized as [ʊ ~ o] and [ɪ ~ e]. (The corresponding Proto-Chibchan aspect markers *-e imperfective and *-o perfective are among the few instances where mid vowels are tentatively reconstructed for Proto-Chibchan.) In the context of the verbs *a:kar* 'to be', *taŋ* 'give', and *kiŋ* 'to cause to X', there is regressive vowel harmony (Craig 1989: 47–8): the root-vowel assimilates to the vowel of a suffix indicating tense/aspect in *n-aka:r* 'I am', *n-a:kur-u* 'I was', *n-a:kir-i* 'I am'. Progressive vowel harmony is attested as well in Rama, namely in the case of *pluŋ* 'dry' + *kiŋ* auxiliary 'to make' > *pluŋ kuŋ* 'to dry' (ibid.: 48).

2.3.21.1.2 Rama consonants

Rama consonant phonemes are shown in table 64.

TABLE 64
RAMA PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Palatal	Velar	Labio-velar	Glottal
Voiceless stops	p	t		k	k^w	
Voiced stops	b	d		g		
Fricatives		s				h
Lateral		l				
Vibrant		r				
Nasals	m	n		ŋ	$ŋ^w$	
Glides	w		j			

Source: Craig (1989: 39).

Unvoiced oral stops are much more common in Rama than their voiced counterparts. The labialized velar stop *k^w* and nasal *$ŋ^w$* are not frequent, and the same seems to be true for the glottal fricative *h* and for the glides *w* and *j* (Craig 1989: 39–40). Instead, the velar nasal is frequent in Rama. It also occurs in root-initial position in this language, a rather uncommon phenomenon in Native American languages (cf. Anderson 2005: 42–5). The consonants *z* and *ʃ*, and high-mid vowels in non-final syllables occur in loans only (Craig 1989: 37–8, 40–1). Consonant clusters can occur in word-initial position in Rama. In a case such as *mliːka* ‘good’, the cluster is the result of syncope (see above). Further investigation is needed to determine the origin of the consonant clusters in cases such as *psutki* ‘inside’, *nkim* ‘today’, or *pnikpnikba* ‘bent up’. Nasal consonants assimilate to the following stops in terms of place of articulation (Craig 1989: 45). In several cases, there is free variation between *s* and *ʃ*, between *r* and *l*, and between *b*, *m*, and *w*; some speakers may also prefer a certain variant of the sounds in question, but no general patterns emerge (ibid.).

In syllable coda, there is alternation of *t* and *l*, depending on the following sound. If followed by a word or a morpheme beginning with a vowel, *l* is found. The stop *t* is attested in all other contexts (cf. ibid.: 48–50).

2.3.21.2 Reflexes of Proto-Chibchan phonemes in Rama

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.21.2.1) and of Proto-Chibchan consonants (2.3.21.2.2) in Rama.

2.3.21.2.1 Reflexes of Proto-Chibchan vowels in Rama (cf. also Constenla Umaña 1981: 254–5)

a > *a

*aBi ~ *aiB ‘maize’ > *ai* ‘corn’ (Grinevald et al. 2002–06)

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > ***abi:sa*** ‘new’ (Grinevald et al. 2002–06)

*a^{n}d- valency-reducer$_3$ > *al-* anticausative, intransitive (Craig 1989: 74–6)

*apa ‘body’ > *a:p* ‘body’ (Grinevald et al. 2002–06)

*apii(s) ‘pumpkin, squash’ > *abi:s* ‘squash, calabaza, ayote’ (Grinevald et al. 2002–06)

*aʔ- valency-reducer$_2$ > *a:-* derivational verbal prefix (Craig 1989: 77–8)

*-^{m}ba nominalizer$_1$ > ***-ima*** stative nominalizer (Craig 1989: 68)

*^{m}ba^{n}d- ‘all$_1$’ > *u:**mal**iŋ* ‘every, all, together’ (Grinevald et al. 2002–06)

*Baiʔ ‘sweet potato’ > ***pai**k* ‘sweet potato’ (Grinevald et al. 2002–06)

*^{m}bak- ‘flea’ > *pa:k* ‘flea’ (Grinevald et al. 2002–06)

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > *kaun* ‘to call, cry out, holler’ (Grinevald et al. 2002–06)

*^{m}baʔ ‘you’ > *ma:* ‘you’ (Craig 1989: 103)

*^{m}baʔk ‘to wrap’ > *al**pa:k***, *a**pa:k*** ‘to sew, meet’ (Grinevald et al. 2002–06)

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_1$’ > *psa:* ‘liver’ (Grinevald et al. 2002–06)

*^{m}bu^{n}d-ka^{n}d(a) ‘wind’ > *pulkat* ‘wind’ (Grinevald et al. 2002–06)

*^{n}da^{m}ba- ‘cold, cold substance’ > ***tama**:s* ‘early, morning’ (Grinevald et al. 2002–06)

*^{n}da(^{n}d) / *sa(^{n}d) ‘creeping animal’ > ***sar**kin* ‘boa’ (Grinevald et al. 2002–06)

*^{n}daH(^{n}d) ‘I$_1$’ > ***na:s*** ~ *nah* ‘I’ (Craig 1989: 103)

*^{n}da(ki^{n}d) ~ *ta(ki^{n}d) ‘back$_1$’ > *taŋkit* ‘back (body)’ (Grinevald et al. 2002–06)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > ***ta:k*** ‘to go’ (Grinevald et al. 2002–06)

*^{n}daʔ-u ‘to enter’ > ***tau**k* ‘to get in, come, dive, put on, wear’ (Grinevald et al. 2002–06)

*^{ŋ}gaʔ^{n}da ~ *^{ŋ}gaʔta ‘meat, flesh$_1$’ > *ka:s* ‘meat, flesh’ (Grinevald et al. 2002–06)

*^{ŋ}g^{w}ah^{n}d ‘bad$_1$’ > ***k^{w}a:la*** ‘bad, rotten, ugly, mean, dangerous’ (Grinevald et al. 2002–06)

*hai^{n}d ‘liver’ > ***air**bi* ‘blood’ (Grinevald et al. 2002–06)

*haka ~ *akaʔ ‘name’ > *a:k* ‘name’ (Grinevald et al. 2002–06)

*hapi ~ *apiʔ ‘to take out, pick up’ > *a꞉pi* ‘to find, take out’ (Grinevald et al. 2002–06)

*i(k) ‘manioc’ > *i꞉k* ‘manioc’ (Grinevald et al. 2002–06)

*ka ‘leaf’ > *ka꞉* ‘leaf’ (Grinevald et al. 2002–06)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > *kat*, *ka꞉t* ‘foot, handle, leg, log, penis, post, stick’ (Grinevald et al. 2002–06)

*kah-ka ‘mouth’ > *kaka꞉* ‘mouth’ (Grinevald et al. 2002–06)

*kap- ‘to sleep’ > ***kam****i꞉* ‘to sleep’ (Grinevald et al. 2002–06)

*La ‘bee, honey’ > *ŋa****la****꞉li* ‘honey’ (Grinevald et al. 2002–06)

*La ‘egg, offspring’ > *a꞉t* ‘egg’ (Grinevald et al. 2002–06)

*paH^{n}d ‘to begin, start, first’ > *pas* ‘first’ (Grinevald et al. 2002–06)

*sa^{n}da ‘wound, trace’ > ***sal****i꞉ba* ‘sore, boil’ (Grinevald et al. 2002–06)

*tau ‘dog’ > ***tau****suŋ* ‘dog’ (Grinevald et al. 2002–06)

*u^{ˈ}a comitative$_2$ > *-wa* ‘with X’, suffix deriving adjectives (Craig 1989: 72)

*u^{m}ba ‘face, eye, fruit’ > *u꞉p* ‘eye, seed, fruit’ (Grinevald et al. 2002–06)

*uB(V)(-ta) ‘sand’ > ***unta****s* ‘sand’ (Grinevald et al. 2002–06)

*ʦaʔ ‘to sit (sg.)’ > ***-sa****i* ‘persisting aspect’ (Craig 1989: 157–158)

*ʦi^{n}d(a) ‘small$_2$’ > *urmut* ***si꞉ra*** ‘small guts’ (Grinevald et al. 2002–06)

***ã > {*a*, *aŋ*}**

*^{m}bãʔ(ĩ) ‘three’ > ***paŋ****sak* ‘three’ (Grinevald et al. 2002–06)

*^{n}dã^{m}bã / *sã^{m}bã ‘calabash$_1$’ > *sabaŋ* ‘gourd’ (Grinevald et al. 2002–06)

*ʦãĩh ‘cold’ > ***sai****ma*, ***saiŋ****ka* ‘cold’ (Grinevald et al. 2002–06)

i > *i

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > ***abi꞉s****a* ‘new’ (Grinevald et al. 2002–06)

*^{n}da(ki^{n}d) ~ *ta(ki^{n}d) ‘back$_1$’ > *taŋkit* ‘back (body)’ (Grinevald et al. 2002–06)

*^{n}di^{n}da / *^{n}disa ‘dry$_1$’ > ***alis****-* ‘to dry’ (Grinevald et al. 2002–06)

*^{n}diʔ ‘water, river’ > *si꞉* ‘water’ (Grinevald et al. 2002–06)

*^{ŋ}g^{w}i ‘(older) sibling, (older) sister’ > ***kwi****꞉ma* ‘relative, friend, partner, brother, sister’ (Grinevald et al. 2002–06)

*hapi ~ *apiʔ ‘to take out, pick up’ > *a꞉pi* ‘to find, take out’ (Grinevald et al. 2002–06)

*hi ~ *iʔ ‘this’ > * *i=, j=* clitic third person subject pronoun (Craig 1989: 104)

*ki locative$_2$ > *ki* postposition or relational preverb ‘in’, *kiŋ* benefactive postposition/relational preverb (Craig 1989: 114)

*kihʦa ~ *kihsa ‘foot, root’ > *ka:l**kit*** ‘root, shin, leg’ (Grinevald et al. 2002–06)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > *kuli:* ‘paca’ (Grinevald et al. 2002–06)

*k^{w}ik ‘arm, wing, shoulder’ > *k^{w}i:k* ‘arm, hand’ (Grinevald et al. 2002–06)

*ʦ(i)- relational element$_2$ > *up**si**-ri* ‘tears’ (Craig 1989: 66)

*ʦsi^{n}d(a) ‘small$_2$’ > *urmut* ***si:ra*** ‘small guts’ (Grinevald et al. 2002–06)

*ʦsi^{n}di ‘soft’ > ***si:r**ka* ‘soft, lazy’ (Grinevald et al. 2002–06)

*ʦsiʔ(-ki) ‘tooth (incisor), thorn’ > *si:k* ‘tooth’ (Grinevald et al. 2002–06)

***ĩ > {*i*, *iŋ*}**

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > *uliŋuliŋ* ‘howler monkey’ (Grinevald et al. 2002–06)

(*ki locative$_2$ > *ki* postposition or relational preverb ‘in’, *kiŋ* benefactive postposition/relational preverb (Craig 1989: 114))

*ʦãĩh ‘cold’ > ***sai**ma*, ***saiŋ**ka* ‘cold’ (Grinevald et al. 2002–06)

***ii > {*i*, *ai*}**

*apii(s) ‘pumpkin, squash’ > *abi:s* ‘squash, calabaza, ayote’ (Grinevald et al. 2002–06)

*^{m}bii ‘only’ > *bi:* ‘only, too’ (Grinevald et al. 2002–06)

*^{m}bii ‘up, sky’ > ***pi**up* ‘star’ (Grinevald et al. 2002–06)

*^{n}dii(k) ‘nose’ > *taik* ‘nose, end, point, edge’ (Grinevald et al. 2002–06)

u > *u

*^{m}bu ‘to twist’ > *kal**bu**k* ‘wall’ (Grinevald et al. 2002–06)

*^{m}bu^{n}d- ‘breath, wind’ > *put* ‘breath’ (Grinevald et al. 2002–06)

*^{m}bu^{n}d- ~ *ku^{n}d- ‘to turn around’ > *a:**bur**n*, *al**bur**n* ‘to twirl, twist, stir’ (Grinevald et al. 2002–06)

*^{m}bu^{n}d(u) ‘white, morning’ > ***plu**:ma* ‘white’ (Grinevald et al. 2002–06)

*^{n}du- ‘sun, year’ > ***nu:nu**k* ‘day’ (Grinevald et al. 2002–06)

*^{n}dua ‘tobacco’ > *tu:* ‘tobacco’ (Grinevald et al. 2002–06)

*^{n}duh(k) ‘tail$_2$’ > *tuk* ‘tail’ (Grinevald et al. 2002–06)

*^{ŋ}gu ‘to take’ > *ku:* ‘to take, catch, get, scoop, bear’ (Grinevald et al. 2002–06)

*hu ‘house’ > *ŋu:* ‘house’ (Grinevald et al. 2002–06)

*-hu ~ *-uʔ ‘to swallow, drink, eat’ > ***tu****k* ‘to eat, drink, swallow, suck’ (Grinevald et al. 2002–06)

*hu^{n}dĩ ~ u^{n}dĩʔ ‘monkey’ > *uliŋuliŋ* ‘howler monkey’ (Grinevald et al. 2002–06)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > *u:k* ‘skin’ (Grinevald et al. 2002–06)

*hutsi ~ *huits ‘urine’ > ***ŋus****ti* ‘to piss’ (Grinevald et al. 2002–06)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > *kuli:* ‘paca’ (Grinevald et al. 2002–06)

*kuh ‘to hear$_2$’ > *al-****ku****k* ‘to hear’ (Grinevald et al. 2002–06)

*kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di ‘throat, hole’ > ***pu:l****-up* ‘throat’ (Grinevald et al. 2002–06)

*kuʔ ‘to blow, fly’ > *a:****ku****k* ‘to blow’ (Grinevald et al. 2002–06)

*kuʔ(-Ba) ‘tongue’ > *ku:p* ‘tongue’ (Grinevald et al. 2002–06)

*pu ‘young, sprout’ > ***puk****si:k* ‘milk teeth’ (Grinevald et al. 2002–06)

*pu^{n}d- ‘dry$_2$’ > ***plu****:s* ‘dry’ (Grinevald et al. 2002–06)

*su ‘to see’ > *suŋ* ‘to see’ (Grinevald et al. 2002–06)

*suh(k) ‘to wash’ > *suk* ‘to wash, peel’ (Grinevald et al. 2002–06)

*suh(-kui) ‘rodent, small’ > *su:k* ‘rat’ (Grinevald et al. 2002–06)

*tsu ‘child, small’ > ***su****k* ‘small, young, baby’ (Grinevald et al. 2002–06)

*u$^{'}$a comitative$_2$ > *-wa* ‘with X’, suffix deriving adjectives (Craig 1989: 72)

*u^{m}ba ‘face, eye, fruit’ > *u:p* ‘eye, seed, fruit’ (Grinevald et al. 2002–06)

*uB(V)(-ta) ‘sand’ > ***unta****s* ‘sand’ (Grinevald et al. 2002–06)

*u^{n}du ‘angry’ > ***ul****i:n* ‘to be angry’ (Grinevald et al. 2002–06)

*u^{n}du ‘cedar’ > *u:t* ‘dory, cedar’ (Grinevald et al. 2002–06)

*ũ > *uŋ*

*^{m}bũ^{n}d(ũ) ‘ashes’ > *pluŋ* ‘ash’ (Grinevald et al. 2002–06)

*^{n}dũ(-i) ‘father, uncle, ancestor’ > *tuŋ* ‘father’ (Grinevald et al. 2002–06)

*hũ ‘pot’ > *u:ŋ* ‘pot’ (Grinevald et al. 2002–06)

*kũʔ ‘louse’ > *ku:ŋ* ‘louse’ (Grinevald et al. 2002–06)

2.3.21.2.2 Reflexes of Proto-Chibchan consonants in Rama (cf. also Constenla Umaña 1981: 256–9)

***p > p / #__*u**

***p > {*p*, *b*, *m*} / elsewhere**

*apa ‘body’ > *a:p* ‘body’ (Grinevald et al. 2002–06)

*apii(s) ‘pumpkin, squash’ > *abi:s* ‘squash, calabaza, ayote’ (Grinevald et al. 2002–06)

*hapi ~ *apiʔ ‘to take out, pick up’ > *a:pi* ‘to find, take out’ (Grinevald et al. 2002–06)

*kap- ‘to sleep’ > ***kam****i:* ‘to sleep’ (Grinevald et al. 2002–06)

*paH^{n}d ‘to begin, start, first’ > *pas* ‘first’ (Grinevald et al. 2002–06)

*pu ‘young, sprout’ > ***puk****si:k* ‘milk teeth’ (Grinevald et al. 2002–06)

*pu^{n}d- ‘dry$_2$’ > ***plu****:s* ‘dry’ (Grinevald et al. 2002–06)

***^{m}b > p / #__*u**

***^{m}b > {*p*, *b*, *m*}**

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > ***abi:s****a* ‘new’ (Grinevald et al. 2002–06)

*^{m}b- ‘to go$_1$’ > ***m****aŋ* ~ ***b****aŋ* ‘go!’ suppletive imperative form of the verb *ta:k* ‘to go’ (Craig 1989: 170, 255)

*-^{m}ba nominalizer$_1$ > -***ima*** stative nominalizer (Craig 1989: 68)

*^{m}ba^{n}d- ‘all$_1$’ > *u:****mal****iŋ* ‘every, all, together’ (Grinevald et al. 2002–06)

*^{m}bak- ‘flea’ > *pa:k* ‘flea’ (Grinevald et al. 2002–06)

*^{m}baʔ ‘you’ > *ma:* ‘you’ (Craig 1989: 103)

*^{m}bãʔ(ĩ) ‘three’ > ***paŋ****sak* ‘three’ (Grinevald et al. 2002–06)

*^{m}baʔk ‘to wrap’ > *al****pa:k***, *a****pa:k*** ‘to sew, meet’ (Grinevald et al. 2002–06)

*^{m}bih^{n}da ~ *^{m}bihta ‘heart, liver, center$_1$’ > *psa:* ‘liver’ (Grinevald et al. 2002–06)

*^{m}bii ‘only’ > *bi:* ‘only, too’ (Grinevald et al. 2002–06)

*^{m}bii ‘up, sky’ > ***pi****up* ‘star’ (Grinevald et al. 2002–06)

*^{m}bu ‘to twist’ > *kal****bu****k* ‘wall’ (Grinevald et al. 2002–06)

*^{m}bu^{n}d- ‘breath, wind’ > *put* ‘breath’ (Grinevald et al. 2002–06)

*^{m}bu^{n}d- ~ *ku^{n}d- ‘to turn around’ > *a:****bur****n*, *al****bur****n* ‘to twirl, twist, stir’ (Grinevald et al. 2002–06)

*^{m}bu^{n}d-ka^{n}d(a) ‘wind’ > *pulkat* ‘wind’ (Grinevald et al. 2002–06)

*^{m}bu^{n}d(u) ‘white, morning’ > ***plu****:ma* ‘white’ (Grinevald et al. 2002–06)

*^{m}bũ^{n}d(ũ) ‘ashes’ > *pluŋ* ‘ash’ (Grinevald et al. 2002–06)

*^{n}da^{m}ba- ‘cold, cold substance’ > ***tama**:s* ‘early, morning’ (Grinevald et al. 2002–06)

*^{n}dã^{m}bã / *sã^{m}bã ‘calabash$_1$’ > *sabaŋ* ‘gourd’ (Grinevald et al. 2002–06)

*u^{m}ba ‘face, eye, fruit’ > *u:p* ‘eye, seed, fruit’ (Grinevald et al. 2002–06)

t > *t

*tau ‘dog’ > ***tau**suŋ* ‘dog’ (Grinevald et al. 2002–06)

*uB(V)(-ta) ‘sand’ > ***unta**s* ‘sand’ (Grinevald et al. 2002–06)

^{n}d > *s* / #__*i

***^{n}d > {*t*, *n*} /#__V$_{[other]}$**

^{n}d > *l* / *V*__*i

***^{n}d > *t* / __#**

***d > *n* / *au*__#**

***^{n}d > {*r*, *l*} / elsewhere**

*a^{n}d- valency-reducer$_3$ > *al*- anticausative, intransitive (Craig 1989: 74–6)

*^{m}ba^{n}d- ‘all$_1$’ > *u:**mal**iŋ* ‘every, all, together’ (Grinevald et al. 2002–06)

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > *kaun* ‘to call, cry out, holler’ (Grinevald et al. 2002–06)

*^{m}bu^{n}d- ‘breath, wind’ > *put* ‘breath’ (Grinevald et al. 2002–06)

*^{m}bu^{n}d- ~ *ku^{n}d- ‘to turn around’ > *a:**bur**n*, *al**bur**n* ‘to twirl, twist, stir’ (Grinevald et al. 2002–06)

*^{m}bu^{n}d-ka^{n}d(a) ‘wind’ > *pulkat* ‘wind’ (Grinevald et al. 2002–06)

*^{m}bu^{n}d(u) ‘white, morning’ > ***plu**:ma* ‘white’ (Grinevald et al. 2002–06)

*^{m}bũ^{n}d(ũ) ‘ashes’ > *pluŋ* ‘ash’ (Grinevald et al. 2002–06)

*^{n}da^{m}ba- ‘cold, cold substance’ > ***tama**:s* ‘early, morning’ (Grinevald et al. 2002–06)

*^{n}da(^{n}d) / *sa(^{n}d) ‘creeping animal’ > ***sar**kin* ‘boa’ (Grinevald et al. 2002–06)

*^{n}da(ki^{n}d) ~ *ta(ki^{n}d) ‘back$_1$’ > *taŋkit* ‘back (body)’ (Grinevald et al. 2002–06)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > ***ta:**k* ‘to go’ (Grinevald et al. 2002–06)

*^{n}daʔ-u ‘to enter’ > ***tau**k* ‘to get in, come, dive, put on, wear’ (Grinevald et al. 2002–06)

*^{n}di^{n}da / *^{n}disa ‘dry$_1$’ > ***alis**- ‘to dry’ (Grinevald et al. 2002–06)

*^{n}dii(k) ‘nose’ > *taik* ‘nose, end, point, edge’ (Grinevald et al. 2002–06)

*^{n}diʔ ‘water, river’ > *si:* ‘water’ (Grinevald et al. 2002–06)

*^{n}du- ‘sun, year’ > ***nu:nu**k* ‘day’ (Grinevald et al. 2002–06)

*ⁿdua ‘tobacco’ > *tu:* ‘tobacco’ (Grinevald et al. 2002–06)

*ⁿduh(k) ‘tail$_2$’ > *tuk* ‘tail’ (Grinevald et al. 2002–06)

*ⁿdũ(-i) ‘father, uncle, ancestor’ > *tuŋ* ‘father’ (Grinevald et al. 2002–06)

*ᵑgʷahⁿd ‘bad$_1$’ > ***kʷa:la*** ‘bad, rotten, ugly, mean, dangerous’ (Grinevald et al. 2002–06)

*haiⁿd ‘liver’ > ***air**bi* ‘blood’ (Grinevald et al. 2002–06)

*huⁿdĩ ~ uⁿdĩʔ ‘monkey’ > *uliŋuliŋ* ‘howler monkey’ (Grinevald et al. 2002–06)

*kuⁿdi ~ *kuiⁿd ‘rodent, large’ > *kuli:* ‘paca’ (Grinevald et al. 2002–06)

*kuHⁿdi ~ *kuiHⁿd ~ *BuHⁿdi ‘throat, hole’ > ***pu:l**-up* ‘throat’ (Grinevald et al. 2002–06)

*puⁿd- ‘dry$_2$’ > ***plu**:s* ‘dry’ (Grinevald et al. 2002–06)

*saⁿda ‘wound, trace’ > ***sal**i:ba* ‘sore, boil’ (Grinevald et al. 2002–06)

*ʦiⁿd(a) ‘small$_2$’ > *urmut* ***si:ra*** ‘small guts’ (Grinevald et al. 2002–06)

*ʦiⁿdi ‘soft’ > ***si:r**ka* ‘soft, lazy’ (Grinevald et al. 2002–06)

*uⁿdu ‘angry’ > ***uli**:n* ‘to be angry’ (Grinevald et al. 2002–06)

*uⁿdu ‘cedar’ > *u:t* ‘dory, cedar’ (Grinevald et al. 2002–06)

***D > *s* / *H__**

*(a-)ᵐbihⁿd- ~ *(a-)ᵐbiht- ‘new’ > ***abi:s**a* ‘new’ (Grinevald et al. 2002–06)

*ᵐbihⁿda ~ *ᵐbihta ‘heart, liver, center$_1$’ > *psa:* ‘liver’ (Grinevald et al. 2002–06)

*ⁿdaH(ⁿd) ‘I$_1$’ > ***na:s*** ~ *nah* ‘I’ (Craig 1989: 103)

*ᵑgaʔⁿda ~ *ᵑgaʔta ‘meat, flesh$_1$’ > *ka:s* ‘meat, flesh’ (Grinevald et al. 2002–06)

*paHⁿd ‘to begin, start, first’ > *pas* ‘first’ (Grinevald et al. 2002–06)

k > *k

*ᵐbak- ‘flea’ > *pa:k* ‘flea’ (Grinevald et al. 2002–06)

*ᵐbau(ⁿd) ~ *kau(ⁿd) ‘to holler’ > *kaun* ‘to call, cry out, holler’ (Grinevald et al. 2002–06)

*ᵐbaʔk ‘to wrap’ > *al**pa:k***, ***apa:k*** ‘to sew, meet’ (Grinevald et al. 2002–06)

*ᵐbuⁿd-kaⁿd(a) ‘wind’ > *pulkat* ‘wind’ (Grinevald et al. 2002–06)

*ⁿda(kiⁿd) ~ *ta(kiⁿd) ‘back$_1$’ > *taŋkit* ‘back (body)’ (Grinevald et al. 2002–06)

*ⁿdii(k) ‘nose’ > *taik* ‘nose, end, point, edge’ (Grinevald et al. 2002–06)

*ⁿduh(k) ‘tail$_2$’ > *tuk* ‘tail’ (Grinevald et al. 2002–06)

*haka ~ *akaʔ ‘name’ > *a:k* ‘name’ (Grinevald et al. 2002–06)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > *u:k* ‘skin’ (Grinevald et al. 2002–06)

*i(k) ‘manioc’ > *i:k* ‘manioc’ (Grinevald et al. 2002–06)

*ka ‘leaf’ > *ka:* ‘leaf’ (Grinevald et al. 2002–06)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > *kat*, *ka:t* ‘foot, handle, leg, log, penis, post, stick’ (Grinevald et al. 2002–06)

*kah-ka ‘mouth’ > *kaka:* ‘mouth’ (Grinevald et al. 2002–06)

*kap- ‘to sleep’ > ***kam****i:* ‘to sleep’ (Grinevald et al. 2002–06)

*ki locative$_2$ > *ki* postposition or relational preverb ‘in’, *kiŋ* benefactive postposition/relational preverb (Craig 1989: 114)

*kihtsa ~ *kihsa ‘foot, root’ > *ka:l****kit*** ‘root, shin, leg’ (Grinevald et al. 2002–06)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > *kuli:* ‘paca’ (Grinevald et al. 2002–06)

*kuh ‘to hear$_2$’ > *al-****ku****k* ‘to hear’ (Grinevald et al. 2002–06)

*kuʔ ‘to blow, fly’ > *a:****ku****k* ‘to blow’ (Grinevald et al. 2002–06)

*kũʔ ‘louse’ > *ku:ŋ* ‘louse’ (Grinevald et al. 2002–06)

*kuʔ(-Ba) ‘tongue’ > *ku:p* ‘tongue’ (Grinevald et al. 2002–06)

^{ŋ}g > *k

*^{ŋ}gaʔ^{n}da ~ *^{ŋ}gaʔta ‘meat, flesh$_1$’ > *ka:s* ‘meat, flesh’ (Grinevald et al. 2002–06)

*^{ŋ}gu ‘to take’ > *ku:* ‘to take, catch, get, scoop, bear’ (Grinevald et al. 2002–06)

k^{w} > *k^{w}

*k^{w}ik ‘arm, wing, shoulder’ > *k^{w}i:k* ‘arm, hand’ (Grinevald et al. 2002–06)

***^{ŋ}g^{w} > {*k^{w}*, *ŋ^{w}*}**

*^{ŋ}g^{w}- ‘to know’ > ***ŋ^{w}****a* ‘to know’ (Grinevald et al. 2002–06)

*^{ŋ}g^{w}ah^{n}d ‘bad$_1$’ > ***k^{w}a:la*** ‘bad, rotten, ugly, mean, dangerous’ (Grinevald et al. 2002–06)

*^{ŋ}g^{w}i ‘(older) sibling, (older) sister’ > ***kwi****:ma* ‘relative, friend, partner, brother, sister’ (Grinevald et al. 2002–06)

***ʔ > {*:*, Ø}**

*Baiʔ ‘sweet potato’ > ***pai****k* ‘sweet potato’ (Grinevald et al. 2002–06)

*^{m}baʔ ‘you’ > *ma:* ‘you’ (Craig 1989: 103)

*^{m}bãʔ(ĩ) ‘three’ > ***paŋ****sak* ‘three’ (Grinevald et al. 2002–06)

*^{m}baʔk ‘to wrap’ > *al****pa:k***, *a****pa:k*** ‘to sew, meet’ (Grinevald et al. 2002–06)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > ***ta:****k* ‘to go’ (Grinevald et al. 2002–06)

*ⁿdaʔ-u ‘to enter’ > ***tau****k* ‘to get in, come, dive, put on, wear’ (Grinevald et al. 2002–06)

*ⁿdiʔ ‘water, river’ > *siː* ‘water’ (Grinevald et al. 2002–06)

*kuʔ ‘to blow, fly’ > *aː****ku****k* ‘to blow’ (Grinevald et al. 2002–06)

*kũʔ ‘louse’ > *kuːŋ* ‘louse’ (Grinevald et al. 2002–06)

*ʦaʔ ‘to sit (sg.)’ > *-****sa****i* ‘persisting aspect’ (Craig 1989: 157–158)

*ʦiʔ(-ki) ‘tooth (incisor), thorn’ > *siːk* ‘tooth’ (Grinevald et al. 2002–06)

***ts > *t* / __+**

***ts > *s* / elsewhere**

*hutsi ~ *huits ‘urine’ > ***ŋus****ti* ‘to piss’ (Grinevald et al. 2002–06)

*kihtsa ~ *kihsa ‘foot, root’ > *kaːl****kit*** ‘root, shin, leg’ (Grinevald et al. 2002–06)

*ʦaʔ ‘to sit (sg.)’ > *-****sa****i* ‘persisting aspect’ (Craig 1989: 157–158)

*ʦãĩh ‘cold’ > ***sai****ma*, ***saiŋ****ka* ‘cold’ (Grinevald et al. 2002–06)

*ʦiⁿd(a) ‘small$_2$’ > *urmut* ***siːra*** ‘small guts’ (Grinevald et al. 2002–06)

*ʦiⁿdi ‘soft’ > ***siːr****ka* ‘soft, lazy’ (Grinevald et al. 2002–06)

*ʦiʔ(-ki) ‘tooth (incisor), thorn’ > *siːk* ‘tooth’ (Grinevald et al. 2002–06)

*ʦu ‘child, small’ > ***su****k* ‘small, young, baby’ (Grinevald et al. 2002–06)

s > *s

*apii(s) ‘pumpkin, squash’ > *abiːs* ‘squash, calabaza, ayote’ (Grinevald et al. 2002–06)

*ⁿdãᵐbã / *sãᵐbã ‘calabash$_1$’ > *sabaŋ* ‘gourd’ (Grinevald et al. 2002–06)

*ⁿda(ⁿd) / *sa(ⁿd) ‘creeping animal’ > ***sar****kin* ‘boa’ (Grinevald et al. 2002–06)

*ⁿdiⁿda / *ⁿdisa ‘dry$_1$’ > *a****lis***- ‘to dry’ (Grinevald et al. 2002–06)

*saⁿda ‘wound, trace’ > ***sal****iːba* ‘sore, boil’ (Grinevald et al. 2002–06)

*su ‘to see’ > *suŋ* ‘to see’ (Grinevald et al. 2002–06)

*suh(k) ‘to wash’ > *suk* ‘to wash, peel’ (Grinevald et al. 2002–06)

*suh(-kui) ‘rodent, small’ > *suːk* ‘rat’ (Grinevald et al. 2002–06)

***h > { *ŋ*, Ø} / #__**

***h > {*ː*, Ø} / *a*__**

***h > Ø / *u*__**

*^{n}duh(k) ‘tail$_2$’ > *tuk* ‘tail’ (Grinevald et al. 2002–06)

*^{ŋ}g^{w}ah^{n}d ‘bad$_1$’ > ***k^{w}aːla*** ‘bad, rotten, ugly, mean, dangerous’ (Grinevald et al. 2002–06)

*hai^{n}d ‘liver’ > ***air**bi* ‘blood’ (Grinevald et al. 2002–06)

*haka ~ *akaʔ ‘name’ > *aːk* ‘name’ (Grinevald et al. 2002–06)

*hapi ~ *apiʔ ‘to take out, pick up’ > *aːpi* ‘to find, take out’

*hu ‘house’ > *ŋuː* ‘house’ (Grinevald et al. 2002–06)

*hũ ‘pot’ > *uːŋ* ‘pot’ (Grinevald et al. 2002–06)

*hutsi ~ *huits ‘urine’ > ***ŋus**ti* ‘to piss’ (Grinevald et al. 2002–06)

*kah-ka ‘mouth’ > *kakaː* ‘mouth’ (Grinevald et al. 2002–06)

*kuh ‘to hear$_2$’ > *al-**ku**k* ‘to hear’ (Grinevald et al. 2002–06)

*suh(k) ‘to wash’ > *suk* ‘to wash, peel’ (Grinevald et al. 2002–06)

***#L > *l* / V__V**

***#L > *t* / __#**

*La ‘bee, honey’ > *ŋa**la**ːli* ‘honey’ (Grinevald et al. 2002–06)

*La ‘egg, offspring’ > *aːt* ‘egg’ (Grinevald et al. 2002–06)

2.3.22 Térraba

At the beginning of the twenty-first century, there were more than 600 Térraba people living in San Francisco de Térraba and other settlements of the Térraba-Boruca Reserve, in the Buenos Aires County of the province of Puntarenas in Costa Rica (Constenla Umaña 2007: 3). These people were forced by the Spaniards to migrate, at the end of the seventeenth century, from the present-day Bocas del Toro province in Panama (Quesada 2000a: 1–2). At the arrival of the Spaniards, they settled near the Changuinola and Teribe rivers, and on the island of Tójar or Colón in the Almirante Bay. On the Panamanian side of the border, at the end of the twentieth century, there were still some 3,000 Teribe (Naso) speakers, living along the Teribe river and speaking a language which is most closely related to Térraba (cf. Constenla Umaña 2007: 3). The relation is so close that both are sometimes also referred to as Teribe/Térraba (e.g., Constenla Umaña 2012: 417). The Térraba population of Costa Rica suffered pressures and changes in contact with the outside world, above all during the twentieth century, and there were almost no speakers left in the 1970's, when Constenla Umaña started his linguistic work among them (ibid.: 4). The lexical material of the Térraba language discussed in this thesis is drawn from Constenla Umaña (2007) who mainly worked with two speakers and several semi-speakers (ibid.: 5). Constenla Umaña's work provides not only a grammatical description, but also a dictionary. Quesada (2000a, 2000c) describes the morphosyntax of the closely related Teribe language spoken in Panama; a dictionary of this language is in preparation (Juan Diego Quesada, p.c.). In the middle of the eighteenth century, grammars and vocabularies for the missionaries dealing with the Teribe/Térraba seem to have existed (Lehmann 1920: 236). These materials were possibly never printed and only circulated in manuscript form.

Within the Chibchan languages, Térraba/Teribe is relatively closely related to Bribri, Cabécar and Boruca, according to Constenla Umaña (2012: 417). He groups them together into the Western Isthmic languages of his Isthmic subbranch.

Among the particular features of Térraba is the indication of oblique person by elements consisting of a base *bɔ* to which a bound person marker is attached, as in *bɔ-ɾ* 'me', *bɔ-b* 'you' (Constenla Umaña 2007: 76). In some single cases, Térraba *kɾ* seems to correspond with k^w ~ *ku* in other Chibchan languages, for instance in Térraba *kɾɔ́k* 'to grind' (Constenla Umaña 2007: 260) which may be cognate with *kuáʔ* 'to crush' in Boruca (cf. Quesada Pacheco & Rojas Chaves 1999: 117).

2.3.22.1 The sounds of Térraba

The following two subsections present and discuss Térraba phonemes and their realization.

2.3.22.1.1 Térraba vowels and suprasegmentals

The inventory of Térraba oral vowel phonemes is shown in table 65:

TABLE 65
TÉRRABA PHONEMES: ORAL VOWELS

	Front	Central	Back
High	i		u
Near high	ɪ		ʊ
Low-mid	ɛ		ɔ
Low		a	

Source: Constenla Umaña (2007: 12).

Table 66 illustrates the nasal vowel phonemes of Térraba.

TABLE 66
TÉRRABA PHONEMES: NASAL VOWELS

	Front	Central	Back
High	ĩ		ũ
Low-mid	ɛ̃		ɔ̃
Low		ã	

Source: Constenla Umaña (2007: 12).

Given the moribund character of Térraba, there is variation, even within a single speaker, in the domains of tone, and of near high vowels versus their low-mid or high counterparts (Constenla Umaña 2007: 23). Concerning the entries in Constenla Umaña's (2007) Térraba dictionary, which is the basis of most data discussed in this section, the author (ibid.: 23) states that he chose to give the variant which was favored by his consultants.

There are two level tones in Térraba, high and low (Constenla Umaña 2007: 12). According to Constenla Umaña's (2007: 14) interpretation, high tone can occur on several vowels of a Térraba word, for instance in /árárɛ̀/ 'much' or /kízbáŋ/ 'big' (ibid.:

14). Vowels bearing tone have been described as longer and more 'intense' ("intensas") than vowels that bear no tone (ibid.: 14–5). Neither stress nor vowel length alone seem to be distinctive in Térraba. Whereas tone and nasality are interpreted as features of the vowel by Constenla Umaña (2007: 14), 'stength' or 'weakness' are features of the syllable: Constenla Umaña (2007: 15) refers to syllables that have a vowel with a tone as 'strong syllables' ("sílabas fuertes"), and to syllables in which the vowel has no tone as 'weak syllables' ("sílabas débiles"). Phonetically, the so-called weak syllables can have vowels with low tone as a nucleus, and they are distinguished from the strong syllables with low tone by the shortness and weakness of their nuclear vowel; Constenla Umaña (ibid.: 15) gives the example of [dìɾíʔ] 'sparse, thin' versus [dˡ̀líʔ] 'meat', indicating brevity and weakness of the first syllable in the latter form by the superscript vowel. The vowel of the weak syllable is to a certain extent determined by the vowel of the strong syllable; likewise, vowel nasality in weak syllables is determined by the nasality of the nuclear vowel in the following strong syllable (ibid.: 15). Weak syllables always precede, directly or indirectly, a strong syllable within a morpheme or word. Typically, a morpheme consists of a strong syllable which may be preceded by up to two weak syllables (ibid.: 16).

Tone in Térraba still needs more research. Although it is lexical, in this language, it can also vary depending on the carrier phrase, and tonal sandhi seems to exist. Compare the different tone patterns in the term for 'branch' in examples (15) and (16), *khɔ́r kɔ̀uɔ́* and *k^{h}ɔ́r kɔ́uɔ̀*. Literally, this term is a possessive construction, meaning 'branch (*kɔuɔ́*, cf. Constenla Umaña 2007: 271) of a tree (*k^{h}ɔr*, cf. ibid.: 233). The tonal pattern is ÝVÙÝ in example (15).

(15) Térraba (Constenla Umaña 2007: 16)

/k^{h}líɾɔ̀	ɸaŋ	**k^{h}ɔ́r kɔ̀uɔ́**	gɔ̀/
chicken	AUX	branch	LOC

'The chicken sits on the branch.'

Instead, the tonal pattern of the same construction is ÝÝVÙ in example (16).

(16) Térraba (Constenla Umaña 2007: 16)

/k^{h}ɔ́r kɔ́uɔ̀	zɔ́hɔ̀/
branch	cut.IMP

'Cut the branch!'

The alternation shown in (15) and (16) needs further investigation. In Constenla Umaña's (2007) orthography, low tone is indicated by the absence of tone marking.

In the so-called 'weak' syllables, there are fewer distinctive vowels (that is, fewer phonemic contrasts are attested between them) compared with the variety of vowels and contrasts occurring in strong syllables (cf. Constenla Umaña 2007: 15); also, in the weak syllable, there can be alternations between *a* and *ə* or between *ɔ* and *ə*, for instance in /dabá/ [dᵃ̀βá, dᵊ̀βá] 'day' or in /dɔbɔ́ŋ/ [dᵊ̀βɔ́ŋ, dᵊ̀βɔ́ŋ] 'feline'.

In bisyllabic sequences of the $C_1V_1C_2V_1$ type, the first vowel can be syncopated in case C_1 is a stop or a bilabial, alveolar or palato-alveolar fricative, if C_2 is a liquid and the first syllable is weak: compare /ʃɪɽí ~ ʃɽí/ 'to come'. The syncope of the first vowel is impossible if both syllables are strong, as in the case of /dìɾí/ [dìɾíʔ] 'thin' (ibid.: 15–6).

There are also vowel sequences in Térraba. In sequences of two vowels, the non-syllabic vowel may either precede or follow the vowel that carries tone. In sequences of three vowels, the vowel bearing tone is the second one. A vowel followed by a vowel carrying tone always displays the same nasality status as the latter (Constenla Umaña 2007: 19). In vowel sequences, the high tense vowels /u/ and /i/ are realized as non-syllabic elements if tone falls on the other vowel (ibid.: 21).

In syllable onset position, /u/ is realized as [ɣw] or [gw] (Constenla Umaña 2007: 21). Also, /u/ and /ũ/ are realized as [#ɣu ~ #gu] and [#ŋũ] if they stand in initial position, in a weak syllable, and precede a strong syllable the onset of which is /l/. This is the case, for instance, in /ulɔɾbɔ̀ [ᵍᵘ̀lɔɾbɔ̀ʔ] or [ᵞᵘ̀lɔɾbɔ̀ʔ] 'arm', and /ũlɛ́/ [ᵑᵑᵘ̃̀lɛ́ʔ] 'toothache' (ibid.: 21–2). If preceded by /ʒ/, /u/ can be realized as a sequence of short [u] and [w], or as [ɣw], as in /ʒuɔ́/ [ʒᵘwɔ́] or [ʒɣwɔ́] 'papaya', or as [ŋw], as in /ʒua/ [ʒwa], [ʒŋwa] 'hip'. If preceded by a nasal vowel, /u/ is realized as [ŋw] in syllable onset position (ibid.: 21).

In a similar vein, if non-syllabic and in contact with a vowel carrying tone, /i/ is realized as /j/ syllable-internally, and as a fricative [ʝ] in syllable onset position. The fricative allophone [ʝ] is distinct from the phoneme /ʒ/, as evidenced in the case of /iɔ́k/ [ʝɔ́k] 'to nail' versus /ʒɔ́k/ '*pacaya* (a plant)'. Non-syllabic (atonal) /ĩ/ is always realized as [j̃], which is distinct from /ɲ/: compare /hĩɔ̃́/ [hj̃ɔ̃́ʔ] 'lie (noun)' versus /ɲɔ̃́/ [ɲɔ̃́ʔ] 'smoke' (Constenla Umana 2007: 21).

There is no contrastive vowel nasality after voiced stops or nasal consonants. After nasal consonants, vowels and vowel sequences are, in most cases, realized as nasal. If the velar nasal is found in coda position, the preceding vowel is always oral (Constenla Umaña 2007: 20). This is interesting insofar as the final velar nasal in Térraba has been argued to be a reflex of nasality in Proto-Chibchan (cf. Constenla Umaña 1981: 183). Thus, vowel nasality in present-day Térraba may derive from a different source than Proto-Chibchan vowel nasality.

There are some cases of vowel harmony in Térraba. For instance, the derivational suffixes *-kuɔ*, *-krɔ*, or *-grɔ* induce a change of the final vowel *ɪ*, *ɛ*, or *ɛ̃* of a

verbal root into *ɔ* (Constenla Umaña 2007: 34, 38–9), for instance in *pɔ́grɔ* ‘hammock’, derived from *pí* ‘to sleep’ (ibid.: 38).

2.3.22.1.2 Térraba consonants

Table 67 illustrates Térraba consonant phonemes.

TABLE 67
TÉRRABA PHONEMES: CONSONANTS

	Labial	Dental/ alveolar	Postalveolar/ palatal	Velar	Glottal
Voiceless stops plain	p	t		k	
Voiceless stops aspirated		t^h		k^h	
Voiced stops	b	d		g	
Affricate			ʧ		
Voiceless fricatives	ɸ	s	ʃ		h
Voiced fricatives		z	ʒ		
Nasals	m	n	ɲ	ŋ	
Lateral approximant		l			
Lateral vibrant		ɺ			
Central vibrant		ɾ			

Source: Constenla Umaña (2007: 11).

Given the moribund character of the language, there is some variation in the context of Térraba consonant production, even within a single speaker. This variation concerns aspiration of voiceless stops, voicing or voicelessness of fricatives. It is found in the context of /s/ versus /ʃ/ and may concern the laterality/centrality of the vibrants (Constenla Umaña 2007: 23). As in the domains of vowels and suprasegmentals, Constenla Umaña (2007: 23), in his dictionary, gives the variant of the consonant which was favored by his consultants.

Two of the three Térraba voiceless stops, namely /t/ and /k/, have aspirated counterparts with a phonemic character, as in *tɔ́* ‘to go’ versus *t^hɔ́* ‘with’ (Constenla Umaña 2007: 98). In the dental-alveolar series, the stops are dental, whereas /n/, the fricatives and the liquids are alveolar (ibid.: 20). The voiced stops are realized as

approximants or fricatives between two vowels (as in /ɔ́bà/ [ʔɔ́βàʔ] 'person' versus /ɔ́wà/ [ʔɔ́wàʔ] 'animal') or if preceded by a vowel and followed by a liquid. Additionally, the realization of voiced stops is weaker and shorter in coda position than in onset position (ibid.: 20–1).

Phonetically, a glottal stop [ʔ] may be found in word-internal position at morpheme boundaries if the first morpheme ends in a vowel and the following morpheme has a vocalic onset. Also, the glottal stop is realized in the onset of a vowel-initial word with a 'strong' first syllable, and at the end of an unbound element ending in a vowel (Constenla Umaña 2007: 22). An example illustrating this phenomenon are the forms /ɔ́bà/ [ʔɔ́βàʔ] 'person' and /ɔ́wà/ [ʔɔ́wàʔ] 'animal'.

The phonemes /ʧ/ and /l/ are rarely attested in Térraba (Constenla Umaña 2007: 13). The phonemes /ŋ/, /l/, and /ɾ/ do not occur word-initially nor morpheme-initially, after a pause; within a word /ʧ/, /ŋ/, /l/, and /ɾ/ are not found in syllable onset following a consonant. In these positions, there is no phonemic contrast between the different liquids, and the underlying archiphoneme is realized as *ɻ* (ibid.: 16–7). In coda position, /l/, /ɭ/, and /ɾ/ are all realized as a tap *ɾ* (ibid.: 19). The liquid /ɭ/ has a nasal allophone [l̃] if followed by a nasal vowel (ibid.: 21). Some alternations between liquids are illustrated in the two terms *iʊk kʰuɾkuɻá* 'coal' (cf. ibid.: 237) and *iʊkúla* 'hot coal' (cf. ibid.: 235). The latter example suggests that tone may determine whether the liquid archiphoneme is realized as *ɻ* or *l*.

In roots with a C_1C_2V shape, where the vowel originally found between C_1 and C_2 is syncopated, C_2 may either be a liquid (see above) or a (non-aspirated) stop. If C_1 in the syncopated forms is /s/ or /z/, the liquid C_2 is most frequently realized as /ɾ/ as in /zɾéɾkuà/ 'horsefly'. Otherwise, a liquid C_2 in a syncopated form is mostly realized as /ɭ/, as for instance in /ɸɭí/ 'hunger' (Constenla Umana 2007: 18). In case C_2 in a syncopated form is a (non-aspirated) stop, C_1 is a sibilant: an alveolar fricative /s/ (which is never followed by /p/ or /t/) or /z/, or a postalveolar fricative /ʃ/ or /ʒ/. The fricative always assimilates to the following stop in terms of voicing. In syllable coda, voicing of consonants is not contrastive (ibid.: 18).

In intervocalic position, the realization of /h/ as [ɦ] is frequent but optional (Constenla Umaña 2007: 21). Finally, there are also sandhi phenomena in Térraba. For instance, the combination of /ŋ/ + /d/ is realized as /n/ in *dɾúniɔ* 'sea'; compare *dɾúŋ* 'salt' and *diɔ* 'liquid' (ibid.: 32)

2.3.22.2 Reflexes of Proto-Chibchan phonemes in Térraba

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.22.2.1) and of Proto-Chibchan consonants (2.3.22.2.2) in Térraba.

2.3.22.2.1 Reflexes of Proto-Chibchan vowels in Térraba (cf. also Constenla Umaña 1981: 192–211)

{*a, *ã} > {*a*, *ɔ*, *ʊ*}

*apa ‘body’ > ***pɔ́***iɪ* ‘to dress’ (Constenla Umaña 2007: 280)

*-^{m}ba nominalizer$_1$ > *-mɔ* non-productive derivational suffix (cf. Constenla Umaña 2007: 41)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > ***ɸɾa****k* ‘tail’ (Constenla Umaña 2007: 238)

*^{m}baʔ ‘beam of light, heat’ > ***mɔ́****k* ‘moon, month’ (Constenla Umaña 2007: 256, 259)

*^{m}baʔ ‘you’ > /ɸá/ ‘you’ (Constenla Umaña 2007: 26)

*^{m}bi-^{n}daʔ ‘neck, throat’ > *bɪŋ-dɔ́* ‘neck, throat’ (Constenla Umaña 2007: 240, 248)

*^{m}bu-^{n}da ‘big$_2$’ > *ɸɾɔ-*, *ɸɾa-* ‘numeral classifier, object of major dimensions’ (Constenla Umaña 2007: 50)

*^{n}da^{m}ba ‘feline$_1$’ > /dɔbɔ́ŋ/ [dˀβɔ́ŋ ~ dˀβɔ́ŋ] ‘feline’ (Constenla Umaña 2007: 15)

*^{n}da ~ *ta comitative$_1$ > *tʰɔ* comitative (Constenla Umaña 2007: 238)

*^{n}da(i) ~ *ta(i) ‘to be’ > *tʰéŋ*, *ɻɔŋ* ‘to be’ (Sp. *estar*), plural form (Constenla Umaña 2007: 245)

*^{n}daʔ ~ *taʔ ‘to go$_2$’ > *tɔ́* ‘to go, imperfective form (without indication of direction; also used as auxiliary for future tense)’ (Constenla Umaña 2007: 252–3)

*^{n}diʔ-a ‘liquid’ > *diɔ* ‘liquid’ (Constenla Umaña 2007: 256)

*^{n}dua ‘tobacco’ > *duɔ* (*duɔ́*) ‘tobacco’ (Constenla Umaña 2007: 173)

*(^{n}d-)u^{m}ba ‘brother-in-law’ > *bɔ* ‘brother-in-law’, ‘sister-in-law’ (Constenla Umaña 2007: 240)

*^{ŋ}ga ‘excrement’ > /ʒáŋ/ ‘excrement’ (Constenla Umaña 2007: 14)

*^{ŋ}gak ‘feather, wing, arm, hand’ > ***sák****uɔ* ‘finger’ (Constenla Umaña 2007: 242)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > **/uɻɔ́**ɾbɔ̀/ [^{gʊ}**ɻɔ́**ɾbɔ̀ʔ] or [^{ɣʊ}**ɻɔ́**ɾbɔ̀ʔ] ‘arm’ (Constenla Umaña 2007: 22)

*ha^{n}d- ~ *hat- ‘hand’ > ***ɔ́ɾ****kuɔ* ‘hand’ (Constenla Umaña 2007: 258)

*hak ~ *kaʔ ‘stone’ > *ak (ák)* ‘stone, rock, metate’ (Constenla Umaña 2012: 153)

*haka ~ *akaʔ ‘name’ > *kɔ (kɔ́)* ‘name’ (Constenla Umaña 2007: 159)

*haka ‘tooth (molar)’ > ***kɔ****uɔ́* <kohuó> ‘tooth, molar, beak’ (Constenla Umaña 2997: 243, 260, 267)

*ha^{n}d ‘to laugh$_1$’ > *háɾ* ‘to laugh’ (Constenla Umaña 2007: 271)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > ***kuɔ́****ta* ‘skin’ (Constenla Umaña 2007: 267)

*ita ~ *i^{n}da ~ *ia^{n}d ‘belly’ > *iɾɔ* ‘inside, in’ (Constenla Umaña 2007: 242, 244)

*ka allative/dative > *gɔ́* ~ *gɔ* ‘to, in’ (Constenla Umaña 2007: 100)

*ka ‘leaf’ > *kʰɔ́ɾ****ga*** ‘leaf of a tree’ (ibid.: 250), *kʰɾɔ́****ga*** ‘leaf’ (Constenla Umaña 2007: 250)

*-ka nominalizer$_3$ > *-gà* agentive nominalizer (compare Constenla Umaña 2012: 406)

*ka^{n}d- ~ *kat- 'stick, bone, tree' > /k^{h}ɔ́ɾ/ 'stick, tree' (cf. Constenla Umaña 2007: 12, 233, 265)

*kã^{n}d- 'bone, strong, hard' > **/k^{h}án**kɔ̀/ 'hard' (Constenla Umaña 2007: 17)

*ka^{n}daʔ 'net' > *k^{h}ɾa* 'big carrying net, spider web' (Constenla Umaña 2007: 165)

*kah 'open' > **/k^{h}á**pkuɔ̀/ 'lip' (Constenla Umaña 2007: 41)

*ka(ka) 'father' > **/k^{h}ɔ́**k/ 'father' (Constenla Umaña 2007: 13)

*kaʔ(k) 'cosmos (sky, day, time, space, earth, place)' > /k^{h}ɔ̀k/ 'place, time' (Constenla Umaña 2007: 14)

*ku^{n}da 'coal, hot coal' > *iʊk* ***k^{h}uɾkuɻá*** 'coal' (Constenla Umaña 2007: 237); *iʊ**kúla*** 'hot coal' (ibid.: 235)

*k^{w}a 'seed, fruit' > *k^{h}uɔ-* numeral classifier round entities (Constenla Umaña 2007: 87)

*Laʔ 'smell' > /lɔ́/ [l̃ɔ́ʔ] 'smell (noun)' (Constenla Umaña 2007: 21)

*si^{m}ba 'god, wind' > /zbó/ 'God' (Constenla Umaña 2007: 18)

*siʔ-k^{w}a 'pale' > *síua* <síhua> 'non-indigenous person' (Constenla Umaña 2007: 205)

*taukaʔ 'calabash$_2$' > /zgó/ a type of container made of a calabash (*tula*) (Constenla Umaña 2007: 18)

*ʦa 'hair, head' > *zɔŋ*, ***zɔ́k*** 'body hair, hair' (Constenla Umaña 207: 266)

*ʦau^{n}d ~ *tsu^{n}da 'post, pole' > *ʃɾa* 'rod, bar' (Sp. *varilla [para techo de casa]*) (Constenla Umaña 2007: 280)

*ʦika ~ *tsaik locative$_3$ > *ʃkɔ́* 'in' (Constenla Umaña 2007: 244)

*u^{m}ba 'face, eye, fruit' > *bɔ́* 'fruit' (Constenla Umaña 2007: 247)

*u^{m}ba ^{n}diʔa 'tear' > /bɔ́ɾiɔ̀/ 'tear' (Constenla Umaña 2007: 19)

*uk-^{n}da 'lip' > *úkɾa* 'next to' (Constenla Umaña 2007: 115)

{*ai, *ii} > {*ɛi, ɛ, ɪ, i, ĩ*}

*aBi ~ aiB 'maize' > *ɪb* 'maize' (Constenla Umaña 2007: 258)

*^{n}da(i) ~ *ta(i) 'to be' > *t^{h}éŋ*, *ɻɔŋ* 'to be' (Sp. *estar*), plural form (Constenla Umaña 2007: 245)

*^{n}dii(k) 'nose' > ***nɛ́***kuɔ 'nose' (Constenla Umaña 2007: 261)

*pai 'friend, other' > ***ɸɛ́i***ga 'friend, relative' (Constenla Umaña 2007: 232, 266), 'relative' (ibid.: 266)

*pii-^{n}da 'all$_2$' > *ɸí*, ***ɸír***kɔ 'every, all' (Constenla Umaña 2007: 277)

*tai 'field for cultivation' > Térraba *t^{h}ɪ* 'cultivated field, tillage' (Constenla Umaña 2007: 236; 255; 259)

*tai^{n}d- ‘six’ > *t^{h}ɛɾ* ‘six, without class indication’ (Constenla Umaña 2007: 273)

*ʦii ‘night, dark’ > *sɨ́* ‘black’ (Constenla Umaña 2007: 261)

{*au, *uu} > {*ɔ*, *ʊ*}

*^{m}bau(^{n}d) ‘jealous’ > ***imɔ́*** ‘jealousy’ (Constenla Umaña 2007: 184)

*^{m}buuʔ ‘two’ > ***ɸóʊ**k* ~ *-bʊ́* ‘two’ (Constenla Umaña 2007: 86)

*kuuʔ ‘hand, finger’ > **/kɔ̀**uɔ́ ~ **kɔ́**uɔ̀/ ‘branch’ (Constenla Umaña 2007: 16)

*suu^{n}d ‘side’ > ***sɔ́ɾgɔ*** ‘next to, behind, around’ (Constenla Umaña 2007: 206)

{*i, *ii} > {*i*, *ɪ*}

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > ***mítʰe*** ‘new, young’ (Constenla Umaña 2007: 254, 262)

*^{m}ba^{n}di ‘hunger’ > *ɸrí* ‘hunger’ (Constenla Umaña 2007: 250)

*^{m}bi- ‘how much, how many’ > *-bí* ‘how many’ (cf. Constenla Umaña 2007: 139)

*^{m}bi-^{n}daʔ ‘neck, throat’ > *bɪŋ-dɔ́* ‘neck, throat’ (Constenla Umaña 2007: 240, 248)

*^{n}di locative/instrumental > *-lɪ* ~ *-ɬɪ* derivational suffix (location) (cf. Constenla Umaña 2007: 44)

*^{n}dihk- ‘to sow’ > ***dɪgí*** ‘to sow’ (Constenla Umaña 2007: 274)

*^{n}diʔ ‘water, river’ > *dí* ‘water’ (Constenla Umaña 2007: 231)

*^{n}diʔ-a ‘liquid’ > *diɔ* ‘liquid’ (Constenla Umaña 2007: 256)

*Gu^{n}di ~ *GuiH^{n}d ‘lightning’ > ***kʰɾík***, *ʒuɬɪŋ* ‘lightning, thunderbolt’, the second form also ‘flash of lightning’ (Constenla Umaña 2007: 271)

*^{ŋ}g^{w}i ‘(older) sibling, (older) sister’ > *uí* (<huí>) ‘older sister’ (Constenla Umaña 2007: 250)

*hakiʔ ‘bile, gall, bitter’ > *kí* ‘bitter’ (Constenla Umáña 2007: 232)

*hapi ~ *apiʔ ‘to take out, pick up’ > *pí* ‘to take out’ (Constenla Umaña 2007: 273)

*hutsi ~ *huiʦ ‘urine’ > *ʧĩ* ‘urine’ (Constenla Umaña 2007: 264)

*ita ~ *i^{n}da ~ *ia^{n}d ‘belly’ > *iɾɔ* ‘inside, in’ (Constenla Umaña 2007: 242, 244)

*ki locative$_{2}$ > *kʰiŋ* postposition ‘for, because’ (Constenla Umaña 2007: 268)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > *kʰuɬí*, ***kʰuɬíua*** (<khuɬíhua>) ‘tepezcuinte (*Cuniculus paca*), domestic rabbit’ (Constenla Umaña 2007: 168)

*k^{w}i ‘turtle’ > ***kʰuéuɔ*** <k^{h}uéhuo> ‘tortoise’ (Constenla Umaña 2007: 277)

*Li ‘to cook$_{1}$’ > ***ɽík*** ‘to cook’ (Constenla Umaña 2007: 238)

*pii-^{n}da ‘all$_{2}$’ > *ɸí*, ***ɸíɾkɔ*** ‘every, all’ (Constenla Umaña 2007: 277)

*si ‘basket, *mochila*’ > ***ʃíŋ**k^{h}uaŋ* ‘basket’ (Constenla Umaña 2007: 237)

*siʔ-k^{w}a ‘pale’ > *síua* <síhua> ‘non-indigenous person’ (Constenla Umaña 2007: 205)

*suh(-kui) ‘rodent, small’ > *ʃkuɪ* ‘mouse’ (Constenla Umaña 2007: 271)

*ʦui^{n}d ~ *ʦu^{n}di ‘spoon, ladle’ > /ʒuíŋ/ [ʒwíŋ ~ ʒ^{u}wíŋ] ‘spoon’ (Constenla Umaña 2007: 21)

*ʦui^{n}d ‘mosquito’ > ***ʒuírua*** (<zhuírhua>) a mosquito (Sp. *mosquito de las frutas*) (Constenla Umaña 2007: 260)

*u^{m}ba ^{n}diʔa ‘tear’ > /bɔɾiə/ ‘tear’ (Constenla Umaña 2007: 19)

{*u, *ũ} > {*u, ũ*}

*^{m}bu-^{n}da ‘big$_2$’ > *ɸɾɔ-*, *ɸɾa-* ‘numeral classifier, object of major dimensions’ (Constenla Umaña 2007: 50)

*^{m}bu^{n}d(u) ‘white, morning’ > ***ɸɾubɾún***, ***ɸɾuɾún*** ‘white’ (Constenla Umaña 2007: 235)

*^{m}bũ^{n}d(ũ) ‘ashes’ > *ɸɾúŋ* ‘ashes, flour, dust’ (Constenla Umaña 2007: 237, 250, 268)

*^{n}du- ‘sun, year’ > *ɭú* ‘year’ (Constenla Umaña 2007: 232)

*^{n}dua ‘tobacco’ > *duɔ* (*duɔ́*) ‘tobacco’ (Constenla Umaña 2007: 173)

*^{n}du^{n}d- ‘seed’ > ***duɭa*** ‘seed’ (Constenla Umaña 2007: 274)

*^{n}du-ku^{n}d(a) / *^{n}du-kus(a) ‘nape$_1$’ > *dugúŋsɔ* ‘nape’ (Constenla Umaña 2007: 262)

*^{n}duʔ ‘armadillo’ > ***dú****pkuɔ* ‘armadillo’ (Constenla Umaña 2007: 233)

*(^{ŋ}g)u^{n}d- ‘turkey, large galliform bird’ > ***guɭɪ****miá* ‘turkey’ (Sp. *pava, pava negra, pava granadera*) (Constenla Umaña 2007: 266)

*^{ŋ}gu^{n}da ~ *^{ŋ}g^{w}a^{n}d ‘to watch’ > ***hũɭé́k*** ‘to look for, find’ (Constenla Umaña 2007: 235, 244)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > **/uɭɔɾbɔ̀/** [^{gù}**ɭɔɾbɔ̀ʔ**] or [^{ɣù}**ɭɔɾbɔ̀ʔ**] ‘arm’ (Constenla Umaña 2007: 22)

*Gu^{n}di ~ *GuiH^{n}d ‘lightning’ > ***k^{h}ɾík***, *ʒuɭɪŋ* ‘lightning, thunderbolt’, the second form also ‘flash of lightning’ (Constenla Umaña 2007: 271)

*hu ‘house’ > *u (ú)* ‘house’ (Constenla Umaña 2007: 219)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > ***kuɔ́****ta* ‘skin’ (Constenla Umaña 2007: 267)

*ku^{n}da ‘coal, hot coal’ > *iʊk* ***k^{h}uɾkuɭá*** ‘coal’ (Constenla Umaña 2007: 237); *iʊ****kúla*** ‘hot coal’ (ibid.: 235)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > *k^{h}uɭí*, ***k^{h}uɭí****ua* (<khuɭíhua>) ‘tepezcuinte (*Cuniculus paca*), domestic rabbit’ (Constenla Umaña 2007: 168)

*kuh ‘to hear$_2$’ > /kúk/ ‘to hear’ (Constenla Umaña 2007: 26)

*kuH ~ *^{m}buH ‘to grow’ > ***kú****n* ‘to grow’ (Constenla Umaña 2007: 162)

*kũʔ ‘louse’ > /k^{h}úŋ/ ‘louse’ (Constenla Umaña 2007: 14)

*pũʔ ‘raptor’ > *ɸúŋ* ‘hawk, eagle, sparrowhawk’ (Constenla Umaña 2007: 231; 248; 250)

*suh(-kui) ‘rodent, small’ > *ʃkuɪ* ‘mouse’ (Constenla Umaña 2007: 271)

*tsuʔ ‘breast, teat$_2$’ > ***ʃúɾiɔ*** ‘milk’ (Constenla Umaña 2007: 255)

*tsui^{n}d ~ *tsu^{n}di ‘spoon, ladle’ > /ʒuíŋ/ [ʒwíŋ ~ ʒ^{u}wíŋ] ‘spoon’ (Constenla Umaña 2007: 21)

*tsui^{n}d ‘mosquito’ > ***ʒuíɾua*** (<zhuírhua>) a mosquito (Sp. *mosquito de las frutas*) (Constenla Umaña 2007: 260)

*uk-^{n}da ‘lip’ > *úkɾa* ‘next to’ (Constenla Umaña 2007: 115)

2.3.22.2.2 Reflexes of Proto-Chibchan consonants in Térraba (cf. also Constenla Umaña 1981: 219–43)

***p > *p* / *V__*V**

***p > *ɸ* / elsewhere**

*apa ‘body’ > ***pɔ́iɪ*** ‘to dress’ (Constenla Umaña 2007: 280)

*hapi ~ *apiʔ ‘to take out, pick up’ > *pí* ‘to take out’ (Constenla Umaña 2007: 273)

*pii-^{n}da ‘all$_2$’ > *ɸí*, ***ɸíɾkɔ*** ‘every, all’ (Constenla Umaña 2007: 277)

*pũʔ ‘raptor’ > *ɸúŋ* ‘hawk, eagle, sparrowhawk’ (Constenla Umaña 2007: 231; 248; 250)

***^{m}b > *ɸ* / #__*u**

***^{m}b > {*b*, *ɸ*, *m*} / #__*V$_{[other]}$**

***^{m}b > {*b*, *m*} / elsewhere**

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > ***míthe*** ‘new, young’ (Constenla Umaña 2007: 254, 262)

*^{m}b- ‘to go$_1$’ > ***bí*** ‘to go (perfective aspect, used with first persons)’ (Constenla Umaña 2007: 239, 252)

*-^{m}ba nominalizer$_1$ > *-mɔ* non-productive derivational suffix (cf. Constenla Umaña 2007: 41)

*^{m}bã- ‘cloud, white’ > *ɸɔ́ŋ* ‘fog’ (Constenla Umaña 2007: 261)

*^{m}ba^{n}d- ‘tasty’ > ***ɸɾɪbɾí*** ‘sweet’ (Constenla Umaña 2007: 243)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > ***ɸɾa****k* ‘tail’ (Constenla Umaña 2007: 238)

*^{m}ba^{n}di ‘hunger’ > *ɸɾí* ‘hunger’ (Constenla Umaña 2007: 250)

*^{m}bau(^{n}d) ‘jealous’ > ***imɔ́*** ‘jealousy’ (Constenla Umaña 2007: 184)

*^{m}baʔ ‘beam of light, heat’ > ***mɔ́****k* ‘moon, month’ (Constenla Umaña 2007: 256, 259)

*^{m}baʔ ‘you’ > /ɸá/ ‘you’ (Constenla Umaña 2007: 26)

*^{m}bi- ‘how much, how many’ > *-bí* ‘how many’ (cf. Constenla Umaña 2007: 139)

*^{m}bi-^{n}daʔ ‘neck, throat’ > *bɪŋ-dɔ́* ‘neck, throat’ (Constenla Umaña 2007: 240, 248)

*^{m}bu^{n}d- ‘breath, wind’ > ***ɸɾúk*** ‘air, wind’ (Constenla Umaña 2007: 232, 280)

*^{m}bu-^{n}da ‘big$_2$’ > *ɸɾɔ-*, *ɸɾa-* ‘numeral classifier, object of major dimensions’ (Constenla Umaña 2007: 50)

*^{m}bu^{n}d(u) ‘white, morning’ > ***ɸɾubɾún***, ***ɸɾuɾún*** ‘white’ (Constenla Umaña 2007: 235)

*^{m}bũ^{n}d(ũ) ‘ashes’ > *ɸɾúŋ* ‘ashes, flour, dust’ (Constenla Umaña 2007: 237, 250, 268)

*^{m}buuʔ ‘two’ > ***ɸɔ́****k* ~ *-bɔ́* ‘two’ (Constenla Umaña 2007: 86)

*^{n}da^{m}ba ‘feline$_1$’ > /dɔbɔ́ŋ/ [dɔ̰βɔ́ŋ ~ dɔ̰βɔ́ŋ] ‘feline’ (Constenla Umaña 2007: 15)

*(^{n}d-)u^{m}ba ‘brother-in-law’ > *bɔ* ‘brother-in-law’, ‘sister-in-law’ (Constenla Umaña 2007: 240)

*si^{m}ba ‘god, wind’ > /zbɔ́/ ‘God’ (Constenla Umaña 2007: 18)

*u^{m}ba ‘face, eye, fruit’ > *bɔ́* ‘fruit’ (Constenla Umaña 2007: 247)

*u^{m}ba ^{n}diʔa ‘tear’ > /bɔɾiɔ̀/ ‘tear’ (Constenla Umaña 2007: 19)

***t > *t^{h}* / #__V**

t > *z* / __*g

***t > *t^{h}* / *Vh__V**

*(a-)^{m}bih^{n}d- ~ *(a-)^{m}biht- ‘new’ > ***mítʰe*** ‘new, young’ (Constenla Umaña 2007: 254, 262)

*tai ‘field for cultivation’ > Térraba *t^{h}ɪ* ‘cultivated field, tillage’ (Constenla Umaña 2007: 236; 255; 259)

*tai^{n}d- ‘six’ > *t^{h}ɛɾ* ‘six, without class indication’ (Constenla Umaña 2007: 273)

*taukaʔ ‘calabash$_2$’ > /zgɔ́/ a type of container made of a calabash (*tula*) (Constenla Umaña 2007: 18)

***^{n}d > {*d, n, ɭ*} / #__**

***^{n}d > *n* / *ã__**

***^{n}d > {*ɾ, ŋ*} / VV__#**

***^{n}d > {*d, ɭ, ɾ, l*} / elsewhere**

*^{m}ba^{n}d- ‘tasty’ > ***ɸɾɪbɾí*** ‘sweet’ (Constenla Umaña 2007: 243)

*^{m}ba^{n}d(a)- ‘tail$_1$’ > ***ɸɾa****k* ‘tail’ (Constenla Umaña 2007: 238)

*^{m}ba^{n}di ‘hunger’ > *ɸɾí* ‘hunger’ (Constenla Umaña 2007: 250)

*^{m}bi-^{n}daʔ ‘neck, throat’ > *bɪŋ-dɔ́* ‘neck, throat’ (Constenla Umaña 2007: 240, 248)

*^{m}bu^{n}d- ‘breath, wind’ > ***ɸɾú****k* ‘air, wind’ (Constenla Umaña 2007: 232, 280)

*^{m}bu-^{n}da ‘big$_2$’ > *ɸɾɔ-*, *ɸɾa-* ‘numeral classifier, object of major dimensions’ (Constenla Umaña 2007: 50)

*^{m}bu^{n}d(u) ‘white, morning’ > ***ɸɾubɾú****n*, ***ɸɾuɾú****n* ‘white’ (Constenla Umaña 2007: 235)

*^{m}bũ^{n}d(ũ) ‘ashes’ > *ɸɾúŋ* ‘ashes, flour, dust’ (Constenla Umaña 2007: 237, 250, 268)

*-^{n}d- nominalizer$_2$ > *-ɾe* (after *ɔ*), else: *-ɾi* ‘stative nominalizer’ (Constenla Umaña 2007: 44)

*^{n}da^{m}ba ‘feline$_1$’ > /dɔbɔ́ŋ/ [dᵊβɔ́ŋ ~ dᵊβɔ́ŋ] ‘feline’ (Constenla Umaña 2007: 15)

*^{n}di locative/instrumental > *-lɪ ~ -ɭɪ* derivational suffix (location) (cf. Constenla Umaña 2007: 44)

*^{n}dihk ‘to sow’ > ***dɪgí*** ‘to sow’ (Constenla Umaña 2007: 274)

*^{n}dii(k) ‘nose’ > ***né****kuɔ* ‘nose’ (Constenla Umaña 2007: 261)

*^{n}diʔ ‘water, river’ > *dí* ‘water’ (Constenla Umaña 2007: 231)

*^{n}diʔ-a ‘liquid’ > *diɔ* ‘liquid’ (Constenla Umaña 2007: 256)

*^{n}du- ‘sun, year’ > *ɭú* ‘year’ (Constenla Umaña 2007: 232)

*^{n}dua ‘tobacco’ > *duɔ* (*duɔ́*) ‘tobacco’ (Constenla Umaña 2007: 173)

*^{n}du^{n}d- ‘seed’ > ***duɭa*** ‘seed’ (Constenla Umaña 2007: 274)

*^{n}du-ku^{n}d(a) / *^{n}du-kus(a) ‘nape$_1$’ > *dugúŋsɔ* ‘nape’ (Constenla Umaña 2007: 262)

*^{n}duʔ ‘armadillo’ > ***dú****pkuɔ* ‘armadillo’ (Constenla Umaña 2007: 233)

*(^{ŋ}g)u^{n}d- ‘turkey, large galliform bird’ > ***guɭn****iá* ‘turkey’ (Sp. *pava, pava negra, pava granadera*) (Constenla Umaña 2007: 266)

*^{ŋ}gu^{n}da ~ *^{ŋ}g^{w}a^{n}d ‘to watch’ > ***hũɭɛ́****k* ‘to look for, find’ (Constenla Umaña 2007: 235, 244)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > **/uɭɔɾbɔ̀/** [^{gù}**ɭɔɾbɔ̀ʔ**] or [^{ɣù}**ɭɔɾbɔ̀ʔ**] ‘arm’ (Constenla Umaña 2007: 22)

*Gu^{n}di ~ *GuiH^{n}d ‘lightning’ > ***kʰɾík***, *ʒuɭɪŋ* ‘lightning, thunderbolt’, the second form also ‘flash of lightning’ (Constenla Umaña 2007: 271)

*ha^{n}d ‘to laugh$_1$’ > *háɾ* ‘to laugh’ (Constenla Umaña 2007: 271)

*ita ~ *i^{n}da ~ *ia^{n}d ‘belly’ > *iɾɔ* ‘inside, in’ (Constenla Umaña 2007: 242, 244)

*kã^{n}d- ‘bone, strong, hard’ > **/k^{h}án**kɔ̀/ ‘hard’ (Constenla Umaña 2007: 17)

*ka^{n}daʔ ‘net’ > *k^{h}ɾa* ‘big carrying net, spider web’ (Constenla Umaña 2007: 165)

*ku^{n}da ‘coal, hot coal’ > *iʊk* ***k^{h}uɾkuɻá*** ‘coal’ (Constenla Umaña 2007: 237); *iʊ**kúla*** ‘hot coal’ (ibid.: 235)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > *k^{h}uɻí*, ***k^{h}uɻíua*** (<khuɻíhua>) ‘tepezcuinte (*Cuniculus paca*), domestic rabbit’ (Constenla Umaña 2007: 168)

*pii-^{n}da ‘all$_{2}$’ > ***ɸíɾ****kɔ* ‘every, all’ (Constenla Umaña 2007: 277)

*Laʔ ‘smell’ > /lɔ́/ [l̃ɔ̃ʔ] ‘smell (noun)’ (Constenla Umaña 2007: 21)

*suu^{n}d ‘side’ > ***sɔ́ɾgɔ*** ‘next to, behind, around’ (Constenla Umaña 2007: 206)

*tai^{n}d- ‘six’ > *t^{h}ɛɾ* ‘six, without class indication’ (Constenla Umaña 2007: 273)

*ʦau^{n}d ~ *tsu^{n}da ‘post, pole’ > *ʃɾa* ‘rod, bar’ (Sp. *varilla [para techo de casa]*) (Constenla Umaña 2007: 280)

*ʦui^{n}d ~ *ʦu^{n}di ‘spoon, ladle’ > /ʒuíŋ/ [ʒwíŋ ~ ʒ^{u}wíŋ] ‘spoon’ (Constenla Umaña 2007: 21)

*ʦui^{n}d ‘mosquito’ > ***ʒuíɾua*** (<zhuírhua>) a mosquito (Sp. *mosquito de las frutas*) (Constenla Umaña 2007: 260)

*u^{m}ba ^{n}diʔa ‘tear’ > /bɔ́ɾiɔ̀/ ‘tear’ (Constenla Umaña 2007: 19)

*uk-^{n}da ‘lip’ > *úkɾa* ‘next to’ (Constenla Umaña 2007: 115)

***k > {*k*, *k^{h}*} / #__**

***k > {*k*, *g*} / elsewhere**[63]

*^{n}dihk ‘to sow’ > ***dɪgí*** ‘to sow’ (Constenla Umaña 2007: 274)

*^{n}du-ku^{n}d(a) / *^{n}du-kus(a) ‘nape$_{1}$’ > *dugúŋsɔ* ‘nape’ (Constenla Umaña 2007: 262)

*^{ŋ}gak ‘feather, wing, arm, hand’ > ***ákuɔ*** ‘finger’ (Constenla Umaña 2007: 242)

*hak ~ *kaʔ ‘stone’ > *ak (ák)* ‘stone, rock, metate’ (Constenla Umaña 2012: 153)

*haka ‘tooth (molar)’ > ***kɔuɔ́*** <kohuó> ‘tooth, molar, beak’ (Constenla Umaña 2997: 243, 260, 267)

*haka ~ *akaʔ ‘name’ > *kɔ (kɔ́)* ‘name’ (Constenla Umaña 2007: 159)

*hakiʔ ‘bile, gall, bitter’ > *kí* ‘bitter’ (Constenla Umáña 2007: 232)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > ***kuɔ́****ta* ‘skin’ (Constenla Umaña 2007: 267)

*-ka nominalizer$_{3}$ > *-gà* agentive nominalizer (compare Constenla Umaña 2012: 406)

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[63] In Térraba, voicing the reflex of *k in intervocalic position is more recent than deleting the first syllable in the terms for ‘tooth’ and ‘name’ above.

*ka allative/dative > *gɔ́ ~ gɔ* ‘to, in’ (Constenla Umaña 2007: 100)

*ka ‘leaf’ > *kʰɔ́ɾ**ga*** ‘leaf of a tree’ (ibid.: 250), *kʰɾɔ́**ga*** ‘leaf’ (Constenla Umaña 2007: 250)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > /kʰɔ́ɾ/ ‘stick, tree’ (cf. Constenla Umaña 2007: 12, 233, 265)

*kã^{n}d- ‘bone, strong, hard’ > **/k^{h}ánk**ɔ̀/ ‘hard’ (Constenla Umaña 2007: 17)

*ka^{n}daʔ ‘net’ > *kʰɾa* ‘big carrying net, spider web’ (Constenla Umaña 2007: 165)

*kah ‘open’ > **/k^{h}á**pkuɔ̀/ ‘lip’ (Constenla Umaña 2007: 41)

*ka(ka) ‘father’ > **/k^{h}ɔ́**k/ ‘father’ (Constenla Umaña 2007: 13)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > /kʰɔ̀k/ ‘place, time’ (Constenla Umaña 2007: 14)

*ki locative$_2$ > *kʰiŋ* postposition ‘for, because’ (Constenla Umaña 2007: 268)

*ku^{n}da ‘coal, hot coal’ > *iʊk **kʰuɾkuɻá*** ‘coal’ (Constenla Umaña 2007: 237); *iʊ**kúla*** ‘hot coal’ (ibid.: 235)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > *kʰuɻí*, ***kʰuɻ́ua*** (<khuɻíhua>) ‘tepezcuinte (*Cuniculus paca*), domestic rabbit’ (Constenla Umaña 2007: 168)

*kuh ‘to hear$_2$’ > /kúk/ ‘to hear’ (Constenla Umaña 2007: 26)

*kuH ~ *^{m}buH ‘to grow’ > ***kún*** ‘to grow’ (Constenla Umaña 2007: 162)

*kuuʔ ‘hand, finger’ > **/kɔ̀**uɔ́ ~ **kɔ́**uɔ̀/ ‘branch’ (Constenla Umaña 2007: 16)

*kũʔ ‘louse’ > /kʰúŋ/ ‘louse’ (Constenla Umaña 2007: 14)

*suh(-kui) ‘rodent, small’ > *ʃkuɪ* ‘mouse’ (Constenla Umaña 2007: 271)

*taukaʔ ‘calabash$_2$’ > /zgɔ́/ a type of container made of a calabash (*tula*) (Constenla Umaña 2007: 18)

*ʦika ~ *tsaik locative$_3$ > *ʃkɔ́* ‘in’ (Constenla Umaña 2007: 244)

*uk-^{n}da ‘lip’ > *úkɾa* ‘next to’ (Constenla Umaña 2007: 115)

^{ŋ}g > {*g*, *h*, Ø} / __*u

***^{ŋ}g > {*s*, *ʒ*} / elsewhere**

*^{ŋ}ga ‘excrement’ > /ʒáŋ/ ‘excrement’ (Constenla Umaña 2007: 14)

*^{ŋ}gak ‘feather, wing, arm, hand’ > ***sák**uɔ* ‘finger’ (Constenla Umaña 2007: 242)

*(^{ŋ}g)u^{n}d- ‘turkey, large galliform bird’ > ***guɻ**miá* ‘turkey’ (Sp. *pava, pava negra, pava granadera*) (Constenla Umaña 2007: 266)

*^{ŋ}gu^{n}da ~ *^{ŋ}g^{w}a^{n}d ‘to watch’ > ***hũɻ́k*** ‘to look for, find’ (Constenla Umaña 2007: 235, 244)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > **/uɻɔ́**ɾbɔ̀/ [^{gù}**ɻɔ́**ɾbɔ̀ʔ] or [^{ɣù}**ɻɔ́**ɾbɔ̀ʔ] ‘arm’ (Constenla Umaña 2007: 22)

***k^{w} > *k^{h}u* / #__**

***k^{w} > *u* / V__V**

*k^{w}a ‘seed, fruit’ > *k^{h}uɔ-* numeral classifier round entities (Constenla Umaña 2007: 87)

*k^{w}i ‘turtle’ > ***k^{h}uéuɔ*** <k^{h}uéhuo> ‘tortoise’ (Constenla Umaña 2007: 277)

*siʔ-k^{w}a ‘pale’ > *síua* <síhua> ‘non-indigenous person’ (Constenla Umaña 2007: 205)

^{ŋ}g^{w} > *u

*^{ŋ}g^{w}i ‘(older) sibling, (older) sister’ > *uí* (<huí>) ‘older sister’ (Constenla Umaña 2007: 250)

***Vʔ > {V, V̀, V́}**

*^{m}buuʔ ‘two’ > ***ɸóɔ́k*** ~ *-bɔ́* ‘two’ (Constenla Umaña 2007: 86)

*^{m}baʔ ‘beam of light, heat’ > ***mɔ́k*** ‘moon, month’ (Constenla Umaña 2007: 256, 259)

*^{m}baʔ ‘you’ > /ɸá/ ‘you’ (Constenla Umaña 2007: 26)

*^{n}daʔ ~ *taʔ ‘to go$_{2}$’ > *tɔ́* ‘to go, imperfective form (without indication of direction; also used as auxiliary for future tense)’ (Constenla Umaña 2007: 252–3)

*^{n}diʔ ‘water, river’ > *dí* ‘water’ (Constenla Umaña 2007: 231)

*^{n}diʔ-a ‘liquid’ > *diɔ* ‘liquid’ (Constenla Umaña 2007: 256)

*^{n}duʔ ‘armadillo’ > ***dú****pkuɔ* ‘armadillo’ (Constenla Umaña 2007: 233)

*^{ŋ}gu^{n}daʔ ‘hand, arm’ > **/u.lɔ́**ɾbɔ̀/ [^{gù}**.lɔ́**ɾbɔ̀ʔ] or [^{ɣù}**.lɔ́**ɾbɔ̀ʔ] ‘arm’ (Constenla Umaña 2007: 22)

*haka ~ *akaʔ ‘name’ > *kɔ (kɔ́)* ‘name’ (Constenla Umaña 2007: 159)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > ***kuɔ́****ta* ‘skin’ (Constenla Umaña 2007: 267)

*ka^{n}daʔ ‘net’ > *k^{h}ɾa* ‘big carrying net, spider web’ (Constenla Umaña 2007: 165)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > /k^{h}ɔ̀k/ ‘place, time’ (Constenla Umaña 2007: 14)

*kuuʔ ‘hand, finger’ > **/kɔ̀**uɔ́ ~ **kɔ́**uɔ̀/ ‘branch’ (Constenla Umaña 2007: 16)

*kũʔ ‘louse’ > /k^{h}úŋ/ ‘louse’ (Constenla Umaña 2007: 14)

*pũʔ ‘raptor’ > *ɸúŋ* ‘hawk, eagle, sparrowhawk’ (Constenla Umaña 2007: 231; 248; 250)

*siʔ-k^{w}a ‘pale’ > *síua* <síhua> ‘non-indigenous person’ (Constenla Umaña 2007: 205)

*ʦuʔ ‘breast, teat$_{2}$’ > ***ʃú****ɾiɔ* ‘milk’ (Constenla Umaña 2007: 255)

*u^{m}ba ^{n}diʔa ‘tear’ > /bɔ́ɾiɔ̀/ ‘tear’ (Constenla Umaña 2007: 19)

***ʦ > { *s*, *z*, *ʧ*, *ʃ*}**

*hutʦi ~ *huiʦ ‘urine’ > *ʧĩ* ‘urine’ (Constenla Umaña 2007: 264)

*ʦa ‘hair, head’ > *zɔŋ*, ***zɔ́****k* ‘body hair, hair’ (Constenla Umaña 207: 266)

*ʦii ‘night, dark’ > *sɨ́* ‘black’ (Constenla Umaña 2007: 261)

*ʦau^{n}d ~ *tsu^{n}da ‘post, pole’ > *ʃra* ‘rod, bar’ (Sp. *varilla [para techo de casa]*) (Constenla Umaña 2007: 280)

*ʦika ~ *tsaik locative$_3$ > *ʃkɔ́* ‘in’ (Constenla Umaña 2007: 244)

*ʦui^{n}d ~ *ʦu^{n}di ‘spoon, ladle’ > /ʒuíŋ/ [ʒwíŋ ~ ʒ^{u}wíŋ] ‘spoon’ (Constenla Umaña 2007: 21)

*ʦui^{n}d ‘mosquito’ > ***ʒuírua*** (<zhuírhua>) a mosquito (Sp. *mosquito de las frutas*) (Constenla Umaña 2007: 260)

*ʦuʔ ‘breast, teat$_2$’ > ***ʃúɾiɔ*** ‘milk’ (Constenla Umaña 2007: 255)

***s > {*s*, *z*, *ʃ*}**

*si ‘basket, *mochila*’ > ***ʃíŋk^{h}uaŋ*** ‘basket’ (Constenla Umaña 2007: 237)

*si^{m}ba ‘god, wind’ > /zbó/ ‘God’ (Constenla Umaña 2007: 18)

*siʔ-k^{w}a ‘pale’ > *síua* <síhua> ‘non-indigenous person’ (Constenla Umaña 2007: 205)

*suh(-kui) ‘rodent, small’ > *ʃkuɪ* ‘mouse’ (Constenla Umaña 2007: 271)

*suu^{n}d ‘side’ > ***sɔ́ɾgɔ*** ‘next to, behind, around’ (Constenla Umaña 2007: 206)

***hV, Vh > {V́, V}**

*^{n}dihk- ‘to sow’ > ***dɪgí*** ‘to sow’ (Constenla Umaña 2007: 274)

*ha^{n}d- ~ *hat- ‘hand’ > ***ɔ́ɾkuɔ*** ‘hand’ (Constenla Umaña 2007: 258)

*hak ~ *kaʔ ‘stone’ > *ak (ák)* ‘stone, rock, metate’ (Constenla Umaña 2012: 153)

*ha^{n}d ‘to laugh$_1$’ > *háɾ* ‘to laugh’ (Constenla Umaña 2007: 271)

*hu ‘house’ > *u (ú)* ‘house’ (Constenla Umaña 2007: 219)

*kah ‘open’ > **/k^{h}á**pkuɔ̀/ ‘lip’ (Constenla Umaña 2007: 41)

*kuh ‘to hear$_2$’ > /kúk/ ‘to hear’ (Constenla Umaña 2007: 26)

#L > *ɾ*, *ɾ

*La ‘bee, honey’ > /ɔ́**ɾ**pì/ ‘to take out honey’ (Constenla Umaña 2007: 17)

*Li ‘to cook$_1$’ > ***ɾík*** ‘to cook’ (Constenla Umaña 2007: 238)

2.3.23 Tunebo

Tunebo or Uw Cuwa is spoken, at present, by some 2,000 to 7,000 persons (estimations vary greatly) in the Colombian departments of Arauca, Boyacá, Casanare, Norte de Santander, and Santander, mainly on the northern slopes of the Sierra Nevada del Cocuy. Some few speakers of the language live in western Venezuela, in the state of Apure. The Tunebo varieties spoken on the northern slopes of the Sierra Nevada del Cocuy are the Cobaría and Tegría dialects. These two varieties have the largest number of speakers (Adelaar & Muysken 2004: 109; Constenla Umaña 2012: 394–5). The Tunebo source used in the present thesis, Headland (1997), covers varieties from Cobaría, Tegría, Bócuta and Banara (cf. ibid: 10). Except if indicated otherwise, the Tunebo forms cited below occur in all these dialects. According to Headland (1976: 18), there are three dialects of Tunebo: Cobaría, Barro Negro, and Agua Blanca. Barro Negro (departments of Arauca and Casanare) and Agua Blanca (departments of Santander and Norte de Santander) are situated in the lowlands (Adelaar & Muysken 2004: 109). Another Tunebo dialect is extinct Sínsiga (ibid.), of which 61 words are listed in Uricoechea (1871: xxxv). Sínsiga was formerly spoken near Chita, a town south of the Sierra Nevada del Cocuy, in the present-day department of Boyacá. According to Adelaar and Muysken (2004: 110), this geographic distribution might indicate that the Tunebo dwelled in the highlands originally, or that they occupied, in the past, a larger part of this region. The dialectal differences between the varieties of the Tunebo language need further investigation. The Tunebo living on the the northern slopes of the Sierra Nevada del Cocuy, have settlements (Sp. *caserios*) in different climatic zones/altitude levels, like the Ika, Damana, and Kogi. They use them at different times of the year, depending on harvesting and sowing periods (Headland 1997: 1, 4). As among the peoples from the Sierra Nevada de Santa Marta, both religious and political power seem to be exerted by one person, labelled "líder" by Headland (1997: 4).

Within Chibchan, Tunebo has been argued to be relatively closely (Constenla Umaña 2012: 414) or most closely (Ostler 1994; Adelaar & Muysken 2004: 109) related to Muisca and Duit. An exhaustive investigation of the shared innovations, opposing this subgroup to the Arhuacan languages and Barí is still wanting.

The Tunebo language is mentioned in several sources of the eighteenth century (Cassani 1741; Gumilla 1741; La Condamine 1745; Gilij 1780–84). It seems that catechisms and grammars of this language were also written in colonial times, although they were possibly never published (Rey Fajardo 1972). According to colonial sources cited by Rey Fajardo (ibid.: 151), the Tunebo spoke two languages, a 'general language' and a language called Subasque. Recent sources on Tunebo are Rochereau (1926–27) on morphosyntax and lexicon, Headland (1973) on morphosyntax (following the

tagmemic model), Headland and Headland (1976) on the phonology of Cobaría Tunebo, based on work with two language consultants, and finally, Headland (1997) on Tunebo lexicon, with short sketches of the language's phonology and morphosyntax.

Tunebo has some features that set it apart from other Chibchan languages of the area. For instance, verbal and nominal person are indicated by unbound elements throughout, and the language has an ergative marker or agent disambiguator /at/ which is cognate with the Bribri ergative marker /tò/ (cf. Constenla Umaña 2012: 407).

2.3.23.1 The sounds of Tunebo

The following two subsections present and discuss Tunebo phonemes and their realization, based on Headland (1997).

2.3.23.1.1 Tunebo vowels and suprasegmentals

The inventory of Tunebo vowel phonemes is shown in table 68:

TABLE 68
TUNEBO PHONEMES: VOWELS

	Front	Central	Back
High	i		u
High-mid	e		o
Low		a	

Source: Headland (1997: 15).

Vowel nasality is not distinctive in the Tunebo vowels given in table 68, according to Headland and Headland (1976: 25) and Headland (1997: 17). However, a potential minimal pair does seem to exist, according to Headland (1997: 172–3): *saʔa* ("nasalizada") 'nephew (brother's son of a male ego, sister's son of a female ego)' versus *saʔa* 'child, small (of person or animal)' ("no nasalizada") (ibid.: 172–3). Also, if followed or preceded by /w̃/, vowels are nasalized, as for instance in /aw̃atá/ [ãw̃ãtá] 'bed' (Headland & Headland 1976: 23). (Headland and Headland (1976) and Headland (1997) represent both stress and high/rising tone with an acute accent in their transcriptions; this approach is followed here.) In Tunebo, high/rising tone and stress do not necessarily coincide in the same vowel or syllable (Headland 1997: 10, 16). According to Headland and Headland (1976: 24–5) Tunebo has rising tone (in slow

speech; it is realized as high tone in rapid speech) and descending tone, for instance in /rúka/ 'cousin',[64] as opposed to /rùka/ 'clay pot'. The vowel with descending tone is long (ibid.), which is in line with Headland's (1997: 168) transripctions: <ruúca> 'clay pot' versus <rucá> (Tegría) and <rúca> (Cobaría) 'man's nephew by sister's side'. Another example is [áàka] 'face', with descending tone, phonetically transcribed as such by Headland and Headland (1976: 25), and as <aáca> 'face, edge, extremity' by Headland (1997: 63).

Stress is distinctive in cases such as *ˈaba* <ába> 'blood' versus *aˈba* <abá> 'mother' (Headland 1997: 16), in *ˈkaka* <káka> 'mouth' versus *kaˈka* <kaká> 'grandmother' and in *ˈwikinro* <wíkinro> 'I give' versus *wiˈkinro* <wikínro> 'I come' (Headland & Headland 1976: 24). If not indicated otherwise, stress is assigned to the penultimate vowel of a polysyllabic word (Headland 1997: 9). Intonation is falling at the end of a phrase, also in questions (ibid.: 16); this latter phenomenon is probably linked to the fact that questions are indicated by morphology (suffixes) in Tunebo (cf. ibid.: 25).

According to Headland (1997: 16), Tunebo *i* might be syncopated in words such as *wítira ~ wítra* 'beam' and *íbita ~ íbta* 'camino'. In Tegría, the non-syncopated form is preferred, whereas in Cobaría, both forms are used. Headland and Headland (1976: 25) instead interpret the *i* in *íbita ~ íbta* 'camino' as secondary, as in the case of Tunebo *kárta ~ kárita* 'paper' (< Spanish *carta*).

In final position, Tunebo *u* may occur in free variation with *o*, for instance in *bar bíro ~ bar bíru* 'I'm leaving'. In these cases there is a tendency, in Tegría, to use *o*, but *u* in Cobaría (Headland 1997: 17). The underlying form, according to Headland and Headland (1976: 25), is *bar biro.* Likewise, in informal speech, *a* often becomes *i* in final position, for instance in *bénka*, which becomes *bénki* 'you (sg.) go?' (ibid.).

The high vowels *i* and *u* may vary freely after *w*, as in *wihakro ~ wuhakro* 's/he came back' (Headland 1997: 17). There is also free variation of [e ~ e^{i}] before *ʃ*, *j*, and *h*, as in /béʃa/ [bé^{i}ʃa ~ béʃa] 'sweet potato'. Before *ʃ*, *j*, and *h* there are also similar variations of [a ~ a^{i}] and [o ~ o^{i}] (Headland & Headland 1976: 23–4).

Final *a* is added to noun roots and deleted in specific syntactic contexts: compare *bahita* 'machete' versus *bahit kuit* 'with a machete' (Headland 1997: 11, 18).

2.3.23.1.2 Tunebo consonants

Table 69 shows the inventory of Tunebo consonant phonemes.

[64] The meaning is 'man's nephew by sister's side' according to Headland (1997: 168).

TABLE 69
TUNEBO PHONEMES: CONSONANTS

	Labial	Dental/alveolar	Postalveolar/ palatal	Velar	Labio-velar	Glottal
Voiceless stops		t		k	k^w	ʔ
Voiced stop	b					
Fricatives		s	ʃ			h
Nasals	m	n				
Vibrant		r				
Oral glides	w		j			
Nasal glide	w̃					

Source: Headland (1997: 15).

The realization of consonant phonemes in Tunebo is as follows: /b/ has several allophones, namely [β] in intervocalic position, [^{m}b ~ b] in initial position in a form that contains nasal consonants, and /b/ in all other contexts. The two first allophones of /b/ mentioned here are illustrated in the form /bánaba/ [^{m}bánaβa ~ bánaβa] 'bear' (Headland & Headland 1976: 21).[65] The Tunebo voiceless alveo-dental stop *t* is realized as a retroflex [ʈ] if followed by *r* (ibid.: 21). The voiceless velar stop *k* is voiced and realized as [g] before the vibrant *r* and other consonants (Headland 1997: 9).

Both the sequence /ku/ and the labiovelar /k^w/ are represented by <cu> in Headland (1997) and by <k^w> in Huber and Reed (1992).

The realization of the glottal stop is soft ("ligera") (Headland 1997: 9). It occurs in free variation with a schwa-like vowel in forms like /koʔtá/ [koʔtá ~ koʔᵊtá ~ koᵊtá] 'grandfather' (Headland & Headland 1976: 21–2). Tunebo /báʔa/ 'thou' is realized as [bá̰ʔå], according to the transcription of Headland and Headland (ibid.: 22), possibly indicating creaky voice.

The fricative /s/ is realized as retroflex [ʂ] if followed by *r*, as in /ásro/ [áʂro] 'I am ("soy yo")' (Headland & Headland 1976: 22). In all other positions, there is free variation of [s ~ θ],[66] as illustrated in /rustára/ [ɖustáɾa ~ ɖuθtáɾa] 'tail' (ibid.: 22).

There is free variation between *ʃ* and *h* in many lexical items without changing their meaning. Examples are /kibaʃtá ~ kibahtá/ [kibaʲʃtá ~ kibahtá] 'trap' or /réʃa ~

[65] The similarity with Movima *ɓanama* 'bear' is remarkable (cf. Judy 2015).
[66] Headland and Headland (1976: 22) write <ʂ ~ θ> and call ʂ a "sorda lenis dental espirante acanalada".

réha/ [ɖéʃa ~ ɖéha] ‘nose’ (Headland & Headland 1976: 22). In Tegría, *ʃ* is preferred, in Cobaría *h* (Headland 1997: 17). For /íʃa/ ‘manioc’, however, Headland and Headland (1976: 22) only give the phonetic form [íʃa], not [íha*]. In initial position, *ʃ* varies freely with *ʧ* in some idiolects (ibid.).

The glottal fricative /h/ is realized as a voiceless vowel in certain contexts, for instance in /áhka/ [áḁka] ‘word’, /bébhira/ [bɛ́bi̥ɪra] ‘rib’ or /bihiráka/ [bii̥ɪráka] a proper name. (Headland & Headland 1976: 22).

Nasal /m/ is realized as [m^{b}] word-internally if followed by *r*. In all other environments, *m* is realized as such (Headland & Headland 1976: 22).

If *r* appears in initial position or after *n* it is realized as a soft *dr* (Headland 1997: 9). According to Headland and Headland (1976: 21), the allophone of *r* (labelled “*vibrante simple*”), is a retroflex *ɖ* after *n* and in initial position.

Tunebo *m*, *n*, *w̃* and *ʔ* do not occur in word-initial position. The glottal stop *ʔ* only occurs after the first vowel of a word (Headland 1997: 16).

2.3.23.2 Reflexes of Proto-Chibchan phonemes in Tunebo

This subsection presents the reflexes of Proto-Chibchan vowels (2.3.23.2.1) and of Proto-Chibchan consonants (2.3.23.2.2) in Tunebo.

2.3.23.2.1 Reflexes of Proto-Chibchan vowels in Tunebo (cf. also Constenla Umaña 1981: 296–8)

{*a, *ã} > *a*

*^{m}ba ‘chicha$_1$’ > ***ba****kua*, ***ba****kuwa* ‘chicha made of maize or sugar cane’ (Headland 1997: 247)

*^{m}bahka(i) ‘four’ > ***baka****ja* ‘four’ (Headland 1997: 78)

*^{m}baʔ ‘you’ > ***baʔ****a* ‘you’ (Headland 1997: 80)

*^{m}bãʔ(ĩ) ‘three’ > ***baj****a* ‘three’ (Headland 1997: 279)

*^{m}baʔk ‘to wrap’ > ***bak****onro* [bahkonro] (*sic*) ‘to wrap’ (Headland 1997: 78)

*^{n}da ‘to come’ > ***ra****kinro* ‘to come’ (Headland 1997: 159)

*^{n}da^{m}ba ‘brother$_1$’ > *raba* [raába] ‘sibling of the same sex as ego; cousin (offspring with the same sex as father’s brother or as mother’s sister)’ (Headland 1997: 157)

*^{n}daka/*saka ‘brother$_2$’ > *saka* ‘older brother (of the same sex as ego)’, ‘great-grandfather’ (Headland 1997: 172)

[*^{n}di-g^{w}a] ‘lake, rain’ > *riwa* ‘lake, rain’ (Headland 1997: 165)

*(ⁿd-)uᵐba ‘brother-in-law’ > *ruba* [ruúba] ‘brother-in-law (husband’s brother, sister’s husband)’ (Headland 1997: 167)

*ᵑga-u (ka[k]) ‘fireplace’ > *oka* [oóka] ‘fire, candle’ (Headland 1997: 146)

*haⁿd- ~ *hat- ‘hand’ > ***át****kara* ‘hand’ (Headland 1997: 75)

*hak ~ *kaʔ ‘stone’ > ***ak****á* [aaká] ‘stone’ (Headland 1997: 63)

*haka ~ *akaʔ ‘name’ > *ahka* ‘language, tongue, voice, soul, spiritual power’ (Headland 1997: 68)

*hap- ‘eight’ > ***áb****ia* ‘eight’ (Headland 1997: 265)

*hapi ~ *apiʔ ‘to take out, pick up’ > ˈ***abi****nro* ‘to take, pick up (coca, coffee, kernels from the floor); learn by heart the song of a dance or other ceremonies, messages; mend (a textile)’ (Headland 1997: 62)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > *umá* ‘skin’ (Headland 1997: 269)

*ka ‘to catch, grasp’ > ***ká****kinro* ‘to catch (for instance, fish, an animal, a person), stop, take out, take a photo’ (Headland 1997: 104)

*ka ‘leaf’ > ***ka****ja* ‘leaf (general term)’ (Headland 1997: 107)

*kãⁿd- ‘bone, strong, hard’ > ***kana****rá*, ***kan****orá* ‘work, strong’ (Headland 1997: 103)

*kaⁿd- ~ *kat- ‘stick, bone, tree’ > ***kár****ara* ‘bone, shinbone’, in Cobaría also ‘lower leg’ (Headland 1997: 105)

*kah-ka ‘mouth’ > ***ka****ka* ‘mouth’ (Headland 1997: 100)

*kap- ‘to sleep’ > ***kám****inro* ‘to sleep’ (Headland 1997: 102)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > ***kahk****a* ‘earth’ (Headland 1997: 102)

*La ‘egg, offspring’ > *aʔ****ná*** ‘egg’ (Headland 1997: 66)

*(taBi-)ⁿda ‘clay, mud’ > *tábira*, *tabra* ‘clay, used to make pots’ (Headland 1997: 189)

*taH(ᵐba) ‘heart, liver, center$_2$’ > ***tán****kara* ‘chest, front (of the body)’ (Headland 1997: 193)

*taukaʔ ‘calabash$_2$’ > *toka* ‘*totuma* (for cup, tree calabash)’ (Headland 1997: 203)

*taʔBa ‘ripe’ > ***tam*** *bihija* ‘yellow’ (Headland 1997: 191)

*uᵐba ‘face, eye, fruit’ > *uba* [uúba] ‘seed (of several fruits); kernel, fruit, eye, star’ (Headland 1997: 206)

*uᵐba ⁿdiʔa ‘tear’ > ***ub riʔa****ra* ‘tear’ (Headland 1997: 258)

*uB(V)(-ta) ‘sand’ > *úmita*, *umta* ‘sand’ (Headland 1997: 213)

*uk(a) ‘nine, ten’ > ***uká****sia* ‘ten’ (Headland 1997: 210)

{*ai, *ii} > {*ej*, *e*}

*aBi ~ aiB 'maize' > ***eb****a* ''maize' (Headland 1997: 132)

*Baiʔ 'sweet potato' > ***beʔ****ʃa*, ***be****ʃa* 'sweet potato' (Headland 1997: 84)

*^{m}bii 'up, sky' > ***bé****bohoa* 'star' (Headland 1997: 252)

*^{n}da^{n}di ~ ^{n}dai^{n}d- / sa^{n}di ~ *sai^{n}d- 'bone, hard' > ***réna****ra* 'leg (from the hip to the foot)', in the Cobaría dialect 'thigh' (Headland 1997: 160)

*^{n}dii(k) 'nose' > ***re****ʃa*, ***re****ha* 'nose' (Headland 1997: 160)

*tai^{n}d- 'six' > ***téra****ja* 'six' (Headland 1997: 199)

*ʦii 'night, dark' > ***ʃéj****kara* 'night' (Headland 1997: 126)

au > *o

*^{m}bau(^{n}d) ~ *kau(^{n}d) 'to holler' > ***kon****inro* 'to ask, pray', in Cobaría also 'to cry' (Headland 1997: 109–10)

*^{m}bau(^{n}d) 'jealous' > *boran abajro* 'jealous, envious' (Headland 1997: 91)

*^{ŋ}ga-u (ka[k]) 'fireplace' > *oka* [oóka] 'fire, candle' (Headland 1997: 146)

*suu^{n}d 'side' > *riʔ a****ʃór****a* 'shore of the river, riverside (scree)' (Headland 1997: 163)

*taukaʔ 'calabash$_2$' > *toka* '*totuma* (for cup, tree calabash)' (Headland 1997: 203)

***i > {*i*, *j*}**

*^{m}bu^{n}di ~ *ku^{n}di ~ *kui^{n}d(i) 'big$_1$' > ***kui****tro* 'much, big, too much, more, enough' (Headland 1997: 121); *bo****kuiʃ****ro* 'cloudy' (ibid.: 90)

*^{n}di 'sun, day' > ***ri****ja* 'day (used when counting)' (Headland 1997: 166)

*^{n}dihk- 'to sow' > ***rihk****inro* 'to sow' (Headland 1997: 164)

*^{n}diʔ 'water, river' > ***riʔ****a* 'water, river' (Headland 1997: 163)

[*^{n}di-g^{w}a] 'lake, rain' > *riwa* 'lake, rain' (Headland 1997: 165)

*^{n}dũ(-i) 'father, uncle, ancestor' > ***rui****ja* 'ancestor' (Headland 1997: 169)

*hakiʔ 'bile, gall, bitter' > ***kiki****tro* 'bitter' (Headland 1997: 156)

*hapi ~ *apiʔ 'to take out, pick up' > ˈ***abi****nro* 'to take, pick up (coca, coffee, kernels from the floor); learn by heart the song of a dance or other ceremonies, messages; mend (a textile)' (Headland 1997: 62)

*ku^{n}di ~ *kui^{n}d 'rodent, large' > ***kuis****taramá*, ***kui****taramá* 'squirrel' (Headland 1997: 237)

*k^{w}ik 'arm, wing, shoulder' > ***kuik****a*, ***kuik****á* [kuíka, kuiká] 'arm' (Headland 1997: 117)

*Li 'to cook$_1$' > ***ani****nro* 'to cook' (Headland 1997: 72)

*si ‘basket, *mochila*’ > ***si**ra* [siíra] a carrying bag used for food (Sp. *mochila*) (Headland 1997: 181)

*(taBi-)^{n}da ‘clay, mud’ > *tábira*, *tabra* ‘clay, used to make pots’ (Headland 1997: 189)

*tu^{n}di ~ *tui^{n}d ‘dark’ > ***tui***a* ‘late afternoon’ (Headland 1997: 204)

*u^{m}ba ^{n}diʔa ‘tear’ > ***ub riʔa**ra* ‘tear’ (Headland 1997: 258)

{*u, *ũ} > *u*

*^{m}bu^{n}d- ~ *ku^{n}d- ‘to turn around’ > ***buri**nro* ~ ***bur**unro* ‘to wrap, fold’ (Headland 1997: 97)

*^{m}bu^{n}di ~ *ku^{n}di ~ *kui^{n}d(i) ‘big$_1$’ > ***kui**tro* ‘much, big, too much, more, enough’ (Headland 1997: 121); *bo**kuiʃ**ro* ‘cloudy’ (ibid.: 90)

*^{m}bũ^{n}d(ũ) ‘ashes’ > ***bur**a* [buúra] ‘ash, snow’ (Headland 1997: 96–7)

*^{n}du(^{n}d) ‘bird, dove’ > ***rús**kara* a small dove (Headland 1997: 171)

*^{n}du^{n}d- ‘seed’ > ***rur**a* ‘seed, descendant (few generations)’ (Headland 1997: 170–1)

*^{n}duk / *suk ‘prick, sting, point’ > ***ruk**sojá* ‘porcupine’ (Headland 1997: 168)

*(^{n}d-)u^{m}ba ‘brother-in-law’ > *ruba* [ruúba] ‘brother-in-law (husband’s brother, sister’s husband)’ (Headland 1997: 167)

*^{n}dũ(-i) ‘father, uncle, ancestor’ > ***rui**ja* ‘ancestor’ (Headland 1997: 169)

*(^{n}du-)ku(^{n}d) ‘bat’ > ***rúkur**a* ‘vampire bat’ (Headland 1997: 168)

*^{n}duʔ ‘armadillo’ > ***ruʔ**rama* (Headland 1997: 169), ***ru**rama* ‘small armadillo’ (ibid.: 171)

*^{n}duʔ ‘tooth’ > ***ruʔ**ra* ‘tooth’ (Headland 1997: 169)

*^{ŋ}gu^{n}da ~ *^{ŋ}g^{w}a^{n}d ‘to watch’ > ***úr**onro* ‘to look out (thieves), watch, to spy, observe, look for’ (Headland 1997: 215)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > *umá* ‘skin’ (Headland 1997: 269)

*ku^{n}da ‘coal, hot coal’ > *kú**kura***, *ku**kra*** ‘coal (of wood or natural); ember’ (Headland 1997: 115)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > ***kuis**taramá*, ***kui**taramá* ‘squirrel’ (Headland 1997: 237)

*kuh ‘to hear$_2$’ > ***ku**kahá*, ***kuh**kahá* ‘ear’ (Headland 1997: 114)

*kuʔ ‘to blow, fly’ > ***kuʔ**winro* ‘to heal (blowing on a person with the feather of a heron), blow, play (a snail, like a trumpet), blow out (e.g., a candle)’ (Headland 1997: 116)

*kuʔ(-Ba) ‘tongue’ > *kuwa* ‘tongue, language’ (Headland 1997: 123)

*pũʔ ‘raptor’ > ***bu**á* ‘sparrowhawk’ (Headland 1997: 93)

*suh(k) ‘to wash’ > ***su**kuinro* ‘to wash, bathe’ (Headland 1997: 186)

*suʔ ‘to peel’ > ***su**kinro* ‘gather (and peel corn), peel’ (Headland 1997: 188)

*tu^{n}di ~ *tui^{n}d ‘dark’ > ***tui****a* ‘late afternoon’ (Headland 1997: 204)

*ʦuH ‘to scratch, rub’ > ***suʔ****kinro* ‘sharpen (a machete)’ (Headland 1997: 187)

*ʦuʔ ‘breast, teat$_2$’ > ***su****tá* ‘teat’ (Headland 1997: 188)

*u^{m}ba ‘face, eye, fruit’ > *uba* [uúba] ‘seed (of several fruits); kernel, fruit, eye, star’ (Headland 1997: 206)

*u^{m}ba ^{n}diʔa ‘tear’ > ***ub riʔa****ra* ‘tear’ (Headland 1997: 258)

*uB(V)(-ta) ‘sand’ > *úmita*, *umta* ‘sand’ (Headland 1997: 213)

*uk(a) ‘nine, ten’ > ***ukás****ia* ‘ten’ (Headland 1997: 210)

2.3.23.2.2 Reflexes of Proto-Chibchan consonants in Tunebo (cf. also Constenla Umaña 1981: 298–301)

***p > {*b*, *m*}**

*hap- ‘eight’ > ***áb****ia* ‘eight’ (Headland 1997: 265)

*hapi ~ *apiʔ ‘to take out, pick up’ > ***ˈabi****nro* ‘to take, pick up (coca, coffee, kernels from the floor); learn by heart the song of a dance or other ceremonies, messages; mend (a textile)’ (Headland 1997: 62)

*kap- ‘to sleep’ > ***kám****inro* ‘to sleep’ (Headland 1997: 102)

*pũʔ ‘raptor’ > ***bu****á* ‘sparrowhawk’ (Headland 1997: 93)

***^{m}b > *b* / #__**

^{m}b > *n* / __*k

***^{m}b > {*b*, *m*} / elsewhere**

*^{m}b- ‘to go$_1$’ > ***bi*** ‘to go’ (Headland 1997: 22, 38)

*^{m}ba ‘chicha$_1$’ > ***ba****kua*, ***ba****kuwa* ‘chicha made of maize or sugar cane’ (Headland 1997: 247)

*^{m}ba- ‘cloud, fog’ > ***bo****kuiʃro* ‘cloudy’ (Headland 1997: 90)

*^{m}bahka(i) ‘four’ > ***baka****ja* ‘four’ (Headland 1997: 78)

*^{m}bau(^{n}d) ‘jealous’ > *boran abajro* ‘jealous, envious’ (Headland 1997: 91)

*^{m}baʔ ‘you’ > ***baʔ****a* ‘you’ (Headland 1997: 80)

*^{m}bãʔ(ĩ) ‘three’ > ***baj****a* ‘three’ (Headland 1997: 279)

*^{m}baʔk ‘to wrap’ > ***bak****onro* [bahkonro] (*sic*) ‘to wrap’ (Headland 1997: 78)

*^{m}bii ‘up, sky’ > ***bé****bohoa* ‘star’ (Headland 1997: 252)

*^{m}bu^{n}d- ~ *ku^{n}d- ‘to turn around’ > ***buri****nro* ~ ***bur****unro* ‘to wrap, fold’ (Headland 1997: 97)

*^{m}bũ^{n}d(ũ) ‘ashes’ > ***bur****a* [buúra] ‘ash, snow’ (Headland 1997: 96–7)

*^{n}da^{m}ba ‘brother$_1$’ > *raba* [raába] ‘sibling of the same sex as ego; cousin (offspring with the same sex as father’s brother or as mother’s sister)’ (Headland 1997: 157)

*(^{n}d-)u^{m}ba ‘brother-in-law’ > *ruba* [ruúba] ‘brother-in-law (husband’s brother, sister’s husband)’ (Headland 1997: 167)

*taH(^{m}ba) ‘heart, liver, center$_2$’ > ***tán****kara* ‘chest, front (of the body)’ (Headland 1997: 193)

*u^{m}ba ‘face, eye, fruit’ > *uba* [uúba] ‘seed (of several fruits); kernel, fruit, eye, star’ (Headland 1997: 206)

*u^{m}ba ^{n}diʔa ‘tear’ > ***ub riʔa****ra* ‘tear’ (Headland 1997: 258)

*uB(V)(-ta) ‘sand’ > *úmita*, *umta* ‘sand’ (Headland 1997: 213)

uʔBa > *uwa

*kuʔ(-Ba) ‘tongue’ > *kuwa* ‘tongue, language’ (Headland 1997: 123)

t > *t

*(taBi-)^{n}da ‘clay, mud’ > *tábira*, *tabra* ‘clay, used to make pots’ (Headland 1997: 189)

*taH(^{m}ba) ‘heart, liver, center$_2$’ > ***tán****kara* ‘chest, front (of the body)’ (Headland 1997: 193)

*tai^{n}d- ‘six’ > ***téra****ja* ‘six’ (Headland 1997: 199)

*taukaʔ ‘calabash$_2$’ > *toka* ‘*totuma* (for cup, tree calabash)’ (Headland 1997: 203)

*taʔBa ‘ripe’ > ***tam*** *bihija* ‘yellow’ (Headland 1997: 191)

*tu^{n}di ~ *tui^{n}d ‘dark’ > ***tui****a* ‘late afternoon’ (Headland 1997: 204)

*uB(V)(-ta) ‘sand’ > *úmita*, *umta* ‘sand’ (Headland 1997: 213)

***^{n}d > {*s*, *ʃ*} / __C**

***^{n}d > {*n*, *r*} / *a(V)__**

***^{n}d > {*s*, *ʃ*, Ø} / *ui__**

***^{n}d > *r* / elsewhere**

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > ***kon****inro* ‘to ask, pray’, in Cobaría also ‘to cry’ (Headland 1997: 109–10)

*^{m}bau(^{n}d) ‘jealous’ > *boran abajro* ‘jealous, envious’ (Headland 1997: 91)

*^{m}bu^{n}d- ~ *ku^{n}d- ‘to turn around’ > ***buri****nro* ~ ***bur****unro* ‘to wrap, fold’ (Headland 1997: 97)

*ᵐbuⁿdi ~ *kuⁿdi ~ *kuiⁿd(i) ‘big$_1$’ > ***kui**tro* ‘much, big, too much, more, enough’ (Headland 1997: 121); *bo**kuiʃ**ro* ‘cloudy’ (ibid.: 90)

*ᵐbũⁿd(ũ) ‘ashes’ > ***bur**a* [buúra] ‘ash, snow’ (Headland 1997: 96–7)

*ⁿda ‘to come’ > ***ra**kinro* ‘to come’ (Headland 1997: 159)

*ⁿdaⁿdi ~ ⁿdaiⁿd- / saⁿdi ~ *saiⁿd- ‘bone, hard’ > ***réna**ra* ‘leg (from the hip to the foot)’, in the Cobaría dialect ‘thigh’ (Headland 1997: 160)

*ⁿdaʔ-u ‘to enter’ > ***rau**winro* ‘to enter, begin’ (Headland 1997: 159)

*ⁿdi ‘sun, day’ > ***ri**ja* ‘day (used when counting)’ (Headland 1997: 166)

*ⁿdihk- ‘to sow’ > ***rihk**inro* ‘to sow’ (Headland 1997: 164)

*ⁿdii(k) ‘nose’ > ***re**ʃa*, ***re**ha* ‘nose’ (Headland 1997: 160)

*ⁿdiʔ ‘water, river’ > ***riʔ**a* ‘water, river’ (Headland 1997: 163)

[*ⁿdi-gʷa] ‘lake, rain’ > *riwa* ‘lake, rain’ (Headland 1997: 165)

*(ⁿd-)uᵐba ‘brother-in-law’ > *ruba* [ruúba] ‘brother-in-law (husband’s brother, sister’s husband)’ (Headland 1997: 167)

*ⁿdu(ⁿd) ‘bird, dove’ > ***rús**kara* a small dove (Headland 1997: 171)

*ⁿduⁿd- ‘seed’ > ***rur**a* ‘seed, descendant (few generations)’ (Headland 1997: 170–1)

*ⁿdũ(-i) ‘father, uncle, ancestor’ > ***rui**ja* ‘ancestor’ (Headland 1997: 169)

*ⁿduk / *suk ‘prick, sting, point’ > ***ruk**sojá* ‘porcupine’ (Headland 1997: 168)

*(ⁿdu-)ku(ⁿd) ‘bat’ > ***rúkur**a* ‘vampire bat’ (Headland 1997: 168)

*ⁿduʔ ‘armadillo’ > ***ruʔ**rama* (Headland 1997: 169), ***ru**rama* ‘small armadillo’ (ibid.: 171)

*ⁿduʔ ‘tooth’ > ***ruʔ**ra* ‘tooth’ (Headland 1997: 169)

*ᵑguⁿda ~ *ᵑgʷaⁿd ‘to watch’ > ***úr**onro* ‘to look out (thieves), watch, to spy, observe, look for’ (Headland 1997: 215)

*kaⁿd- ~ *kat- ‘stick, bone, tree’ > ***kár**ara* ‘bone, shinbone’, in Cobaría also ‘lower leg’ (Headland 1997: 105)

*kãⁿd- ‘bone, strong, hard’ > ***kana**rá*, ***kan**orá* ‘work, strong’ (Headland 1997: 103)

*kuⁿda ‘coal, hot coal’ > *kú**kura***, *ku**kra*** ‘coal (of wood or natural); ember’ (Headland 1997: 115)

*kuⁿdi ~ *kuiⁿd ‘rodent, large’ > ***kuis**taramá*, ***kui**taramá* ‘squirrel’ (Headland 1997: 237)

*suuⁿd ‘side’ > *riʔ a**ʃór**a* ‘shore of the river, riverside (scree)’ (Headland 1997: 163)

*(taBi-)ⁿda ‘clay, mud’ > *tábira*, *tabra* ‘clay, used to make pots’ (Headland 1997: 189)

*taiⁿd- ‘six’ > ***téra**ja* ‘six’ (Headland 1997: 199)

*tuⁿdi ~ *tuiⁿd ‘dark’ > ***tui**a* ‘late afternoon’ (Headland 1997: 204)

*u^{m}ba ^{n}diʔa ‘tear’ > ***ub riʔa****ra* ‘tear’ (Headland 1997: 258)

k > *k

*^{m}bahka(i) ‘four’ > ***baka****ja* ‘four’ (Headland 1997: 78)

*^{m}bau(^{n}d) ~ *kau(^{n}d) ‘to holler’ > ***kon****inro* ‘to ask, pray’, in Cobaría also ‘to cry’ (Headland 1997: 109–10)

*^{m}baʔk ‘to wrap’ > ***bak****onro* [bahkonro] (*sic*) ‘to wrap’ (Headland 1997: 78)

*^{n}daka/*saka ‘brother$_2$’ > *saka* ‘older brother (of the same sex as ego)’, ‘great-grandfather’ (Headland 1997: 172)

*^{n}dihk- ‘to sow’ > ***rihk****inro* ‘to sow’ (Headland 1997: 164)

*^{n}duk / *suk ‘prick, sting, point’ > ***ruk****sojá* ‘porcupine’ (Headland 1997: 168)

*(^{n}du-)ku(^{n}d) ‘bat’ > ***rúkur****a* ‘vampire bat’ (Headland 1997: 168)

*^{ŋ}ga-u (ka[k]) ‘fireplace’ > *oka* [oóka] ‘fire, candle’ (Headland 1997: 146)

*hak ~ *kaʔ ‘stone’ > ***ak****á* [aaká] ‘stone’ (Headland 1997: 63)

*haka ~ *akaʔ ‘name’ > *ahka* ‘language, tongue, voice, soul, spiritual power’ (Headland 1997: 68)

*hakiʔ ‘bile, gall, bitter’ > ***kiki****tro* ‘bitter’ (Headland 1997: 156)

*ka ‘to catch, grasp’ > ***ká****kinro* ‘to catch (for instance, fish, an animal, a person), stop, take out, take a photo’ (Headland 1997: 104)

*ka ‘leaf’ > ***ka****ja* ‘leaf (general term)’ (Headland 1997: 107)

*ka^{n}d- ~ *kat- ‘stick, bone, tree’ > ***kár****ara* ‘bone, shinbone’, in Cobaría also ‘lower leg’ (Headland 1997: 105)

*kã^{n}d- ‘bone, strong, hard’ > ***kana****rá*, ***kan****orá* ‘work, strong’ (Headland 1997: 103)

*kah-ka ‘mouth’ > ***ka****ka* ‘mouth’ (Headland 1997: 100)

*kap- ‘to sleep’ > ***kám****inro* ‘to sleep’ (Headland 1997: 102)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > ***kahk****a* ‘earth’ (Headland 1997: 102)

*ku^{n}da ‘coal, hot coal’ > *kú****kura***, *ku****kra*** ‘coal (of wood or natural); ember’ (Headland 1997: 115)

*ku^{n}di ~ *kui^{n}d ‘rodent, large’ > ***kuis****taramá*, ***kui****taramá* ‘squirrel’ (Headland 1997: 237)

*kuh ‘to hear$_2$’ > ***ku****kahá*, ***kuh****kahá* ‘ear’ (Headland 1997: 114)

*kuʔ ‘to blow, fly’ > ***kuʔ****winro* ‘to heal (blowing on a person with the feather of a heron), blow, play (a snail, like a trumpet), blow out (e.g., a candle)’ (Headland 1997: 116)

*kuʔ(-Ba) ‘tongue’ > *kuwa* ‘tongue, language’ (Headland 1997: 123)

*k^{w}ik ‘arm, wing, shoulder’ > ***kuik****a*, ***kuik****á* [kuíka, kuiká] ‘arm’ (Headland 1997: 117)

*taukaʔ ‘calabash$_2$’ > *toka* ‘*totuma* (for cup, tree calabash)’ (Headland 1997: 203)

*uk(a) ‘nine, ten’ > ***uká****sia* ‘ten’ (Headland 1997: 210)

***ŋg > Ø / #__**

*^{ŋ}ga-u (ka[k]) ‘fireplace’ > *oka* [oóka] ‘fire, candle’ (Headland 1997: 146)

*^{ŋ}gu^{n}da ~ *^{ŋ}g^{w}a^{n}d ‘to watch’ > ***úr****onro* ‘to look out (thieves), watch, to spy, observe, look for’ (Headland 1997: 215)

k^{w} > *ku

*k^{w}ik ‘arm, wing, shoulder’ > ***kuik****a*, ***kuik****á* [kuíka, kuiká] ‘arm’ (Headland 1997: 117)

ŋg^{w} > *w

[*^{n}di-g^{w}a] ‘lake, rain’ > *riwa* ‘lake, rain’ (Headland 1997: 165)

ʔ > *h* / *a__k

***ʔ > {*ʔ*, Ø} / elsewhere**

*Baiʔ ‘sweet potato’ > ***beʔ****fa*, ***be****fa* ‘sweet potato’ (Headland 1997: 84)

*^{m}baʔ ‘you’ > ***baʔ****a* ‘you’ (Headland 1997: 80)

*^{m}baʔk ‘to wrap’ > ***bak****onro* [bahkonro] (*sic*) ‘to wrap’ (Headland 1997: 78)

*^{n}daʔ-u ‘to enter’ > ***rau****winro* ‘to enter, begin’ (Headland 1997: 159)

*^{n}diʔ ‘water, river’ > ***riʔ****a* ‘water, river’ (Headland 1997: 163)

*^{n}duʔ ‘armadillo’ > ***ruʔ****rama* (Headland 1997: 169), ***ru****rama* ‘small armadillo’ (ibid.: 171)

*^{n}duʔ ‘tooth’ > ***ruʔ****ra* ‘tooth’ (Headland 1997: 169)

*kaʔ(k) ‘cosmos (sky, day, time, space, earth, place)’ > ***kahk****a* ‘earth’ (Headland 1997: 102)

*kuʔ ‘to blow, fly’ > ***kuʔ****winro* ‘to heal (blowing on a person with the feather of a heron), blow, play (a snail, like a trumpet), blow out (e.g., a candle)’ (Headland 1997: 116)

*pũʔ ‘raptor’ > ***bu****á* ‘sparrowhawk’ (Headland 1997: 93)

*suʔ ‘to peel’ > ***su****kinro* ‘gather (and peel corn), peel’ (Headland 1997: 188)

*taʔBa ‘ripe’ > ***tam*** *bihija* ‘yellow’ (Headland 1997: 191)

*tsuʔ ‘breast, teat$_2$’ > ***su****tá* ‘teat’ (Headland 1997: 188)

*u^{m}ba ^{n}diʔa ‘tear’ > ***ub riʔa****ra* ‘tear’ (Headland 1997: 258)

***ts > ʃ / __*VV**

***ts > *s* / elsewhere**

*ʦii ‘night, dark’ > ***ʃéj**kara* ‘night’ (Headland 1997: 126)

*ʦuH ‘to scratch, rub’ > ***suʔ**kinro* ‘sharpen (a machete)’ (Headland 1997: 187)

*ʦuʔ ‘breast, teat$_2$’ > ***su**tá* ‘teat’ (Headland 1997: 188)

***s > ʃ / __*VV**

***s > *s* / elsewhere**

*^{n}daka/*saka ‘brother$_2$’ > *saka* ‘older brother (of the same sex as ego)’, ‘great-grandfather’ (Headland 1997: 172)

*suu^{n}d ‘side’ > *riʔ **aʃór**a* ‘shore of the river, riverside (scree)’ (Headland 1997: 163)

*si ‘basket, *mochila*’ > ***si**ra* [siíra] a carrying bag used for food (Sp. *mochila*) (Headland 1997: 181)

*suh(k) ‘to wash’ > ***su**kuinro* ‘to wash, bathe’ (Headland 1997: 186)

*suʔ ‘to peel’ > ***su**kinro* ‘gather (and peel corn), peel’ (Headland 1997: 188)

h > {Ø, *h*} / __*k

***h > Ø / elsewhere**

*^{m}bahka(i) ‘four’ > ***baka**ja* ‘four’ (Headland 1997: 78)

*^{n}dihk- ‘to sow’ > ***rihk**inro* ‘to sow’ (Headland 1997: 164)

*ha^{n}d- ~ *hat- ‘hand’ > ***át**kara* ‘hand’ (Headland 1997: 75)

*hak ~ *kaʔ ‘stone’ > ***ak**á* [aaká] ‘stone’ (Headland 1997: 63)

*haka ~ *akaʔ ‘name’ > *ahka* ‘language, tongue, voice, soul, spiritual power’ (Headland 1997: 68)

*hap- ‘eight’ > ***áb**ia* ‘eight’ (Headland 1997: 265)

*huka ~ *huBa ~ *kuaʔ ‘skin’ > *umá* ‘skin’ (Headland 1997: 269)

*kah-ka ‘mouth’ > ***ka**ka* ‘mouth’ (Headland 1997: 100)

*kuh ‘to hear$_2$’ > ***ku**kahá*, ***kuh**kahá* ‘ear’ (Headland 1997: 114)

*suh(k) ‘to wash’ > ***su**kuinro* ‘to wash, bathe’ (Headland 1997: 186)

#L > *n

*Li ‘to cook$_1$’ > *a**ni**nro* ‘to cook’ (Headland 1997: 72)

*La ‘egg, offspring’ > *aʔ**ná*** ‘egg’ (Headland 1997: 66)

2.4 Proto-Chibchan phonology

The present section discusses the sounds of Proto-Chibchan: phonemes and allophones (subsections 2.4.1 and 2.4.2), phoneme alternation and subphonemic variation (subsection 2.4.3) and Proto-Chibchan phonotactics (subsection 2.4.4). The data presented in these subsections are based on the correspondences observed in the cognate sets shown in subsection 2.2, and on the sound changes discussed in subsection 2.3.

2.4.1 Vowels and suprasegmentals

Subsections 2.4.1.1 to 2.4.1.5 will present and discuss Proto-Chibchan vowels, vowel sequences, vowel nasality and suprasegmental features (stress and tone). These latter phenomena are likewise dealt with in the present subsection 2.4.1 because an interaction between vowel quality and stress or tone seems to exist in some Chibchan languages (see subsection 2.3).

Six to nine vowel phonemes are reconstructed for Proto-Chibchan in the present thesis, on the basis of the data shown in subsections 2.2 and 2.3. Some Proto-Chibchan (near-)minimal pairs are given below. They serve to illustrate the phonemic status of the Proto-Chibchan vowels reconstructed here.

/*a/, /*e/, /*i/, /*o/, /*u/
*a ‘that’
*-e imperfective aspect
*hi ~ *iʔ ‘this’
*-o perfective aspect
*hu ‘house’

/*a/, /*ã/
*^{n}da^{m}ba ‘feline’
*^{n}dã^{m}bã ‘calabash’

(/*i/, /*ĩ/
*ki locative$_2$
*kĩ ‘for, because’)

/*u/, /*ũ/
*hu ‘house’
*hũ ‘pot’

The Proto-Chibchan vowel phonemes reconstructed in this thesis are presented in table 70.

TABLE 70
PROTO-CHIBCHAN VOWELS

	Front	Mid	Back
High	*i, (*ĩ)		*u, *ũ
High-mid	(*e)		(*o, *õ)
Low		*a, *ã	

Nasal *ĩ and the mid vowels *e, *o, and *õ seem to be marginal in Proto-Chibchan. Mid vowels are only tentatively reconstructed here in Proto-Chibchan *-e imperfective aspect, *-o perfective, and *õ 'to do' (see subsection 2.2). These forms are the only cases for which it is impossible to derive modern Chibchan mid vowels from Proto-Chibchan vowel sequences or diphthongs *au or *ai (see below, subsection 2.4.1.1). Indeed, mid vowels are not always very prominent in modern Chibchan languages: In Kogi, for example, mid vowels from Spanish loanwords are regularly realized as high vowels, although the language does have mid vowels – compare Kogi *buraʧu* 'drunk' (< Spanish *borracho*) (Holmer 1953: 315–6). (In fact, Wheeler (1972: 102) observes an "emic three-vowel system" in Kogi.) Likewise, in the domain of mid vowels, Pech *e* and *o* are a bit less frequent than the high vowels *a*, *i*, and *u* (Holt 1999a: 21). Finally, Wheeler (1972: 94) does not find much evidence for a high-mid vowel *e in Proto-Colombian Chibchan.

2.4.1.1 Sequences of distinct vowels

The Proto-Chibchan sequences of distinct vowels *au and *ai gave rise to mid vowels in modern Chibchan languages, for instance in Kuna (Holmer 1947: 28). A similar development was also proposed for Bribri, Kogi (some cases), Kuna, Muisca, and Pech by Holt (1986: 184–5), and, in some single cases, for Bocotá by Levinsohn (1975: 7–9). As sequences of distinct elements, vowel sequences are fairly well preserved in Kogi (Holmer 1953: 321) and, above all, in Rama (see subsection 2.3). Three instances showing the reflexes of Proto-Chibchan *au in Kogi, Rama, and Kuna, are presented in table 71.

TABLE 71
PROTO-CHIBCHAN *au AND ITS REFLEXES IN KOGI, RAMA, AND KUNA

Proto-Chibchan	Kogi	Rama	Kuna
*hau^{m}b ~ *a^{m}buʔ 'to bathe, swim	<**hau̯**ši> 'to bathe (tr.)' (Preuss 1927: 502)		***o**ka* 'to bathe' (Holmer 1952: 101)
*^{m}bau(^{n}d) ~ *kau(^{n}d) 'to holler'	<**kau̯**la> 'to scream, sing (of birds)' (Holmer 1947: 28)	*kaun* 'to call, cry out, holler', *paun* 'to cry' (Grinevald et al. 2002–06)	***kol**a* 'to call, sound, say, awaken, announce' (Holmer 1952: 55–6)
*taukaʔ 'calabash$_2$'	<tau̯ká> 'calabash' (Preuss 1927: 488)		*noka* 'calabash, drinking vessel, cup, *totuma*' (Holmer 1952: 97)

I argue that vowel sequences gave rise to mid-vowels rather than the other way around for the following reasons:

- Similar phenomena are also found in modern Chibchan languages, for instance in Pech, where the contraction of *ai* and *au* can yield mid vowels *e* and *o* (Holt 1999a: 22). Similar observations were made in Kogi (Holmer 1953: 315–6), and Muisca (González de Pérez 1987: 140; Adelaar & Muysken 2004: 97). Finally, Wheeler (1972: 102) states that Tunebo *e* derives from *ai. I found no evidence for the opposite development from mid vowels to diphthongs in any Chibchan language.
- Rama has only three phonemic vowels and seems to have best preserved the Proto-Chibchan vowel sequences (or diphthongs) *au and *ai which gave rise to mid vowels in several other Chibchan languages. The conservative character of Rama, in this respect, might be due to contact with neighboring Misumalpan languages which are also trivocalic. If Pre-Rama had had mid vowels *o and *e, one would expect them to become *u* and *i* in contact with trivocalic Misumalpan languages, and not *au* and *ai*.
- The principle of parsimony makes the reconstruction of a trivocalic system and of changes such as *ai > *e*, *au > *o* more attractive than the reconstruction of a five-vowel system, even if a three-vowel system is less common in typological terms.

2.4.1.2 Sequences of same vowels

Holt (1986: 186) states that there is evidence for phonemic vowel length in Proto-Chibchan, without reconstructing long vowels, however. Indeed, vowel length or sequences of same vowels seem to have existed in Proto-Chibchan, at least for the high vowels *i and *u. I tentatively opt for sequences of same vowels instead of vowel length for reasons of parsimony. These sequences of same vowels are reconstructed on the basis of the observations that some forms in different daughter languages seem to reflect *ii whereas others reflect *ai, and that some reflect *uu, whereas others reflect *au. No pattern emerges that could be interpreted in terms of subgrouping. Compare, for instance Boruca ***kúʔ****skua* 'finger' (Quesada Pacheco & Rojas Chaves 1999: 136) which may derive from *kuuʔ, and the cognate Kogi form /ˈkou/ 'hand' (Ortiz Ricaurte 2000: 769) which descends from *kauʔ. It is postulated that the forms *kuuʔ ~ *kauʔ ultimately derive from Proto-Chibchan *kuuʔ 'hand, finger', given that long or geminated high vowels may easily diphtongize (e.g., in Middle High German *huːs* > Modern High German *haus* 'house', Campbell 2004: 42). I therefore tentatively propose that the geminated vowels represent the original state of affairs in Chibchan as well. A similar process would have applied in the cases of Proto-Chibchan*^{n}dii(k) and *^{n}dai(k) 'nose', ultimately < *^{n}dii(k) 'nose', *^{m}buuʔ and *^{m}bauʔ 'two', ultimately < *^{m}buuʔ 'two', and in several other instances. The inverse processes, *au > *uu* and *ai > *ii* appear less plausible. A similar variation is attested in the Guatuso term for 'mother', which has two allomorphs, |**sau** ~ **su**ː|. The vocative form, among some speakers, is *sau*; in other contexts, the form *suː* is chosen. Some speakers only use the latter allomorph throughout (Constenla Umaña 1998: 25). The possible existence of Proto-Chibchan *aa is yet to be determined.

As shown in subsection 2.4.1.2, several Proto-Chibchan forms contain sequences of distinct vowels *ai or *au, without any traces of alternation with sequences of same vowels. To what extent these sequences of distinct vowels may ultimately also descend from older sequences of same vowels remains to be established.

2.4.1.3 Non-syllabic allophones

In some vowel sequences, the high vowels *i and *u may have had non-syllabic allophones, for instance in Proto-Chibchan *uˈa [*wa] comitative$_2$ (reflected in Cabécar *wa* 'with' (Margery Peña 1989: cviii), Rama -*wa* 'with' (Craig 1989: 72), or in *iˈaʔ [*jaʔ] a root which may tentatively be reconstructed for 'to consume'. (This Proto-Chibchan form seems to be reflected in Térraba ***jɔ́****krɔ* <yócro> 'container for food or drink' (cf. Constenla Umaña 2007: 271) and in Tunebo ***jáʔ****anro* 'to drink' (cf. Headland 1997: 225).) Proto-Chibchan *i and *u may also have been realized as non-syllabic in

the sequences *ai and *au. For reasons of parsimony, I do not reconstruct a particular set of glides /*w/ and /*j/.

2.4.1.4 Nasal vowels

Nasality needs further research, both in modern Chibchan languages and in Proto-Chibchan. I tentatively propose that (1) Proto-Chibchan had nasal vowel phonemes and (2) that vocalic nasality determined the realization of neighboring voiced stops in Proto-Chibchan as nasal or oral, in line with Constenla Umaña (1981: 182–7, 2012: 404; see also below). A similar behavior of vowel and consonant nasality is attested in Bribri, Cabécar, and possibly also in Bocotá (see above, subsection 2.3). In these languages, vowel nasality determines the nasality/orality of a preceding, and sometimes also of a following voiced stop and there are no voiced nasal stop phonemes (Constenla Umaña 1985; Margery Peña 1988; cf. also Chevrier 2017a: 369–73). This may be illustrated here by the case of Cabécar /bũɽ̃ĩ̌tʊ/ 'ashes' which is realized as [mũ̃ɽ̃ĩ̌tʊ] (adapted from Margery Peña 1989: 401).

Sets of nasal vowels as opposed to oral vowels exist in many other Chibchan languages as well, such as Barí (Mogollón Pérez 2000: 721), Pech (Holt 1999a: 17), Kogi (Ortiz Ricaurte 2000: 760), Térraba (Constenla Umaña 2007: 12), Chimila (Malone 2010), and possibly also in Damana (Trillos Amaya 2000: 752). Notwithstanding, as with nasal consonants (see below, subsection 2.4.2.2), the correspondences are not very consistent across Chibchan languages of Central America and Colombia, and Proto-Chibchan vowel nasality is difficult to reconstruct.

The reason why nasality is nevertheless tentatively postulated here as a feature of Proto-Chibchan vowels but not of consonants is not comparative but typological in nature: From an areal perspective, vowel nasality determining the nasality of adjacent voiced stops is an unusual feature of Bribri, Cabécar (cf. Constenla Umaña 1985a) and Bocotá. In Central America, no other language or language group is known to have a similar system (cf. Chevrier 2017a: 144–5). It is therefore difficult to consider language contact and areality as an origin of this phenomenon in Bribri, Cabécar, and Bocotá; also, since it is relatively unusual typologically, it is difficult to consider it an independent, recent innovation in the three languages in question. It is therefore tentatively postulated that vowel nasality determining the nasality of adjacent consonants is a feature that Bribri, Cabécar, and possibly also Bocotá inherited from Proto-Chibchan: independently innovating a system with phonemic vowel nasality but no nasal/oral contrast in consonant phonemes is less plausible than it would be, for other Chibchan languages to innovate contrastive sets of voiced oral and nasal stop phonemes, all the more since neighboring languages (such as Misumalpan and

Chocoan) have similar consonant phonemes, distinguishing between nasal and oral stops.

The reconstruction of Proto-Chibchan vowel nasality is by no means an easy task since there is a lot of variation between the different Chibchan languages. Among the few cases where nasal vowels are tentatively proposed for Proto-Chibchan forms in this thesis are, for instance, *ũ in *kũ 'louse' and *hũ 'pot' (as opposed to *hu 'house'), or *ã in *^{n}dã^{m}bã 'calabash' (as opposed to *^{n}da^{m}ba 'feline'). I tentatively reconstruct Proto-Chibchan vowel nasality in those cases where cognate forms from Rama on the one hand and from Bocotá (and/or Guaymí, in some instances) on the other hand seem to reflect this phenomenon. Both Rama and Bocotá/Guaymí coincide in reflexes of Proto-Chibchan nasality in several cases, and given the geographic distance between both groups, (recent) areal diffusion can be excluded as an explanation for that. Bribri and Cabécar data seem to reflect Proto-Chibchan vowel nasality at least in the case of *ũ. It remains to be established to what extent nasality may have had sound-symbolic functions in Proto-Chibchan, for instance, indicating smallness or an honorific meaning (cf. subsection 3.1.1.1.5 below).

2.4.1.5 Stress and tone

Stress is not easy to reconstruct for Proto-Chibchan, at least on the basis of the data presented in subsections 2.2 and 2.3. Stress in Proto-Chibchan may have been predominantly assigned to the ultimate syllable of a morpheme (Constenla Umaña 1981: 168), given that this is the situation which can be found in several living Chibchan languages belonging to different subgroups. Among the Colombian Chibchan languages with stress mostly assigned to the last syllable of a word are Barí (Mogollón Pérez 2000: 723) and probably also Muisca (Constenla Umaña 1984b: 105). Among the Isthmic languages, stress is found on the ultimate syllable of a morpheme in Bribri (Chevrier 2017a: 93). I found no indications for the hypothesis that stress was distinctive in Proto-Chibchan. It is only tentatively reconstructed in some few forms shown in subsection 2.2.

Whether or not tone existed in Proto-Chibchan remains to be established. Proto-Chibchan tone is not reconstructed here since no regular patterns appears when tone is compared in cognate forms across different Chibchan languages from Central America and northern Colombia. Tone has been observed in the following Chibchan languages: Barí, Boruca, Bribri, Cabécar, Chimila, Pech, Térraba, and Tunebo; lexical tone may possibly be a feature of some dialects of Guaymí. Tone sandhi and grammatical functions of tone need to be investigated in several Chibchan languages, for instance in Térraba and Barí (for details, see subsections 2.3.2 and 2.3.22). Tone in modern Chibchan languages does not necessarily reflect Proto-Chibchan tone: in Bribri for

instance, falling tone reflects a Proto-Chibchan glottal stop or fricative in certain contexts (see subsection 2.3.5 above).

2.4.2 Consonants

This subsection presents and discusses the inventory of Proto-Chibchan consonant phonemes, allophones and some features of Proto-Chibchan consonants in some detail, such as voicing and nasality.

Thirteen consonant phonemes are reconstructed here for Proto-Chibchan, on the basis of the reflexes presented in subsection 2.2 and 2.3. (Near-)minimal pairs illustrating the phonemic status of Proto-Chibchan consonants reconstructed here include the following:

/*p/, /*^{m}b/
*pu ‘young, sprout’
*^{m}bu ‘twist’

/*p/, /*k/
*kuʔ ‘to blow, fly’
*pũʔ ‘raptor’

/*t/, /*^{n}d/
*tai ‘field for cultivation’
*^{n}dai ‘walk’

/*k/, /*^{ŋ}g/
*ki locative$_2$
*^{ŋ}gi ‘firewood’

/*t/, /*k/
*tu^{n}di ~ *tui^{n}d ‘dark’
*ku^{n}di ~ *kui^{n}d ‘rodent, large’

/*^{ŋ}g/, /*^{m}b/
*^{ŋ}gu ‘to take’
*^{m}bu ‘to twist’

/*ŋgu/, /*ŋg^{w}/
*ŋgua ‘to kill’
*ŋg^{w}aʔ ‘child’

/*ku/, /*k^{w}/
*kuaʔ ‘skin’
*k^{w}a ‘seed, fruit’

/*ʦ/, /*s/
*ʦuʔ ‘breast, teat$_2$’
*suʔ ‘to peel’

/*ʦ/, /*t/
*ʦu^{n}di ~ *ʦui^{n}d ‘spoon, ladle’
*tu^{n}di ~ *tui^{n}d ‘dark’

/*s/, /*^{n}d/
*siʔ ‘moon’
*^{n}diʔ ‘water, river’

/*ʔ/, /*h/
*kuʔ ‘to blow, fly’
*kuh ‘seven’

/*L/, /*^{n}d/
*La ‘egg, offspring’
*^{n}da ‘come’

Table 72 shows the Proto-Chibchan consonants reconstructed here. Like the Proto-Chibchan vowels presented in table 70 above, the consonants shown in table 72 are tentatively attributed a phonemic status in the proto-language.

TABLE 72
PROTO-CHIBCHAN CONSONANTS

	Labial	Dental/alveolar	Velar	Labialized velar	Glottal
Voiceless stops	*p	*t	*k	*k^w	*ʔ
Voiced stops	*^{m}b	*^{n}d	*^{ŋ}g	*^{ŋ}g^w	
Affricate		*ʦ			
Fricatives		*s			*h
Liquid		*L			

2.4.2.1 Voiced versus voiceless consonants

The voiceless Proto-Chibchan stops *p, *t, *k, and *k^w have voiced counterparts. Proto-Chibchan *p is only reconstructed in relatively few cases. The main reasons are (1) that an opposition of Proto-Chibchan *p and *^{m}b is only reflected in a few languages, namely in Bribri, Cabécar, Damana, Ika, and, in intervocalic position, in Teribe/Térraba (see subsection 2.3), and (2) that only relatively few cognate sets are available in these cases. One might also hypothesize that in Proto-Chibchan, *p was not a very frequent consonant at all. In modern Chibchan languages at least, if there is a gap in the series of voiceless supra-glottal stops /p/, /t/, /k/ (and aspirated counterparts in the case of Térraba), it always concerns the absence of a voiceless bilabial stop. Lack of /p/ in the series of voiceless supra-glottal stops is attested in Barí, Bocotá, Boruca, Guaymí, and Tunebo; lack of /p^h/ is attested in Térraba. In a similar vein, Wheeler (1972: 99) states that the inclusion of *p into his inventory of Proto-Colombian Chibchan consonants is partly based on "structural patterning", by which he seems to refer to considerations of symmetry of the proto-phoneme inventory.

2.4.2.2 Nasal consonants

Consonant nasality in Proto-Chibchan is one of the topics where the reconstructions of Constenla Umaña (1981, 2012) and Holt (1986) differ. Constenla Umaña (1981: 219, 2012: 404) does not reconstruct distinct sets of voiced nasal and oral stops, whereas Holt (1986: 186) does. At least for Proto-Colombian Chibchan, distinct sets of nasal and

oral stops must probably be reconstructed (Ostler 1997/98). However, I could find no systematic correspondences of oral or nasal stops comparing Colombian and Central American Chibchan languages, and as outlined above, no consonant nasality versus orality distinction is reconstructed for Proto-Chibchan here, in line with Constenla Umaña (2012: 404). Instead, it is tentatively assumed that vowel nasality determined the nasality of adjacent (probably preceding) voiced stops (see above, subsection 2.4.1.4). As Proto-Chibchan voiced stops, one might therefore reconstruct voiced stop archiphonemes. In a similar vein, I tentatively opt for the representation of Proto-Chibchan voiced stops as prenasalized stops *^{m}b, *^{n}d, *^{ŋ}g, and *^{ŋ}g^{w}, a solution which solely aims to represent both their voiced character and their ambiguity in terms of nasality. In modern Chibchan languages, prenasalized stops are found in Bocotá and in Chimila. The velar nasal *ŋ* is mostly restricted to syllable-final position in Chibchan languages, if it occurs at all (cf. Anderson 2005), except in Guaymí, Rama, and, on the phonetic level, Bocotá, where it is also found in word-initial position (see subsection 2.3 above).

2.4.2.3 Labialized velars

Labialized velar consonants are tentatively reconstructed for Proto-Chibchan, in line with Wheeler (1972), Levinsohn (1975) and Holt (1986). This reconstruction is supported by the observation that in some Chibchan languages, such as Bocotá and Kuna, *k^{w} and *^{ŋ}g^{w} have other reflexes than the sequences *ku and *^{ŋ}gu. Bocotá forms that reflect a distinct character of Proto-Chibchan *k^{w} and *ku are shown in table 73. Alternatively, one would have to postulate Proto-Chibchan *ku and a split in Pre-Bocotá. The conditions of this split, however, would still need to be determined.

TABLE 73
DISTINCT REFLEXES OF *k^{w} AND *ku IN BOCOTÁ

Proto-Chibchan	Bocotá
*k^{w}a ‘seed, fruit’	*ga ˈba* ‘fruit’ (Margery Peña 1993: 68)
*k^{w}i ‘turtle’	*go ˈbi* ‘turtle’ (Margery Peña 1993: 70)
*kuaʔ ‘skin’	**/ku**ˈ**a**ɾa ~ **gu**ˈ**a**ɾa/ ‘skin’ (Margery Peña 1996: 19)
*kui^{n}d ‘big$_{1}$’	/kuˈɛɾi ~ guˈɛɾi/ ‘big’ (Margery Peña 1996: 19)

Likewise, a distinction between Proto-Chibchan *ŋgʷ and *ŋgu seems to be reflected in Kuna, as shown in table 74. Alternatively, one might postulate Proto-Chibchan *ŋgu and a split in Pre-Kuna; its conditions, however, would still need to be determined.

TABLE 74
DISTINCT REFLEXES OF *ŋgʷ AND *ŋgu IN KUNA

Proto-Chibchan	Kuna
*ŋgʷ- ‘to know’	***wi**si* ‘to know’ (186)
*ŋgʷã ‘fish’	*ua* ‘fish’ (170)
*ŋgʷa(k) ‘face’	***wa**kala* ‘face, cheek’ (180)
*ŋgʷaʔ ‘child’	***wa**kʷa* ‘grandchild (boy or girl)’ (181)
*ŋgu ‘to take’	***su**a* ‘to take, fetch e.g. water, get’ (146–7)
*ŋgu^{n}daʔ ‘hand, arm’	***sur**kana* ‘arm’ (151)

Kuna data are from Holmer (1952). Page numbers in parentheses.

2.4.2.4 Glottal consonants

Similar to Constenla Umaña (1981: 219, 2012: 404), I reconstruct two distinct Proto-Chibchan glottal consonants, a stop *ʔ and a fricative *h. In several cases, a complementary distribution can be observed involving Proto-Chibchan *ʔ and *h. Whereas *ʔ tends to occur root-finally, *h occurs more frequently in root-initial position, as for example in *a^{m}buʔ ~ *hau^{m}b ‘bathe, swim’. In other cases (only in syllable coda), *ʔ and *h must be seen as distinct phonemes of Proto-Chibchan, since they contrast in a minimal pair like *kuʔ ‘to blow, fly’ versus *kuh ‘seven’, or *tah(-ka) ‘raw’ (e.g., > Boruca *taxká* ‘raw’) versus *taʔBa ‘red, yellow, ripe’ (e.g., > Boruca ***taʔp**ká* ‘to ripen’).

2.4.2.5 Liquids

From an overall typological perspective, it seems logical to postulate the existence of a liquid phoneme (a rhotic or lateral) in Proto-Chibchan, but it is difficult to reconstruct such an element as distinct from *^{n}d (cf. Constenla Umaña 2012: 405), since the outcome of a Proto-Chibchan liquid seems to have merged with the outcome of *^{n}d in intervocalic position in all Chibchan languages. Proto-Chibchan *^{n}d (not meant to represent a phonetic value) is tentatively reconstructed here in intervocalic position throughout, since the merger may already have taken place in Proto-Chibchan. In initial position, liquids are barely attested in modern Chibchan languages. In Kuna and Kogi, a

prothetic vowel is inserted before word-initial *r* or *l* from Spanish loanwords: compare Kuna *irikardo* for Ricardo, and Kogi <alana> 'wool' and <alima> 'file' for Spanish *lana* and Spanish *lima* (Holmer 1947: 40–1). In Bribri, there is a free variation between [ɽ] and [ɻ̀ɽ] in certain cases, for instance in Amubre [ɽír ~ à̠ˈɽír] 'ant' or in Amubre [ɽî ~ ì̠ˈɽî] 'ripe' (Chevrier 2017a: 82). A similar phenomenon might be reflected in the case of Muisca <hycha> 'I' (González de Pérez 1987: 335), which, like Damana *ɾa* 'I' (Trillos Amaya 2000: 753), may derive from Proto-Chibchan *La (compare the corresponding entry in subsection 2.2). The terms *Aramas* and *Arramas* which were used to refer to the Rama people during colonial times (cf. Constenla Umaña 2012: 391) may reflect a similar phenomenon. In line with these latter observations, a Proto-Chibchan liquid phoneme *L [ɾ, ɽ, ɭ, l, r] is tentatively reconstructed only if a similar variation #C ~ #(h)aC (with C as a coronal consonant, most frequently a liquid) is found across different daughter languages. This is illustrated in table 75.

TABLE 75
REFLEXES OF PROTO-CHIBCHAN FORMS CONTAINING A LIQUID, WITH OR WITHOUT A PROTHETIC VOWEL IN MODERN CHIBCHAN LANGUAGES.

Proto-Chibchan	Forms with a reflex of prothetic *(h)a	Forms without a reflex of prothetic *(h)a
*Li 'to cook'	Bocotá **/alí**ɛ/ [ʔalíɛ] 'to cook' (Margery Peña 1996: 12) Tunebo ***ani**nro* 'to cook' (Headland 1997: 72)	Cabécar ***ɽí**ɵ̃ɽ ~ **ɽí**ɵ̃ɽɪ* 'to cook' (Margery Peña 1989: lxxvi) Térraba ***ɭí**k* 'to cook' (Constenla Umaña 2007: 238)
*Laʔ 'smell'	Bribri *aɽaʔ* 'smell (noun)' (Margery Peña 1982: 142) Gualaca <**ana**ocha> 'stink (noun), smelliness' (Pinart 1882: 55)	Guaymí *ɾɔ* 'smell (noun)' (Quesada Pacheco 2008: 88) Térraba /ɭɜ̃/ [Ĩɜ̃ʔ] 'smell (noun)' (Constenla Umaña 2007: 21)
*La 'bee, honey'	Chumulu <χá**la**>, Gualaca <ála> 'honey' (Pinart 1890: 21)	Atanques <**ná**nga> 'wax' (Celedón 1892a: 592)
*La 'egg, offspring'	Rama *a:t* 'egg' (Grinevald et al. 2002–06)	Chimila /ɾaaʔ/ [ɾáːʔ] 'egg' (Malone 2005: 210)

No Proto-Chibchan liquid *L can be reconstructed in those cases where no variation #C ~ #(h)aC (with C as a coronal consonant, most frequently a liquid) is found across different modern Chibchan languages. This is the case, for instance, in the reflexes of Proto-Chibchan *^{n}da^{m}ba 'feline', *^{n}du(^{n}d) 'bird', or *ku^{n}da 'coal, hot coal. The presence or absence of prothetic #(h)a before a reflex of Proto-Chibchan *L does not show any pattern which could be interpreted in terms of subgrouping Chibchan languages.

2.4.3 Phoneme alternation and subphonemic variation

Subphonemic variation and phoneme alternation must have been relatively widespread in Proto-Chibchan. These phenomena are discussed in the present subsection. In several instances, similar cases of alternation and variation can still be observed in present-day Chibchan languages. Different phenomena that need further investigation may have been – and in some cases may still be – at the origin of the alternations/variation in question: suprasegmental features such as tone, or sound symbolism. The present subsection does not deal with grammatically conditioned cases of phoneme alternation, which may also have existed in Proto-Chibchan (compare subsection 3.3.3.3 below). For a possible variation between *uu and *au, and between *ii and *ai in Proto-Chibchan, see subsection 2.4.1.2 above.

2.4.3.1 *^{m}b and *k or *^{ŋ}g

Bilabial and velar stops (most frequently *^{m}b and *k or *^{ŋ}g) may have been in free variation in some cases. This accounts for the reflexes [**b**ūˈrì] 'throat' in Barí and ***kuɻí*** 'neck' in Cabécar (Margery Peña 1989: 413). Similar correspondences of bilabial and velar stops are also found in different dialects of the same language: compare Cabécar ***mãtsũ*** (northern dialects) and ***kotsu*** (southern dialects) 'penis' (Margery Peña 1989: 498). Other cases to be mentioned here are Rama ***kaun*** 'to call, cry out, holler' versus ***p****aun* 'to cry' (cf. Grinevald et al. 2002–06), or Gualaca (Dorasque) <kúri**g**a> (Pinart 1890: 28) versus <curi**b**a> 'lightning, thunderbolt' (Pinart 1882: 53).

From a synchronic perspective, it seems impossible to detect any systematic pattern in the correspondences of velar and bilabial stops across different languages or dialects. Therefore, in these cases, two Proto-Chibchan forms are reconstructed, one with a velar stop, the other with a bilabial stop, for instance in *$^{\mathbf{m}}$**b**u^{n}d- ~ *k**u**^{n}d- 'to turn around'. There is no evidence that would point at the existence of particular proto-segment, for instance, a labialized velar or a glide *w*, from which *^{m}b and *k or *^{ŋ}g would ultimately derive, in the forms in question.

2.4.3.2 *^{n}d and *s

In some cases, there must have been an alternation, in Proto-Chibchan, between *^{n}d and a fricative *s, in which case I reconstruct two different forms for Proto-Chibchan. This alternation in Proto-Chibchan is reflected, for example, in Boruca ***det***kɾa* ‘bone’ (Quesada Pacheco & Rojas Chaves 1999: 153) versus Chumulu (Dorasque) <**s**er> ‘foot’ (Pinart 1890: 26). Whereas the Boruca form reflects Proto-Chibchan *^{n}dai^{n}d, the Chumulu form reflects Proto-Chibchan *sai^{n}d. It is impossible to identify any systematicity or direction of development for these segments, and there is no evidence that would point at the existence of a particular proto-sound (for instance, an affricate) from which *d* and *s* would derive in the forms in question.

Instead, sound-symbolic considerations may be involved in this case of alternation: The fricative in Proto-Chibchan *^{m}bu**s**- ‘young woman’, seems to indicate small size – compare Proto-Chibchan *^{m}bu^{n}**d**i ‘woman (adult)’. Similar cases of sound symbolism might also be at play in Proto-Chibchan *^{n}**d**i ‘sun, day’ versus *s**i**ʔ ‘moon’, and Chumulu <**dár**ki> ‘caiman’ (Pinart 1890: 7), versus Gualaca <**sal**bó> ‘worm’ (ibid.: 16). With respect to Muisca <tyba**r**a> and <tyba**ch**a> both ‘old man’ (cf. González de Pérez 1987: 333), the second form might imply a higher degree of affection or an honorific meaning. Similar explanations may hold for Proto-Chibchan *^{n}**d**aka/*s**s**aka ‘brother$_2$’.

2.4.3.3 *^{n}d and *t

The consonants *^{n}d and *t seem to be in free variation in some instances. Here, I reconstruct two different forms for Proto-Chibchan, one with a voiced, prenasalized stop *^{n}d, the other with a voiceless stop *t. This solution is proposed, for instance, for the locative suffix *^{n}**d**a ~ *t**t**a locative$_1$: Boruca *ta* ‘in’ (Quesada Pacheco & Rojas Chaves 1999: 140) reflects Proto-Chibchan *ta, whereas Cabécar [nã] ‘in’ (Margery Peña 1989: cvi) and Muisca <-na> locative (rest in location, source) (Ostler 1993: 9) reflect Proto-Chibchan *^{n}da. A similar variation between reflexes of *^{n}d and *t may also occur in forms of one and the same Chibchan language: compare Cabécar *ka**ɾ*** ‘tree’ (Margery Peña 1989: 379) and *ka**t**a* northern dialects ‘stick’, southern dialects ‘handle’ (ibid.: 133) ([ɾ] is probably an allophone of /d/ (Chevrier 2017a: 358)); Bocotá *ˈe**d**e*, *ˈe**t**e* ‘full’ (Margery Peña 1993: 67); or Kogi *hi ˈə**ld**ə* ‘full’ (Huber & Reed 1992: 289) versus <i**t**e̯i̯> ‘to fill’ (Ger. *zugießen*) (Preuss 1927: 528).

This variation between *^{n}d and *t is most frequently found if the segment in question is either preceded or followed by the vowel *a. As long as no conditioning factors have been found, *^{n}d ~ *t must be considered a case of variation, not of alternation.

2.4.3.4 *#h and *ʔ#

As mentioned above (subsection 2.4.2.4), the Proto-Chibchan glottal stop *ʔ only occurs in coda position, whereas the glottal fricative *h occurs more frequently in onset position. In several cases, the final glottal stop is reconstructed in variation with initial *h in the Proto-Chibchan form, for instance in *hau^{m}b ~ *a^{m}buʔ 'to bathe, swim', or in *hapi ~ *apiʔ 'blood'.

2.4.4 Phonotactics

The present subsection provides some observations regarding Proto-Chibchan phonotactics. In the reconstructed forms shown in subsection 2.2, some sound combinations or sequences are relatively frequent, such as *ku^{n}d, *bu^{n}d, or *u^{m}ba. The sequence *ku^{n}d, for example, is found in the terms *ku^{n}d- 'to turn around', *ku^{n}da 'coal, hot coal', *ku^{n}di 'to eat', and *ku^{n}di 'large rodent'. Other sequences are not attested at all or only in few cases in Proto-Chibchan forms, such as the sequences *ki^{n}d, *bi^{n}d, *u^{n}da, or *a^{m}bu. The majority of Proto-Chibchan forms has a structure CV, CVV, CVC, CVVC or CVCV. Proto-Chibchan consonant clusters in intervocalic or coda position always involve a glottal consonant *h or *ʔ as in *tah(-ka) 'raw', *taʔBa 'red, yellow, ripe' or *paH^{n}d 'to begin, start, fist'. Alternatively, one may hypothesize that there were preaspirated or laryngalized/glottalized consonants in Proto-Chibchan, in this position (Natacha Chevrier, p.c.).

2.4.4.1 *$CC clusters

On the phonetic level, consonant-clusters in syllable onset may have existed in Proto-Chibchan. Several Chibchan languages have sequences of non-identical consonants which may consist of a stop followed by a liquid (such as *kɾ*, *dɾ*, *bl*, etc.); these consonant clusters occur in morpheme-initial position. In those cases where stress is (or originally was) assigned to the final syllable of a morpheme, syncope is a plausible explanation for this phenomenon. Consonant clusters in syllable onset position involving a liquid are relatively frequent in Bribri, Cabécar, Guaymí, Guatuso, Pech, Rama, and Teribe/Térraba – compare, for example, Cabécar *kaɾ* 'tree, stick' (Margery Peña 1989: 126) and *kɾó* 'tree, foot, leg' (ibid.: 156). Note, however, that consonant clusters in syllable onset only exist on the phonetic level in Bribri (Chevrier 2017a: 112–4) and in Barí. On a phonemic level, clusters like /ml/ seem to exist in Guatuso (cf. Constenla Umaña 1998: 12–3). In general terms, consonant clusters of the *CL*-type in syllable onset are less frequent in the Chibchan languages of Colombia. In Chimila, a Chibchan language from northern Colombia, the sequences *kr* and *br* are attested morpheme-initially, for instance, in the numeral classifier *kra-* relating to ears of corn

(Malone 2004: 188) or in /bɾii/ [^{m}bɾiː] ‘all, every’ (Malone 2005: 210). It is difficult to decide in which cases these consonant clusters are inherited from Proto-Chibchan. Proto-Chibchan stress, tentatively identified on the last syllable of a morpheme, and the evidence from Chibchan languages of Central America and Colombia at least suggest the possibility that a similar alternation or variation between *CV^{n}d(V) and *C^{n}dV forms may also have existed in Proto-Chibchan, in the context of a bilabial or velar stop *C_1, whereas *^{n}d may or may not have been realized as a liquid.

Finally, in Barí (Pache 2014–16), Kogi (Ortiz Ricaurte 2000: 761), Bribri, Cabécar, and Térraba (Constenla Umaña 1981: 211), the first vowel of a bisyllabic form with a *C_1VC_2V* structure may be syncopated if C_1 is *s* or *ʃ* and if C_2 is a stop, for instance in Cabécar *sakɛ́ ~ skɛ́* ‘five’ (ibid.). This kind of syncope with C_1 as a sibilant and C_2 as a stop may likewise have existed in Proto-Chibchan on the phonetic level, given that this language probably had stress on the last syllable of a morpheme.

2.4.4.2 Deletion of *#ha

Deletion of an initial syllable *ha- is tentatively postulated for several Chibchan languages before the voiceless stops *p or *k, in roots with a shape *hapV or *hakV. The original, underlying process may have been syncope: Indeed, Constenla Umaña (1981: 212) observes, in Boruca, Bribri, and Térraba, that “obligatory syncope” of *a occurs between *h and *k. Deletion of *ha- is mostly reflected in languages of Central America, for instance in Bribri, Cabécar, Teribe/Térraba, or Guaymí. An example is Boruca *káʔ* ‘name’ (Quesada Pacheco & Rojas Chaves 1999: 169), derived from Proto-Chibchan *haka ~ *akaʔ ‘name’. A similar case in Damana, a Chibchan language from northern Colombia, is *ˈpe* ‘picked up’ (Trillos Amaya 2000: 751), which derives from Proto-Chibchan *hapi ~ *apiʔ ‘to take out, pick up’. Although in Chibchan languages of Colombia, this development is much less frequently found than in Chibchan languages of Central America, its existence in Chibchan languages of both areas suggests the possibility that it was present in Proto-Chibchan already.

2.4.4.3 Prothetic *(h)a before *#LV

Prothesis of *(h)a before a liquid *#L has been described above, in subsection 2.4.2.5. Given the distribution of this phenomenon across the whole family, it may have existed already in Proto-Chibchan, and it is tentatively postulated here that a variation between *#L and *#(h)aL existed in Proto-Chibchan.

2.4.4.4 *$C_1V_1C_2V_2$ and *$C_1V_1V_2C_2$

In several cases, metathesis or a variation of the type *$C_1V_1C_2V_2$ and *$C_1V_1V_2C_2$, may be postulated, as in Proto-Chibchan *^{m}bu^{n}di ~ *^{m}bui^{n}d ‘woman (adult)’. In most of

these cases, C_2 is a coronal consonant. A similar phenomenon has been described for Pech, where Holt (1999a: 25) observes that a sequence *eɾ* may be realized as *ɾe* after *h*, as in ***kú-h-éɾ**-pi-hɛ̃ʔ* [**kúhre**pɛ̃́ʔ] 'they'll buy it'. The underlying processes still need to be worked out. Similar cases of metathesis with non-coronal consonants have been observed in Guatuso, where /kuki/ and /kuik/ 'hand' (|kuki| 'hand') may alternate in free variation, for instance in **/kuki**: suiɾa/ and **/kuik** sui:ɾa/ 'right hand' (lit.: 'legitimate hand') (Constenla Umaña 1998: 25), or in the case of Kuna *timma* 'alligator' which may be realized as *taim* (Holmer 1952: 152).

2.4.4.5 *uka and *kua/*k^{w}a

In several cases there is a metathesis or variation, in Proto-Chibchan, of the sequences *uka and *kua/*k^{w}a. This has been observed by Constenla Umaña (1981: 215–6) in the case of the 'skin' term, reconstructed here as *huka ~ *huBa ~ *kuaʔ. In a single, modern Chibchan language, this variation is illustrated by Bribri /ukɔ́/ and /kuɔ́/ 'piece', or in /ukɛ̆kĩ/ and /kuɛ̆kĩ/ 'different' (Constenla Umaña 1981: 216). Likewise, in Muisca, the imperfective aspect marker has two allomorphs, <-suca> and <-squa>, the choice of which depends on different characteristics of the root to which it is attached (Adelaar 1995: 177): <-suca> is used with polysyllabic roots such as <guity-suca> 'to whip', or in monosyllabic roots ending in a consonant such as <b-xin-suca> 'to sew' (in the latter case probably in order to avoid complex consonant clusters). Instead, the <-squa> allomorph of the imperfective marker is usually combined with monosyllabic roots ending in a vowel such as <hu-squa> 'to come' and with stems that contain a verbalizing suffix <-go>, such as <muysy-go-squa> 'to dream' (from <muysua> 'dream') (ibid.).

In Rama, the sequence *uka* may be realized as *k^{w}a*, even across morpheme boundaries – compare the example shown in (17):

Rama (Craig 1989: 55)

(17) *ipaŋ=**su*** ***ka**rka*
island=LOC from
'from the island'

Actually, the form in (17) is realized as *ipaŋ**sk^{w}a**rka* (Craig 1989: 55).

2.5 Summary and discussion

Section 2 has presented different aspects of Proto-Chibchan: Proto-Chibchan forms and Chibchan cognate sets (2.2), reflexes of Proto-Chibchan phonemes in the different Chibchan languages (2.3), and Proto-Chibchan phonology (2.4).

2.5.1 Proto-Chibchan phonology

Table 76 summarizes central characteristics of Proto-Chibchan phonology that have been reconstructed above.

TABLE 76
CENTRAL CHARACTERISTICS OF PROTO-CHIBCHAN PHONOLOGY

Vowels	*a, *ã, (*e), *i, (*ĩ), (*o, *õ), *u, *ũ There is little evidence for Proto-Chibchan mid vowels.
Vowel sequences	Proto-Chibchan sequences of same high vowels must have occurred in free variation with sequences of distinct vowels (*ii ~ *ai; *uu ~ *au) during a certain period. They both ultimately derive from sequences of same high vowels. Proto-Chibchan sequences of distinct vowels gave rise to mid vowels in most Chibchan languages.
Stop consonants	There is no evidence for a nasal/oral distinction in Proto-Chibchan voiced stops. There is evidence for a distinction between voiced and voiceless stops in Proto-Chibchan. The voiceless stop *p may have been a rare bird, however. There is some evidence for Proto-Chibchan labialized velar stops: *k^{w} and *$^{ŋ}g^{w}$.

Liquids	Only one liquid consonant could be reconstructed here for Proto-Chibchan, in word-initial position.
Glottal consonants	There are two Proto-Chibchan glottal consonants: *h and *ʔ, sometimes in complementary distribution: The glottal fricative is most frequently found in syllable onset, the glottal stop is only reconstructed in coda position. Both glottal consonants may occur word-internally, before consonants.
Phoneme alternation and variation	There are some cases of variation or alternation in Proto-Chibchan, e.g., between *^{m}b and *k or *^{ŋ}g, or between *^{n}d and *t. The alternation between Proto-Chibchan *^{n}d and *s may be explained by sound symbolism. Similar cases of phoneme alternation or subphonemic variation can be found in some daughter languages.
Phonotactics	Syllable-initial consonant clusters of the CL-style may have existed in Proto-Chibchan (with C as a bilabial or velar stop). Deletion of *#ha- is tentatively postulated for several Chibchan languages before the voiceless stops *p or *k. Prothetic *(h)a was added before a word-initial liquid, and there was probably a variation, in Proto-Chibchan, between *#L and *#(h)aL. Several cases of metathesis are postulated for Proto-Chibchan, for instance of *uka and *kua/*k^{w}a, or of *V^{n}di and *Vi^{n}d. Some of these cases of metathesis may still occur in some daughter languages.

Proto-Chibchan phonology as reconstructed in the present thesis both differs and coincides in several respects with Proto-Chibchan phonology as proposed by Constenla Umaña (1981) and Holt (1986). In the domain of vowels, I mostly concur with Holt's (1986: 186) and Kaufman's (1988: 64) reconstructions in that there is very little evidence for Proto-Chibchan mid vowels. Both authors only reconstruct Proto-Chibchan *a and high vowels. I found evidence for *a, *i, *u (and their nasal counterparts), but very little evidence for mid vowels. Also, I coincide both with Holt (1986: 184–5) and Holmer (1947: 28) in that sequences of distinct vowels in Proto-Chibchan bring about mid vowels in most Chibchan languages. In the domain of vowels, I agree with Constenla Umaña (1981: 182–7, 2012: 404) in the reconstruction of nasal vowels and of vowel nasality as determining the nasality of adjacent (precedent) voiced stops. However, vowel nasality is only tentatively reconstructed here on the basis of Bribri and Cabécar data, and for typological arguments (see above, subsection 2.4.1.4).

Concerning Proto-Chibchan consonants, I mainly concur with Constenla Umaña's (1981: 219, 2012: 404) view. Like Constenla Umaña (1981: 231–6, 2012: 404), I propose the existence of both a glottal stop *ʔ and of a glottal fricative *h. These glottal consonants often, but not always, have a complementary distribution (see above, subsection 2.4.3.4). Also, I tentatively refrain from reconstructing distinct sets of voiced nasal and oral stops for Proto-Chibchan, in line with Constenla Umaña (1981: 219, 2012: 404). Most importantly, the data discussed in the previous subsections corroborate many sound changes postulated by Constenla Umaña (1981, 2012) in the domain of consonants, such as *^{ŋ}g > *s* in Kuna, or *ʦ > t /_*u* in Ika. However, I concur with Holt (1986: 186) when I reconstruct Proto-Chibchan voiced and voiceless labialized velar phonemes *k^{w} and *^{ŋ}g^{w}. Proto-Chibchan labiovelar consonants were also reconstructed by Wheeler (1972: 97) and Kaufman (1988).

New findings presented here mainly concern (1) the existence of sequences of same vowels (*ii and *uu), (2) the existence of only one Proto-Chibchan liquid reconstructable in word-initial position, and (3) alternation and subphonemic variation, for instance of bilabial and velar stops (*^{m}b and *k or *^{ŋ}g), of *^{n}d and *s, of *^{n}d and *t, of *#h and *ʔ#, and of sequences $C_1V_1C_2V_2$ and $C_1V_1V_2C_2$, as in *ku^{n}di ~ *kui^{n}d 'rodent, large'. New findings presented in this thesis also touch upon conditioned sound change in certain Chibchan languages discussed in subsection 2.3, for instance concerning the origin of falling tone in Bribri, or of mid back vowels in Guatuso and Guaymí (see above, subsection 2.3.5).

2.5.2 Proto-Chibchan morphosyntax

It is also possible to reconstruct several grammatical elements and morphosyntactic features of Proto-Chibchan, as shown in subsection 2.2. They are summarized in table 77.

TABLE 77
CENTRAL CHARACTERISTICS OF PROTO-CHIBCHAN MORPHOLOGY

Marking of grammatical relations	Postpositions
Direct-object marking	No element marking a direct object can be reconstructed for Proto-Chibchan.
Agent-disambiguation	Agent-disambiguators or ergative case markers in different Chibchan languages derive from Proto-Chibchan postpositions such as *^{n}di instrumental or *^{n}da ~ *ta locative.
Possession	Two Proto-Chibchan 'relational' prefixes are reconstructed here: *^{n}d(i)- and *ʦ(i)-. A Proto-Chibchan suffix *-i was possibly attached to the head of a possessive construction.
Derivation	Several Proto-Chibchan nominalizing suffixes can be reconstructed: *-^{m}ba, *-^{n}d- and *-ka, but there is no evidence for Proto-Chibchan verbalizing suffixes so far. Other derivational elements are, for instance, *-k^{w}a in *siʔ-k^{w}a 'pale' (cf. *siʔ 'moon') *-a in *^{n}diʔ-a 'liquid' (cf. *^{n}diʔ 'water, river').

Person	Person in Proto-Chibchan was possibly indicated only by unbound forms. There was probably no formal distinction between a first person inclusive and exclusive.
Valency	There are Proto-Chibchan prefixes reducing verbal valency (*a-, *a^{n}d-, and *aʔ-); they may all ultimately derive from a form *a-.
Aspect	Imperfective *-e, perfective *-o. (Together with Proto-Chibchan *õ 'to do, make', these aspect markers are the only instances where mid vowels have been reconstructed here for Proto-Chibchan.)
Information structure	So far, there is not enough comparative evidence to allow a firm reconstruction of topic or focus markers for Proto-Chibchan, although data from Kogi and Boruca suggest their existence.
Negation	It is difficult to reconstruct a Proto-Chibchan negation marker, apart, possibly, from a fossilized element *-^{n}da/*-sa in *^{n}di**^{n}da** / *^{n}di**sa** 'dry' (cf. *^{n}diʔ 'water, river')

In some cases, morphologically complex Proto-Chibchan forms contain an unknown element, for instance *atsa-ka^{n}da 'chicken' with a semantically opaque left-hand element *atsa. Also, there seems to be a suffix *-^{n}d reflected in animal terms of some Chibchan languages – compare Proto-Chibchan *^{n}du-^{m}ba(^{n}d) 'dove', *^{n}du(^{n}d) 'bird, dove', *ku(^{n}d-) 'feline$_2$' – and an element *-k reflected in some Chibchan body-part terms – compare Proto-Chibchan *^{n}dii(k) 'nose', *^{ŋ}g^{w}a(k) 'face', *^{n}duh(k) 'tail$_2$'. Proto-Chibchan terms for 'small' or 'seed' seem to have become plural markers in different Chibchan languages, for instance the reflex of *tsi^{n}d(a) 'small' (in Damana) or of *^{n}du^{n}d- 'seed' (in Kogi, possibly also in Rama).

Some information on Proto-Chibchan syntax may be gleaned from complex forms reconstructed in subsection 2.2. The modifier follows the modified in *^{ŋ}ga-^{n}di(a) 'diarrhea', from *^{ŋ}ga 'excrement' and *^{n}diʔ-a 'liquid', and in *kaʔ(k)-pu^{n}d- 'dust', from *kaʔ(k) 'cosmos (sky, day, time, space, earth, place)' and *pu^{n}d- 'dry'. The element

indicating the possessor precedes the element indicating the possessed entity in Proto-Chibchan *u^{m}ba ^{n}diʔa ‘tear’ – compare *u^{m}ba ‘face, eye, fruit’, and *^{n}diʔ-a ‘liquid’.[67]

2.5.3 Proto-Chibchan lexicon and semantics

Considering Proto-Chibchan lexicon and semantics, several observations can be made in the reconstructed forms presented above. For instance, some basic lexical items of Proto-Chibchan shown in subsection 2.2 are morphologically complex, including body-part terms such as *kah-ka ‘mouth’ (derived from *kah ‘open’) or the basic verb *^{n}daʔ-u ‘to enter’ (derived from *^{n}daʔ to ‘go’). In other cases, non-basic vocabulary items of Proto-Chibchan seem to be monomorphemic, including numeral terms above ‘five’, which is rather unexpected. Proto-Chibchan numeral terms from ‘two’ to ‘nine’ are shown in table 78.

TABLE 78
PROTO-CHIBCHAN NUMERAL TERMS

Proto-Chibchan form	Meaning
*^{m}buuʔ	‘two’
*^{m}bãʔ(ĩ)	‘three’
*^{m}bahka(i)	‘four’
*tai^{n}d-	‘six’
*kuh	‘seven’
*hap-	‘eight’
*uk(a)	‘nine, ten’

In fact, monomorphemic numeral terms above ‘five’ are not frequently reconstructed for Native American proto-languages. At least in South America, I am only aware of Proto-Quechua as a language with ten mostly monomorphemic numeral terms which have an arguable time depth of more than a millennium (cf. Adelaar 2012a: 467).

Furthermore, in the domain of non-basic vocabulary, several straightforward terms for sometimes complex emotions can be reconstructed for Proto-Chibchan: compare *^{m}bau(^{n}d) ‘jealous’, *u^{n}du ‘angry’, and, possibly, a form *^{n}da^{n}du ~ *^{n}dau^{n}d

[67] This order of possessor and possessed is found in all Chibchan languages, with two exceptions: Bocotá and Chimila, which seem to be the only Chibchan languages where the order is possessed–possessor throughout (cf. Quesada 2007: 79, 146).

'afraid, angry, sad' and *^{m}ba^{n}d 'afraid, ashamed' (see above, subsection 2.2). In several daughter languages, terms relating to emotions or mental states, activities or traits are also derived from the term for 'liver', but these constructions do not seem to reconstruct for Proto-Chibchan.[68]

In some cases, it is possible to reconstruct several different Proto-Chibchan roots expressing the same or at least similar meanings. These forms are shown in table 79.

TABLE 79
DIFFERENT PROTO-CHIBCHAN FORMS WITH IDENTICAL OR RELATED MEANINGS

Proto-Chibchan form	Meaning
*^{m}ba^{n}d-	'all$_1$'
*pii-^{n}da	'all$_2$'
*^{n}da(ki^{n}d) ~ *ta(ki^{n}d)	'back$_1$'
*^{ŋ}ga(^{n}da)	'back$_2$'
*la	'bee, honey'
*^{m}bu^{n}d(u)	'bee, wasp'
*kã^{n}d-	'bone, strong, hard'
*^{n}da^{n}di ~ ^{n}dai^{n}d- / sa^{n}di ~ *sai^{n}d-	'bone, hard'
*kãʔ	'breast, teat$_1$'
*ʦuʔ	'breast, teat$_2$'
*^{n}da^{m}ba-	'cold, cold substance'
*ʦãĩh	'cold'
*^{ŋ}g^{w}aʔ	'child'
*ʦu	'child, small'
*Li	'to cook$_1$'
*^{n}du	'to cook$_2$'

[68] In Pech, this may be illustrated by the terms *a-h(a)ɾa-(a)ɾína* 'happy' (= 'his-liver-clean') and *a-h(a)ɾà-nu* 'crazy' (= 'his-liver-bad') (Holt 1999: 78). In Bribri, processes like remembering, understanding, or being sad are referred to by constructions that involve the 'liver' term (cf. Pacchiarotti 2014: 4), and Térraba /wɔɸɾú/ <huofrú> 'faithful, honest' contains the element /wɔ/ <huo> 'liver' (Constenla Umaña 2007: 42). This strategy is paralleled in Sumu (Misumalpan family) where "seat of man's life and emotions" is localized in the liver, according to Brinton (1891b: 4).

*^{n}di^{n}da / *^{n}disa	‘dry’
*pu^{n}d-	‘dry, dust’
*^{m}b-	‘go$_1$’
*^{n}daʔ ~ *taʔ	‘go$_2$’
*kuuʔ	‘hand, finger’
*ha^{n}d- ~ *hat-	‘hand’
*^{ŋ}gu^{n}daʔ	‘hand, arm’
*^{ŋ}gak	‘feather, wing, arm, hand’
*^{m}bih^{n}da ~ *^{m}bihta	‘heart, liver, center$_1$’
*taH(^{m}ba)	‘heart, liver, center$_2$’
*^{ŋ}gaʔ^{n}da ~ *^{ŋ}gaʔta	‘meat, flesh$_1$’
*sih	‘meat, flesh$_2$’
*kah-ka	‘mouth’
*ʦipi	‘mouth, vagina’
*^{n}d(i)-	relational element$_1$
*ʦ(i)- ~ *s(i)	relational element$_2$
*^{n}du^{n}d-	‘seed’
*k^{w}a	‘seed, fruit’
*Bu^{n}d-	‘small$_1$’
*ʦi^{n}d(a)	‘small$_2$’
*^{m}ba^{n}d(a)-	‘tail$_1$’
*^{n}duh(k)	‘tail$_2$’
*^{m}bi-^{n}daʔ	‘throat’
*kuH^{n}di ~ *kuiH^{n}d ~ *BuH^{n}di	‘throat, hole’

The forms in table 79 reconstruct for Proto-Chibchan as a whole, not for particular subgroups. In some cases, it is impossible to identify any semantic differences between them, for instance in the case of *^{m}ba^{n}d(a)- and *^{n}duh(k), both ‘tail’, *kuh and *^{n}d(a)uHk- ~ *^{n}daHku, both ‘to hear’; and *Li and *^{n}du, both ‘to cook’. To what extent some of these apparently synonym forms may have entered Proto-Chibchan more recently, as a result of contact between Proto-Chibchan speakers and speakers of another, hitherto unknown language, remains to be established. In other instances, certain semantic differences seem to exist between the forms shown in table 79: The

term *ʦãĩh ‘cold’ probably referred to temperature of the environment, whereas Proto-Chibchan term *^{n}da^{m}ba- has reflexes in the ‘ice’ and ‘snow’ terms of Colombian Chibchan languages (cf. also Anderson 2014) and may originally have had the meaning ‘cold substance’.

In contrast with same or similar meanings being expressed by etymologically unrelated forms, in other cases, different meanings are encoded by Proto-Chibchan terms which do seem to be etymologically related, as shown in table 80. Several of the Proto-Chibchan terms in question differ along the lines of variation and phoneme alternations described above (see subsection 2.4.3).

TABLE 80
POTENTIALLY RELATED PROTO-CHIBCHAN FORMS

Proto-Chibchan form	Meaning
*ʦuH	‘to scratch, rub’
*suʔ	‘to peel’
*suh(k)	‘wash’
*^{n}di	‘sun, day’
*siʔ	‘moon’
*^{n}duk / *suk	‘prick, sting, point’
*^{n}duk	‘tooth’
*ku^{n}da	‘coal, hot coal’
*^{m}bũ^{n}d(ũ)	‘ashes’
*tah(-ka)	‘raw’
*taʔBa	‘red, yellow, ripe’
*ʦii	‘night, dark’
*ʦãĩh	‘cold’
*^{n}da^{m}ba	‘feline$_{1}$’
*tau	‘dog’

Finally, there seem to be several cases of colexification (one form, several meanings) in the Proto-Chibchan vocabulary, as shown in table 81.[69]

[69] For the concept of colexification, compare François (2008).

TABLE 81
SOME PROTO-CHIBCHAN SEMANTIC EQUATIONS

Proto-Chibchan form	Meaning
*^{m}bu^{n}d(u)	'white, morning'
*ka^{n}d- ~ *kat-	'stick, bone, tree'
*kaʔ(k)	'cosmos (sky, day, time, space, earth, place)'
*La	'egg, offspring'
*sa^{n}da	'wound, trace'
*ʦa	'hair, head'
*ʦipi	'mouth, vagina'
*u^{m}ba	'face, eye, fruit'

In the examples shown in table 81, it is difficult to distinguish primary from secondary meanings, for instance in the case of 'head' and 'hair'. Cases of colexification resembling those postulated for Proto-Chibchan may still exist in present-day Chibchan languages, for instance in the case of Rama *kat* (< *ka^{n}d- ~ *kat- 'stick, bone, tree') which can mean 'leg', 'foot', 'penis', 'handle', 'stick', 'post', 'log', or 'tree' (cf. Grinevald et al. 2002–06). In other instances, we are probably dealing with mere homophony, as, for instance, in the case of *^{m}bii 'only' and *^{m}bii 'up, sky' (see 2.2).

Finally, some Proto-Chibchan cultural vocabulary can be reconstructed (compare also Constenla Umaña 1995: 44–7, 2012: 420). It comprises terms for crops – 'calabash' (two terms), 'field for cultivation', 'maize', 'manioc', 'pumpkin, squash', 'to sow', 'sweet potato', and 'tobacco' – and 'dog' as a domestic animal term. Proto-Chibchan vocabulary referring to cultural techniques or items includes 'basket, *mochila*', '*chicha*', 'to cook', 'net', 'pot', 'rattle', and 'spoon, ladle'. Whether or not a term for 'bow' can be reconstructed for Proto-Chibchan remains to be established. The cultural vocabulary reconstructed here suggests that Proto-Chibchan speakers already had knowledge of several domesticated plants and cultural techniques when their language first split. A similar conclusion has also been proposed by Uhle (1890: 487) and Constenla Umaña (2012: 420). This observation, however, does not help much in dating the first split of Proto-Chibchan: If first pottery or first domesticated plants appear in the Intermediate Area some millennia B.C., this only suggests that the Proto-Chibchan split probably took place at some moment *after* this period, which might also be relatively recent. In fact, the observation that Proto-Chibchan had several monomorphemic numeral terms above five might suggest a relatively recent split of Proto-Chibchan into its different daughter languages.