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Lexical Phonology and Morphology of the Ciyao Verb Stem

by

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This dissertation is dedicated to the memory of my grandmother, Ambota Masuúdi, who had the wisdom of sending me to school and always told me that perseverance was the key to success in any endeavor.

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LIST OF SYMBOLS AND ABBREVIATIONS

/	=	in the enironment of
1pl.	=	1st person singular
1sg.	=	1st person singular
<	=	develops out of
>	=	changes into
A	=	applicative(-il-/-el-)
adj.	=	adjective
→	=	becomes
affix.	=	affixation
assim.	=	assimilation
C₁	=	causative allomorph 1 (-i̧-)
C₂	=	causative allomorph 2 (-is-i̧-/-es-i̧-)
C₃	=	causative allomorph 3 (-aas-i̧-)
CL.	=	compensatory lengthening
cl.	=	noun class
e.o.	=	each other
encl.	=	enclitic
ext.	=	verb extension
fric.	=	frication
Fut.	=	future tense
ideop.	=	ideophone
imbric.	=	imbrication
imp	=	impositive (-ik-/-ek-)
imper.	=	imperative
int	=	intensive (-is-i̧-/-es-i̧-)

interfix.	=	interfixation
interm.	=	intermorph
intr.	=	intransitive
Morph.	=	morphology
n.	=	noun
neg.	=	negation/negative
NELIMO	=	*Núcleo de Estudo de Línguas Moçambicanas* (Research Group of Mozambican Languages, at Eduardo Mondlane University)
Ø	=	deleted segment
OM	=	object marker
OM	=	object marker
onom.	=	onomatopoeia
p.c.	=	personal communication
P_1	=	passive allomorph 1 (-w-)
P1	=	recent past tense (today)
P_2	=	passive allomorph 2 (-ig-w-/-eg-w-)
P2	=	remote past tense (before today)
palat.	=	palatalization
part.	=	participant(s)
perf.	=	perfective
Phon.	=	phonology
pl.	=	plural
poss.	=	possessive
pref.	=	prefix
Pst.	=	past tense
R_1	=	reciprocal allomorph 1 (-an-)
R_2	=	reciprocal allomorph 2 (-aangan-)

R_3	=	reciprocal allomorph 3 (-agan-/-egan-)
Rt	=	root
Rv_1	=	reversive allomorph 1 (-ul-/-ol-)
Rv_2	=	reversive allomorph 2 (-uk-/-ok-)
S	=	stative (-ik-/-ek)
s.o.	=	someone
sbd.	=	somebody
sg.	=	singular
SM	=	subject marker
sth.	=	something
subj.	=	subjunctive
suf.	=	suffix
suffix.	=	suffixation
Tns.	=	tense
tr.	=	transitive
UR	=	underlying representation
v.	=	verb
{ }	=	either one of the elements enclosed in the brackets
—	=	before or after

ACKNOWLEDGMENTS

CHAPTER 1: INTRODUCTION

1.0. Introduction

This study is concerned with the phonology and morphology of the verb stem in Ciyao with both descriptive and theoretical goals. Our purpose is threefold: (i) to unveil the complex morphophonemics that result from the concatenation of morphemes in Ciyao verb, with particular emphasis on the stem; (ii) through the theory of Lexical Phonology and Morphology (Kiparsky 1982, 1985, Mohanan 1982, and others), to provide an understanding of the processes behind the surface forms we hear from Ciyao speakers; (iii) to contribute towards the documentation of Ciyao from "Yaoland"[1].

1.1. The Ciyao Language

Ciyao is a Bantu language spoken in Southern Malawi, Northwestern Mozambique, and Southern Tanzania. It is coded as P.21 in Guthrie's (1967-70) classification along with its closest relatives Cimwera (P.22), spoken in Southern Tanzania, and Shimakonde (P.23), spoken in Northeastern Mozambique and Southern Tanzania. Thousands of Ciyao speaking emigrants, mainly from Malawi, have lived in Zambia and Zimbabwe since the early fifties of this century when the "Federation of Rhodesia and Nyasaland" was formed by Great Britain, the then colonial power. It is not possible to cite the exact number of speakers of this language in each of the countries where it is spoken, but estimates point out that a total of 1,160,000 were reported in 1987 (...) (International Encyclopedia of Linguistics) in Malawi, Mozambique and Tanzania "and possibly in Zimbabwe" (ibid.). Despite the fact that the language is spoken in such a vast territory, and has no solid writing tradition, all dialects are mutually intelligible. Although there are some differences in the lexicon it is "remarkable how few dialectal variations the language shows" (Sanderson 1954:i). Thus, the most accurate way to identify the "dialects" of this language is by the

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[1] More precisely in Chicónóno, home area of the author, in Mozambican Province of Niassa.

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name of the countries where it is spoken, namely, Malawian dialect, Mozambican dialect, and Tanzanian dialect, that ignore the minor phonetic or so variations within each country.

1.2. Database

This dissertation is based on Mozambican variant of Ciyao as spoken in Kuyaawo 'Yaoland', a place which is regarded as the cradle of the Yao people. According to Sanderson (1922:xii) "For pure Yao we must go to Yaoland; our criterion must be the language spoken there". This dissertation is the first comprehensive study to respond to Sanderson's suggestion in that it describes Ciyao as it is spoken at the heart of Yaoland. Ciyao is the mother tongue of the author of this work who also knows the variants spoken in most of the other countries (Malawi, Tanzania, Zimbabwe). Apart from the author's own intuition and his wife's knowledge of the language, this work is based on a Ciyao lexicon based loosely on Sanderson's (1954) *A Dictionary of Yao Dictionary Language* of the Malawian dialect. As part of the CBOLD (Comparative Bantu On-Line Dictionary) Project of the Department of Linguistics of the University of California at Berkeley. We first went through the Sanderson's (1954) dictionary and set up a database on File Maker Pro 2.1™. Then we added tone and vowel length, causatives, applicatives, and perfectives, noun classes, expanded the vocabulary of the Mozambican Ciyao, etc. Sanderson's dictionary has 267 pp. of *Yao-English Vocabulary* and 149 pp. of *Index of English-Ciyao*". Our lexicon (with over 7,800 entries to date of which over 2,700 are verbs) is based on Sanderson's *Yao-English Vocabulary* only. This lexicon is a work in progress and it will continue to be after the completion of this dissertation, even after part of it has been published (not only in Ciyao-English but also in Ciyao-Portuguese) so as to make it available also to Ciyao speaking communities most of whose members cannot access the on-line version. For the purpose of this dissertation, all verbs included in the database are presented in the Appendix A (Dictionary of Ciyao-English Verbs).

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1.3. Previous works

Written work on Ciyao in Western languages (especially, Germany, English, Italian, Portuguese) dates from second half of nineteen century (Krapf 1850; Pott 1850; Koelle 1854; Bleek 1862, 1869; Steere 1871; Mapples 1888; Hetherwick 1889; Torrend 1891; Hynde 1894; Dupeyron 1900 (?); Hetherwick 1902. Some of these works are exclusively on Ciyao, and others include Ciyao and other languages. Most of the authors were missionaries whose studies were limited to bilingual or multilingual word lists and short elementary grammars of the language aimed at teaching other missionaries who ventured into the Yao speaking territory. The publication of the first edition of Ciyao grammar by Sanderson (1916), whose second edition appeared in 1922 marked a new era in Ciyao linguistic studies then followed by Sanderson (1954), Fortune (1959), Viana (1961); Whiteley and Mbaga (1961a, 1961b); Whiteley (1966). There are other non-linguistic works, which we should mention for their historical importance for the language and its speakers, namely, *Yao New Testament* (1907), the first in this language, and Abdallah (1919), Mitchell (1951, 1956), Wegher (1997). The three works of these three authors (Abdallah, Mitchell, Wegher) are all historical/anthropological and only the last includes an twelve page Ciyao-Portuguese "Dicionário". It is known that due to an intense contact between Yaos and Arabs, this language has been written in Arab characters since about XIII-XIV centuries. But we cannot cite any works since no books or articles were found during our research. More recently, many studies have been done on Ciyao, including Hyman and Ngunga (1994, 1997), Mapanje (1983), Mtenje (1989, 1990), Nelimo[2] (1989), Ngunga (1987, 1988, 1997,) and Odden (1994, 1995, 1997). Comparatively, most studies on Ciyao are about either Tanzanian or Malawian dialects. Only a few (Dupeyron 1900?, Viana 1961; Hyman and Ngunga (1994, 1997), Ngunga (1987, 1988, 1997), and NELIMO (1989) are based on the Mozambican dialect, which will also be the object of study in the present work.

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[2] Portuguese acronym for "Núcleo de Estudo de Línguas Moçambicanas" (Mozambican Languages Study Group).

1.4. Theoretical assumptions

In this study we will generally assume the framework of Lexical Phonology and Morphology (Kiparsky 1982, 1985, Mohanan 1982 and others), a model of interleaving between phonology and morphology. This model assumes that phonological rules apply at different levels in the grammar. The number of strata may vary from language to language, but generally there are rules which apply at lexical level, and rules which apply post-lexically. The verb stem, the subject of the present study, will be assumed to be constructed at stratum 1 at which specific phonological rules apply. The application of phonological rules every time a morpheme is added, tells us that such rules are cyclic. There are other rules related with vowel length and the behavior of the different nasals whose analysis involves mora count. We will assume Moraic Theory (Hyman 1985, Hayes 1989, and others) to handle such facts.

1.5. Language overview

As mentioned above, the early work on Ciyao was mostly developed by scholars with no (Bantu) linguistic training which means that some issues such as noun classification and tone, could not be addressed properly. Such issues and syllable structure will be briefly be addressed in the present section which begins with the presentation of segmental inventory and orthography.

1.5.1. Segmental inventory and orthography

The diversity of Ciyao studies by scholars with different linguistic backgrounds has reflected in the orthography adopted in the representation of the sounds of the language. The sound of Ciyao in most are represented according to the (usually convenient) orthographies of the native languages of the respective authors (frequently with no vowel length, and no reference to tone). Since Ciyao consonantal system is not terribly complex, as we will see below, only a handful consonants have been affected by this orthographic

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discrepancy. In our database we use Nelimo's (1989) standard orthography approved for Ciyao. The only observation we must make beforehand is that instead of Nelimo's (1989), which is similar to Sanderson's (1954) /w/ with circumflex for the labiodental approximant [ʋ], we follow Whiteley (1966) in using /v/ for the same phoneme. This orthography follows the standard IPA except that /c/ and /j/ stand for alveopalatal affricates, /v/ stands for labiodental approximant [ʋ], and /ny/ and /n'/ stand for palatal and velar nasals, respectively. In this subsection we will be concerned about the sounds of the language and how they are represented in our study and in our database. For illustration we generally cite verbs without prefixes or the final vowel, usually -a (see chapter 4).

1.5.1.1. The vocalic phonemes

Ciyao has 5 phonemic vowels, namely, /a, e, i, o, u/. Vowel length is distinctive. Therefore, the representation of this contrast in the writing system of the language is of crucial importance as illustrated in the following examples:

(1) Short   Long

-pat-   'get, obtain'   cf.   -paat-   'rub off'

-pet   'decorate'   cf.   -peet-   'sift'

-cim-   'hate'   cf.   -ciim-   'pant'

-som-   'pierce'   cf.   -soom-   'study'

-put-   'erase'   cf.   -puut-   'hit'

In (1) we provide minimal pairs of verb roots where the vowel length, marked by doubling the corresponding short vowel, is the only distinctive feature, in order to show that it is important to represent the distinctive vowel length in the writing system of this language. Let us consider in the next subsection the consonantal phonemes of the language.

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1.5.1.2. The consonantal phonemes

Ciyao has 17 consonantal phonemes: /b c d g j k l m n ny n' p s t v w y/. Each one of these consonantal phonemes is presented in alphabetical order and briefly described below. Illustrative examples are also immediately provided. Thus:

(2)   **/b/**:   voiced bilabial stop, as illustrated in:

    -sabadik-   'be out of order'

    -benyul-   'chip off'

    -bek-   'pay for a song in order to dance or to listen to'

    -bogojol-   'wrench open'

    -jub-   'sign up a time sheet'

(3)   **/c/**:   voiceless alveopalatal affricate [ʧ], as illustrated in:

    -calacaat-   'flit about'

    -cel-   'castrate'

    -sicit-   'slaughter'

    -cop-   'paddle'

    -cuwuk-   'come out of water'

(4)   **/d/**:   voiced alveolar stop, as illustrated in:

    -daandawul-   'lament'

    -delel-   'lament'

    -dil-   'cry'

    -dodolok-   'be greedy'

    -duum-   'shout angrily'

(5)   **/g/**:   voiced velar stop, as in:

    -gopól-   'untie'

    -gey-   'belch'

    -gopol-   'untie'

-gumul-   'destroy'

(6)   /j/ :   voiced alveopalatal affricate [ʤ], as illustrated in:

-jajaval-   'float'

-jejem-   'strain at stool'

-jidim-   'flow slowly'

-jogoj-   'talk noisily'

-juguval-   'blister'

(7)   /k/:   voiceless velar stop, as in:

-kamul-   'float'

-sweekeen-   ' be loose in the socket'

-pikinicisy-   'squeeze in'

-kokov-   'delay'

-kul-   'grow up'

(8)   -/l/:   alveolar lateral liquid, as shown in:

-lal-   'be worn out'

-pelet-   'pass through'

-lil- (Mal.)   'cry'

-log-   'bewitch'

-lul-   'ferment'

(9)   /m/:   bilabial nasal, as illustrated in:

-mal-   'be worn out'

-memen-   'gnaw hard stuff (e.g., bone)'

-mil-   'swallow'

-somol-   'extract'

-mudik-   'illuminate'

(10)   /n/:   alveolar nasal, as illustrated in:

-nakan-   'be fat (e.g., meat)'

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-**n**emek-	'swank'
-**n**in'-	'constrict'
-**non**op-	'be hard'
-**n**un-	'trim'

(11) /**n** y/:   palatal nasal [ɲ], as in::

-**n** yaat-	'be sticky'
-me**n** y-	'be aggressive'
-**n** yikat-	'press down'
-**n**yov-	'get wet'
-**n** yutul-	'jerk'

(12) /**n** '/:   velar nasal [ŋ], as illustrated in:

-**n** 'aand-	'play'
-ko**n** 'oond-	'hammer'
-**n** 'un 'un-	'scrape with teeth'

(13) /p/:   voiceless bilabial stop, as in:

-**p**a-	'give'
-**p**eepeel-	'blow up'
-**p**iikan-	'hear'
-**p**ot-	'wring'
-**p**uut-	'hit'

(14) /s/:   voiceless alveolar fricative, as illustrated in:

-**s** aandul-	'amputate'
-**s** emul-	'boil'
-**s** im-	'extinguish'
-**s** ol-	'dig'
-**p**as ul-	'destroy'

(15) /t/:   voiceless alveolar stop. Examples:

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-ta-	'name (a child)'
-telek-	'kook'
-tiil-	'run away'
-tool-	'take'
-tutum-	'froth up'

(16) /v/:   voiced labiodental approximant [ʋ]. Examples:

-va-	'be'
-veeveel-	'be thin (e.g., material)'
-sivil-	'obstruct'

(17) /w/:   labial-velar glide, as shown in:

-wu-	'die'
-weeweet-	'rave as in nightmare'
-wiidisy-	'repeat'
-powol-	'bore through'
-wut-	'pull'

(18) /y/:   palatal glide, as in:

-yaataangul-	'collapse'
-yeeyeek-	'tie temporarily'
-yik-	'arrive'
-yoond-	'suck'
-yuuy-	'swing'

Let us consider the noun structure next.

1.5.2.   Notes on noun classes

Although this work is about Ciyao verb stem, in this section we briefly provide information about noun structure because nouns will frequently appear in this study, in

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which cases, reference to the noun classes will be necessary. As in all Bantu languages,
Ciyao nouns are distributed in classes according to their prefixes or agreement pattern, as
illustrated in Table 1:

Table 1: Noun classes.

Cls.	Noun Prefix		Examples
	Ciyao	PB[3]	
1	mu- mw- N.-	mu-[4]	muu-ndu jú-pi-il-e 'the person got burnt' mw-aanáce jú-pi-il-e 'the child got burnt' m-palú jú-pi-il-e 'the thief got burnt' n.-jíinga ju-pi-il-e 'the fool person got burnt'
2	va- a-	ba-	vaa-ndu á-pi-il-e 'the people got burnt' a-palú á-pi-il-e 'the thieves got burnt'
3	mu- mw- N.-	mu-	mu-si wú-pi-il-e 'the village got burnt' mw-éésí wú-pi-il-e 'the moon got burnt' m-puunga wú-pi-il-e 'the rice got burnt' m.-búdiidí wu-pi-il-e 'the shade got burnt' n.-duduudu wu-pi-il-e 'the motorbike got burnt' n.-goombá wu-pi-il-e 'the beam got burnt'
4	mi- my	mi-	mi-si jí-pi-il-e 'the villages got burnt' mi-goombá ji-pi-il-e 'the beams got burnt' my-éésí jí-pi-il-e 'the moons got burnt'
5	di- dii- dy-	di-j-	di-véélé dí-pi-il-e 'the breast got burnt' dii-jela dí-pi-il-e 'the hoe got burnt' dy-oolá di-pi-il-e 'the frog got burnt'
6	ma-	ma-	ma-véélé gá-pi-il-e 'the breasts got burnt' ma-jela gá-pi-il-e 'the hoes got burnt'
7	ci- c-	ki-	ci-ló cí-pi-il-e 'the night got burnt' c-áálá cí-pi-il-e 'the finger got burnt'
8	yi- y-	bi-	yi-ló yí-pi-il-e 'the nights got burnt' y-áálá yí-pi-il-e 'the fingers got burnt'
9	N- Ø	n-	n-juva jí-pi-il-e 'the dove got burnt' Ø-wuuti jí-pi-il-e 'the gun got burnt'
10	N- Ø	n-	m-balati (pl. of cl.11) sí-pi-il-e 'the ribs got burnt' n-gomó (sg. of cl.11) sí-pi-il-e 'the lips got burnt' n-juva (pl. of cl.9) sí-pi-il-e 'the doves got burnt' Ø-wuuti (pl. of cl.9) sí-pi-il-e 'the guns got burnt'
11	lu- lw-	du-	lu-valati lú-pi-il-e 'the rib got burnt' lu-wuudí lú-pi-il-e 'the white hair got burnt' lw-aawú lu-pi-il-e 'the net got burnt'
12	ka-	ka-	ka-valati ká-pi-il-e 'the small rib got burnt'
13	tu-	tu-	tu-valati tú-pi-l-e 'the small ribs got burnt'
14	wu-	bu-	wu-lávídi wu-pi-il-e 'the flea got burnt'
15	ku-	ku-	ku-dyá kú-pi-il-e 'the eating got burnt'
16	pa-	pa-	pa-ntwé pá-pi-il-e 'the top of a head got burnt'
17	ku-	ku-	ku-ntwé kú-pi-il-e 'the head-rest got burnt'
18	mu- N.-	mu-	mu-ntwé mú-saléel-e 'in the path is clean' mw-iitala mú-saléel-e 'in the path is clean' n.-nyuumbá mu-saléel-e 'inside the house is clean'

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[3] PB = Proto-Bantu.

[4] In many languages the noun prefix is preceded by a morpheme known as the "augment", a pronominal prefix of the structure CV-. In many contemporary Bantu languages the initial "C" of the augment is dropped, thereby creating a VCV- prefix sequence, as in language names such as I-si-zulu, O-lu-ganda, I-ci-bemba, where the initial vowels are augments and the CV- syllables are noun class prefixes. In Ciyao we only have the prefix except in class 5 (Ngunga 1997).

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Table 1 presents Ciyao noun classes with some illustrative examples. As is observed, some nouns belonging to different classes can have identical prefixes, a fact which weakens the use of the prefix as a reliable criterion for classifying nouns into classes. Because of this problem, classification of the nouns into classes is generally based on their agreement patterns as shown in Table 2.

Table 2: Agreement markers per noun class.

Cls.	Subject		Adj.	Enumerative		Dem.	Object	Poss.
	Ciyao	PB	Ciyao	Ciyao	PB	Ciyao	Ciyao	Ciyao
1	ju-	a-	ju-	ju-	(u-)	-ju	-m'-	jw-
2	(v)a-	ba-	(v)a-	va-	ba-	-va	-a-	v-
3	wu-	gu-	wu-	wu-	(u-)	-wu	-wu-	w-
4	ji-	gi-	ji-	ji-	(i-)	-ji	-ji-	j-
5	di-	di-	di-	di-	į-	-di	-di-	dy-
6	ga-	ga-	ga-	ga-	ma-	-ga	-ga-	g-
7	ci-	ki-	ci-	ci-	ki-	-ci	-ci-	c-
8	vi-	bį-	vi-	vi-	bį-	-vi	-vi-	y-
9	ji-	ji-	ji-	ji-	(i-)	-ji	-ji-	j-
10	si-	jį-	si-	si-	į-	-si	-si-	sy-
11	lu-	du-	lu-	lu-	du-	-lu	lu-	lw-
12	ka-	ka-	ka-	ka-	ka	-ka	ka-	k-
13	tu-	tu-	tu-	tu-	tu	-tu	tu-	tw-
14	wu-	bu-	wu-	wu-	bu-	-wu	wu-	w-
15	ku-	ku-	ku-	ku-	ku-	-ku	ku	kw-
16	pa-	pa-	pa-	pa-	pa-	-pa	pa-	p-
17	ku-	ku-	ku-	ku-	ku-	-ku	ku-	kw-
18	mu-	mu-	mu-	mu-	mu-	-mu	mu-	mw-

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In this study of the verb stem, we will have occasion to consider noun classes only in connection with the subject marker (SM) and object marker (OM).

1.5.3.   Notes on syllable structure

As in other Bantu languages, the basic syllable structure of Ciyao words is CV, where "C" may be a single consonant, a glide, a cluster (nasal plus oral consonants, any consonant plus a glide, or a nasal plus an oral consonant plus a glide) as illustrated in the following examples:

(19)a. <u>CV</u>

-pe.la	'be tired'
-wo.na	'see'
-yi.ka	'arrive'
-pi.ku.la	'turn over'
-soo.me.la	'read for'
-ka.la.mu.ka	'be cunning; be clever'

<u>CVV</u>

-taa.jii.la	'lay an egg'
-pee.pee.la	'blow'
-yee.yee.ka	'tie temporarily'
-tii.tii.la	'be sleepy'
-wuu-wuu-la	'groan'

b. <u>CGV</u>

-wu.mya	'remove'
-pyo.ko.nyo.la	'sprain'
-pwa.ta.ta	'lie flat'
-na.mwi.ta	'speak confusedly'

<u>CGVV</u>

-tyaa.la	'slip'
-twee.le.la	'pound for'
-tyoo.ka	'leave (intr.)'
-syuu.ka	'resuscitate'

e. <u>NCV(V)</u>

-mbwa.ndu.ku.la	'open out'
-nju.nju.ndu.la	'cut into two parts'
-nguu.mba	'deceive'
-ndii.ngwii.na	'shake'

<u>NCGV(V)</u>

-mbwa.ndu.ku.la	'open out'
-ndii.ngwii.na	'shake'
-ngwaa.su.la	'chip off'
-ngwe.ngwe.lu.ka	'stagger'

In (19), where the dot (.) indicates syllable boundary, we have included the inflectional final vowel to show that the root final consonant is always an onset of the syllable whose nucleus in the inflectional final vowel.

Open syllable may be monomoraic or bimoraic, an opposition that is captured by the following representation:

$$(20)\text{a.} \quad \begin{matrix} \sigma \\ | \\ \mu \end{matrix} \qquad \text{b.} \quad \begin{matrix} \sigma \\ \diagup \diagdown \\ \mu \;\; \mu \end{matrix}$$

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There are no trimoraic syllables in Ciyao, but among the monomoraic syllables we find syllables that lack an onset or vocalic nucleus, as shown in the following examples:

(21)a. V

      i .yi   'this way'

      i .yoó.yo   'that same way'

      u .né   'I'

      u .wé   'we'

      a .súu.ngu 'white people'

      a .ka.yí.di 'prisoners'

  b. m .be.le.ce '(that) you carry on the back'

      m .pi.te   '(that) you pass'

      m .mi.le   '(that) you swallow'

      n .di.le   '(that) you cry'

      n .tii.le   '(that) you run away'

      n .ce.le   '(that) you castrate'

      n .jaa.ngu.ye '(that) you hurry up'

      n .naa.ve   '(that) you wash your hands'

      n .si.ga.le '(that) you remain'

As seen in (21a), /i/, /u/ and /a/ are the only vowels that can stand on their own as syllables in the contexts illustrated in (21). Onsetless bimoraic syllables are ruled out by the constraint represented in (22):

(22)   * σ[VV

The constraint in (22) shows that no onsetless bimoraic syllable is allowed.

The only syllable lacking vocalic nucleus in Ciyao is the syllabic nasal derives historically derived from *mu-, with which it is in complementary distribution in contemporary Ciyao. The syllabic nasal is orthographically represented by "m" before bilabial consonants and by "n" before alveolar, palatal, or velar consonants. In each case it is produced in the same place of articulation as the following consonant. Note also that in our transcription the syllabic nasal is followed by a dot (.) when the following consonant is voiced or without a dot (.) when the following consonant is voiceless or another nasal. We use a dot before voiced consonants only because there is a contrastive prenasalization in Ciyao which, on the surface, is limited to sequences of nasal plus voiced oral consonants. Thus, a representation of the syllabic nasal without the dot could produce ambiguous results, as shown in the following examples:

(23)a.　m.be.le.ce　　'(that) you carry on the back'

　　　　n.di.le　　　'(that) you cry'

cf.

　b.　mbe.le.ce　　'(that) I hand over'

　　　ndi.le　　　　'(that) I cry'

The nasal in (23a), which is syllabic, is the 2nd person subject marker. The nasal in (23b), not syllabic, is the 1sg. subject marker.

Unlike the three vowels (/i, u, a/) which stands on their own as onsetless syllables only in word-initial position, the syllabic nasal can also be found word internally as in the following examples:

(24)　tu.m.be.le.ce　　'(that) we carry you on the back'

　　　tu.m.pi.te　　　'(that) we pass you'

　　　tu.m.mi.le　　　'(that) we swallow you'

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tu.n.di.le	'(that) we cry at you'
tu.n.tii.le	'(that) we run away from you'
tu.n.ce.le	'(that) we castrate you'
tu.n.jaa.ngu.ye	'(that) we make you hurry up'
tu.n.naa.ye	'(that) we wash your hands'
tu.n.si.ga.sye	'(that) we make you remain'

It should be mentioned that the syllabic nasal cannot appear morpheme internally. Further, just like onsetless syllables, a syllabic nasal cannot be bimoraic. More details on the syllabic nasal will be discussed later in chapter 3. We now consider some aspects of Ciyao tone.

1.5.4.   Notes on tone

This study is limited to segmental phonology. However, since Ciyao is a tonal language we will provide some brief notes on Ciyao tone without getting into a detailed description of its tonal system. Although Ciyao is said to have five phonetic tones, namely, high (H), low (L), downstep (!H), rising (LH) and falling (HL) (Whiteley, 1966:7), phonemically there just two: H(igh) and L(ow) (Hyman and Ngunga 1994, Meeussen 1971, Mtenje 1990, Mtenje and Odden 1993, Odden 1994, 1997, Whiteley 1966), as shown in the following examples, where only the H tone is marked with an acute accent (´) over the vowels, and L is not graphically represented. Vowels with no accent must be considered to have low tone by default.

(25)a.	-CVC-a		c.	-CVVC-a	
	ku-pál-á	'import'		ku-lwáál-á	'be ill'
	ku-sék-á	'laugh'		ku-lééng-á	'cut into strips'
	ku-sím-á	'extinguish'		ku-yúúmb-á	'swell'

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ku-pól-á	'cool down'		ku-póónd-á	'knead'
ku-wúvá	'begin to ripe (corn)'		ku-lúúng-á	'make'

b. -CVCVC-a   d.   -CVCVCVC-a

ku-sámíl-a	'load a gun'		ku-kálámuk-a	'be cunning'
ku-télék-a	'cook'		ku-sélélek-a	'slide'
ku-vínúk-a	'go over an obstacle'		ku-típítil-a	'have a clean skin'
ku-lókót-a	'pick up'		ku-kósómol-a	'cough'
ku-wúdík-a	'explode'		ku-wúlúkut-a	'fidget'

There is no lexical tonal contrast on verb roots. In Ciyao, verb tone is assigned by the inflectional morphology (tense/aspect system). (25) shows the effects of a process by which H is assigned to the stem-initial first mora and then spreads rightwards, as represented in (26):

(26)   High tone spreading (HTS) (Hyman and Ngunga 1994, Mtenje 1990, Mtenje and Odden 1993, Odden 1994, 1997):   [μ   μ

                                                                          H

Since tone is not the focus of the present study, for further information on the Ciyao tone system see Hyman and Ngunga (1994), Meeussen (1971), Mtenje (1990), Mtenje and Odden (1993), Odden (1994, 1997), and Whiteley (1966).

Unlike verb roots, in which there is no H and L contrast, in nouns there is H and L contrast. Let us briefly consider the tonal patterns of some disyllabic noun stems followed by possessives which show us whether or not the some of the toneless nouns have a floating H.

(27)a. -LL

     wuuti jaangu (cl.9)   'my gun'

     m.-piila waangu (cl.3)   'my ball'

     ci-googo caangu (cl.7)   'my cap'

     n.-siinga waangu (cl.3)   'my cannon'

  b. -LL(H)

     dii-tupi dyáangu (cl.5)   'my weight'

     dii-jela dyáangu (cl.5)   'my hoe'

     wu-sito wáangu (cl.14)   my weight'

     ma-cidi gáangu (cl.6)   'my strength'

  c. -LH

     dii-janí dyáangu (cl.5)   'my baboon'

     toondé jáangu (cl.9)   'my billy goat'

     dii-sotó dyáangu (cl.5)   'my hole'

     ci-vigá cáangu (cl.7)   'my cooking pot'

  d. -HL

     ci-tútú caangu (cl.7)   'my ash-pit

     n.-sákú waangu (cl.3)   'my bag'

     ci-ságwá caangu (cl.7)   'my cluster "and") of bananas"

     ci-wúví caangu (cl.7)   'my cupping horn'

     ci-sópó caangu   'my fish-hook'

  e. -HH

     dii-kálá dyáangu (cl.5)   'my charcoal'

     lu-kátá lwáangu (cl.11)   'my binder of bark-cloth'

     ci-símú cáangu (cl.7)   'my buckle'

     n-kóló wáangu (cl.3)   'my female (animal)'

     wu-vígó wáangu (cl.14)   'my game-fence'

As seen in (27), there are five tone patterns for disyllabic stems, namely, LL (27a), with LL(H)—where the H is attached to first mora of the next word if there is any—(27b), LH (27c), HL (27d), and HH (27e). One common characteristic of the H tone in (27c-e) is that it obligatorily spreads onto the next mora within or outside the stem regardless of what follows. In other words, in no instance of the 821 nouns with H on the final mora does the final H not spread, which means that the general HTS rule which operates on verbs also operates on nouns. With monosyllabic, trisyllabic and longer noun stems, the situation gets more complicated and cannot be covered in a brief statement like this (but see references cited).

1.6. Organization of the study

This study is organized as follows. Chapter 2 deals with vowel processes and Chapter 3 which discusses consonantal processes. The next four chapters constitute the core of the study. Chapter 4 presents Ciyao verb structure, Chapter 5 investigates the morphology of the verb stem with reference to the verb to verb derivation. Chapter 6 analyzes the combination and order of verb derivational suffixes (verb extensions), and Chapter 7 looks into the inflectional stem with particular emphasis on the suffixation of the perfect marker. Finally, chapter 8 presents the summary of study. In the end the study presents three appendices: Appendix A (Derived verbs from other parts of speech); and Appendix B (Lexicon of 2,838 Ciyao-English verbs).

2.0. Introduction

The present chapter discusses the phonological processes in which vowels are involved. As mentioned in chapter 1, Ciyao has five vowels, all which show a short/long opposition, as shown in Table 1:

Table 1: Vowel phonemes

Height	Ciyao						Proto-Bantu		
+ATR	i		u	ü		uu	i̧		u̧
-ATR	—		—	—		—	i		u
Mid	e		o	ee		oo	e		o
Low		a			aa			a	

As seen in Table 1, Ciyao has reduced the seven vowel system of Proto-Bantu to five by merging the +ATR and -ATR distinction into +ATR only. The following examples, which were given in the preceding chapter and are repeated here for convenience, provide minimal pairs that illustrate the difference between the underlying short and underlying long vowels:

(1)   Short   Long

       -pat-   'get, obtain'   cf.   -paat-   'rub off'

       -pet-   'decorate'   cf.   -peet-   'sift'

       -cim-   'hate'   cf.   -ciim-   'pant'

       -som-   'pierce'   cf.   -soom-   'study'

       -put-   'erase'   cf.   -puut-   'hit'

This underlying length contrast can be captured by the following moraic representations:

(2)   a.
```
        σ                      σ
        |                     / \
        μ                    μ   μ
        |                     \ /
        V                      V
```
                            b.
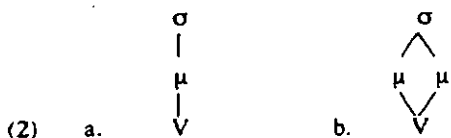
Note that (2) represents morpheme internal length opposition. Within a word any vowel found in morpheme-initial position is long, as shown in the following examples:

(3)   -aawul-   'go'

       -eend-   'walk'

       -iim-   'stop'

       -oog-   'have a bath'

       -uuv-   'hide (intr.)'

Table 2 presents the number of verb stems beginning with each (long) vowel (from the database):

Table 2: Number of verb stems beginning with each vowel.

Vowels	aa	ee	ü	oo	uu	Total
# verb stems	49	23	44	31	9	156

In contrast with the lack of short vowels in root-initial position, there are no long vowels (derived or underlying) in word initial position. In the next sections we will provide detail on what happens when the morphology or syntax create environment that could yield long vowel word initially.

The present chapter is divided into three sections. In section 1 we investigate the various sources of derived vowel length in Ciyao. In section 2 we discuss vowel harmony with emphasis on the relationships between vowel of the verb root and the vowels of the suffixes attached to it. Finally, in section we summarize the study on vowel processes in Ciyao.

2.1. Derived vowel length

In the present section we show that apart from the aforementioned underlying vowel length opposition, vowel length can also derive from various sources such as a following vowel, an adjacent moraic nasal, a following enclitic or a preceding glide. Ciyao does not tolerate sequences of vowels. Whenever the morphology or syntax creates conditions for VV concatenation, the phonology takes the responsibility to resolve the hiatus applying one of the following rules: fusion, gliding and deletion. Let us consider each one of these sources separately.

2.1.1. Fusion

In this subsection we consider two types fusion. First, the process which takes place when, across morphemes (word-internally or across words), two identical vowels follow each other and form one single vowel of the same quality as the inputs. Second, the phenomenon which takes place when two different vowels, the first of which is low, are found in sequence and fuse to form a single vowel whose quality is different from the quality of the input vowels. In both cases the resulting vowel is bimoraic as a result of compensatory lengthening.

When morphological or syntactic rules determine the occurrence of two identical vowels next to one another, the two vowels fuse and a single long vowel is produced, as illustrated in (4):

(4)i. Across morphemes[5]

    a. [i+i → ii]:   díí.ná[6] (cl.5)   /di+íná/   'name'

                        díí.só (cl.5)   /di+ísó/   'eye'

    b. [u+u → uu]:   muú.nyu (cl.3)   /mu+únyu/   'graphite used in pottery'

    c. [e+e → ee]:   -cee.l-e   /-ke+el-e/   'it has dawned'

                        -nyee.l-e   /-nye+el-e/   'defecated'

    d. ([o+o → oo])[7]

    e. [a+a → aa]:   kaa.náce (cl.12)   /ka+anáke/   'small child'

                        vaá.di (cl.2)   /va+ádi/   'initiates during the ceremony'

ii. Across words[8]

    a. [i+i → ii]:   -jíimíí.yoóyo   /-jiim-í iyoóyo/   'stopped the same way'

    b. [u+u → uu]:   m-buut-il-e muundúú.né   /muundú ú né/   'I hit a person'

                        tu-suum-il-e kanúunduu.wé   /kanúundu uwéé/   'we bought cigarettes'

    c. ([e+e → ee])

    d. ([o+o → oo])

    e. [a+a → aa]:   -sákáá.yice   /-sáká áyike/   'want them to come'

                        -dímáá.pa   /-dimá ápa/   'cultivate here'

As seen in (4i.d), there are no examples of sequences of two identical mid back vowels across morphemes, since no internal morpheme ends in a mid-back vowel. In (4ii.d) we see that there are no identical mid vowels across words, since no mid vowels are found in word-initial position in this language. In those cases where we find sequences of two identical vowels the result is always one long (bimoraic) vowel. The representation of the surface long vowel resulting from the concatenation of identical vowels is similar to that of

---

[5] Across morphemes: = word-internally.

[6] The dot in this and the subsequent examples indicates the syllable boundaries at the point where fusion has occurred.

[7] We put in parenthesis the unattested sequences.

[8] Across words: = across two morphemes of adjacent words.

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the underlying long vowels represented in (1b) where the vowel is attached to two moras as in (5):

$$
\begin{array}{ccc}
\sigma & \sigma & \sigma \\
| & | & \bigwedge \\
\mu & \mu & \mu\ \ \mu \\
| & | & \bigvee \\
(5) \quad V_i & +\ V_i & \rightarrow \quad V
\end{array}
$$
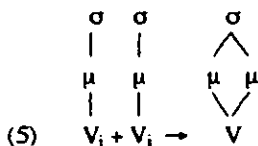
(5) shows that any two identical vowels in sequences across morphemes fuse into one bimoraic vowel, which also allows us to explain why we do not find morpheme internal V_iV_i sequences.

When the first of two non-identical vowels in a heteromorphic sequence is low, the output is a mid vowel, which agrees in frontness or backness with the second vowel in the input, as shown in (6):

(6)   Across morphemes

a. |a+i → ee|:   méé.só (cl.6)   /ma-ísó/   'eyes'   cf.   dí-ísó   'eye'

    méé.nó (cl.6)   /ma-ínó/   'teeth'   cf.   dí-ínó   'tooth'

b. |a+u → oo|:   moó.ngu (cl.6)   /ma-úngu/   'pumpkins'   cf.   dy-uúngu   'pumpkin'

    móó.vá (cl.6)   /ma-úvá/   'days'   cf.   dy-úúvá   'day, sun'

c. |a+e → ee|:   géé.swéélá   /ga-éswéélá/   'white (cl.6)'

    |a+o → oo|:   moó.la (cl.6)   /ma-óla/   'frog'   cf.   -dy-óola   'frog'

The mora-conserving rule that produces a mid long vowel from a sequence of low plus high vowel is represented in (7):

(7)

```
        σ              σ              σ
        |              |             / \
        μ              μ            μ   μ
        |              |             \ /
        V       +      V      →       V
        |              |              |
     [+low]         [+high]    [-high, -low, αback]
```
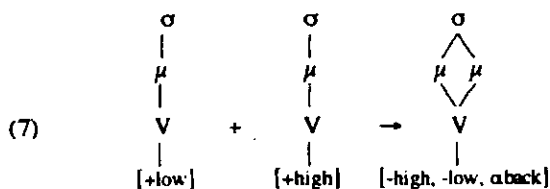
Unlike the rule in (5), which applies both across morphemes and across words, the rule in (7) does not apply across words, as illustrated in the following examples:

(8)   Across morphemes

a. [a+i → a+i]: -dimáiyi   /-dima-iyi/   'cultivate this way' cf. *-dimeeyi

                  -veecetáiyoóyo /-veeceta iyóoyo/ 'speak that way' cf. *-veeceteeyo

b. [a+u → a+u]: -puundáúwé   /-puundá ú wé/   'exceed us'   cf. *-puundoó wé

                  -wonáʊwé   /-wona úwé/   'see us'   cf. *-wono owé

       ([a+e → ee])

       ([a+o → oo])

Fusion of a+i can also be found word-internally, in verb stems, as a result of a complex process of imbrication (see chapter 7) of the perfective -il-e when the last vowel of the root is /a/ as shown in (9):

(9)   Word-internally

       -piikée.ne   /-piika-in-e/   'heard'   cf. -piikan-   'hear'

       -divée.te   /-diva-it-e/   'stepped on' cf. -divat-   'step on'

       -wutée.me   /-wuta-im-e/   'crouched'   cf. -wutam-   'crouch'

       -nyikée.te   /-nyika-it-e/   'compressed' cf. -nyikat-   'compress'

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In (9) we have what is called imbrication, a process where the formative -il- of the perfective marker -il-e is infixed in the verb root, triggering the coalescence of the last vowel of the root (/a/) with the suffix initial vowel (/i/). Then, the /l/ of -il- is deleted (see chapter 7 for details). There is no context for a+u fusion in verbs.

2.1.2.   Gliding

Glide formation takes place when a high vowel is followed by another vowel. Consider the following examples:

(10)i.   Across morphemes

   a.   i+V → yVV:

[i+u → yuu]:	dy uúngu	/di-úngu/	'pumpkin'
‑	dy úúvá	/di-úvá/	'day; sun'
[i+e → yee]:	my éésí	/mi-ésí/	'moons'
	dy éenu	/di-énu/	'yours (cl.5 possessed object)'
[i+o → yoo]:	my óótó	/mi-ótó/	'fires (cl.4)'
	dy oóla	/di-óla/	'frog (cl.5)'
[i+a → yaa]:	-dy a	/-di-a/	'eat'
	-py a	/-pi-a/	'burn (intr.)'

   b.   u+V → wVV:

[u+i → wii]:	mw -iisi	/mu-isi /	'pestle'	cf. mi-isi	'pestles'
	mw -iiko	/mu-iko /	'miracle'	cf. mi-iko	'miracles'
[u+e → wee]:	mw -éésí	/mu-íísí/	'moon'		
	mw -eela	/mu-ela/	'elephantiasis of scrotum'		

   [u+o → wo]:[9]

---

[9] We discuss later in this section what happens when the high back vowel glides before the mid back vowel.

27

[u+a → waa]:	-gʷ-a	/-gu-a/	'fall'
	-w-a	/-u-a/	'die'

ii. Across words

a. i+V → yVV:

([i+u → yuu])

([i+e → yee])

([i+e → yoo])

[i+a → yaa]:	ajüümyáapó	/a-jüm-i ápo/	'they (cl.2) stopped over there'
	ngútyáayó	/n-kú-tí ayó/	'I mean those (cl.8) ones'

b. u+V → wVV:

([u+i → wii])[10]

([u+e → wee])

([u+e → woo])

[u+a → waa]:	acukúulwáapó	/acukúulu apó/	'they (cl.2) thanked over there'
	vaandwááwó	/vaandu awó/	'(those) people over there'

In (10) we see that across morphemes, i.e., word-internally, gliding applies whenever the structural description is met. Across words, however, gliding is restricted to contexts where the high vowel is followed by a low vowel. Sequences of high vowel followed by vowels other than /a/ either are not found across words (e.g., *i+e, *i+o, *u+e, *u+o) or exist but do not produce gliding as shown in the following examples:

(11)a.	[i+u → i+u]:	a-tu-weeni uwé	/weeni uwé/	'they saw us'
	cf.	*a-tu-weenyuuwé		
		ngútí úné	/n-kú-tí ayó/	'I mean those (cl.8) ones'
	cf.	*ngútyúúné		

---

[10] We enclose in parenthesss the sequences which are not found.

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b. [u+i → u+i]: a-cukúulaiyi   /a-cukúula iyi/   'they (cl.2) thanked this way'

    cf.   *acukúulwiyi

In (6) we saw that fusion of low with high vowels does not apply across words. The examples in (11) show that across words gliding does not apply when two high vowels occur one after another.

      Just like fusion, gliding does not delete moras. That is, although the segment which is moraic before the application of the rule is not moraic after gliding, its mora is not lost. It is reattached to the next vowel. We represent glide formation as in (12):

(12)
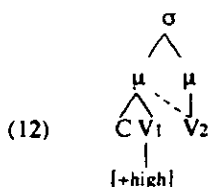
This leftward spreading of the following vowel is a source of phonological vowel lengthening. This formalization however, does not represent all instances of glide formation. As seen in the examples in (13) glide formation is not limited to high vowels. The mid back vowel also glides before other vowels.

(13)i. o+V → wVV:

  i. Across morphemes

  a. [o+i → wee]: -lokweet-e   /-loko-it-e/   'picked up'   cf. -lokot-   'pick up'

              -kolweem-e   /-kolo-im-e/   'growled'   cf. -kolom-   'growl'

  b. ([o+u →])

  c. [o+e → wee]: -ŋ'weel-e   /-ŋ'o-el-e/   'drank'   cf. -ŋ'o-   'drink'

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| | | -tweel-e | /-to-el-e/ | 'pounded' | cf. -to- | 'pound' |

d. [o+a → waa]: -n'w-a   /-n'o-a/   'drink'

                   -tw-a   /-to-a/   'pound'

ii. Across words

a. ([o+i → wee])

b. [o+u → o+u]: ...ciló ú wé   /...ciló ú wé/   'at night we...'

                  ...ciló ú né   /...ciló ú né/   'at night I...'

c. ([o+e → wee])

d. [o+a → waa]: lu-súlwáálu (cl.11)   /lu-súló alu/   'this river here'

                  wu-sitwááwu (cl.14)   /wu-sitó áwu/   'this weight here'

As seen in (13) mid back vowel glides in the same environments where the high back vowel glides, except in (13ii.b), where /o/ precedes /u/, in which case no phonological processes take place. Just like the high vowel, across words, the mid back vowel only undergoes gliding if it occurs in the final position of a word which precedes another word with a low vowel in initial position. We formalize the rule that turns the mid back vowel into a glide before other vowels as follows:

(14)
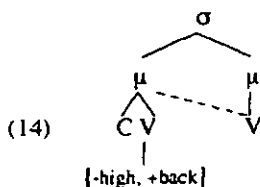
When high front vowel is the trigger of the gliding of the mid back vowel, as in (13i.a) the result is a mid front vowel since, just like the cases of fusion of different vowels, the output vowel has to agree in height with the non-high vowel of the input and in "frontness" (or "backness") with the second vowel as represented in (15):

30

(15)

$$\sigma \qquad\qquad \sigma$$

CV V → C V V

[-high, +back] [+high, +front] [-high, +back] [-high]
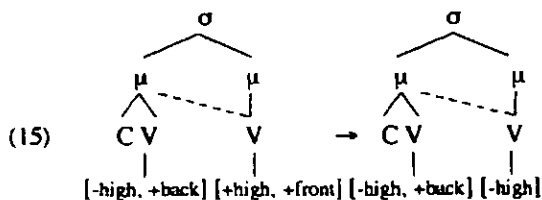
Before we move on to the next subsection, we should mention that while across morphemes glide formation rule applies whenever the structural description is met, there is one context where the next step, compensatory lengthening, fails to apply. Consider the following examples:

(16)a. dy-élé (cl.5)   /di-élé/   'that one'

sy-élé (cl.15)   /si-élé/   'those ones'

b. jw-élé (cl.1)   /ju-élé/   'that one'

w-élé (cl.11) ·   /u-élé/   'that one'

tw-élé (cl.12)   /tu-élé/   'those small ones'

kw-élé (cl.15)   /ku-élé/   'that (action or event)'

kw-élé (cl.17)   /ku-élé/   'that place'

mw-élé (cl.18)   /mu-élé/   'in there'

In (16), the affixation to demonstratives of agreement prefixes with high vowels in final position triggers gliding, while in (146), the high front vowel of the classes 5 and 10 prefixes di- and si-, respectively, turn into palatals. In (16b), the prefixal high back vowel /u/ becomes s labiovelar glide. What is important to note is that the glides that result from these changes fail to trigger compensatory lengthening of the initial vowel of the demonstrative. This is captured by the rules and representations in (17) where the initial V of the demonstrative is just a floating vowel which is not attached to any mora. When a

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prefix is attached to the demonstrative, the floating vowel is then attached to the mora of the prefix, whose vowel undergoes gliding.

(17)
$$
\begin{array}{ccc}
\sigma & \sigma & \sigma \quad \sigma \\
| & | & | \quad | \\
\mu & \mu & \mu \quad \mu \\
\wedge & \wedge & \wedge \quad \wedge \\
\text{CV} & + \quad \text{V CV} \rightarrow & \text{C G VCV} \\
| & | & \\
\text{[+high]} & \text{[-high, -low, -back]} &
\end{array}
$$
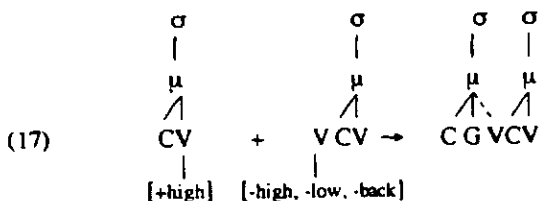
When the high back vowel is followed by a the mid back vowel, the resulting glide is immediately deleted, as shown in the following examples:

(18)i.   Across morphemes

     a.   {u+o → oo}:   ko oga (cl.15)   /kʊ-oga/   'have a bath'

                         ko ota (cl.15)   /kʊ-ota/   'warm oneself at a fire'

                         móó tó (cl.3)   /mʊ-ótó/   'fire'

                         moó po (cl.6)   /mʊ-ópo/   'fresh green grass'

The derivation that produces the output in (16) is given in (17):

(19)   Input:

	/ku-oga/	/ku-ota/	/mu-ótó/	/mu-ópo/
Input:	/ku-oga/	/ku-ota/	/mu-ótó/	/mu-ópo/
Gliding+VL:	kw-ooga	kw-oota	mw-óóto	mw-oopo
Glide deletion or absorption:	k-ooga	k-oota	m-óótó	m-óóto
	'have a bath'	'warm oneself'	'fire'	'fresh green grass'

As is seen in (19), gliding can feed deletion. One could also think that it is /u/ that undergoes deletion before gliding. The problem with this possibility is that we would miss the generalization that high vowels undergo gliding before all other vowels.

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Note that there are examples in Ciyao where w+o (< u+o) sequence is found, but the sequence is only acceptable if /u/ is not preceded by a consonant. That is, glide deletion is imposed by a rule which deletes the labial-velar glide between a consonant and the mid back vowel. We informally represent this rule as follows:

(20) $w \rightarrow \emptyset \,/\, C\!-\!o$

A rule similar to the one in (20) is also applied to sequences of palatal glide preceded by palatal consonants. Consider the following examples:

(21)a. [ee]   mbwá jééswéélá (cl.9)   /ji-éswééla/   'white dog'

   b. [uu]:   cúúmá (cl.7)   /ki-úmá/   'beads'

   c. [oo]:   coovéla (cl.7)   /ki-ovéla/   'bathroom'

   d. [aa]:   cááká (cl.7)   /ki-áká/   'year'

In (21) we see that palatal consonants—often derived from velars—absorb the palatal glide that results from gliding of high front vowel. That is, the palatalization of the high front vowel preceded by a palatal affricate would produce phonetically complex sequences of the type /čya, čye, čyo, čyu/ as shown below:

(22) Input: /ji-éswéélá/   /ki-úmá/   /ki-ovéla/   /ki-áká/

      Gliding+VL: jy-ééswéélá   cy-úúmá   cy-oovéla   cy-ááká

      Glide deletion or absorption: j-ééswéélá   c-úúmá   c-oovéla   c-ááká

                                        '(cl.9) white' 'beads'   'bathroom'   'year'

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Due presumably to the phonetic imperceptibility of palatal consonant plus palatal glide sequences, the phonology of the language prohibits them altogether, through a constraint represented as follows:

(23) $y \rightarrow \emptyset \, / \, C - V$
                    |
                  [pal]

2.1.3.   Deletion

Thus far we have seen that all vowels undergo some change when they precede other vowels. For examples, the high vowels and the back vowels glide before other vowels. The low vowel fuses with other vowels. The only vowel not included in this generalization is the mid front which neither fuses nor glides before other vowels. When it syntactic or morphological rules require the occurrence of the mid front vowel before or after another vowel, a total assimilation takes place which allows only one vowel to surface (plus compensatory lengthening). Since the intervening vowels are different, and the resulting vowel is never different from the inputs, we consider this as a deletion process or total assimilation. Consider the following examples:

(24)i. Across morphemes

a. [e+i → ee]:   -seleem-e   /-sele-im-e/   'slid'   cf. -selem- 'slide'

                   -veecee t-e   /-veece-it-e/   'spoke'   cf. -pocel- 'speak'

b. ([e+u → ee])

c. ([e+o →])

d. ([e+a →])

   ii. Across words

a. [e+i → e+i]:   -patile iyoóyo   /-patile iyoóyo/ 'got the same way' cf. -pat-   'get'

                   n.taame iyi   /n.-tame iyi/   'sit this way'   cf. -taam- 'sit'

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b. [e+u → ee]:   saasileené   /saasile úné/   'I said (lit.: said I') cf. -saal- 'say'

                  tutaameewé   /tu-taame úné/   '(so that) we sit'   cf. -taam- 'sit'

c. ([e+o →])

d. [e+a → aa]:   -diilaapa   /-diile apa/   'ate here'   cf. -di-   'eat'

                  n.taamaapa   /n.-tame apa/   'sit here'   cf. -taam- 'sit'

In (24i.a) we see that word-internally, the mid front vowel triggers deletion of the following high front vowel. We have not found examples of sequences of /e/ plus other vowels. Across words, the mid front vowel triggers deletion of the following high back vowel and deletes before the low vowel. As usual, there is one exception across words. Unlike what we have across morphemes and would expect across words, the high back vowel does not delete in (24ii.a). As seen in all cases where deletion applies, the adjacent vowel always lengthens. That is, the adjacent vowel takes over the mora left by the deleted vowel.

With this observation we complete the study of derived vowel length in which we have seen three hiatus resolution rules, namely, fusion, gliding and deletion. What these rules have in common is the fact that they all allow the language to avoid sequences of vowels, without affecting the mora count. They all are sources of vowel length. However, while across morphemes, each one of these rules applies without exception whenever the structural description is met, across words the situation is different. There are many cases in which the rules that apply across morphemes do not apply across words even when all conditions are met. So, the following table summarizes the results of the application of the hiatus resolution rules in Ciyao.

Table 3: Vowel hiatus resolution across morphemes.

Rules	1st \ 2nd	i	u	e	o	a
Gliding	i		yuu	yee	yoo	yaa
Gliding	u	wii		wee	oo	waa
Deletion	e	ee	ee		—	aa
Gliding	o	wee	ou	wee	oo	waa
Fusion	a	ee	oo	ee	oo	

Table 3 sums up our discussion on what surfaces as a result of the application of HRR Ciyao. The blank box shows that we have not been able to find cases where a mid front vowel is followed by a mid back vowel.

In the next section we discuss a source of vowel length whose trigger is not a vowel.

2.1.4.   Vowel plus preconsonantal nasal (V+NC)

In the present subsection we will be concerned about the compensatory lengthening of the vowel in VNC sequences found morpheme-internally, which has been extensively described in other Bantu languages, e.g. Luganda (Clements 1986, Hyman and Katamba 1993 and references cited therein) Maddieson (1993), Hubbard (1993, 1994) as illustrated in (25):

(25)   Sequence of vowel+prenasalized consonants morpheme-internally

    [^{m}b]:   -gámbá (cl.15)   →   -gáá^{m}bá   'refer to'

    [^{n}d]:   -tándá (cl.15)   →   -táá^{n}dá   'begin'

    [ɟ]:   -ganja (cl.14)   →   -gaa^{ɲ}ja   'friendship'

    [^{ŋ}g]:   -cángá (cl.15)   →   -cáá^{ŋ}gá   'bounce'

These are of course virtually identical to the Luganda patterns discussed by Tucker (1962) and formalized by Clements (1986) in the CV framework. Hayes (1989) formalizes compensatory lengthening in the moraic framework. For example, Hyman (1992) and others, have analyzed (25) in terms of (26):

(26)a. Vowel spreading + nasal delinking   b. Nasal relinking
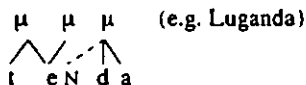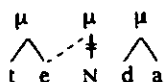
As seen in (26), the vowel 'forces' the nasal to give up its mora (26a) and join the following mora (26b). More recently, Maddieson (1993) and Hubbard (1993, 1994), have raised the question—based on Bantu languages—of whether there is a predictable relationship between proposed surface representations of moraic structure versus the phonetics of vowel and consonant duration on the surface. These authors have claimed that for some Bantu languages such as Sukuma and Runyambo, the resulting vowel is (compensatorily) lengthened, but is not as long as the underlying (and probably derived) long vowels. For these languages they argue for the derivation in (27):

(27)   Vowel spreading without nasal delinking.
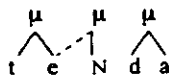
In this case, the vowel spreads onto the moraic nasal, but the nasal does not delink. Given this potential difference, we have to ask for every Bantu language that has prenasalized consonants whether it is like Luganda, in (26b) or like Sukuma and Runyambo in (27). As

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demonstrated by Hyman and Ngunga (1997), Ciyao works like Luganda, in that the nasal gives up its mora in favor of the preceding vowel whose length is equivalent to the length of an underlying long vowel, which is usually at least twice longer than the underlyingly short vowel (See Hubbard 1994, 1995, and Ngunga 1995 for phonetic details). However, contrast the examples in (27) with the following:

(28)   Sequence of vowel+prenasalized consonants across morphemes

   [^{m}b]:   ku-^{m}bwandukuka   'open out'

   [^{n}d]:   ku-^{n}dííngwiina   'shake (intr.)'

   [^{n}ɟ]:   ku-^{n}jánjándala   'be tough'

   [^{ŋ}g]:   ku-^{ŋ}gúúnguunda   'shiver'

(28) shows that unlike most prenasalized consonants that occur within morphemes, which have the possibility of bearing a mora, as we saw in (25), preconsonantal nasals in verb root-initial position are never moraic. They are affiliated to the first mora of the root-initial syllable as shown in (29):

(29)
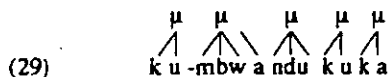
In (29) we show the mora assignment of the first example in (28). The preconsonantal nasals cannot supply the preceding vowel with any mora. That is why the vowels that precede prenasalized consonants in root-initial position (and some within the root as we will see later) are never lengthened.

Just like what happens across morphemes, where vowels can exceptionally fail to lengthen when the structural description seems to be met, as in the examples in (16) in which initial vowels of the demonstrative root - έ l ɗail to lengthen after glide, morpheme

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internal NC clusters may fail to lengthen the preceding vowels, as shown in the following examples:

(30)a. Nouns

kasanjaala (cl.9)	'kind. of mushroom'
N-jembeele (cl.9)	'woman who has born at least one child'
ci-mbwidimbwiinda (cl.7)	'uninitiated girl who has become pregnant'
di-gombéesa (cl.9)	'blanket'
kawumbaata (cl.9)	'cabbage'

b. Verbs

-mbwándúkuka	'open out'
-lámbwánda	'boil'
-njánjándala	'be tough (e.g, meat)'
-ngwéngwéluka	'stagger'
-ndúndúdika	'be at loss'

(30) shows that we have two different types of preconsonantal nasals. One is moraic. and lengthens the preceding vowel as seen in (25), and one is non-moraic, and does not lengthen the preceding vowels. In our database, among the 2,591 cases of a morpheme-internal VNC sequences there are 213 (or 8.2%) non-moraic preconsonantal nasals. (For details on the different types of preconsonantal nasals in Ciyao see Hyman and Ngunga 1997).

In section 2.1.5. we analyze another source of vowel length which is triggered by a moraic nasal that are morphemes.

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2.1.5. Vowel plus moraic nasal (V+N)

Apart from the lengthening that results from the application of the various rules of hiatus resolution, surface vowel length is also produced when a vowel precedes nasal prefixes, such as the 1st person singular (subject and object) and classes 9 and 10 prefixes. As must be inferred from the intervening elements, this kind of vowel length can only be found across morphemes or across words, as shown in the following examples:

(31)   Across morphemes

1sg object (-N-)

kuu-m-bat-a	/ku-N-pat-a/	'to get me'	cf.	-pat-	'get, obtain'
kuu-n-dak-a	/ku-N-tak-a/	'to fetch me'	cf.	-tek-	'fetch'
kuu-m-on-a	/ku-N-won-a/	'to see me'	cf.	-won-	'see'
kuu-m-ec-el-a	/ku-N-bek-el-a/	'to pay for me'	cf.	-bek-el-	'pay for'

As seen in (31), the final vowel of the preceding morpheme is lengthened before the 1sg. object (nasal) marker. Observe that the 1sg. object marker voices the voiceless stops it precedes, with which it forms nasal clusters, and deletes the voiced consonants. The nasal assimilates in place to a following consonant if there is any, as shown in (32):

(32)   N+C
       ⟍↓
       [Place]

In (33) we provide examples with the nasal of the 1sg. subject marker, which normally occupies the initial position of the verb complex, to illustrate its effect on the vowel of the preceding word:

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(33)   Across morphemes

　　Isg subject

　　cilóó m-batile /N-pat-il-e/ 'at night I got'   cf. ciló tú-patile 'at night we got'

　　cilóó n-decile (N-tek-il-e) 'at night I fetched'   cf. ciló tú-tecile 'at night we fetched'

　　cilóó m-atiice (N-batiik-e) 'at night I stuck'   cf. ciló tú-batiice 'at night we stuck'

　　cilóó n'-onile (N-gon-il-e) 'at night I slept'   cf. ciló tú-gonile 'at night we slept'

Before fricatives, the Isg SM drops out ("nasal effacement") as seen in (34). Here too, though, the nasal triggers lengthening:

(34)   Across morphemes

　　cilóó saasíle   /N-saal-il-e/ 'at night I said'   cf. ciló tú-saasíle   'at night we said'

　　cilóó sisíle   /N-sis-íl-e/   'at night I hid'   cf. ciló tú-sisíle   'at night we hid'

　　　Lengthening effects of the initial nasal of one word on the final vowel of the preceding word are also found when the initial nasal is the prefix of classes 9 and 10, as shown in (35):

(35)   Across words:

　a.　kusákáá m-bwá   /kusáká N-bwá/   'to want a dog'

　　　kusákáá n-dóópé   /kusáká N-dóópé/   'to want an antelope'

　b.　kusákáá nyaambo   /kusáká Nyaambo/   'to want a bait'

　　　kusákáá n'oombe   /kusáká N'-oombe/   'to want a cow'

In (35) we have other examples of the effect of the word-initial nasal prefix on the final vowel of the preceding word. As seen, the same observations made for the examples in (33) and (34) are also valid for the examples (35). That is, the lengthening effects of the

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moraic nasal prefix on the preceding nasal apply even when the nasal does not surface as illustrated in (36):

(36) kusákáá sátó   /kusáká N-sátó/   'to want a python'

      kuúsákáá sóbóóla   /kusáká N-sóbóóla/   'to want red pepper'

In (36), the lengthening of the final vowel of the word that precedes **sátó** 'python' and **sóbóól** 'red pepper' is evidence that underlyingly these two words have nasal prefixes.

The vowel lengthening before 1sg. (object and subject) and before classes 9 and 10 nasal prefix is captured by the following representation:

(37)a. Nasal spreading + nasal delinking   b. Vowel spreading
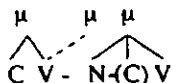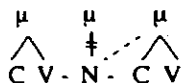
The representation in (37), where -**N**- stands for nasal prefix (1sg. and classes 9 and 10), accounts for the lengthening effect of the vowel that precedes the nasal prefix, as well as attempts to capture the effect of the nasal prefix on the following consonant where the (C) is the consonant that undergoes voicing, if it is voiceless, or deletion, if it is voiced. (Obviously, the exceptions where the nasal undergoes effacement whose details will be discussed in the next chapter do not fit in this representation where we simply show the nasal spreading and nasal delinking that take place before the vowel spreading.) As was shown in the preceding examples, the vowel that spreads rightward, which may be in the same word as the nasal or in another word, takes over the mora left behind by the nasal which has joined the first mora of the initial syllable of the stem. However, when the nasal prefix precedes a vowel, it does not give up its mora, as we will see in the next subsection.

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But before we move on to that subsection it is important to mention the following. As was shown in Table 1 in chapter 1, apart from the nasal prefixes, the classes 9 and 10 prefix have another prefix, which is zero (Ø), as shown in (38):

(38) akúsáká bónoongwé   /akúsáká bónoongwé/   'they want wild spinach'

  akúsáká díindi   /akúsáká díindi/   'they want a latrine'

  akúsáká gúuta   /akúsáká gúuta/   'they want black calico'

  akúsáká jáando   /akúsáká jáando/   'they want rite of circumcision'

  akúsáká kábuduula   /akúsáká kábuduula/   'they want shorts'

  akúsáká láamba   /akúsáká láamba/   'they want a belt'

  akúsáká péete   /akúsáká péete/   'they want a ring'

  akúsáká síngáano   /akúsáká síngáano/   'they want a needle'

  akúsáká támbaala   /akúsáká támbaala/   'they want a cock'

As seen in (38) the final vowel of the word that precedes the classes 9 and 10 words does not lengthen, which is an evidence that these words of classes 9 and 10 do not have nasal prefix which we could have thought of as having been effaced as happens in some cases before /s/. That is, the nouns in (38) have Ø prefix. Therefore, the preceding vowel cannot be lengthened. With this additional note we complete the study of the phonological vowel length before prefix nasals of 1sg. object and subject prefixes, and classes 9 and 10. In the next subsection we briefly look into the effect of the moraic nasal on the following vowel.

2.1.6. Moraic nasal plus vowel (N+V)

The lengthening effect of the moraic nasal on the adjacent vowel is true not only when the nasal follows the vowel, as we have seen in the two preceding sections, but also when it precedes the vowel, as shown in the following examples:

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(39) n-aa-cápúle   /N-a-cápúle/   'I washed for them'

      n-aa-dípíle   /N-a-dípíle/   'I paid them'

      n-aa-nyákwúle   /N-a-nyákwúle/   'I lifted hem'

      n-aa-lóómbíle   /N-a-lóómbíle/   'I married them'

In (39) the 1sg. subject is followed by the 3pl. object marker -a-. As seen, this -a- is lengthened, as it becomes the nucleus of the syllable whose onset comes in with a mora as represented in (40):

(40)
$$\begin{array}{cc} \mu & \mu \\ \mid & \mid \\ N & - V \end{array}$$
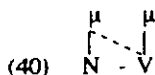
Let us consider next another source of vowel lengthening in Ciyao, enclitics.

2.1.7. Vowel+enclitics (V+Encl.)

Enclitics constitute another source of phonological vowel length in Ciyao as shown in the following examples:

(41)a. pa-nyuúmbáa=pa   'at this house'   cf. nyuúmba   'house'

       pa-wu-gadíí=po   'at that stiff porridge' cf. wu-gadi   'stiff porridge'

       ku-m-piikaa=ku   'by this pot'   cf. m-piika   'pot'

       n-ci-tuundúú=mo   'in that basket'   cf. ci-tuúndu   'basket'

   b. apatú-kw-íínjíláá=pá   'we are entering here'   cf. -iinjil-   'enter'

       apoa-kw-íínjílaá=po   'they are entering there' cf. -iinjil-   'enter'

       aku á-kw-íínjíláá=kú   'they are entering this side' cf. -iinjil- 'enter'

       akoa-jiinjííléé=kó   'they entered over there' cf. -iinjil-   'enter'

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As seen on the left hand column, in (41a) we added enclitics to nouns. In (41b) we added enclitics to verbs. In both cases we observe that as we add an enclitic to the word-final vowel we also add vowel length. There are at least two possible ways to explain this lengthening of the word-final vowel. Either that there is a floating mora which surfaces only when an enclitic is attached to the word, or that it is a characteristic of enclitics in Ciyao to add length to the preceding vowel.

In the next subsection, we consider vowel length after glides.

2.1.8.   Glide plus vowel (G+V)

As we saw in section 2.1.2. on glide formation, high vowels and mid back vowel undergo gliding before other vowels across morphemes, a process which results in lengthening of the vowel that triggers gliding. Within a morpheme, however, a vowel does not necessarily lengthen just because it follows a glide. In our database, for example, we found that although the vowels that follow glides within roots are generally long, a significant number of them are short. For instance, of the 657 morpheme-internal GV(V) sequences where the vowels are in non-final position of the words, 186 (28.3 per cent) vowels are short and 471 are short. As these numbers show, we cannot just generalize that the vowels lengthen after glides without considering the contexts where such vowel length is realized, as we show in the following table:

	(V)GV	-C	-NC	Total
(i)a.	(V)wa	9	—	9
	(V)we	—	--	—
	(V)wi	1	—	1
	(V)wo	30	—	30
	(V)wu	105	1	106
	Total	**145**	**1**	**146**
b.	(V)waa	16	4	20
	(V)wee	12	23	35
	(V)wii	12	1	13
	(V)woo	1	3	4
	(V)wuu	56	76	132
	Total	**105**	**107**	**156**
(ii)a.	(V)ya	—	—	—
	(V)ye	—	—	—
	(V)yi	3	--	3
	(V)yo	—	—	—
	(V)yu	—	—	—
	Total	**3**	**—**	**3**
b.	(V)yaa	5	—	5
	(V)yee	2	—	2
	(V)yii	3	4	7
	(V)yoo	—	1	1
	(V)yuu	2	—	2
	Total	**12**	**5**	**17**

Table 4 shows the distribution of short vs. long vowels after glide within roots before single consonants (C) and before NC clusters. As seen, generally there seems to be a reason for us to expect a long vowel after glide, although the figures are so close that any statement on vowel length after glide in Ciyao should be made with some caution. Note,

for instance, the exceptional case of the high back vowel in (ia) and (iib). As seen, of the 161 occurrences of the high back vowel in -(V)Gu(u)C-, only in 56 cases (34.78 percent) the /u/ is long. That is, in most cases this vowel does not lengthen after the labial-velar glide, which suggests that the glide that precedes it is not underlyingly moraic. If it is underlyingly moraic, then its mora is exceptionally lost in the process of glide formation before other vowels. However, the fact that in a considerable number of GV sequences, the vowel is usually short—148 (58 percent) out of 255 occurrences before single consonants—implies that glide does not add length to vowels. Therefore, the length that we find must be underlying. We postpone the discussion of the length of the vowel between the glide and the NC cluster until we see the following table which shows the distribution of vowels after a post-consonantal glide.

Table 5: Vowel length after post-consonantal glides.

	CGV	-C	-NC	Total
(i)a.	Cwa	17	—	17
	Cwe	11	—	11
	Cwi	3	—	3
	Total	**31**	**—**	**31**
b.	Cwaa	69	11	80
	Cwee	31	8	39
	Cwii	34	3	37
	Total	**154**	**22**	**156**
(ii)a.	Cya	2	—	2
	Cye	—	2	2
	Cyo	2	—	2
	Cyu	—	—	—
	Total	**4**	**2**	**6**
b.	Cyaa	28	8	36
	Cyee	4	1	5
	Cyoo	18	1	19
	Cyuu	7	7	14
	Total	**57**	**17**	**74**

Note beforehand that the relationships between some vowels and glides dictate their distribution after certain consonant in Ciyao. Thus, as we saw in section 2.1.2., there are no sequences of back rounded vowels after post-consonantal labial velar. High front vowel cannot follow the palatal glide preceded by a consonant. Although Table 5 suggests that vowel length after glide must be derived, since in all contexts the number of short vowels after glide is lower than that of long vowels both before single consonants and before nasal clusters, we still maintain that this is a coincidence. The vowel length is underlying after glides. Let us consider some examples:

(42)i. /w/

a. Verbs

-walawaasy- 'patch a roof with grass'

-wonegan- 'meet each other'

-wunik- 'cover'

-wugal- 'close'

b. Nouns

lu-kwámbáála (cl.11) 'rope made of plated palm-leaf'

di-walaangulo (cl.5) 'sp. of locust'

ci-wámásoka (cl.7) 'sp. of wild vine'

n-kwándáála (cl.3) 'iron ware; hoop iron.'

ii. /y/

a. Verbs

-yik- 'arrive'

-kwayisya 'lay hand on'

b. Nouns

yaluúmo 'same way'

n-kayídi (cl.1) 'prisoner'

cisyunguúsya (adv.) 'in a round way'

(42) presents a sample of cases where short vowels are preceded by glides and cases, where short vowels are preceded by glides and followed by nasal clusters. Cases like these tell us that in fact, root internally, glides do not lengthen vowels. When long vowels are preceded by glides, that length is underlying, which is different from what we can find across morphemes where the glide results from the application of the gliding rules we discussed in section 2.1.2. of the present chapter. So, in those cases where the vowel occurs between a glide and a nasal cluster, the vowel could lengthen if the following

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preconsonantal nasal were moraic. But, as we have seen, not all preconsonantal nasals are moraic. Therefore, those that are not moraic cannot lengthen the preceding vowels.

Finally, to complete our study of vowel processes we move on to the discussion of vowel harmony in the next section.

2.2. Vowel harmony

In this section we will discuss vowel harmony (VH), one of the characteristics of the Ciyao verb stem. Consider the following examples:

(43)a. -dim-il-   'cultivate for'   cf.   -dim-   'cultivate'
        cultivate-A

     -wut-il-   'pull for'   cf.   -wut-   'pull'
        run-A

     -saam-il-   'move to'   cf.   -saam-   'move'
        move-

   b. -pet-el-   'ornament for'   cf.   -pet-   'ornament'
        ornament-

     -soom-el-   'read/study for'   cf.   -soom-   'read, study'
        study-A

The examples in (43) are typical of verb to verb derivation where most of the derivational suffixes have two allomorphs, one with high front vowel in initial position and the other one with mid front vowel in initial position. As seen, the verbs on the left hand column in (43) are derived from those on the right hand column through suffixation of what is called applicative suffix of the shape -il-/-el-. The distribution of the allomorphs of the derivational suffix with front vowel in initial position is determined by the height of the last

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vowel of the root. If the last vowel of the root is mid, the suffix is mid (43b). Otherwise, the suffix vowel is high (41a). We formalize this vowel harmony rule as in (44):

(44)   CVC - VC-
          L---´
          [-high, -low]

The rule of vowel harmony represented in (44) usually does not apply to -perfective -**il-e**, as illustrated in the following.

(45)a. -sim-il-e   'extinguished'

        -suum-il-e   'bought'

        -pat-il-e   'got'

   b.   -pet-il-e   'ornamented'

        -pot-il-e   'twisted'

As seen in (45) the perfective maker -**il-e** is realized with high front vowel in initial position after all roots. Thus, we can conclude the rule in (44) does not apply to this morpheme. But compare the perfective examples in 45) with examples in (46), below:

(46)a. -di-il-e   /-di-il-e/   'ate'

        -gw-iil-e   /-gu-il-e/   'fell'

        -v-eel-e   /-va-il-e/   was'

   b.   -nye-el-e   /-nye-il-e/   'defecated'

        -tw-eél-e   /-to-il-e/   'pounded'

In (46) we see that the VH rule in (44) does appear to apply to the perfective marker. Note, however, that in all examples in (46) the surface forms result from the application of the

HRR rules we discussed in section 1 of this chapter. Thus, for instance, in the first examples in (46a), and (46b), the affixation of the perfective allomorph creates a sequence of two identical vowels. The result is that a single bimoraic vowel, with the quality of the input vowels, is produced. In the second examples in (46a) and (46b) we have cases of gliding of the back vowels. Finally, fusion rule applies in the third example in (46a) where we have the mid front vowel /e/ on the surface.

The perfective marker also fuses with the last vowel of the root when it is affixed to long roots where -il- has to be inserted within the root between the last vowel and the final consonant, a process called 'imbrication' as we have mentioned before (but see chapter 7 for a detailed account), as shown n the following examples:

(47)a. -sidiic-e   /-sidi-il-k-e/   'fainted'   cf.   -sidik-   'faint'

    -wutwiic-e   /-wutu-il-k-e/   'ran'   cf.   -wutuk-   'run'

    -seleem-e   /-sele-il-m-e/   'slid'   cf.   -selem-   'slide'

  b. -lokweet-e   /-loko-il-t-e/   'picked up'   cf.   -lokot-   'pick up'

    -topweel-e   /-topo-il-l-e/   'chased away'   cf.   -topol-   'chase away'

As seen, in (47a), where last vowels of the roots are not mid back, the perfective marker is realized with a high front vowel in initial position. In (47b), where the last vowel of the root is mid back, the perfect marker is realized with a mid back vowel. The fact that in (46) and (47) the root vowels and the suffix (perfective) vowel become adjacent explains why we have harmony in these cases and not in (45), where the vowels are separated by consonants.

Other instances of vowel harmony are found when the verb extensions are attached to the base of the verb. Consider, for instance, the affixation of the reversive extension to the roots in the following examples:

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(48)a. -siw-ul-   'open up'   cf.   -siv-   'close up'

-uuw-ul-   'reveal'   cf.   -uuv-   'hide'

-mat-ul-   'peel off'   cf.   -mat-   'adhere'

-sweek-ul-   'pull out'   cf.   -eejek-   'put leaning on'

b. -ook-ol-   'take out of fire'   cf.   -ooc- /-ook-i̧-/   'roast'

-som-ol-   'extract'   cf.   -som-   'pierce'

While the verb extensions that have a front vowel in initial position harmonize in height only, the reversive suffixes, which have a back vowel in initial position, harmonize in both backness and frontness. Vowel is mid back, select the reversive suffix with mid back vowel. We discuss more on vowel harmony in derived environments is discussed more in chapter 5.

Consider next vowel harmony root-internally.

(49)a. -daandawul-   'lament'

-kuundidicil-   'accept (of a child being taken from a parent's hands)'

-kuumbatil-   'embrace; hug'

-caanjamisy-   'hurry up'

-cidiimbik-   'determine'

b. -bogojol-   'wrench open

-kolongoos-   'meddle the fire with a stick'

-someelel-   'announce'

-peleembel-   'be insufficient (in size or quantity)'

In (49) we observe that VH determines the distribution of vowels within morphemes. That is, the distribution of the vowels in a root is affected by the height of the first vowel, as

illustrated in the following table, where we show the distribution of vowels in -CVCVC- roots.

Table 6: Vowel distribution in -CVCVC- roots.

	1st \ 2nd	i	u	e	o	a	Total
(i)	i	. 89	69	—	(5)	47	210
(ii)	u	61	161	—	—	41	263
(iii)	e	(3)	55	98	—	19	175
(iv)	o	8	—	59	143	27	237
(v)	a	116	125	—	—	119	360
	Total	277	410	157	148	253	1245

Table 6 reports the results of our survey of vowel distributions in 1245 -CVCVV- verb roots. As the numbers show, the high vowels and the low vowel do not precede mid vowels and [e] cannot be followed by [o]. The violations that produced disharmonic sequences shown in shaded the boxes can be explained as follows. The five exceptions in (i), where [i] precedes [o], are actually two roots and their derived forms provided in (50):

(50)a. -simoong-   'wonder at'

     -simoong-w-   'be puzzled; at a loss'

     -simoos-y-   /-simoong-i̧-/   'puzzle; astonish'

  b. -sitop-   'be heavy'

     -sitop-y-   /sitop-i̧-/   'weigh'

As seen, in (50a) we have three verbs, two of which are derived from the third. In (50b) the second example is derived from the first examples which, in turn, is derived from **wu-sito** 'weight' a class 14 noun. Verbs derived from other parts of speech violate harmony

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since that type of derivation is realized by adding a consonant (e.g., /p/ in case of -sito-p-) to the already self-standing stems without affecting the vowel to which the derivational consonant is added. So, the stem final vowel of noun, for instance, becomes a last vowel of the derived verbs as is the case of -sitop- in (50b). With this observation, the only exception where the vowels do not harmonize is -simoong- 'wonder at' and its derived forms. So, it would be more accurate to register just 1 exception instead of 5 in -CiCoC- sequence. But since the derived forms are now lexicalized, we can regard them also as exceptions.

The height harmony is also seen when the mid vowel is the first in a sequence. As seen in (iii), when a mid vowel is the first in a sequence, the next vowel has to be mid too. Two of the three roots where the high front vowel exceptionally follows the mid front vowel in (iii) are -gwesim- 'be dullwitted' and -nyesim- 'glitter, shine'. These verbs are derived from the ideophones gwesii 'of being stupid, confused' and nyésényésí 'of glittering, shining', respectively. Since the final vowel does not count for harmony purposes, these ideophones have just one vowel. However, when the verbs are derived from them by adding a consonant after the final vowel, this vowel is no longer external. It counts for harmony, but the derivation does not change the quality of the final vowel of the input stem. Therefore, the outputs show disharmonic forms. The third form where [i] follows [e] is -pesigw- 'be perplexed'. This form seems to be a derived passive, but we cannot say exactly what the source is, apart from the fact that passive suffixes also harmonize and in this verb no such harmony exists. So, we can consider it just as an exception.

The other 55 cases reported in (iii) where [e] precedes [u] can also be explained. They are all derived. 47 of them contain the reversive, whose vowel, as we have seen, is back and round, with height determined by whether or not the last vowel of the root is mid back. If it is a mid back vowel, the reversive is realized with a mid back vowel.

Otherwise, the reversive suffix surfaces with high back vowel even when the last vowel of the root is mid front as shown in (51):

(51)a. -sweek-ul-   'pull out'   cf.   -sweek-   'insert'

     -sweek-uk-   'be pulled out'   cf.   -sweek-   'insert'

     -teg-ul-   'take (a pot) off the fire'

   b. -vel-uk-   'knock off'

In some cases, like those in (51a), the suffix is productive, and in other cases, like those in (51b), the suffix is frozen. But in both cases the "reversive" meaning is understandable. So, since [e], like all non mid back vowels, selects [u] instead of [o], the forms represented in (51) are not actually disharmonic. They simply follow another pattern of VH. Of the remaining eight "exceptions", five end in /-s-i̧-/, a causative extension ending usually derived from frication of lingual consonants before the causative suffix /-i̧-/ (which palatalizes before vowels). Exceptionlessly, /l/ undergoes frication before the causative suffix /-i̧-/. So, it is understandable that these /-s-i̧-/ ending forms are also derived by causativization of reversive forms (we will discuss these issues with detail in chapters 5 and 6). There are also other three exceptions. Two are **-leewup-** 'be long' and **-leewuy-** 'lengthen', which are derived from a class 14 noun **wu-leéwu** 'length'. As seen, in **-leewup-** 'be long' we have a /p/ in final position just like we did in the cases of **-sitop-** 'be heavy', in (50b). In **-leewuy-** 'lengthen' we have the causative suffix /-i̧-/ added to same class 14 noun **wu-leéwu** 'length'. The final exception is **-ndengum-** 'sway from side to side to side', derived from the ideophone **ndenguundengu** 'swaying from side to side as branches in the wind'.

    In (iv) we see that the mid back vowel can precede the mid front vowel, while in (iii) we saw that the mid front vowel cannot precede the mid back vowel. The explanation is simple as we have just seen, [e] selects the reversive suffix with high back vowel instead

of mid back which exclusively selected by [o]. In all suffixes where the initial vowel is front, the distribution is that the mid vowel occurs after mid vowels (front or back) in the last V slot in the verb, and the high vowel is selected by the non-mid vowels. Therefore, [o] selects the mid vowel, yielding the apparently disharmonic sequences illustrated in (52):

(52) -gon-ek-   'lay down'   cf. -gon-   'lie down'

        -lol-el-   'watch for'   cf. -lol-   'look at'

        -loomb-eg-w-   'be married'   cf. -loomb-   'marry'

        -soom-es-y-   'teach (literacy)'   cf. -soom-   'read, study'

As we seen, the forms in (52) are not disharmonic, since the occurrence of [e] after [o] is determined by height harmony. However, in the list of the 59 -CoCeC- sequences we found two roots where the -eC- is not a suffix, namely:

(53) -jovet-   'keep tame animals; speak'

        -cotec-   'act thoughtlessly or carelessly; go off the track; exaggerate'

If the sequences -CoCeC- were to be regarded as disharmonic, these two could be the only examples of such a disharmony in roots..

Still in (iv) we have the last set of disharmonic forms. As in the previous cases, these exceptional sequences occur in derived environments also, as shown in (54):

(54) -codim-   'be in a hurry'   cf. códii! (ideop.)   'of being steep')

        -lodik-   'heap up'   cf. códii! (ideop.)   'of being piled up'

        -noondip-   'be small or little'   cf. -noondí (adj.)   'small, little'

        -noondiy-   'reduce (size or quantity)' cf. -noondí (adj.)   'small, little'

        -tojim-   'be startled'   cf. tóji! (ideop.)   'of being startled'

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| -tojimy- | 'startled' | cf. tóji! (ideop.) | 'of being startled' |

b. -kodig-   'speak or sing very well'

    -sojig-   'curve'

In (54) we see that actually, there are only two exceptionally disharmonic verb roots provided in (54b). They look like forms derived from ideophones, but we have not found such ideophones. So, for the time being we will regard these forms as exceptions. Thus, of the 1245 -CVCVC- roots surveyed, we found seven forms that can be considered exceptional cases of disharmonic sequences. These are given in (55):

(55)   -simoong   'wonder at'

       -pesigw-   'be perplexed'

       -kodig-   'speak or sing very well'

       -sojig-   'curve'

       -jovet-   'keep tame animals; speak'

       -cotec-   'act thoughtlessly or carelessly; go off the track; exaggerate'

All of the other exceptions seen in Table 6 occur in derived environments. That is, the disharmonic forms result from the application of morphological rules. With these data we can clearly state that in non-derived environments, Ciyao verb roots strictly observe vowel harmony. With these notes o vowel harmony we complete the discussion of vowel processes in Ciyao.

2.3. Summary

In this chapter we have discussed the various sources of phonological vowel length in Ciyao, demonstrating that besides contrastive length opposition where we have

underlying short vs. long vowels, there are other sources of vowel length, namely, fusion, gliding, and deletion, adjacent moraic nasal, and enclitics.

Apart from the analysis of vowel length we also discussed vowel harmony, which is determined by the height of the root vowels. In this regard, we demonstrated that only derived forms may yield disharmonic sequences.

With this summary we now move on to the next chapter, where we analyze the phonological processes in which consonants are involved.

CHAPTER 3: CONSONANT PROCESSES

3.0. Introduction

In the preceding chapter we discussed the major phonological processes in which vowels are involved. In the present chapter we investigate the phonological processes that involve consonants, with vowels playing a role in some cases and other consonants (especially nasals) in others. Before we start our discussion of the processes, let us first consider the Ciyao surface consonants in Table 1:

Table 1: Consonantal phonemes.

Manner of articulation	Place of articulation					
	Bilabial	Labiodental	Labial-velar	Alveolar	Alveopalatal	Velar
Stop	p b			t d		k g
Affricate					c [ɟ] j [ʤ]	
Nasal	m			n	ny [ɲ]	n' [ŋ]
Fricative				s		
Approximant		v [ʋ]	w	l	y [j]	

Table 1 presents the 17 Ciyao consonantal phonemes. Most of the consonants in Table 1 may be involved in phonological processes which affect their surface realization or the surface realization of the adjacent segment. This chapter aims at discussing the phonological processes that affect synchronic distribution and alternation of consonants in Ciyao. The chapter is organized as follows: Section 1 shows the consonant distribution. Section 2 discusses nasal conditioned consonant alternations. Section 3 discusses other alternations. Section 4 presents the summary of the discussions.

3.1. Consonant distribution

All consonants given in Table 1 can be found in verb root initial position. The distribution of some of the consonants however, require some explanation or comment. The purpose of this section is to provide some of the explanations that account for the peculiarities shown by such consonant. Consider the following Table:

Table 2: Verb roots beginning with each consonant

Consonants	b	c	d	g	j	k	l	m	n	ny	n'	p	s	t	v	w	y
# verb roots	18	143	66	130	39	359	224	67	49	111	29	380	313	372	129	140	17

Table 2 provides important figures for our understanding of the relationships between the consonants. Thus:

[b] occurs mostly after /m/. Due to its rarity, we provide in (1) the complete list of the 18 roots in which it appears in initial position:

(1)   -balaadisy-   'disperse'

-balaadik-   'be dispersed'

-bambadik-   'bolt one's food'

-bangul-   'roar; bellow'

-batik-   'put on a patch'

-batukuk-   'be unstuck'

-batukul-   'unglue'

-beduk-   'break off a portion'

-bedul-   'break off a portion'

-bek-   'pay for a song in order to dance or to listen to'

-benyul-   'chip off little by little'

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-bidiviital-	'be dark in color'
-bogojol-	'wrench open'
-bunyuk-	'become jagged'
-bunyul-	'notch; chip'
-buuk-	'rise up; shout angrily'
-bwaasy-	'drive (people) away by bad behavior'
-bwabwaatal-	'be low and flat-topped (of a hill or mound)'

It should be added that /b/ is also found in the following nine roots intervocalically (root-internally):

(2)
-bwabwaatal-	'be low and flat-topped (of a hill or mound)'
-gudubuk-	'roll (intr.)'
-gudubuk-	'roll (tr.)'
-gwebedesy-	'stumble onto something that produces metallic sound'
-jub-	'sign up (daily job ticket or time sheet)'
-kudubuk-	'come out (a tube) from the tyre'
-kudubul-	'take out (a tube) from the tyre'
-sabadik-	'be out of order'
-sabadisy-	'put out of order'

[d, l] are partially in complementary distribution. [d] occurs mostly after [n] (in 268 roots) and before [i] (in 208 roots). There are only a few cases (24 roots total) where it precedes vowels other than [i]. Of the 224 occurrences of [l] there is no single root where it precedes [i] or follows [n]. The following table shows the number of verb stems where /d/ and /l/ occur before the different vowels and glides in our database.

Table 3: Verb roots where /d/ and /l/ occur before different vowels and glides.

Consonants	Vowels						
	a	e	i	o	u	w	y
/l/	1141	162	—	126	184	37	—
/d/	110	26	338	21	92	1	7

These figures allow us to conclude that in Ciyao there is a rule which turns /l/ into [d] before [i], as illustrated in the following examples:

(3) -did-il- /-dil-il-/ 'cry for' cf. -lel-el- /-lel-el-/ 'nurse for'

 cry-A nurse-A

 -mid-il /-mil-il-/ 'swallow for' cf. -lol-el- /-lol-el-/ 'look at for'

 swallow-A look at-A

In (4) we provide the rule which turns /l/ into [d]. Such a rule is represented in (3):

$$V$$
(4) /l/ → [d]/ —[+high, +front]

[k, g, n'] do not precede front vowels, as illustrated in the following examples where they alternate with palatals:

(5)a. -teleec-e 'cooked' cf. -telek- 'cook'

 b. -puj-il-e 'blew' cf. -pug- 'blow (of wind)'

 c. -niny-il-e 'constricted' cf. -nin'- 'constrict'

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We will come back to these alternations in section 3.4.2. where we discuss palatalization. For now consider the following table which provides the number of roots where the velar and the palatal consonants occur before the different vowels and glides:

Table 4: Velar and palatal consonants before different vowels and glides.

Consonants		Vowels						
		a	e	i	o	u	w	y
Velar	/k/	679	3	3	166	283	64	—
	/g/	272	1	—	85	162	48	—
	/ŋ'/	25	2	—	7	14	12	—
Palatal	/c/	27	102	177	29	15	—	—
	/ɟ/	26	43	92	15	31	—	—
	/ny/	193	38	69	34	21	—	—

Table 4 show that in this language the velar and palatal consonants are in partial complementary distribution.

In chapter 2 we saw that the labial approximants [w] derives from gliding of rounded vowels. It should be added that in some cases, [w] can be derived from /v/, as illustrated in the following examples:

(6)   Roots

    -lovek-   'steep in; soak'   cf. -lowok-ol- 'remove from a liquid ("unsoak")'

    -siv-   'fill in a hole; close up; shut up' cf. -siw-ul-   'open up'

    -uuv-   'hide (intr.)'   cf. -uuw-ul-   'bring out; denounce'

As seen in (6) the addition of the reversive morphemes to the roots, create sequences of /v/ followed by rounded vowels. Therefore, the turns into as required by a rule which is informally represented as in (7):

$$V$$
(7)   /v/ → [w] / —[+round]

In Table 5 we provide distribution of voiced oral labials before the different vowels in the database:

Table 5: Voiced oral labial consonants before different vowels.

Consonants	Vowels				
	a	e	i	o	u
/b/	10	4	1	1	7
/v/ ([ʋ])	130	36	87	—	—
/w/	23	6	14	27	140

As Table 5 shows, [b], [ʋ], and [w] are in partial complementary distribution with [ʋ] occurring mostly before non-rounded vowels where [b] and [w] are rare, and [w] before rounded vowels where [b] is rare and [ʋ] never occurs (cf. the rule in (6)).

In addition, where [w] occurs before a vowel other than [u] or [o], that vowel is almost always long. Therefore, we can say that in such contexts we have underlyingly /vuV/ which becomes /vwVV/ with gliding of the high back vowel and compensatory lengthening, and then /wVV/ with a deletion of /v/, as illustrated in the following examples:

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(8)   -waas-   /-vuas-/   'search thoroughly'

      -wees-   /-vues-/   'give up'

      -wiisal-   /-vuisal-/ 'be worn-out'

See in (9) the derivational history of the forms on the left hand column in (8):

(9)   UR: /-vuas-/   /-vues-/   /-vuisal-/

      v → w∷   -wuas-   -wues-   -wuisal-

      gliding + CL -wwaas-   -wwees-   -wwiisal-

      w → Ø   -waas-   -wees-   -wiisal-

                   'search'   'give up'   'be worn out'

In (9) gliding and CL (compensatory lengthening) happen simultaneously as we saw in
chapter 2.

        [y] has a limited distribution. It appears in initial position of the following 17 roots
mostly (in 11 root) before [i].

(10) -yaataangul-   'collapse'

      -yaatil-   'cover the genitals'

      -yeeyeeka   'tie temporarily'

      -yicil-   'lodge'

      -yiimb-   'swell'

      -yiind-   'swell (of seeds when steeped)'

      -yiingalamuk-   'roll on the ground'

      -yiingalamul-   'roll on the ground'

      -yiip-   'be sour'

      -yiituk-   'go off (a gun or a trap)'

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-yiitul-	'fire (a gun); touch off (a trap)'
-yik-	'arrive; come; reach'
-yikaangan-	'arrive, assemble, in a large number'
-yikaangany-	'bring, let come in large number'
-yoond-	'suck; be lean; kiss'
-yuutul-	'pull out'
-yuuy-	'winnow; shake or swing to and from'

[y] does not occur root-finally except in pseudo-causatives, in which cases the palatal glide derives from palatalization of /į/ before a vowel.

There are many morphophonemic changes that affect the surface realization of the consonants given in Table 1. In the next two section we discuss all such alternations.

3.2. Nasal conditioned consonant alternations

As was mentioned above, most of the consonants given in Table 1 alternate with others or with zero. In some cases, alternations are triggered by other segments, in other cases are just part of the morphology of the language. In this section we will investigate all possible consonant alternations triggered by the two nasals, namely, moraic nasal and syllabic nasal. In the next subsection we analyze alternations triggered by moraic nasal.

3.2.1. Consonant alternations after moraic nasal

Most of the morphophonemic changes that affect the consonants in Table 1 take place after nasals. In this subsection we will be concerned about the effects of the interaction between the moraic nasal and adjacent consonants. Consider the following examples:

(11)   1sg. object

    a. Before underlyingly voiceless oral consonants

        juu-m-bat-il-e   /ju-N-pat-il-e/   's/he got me'

        juu-m-diis-il-e   /ju-N-tiis-il-e/   's/he ran away from me'

        juu-n-juv-il-e   /ju-N-cuv-il-e/   's/he extracted me'

        juu-N-gam-il-e   /ju-N-kam-il-e/   's/he milked me'

    b. Before underlyingly voiced oral consonants

        juu-m-edudiil-e   /ju-N-bedud-i-il-l-e/   's/he broke off a portion for me'

        juu-m-aciil-e   /ju-N-vak-i-il-l-e/   's/he built for me'

        juu-m-weeciic-e   /ju-N-vuek-i-il-k-e/   's/he clothed me'

        juu-ɲ-iim-il-e   /ju-N-jiim-il-e/   's/he did not give me'

        juu-ɲ-iic-e   /ju-N-yi-il-k-e/   's/he reached me'

        juu-ɲ-uuyiiy-e   /ju-N-yuuy-i̧-i-i̧-e/   's/he swung me to and from'

        juu-n'-av-il-e   /ju-N-gav-il-e/   's/he cut me'

        juu-n-oomb-il-e   /ju-N-loomb-il-e/   'he married me'

    c. Before underlying nasals

        juu-m-et-il-e   /ju-N-met-il-e/   's/he shaved me'

        juu-n-ic-il-e   /ju-N-nik-il-e/   's/he dyed me'

        juu-n y-akwiil-e   /ju-N-nyaku-il-l-e/   's/he lifted me'

        juu-n'-weeleel-e   /ju-N-n'o-el-e-il-l-e/   's/he drunk for me'

In (11), the moraic nasal (N), which is the 1sg. object marker, agrees in place with the following consonant. As seen, the moraic nasal not only lengthens the preceding vowel, as we saw in the preceding chapter and is also observed in (11), but also affects the surface realization of the following consonants by voicing the voiceless oral as in (11a), deleting

the voiced oral and nasal as in (11b) and (10c), respectively. In (12) we provide the formalization of these two general rules:

(12)a.
N - C
  ⎿----�
  [+voice]

b.
Ø
↑
N - C
        |
     [+voice]
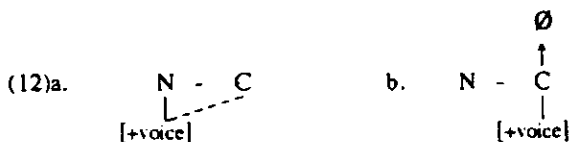
(12a) represents voicing of voiceless consonants (12b) deletion of voiced consonants. These two rules apply exceptionlessly when 15 out of the 17 consonants presented in Table 1 occur in verb root initial position. That is, in verb root-initial position, there are only two consonants (/d, s/) which are not affected by any of the rules in (12), as illustrated again in the following examples:

(13)   1sg. object

   a. Before /d/

       juu-n-dimúl-e   /ju-N-dimi-il-l-e/   's/he cultivated for me'
       juu-n-déléel-e   /ju-N-dele-il-l-e/   's/he underestimated me'

   b. Before /s/

       juu-saadiil-e   /ju-N-saadi-il-l-e/   's/he told me'
       juu-siméen-e   /ju-N-sima-il-n-e/   's/he encountered me'

As seen in (13), the rules (12) do not apply to Nd, Ns sequences. In (13a) the rule (12b) fails to delete the voiced alveolar consonant and the palatal approximant, respectively. In (13b) we see that instead of applying rule (11a), which voices the voiceless consonants, another rules is applied, nasal effacement. Nasal effacement has been investigated in many studies (Foley 1975, Herbert 1986, Ohala and Busá 1995, and the references therein cited)

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which have pointed out that in many languages nasal undergoes deletion before /s/ and/or sonorants. So far we can informally represent nasal effacement as in (14):

(14) $N \rightarrow \emptyset / \text{—s}$

(14) shows the most frequent case of nasal effacement across morphemes, as illustrated again in (15):

(15)a. 1sg. subject

saas-il-e	/N-saas-il-e/	'I reported'
sec-il-e	/N-sec-il-e/	'I laughed'
sim-il-e	/N-sim-il-e/	'I extinguished'
son-il-e	/N-son-il-e/	'I sewed'
suum-il-e	/N-suum-il-e/	'I bought'

b. 1sg. object

a-saas-il-e	/a-N-saas-il-e/	'they (cl.2) reported me'
a-sec-il-e	/a-N-sec-il-e/	'they (cl.2) laughed at me'
a-sim-il-e	/a-N-sim-il-e/	'they (cl.2) extinguished me'
a-son-il-e	/a-N-son-il-e/	'they (cl.2) sewed me'
a-suum-il-e	/a-N-suum-il-e/	'they (cl.2) bought me'

In (15) we see that the 1sg. (subject and object) marker, which is a moraic nasal, is deleted before the voiceless alveolar fricative /s/, but the preceding vowel is still lengthened as it takes over the mora left behind by the deleted (moraic) nasal.

Nasal effacement also takes place before classes 9 and 10 nouns with /s/ in stem-initial position, as illustrated in the following examples:

(16)a. Classes 9 and 10

sátó (cls.9 & 10)	/N-sátó/	'python(s)'
séeta (cls.9 & 10)	/N-séeta/	'tin'
singáano (cls.9 & 10)	/N-singáano/	'needle(s)
sóomba (cls.9 & 10)	/N-sóomba/	'fish'
suusúva (cls.9 & 10)	/N-suusúva/	'wart(s)'
swáala (cls.9 & 10)	/N-swáala/	'giraffe(s)'
syéétó (cls.9 & 10)	/N-syéétó/	'side(s)'

b. Classes 11 & 10

sáambi (cl.10)	/N-sáambi/	'sins'	cf.	lu-sáambi (cl.11)
sáasu (cl.10)	/N-sáasu/	'firewoods'	cf.	lu-sáasu (cl.11)
seenga (cl.10)	/N-senga/	'dregs'	cf.	lu-seenga (cl.11)
sííndó (cl.10)	/N-síndó/	'footfalls'	cf.	lu-sííndó (cl.11)
sosó (cl.10)	/N-sosó/	'shoot (of a seed)'	cf.	lu-sosó (cl.11)
súló (cl.10)	/N-súló/	'rivers'	cf.	lu-súló (cl.11)
swáájí (cl.10)	/N-suájí/	'tuft-like flowers'	cf.	lu-swáájí (cl.11)
syaasyo (cl.10)	/N-siasyo/	'example, sample'	cf.	lu-siasyo (cl.11)

Nasal effacement, as represented in (15), applies across morphemes whenever the moraic nasal (1sg. subject and object marker, and classes 9 and 10 prefixes) is followed by the voiceless alveolar fricative /s/. But this is not the only environment where nasal effacement takes place. This phenomenon also takes place morpheme-internally in a complex way. For instance, as we will see in section 3.3.3., the reflex of the historical tense vowel /*i̧/ which occurs in initial position of the perfect marker triggers frication of most verb linguals to which it is attached. Thus, if the oral consonant is prenasalized, the preceding nasal is deleted immediately after frication has applied to the lingual oral consonant, as illustrated in the following examples:

(17) -jees-il-e   /-jend-į̀l-e/   'walked'

      -tees-il-e   /-tend-į̀l-e/   'did'

      -valaas-il-e /-valang-į̀l-e/   'counted'

      -vilaas-il-e /-vilang-į̀l-e/   'called'

The derivational history that produces the output forms in (17) is given in (18):

(18) Input: -teend-   'do'   -vilaang-   'call'

   a. Morph.: -il-e suffixation: -teend-il-e   -vilaang-il-e

   b. Phon.: i. Frication: -teens-il-e   -vilaans-il-e

             ii. Nasal effacement: -tees-il-e 'did' -vilaas-il-e 'called'

As seen in (18), the suffixation of the perfective marker to the nasal cluster in root-final
position in (18a) triggers frication of the oral member of the cluster in (18b.i).
Consequently, the nasal which was preceding the oral voiced stop now precedes a
voiceless fricative consonant, a position it is no longer allowed to occupy. Therefore, in
(18b.ii) the nasal undergoes effacement.

        Consider next the following examples, where the moraic nasal is the 1sg. subject
marker:

(19) 1sg. subject

   a. Before underlyingly voiceless oral consonants

        cilóó m-bat-il-e   /N-pat-il-e/   'at night I got'

        cilóó n-diis-il-e   /N-tiis-il-e/   'at night I ran away'

        cilóó n-juv-il-e   /N-cuv-il-e/   'at night I extracted'

        cilóó n-gam-il-e   /N-kam-il-e/   'at night I milked'

b. Before underlyingly voiced oral consonants

cil66	m-atiic-e	/N-bati-il-k-e/	'at night I stuck on'
cil66	m-ac-il-e	/N-vak-il-e/	'at night I built'
cil66	m-weeciic-e	/N-vueki-il-k-e/	'at night I clothed'
cil66	ɲ-iim-il-e	/N-jim-il-e/	'at night I did not give'
cil66	n'-av-il-e	/N-gav-il-e/	'at night I cut'
cil66	N-oomb-il-e	/N-loomb-il-e/	'at night I married'

c. Before underlying nasals

cil66	m-etil-e	/N-met-il-e/	'at night I shaved'
cil66	n-ic-il-e	/N-nik-il-e/	'at night I dyed'
cil66	ɲ-akwiil-e	/N-nyaku-il-l-e/	'at night I lifted'
cil66	n'-w-eél-e	/N-n'-o-il-e/	'at night I drank'

In (19) we see the same effects that the 1sg. had on the following consonants. The 1sg. (moraic nasal) subject marker triggers voicing of the following voiceless consonants and deletion of the following voiced consonants (including the nasal). Again, exceptions are found when the following consonants are the voiced alveolar stop, /d/ or palatal glide, /y/ which do not undergo deletion, or when the following consonant is the voiceless alveolar fricative /s/, which does not voice, as illustrated in (20):

(20) 1sg. subject

a. Before /d/

| n-dimiil-e | /N-dim-il-e/ | 'I cultivated' |
| n-deleel-e | /N-dele-il-l-e/ | 'I underestimated' |

b. Before /s/

| saas-il-e | /N-saas-il-e/ | 'I told' |
| simeen-e | /N-sima-il-n-e/ | 'I encountered' |

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As seen in (20a) the moraic nasal which is the 1sg. subject marker still fails to delete /d/. Just like in (13b), the moraic nasal not just fails to voice the root-initial /s/ in (20b), but also undergoes effacement.

The effect on of the 1sg. (subject and object) marker moraic nasal on the adjacent consonants are in many respects similar to the effects of the classes 9 and 10 prefixes as shown in the following examples:

(22)   Classes 9/10 noun prefixes

   a.   Voiceless consonant voicing

m-búsí (cls.9 & 10)	'goat(s)'	cf.	ka-púsí (cl.12)	'kid'
m-báale (cls.10)	'potsherds'	cf.	lu-páale (cls.11)	'potsherds'
n-démá (cl.9 & 10)	'time(s)	cf.	ka-témá (cl.12)	'short period of time'
n-dewu (cl.10)	'beards'	cf.	lu-tewu (cl.11)	'beard'
n-gúku (cls.9 & 10)	'fowl(s)'	cf.	ka-kúku (cl.12)	'chicken'
n-gálála (cls.10)	'large baskets'	cf.	lu-kálála (cl.11)	'large basket'
n-jaáma (cl.10)	'groundnuts'	cf.	tu-caáma (cl.13)	'small groundnuts'
n-jeele (cl.10)	'figs'	cf.	lu-ceele (cl.11)	'fig'

   b.   C-deletion

n y-áámbí (cl.10)	'branches'	cf.	lu-jáámbí (cl.11)	'branch'
n-éémbó	'tattoos'	cf.	lu-léémbó	'tattoo'
m-udi (cl.10)	'torches'	cf.	lu-mudi (cl.11)	'torch'
n-eéne (cl.10)	'touchinesses'	cf.	lu-neéne (cl.11)	'touchiness'
n y-éenye (cl.10)	'kind of soft drink'	cf.	lu-nyéenye (cl.11)	'kind of soft drink'
n '-waánu (cl.10)	'miserlinesses'	cf.	lu-n'waánu (cl.10)	'miserliness'

   c.   No C-deletion

m-bokóla (cl.10)	'walking stick'	cf.	lu-bokóla (cl.11)	'walking stick'

m-balati (cl.10)	'ribs'	cf.	lu-valati (cl.11)	'rib'
n-jemó (cl.10)	'lips'	cf.	lu-jemó (cl.11)	'lip'
n-jété (cl.9)	'salt'	cf.	ka-jété (cl.12)	'a bit of salt'
n-jidimá (cl.10)	'currents in stream'	cf.	lu-jidimá (cl.11)	'current in stream'
n-jiidi (cl.10)	'layers'	cf.	lu-jiidi (cl.11)	'layers'
n-gono (cl.10)	'sleep'	cf.	lu-gono (cl.11)	'sleep'
n-dimi (cl.10)	'tongues'	cf.	lu-dimí (cl.11)	'tongue'

As shown in (21a), just like the 1sg marker, the moraic nasal prefix of the classes 9 and 10 voices the following voiceless consonants. However, unlike the moraic nasal of 1sg. marker which conditions the deletion of the following voiced consonant, the nasal prefix of the classes 9 and 10 just deletes: (i) two oral voiced consonants, namely, the lateral approximant (always) and the alveopalatal affricate (in 9 cases out of 12), and the nasals, as shown in (21b). The voiced alveopalatal affricate [j] is not deleted in 3 roots only, while the other voiced consonants ([b, d, g]) are never deleted as shown in (21c), which shows that verbs and nouns behave differently in some cases which some times happens even the verb and the noun are semantically related as in (22):

(22) Classes 10 (N)   1sg. subject (N)   Class 11

   n-gono 'sleep' cf. n'-on-il-e 'I slept' cf. lu-gono 'sleep'

   n-gooso 'taboos' cf. n'-goos-il-e 'I refrained from' cf. lu-gooso 'taboo'

As seen in (22), it seems that the only reason why these forms are different is that some are nouns, and others are verbs. But in the two cases the words seem to derive from the same class 11 nouns provided in the extreme right column.

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Just like the 1sg., there are some exceptional cases where the classes 9 and 10 (moraic nasal) marker fails to trigger consonant alternations. Consider the following examples:

(23)a. Before /s/

soombe (cl.10) /N-soombe/ 'locusts' cf. lú-soombe (cl.11) 'a locust'

súló (cl.10) /N-súló/ 'rivers' cf. lu-súló (cl.11) 'a river'

 b. Before /w/

wúumbo (cl.10) /N-wúumbo/ 'hairs' cf. lu-wúumbo (cl.11) 'a hair'

wuúdi (cl.10) /N-wuúdi/ 'white hairs' cf. lu-wúumbo (cl.11) 'a white hair'

On the left hand column in (23) we see that nasal effacement takes place not only before /s/, as in (22a), but also before the labial-velar approximant [w] as shown in (24):

(24) N → Ø/ — w

There is one major difference between nasal effacement before /s/ and before /w/. Before /s/, nasal effacement applies in verbs and in nouns. Before /w/, nasal effacement does not apply in verbs, as shown in (25):

(25) m-wiimbile /N-vuimb-įl-e/ 'I thatched'

  m-weeciice /N-veek-į-k-e/ 'I dressed (tr.)'

  m-waanjile /N-vang-įl-e/ 'I mixed'

As seen in (25), the reason why nasal effacement does not apply in verbs is that the surface [w] is underlying /u/ which occurs between /v/ and a non-rounded vowels, one of the cases

in which rule in (6) applies. So, we can say that nasal effacement before [w] applies exclusively in non-derived environments (which are found only in nouns).

Additional examples of classes 9 and 10 nouns, which illustrated the application of the rule in (24), are seen in (26):

(26)a. Classes 9/10

panáá	wúlá	/N-wúlá/	'there is rain'		
panáá	wuuti	/N-wuuti/	'there is a gun'		
panáá	wukó	/N-wukó/	'there is a mole (animal)'		
panáá	wuungo	/N-wuungo/	'there is a civet-cat'		
panáá	wunyá	/N-wunyá/	'there is uncooked gruel made of rice or millet flour'		
panáá	wúpó	/N-wúpó/	'there is a present'		

b. Classes 11/10

panáá	wáamba	/N-waamba/	'sensitivities to cold'	cf. lu-wáamba (cl.11)
panáá	waani	/N-waani/	'verandah rooms'	cf. lu-waani (cl.11)
	wáawu	/N-wáawu/	'kinds of shrubs'	cf. lu-wáawu (cl.11)
	wúla	/N-wúla/	'disused paths'	cf. lu-wúla (cl.11)
	wuumba	/N-wuumba/	'strange smells of food or drink'	cf. lu-wuumba (cl.11)

As seen in (26) the length of the vowel /a/ in final position of **paná** tells us that these nouns belong to classes 9/10, whose prefix is a moraic nasal that has been deleted by the nasal effacement rule in (24). It should be added that unlike nasal effacement before /s/, which also applies morpheme internally, nasal effacement before /w/ happens exclusively across morphemes, as shown in the preceding examples in (26). Many attempts have been made to explain nasal effacement. For Foley (1977:58ff), for instance, "it is the continuants which lead to nasal loss, not fricatives, per se, plus a relative strength of the segments and positions which determine nasal loss", while for Ohala and Busá (1995:9) it

is the combination of "voicelessness" and "fricativeness". Herbert (1986:251) refers to a process attested in some languages "which devoices nasal consonants when they precede voiceless oral consonants". Our data brings together these different points of view in one fact. The continuance and voicelessness, without necessarily combining them, create an environment for nasal effacement. Thus, while Foley's view explains nasal effacement applied before /w/ and before /s/, it does not however explain why it fails to apply before /y/, in Ciyao, another continuant. Ohala and Busá's as well as Herbert's view, explain why nasal effacement takes place before /s/ but not before /w/, which is neither voiceless nor fricative. This failure to account for the totality of Ciyao data suggests that there is no uniform way of analyzing this complex phenomenon phonetically as has mostly been done in the explanation of nasal effacement in the studies herein cited.

To complete the picture of the consonant alternations triggered by the moraic nasal we discuss Meinhof's Law (ML) which has been formulated as follows:

(27)   "When two successive syllables both begin with a nasal plus a following plosive, the plosive of the first syllable is lost" Meinhof's (1932:183).

The rule in (27), also known as Ganda Law, for it was in this language where it was first observed, assumes different configurations in different contemporary Bantu languages. Since the first plosive, which is the candidate for deletion, must be underlyingly voiced, in Ciyao, for instance, this rule has a considerably limited range of application. We have already discussed the reason for the limitation, the fact that all voiced consonants, except the alveolar stop /d/, are systematically deleted after moraic nasal. Therefore, the only target of Meinhof's Law in Ciyao is /d/. Recall that /d/ is the only stop that survives general voiced consonant deletion rule after moraic nasal given in (12b). Consider the following examples:

(28)a. 1sg. subject

ɳ-aandawiil-e   /N-daandawiil-e/   'I lamented'

n-üŋj-il-e   /N-diiŋj-il-e/   'I tried'

ɳ-ümbiil-e   /N-diimbiil-e/   'I insisted'

ɳ-oondoceey-e   /N-doondokeey-e/   'I poured drop by drop'

ɲ-yuuŋj-il-e   /N-dyuuŋj-il-e/   'I swung'

   b. 1sg. object

muu-ɳ-aandawudiil-e   /mu-N-daandawudiil-e/   'you lamented at me'

muu-n-iiŋj-il-e   /mu-N-diiŋg-il-e/   'you tried me'

muu-ɳ-iimbiil-e   /mu-N-diimbiil-e/   'you insisted on me'

muu-ɳ-oondoceey-e   /mu-N-doondokeey-e/   'you poured for me'

muu-ɲ-yuuŋgaasiisy-e /mu-N-dyuuŋgaasiisy-e/ 'you confused me'

As seen in (28), when the 1sg. (subject and object) marker is prefixed to a verb root with the voiced alveolar stop /d/ in initial position where it is the onset of a syllable that precedes another syllable whose onset is a prenasalized consonant, Meinhof's Law applies by deleting the verb root initial /d/. This phenomenon is informally represented as follows:

(29)   Meinhof's Law in Ciyao: $N+[dV(V)NC...]_{Root}$

$$\downarrow$$
$$\emptyset$$

Observe that in Ciyao, the adjacency of the syllables with the prenasalized consonants in onset positions is an obligatory condition for this rule to apply only if the first preconsonantal nasal and the following consonant belong to different morphemes. That is, the nasal must be a prefix and the voiced alveolar stop must occupy the root-initial position. Consider the following examples:

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(30)a. Verbs

    -ndaambik-   'trickle'

    -ndeengum-   'be tossed about'

    -ndiingwiin-   'shake'

The fact that Meinhof's Law applies exclusively across morphemes explains why it does not apply in (29) where the NCVNCV... sequences are all tautomorphemic. An important note to add is that if the second syllable starts with a plain nasal instead of a preconsonantal nasal, ML does not apply, as shown in the following examples:

(31)   n-dim-il-e   /N-dim-il-e/   'I cultivated'

        n-duum-il-e   /N-duum-il-e/   'I shouted angrily'

        n-dimwiil-e   /N-dimwiil-e/   'I sacred away'

If the voiced consonant in the stem-initial position is derived, that is, if it is underlyingly voiceless, again, ML does not apply, as illustrated in the following examples:

(32)   n-daandiit-e   /N-taandiit-e/   'I started'

        n-deenj-il-e   /N-teeng-il-e/   'I made a roof'

        n-diimb-il-e   /N-tiimb-il-e/   'I struck'

        n-doongweel-e   /N-toongweel-e/   'I roared'

        n-duund-il-e   /N-tuun-il-e/   'I urinated'

As seen in (32) ML applies only to non-derived voiced consonants. A final observation about the ML in Ciyao is that, as we have seen in all examples so far, it applies exclusively in verbs, and not in nouns as illustrated in the following examples:

(33) Nouns

    m-buúmba (cl.9)   'extended family'

    m-búunda (cl.9)   'zebra'

    n-dóóndwá (cl.9)   'star'

    n-guúnda (cl.9)   'pigeon'

    n-gáángá (cl.9)   'helmeted Guinea Fowl'

With this final observation we have covered all consonant alternations in which the moraic nasal is involved. As we saw, in most cases, the moraic nasal is the trigger of the alternations which affect all voiced consonants and voiceless consonants except /s/. In addition, the moraic nasal itself alternates with zero (Ø) before /s/ in verbs and nouns, and before /w/ in nouns. With this summary we move on to the next subsection, where we discuss the various types of alternation triggered by the syllabic nasal.

3.2.2.   Consonant alternations after syllabic nasal

The syllabic nasal (N .) in Ciyao also contributes, although not as much as the moraic nasal does, to consonant alternation. In the present subsection we will be concerned about the effects of the syllabic nasal on the following consonant. The syllabic nasal has a phonological behavior which is strikingly different from that of the moraic nasal we saw in the preceding subsection. Consider the following examples:

(34)   2sg., pl. object and 3sg. object (i.e., cl.3 nouns)

    a.   Before underlyingly voiceless oral consonants

        tu-m.-pat-il-e   /tu-mu-pat-il-e/   'we got you/him/her'

        tu-m.-tiis-il-e   /tu-mu-tiis-il-e/   'we ran away from her'

        tu-n.-cuv-il-e   /tu-mu-cuv-il-e/   'we extracted you'

        tu-n.-kamiil-e   /tu-mu-kamiil-e/   'we milked for you'

tu-n.-sis-il-e	/tu-mu-sis-il-e/	'we hid you'

b. Before underlyingly voiced oral consonants

tu-m.-batiic-e	/tu-mu-bati-il-k-e/	'we stuck on you'
tu-n.-jiim-il-e	/tu-mu-jiim-il-e/	'we did not give you'
tu-n.-gav-il-e	/tu-mu-gav-il-e/	'we cut her'

c. Before underlying nasals

tu-m.-met-il-e	/tu-mu-met-il-e/	'we shaved you'
tu-n.-nic-il-e	/tu-mu-nik-il-e/	'we dyed for you'
tu-n.-ŋyakwiil-e	/tu-mu-ŋyaku-il-l-e/	'we lifted you'
tu-n.-n'weeleel-e	/tu-mu-n'o-el-e-il-l-e/	'we drunk for you'

d. Before approximants

tu-m.-baciil-e	/tu-mu-vak-i-il-l-e/	'we built for him'
m.-búlá (cl.3)	/mu.-wúlá/[11]	'heavy rain"
tu-n.-noomb-il-e	/tu-N.-loomb-il-e/	'we married me'
tu-n.-nyiic-e	/tu-N.-yi-il-k-e/	'we reached you'

In (34), **N** . represents the syllabic nasal which is, in this case, the object marker of the 2nd parson (singular and plural) and the 3sg. Unlike the moraic nasal we discussed in section 3.2.1., the syllabic nasal neither triggers voicing of the voiceless oral consonants (34a), nor deletes the voiced consonants (34b), nasal included (34c). It also never triggers lengthening of the preceding vowel, as /u/ of **tu**- in (34). As shown in (34d), the only segments that show alternation after syllabic nasal are the approximants. When preceded by a syllabic nasal, the labial approximants harden, turning into a labial stop (/b/), as seen in the first two examples in (34d). The following is the formal representation of these alternations:

---

[11] Cf. wúlá (cl.9)   'rain';   ka-wúlá (cl.12)   'light rain'

(35)a.   N.   C

[diagram with N and C nodes, dashed line, double-strikethrough mark]

[-cont]   [+son]   [lab]
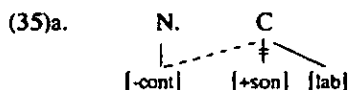
This rule turns the labial approximants [ʋ] and [w] into labial stop, as illustrated in the following derivation of the imperative form of -**vak**- 'build' and -**waang**- 'mix':

(36) UR: /-vak-/   'build'   /-vuang-/   'mix'

Morph.:   2sg. SM prefixation: m.-vak-   m.-vuaang-

Phon.:   v → b: m.-bak-   m.bwaang-

Morph.:   FV-suffixation: m.-bak-e   m.-vuaang-e

Phon.:   Palatalization: m.-bac-e 'build!'   m.bwaanj-e   'mix!'

In addition, the last two examples in (34b) show that the syllabic nasal turns the liquid /l/ and the palatal glide /y/ into alveolar nasal and palatal nasal, respectively, as represented in (37):

(37)   N.   C

[diagram with N and C nodes, dashed line]
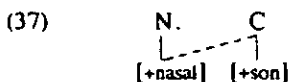
[+nasal]   [+son]

Except for these alternations, the syllabic nasal does not affect the surface realization of the consonants it precedes or the vowels it follows. When the syllabic nasal precedes root-initial nasals, the result is a double nasal, with the syllabic nasal assimilating the place of articulation of the following nasal. Another difference between the syllabic nasal and the moraic nasal is illustrated in the following examples:

(38)   2nd person subject before fricative /s/

tu-n.-saadiil-e   /tu-N.-saadi-il-l-e/   'we told you'

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tu-n.-simeen-e   /tu-N.-sima-il-n-e/   'we met you'

(38) shows that unlike the moraic nasal, the syllabic nasal is not deleted before /s/.
Consider next the following examples, where we show that the syllabic nasal is also one of
the realizations of the 2nd person subject as shown in (39):

(39) 2nd subject

   a. m.-pat-il-e   /mu-pat-il-e/   'you got'

      n.-tiis-il-e   /mu-tiis-il-e/   'you ran away'

      n.-cuv-il-e   /mu-cuv-il-e/   'you extracted'

      n.-kam-il-e   /mu-kam-il-e/   'you milked'

   b. m.-batiic-e   /mu-vati-il-k-e/   'you stuck'

      n.-dim-il-e   /mu-dim-il-e/   'you cultivated'

      n.-juj-il-e   /mu-juj-il-e/   'you begged'

      n.-gav-il-e   /mu-gav-il-e/   'you cut'

   c. m.-met-il-e   /mu-met-il-e/   'you shaved'

      n.-nic-il-e   /mu-pat-il-e/   'you dyed'

      n.-nyakwiil-e   /mu-nyaku-il-l-e/   'you lifted'

      n.-n'weeleel-e   /mu-n'o-el-e-il-l-e/   'you drank with'

All syllabic nasals are derived from *mu-. The syllabic nasal is an alternates with mu-
and mw- as illustrated in (40):

(40) 2nd subject

   a. muu-m-bat-il-e   /mu-N-pat-il-e/   'you got me'

      muu-n-diis-il-e   /mu-N-tiis-il-e/   'you ran away from me'

      muu-n-juv-il-e   /mu-N-cuv-il-e/   'you extracted me'

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muu-n-gam-il-e	/mu-N-kam-il-e/	'you milked me'
mou-m-atiic-e	/mu-N-mati-il-k-e/	'you stuck on me'
muu-ny-uj-il-e	/mu-N-juj-il-e/	'you begged me'
muu-n'-av-il-e	/mu-N-gav-il-e/	'you cut for me'
b. mw-aa-bat-il-e	/mu-a-pat-il-e/	'you got them (cl.2)'
mw-aa-tiis-il-e	/mu-a-tiis-il-e/	'you run away from them (cl.2)'
mw-aa-cuv-il-e	/mu-a-cuv-il-e/	'you extracted them (cl.2)'
mw-aa-kam-il-e	/mu-a-kam-il-e/	'you milked them (cl.2)'
mw-aa-matiic-e	/mu-a-mati-il-k-e/	'you stuck on them (cl.2)'
mw-aa-juj-il-e	/mu-a-juj-il-e/	'you begged them (cl.2)'
mw-aa-gav-il-e	/mu-a-gav-il-/	'you cut them (cl.2)'
c. mw-aa-metil-e	/mu-a-metil-e/	'you shaved them (cl.2)'
mw-aa-nic-il-e	/mu-a-nik-il-e/	'you dyed them (cl.2)'
mw-aa-nyakwiil-e	/mu-a-nyaku-il-l-e/	'you lifted them (cl.2)'
mw-aa-n'weeleel-e	/mu-a-n'o-el-e-il-l-e/	'you drank for them (cl.2)'

As seen in (40a), before the 1sg. object prefix, moraic nasal N which agrees in place with the following consonant, the 2nd person subject marker is realized as mu-, with compensatory lengthening of /u/. (40b) shows that before the class 2 object prefix -a-, the 2nd person subject is realized as mw-, with gliding of the /u/. This distribution of 2nd person prefix is similar to the distribution of classes 1, 3, and class 18 prefixes where syllabic nasal is also one of the allomorphs as shown in the following examples:

(41) Classes 1, 3, and 18 noun prefixes

a. mu- allomorph: noun class prefix

muu-ndu (cl.1)	/mu-ndu/	'person'
muu-ndálaanga (cl.3)	/mu-ndálanga/	'kind of dance'

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muu-mbaale (cl.18)   /mu-N-baale/   'in a plate'

b. **mw**- allomorph:

　mw-aanáce (cl.1)   /mu-anáce/   'child'

　mw-éésí (cl.3)   /mu-ésí/   'moon'

　mw-aasávi (cl.18)   /mu-asávi/   'in a wizards'

c. **N .**- allomorph:

　n .-daála (cl.1)   /mu-dala/   'old person'

　n .-goómba (cl.3)   /mu-goómba/   'beam'

　n .-nusúló (cl.18)   /mu-lusúló/   'in a river'

As seen in (41), the distribution of the allomorphs of the classes 1, 3, and 18 is the same as that of the 2nd person (subject and object) marker: **mu**- precedes moraic nasal; **mw**- occurs before vowels, and **N .**- before non-moraic consonants. Of the 12 nouns of classes 1 and 3 whose prefix is **mu**-, there is one exceptional noun, **mu-si** (cl.3) 'village', where the **mu**- allomorph precedes a non-moraic consonant. And there is no way that we can explain it. One could have thought that there was a nasal effacement if the vowel of the prefix **mu**- was long. But, as seen, it is short. So, we maintain that it is just an exception. Although the noun prefixes of the classes 1, 3, and 18, have been reconstructed as ****mu**- in Meeussen (1967), it is interesting to note that most of nouns of these classes take the syllabic nasal as is illustrated in the following table:

Table 6: Distribution of classes 1 and 3 allomorphs.

Allomorphs	Classes		Total
	1	3	
mu-	1	11	12
mw-	12	15	27
N.-	95	601	696
Total	108	627	735

As seen in the Table 3, of the 736 nouns of classes 1 and 3, 601 (81.7 percent) have the syllabic nasal **N .** - as their prefix, 27 (3.7 percent) take the prefix **mw-** and **mu-** is found in 12 nouns only (1.6 percent)—of which 11 of class 3 and 1 of class 1.

Thus far we have seen two sets of alternations, one with moraic nasal, and one with syllabic nasal. Now we turn to other alternations.

3.3. Other alternations

In this subsection we will consider consonant alternations which are not triggered by nasals, namely, Ø/j. palatalization, and frication.

3.3.1. Ø/j alternation

In this subsection we will be concerned with the alternation between the voiced alveopalatal affricate /j/ and zero. In contemporary Ciyao there is a "stable" [j], which is realized in all verb forms, and an "unstable" [j], which appears only in some verb forms. Let us consider the stable one in the following examples:

(42) -j-   'go'   -jû-   'say'

-jaalusy-   'disgrace oneself'   -jin-   'dye black'

-jaand-   'throw cloth, over the shoulder' -jogoj-   'talk noisily'

-dii-jaas-   'leave home and settle elsewhere' -joj-   'make noise'

-jagadik-   'be restless and worried'   -joogocey-   'bluster; bluff'

-jagam-   'hobble (in walking). limp'   -dii-joongol- 'stretch one's limbs'

-jajaval-   'float'   -joongolomy- 'scare game'

-jevedika-   'search in vain; waste'   -jovet-   'mumble'

-javaluk-   'spring to the feet'   -jub-   'sign up time sheet)'

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-jawusy-	'halfcook'.	-jug-	'beg'
-jeesy-	'walk carefully'	-juguval-	'blister'
-jejem-	'strain at stool'	-juguvasy-	'makee blister(s)'
-jididik-	'be covered up'	-juj-	'rejoice at an escape'
-jidijiitik-	'quiver; tremble'	-jujik-	'be over-liberal'
-jidim-	'trickle; flow slowly'.	-jujulusy-	'be acid in taste'
-jiigaany-	'learn; teach oneself'.	-juman-	'quarrel'
-jiim-	'to not give'	-jutuk-	'rebound (as a spring)'
-jiimy-	'cause to not give'	-jutul-	'jar oneself'
-dii-jiiticisy-	'confess a crime"	-juund-	'be sodden'
-jijidik-	'be restless'		

(42) presents a sample of the 39 verbs with /j/ in root-initial position. As we saw in section 1, after the 1sg. agreement marker which is a moraic nasal, /j/ is deleted and the 1sg. agreement marker is realized as a palatal nasal. In (42), below, we show a sample of how these verbs are conjugated in a sample of different tenses/moods of 1st person plural:

(43)	Infinitive	ku-jájával-a	'float'
	Remote past (P2):	tw-aa-jajaveel-e	'we floated' (before today)
	Recent past (P1):	tu-jajaveel-e	'we floated' (today)
	Present:	tu-ku-jajaval-a	'we are floating'
	Distant future (F2):	ci-tu-ci-jajaval-a	'we will float' (after today)
	Recent future (F1):	ci-tu-jajaval-e	'we will float' (today)
	Conditional:	tu-kaa-jajaval-e	'if we had floated'
	Consecutive:	tu-kaa-jajaveél-e	'we could have floated'

As seen in (43), /j/ is present in all forms of the verb. That is, /j/ never alternates with Ø. In contrast with the verbs of this group, where the root-initial /j/ is present in all tenses and is only subject to the general voiced consonant deletion rule after moraic nasal (1sg. marker), we have in the database a list of 151 out of 190 (79.4 percent) j-initial verbs where /j/ is "unstable". It surfaces in most tenses except in three forms, namely, the infinitive, the present, and the distant future tense, where the long vowel that follows /j/ occupies root-initial position, as illustrated in the following examples:

(44) -aasim-   'lend, borrow'

    -eegam-   'lean on'

    -iinám-   'bend down'

    -oog-   'bathe'

    -uuv-   'hide (intr.), shelter'

Unlike the verbs with stable [j] where we find both bimoraic and monomoraic root-initial syllables, the root-initial syllable of all verbs where [j] is unstable is bimoraic only. As seen in (45a), below, where we provide verb forms in which the unstable [j] surfaces, the root-initial syllable whose onset is [j] remains long as it is when the onset is the part of the preceding morpheme, as in (45b), where [j] does not surface.

(45)a. Verb tenses with [j] :

Rts:	-aasim-	-eegam-	-iinam-	-oog-	-uuv-
Gloss:	'lend, borrow'	'lean on'	'bend down'	'bathe'	'hide (intr.)'
P2[12]:	tw-aa-jaasiim-e	tw-aa-jeegeem-e	tw-aa-jiineem-e	tw-aa-joos-il-e	tw-aa-juuv-il-e
P1:	tu-jaasiim-e	tu-jeegeem-e	tu-jiineem-e	tu-joos-il-e	tu-juuv-il-e

---

[12] "P2" stands for 'remote past' ('before today'); "P1" stands for 'recent past' ('today'); "F1" stands for 'near future' ('today'); "Cond." stands for 'past conditiona' (E.g., 'If we had borrowed')

[12] "Pres." stands for 'present' ('before today'); "F2" stands for 'distant future' ('before today')

F1:	ci-tu-jaasim-e	ci-tu-jeegam-e	ci-tu-jiinam-e	ci-tu-jooj-e	ci-tu-juuv-e
Cond:.	tu-kaa-jaasim-e	tu-kaa-jeegam-e	tu-kaa-jiinam-e	tu-kaa-jooj-e	tu-kaa-juuv-e

b. Verb tenses without [j] :

Rts:	-aasim-	-eegam-	-iinam-	-oog-	-uuv-
Gloss:	'lend, borrow'	'lean on'	'bend down'	'bathe'	'hide (intr.)'
Pres.:[13]	tu-kw-aasim-a	tu-kw-eegam-	tu-kw-aasim-a	tu-k-oog-a	tu-ku-uv-a
F2:	ci-tu-c-aasim-a	ci-tu-c-eegam-a	ci-tu-c-iinam-a	ci-tu-coog-a	ci-tu-c-uuv-a

As we look at the database, we realize that all verbs with vowel in stem-initial position are conjugated as illustrated in (45). That is, all verbs with vowel in stem-initial position of the citation (infinitive) forms used as entries in the dictionary insert [j] in suffix-marked tenses (P2, P1, Present, F2, F1, Conditional, etc.) as in (46a). In prefix-marked tenses (Present, F1) as well as in infinitive forms, /j/ does not surface, as seen in (45b). It should be mentioned that in some studies (Sanderson 1922, 1954; Whiteley 1966), [j]-deletion, and not [j[-insertion, is implied since the infinitive forms of the verbs with vowel in root-initial position are cited with [j], in which cases the prefix-marked tenses are regarded as the ones where [j] is deleted. We assume that the infinitive provides the underlying form. Since the unstable /j/ does not occur in the infinitive forms, it is not part of the underlying structure of the verbs. In those forms where it surfaces, it is inserted later.

Although in most cases it is not possible to derive nouns from verbs, (46) provides the few derived nouns found in our database:

(46)a. w-aasaasi (cl.14)   'losing frequently'   cf. -aas-   'lose'

       lw-eendo (cl.11)   'roving'   cf. -eend-   'walk'

---

mw-iinjilo (cl.3)	'long shirt or gown'	cf. -iinjil-	'enter'
w-oonaasi (cl.14)	'destruction'	cf. -oonaang-	'destroy'
b. ci-joocelo (cl.7)	'place where things are roasted'	cf. -ooc-	'roast'
wu-juumu (cl.14)	'dryness'	cf. -umul-	'dry'
ci-jaasa (cl.7)	'place where things are thrown away'	cf. -aas-	'throw away, lose'

As seen in (46), the kind of Ø/j alternation that we find in verbs with vowels in root-initial position is also found in nouns derived from those verbs. That is, some nouns derived from v-initial verbs keep the vowel in stem-initial position as in (46a), while others insert /j/ in stem-initial position as in (46b). There does not to be any way to explain this difference, which is completely lexicalized.

In the next section we move on to the analysis of the widespread phenomenon of palatalization in Ciyao.

3.4.2. Palatalization

Ciyao is one of the languages where palatalization of velar consonants after front vowels is regular not only morpheme-internally (Hyman and Moxley 1996), but also across morphemes. Palatalization as a phonological process constitutes one of the main results of the interaction between vowels and consonants in this language. Consider the following examples:

(47)   Morpheme-internal palatalization

a.   *k > c

n-cila (cl.3)	'tail'	cf. *-kida
n-ciga (cl.3)	'tail'	cf. *-kiga
-ce-	'dawn'	cf. *-ke-
ma-ceende (cl.6)	'testicles'	cf. *-kende

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b. *g > j

-ji-	'go'	cf. *-gi-
N-jijo (cl.10)	'ban, prohibition'	cf. *-gido
dii-jego (cl.5)	'molar tooth'	cf. *-gego
N-je (cls.9 & 10)	'blue scorpion'	cf. *-ge
N-jidma (cl.10)	'currents in streams'	cf. *-gedi

As seen in (47), palatalization in Ciyao is a pervasive phonological rule triggered by the front vowels /i, e/ which spreads the feature [coronal] onto the preceding velar ([dorsal]) consonants as represented in (48):

(48)   C   V
          ǂ⁻ ˙₋ⵊ
        [dorsal] [coronal]

The palatalization rule represented in (48) applies in the same way to oral and to nasal velars, as was shown in chapter 2, which shows an important phonological difference between Proto-Bantu, where these alternations are not attested, and Ciyao. The following examples constitute exceptions to the palatalization rule formalized in (48):

(49)a. -pikinicisy-   'squeeze in'

        -keeka (cl.3)   'mat'

        -gey- (< geee! 'ideop. of belching) 'belch'

        di-geleesya (cl.5)   'pot shred'

    b. -kiy- (< Eng. 'key')   'lock'

        -giya (cl.9) (< Port. 'guia' ['gija] 'a travel document within the country, esp. during a war'

    c. kimyaa! (ideo.)   'be quiet and thoughtful; quietness'

        -sweekeen- (< ideop.: swekeesweke 'be wobbly')   'be loose in a socket'

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di-tekeenya (cl.5) (< ideop.: tekeenyatekenya 'itchy') 'jigger-flea (pules penetrans)'

-teketeka (< ideop.: tekateka 'falling down as tears') 'fluttering down as falling leaves'

d. ci-ngelengeele (cl.7) (onom.: ngelengelengele! 'sound of a bell') 'a bell'

As seen in (49), of the eleven exceptions to the palatalization rule in (48), two (49b) are loanwords and nine are indigenous. Of the nine indigenous, four (49a) are words that can be considered as actual exceptions, four (49c) are ideophones or derived from ideophones, and one (49d) is an onomatopoeic word. The fact that the only exceptions to the rule in (45) are found in these three groups of words —ideophones, onomatopoeias and loanwords— constitutes a strong evidence that palatalization in Ciyao is a very widespread phenomenon. Observe that in all examples in (49) the exceptions happen morpheme-internally. Across morphemes such exception are never found, in which cases palatalization applies exceptionlessly whenever the structural description is met, as shown in the following examples:

(50) Across morpheme palatalization

 i.. k → c

 a. -vac-il-e /-vak-il-/ 'we built'

 -teleec-e /-teleek-e/ 'we cooked'

 b. -vic-il- /-vik-il-/ 'put for'

 -pelec-el- /-pelek-el/ 'hand over for'

 ii. g → j

 a. -jaanj-il-e /-jaang-il-/ 'we answered'

 -vidiij-e /-vidiig-e/ 'we wrapped up'

 b. -valaanj-il- /-valaang-il-/ 'count on'

 -loj-el- /-log-el-/ 'bewitch for'

 iii. n' → ny

a. -niny-il-e   /-nin'-il-e/   'we constricted'

    -nony-il-e   /-non'-il-e/   'they tested well'

b. -niny-il-   /-nin'-il-/   'constrict for'

    -nony-el-   /-non'-el-/   'please'

The examples in (50) show that palatalization of velars before [i] and [e] is a highly productive phenomenon. Finally, it important to note that only underlying front vowel trigger palatalization of the velars. That is, the mid front vowel that results from the coalescence of a+i , which happens across morphemes, does not condition palatalization. as shown the following examples:

(51)a. -pakeet-e   /-paka-il-t-e/   'held in the hands'

     -piikeen-e   /-pika-il-in-e/   'heard'

b. -jigeel-e   /-jiga-il-l-e/   'took'

     -laangeen-e   /-laanga-il-n-e/   'agreed'

In the next section we consider another important source of the difference between underlying and surface forms in Ciyao, frication.

3.4.3.   Frication

In contemporary Ciyao, there are many instances where the high front vowel /i/ triggers frication, a phenomenon also called "euphonic change" (Sanderson (1922, 1954), "consonant mutation" (Kisseberth and Abasheikh 1975, Hyman 1994, Zoll 1995), or "spirantization" (Bastin 1983, Mtenje 1989/90, Odden 1996), on preceding lingual oral consonants, turning them into voiceless alveolar fricative /s/. The high front vowel responsible for such changes is the a relic of the historical tense vowel usually reconstructed as /i̧/ which in many contemporary Bantu languages, Ciyao included, has

merged with the lax high or 'more open' (Meeussen 1967) front vowel /i/. In such languages the relic of the historical *-į- is felt only through the phonological processes it triggers. In Ciyao, for example, such phonological processes are reduced into one, frication, whereby all oral linguals (alveolars, palatals, and velars) turn into voiceless alveolar fricative [s] before /į/. Synchronically, frication can only be observed across morphemes, as illustrated in the following examples:

(52) tu-tees -il-e   /tu-tend-įl-e/   'we did'

      tu-dis -il-e   /tu-dil-įl-e/   'we cried'

      tu-los -il-e   /tu-log-įl-e/   'we bewitched'

      tu-wus -il-e   /tu-vuj-įl-e/   'we returned'

      tu-les -il-e   /tu-lek-įl-e/   'we left'

(52) shows that synchronically, frication takes place when the reflex of the tense /*į/ such as /i/ of the perfective bimorphic -il-e is preceded by one of the linguals. The following Table shows the number of roots in which the final lingual consonants undergo frication or frication before /i/ of the perfective -il-e:

Table 7: Frication or palatalization in roots-final position before -il-e (<*-į de).

Phonological	Consonants					
Processes	/d/	/l/	/j/	/k/	/g/	Total
Frication	3	44	1	3	8	59
Palatalization	—	—	—	30	72	103
No change	40	—	5	—	—	40
Total	43	44	6	33	80	202

The figures in Table 7 report the number of times the relevant consonants undergo frication, palatalization or do not undergo any changes in the relevant environments in -C(V)V(N)C- roots. As seen, /l/ is the only lingual which is not affected by the tense initial vowel of the perfective -il-e. In three roots out of 43, /d/ undergoes frication before the tense vowel of the perfective -il-e. In this context, and nowhere in the language, /d/ does not undergo palatalization. Since /j/ is already palatal, the only change we could expect, if any, could be frication. However, it does not happen that much. Out of the six roots where it occurs in final position, it only undergoes frication once before the tense /i/ of -il-e. The most productive case of frication is given to us by /l/. As seen in Table 7, /l/ either undergoes frication or some irregular ways of perfective formation happens. But definitely, -il-e is never attached to /l/ without changing /l/ into [s] and never undergoes palatalization. The velars /k, g/ show also some regularity inasmuch as palatalization is concerned. They rarely undergo frication—we have 3 roots out of 33 with k → s frication and eight out of 80 with g → s frication—but almost always undergo palatalization. What they never do is to allow for the /i/ of -il-e to be affixed to them and still surface as velars. More details on frication in Ciyao are discussed in chapter 5, where we show that the other trigger of frication is the /-i̧-/ causative.

3.4. Summary

This chapter has investigated the phonological processes in which consonants are involved in Ciyao, with special emphasis on the role of nasals whose interaction with the oral consonants affects considerably their surface realization either by voicing the voiceless consonants—through a general rule of voicing voiceless consonants after N—or by deleting the voiced ones—through another general voiced consonant deletion rule. In addition, the survivor of this general deletion rule, /d/, may be deleted by of Meinhof's Law. We demonstrated that the moraic nasal is not only a trigger of the consonant alternations, but also an undergoer. It drops before /s/ in verbs and nouns and before /w/

in classes 9 and 10 nouns. The syllabic nasal hardens approximants by turning into oral stops the two labials /v, w/, and into a nasal the two linguals /l, y/. We also demonstrated that the front vowels /i, e/ palatalize the velar consonants (oral and nasal) they follow, and that the reflex of the historical tense /ʮ/ fricativizes most of the linguals (but especially /l/) it follows. Finally, we have observed several times in this chapter that many phonological processes involving consonants must be analyzed taking into account the part of speech, i.e., verb, vs. noun.

CHAPTER 4: VERB STRUCTURE

4.0. Introduction

The Bantu languages are well known for their robust morphology characterized by the complex concatenation of morphemes to form words. This complexity finds its highest expression in the verb, as illustrated in (1):

(1)   Bantu verb structure
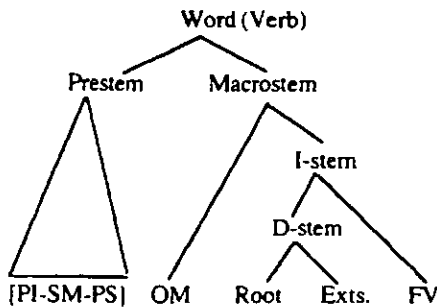
Where: I-stem stands for Inflectional stem; D-stem stands for Derivational stem; PI stands for Pre-initial; SM stands for Subject marker; PS stands for Post-subject; OM stands for Object marker; Exts. stands for Extensions; FV stands for Final vowel. PI and PS include tense, aspect, mood, and negation markers. There are two stems, namely, simplex stem (S-stem) and reduplicated stem (Red-stem), which are included in our discussion later in this chapter, but are not represented in (1) for lack of space.

As seen in (1), the verb in Bantu comprises a series of prefixes in prestem position, an optional macrostem which includes an object marker plus the inflectional stem which includes a root and a final vowel. The derivational stem is an optional structure which

includes the root and derivational suffixes. That is, if no extension are suffixed to the root we assume an I-stem with the configuration shown in (2):

(2)

```
            I-stem
           /\
        Root   FV
```

In the next sections of the present chapter we consider these components of the verb structure.

Although (1) represents the verb structure of the affirmative form most commonly found in Bantu languages, its application to particular languages may require some modifications to suit the different language characteristics. For instance, in some languages such as Makonde (P.23), Nyanja (N.31), and Shona (S.10) the tense markers of the indicative mood are prefixes, but in the singular affirmative imperative there is no prefix, i.e., no SM. In other languages such as Changana (S.53), and Makhuwa (P.31), the markers of some tenses of the indicative are prefixes and others are suffixes while in the imperative they do not take the subject marker. In Ciyao, some tense markers are single morpheme prefixes, others are single morpheme suffixes, and still others are two morpheme prefixes (separated by another morpheme in the verb structure), or two morphemes one of which is a prefix and the other is a suffix. Unlike the other languages which do not include the subject marker in the imperative, Ciyao requires a second person subject marker in the imperative. Consider the following examples:

(3) Root: -suum-   'buy'

a.   Present (Prs.):   tu-ku-suum-a   'we buy'

     Recent past (P1):   tu-suum-il-e   'we bought (today)'

     Remote past (P2):   tu-aa-suum-il-e   'we bought (before today)'

     Near future (F1):   ci-tu-suum-e   'we will buy (today)'

     Distant future (F1):   ci-tu-ci-suum-a   'we will buy (after today)'

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b.   Imperative: n-suum-e!   'buy!'

As seen, in (3a), while the TM of the simple Prs. tense is the prefix -**ku**- and the TM of the P1 is the bimorphic suffix -**il-e**, the TM of the P2 is the bimorphemic -**aa-**...**-il-e**, the TM of the F1 is the bimorphemic **ci-**...**-e**, and the TM of the F2 is the bimorphemic **ci-**...**-ci-**. In (3b) we have the imperative form where the syllabic nasal **n.**- is the subject marker which, as we have said, in this language must obligatorily be expressed. As seen, facts with the bimorphemic tense markers with one morpheme in prefix position and another morpheme in suffix position might pose a question of how to represent the inflectional stem (Downing 1994, 1996, 1997) in those cases where the inflectional marker includes one prefix and one suffix. In our study, which is concerned about the stem, we will only consider the suffixal part of the tense marker which is part of the stem. However, before we get into the analysis of the verb structure itself, it is important to mention that the Bantu verbs in the infinitive forms are classified as nouns which employ the class 15. In Ciyao, and in many other languages, the class 15 noun prefix is **ku**-. In the present study of the verb structure, we will exclude this infinitive marker, which is listed as a class 15 prefix in Table 1 of noun classes in chapter 1.

       The present chapter is organized as follows: Section 1 presents the root. Section 2 considers the final vowel. Section 3 discusses the stem. Section 4 analyzes the inflectional prefixes. Section 5 briefly considers defective verbs. Finally, Section 6 summarizes the discussions.

4.1. The root

       In Bantu languages the root constitutes the core morpheme of the verb to which the affixes are added. The structure of the root can be of different shapes such as -CV-, -(C)V(V)C-, or longer. In the next section we consider the (C)V(V)C- roots.

4.1.1. -(C)V(V)C- roots

By -(C)V(V)C- roots we mean monosyllabic (monomoraic or bimoraic) non-derived forms with a vocalic nucleus which may have or may not have an onset, but with an obligatory final consonant, as illustrated in the following examples:

(4)a. -CVC-

    -vak-   'build'

    -mel-   'sprout'

    -yik-   'arrive'

    -pot-   'wring'

    -wum-   'come from'

b. -CVVC-

    -waas-   'search'

    -kweemb- 'smoke'

    -yiind-   'become stained with damp'

    -loot-   'foresee'

    -tyook-   'go away'

    -puund-   'surpass'

c. -VVC-

    -aas-   'lose'

    -aang-   'answer'

    -eend-   'walk'

    -iiv-   'steal'

    -iimb-   'sing'

    -oot-   'warm oneself at a fire'

    -oong-   'suck'

    -uuv-   'hide' (intr.)

Observe that the vowel in root-initial position in (4c) is underlyingly long. As we saw in chapter 3, all these vowel-initial roots insert /j/ in suffix marked tenses, as illustrated in the following examples:

(5)   Root   PI

    -aas-   'lose'   tu-jaas-il-e   'we lost'

    -eend-   'walk'   tu-jees-il-e   'we walked'

    -iit-   'pour out'   tu-jiit-il-e   'we poured out'

    -ootel-   'warm oneself at a fire'   tu-joot-il-e   'we warmed onself at a fire'

    -uuv-   'hide (intr.)'   tu-juuv-il-e   'we hid'

As seen in (5), the length of the vowel which occupies the root-initial position before the insertion of /j/ is kept after the /j/-insertion, which means that these vowels are underlyingly long. No short vowels are found in verb root initial position.

    In the next subsection we consider what we call long roots.

4.1.2.   Long roots

    We refer to synchronically non-derived bisyllabic or longer roots as "long roots". By non-derived we mean forms with no derivational suffixes (extensions or verbalizers), be they active or frozen. If we consider all derivational processes that produce different types of stems we will discuss in section , below, we can say that there are very few non-derived long roots in Ciyao. As we will see in chapter 7, in terms of inflectional morphology, the long roots behave like the derived roots as far as the process of affixation of some inflectional suffixes is concerned. Consider the following examples:

(6) Bisyllabic roots

a. -CVCVC- roots   b. -(C)VVCVC- roots

-sigal-   'remain'   -aangal-   'dance about'

-nyelet-   'squeeze through'   -veecet-   'speak'

-vidig-   'roll up'   -aasim-   'lend; borrow'

-gojom-   'be loosely tied'   -toondov-   'be slack; loose; relent'

-puluv-   'form lumps of uncooked flour' -guundum-   'rush and seize hold'

In (6) we have examples of bisyllabic long roots. Apart from the bisyllabic (long) roots as shown in (6), there are also trisyllabic non-derived roots, as illustrated in (7):

(7) -gaangalam-   'be big (and roundish)'

-eembecey-   'await'

-divadil-   'forget'

-solokot-   'scrape out (e.g., seeds); entice a person away from his (her) home'

-wulukut-   'fidget'

There appear to be no tetrasyllabic or longer roots that are non-derived. In some cases there long roots which have what Meeussen (1967) calls "expansions" — "V(N)C-, in which V can be any vowel, although 'e' and 'o' are rare" (p. 89). Unless we add an extension suffix, the "expansion" precedes the final vowel that follows -(C)V(V)C- root as shown in the following examples:

(8)a. -aasam-   (< *-jac-)   'gape; yawn; open one's mouth'

-jidim-   (< *-gèd-)   'trickle; flow slowly'

-komaang-   (< *-kom-)   'finish off a wounded animal'

-paangaany-   (< *-paŋg-)   'make'

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	-vilaang-	(< *-bid-)	'call; summon'
b.	-diimbaangan-	(< *-dimb-)	'be very strong and muscular'
	-ganiisy-	(< *-gàn-)	'think; consider'
	-iinjil-	(< *-jinj-)	'enter; go in'
	-puumul-	(< *-pum-ud-)	'breath'
	-kojol-	(< *-kòj-)	'pass water; urinate'

The final -VC- morphs presented in bold face are what can be considered as "expansion". The concept of "expansion" is difficult to operate with due to its semantic and formal heterogeneity. According to Meeussen (1967:89), "The expansions in some bases are entirely different from suffixes", as in (8a), and in "other bases the expansion is formally identical with one of the suffixes" as in (8b). To make matters more complicated, Meeussen says that "Where convenient the term extension will be used to cover both expansion and suffix". That is, Meeussen does not clearly show what expansion is and the need for its inclusion in the literature. As seen in (8), apart from lengthening the -(C)V(V)C- root, the expansion does not seem to have any other functions. So, in our study we consider the "expanded" roots as simply long roots, since they usually satisfy our defining characteristics of long roots. In the next subsection we consider short roots.

4.1.3.   Short roots

According to our classification, this is the third and smallest group of roots, normally known as -CV- roots in the literature and this is the way we designate them in this study. A complete list of the 15 -CV- roots in Ciyao is provided in (9):

(9)   Roots   P1

a.   -dy-   /-di-/   'eat'   -di-il-e

     -ji-   /-ji-/   'go'   -ji-il-e

     -py-   /-pi-/   'be burnt'   -pi-il-e

     -ti   /-ti/   'say'   -ti-it-e

b.   -gw-   /-gu-/   'fall'   -gw-iil-e

     -w-   /-bu-/   'die'   -w-iil-e

c.   -ce-   /-ke-/   'dawn'   -ce-el-e

     -ny-   /-nya-/   'defecate'   -nye-el-e

     -p-   /-pa-/   'give'   -p-eel-e

     -t-   /-ta-/   'name (a child)'   -t-eel-e

     -v-   /-va-/   'be'   -v-eel-e

d   -n'w-   /-n'o-/   'drink'   -n'w-eel-e

     -pw-   /-po-/   'empty (intr.)'   -pw-eel-e

     -sw-   /-so-/   'grow dark'   -sw-eel-e

     -tw-   /-to-/   'pound'   -tw-eel-e

In the next chapter we will see that -CV- roots show a peculiar behavior in the way they accept the affixation of the derivational morphemes. But consider the final vowel in the next subsection first.

4.2.   The final vowel

The final vowel is the morpheme which occurs in the final position of a verb form. In Ciyao, the most common vowel in verb final position is -a. Therefore, we regard it as being the 'morphological default' (Downing 1997, Odden 1996) final vowel. In this language it is found in final position of the infinitive as illustrated in the following examples:

(10)   Simplex stem

-pat-a   'get, obtain'

-pet-a   'ornament'

-pit-a   'pass'

-pot-a   'twist'

-put-a   'erase'

Apart from the default -a, however, there are six verbs which have /i/ or /u/ in final position of the infinitive forms as seen in (11):

(11)   Simplex stem   Derivational stem

a.   -nawud-i   'develop well (esp. plants)'   —

     -paay-i   'match well'   -paay-is-y-   'make match well'

     -swaad-i   (< Arabic)   'pray'   -swaad-is-y-   'lead a mass, make pray'

     -t-i   'say'   —

b.   -cukul-u   (< Arabic)   'thank'   —

In (11) we have all the exceptional cases where the FV of the non-derived form is not the morphological default FV /a/. However, as seen on the right hand column, when the causative suffix is attached to those roots which can accept the causative extension—no other extension can be attached to any of these verbs—their exceptionality is obscured and they revert to the normal pattern of -a VF. Unlike /i/ and /u/ of the verbs in (11) which are not morphemes and never alternate with other vowels in the defective verbs, the front vowels /i/ and /e/ appear in final position in certain tenses (of normal verbs) as in the following examples:

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(12)   Root: -suum-   'buy'

a.   -a final vowel

Present (Prs.):   tu-ku-suum-a   'we buy'

Distant future (F1):   ci-tu-ci-suum-a   'we will buy (after today)'

Habitual (Hab.):   tu-cinaa-suum-a   'we habitually buy'

b.   -e final vowel

Recent past (P1):   tu-suum-il-e   'we bought (today)'

Remote past (P2):   tu-aa-suum-il-e   'we bought (before today)'

Near future (F1):   ci-tu-suum-e   'we will buy (today)'

Imperative: n-suum-e   'buy!'

Subjunctive: tu-suum-e   '(that) we buy'

Conditional: tu-kaa-suum-e   'if we bought'

Hortative: tu-ka-suum-e   'let us go buy'

c.   -i final vowel

Root:		P1		P2	
-iim-	'stop'	tu-jiim-i	'we stopped'	tu-aa-jiim-i	'we stopped'
-pagw-	'exist, be born'	tu-pad-i	'we existed'	tu-aa-pad-i	'we existed'
-taam-	'sit'	tu-teem-i	'we sat'	tu-aa-teem-i	'we sat'
-won-	'see'	tu-ween-i	'we saw'	tu-aa-ween-i	'we saw'

In (12) we show the three most frequent final vowels of the affirmative forms (we exclude
o which has a single appearance in a verb which, as we saw above, does not inflect
morphologically). In (12a) we have the default /a/ which occurs in final position of the
present, F2, and habitual forms—apart from the infinitive, as we noted earlier. In (12b)
we have -e, which occurs in many finite affirmative tenses and is the second (after /a/)
most widely distributed FV in Ciyao. It never occurs in negative forms. The infinitive
forms of the verbs in (12c) take /a/ as their FV in the infinitive and, according to the general

pattern, should take the mid front vowel in the P1 and P2. The verbs in (12c), are the ones that take -i as FV P1 and P2. In chapter 7 we discuss the details of the appearance of this high front vowel in final position of perfective forms. Just like -e, -i never occurs in final position of negative forms of normal verbs, in which case the default /a/ is the only FV used, as shown in (13):

(13) Root: -suum-   'buy'

a.   Present (Prs.):   **nga**-tu-ku-suum-**a**   'we are not buying'

     Distant future (F1):   **ngani**-tu-suum-**a**   'we will not buy'

     Habitual (Hab.):   **nga**-tu-cinaa-suum-**a**   'we habitually buy'

     Recent past (P1):   **ngani**-tu-suum-**a**   'we did not buy'

     Remote past (P2):   **ngani**-tu-suum-**a**   'we did not buy'

     Near future (F1):   **nga**-tu-suum-**a**   'we will buy'

     Imperative: **n-ka**-suum-**a**!   'do not buy!'

     Subjunctive: **tu-ka**-suum-**a**   '(that) we do not buy'

     Conditional: **tu-ka**-suum-**a**   'if we had not bought'

b.   Exceptional verbs which have /i/ or /u/ in final position

     Root: P1

     -nawudi   'develop well' **ngani**-yi-nawudi   'they (cl.8) did not develop well'

     -paayi   'match well'   **ngani**-yi-paayi   'they (cl.8) did not match well'

     -swaadi   'pray'   **ngani**-tu-swaadi   'we did not pray'

     -ti   'say'   **ngani**-tu-ti   'we did not say'

     -cukulu   'thank'   **ngani**-tu-cukulu   'we did not thank'

(13) shows that the FV of the affirmative infinitive forms does not change in negative (infinitive and finite) forms. That is, the verbs whose FV in the infinitive is /a/ keep /a/ in the negative finite and infinitive forms, and those verbs whose final vowel in the infinitive

form is /i/ or /u/ keep /i/ or /u/ in the negative and all other forms (including those forms with the imperfective -**ag**-) as we will see later.

4.3. The stem

The stem comprises the root plus suffixes. According to the nature of the suffixes we have different types of stem, namely, simplex stem (S-stem), derivational stem (D-stem), inflectional stem (I-stem), and reduplicated stem (R-stem). Sometimes, the stem joins with an object marker—a prefix which occurs immediately before the root—to form what is called a macrostem. In this section we will not be concerned about the macrostem. In the next subsection we present the simplex stem.

4.3.1. The simplex stem (S-stem)

The simplex stem is the minimal non-derived and non-inflected bimorphemic unit constituted by a simplex root plus the morphological default final vowel -**a**. As we mentioned in the preceding section, exceptionally one of the two high vowels may occupy the final position of verb. However, since those are exceptional cases, we do not consider them in our definition of the S-stem since, unlike the final -**a** which is a morpheme, the two high vowels are not morphemes. Thus, the simplex stem is a bimorphemic structure that is represented as in (14):

(14)
$$\text{S-stem} \atop \overset{\displaystyle \wedge}{\text{-Root \ FV}}$$
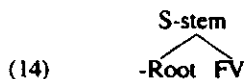
The following examples illustrate the S-stem represented in (14):

(15)a. -pat-a   'get, obtain'

        -peet-a   'sift'

        -woong-a   'bribe'

        -syuuk-a   'resuscitate'

    b. -gwesim-a   'be dullwitted, stupid'

        -lokot-a   'pick up'

        -senyeend-a   'sift out the coarse grains of flour for final pounding'

        -wutuk-a   'run'

    c. -dy-a   'eat'

        -t-a   'name'

        -w-a   'die'

Let us consider the inflectional stem next.

4.3.2.   The derivational stem (D-stem)

The derivational stem is obtained either by attaching derivational suffixes to the S-stem between the root and before the final vowel or by adding derivational suffixes to stems of other parts of speech. In each case morphemes of one of two groups of derivational suffixes are involved, namely, verb extensions and "verbalizers" (Dembetembe 1987, Gowlett 1967). There are three major differences between the two kinds of derivational suffixes. One is that extensions are added to verb roots, modifying their structure and their semantics—without changing their grammatical category—while verbalizers are added to stems of other parts of speech (nouns, ideophones, adjectives, adverbs) to turn them into verbs, that is, changing their grammatical category. Thus, while the verb extensions have the possibility of being attached to verbs derived from other parts of speech, the verbalizers cannot be attached to verbs, let alone the derived verbs. As seen in (16), below, verb derivation from other parts of speech also involves the loss of lexical

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tone—recall that tones are contrastive in other parts of speech but not in verbs. Consider the following examples:

(16)a. Verb extensions

-puut-il-a	'hit for'	<	-puut-	(v.)	'hit'
-pit-an-a	'pass each other'	<	-pit-	(v.)	'pass'
-mil-w-a	'be swallowed'	<	-mil-	(v.)	'swallow'
-won-ek-a	'be visible'	<	-won-	(v.)	'see'
-did-is-y-a	'cry a lot'	<	-dil-	(v.)	'cry'
-gon-ek-a	'lay down'	<	-gon-	(v.)	'lie down, sleep'
-lokot-aas-y-a	'make pick up'	<	-lokot-	(v.)	'pick up'
-som-ol-a	'extract'	<	-som-	(v.)	'prick'

b. Verbalizers

-kudi-k-a	'set fire'	<	kúdii!	(ideo.)	'setting fire'
-poowaan-	'be soft, pulpy'	<	powaapówa	(ideo.)	'of being soft, pulpy'
-tika-m-a	'be half full'	<	dii-tika	(cl.5)[14]	'half'
-luuluu-t-a	'ululate'	<	ci-lúúlú	(cl.7)	'ululation'
-ceekulu-p-a	'grow old'	<	-céékulu	(adj.)	'old, aged'
-tüindiva-l-a	'kneel down'	<	ma-tííndívá	(adv.)	'shuffling along on the knees'

In (16a) we have derivational stems that result from affixation of verb extensions to S-stems. We will not get into the details of verb extensions here, for they are the focus of our attention in chapter 5, below, where we discuss verb to verb derivation. (16b) provides one example from each of the parts of speech which, apart from other verbs, constitute the input to verb derivation. As shown in Table 1, /l/ is the most common of all consonant verbalizers as shown in the Table 1:

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[14] The noun class will be provided instead of "n." for noun.

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Table 1: Distribution of -C- verbalizers per part of speech.

Parts of speech	Verbalizers						
	-l-	-k-	-m-	-n-	-t-	-p-	Total
Ideophones	70	31	8	1	4	1	115
Nouns	8	4	1	—	1	3	17
Adjective	4	1	—	1	—	6	12
Adverbs	3	—	—	—	—	—	3
Total	85	36	9	2	5	10	147

Table 1 presents numbers of different verbalizers which are suffixed to the stems of the different parts of speech. As reported in Table 1, at this moment, we have in our corpus 147 verbs (provided in Appendix A) derived from other parts of speech. In the derivation of verbs from other parts of speech, /l/ is the most important verbalizer (occurring in 85 verbs derived from other parts of speech) , followed by /k/ (36), /p/ (10), /m/ (9), and /t/ (5). /n/ is only found in two verbs. As seen, only some nouns, ideophones, adjectives. and adverbs can be used to derive verbs, and each one of them (nouns, ideophones, adjectives, and adverbs) can only form one verb.

While the major difference between verbalizers and extensions is that the former derived verbs from other parts of speech and the latter derive verbs from other verbs, a close look at the data in (16), above, allows us to discover the second difference between these two groups of suffixes. Verbalizers usually have the structure -C-. Extensions typically have the structure -VC-. As we will see in the next chapter, there are a few exceptions where the extension is just a -V- (e.g., the short allomorphs of causative and passive extensions) or longer (e.g., some allomorphs of causative, passive, and reciprocal extensions). Thus, we can conclude that the structure of the D-stem depends on the nature of the input to which the derivational suffix is added as shown in (17):

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(17)   Structure of the two different types of D-stem:

a. $\left[\left[[\text{Stem}+\text{Verbalizer}|\text{VRoot}]+\text{Extension(s)}\right]\right.$D-stem

b.   [VRoot+Extension(s)]D-stem

(17a) shows that the verbalizer allows a self-standing stem of parts of speech other than verb to become a verb root from which other verbs can derive by the normal process of adding extensions. That is, once the verbalizer has been affixed, the resulting output is treated as any other (non-derived) root in the language subject to all morphophonological processes that all roots with identical number of syllables undergo. In (17b) we have a representation of verb to verb derivation where the D-stem results from the addition of the extensions to the S-stem between the root and the final vowel.

The third difference between verbalizers and extensions is that the latter can combine with one another, observing certain constraints, while the former are mutually exclusive. Consider the following examples:

(18)a. Extensions

-pit-an-aas-y-   'make each other pass'   <   -pit-   (v.)   'pass'

-som-ol-an-   'extract each other'   <   -som-   (v.)   'prick'

b. Verbalizers

*-pyaaji-l-a-p-a

*-ceekulu-p-a-l-a

In (18a) we see that the output of the combination of the verb extensions is grammatical, which is not the case of the examples in (18b) where we attempt to combine two verbalizers

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yield ungrammatical meaningless outputs. The complexity of the D-stem will be appreciated in chapter 6 where we discuss the details about the combination and ordering of verb extensions in Ciyao.

4.3.3. The inflectional stem (I-stem)

The inflectional stem is the stem which results from the affixation of an inflectional suffix to the root, as in (19), or to the D-stem, as in (20).

(19)   I-stems from roots

a	-saam-il-e	'moved'	<	-saam-	'move'
	-les-il-e	'left'	<	-lek-	'leave'
	-dim-il-e	'cultivated'	<	-dim-	'cultivate'
	-gon-il-e	'slept'	<	-gon-	'lie down, sleep'
	-puut-il-e	'hit'	<	-lokot-	'hit'
b.	-saamiil-e	'moved to'	<	-saam-il-	'move to'
	-leceel-e	'left'	<	-lec-el-	'leave for'
	-dimiil-e	'cultivated for'	<	-dim-il-	'cultivate for'
	-goneec-e	'laid down'	<	-gon-ek-	'lay down'
	-puuteen-e	'hit each other'	<	-puut-an-	'hit each other'

In (19a) we have inflectional stems obtained from adding the inflectional Pl marker -il-e to roots. In (19b) the inflectional suffix -il-e is attached to D-stem which is the output of verb to verb derivation. As we will see in chapter 7, the affixation of the perfective inflectional morphemes to verbs (derived or not) whose root has the structure $-C_1V_1C_2V_2C_3-$, as we have in (19b), is not as linear, as we see in (19a). When the verb roots are at least bisyllabic and satisfy other requirements, the affixation of the perfective suffix involves a process called imbrication whereby the -il- of the perfective marker is

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inserted between the V_2 and the C_3, triggering some phonological processes that yield the outputs seen in the examples. We will not discuss the details of imbrication at this point since this will be the subject of discussion in chapter 7. What is important to note for now is that inflectional suffixes in Ciyao are markers of tense, aspect, and mood. Some can function on their own while others must co-occur with inflectional prefixes, whose detailed discussion is presented in section 4.4. See the following examples in which the inflectional suffixes with which the roots form I-stems are presented in bold face:

(20)   Completive affirmative forms:
    a. Remote Past (P2):   tw-aa-lldim-**il**-**e**   'we cultivated'
                              SM-Pst.-cultivate-Pst.-FV

                              tw-aa-lllokweet-**e**   'we picked up'
                              SM-Pst.-pick up-Pst.-FV

                              tw-aa-lljiim-**i**   'we stopped'
                              SM-Pst.-stop-Pst.-FV

                              tw-aa-llteel-**e**   'we named'
                              SM-Pst.-name-Pst.-FV

    b. Recent Past (P1):   tu-lldim-**il**-**e**   'we cultivated'
                              SM-cultivate-Pst.-FV

                              tu-lllokweet-**e**   'we picked up'
                              SM-pick up-Pst.-FV

                              tu-lljiim-**i**   'we stopped'
                              SM-stop-Pst.-FV

                              tu-llteel-**e**   'we named'
                              SM-name-Pst.-FV

    c. Near future (F1):   ci-tu-lldim-**e**   'we will cultivate'
                              Fut.-SM.-cultivate-FV

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	ci-tu-lllokot- e	'we will pick up'
	Fut-pick up-Pst.-FV	
	ci-tu-lljiim- e	'we will stop'
	Fut-stop-Pst.-FV	
	ci-tu-llt- e	'we will name'
	Fut-name-Pst.-FV	
d. Imperative:	n.-lldim-e!	'cultivate!'
	SM-cultivate-FV	
	n.-llnokot- e!	'pick up!'
	SM-pick up-FV	
	n.-lljiim- e!	'stop!'
	SM-stop-FV	
	n.-llt- e!	'name!'
	SM-name-FV	
e. Distant future (F2):	ci-tu-ci-lldim-a	'we will cultivate'
	Fut.-SM-Fut.-cultivate-FV	
	ci-tu-ci-lllokot-a	'we will pick up'
	Fut.-SM-Fut.pick up-FV	
	ci-tu-c-lliim- a	'we will stop'
	Fut.-SM-Fut.-stop-FV	
	ci-tu-ci-llt- a	'we will name'
	Fut.-SM-Fut.-name-FV	
g. Present:	tu-ku-lldim-a	'we are cultivating'
	SM-Pres.-cultivate-FV	
	tu-ku-lllokot-a	'we are picking up'
	SM-Pres.-pick up-FV	
	tu-kw-lliim- a	'we are stopping'

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SM-Pres.-stop-FV

tu-ku-llt-a   'we are naming'

SM-Pres.-name-FV

In (20) "ll" marks the beginning of the stem. Observe that in (20a) the P2 inflectional suffixes -il-e must co-occur with the inflectional prefix -aa, and in (20c) the inflectional F1 suffix -e must co-occur with the inflectional prefixes ei-. The inflectional suffixes in (20b, and d) do not co-occur with any prefixes. In (20f, g) we have two tenses where the inflectional FV is -a, which also co-occurs with prefixes in the expression of tense/aspect. Observe that the third verb -iim- 'stop' ends in -i in the P1 and P2 tenses only. In (21) we provide the negative forms of the five verbs given in (20):

(21)   Completive negative forms[15]:

    a.   Remote Past (P2):   ngani-tu-lldim-á   'we did not cultivate'

                              ngani-tu-lllokót-a   'we did not pick up'

                              ngani-tu-lljiím-a   'we did not stop'

                              ngani-tu-llt-a   'we did not name'

    b.   Recent Past (P1):   nganí-tú-lldím-á   'we did not cultivate'

                                nganí-tú-lllókót-a   'we did not pick up'

                              nganí-tú-lljiím-a   'we did not stop'

                              nganí-tú-llt-á   'we dod not name'

    c.   F2 and F1:   nganí-tú-lldim-á   'we will not cultivate'

                                nganí-tú-lllokót-a   'we will not pick up'

                              nganí-tú-lljiím-a   'we will not stop'

                              nganí-tá-llt-a   'we will not name'

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[15] We exceptionally mark tones on some of these forms since it is the only way we can distinguish them from each other.

d. Imperative:

	n.-ka-lldim-a!	'do not cultivate!'
	n.-ka-llnokot-a!	'do not pick up!'
	n.-ka-lljiim-a!	'do not stop'
	n.-ka-lllt-a!	'do not name!'

e. Present:

	nga-tu-ku-lldim-a	'we are cultivating'
	nga-tu-ku-lllokot-a	'we are picking up'
	nga-tu-kw-lliim-a	'we are not stopping'
	nga-tu-ku-llt-a	'we are naming'

As seen, with the exception of present tense, where the tense prefix co-occurs with the FV -a in negative forms, -a is the only FV in all others tenses/moods. Note that the negative forms of F1 and F2 are identical. Observe also that in Ciyao the completive aspect marker is zero ($\emptyset$), which contrasts with the incompletive aspect as illustrated in the following examples:

(22). Incompletive affirmative forms:

a. Remote Past (P2):

	tw-aa-lldim-a-ga	'we used to cultivate'
	tw-aa-lllokot-a-ga	'we used to pick up'
	tw-aa-lljiim-a-ga	'we used to stopp'
	tw-aa-llta-a-ga	'we used to name'

b. Present:

	tu-ku-lldim-a-ga	'we normally cultivate'
	tu-ku-lllokot-a-ga	'we normally pick up'
	tu-kw-lliim-a-ga	'we normally stop'
	tu-ku-llta-a-ga	'we were naming'

c. Distant future (F2):

	ci-tu-ci-lldim-a-ga	'we will be cultivating'
	ci-tu-ci-lllokot-a-ga	'we will be picking up'
	ci-tu-c-lliim-a-ga	'we will be stopping'

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	ci-tu-ci-llta-a-ga	'we will be naming'
d. Recent Past (Pl):	tu-dim-il-e-je	'we were cultivating'
	tu-lllokweet-e-je	'we were picking up'
	tu-lljim-i-ji	'we were stopping'
	tu-llteel-e-je	'we were naming'
e. Near future(Pl):	ci-tu-lldim-e-je	'we will be cultivating'
	ci-tu-lllokot-e-je	'we will be picking up'
	ci-tu-lljiim-e-je	'we will be stopping'
	ci-tu-llte-e-je	'we will be naming'
f. Imperative:	n.-lldim-e-je!	'cultivate (continuously)!'
	n.-llnokot-e-j-e!	'pick up (continuously)!'
	n.-lljiim-e-j·e!	'stopp (continuously)!'
	n.-llte-e-je	'name (continuously)!'
g. Conditional:	n.-kaa-lldim-e-je	'if you were cultivating (continuously)'
	n.-kaa-lllokot-e-je	'if you were picking up (continuously)'
	n.-kaa-lljiim-e-je	'if you were stopping (continuously)'
	n.-kaa-llte-e-je	'if you were naming (continuously)'

(22) shows that the incompletive aspect in Ciyao is marked by -ga, a morpheme which is attached after the final vowel. As seen in the examples in (22), the FV of the incompletive maker -ga is always similar to the FV vowel of the verb stem to which it is attached. When the FV is /i/ as in the third example in (20d) or /e/, as in the remaining examples in (20d) and in all examples in (20e-g), the velar consonant of the incompletive marker is palatalized and turned into palatal. In (23) we provide the derivations that produce the output forms in (22).

(23) S-stem: -dim-a   'cultivate'   -iim-a   'stop'

  i. Pres. imperfective:

      Morph.: Pres. marker affix.: -ku-dim-a   -ku-iim-a

      Phon.:   Gliding: NA   -kw-iim-a

      Morph.: -ga suffixation: -ku-dim-a-ga   -kw-iim-a-ga

                                    'cultivate normally'   'stop normally'

 ii. P1 imperfective:

  a. Morph.: P1 marker affix.:   -dim-il-e   'cultivated'   -iim-i   'developed well'

      Phon.:   NA   NA

  b. Morph.: -ga affixation: -dim-il-e-ga   -iim-i-ga

      Phon.:   FV assimilation: -dim-il-e-ge   -iim-i-gi

               Palatalization: -dim-il-e-ge   -iim-i-ji

                                    'was cultivating'   'was to stopping'

In (23i) we have the present imperfect form. In (23ii) we have the P1 imperfect form.
There are no major phonological processes resulting from the affixation of the imperfective
marker - ga. Now we turn to the next subsection where we discuss the last type of stem,
the reduplicated stem.

4.3.4. Reduplicated stem (Red-stem)

        Reduplication in Ciyao is a process of prefixation of the reduplicant, the "repeating
element" (Crystal 1997:326) can be the whole or part of verb to the stem (base). That is,
reduplication in this language can be total (macro) or partial (micro) as shown in the
following examples:

(24)   Infinitive   P1   Present imperfective

a. ku-<u>dima</u>-dima[16]   tu-<u>dimile</u>-dimile   tu-ku-<u>dimaga</u>-dimaga

'to cultivate frequently'   'we cultivated frequently'   'we normally cultivate frequently'

ku-<u>lokota</u>-lokota   tu-<u>lokweete</u>-lokweete   tu-ku-<u>lokotaga</u>-lokotaga

'to pick up repeatedly'   'we picked up repeatedly'   'we normally pick up repeatedly'

b. ku-<u>pe</u>-peluka   a-<u>pe</u>-pelwiice   tu-ku-<u>pe</u>-pelukaga

'to stagger about'   'they staggered about frequently'   'they normally stagger about'

ku-<u>tee</u>-teela   si-<u>tee</u>-teesile   si-ku-<u>tee</u>-teelaga

to 'cackle'   'they (cl.10) cackled'   'they normally cackle'

The examples in (24a) represent the most common type of total reduplication in Ciyao. where the reduplicant and the base are exactly the same except for tones which are only marked in the reduplicant. The base has no H tone. The examples in (24b) represent one type of partially reduplicated stems where the reduplicant is identical to the first syllable of the base. As seen, under the basic pattern, suffixes such as P1 marker in (24a) participate in the reduplication, but prefixes do not participate in any kind of reduplication. In the subsections 4.3.4.1. and 4.3.4.2., below, we consider each one of these two types of reduplication which take place when stems have the -(C)V(V)C- or long roots. Then in subsection 4.3.4.3 we dedicate our attention to the reduplication of stems with -CV- since, as we will see, the process in such cases is realized in a special way.

4.3.4.1. Total reduplication (T-Red)

Total reduplication is the morphological process where the reduplicant and the base are identical (at segmental level). The entire stem, the base, constitute the reduplicant which is prefixed to itself. Semantically, it can be regarded as macro reduplication since it

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[16] For convenience, in this section the only morpheme boundary that will be marked is between the reduplicant and the base of the totally reduplicated stem. The internal boundaries will not be marked.

indicates that the action or event expressed by the Red-stem is realized repeatedly or frequently at large intervals of time (minutes, hours, days, etc.). That is, it is a repetition seen from outside of the event or action as illustrated in the following examples:

(25)   Normal total reduplication

Infinitive   P1

a.   ku-<u>sova</u>-sova (< -sov- "be usually rare")   cf.   -<u>sovile</u>-sovile

'to be usually rare'   'was usually rare'

ku-<u>laava</u>-laava (< -laav-'go for a scheduled activity')   cf.   -<u>laavile</u>-laavile

'to frequent'   'frequented'

b.   ku-si-<u>pata</u>-pata   (< -pat- 'get, obtain')   cf.   -si-<u>patile</u>-patile

'to get them (cl.10) many times'   'got them (cl.10) several times'

ku-wu-<u>teleka</u>-teleka   (<-telek- 'cook')   cf.   -wu-<u>teleece</u>-teleece

'to cook it (cl.14) repeatedly'   'cooked it (cl.14) repeatedly'

ku-tu-<u>galawusya</u>-galawusya (< -galawusy- 'turn round) cf. -tu-<u>galawiisye</u>-galawiisye

'to turn us round many times'   'turned us round many times'

(25) shows the basic pattern of reduplication where stem is fully reduplicated. The condition for the basic pattern to apply is that the stem must be at least bisyllabic, in which case both or all syllable are reduplicated. Each component of the T-Red stem can exist independent of the other since each one of them is a full fledged stem both morphologically and semantically. In (25b) we show that object marker does not reduplicate. Totally reduplicated stems cannot be reduplicated again as shown in the following examples:

(26)   Normal total reduplication

a.   *-<u>sova</u>-<u>sova</u>-sova   b.   *-<u>sova</u>-<u>sova</u>-<u>sova</u>-sova

   *-<u>laava</u>-<u>laava</u>-laava   *-<u>laava</u>-<u>laava</u>-<u>laava</u>-laava

   *-<u>saka</u>-<u>saka</u>-saka   *-<u>saka</u>-<u>saka</u>-<u>saka</u>-saka

   *-<u>teleka</u>-<u>teleka</u>-teleka   *-<u>teleka</u>-<u>teleka</u>-<u>teleka</u>-teleka

   *-<u>galawuka</u>-<u>galawuka</u>-galawuka   *-<u>galawuka</u>-<u>galawuka</u>-<u>galawuka</u>-galawuka

In (26a) the Red-stem given in (25) are partially reduplicated, and in (26b) the same Red-stems are totally reduplicated. Reduplication of stems already reduplicated according to the basic pattern yields ungrammatical results, which is not the case with what we call frozen reduplicated stems which are both semantically and morphologically different from those illustrated in (25). Consider the following examples:

(27)   Frozen reduplication 1

Infinitive   P1

a.   ku-<u>soya</u>-a-soya   (< -soy- 'err')   cf.   -<u>soya</u>-a-soyiiye
     'to err (in a drill)'   'erred'

     ku-<u>nyin'wa</u>-a-nyin'wa (< *-nyin'wa-)   cf.   -<u>nyin'wa</u>-a-nyiin'wile
     'to complain'   'complained'

b.   ku-<u>lava</u>-lava   (*-lav-)   cf.   -<u>lava</u>-leeve
     'to be naughty"   'was naughty'

     ku-<u>tika</u>-tika   (-tik- 'dupe')   cf.   -<u>tika</u>-tiice
     'to tickle'   'tickled'

     ku-<u>saka</u>-saka   (-sak- 'want')   cf.   -<u>saka</u>-seece-
     'to be restless'   'was restless'

The examples in (27) have some similarities and some differences. One similarity is that all reduplicated forms given in (27) do not have semantically corresponding non-reduplicated forms. That is, the reduplicated forms do not mean external repetition of the actions, event, or process expressed by the base. Another similarity is that the affixation of the Pl marker to both (27a) and (27b) ignores the internal structure of the Red-stems which are treated as if they were just polysyllabic stems. That is, unlike the examples in (26) where we first inflect and then reduplicate, in (27) we first reduplicate and then add the Pl inflect by adding replacing the FV of the Red-stem by the tense suffix. This explains why the Pl marker is not attached to the reduplicants in (27). But note that the Pl marker sees the internal structure of the Red-stem. In (27a) the reduplicant is treated by Pl marker as if it were not present. In (27b) the situation is different. The contribution of the reduplicant to the syllable structure of the Red-stem is taken into account in the suffixation of the Pl marker. Therefore, in (27b) the affixation of the Pl marker is realized through imbrication as if it were at least a trisyllabic stem with monomoraic penultimate syllable. The puzzle is that these two requirements for imbrication to apply are equally satisfied by the examples in both (27a) and (27b), but only the examples in (27b) do imbricate. A second look at the examples in both (27a) and (27b) shows a major difference between the two groups of examples. which determines the location in the base where the Pl must be attached. In (27a) there is an epenthetic vowel /a/ between the reduplicant and the base, which does occur in (27b). This epenthetic vowel is to be rendered responsible for the failure of the examples in (27a) to accept imbrication. That is, the /a/ which separates the reduplicant from the base in (27a) plays a role in blocking imbrication, not because of the vowel length it introduces, but because it constitutes a barrier beyond which the Pl marker cannot see. The examples in (27a) are the only two cases in the database where epenthetic /a/ appears. But to make our point, we have similar cases where a nasal is epenthesized in the same position where /a/ is inserted in (27a) as shown in the following examples:

(28)   Frozen reduplication 2

Infinitive   PI

ku-<u>togaa</u>-n-doga   (cf. *-toġ-)   cf.   -<u>togaa</u>-n-dojile

'to flit about'   .   'flitted about'

ku-<u>tenaa</u>-n-dena   (cf. *-ten-)   cf.   -<u>tenaa</u>-n-denile

'to sway to and from'   'swayed to and from'

ku-<u>pisyaa</u>-m-bisya   (cf. -pis-y- 'make pass')   cf.   -<u>pisyaa</u>-m-bisiisye

'to pass a rope many times'   'passed the rope many times'

ku-<u>posyaa</u>-m-bosya (cf. -pos-y- 'make cool down') cf.   -<u>posyaa</u>-m-bosiisye

'to shake to cool down'   'cooled down'

In (28) we see four of the eleven cases found in the database where that a nasal is epenthesized between the reduplicant and the base. As seen, the nasal agrees in place with the following consonant, triggers lengthening of the preceding vowel, and voices the following consonant. This nasal blocks imbrication, just like /a/ does in (27a), since the PI marker is prevented from seeing beyond it. That is, frozen Red-stem roots represented in (27) and (28)—unlike the forms which are reduplicated according to the basic pattern which allow the PI (and other suffixes) to be affixed to both the reduplicant and the base— do not allow to be separated by the PI or any other suffixes. This fact is evidence that frozen Red-stems are lexicalized items whose integrity cannot be violated. Observe that just like the data in (27), the reduplicated forms in both (27) and (28) usually do not have a corresponding non-reduplicated stem, as in the second example of (27a), the first example in (27b), and the first two examples in (28). When it happens that a corresponding non-reduplicated stem exists, either the semantic relationship is only slightly identical, as in the first example in (27a) and the last two examples in (28), or it is completely unrelated, as in the second example in (25b). This is why we refer to these stems as lexicalized Red-stems. In other words, in (27) and (28) we have lexicalized reduplicated forms which can undergo

further reduplication according to the general pattern—which is not possible with the forms in (25), as illustrated in the following examples:

(29) Total reduplication of frozen Red-stems

Infinitive   P1

a. ku-<u>soyaasoya</u>-soyaasoya   cf. -<u>soyaasoyiiye</u>-soyaasoyiiye

'to err repeatedly (in a drill)'   'erred repeatedly (in a drill)'

ku-<u>nyin'waanyin'wa</u>-nyin'waanyin'wa cf. -<u>nyin'waanyinw'ile</u>-nyin'waanyinw'ile

'to complain a lot'   'complained'

b. ku-<u>lavalava</u>-lavalava   cf. -<u>lavaleeve</u>-lavaleeve

'to be naughty' several times'   'was naughty several times'

ku-<u>tikatika</u>-tikatika   cf. -<u>tikatiice</u>-tikatiice

'to tickle repeatedly'   'tickled repeatedly'

-<u>sakasaka</u>-sakasaka   cf. -<u>sakaseece</u>-sakaseece

'to be continuously restless'   'was continuously restless'

c. -<u>togaandoga</u>-togaandoga   cf. -<u>togaandojile</u>-togaandojile

'to flit about a lot'   'flitted about a lot'

ku-<u>tenaandena</u>-tenaandena   cf. -<u>tenaandenile</u>-tenaandenile

'to sway to and from several times'   'swayed to and from several times'

ku-<u>pisyaambisya</u>-pisyaambisya   cf. -<u>pisyaambisiisye</u>-pisyaambisiisye

'to pass a rope many times again and again'   'passed the rope many times again and again'

ku-<u>posyaambosya</u>-posyaambosya   cf. -<u>posyaambosiisye</u>-posyaambosiisye

'shake repeatedly to cool down'   'shook repeatedly to cool down'

As seen, in (29a, b) we have reduplicated forms whose bases are the frozen Red-stems presented in (27a, b). The bases of the reduplicated form in (29c) are the frozen Red-stems given in (28). The fact that they can be reduplicated following the general pattern is, apart

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from the P1 marker which cannot be suffixed to the reduplicant, more evidence that the frozen Red-stems are lexical items which function like any other stems. We shall now consider partial reduplication.

4.3.4.2. Partial reduplication (Pred)

Partial reduplication is meant the reduplicant is constituted only by the initial syllable of the base, as illustrated in the following examples:

(30) Partial reduplication (Pred) 1

Infinitive   P1

a. ku-**pa**-palala   'to flutter the wings'   cf. -**pa**-paleele   'fluttered the wings'

ku-**pe**-peluka   'to stagger about'   cf. -**pe**-pelwiice   'staggered'

ku-**ti**-timila   'to run aground'   cf. -**ti**-timiile   'ran aground'

ku-**do**-doma   'to hesitate'   cf. -**do**-dweeme   'hesitated'

ku-**n'u**-n'una   'to scrape out with teeth'   cf. -**n'u**-n'wiine   'scraped out with teeth'

ku-**nju**-njundula 'to divide into two parts'   cf. -**nju**-njundwiile   'divided into two parts'

ku-**ngwe**-ngweluka   'to stagger'   cf. -**ngwe**-ngwelwiice 'staggered'

b. ku-**taa**-taasika   'to crackle a lot'   cf. -**taa**-taasiice   'crackled a lot'

ku-**mee**-meesya   'to cry (goats) for sex'   cf. -**mee**-meesiisye 'cried (goats) for sex'

ku-**nyii**-nyiisika   'to cry in low sound'   cf. -**nyii**-nyiisiice   'cried in low sound'

ku-**too**-toota   'to rap with the knuckles'   cf. -**too**-tootile   'rapped with the knuckles'

ku-**luu**-luuta   'to ululate'   cf. -**luu**-luutile   'ululated'

c. ku-**goo**-godecela 'to inform against'   cf. -**goo**-godeceele   'informed against'

ku-**sii**-sina   'to close the eyes'   cf. -**sii**-siine   'closed the eyes'

ku-**see**-sevala   'to be stupid'   cf. -**see**-sevala   'was stupid'

ku-**pyee**-pyeteka   'to press'   cf. -**pyee**-pyeteece   'pressed'

ku-**tuu**-tula   'to push with nose as a pig'   cf. -**tuu**-tula   'pushed with nose'

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ku-_tee_-telecesya   'to speak slowly'   cf. -_tee_-teleceesye   'spoke slowly'

ku-_tii_-tidika   'to roast deep in hot ashes'   cf. -_tii_-tidiice   'roasted deep in hot ashes'

As seen in (30), the reduplicant is the same as the first syllable of the base. (30a) represents the most productive pattern with 117 cases in the database, followed by (30b) with 77 examples in the database. In (30c) we provide all 7 examples of this pattern which is the least productive of the three. Semantically, the partially reduplicated forms indicate repetition of the event at micro-level, what we refer to as internal or micro-repetition. That is, the action or event which is externally seen as a single whole, is internally constituted by a set of repetitions. All examples in (30) are constituted by such internal micro repetitions which externally constitute a whole single action (e.g., **-pa-palala** 'flutter the wings': **too-toota** 'rap with the knuckles'), process (e.g., **-ti-timila** 'go aground'), or event (e.g., **-taa-taasika** 'crackle'), etc. Note that the base of the partially reduplicated stems do not exist without the monosyllabic reduplicant and the number of moras of the reduplicant is usually equal to the number of moras of the initial syllable of the bases. The only exceptions to the moraic symmetry are provided in (30c) where the reduplicants are bimoraic and the initial syllables of the base are monomoraic. The opposite, where the reduplicant is monomoraic and the initial syllable of the base is bimoraic, is not found in the database. Apart from the Red-stems given in (30), a group where we find most of the partial Red-stems (201 out of 336), there are other two groups of partial Red-stem. In one group, with 91 stems, the monosyllabic reduplicant is separated from the base by an epenthetic nasal, similar to what we saw in frozen reduplication 2, as illustrated in the following examples:

(31) Partial reduplication (Pred) 2

Infinitive		P1	
ku-<u>paa</u>-m-banika	'to insist'	cf. -<u>paa</u>-m-baniice	'insisted'
ku-<u>tee</u>-n-degula	'to take to pieces'	cf. -<u>tee</u>-n-degwiile	'took to pieces'
ku-<u>cii</u>-n-jidima	'to be regular in habits'	cf. -<u>cii</u>-n-jidiime	'was/were regular in habits'
ku-<u>koo</u>-n-goondeka	'to cackle (of a fowl)'	cf. -<u>koo</u>-n-goondeece	'cackled (of a fowl)'
ku-<u>kuu</u>-n-guluka	'to chat'	cf. -<u>kuu</u>-n-gulwiice	'chatted'

As seen in (31), a nasal may be epenthesized between the reduplicant and the base, in which case the vowel of the reduplicant is lengthened and the initial consonant of the base, which is underlyingly voiceless, is voiced according to the morphophonemic rules discussed in chapters 2 and 3. The other group of partially reduplicated stems involve an epenthetic /l/, as shown in the following examples:

(32) Partial reduplication (Pred) 3

Infinitive		P1	
ku-<u>ga</u>-l-<u>a</u>-gaata	'to roll on the ground'	cf. -<u>ga</u>-l-<u>a</u>-gaatile	'rolled on the ground'
ku-<u>me</u>-l-<u>e</u>-meenda	'to drizzle constantly'	cf. -<u>me</u>-l-<u>e</u>-meendile	'drizzled'
ku-<u>ji</u>-d-<u>i</u>-jiitika	'to quiver frequently'	cf. -<u>ji</u>-d-<u>i</u>-jiitiice	'quivered'
ku-<u>ko</u>-l-<u>o</u>-koosola	'to shell'	cf. -<u>ko</u>-l-<u>o</u>-koosweele	'shelled'
ku-<u>n'u</u>-l-<u>u</u>-n'uunda	'to scrape out'	cf. -<u>n'u</u>-l-<u>u</u>-n'uundile	'scraped out'

As the examples in (32) show, an epenthetic /l/ is inserted between the two moras of the reduplicant to break the syllable into two. That is, in order to get this kind of reduplication we need an initial CVV. We have 44 such cases in the database.

Just like the frozen Red-stems, the partial Red-stems can also undergo total reduplication as shown in the following examples:

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(33)   Reduplication of Pred stems

   a.   Pred stem 1

      Infinitive   P1

      ku-<u>papalala</u>-papalala   cf.   -<u>papaleele</u>-papaleele

      'to flutter the wings repeatedly'   'fluttered the wings repeatedly'

      ku-<u>pepeluka</u>-pepeluka   cf.   -<u>pepelwiice</u>-pepelwiice

      'to stagger about a lot'   'staggered about a lot'

      ku-<u>titimila</u>titimila   cf.   -<u>titimiile</u>titimiile

      'to run aground constantly'   'ran aground constantly'

      ku-<u>dodoma</u>-dodoma   cf.   -<u>dodweeme</u>-dodweeme

      'to hesitate constantly'   'hesitated constantly'

      ku-<u>n'un'una</u> -n'un'una   cf.   -<u>n'un'wiine</u> -n'un'wiine

      'to scrape out with teeth (e.g., a bone)'   'scraped out with teeth (e.g., a bone) a lot'

      ku-<u>njunjundula</u>-njunjundula   cf.   -<u>njunjindwiile</u>njunjundwiile

      'to cut/divide into two parts repeatedly'   'cut/divided into two parts repeatedly'

      ku-<u>ngwengweluka</u>-ngwengweluka   cf.   -<u>ngwengwelwiice</u>-ngwengwelwiice

      'to stagger repeatedly'   'staggered repeatedly'

   b.   ku-<u>taataasika</u>taataasika   cf.   -<u>taataasiice</u>taataasiice

      'to crackle a lot'   'crackled a lot'

      ku-<u>meemeesya</u>-meemeesya   cf.   -<u>meemeesiisye</u>meemeesiisye

      'to cry (goats) constantly before having sex'   'cried (goats) constantly before having sex'

      ku-<u>nyiinyiisika</u>-nyiinyiisika   cf.   -<u>nyiinyiisiice</u>nyiinyiisiice

      'to cry in a very low sound continuously'   'cried in a very low sound continuously'

      -<u>tootoota</u>-tootoota   cf.   -<u>tootootile</u>-tootootile

      'to rap with the knuckles repeatedly'   'rapped with the knuckles repeatedly'

      ku-<u>luuluuta</u>-luuluuta   cf.   -<u>luuluutile</u>-luuluutile

'to ululate repeatedly'   'ululated repeatedly'

  c. Pred stem 2

ku-<u>paambanika</u>-paambanika   cf.   -<u>paambaniice</u>-paambaniice

'to insist repeatedly'   'insisted repeatedly'

ku-<u>teendegula</u>-teendegula   cf.   -<u>teendegwiile</u>-teendegwiile

'to take everything to pieces'   'took everything to pieces'

ku-<u>ciinjidima</u>-ciinjidima   cf.   -<u>ciinjidiime</u>-ciinjidiiime

'to be very regular in habits'   'was/were very regular in habits'

ku-<u>koongoondeka</u>-koongoondeka   cf.   -<u>koongoondeece</u>-koongoondeece

'to cackle (of a fowl) repeatedly'   'cackled (of a fowl) repeatedly'

ku-<u>kuunguluka</u>-kuunguluka   cf.   -<u>kuungulwiice</u>-kuungulwiice

'to chat frequently'   'chatted frequently'

  d. Pred stem 3

ku-<u>galagaata</u>-galagaata   cf.   -<u>galagaatile</u>-galagaatile

'to roll about on the ground a lot'   'rolled about on the ground a lot'

ku-<u>melemeenda</u>-melemeenda   cf.   -<u>melemeendile</u>-melemeendile

'to drizzle (of rain) constantly'   'drizzled (of rain) constantly'

ku-<u>jidijiitika</u>-jidijiitika   cf.   -<u>jidijiitiice</u>-jidijiitice

'to quiver frequently'   'quivered frequently'

ku-<u>kolokoosola</u>-kolokoosola   cf.   -<u>kolokoosweele</u>-kolokoosweele

'to shell frequently'   'shelled frequently'

ku-<u>n'ulun'uunda</u> -n'ulun'uunda   cf.   -<u>n'ulun'uundile</u> -n'ulun'uundile

'scrape out a lot'   'scraped out a lot'

In (33a) we have a total reduplication of the Pred-stems given in (30a, b). The totally reduplicated forms in (33c) are the Pred-stems provided in (31). The reduplicated forms given in (33d) are the Pred-stems given in (32). With the examples in (33) we demonstrate

that partially reduplicated stems can further be reduplicated provided that the second reduplication is total and observes the general pattern whereby, in this particular case, the Pred-stem functions as the base to which a completely identical reduplicant is prefixed. The grammaticality of the result of this operation is another evidence that the Pred-stems are lexical items just like any other lexical item in the language. We present in Table 2 a summary of the Pred-stems in Ciyao:

Table 2: Number of different Pred-stems.

Type	Red structure	Number
	-CV-CV...	117
Pred-stem 1	-CVV-CVV...	77
	-CVV-CV...	77
Pred-stem 2	-CV-N-CV..	91
Pred-stem 3	-CV-l-CV...	44
	Total	336

The Table 2 presents the three types of Pred-stem and their respective structure. As seen, unlike the general pattern of total reduplication, which is predictable, the partial reduplication is not predictable. Therefore, the Pred-stems are found in the database since they are lexical items. Language learners must memorize them. In the next subsection we consider the last piece of data on Red-stem which concern the stems whose roots have the shape -CV-.

4.3.4.3. Reduplication of stems with -CV- roots

In Ciyao, reduplication of the S-stems whose roots have the shape -CV- (hereafter -CV S-stems) can only undergo total reduplication in a way which is different from what the general pattern we discussed above. In Ciyao, -CV S-stems reduplicate by "double"

reduplication, in like Kinande (Mutaka and Hyman 1990). That is, unlike some Bantu languages (e.g., Cewa, Shona, Ndebele, Swati) which reduplicate the -CV stems by introducing some material (e.g., epenthetic [i] or [yi] between the reduplicant and the base, Ciyao reduplicates stems of this kind by doubling the reduplicant as shown in following examples:

(34)   Reduplication of -CV S-stems

Infinitive   P1

ku-dyaa-dyaa-dya   cf. -diile-diile

'to eat repeatedly'   'ate repeatedly'

ku-waa-waa-wa   cf. -wiile-wüle

'to die (everybody or everything)'   '(everybody or everything) died'

ku-taa-taa-ta   cf. -teele-teele

'to name everybody/rename repeatedly someone'   'named everybody/renamed repeatedly s.o.'

ku-twaa-twaa-ta   cf. -tweele-tweele

'to pound repeatedly'   'pounded repeatedly'

ku-pwaa-twaa-ta   cf. -pweele-pweele

'to empty (e.g., air in the tire) frequently'   'emptied (e.g., air in the tire) frequently'

By doubling the reduplicant, the Ciyao -CV stems satisfy the minimal two syllable size of the reduplicant in total reduplication. When the P1 marker is added, the I-stem of the -CV-root becomes bisyllabic. Therefore, its reduplication takes place according to the general pattern of total reduplication. This explains why we have double reduplication in the infinitive form, in the left hand column, and one normal reduplication of the forms to which the P1 marker is added in the right hand column. Just like in all normal cases of total reduplication, reduplicated -CV stems cannot be reduplicated again, as shown in the following examples:

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(35)   Reduplication of -CV- root based Red-stems

   *-dyaadyaadya-dyaadyaadya

   *-waawaawa-waawaawa

   *-taataatataataata

   *-twaatwaata-twaatwaata

   *-pwaatwaata-pwaatwaata

The example in (35) show that apart from the double reduplication, whose function is to satisfy the minimal two syllable requirement. the -CV stems are reduplicated according to the general pattern which is realized by prefixing to the base reduplicant which is its copy. With this brief note on the reduplication of the -CV stems we complete the study of reduplication in Ciyao and move on to the analysis of the inflectional prefixes in the next section.

4.4. The inflectional prefixes

Inflectional prefixes are those morphemes which and add grammatical information to the stem. In this section the following inflectional prefixes will be considered: person (SM, OM), tense markers (TM), and negative makers (Neg.). All these prefixes occur in what we call prestem position. Since polarity provides different verbal structures, in this section we will treat the affirmative and negative forms separately. Thus, in subsection 4.4.1. we consider the inflectional prefixes of the affirmative forms of the different tenses and moods, and in subsection 4.4.2. we deal with the negative forms.

4.4.1.   The affirmative forms

Five prefixes are found in prestem position in affirmative forms of Ciyao verbs. As was shown in Table 2 of chapter 1, each noun class prefix—3rd grammatical person

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(singular or plural according to the respective number of the prefix)—has its corresponding agreement marker. Not included in that table were the markers of the 1sg., 1pl., and 2nd person prefixes, shown in the following examples:

(36)a. SM: 1sg. N-: n-dim-il-e   /N-dim-il-e/   'I cultivated'

                      n-okweet-e   /N-loko-it-e/   'I picked up'

                      n-deel-e   /N-ta-il-e/   'I named (a child)'

            1pl. tu-: tu-dim-il-e   /tu-dim-il-e/   'we cultivated'

                      tu-lokweet-e   /tu-loko-it-e/   'we picked up'

                      tu-teel-e   /tu-ta-il-e/   'we named (a child)'

            2nd   mu.: n.-dim-il-e   /mu-dim-il-e/   'you cultivated'

                      n.-nokweet-e   /mu-loko-i-t-e/   'you picked up'

                      n.-t-eel-e   /mu-ta-il-e/   'you named (a child)'

     b. OM: 1sg. -N-: muu-n-dimiil-e   /mu-N-dimi-il-l-e/   'you cultivated for me'

                      muu-n-okweet-e   /mu-N-loko-il-t-e/   'you picked me up'

                      muu-n-deel-e   /mu-N-ta-il-e/   'you named me'

            1pl. -tu-: n.-tu-dimiil-e   /mu-tu-dim-i-il-t-e/ 'you cultivated for us'

                      n.-tu-lokweet-e   /mu-tu-loko-il-t-e/ 'you picked us up'

                      n.-tu-teel-e   /mu-tu-ta-il-e/   'you named us'

            2nd   mu-: tu-n.-dimiil-e   /tu-mu-dim-i-il-e/   'we cultivated for you'

                      tu-n.-nokweet-e   /tu-mu-loko-i-t-e/   'we picked you up'

                      tu-n.-t-eel-e   /tu-mu-ta-il-e/   'we named you'

As seen, the 1sg., 1pl., and 2nd person (there is no distinction between singular and plural) markers in (36a) and (36b) are the same for subject and object. The only different is their position in the verb complex. The subject markers are only directly attached to the verb root if no other prefix claims a position closer to the root. The object marker, in

contrast, must be directly attached to the root regardless of the number of prefixes co-occurring in the prestem position. Apart from the SM and OM, we also have tense markers in prestem position as illustrated in the following examples:

(36)a. Indicative:

Remote past (P2):	tw-**aa**-dim-il-e	'we cultivated'
	tw-**aa**-lokweet-e	'we picked up'
	tw-**aa**-teel-e	'we named (a child)'
Present (Prs.):	tu-**ku**-dim-a	'we are cultivating'
	tu-**ku**-lokot-a	'we are picking up'
	tu-**ku**-t-a	'we are naming (a child)'
Near future (F1):	**ci**-tu-dim-e	'we will cultivate'
	ci-tu-lokot-e	'we will pick up'
	ci-tu-t-e	'we will name (a child)'
Distant future (F2):	**ci**-tu-**ci**-dim-a	'we will cultivate'
	ci-tu-**ci**-lokot-a	'we will pick up'
	ci-tu-ci-t-a	'we will name (a child)'

Consecutive (C):

Near future (CF1):	**ci**-tu-**ka**-dim-e	'we will go cultivate'
	ci-tu-**ka**-lokot-e	'we will go pick up'
	ci-tu-**ka**-t-e	'we will go name (a child)'
Distant future (CF2):	**ci**-tu-**ka**-dim-e	'we will go cultivate'
	ci-tu-**ka**-lokot-e	'we will go pick up'
	ci-tu-**ka**-t-e	'we will go name (a child)'
Habitual (Hab.):	tu-**cinaa**-dim-a	'we habitually cultivate'
	tu-**cinaa**-lokot-a	'we habitually pick up'
	tu-**cinaa**-t-a	'we habitually name (a child)'

b. Conditional:

P2 and P1:   naaga tu-**kaa**-dim-e   'if we had cultivated'

naaga tu-**kaa**-lokot-e   'if we had picked up'

naaga tu-**kaa**-t-e   'if we had named (a child)'

We also have the class 16 prefix -**pa**- which is not an inflectional prefix, but occurs in prestem position in complementary distribution with the OM. We treat it as an object marker due to the location where it occurs. -**pa**- provides adverbial information which means 'well', 'succeed', or 'be able to", as illustrated in the following examples:

(38)   -**pa**-dim-   'cultivate well; succeed in cultivating; be able to cultivate'

-**pa**-w-   'die well (without suffering or in the 'right' time)'

-**pa**-lokot-   'pick up well; succeed in picking up; be able to pick up'

-**pa**-t-   'mane well; succeed in naming; be able to eat'

As seen in (38) -**pa**- can precede a root of any verb (transitive or intransitive), and to roots of any size. Thus, the structure of a full prestem of the affirmative form in Ciyao can be summarized as follows:

Table 3: Sequences of prefixes of affirmative forms.

Tense	Mood				
	Indicative	Conditional	Imperative	Subjunctive	Consecutive
P2	SM-**aa**-Stem	SM-**kaa**-Stem	—	SM-**kaa**-Stem	—
P1	SM-Stem	SM-**kaa**-Stem	—	SM-**kaa**-Stem	—
Prs.	SM-**ku**-Stem	SM-TM-Stem	SM-Stem	SM-Stem	—
F1	c**i**-SM-Stem	SM-Stem	—	SM-**ka**-Stem	c**i**-SM-**ka**-Stem
F2	c**i**-SM-c**i**-Stem	c**i**-SM-c**i**-Stem	—	c**i**-SM-**ka**-Stem	c**i**-SM-**ka**-Stem
Hab.	SM-c**inaa**-Stem	SM-c**inaa**-Stem	—	—	—

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Table 3 shows the inflectional suffixes of the affirmative forms. It will be noted that in some cases the only prefix presented is the SM. As we have seen earlier, there are other inflectional markers, especially tense/aspect markers, which are part of the stem by virtue of their position in post-root or post-derivational stem position.

To conclude this subsection, we present in (38) the summary of the structure of the full prestem of an affirmative form in Ciyao:

(39)   [[(TM-)SM-TM-(OM/pa)]Prestem-Stem]Verb

As was mentioned earlier, any verb can optionally take the class 16 -pa- immediately before the root provided that, if the verb is transitive, no object marker is included in the verb complex. The structure of the prestem of the affirmative form in (36) is different from that of the negative form to what we now turn.

4.4.2.   The negative forms

The negative marker in Ciyao is a prefix which in the prestem. According to the mood and/or tense of the verb form, it may precede or follow the SM and can be realized by different allomorphs **nga-**, **ngani-**, **ngaangani-** and **ka-**. In the infinitive, conditional (Prs. and F1), and indicative (Prs. and F1), it is marked by **nga-** as in the following examples:

(40)a. Negative infinitive: **nga**-dim-a   'to not cultivate'

                               nga-lokot-a   'to not pick up'

                               nga-t-a   'to not name'

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b. Conditional:

Prs.:   naaga **nga**-tu-ku-dim-a   'if we do not cultivate'

naaga **nga**-tu-ku-lokot-a   'if we had picked up'

naaga **nga**-tu-ku-t-a   'if we had named (a child)'

F1:   naaga **nga**-tu-dim-a   'if we will not cultivate'

naaga **nga**-tu-lokot-a   'if we will not pick up'

naaga **nga**-tu-t-a   'if we will not name (a child)'

c. Indicative:

Prs.:   **nga**-tu-ku-dim-a   'we are not cultivating'

nga-tu-ku-lokot-a   'we are not picking up'

nga-tu-ku-t-a   'we are not naming (a child)'

F1:   **nga**-tu-dim-a   'we will not cultivate'

nga-tu-lokot-a   'we will not pick up'

nga-tu-t-a   'we will not name (a child)'

As seen in (40), the negative form of the verb does not include the prefix **ku**- to mark the infinitive mood (37a), or the F1 marker **ci**-, in which cases it appears that the negative morpheme **nga** marks not only negative polarity but also infinitive mood or F1 tense. In the finite tenses of the indicative (P2, P2, F2) and conditional (P2, P2, F2) the negative morpheme is marked by **ngani**- as in the following examples:

(41)a. Indicative:

Roots	P2	P1	F2
-dim-	**ngani**-tu-dim-a	**ngani**-tu-dim-a	**ngani**-tu-dim-a
'cultivate'	'we did not cultivate'	'we did not cultivate'	'we will not cultivate'
-lokot-	**ngani**-tu-lokot-a	**ngani**-tu-lokot-a	**ngani**-tu-lokot-a
'pick up'	'we did not pick up'	'we did not pick up'	'we will not pick up'

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| -at- | ngani-tu-t-a | ngani-tu-t-a | ngani-tu-t-a |
| 'name' | 'we did not name' | 'we did not name' | 'we will not name' |

b. Conditional:

Roots	P2	P1	F2
-dim-	naaga **ngani**-tu-dim-a	naaga **ngani**-tu-dim-a	**ngani**-tu-dim-a
'cultivate'	'if we did not cultivate'	'if we did not cultivate'	'if we will not cultivate'
-lokot-	naaga **ngani**-tu-lokot-a	naaga **ngani**-tu-lokot-a	naaga **ngani**-tu-lokot-a
'pick up'	'if we did not pick up'	'if we did not pick up'	'if we will not pick up'
-t-	'naaga **ngani**-tu-t-a	'naaga **ngani**-tu-t-a	'naaga **ngani**-tu-t-a
'name'	'if we did not name'	'if we did not name'	'if we will not name'

Note that although the segmental structure of the verbs is similar in the three tenses given in (40), all three tenses assign tones differently to the moras of the morphemes that comprise each verb complex. Let us consider negative forms of other finite tenses next.

The negative forms of P2 and P1 of the potential mood is marked by **ngaangani**. The negative forms of P2 of the conditional and Prs. tense of subjunctive are marked by -**ka**-. Finally, the negative form of the imperative is marked by -**ka**-. All these are illustrated in the following examples:

(42)   Potential: **ngaangani**-tu-dim-a   'we could not have cultivated'

                      ngaangani-tu-lokot-a   'we could not have picked up'

                      ngaangani-tu-t-a   'we could not have named (a child)'

      Conditional:

      P2:   naaga tu-**ka**-dim-a   'if we had not cultivated'

                      naaga tu-**ka**-lokot-a   'if we had not picked up'

                      naaga tu-**ka**-t-a   'if we had not named (a child)'

      Imperative   n-**ka**-dim-a!   'do not cultivate'

	n-ka-lokot-a!	'do not picked up!'
	n-ka-t-a!	'do not name (a child)!'
Subjunctive:	n-ka-dim-a	'(that you) do not cultivate'
	n-ka-lokot-a	'(that you) do not picked up'
	n-ka-t-a	'(that you) do not name (a child)'

As seen in (42), the major difference between the imperative and the subjunctive is the tone. The imperative assigns H to the mora of the subject which spreads onto -ka- and subsequently delinks. The subjunctive does not assign any tone to any mora in the verb complex. The following table presents the distribution of the morphemes in the negative forms of the different tenses and moods seen here:

Table 4: Distribution of prefixes in finite tenses.

Tense	Mood				
	Indicative	Conditional	Imperative	Subjunctive	Potential
P2	ngani-SM-Stem	SM-ka-Stem	—	SM-kaa-Stem	ngaangani-SM-Stem
P1	ngani--SM-Stem	SM-ka-Stem	—	SM-ka-Stem	nga-SM-Stem
Prs.	nga-SM-TM-Stem	nga-SM-TM-Stem	SM-ka-Stem	SM-ka-Stem	—
F1	ngani-SM-Stem	nga-SM-Stem	—	SM-ka-Stem	ngani-SM-Stem
F2	ngani-SM-Stem	ngani-SM-Stem	—	—	—
Hab.	nga-SM-TM-Stem	—	—	—	—

As seen in Table 4, unlike the affirmative form which is morphologically unmarked, the negative form has one morpheme with many allomorphs whose distribution is determined by the different tenses and moods. Note that in Table 4 we have not included the object marker since its occurrence immediately before the stem is highly predictable. So, whenever necessary, the OM can be prefixed to the stem before any other prefix. To

conclude the study of inflectional prefixes, we present in (43) the structure of the prestem of the negative form:

(43)   [Neg.$_i$-SM-TM-Neg.$_i$-(OM)]$_{Prestem}$

The indexes attached to Neg. indicate that negative markers do not co-occur in the verb complex. They are always in complementary distribution. It is also important to mention that only the allomorph **nga-**, which occurs at the initial position of the prestem, can co-occur with segmental tense markers. All other allomorphs of the negative morpheme do not co-occur with segmental tense markers. The analysis of the prestem presented in this and in the preceding subsection applies to both normal verbs, as we saw so far, and to defective verbs that will be the subject of our study in the next section.

4.5. Defective verbs

Of the 2724 verbs found in the database at this point, there are seven that can be considered to be defective. They either have an abnormal morphology or do not have some of the conjugation forms in their paradigm. In (44) we present seven of the ten defective verbs found in the database:

(44)	Roots		P1		
a.	-jil-	'say'	cf.	—	
	-pagw-	'be born'	cf.	-padi	'was born'
b.	-ti	'say'	cf.	-tiite	'said'
	-paayi	'match well'	cf.	-paayiiye	'matched well'
	-nawudi	'develop well'	cf.	-nawuudi	'developed well'
c.	-swaadi	'pray'	cf.	-swaasile	'prayed'
	-cukulu	'thank'	cf.	-cukuulu	'thanked'

The first verb in (44a) does not have P1 forms. The second verb has a peculiar way of realizing the perfective forms that does not conform with the morphological rules of Ciyao. In (45b) are indigenous verbs with a high front vowel in final position. In (45c) are borrowed verbs which end in high vowels /i/ and /u/.

Apart from these nine, there is one verb which, due to its specificity, we treat separately. It is the verb -v- 'be', whose root does not surface in the present tense, as shown in the following examples:

(45)   Root: -v-   'be'

a. P1:   1pl.:   tu-v-eel-e   'we were'

            2nd pers.   m.-b-eel-e   'you were'

            3sg. (cl.1): ju-v-eel-e   's/he was'

            3pl. (cl.2): a-v-eel-e   'they were'

b. F1:   1pl.:   ci-tu-v-e   'we will be'

            2nd pers.   ci-m.-b-e   'you will be'

            3sg. (cl.1): ci-ju-v-e   's/he will be'

            3pl. (cl.2): c-aa-v-e   'they will be'

c. Present: 1sg.:   N-di   'I am'

            1pl.:   tu-di   'we are'

            2nd pers.   n.-di   'you are'

            3sg. (cl.1): ju-di   's/he is'

            3pl. (cl.2): a-di   'they are'

In (45a, b) we have examples with P1 and F1, that represent all those tenses where the root -v- surfaces. In (45c), however, we show that unlike in the other tenses, in the present tense, not only does the copula -di completely replaces the root -v-, but also the tense is

not marked by the normal TM -ku- in the verb complex. Other complexities concerning the verb conjugation paradigms, such as, for example, compound tenses—which we consider to be out of the scope of the present study—will not be considered here. Therefore, we move on to the next section where we present the summary of the discussion on verb structure present in this chapter.

4.6. Summary

In this chapter we have discussed verb structure and proposed some working concepts that allow us to describe the verbal morphophonological facts not only in Ciyao. Thus, we have distinguished different types of root in terms of -(C)V(V)C- root, L-roots, and S-roots". We discussed the different types of stems, including S-stem, D-stem, I-stem and Red-stem. In turn we proposed a classification of the reduplication stem in terms of total (macro) reduplication and partial (micro) reduplication and presented the major differences between them. Within each type of reduplicated stem we distinguished different subtypes. The totally reduplicated stems, for example, can be normal, which is in accordance with the basic pattern which prefixes the reduplicant (totally identical to the base), or frozen, where the reduplicant and the base may be separated by a segment (vowel /a/ or a nasal). Partial reduplication can be realized by directly prefixing the whole initial syllable of the base to the base (Pred 1), or by separating the monosyllabic reduplicant from the base with a nasal (Pred 2), or by an extra syllable which is obtained by epenthesizing an /l/ between the two (Pred 3). The normal totally reduplicated stems cannot undergo any further reduplication, but the frozen and partially reduplicated stems can undergo macro-reduplication. To end the section on Red-stem we presented the reduplication of the -CV stems which, in order to satisfy a two-syllable minimality condition required for the reduplicant by the general pattern, have to undergo double reduplication. After this exposition on Red-stem, although our concern in this study is just the stem part of the verb—for the sake of completeness—we presented the different inflectional prefixes of

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Ciyao, some of which have to obligatorily co-occur with some suffixes. Finally we briefly saw the defective verbs. In the next three chapters we restrict our analysis to the verb stem. First, we discuss D-stem in the chapters 5 and 6, and then the I-stem in chapter 7, before we present the conclusion of this study.

CHAPTER 5: THE DERIVATIONAL STEM

5.0. Introduction

In chapter 4 we described the Bantu verb structure as presented in (1):

(1)   Bantu verb structure
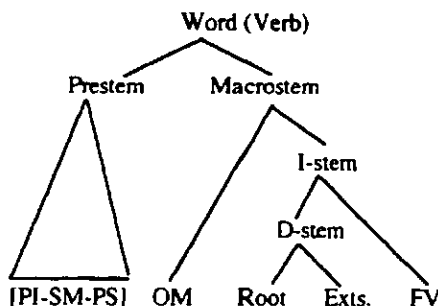
Where: I-stem stands for Inflectional stem; D-stem stands for Derivational stem; PI stands for Pre-initial; SM stands for Subject marker; PS stands for Post-subject; OM stands for Object marker; Exts. stands for Extensions; FV stands for Final vowel. PI and PS include tense, aspect, mood, and negation markers.

Due to their particular complexity within the verb morphology, the derivational suffixes, also known as verb 'extensions', have been the subject of many studies in different languages. Despite the increasing number of such studies, the verb extensions in Bantu still remain an area where there is a lot to be researched. The present chapter aims at providing a detailed investigation of Ciyao derivational morphology, with special reference to verb to verb derivation which, as in all Bantu languages, is realized through suffixation of verb extensions to the root. In the different Bantu languages the number and shape of the verb extensions may differ from one language to another (e.g., Emakhuwa has 12, Kiswahili has 15, Cicope has 16, Ciyao has 18, etc.) and even in the same language from

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one author to another. Studies of verb extensions in Ciyao, for example, show some terminological and conceptual differences whereby different authors provide different numbers of extensions and/or different designations for the same extensions as illustrated in Table 1:

Table 1: Ciyao verb extensions as found in four different studies.

Extensions	Ngunga (1988)	Sanderson (1922)	Sanderson (1954)	Whiteley (1966)
Applicative	-il-/-el-	Applied: -ila, -ela	Prepositional: -ila, -ela	Oblique: -il-/-el-
Causative	-aasy-, -isy-/-esy- -y-	-isya, -esya	-isya, -esya, -sya, -nya (mya), -icisya (ecesya)	-aasy-, -y-, -i-
Intensive	-isy-/-esy-	-isya, -esya	-isya; -esya	-isy-, -esy-
Passive	-w-	-wa, -ilwa	-ilwa -wa, -elwa	-w-
Reciprocal	-an-	-na, -ngana, -igana, -egana	-ana, -angana, -igana (-egana)	-an-
Reversive	-ul-/-ol-	-ula, -ukula, -ikula (-ola)	Conversive: -ul-, -ol-	-ul-/-ol-
Reflexive	—	-li- (prefix)	—	—
Stative	-ik-/-ek-	—	-ika, -eka, -uka	—
Potential	-ik-/-ek-	—	-ika, -eka	Neuter/Potential: -ik-, -ek-, -k-
Associative	-an-	—	—	—

As observed in the Table 1, the interpretation of the verb extensions varies from one author to the other and/or from one study to the other by the same author (cf. Sanderson 1922 with 1954). Table 1 shows, for instance, different designations for the applicative extension (-il-/-el-) which is referred to as 'applied' (Sanderson 1922), 'prepositional' (Sanderson 1954), and 'oblique' (Whiteley 1966). This terminological discrepancy is also observed in relation to the reversive extension (-ul-/-ol-), which is referred to as 'conversive' (Sanderson 1954), and the stative (-il-/-el-), which is called

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'neuter/potential' (Whiteley 1966). Observe also that even the notion of verb extension has improved over the years. In his earlier work, Sanderson (1922) listed the reflexive prefix as part of the verb extension, which he corrected in later work (Sanderson 1954), where he also included the stative extension , which was not considered in the previous work. In the present study, a quasi-neutral terminology will be used with no intention to establish a one-to-one relationship between the label and the semantics of the extensions.

In this chapter we discuss verb to verb derivation. In the following sections a detailed investigation of each one of the following extensions is presented in this order: applicative, causative, impositive, intensive, passive, stative, reversive and reciprocal. In the analysis of each extension, we will argue for the non-existence of one-to-one relationship between the shape and the meaning of the extensions, while showing the need for the labels attributed to the extensions to be regarded as cover-terms that refer to the extensions without, in many cases, necessarily relating the shape to a particular meaning. The eight extensions to be considered in this study, their different realization, their historical reconstructions, and the codes through which they will be referred to throughout this study, are provided in Table 2:

Table 2: Verb extensions to be considered in this study.

	Extensions	Codes	Suffixes	PB[17]		Extensions	Codes	Suffixes	PB[1]
1.	Applicative	A	-il-/-el-	*-id-		Passive	P_2	-ig-w-/-eg-w-	—
2.	Causative	C_1	-i̧-	*-i̧-	6.	Stative	S	-ik-/-ek-	*-ik-
		C_2	-is-i̧-/-es-i̧-	*-ic-i̧-	7.	Reversive	Rv_1	-ul-/-ol-	*-ud-
		C_3	-aas-i̧-	—			Rv_2	-uk-/-ok-	*-uk-
3	Impositive	Imp	-ik-/-ek-	*-ik-			R_1	-an-	*-an-
4	Intensive	Int	-is-i̧-/-es-i̧-	*-ic-i̧-	8.	Reciprocal	R_2	-aangan-	—
5	Passive	P_1	-w-	*-u-			R_3	-agan-/-egan-	—

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[17] Proto-Bantu (PB) reconstructions are taken from (Meeussen 1967).

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Table 2 gives a list of the 14 realizations of the 8 verb extensions in Ciyao. As seen, three different causative suffixes, and three different reciprocal suffixes are distinguished. Reversive and passive have two suffixes each, and the remaining four (applicative, impositive, intensive, and stative have one suffix each. In some cases there are phonological alternations as well. In the next section we begin our analysis of the affixation of each one of the extensions to the verb roots, starting with the applicative extension.

5.1. The applicative extension

This extension, also called applied (Sanderson 1922), prepositional (Sanderson 1954), and oblique (Whitely 1966), is one of the most widespread extensions in Bantu languages. In Ciyao it has two allomorphs, namely, -il- and -el- as shown in (2):

(2)   D-stems   Roots

a. -viinj-il-   'chase toward'   cf. -viing-   'chase'

    -paand-il-   'sow with'   cf. -paand-   'sow'

    -puund-il-   'exceed for (reason)' cf. -puund-   'exceed'

b. -tec-el-   'fetch (liquid) for'   cf. -tek-   'fetch (liquid)'

    -lol-el-   'look through'   cf. -lol-   'look'

Two major phonological observations can be made to the data in (2). The distribution of -il- vs. -el- is determined by the vowel harmony rule discussed in chapter 2. The other observation concerns the application of the palatalization rule also discussed earlier, in chapter 3. These two rules apply whenever the concatenation of the morphemes creates the required structural description.

Syntactically the applicative extension in Ciyao has the ability of introducing elements with various thematic roles such as benefactive (or malefactive), instrument, cause (reason), and locative. We illustrate with examples each one of these below.

(3)   Benefactive/Malefactive

   a.   Intransitive → transitive

Stems			Roots	
-a-luuluut-il-a va-anace	'ululate for children'	cf.	-luuluut-	'ululate'
OM-ululate-A-FV cl.2-child				
-ji-saangalad-il-a m-bwa	'be happy with a dog'	cf.	-saangalal-	'be happy'
OM-be happy-A-FV cl.9-dog				
-n-tuumbiid-il-a n-sonogwe	'be angry at the spouse'	cf.	-tuumbil-	'be angry'
OM-be angry-A-FV cl.1-spouse				

   b.   transitive → ditransitive

-n-suum-il-a n-neendo nguku	'buy the guest a hen'	cf.	-suum-	'buy'
OM-buy-A-FV cl.1-guest cl.9-hen				
-n-jiiv-il-a m-biya muu-ndu	'steal money from a person'	cf.	-iiv-	'steal'
OM-steal-A-FV cl.10-money cl.1-person				
-a-wulaj-il-a yi-laango vaa-ndu	'kill people's pets'	cf.	-wulag-	'kill'
OM-kill-A-FV cl.8-pets cl.2-person				

An important observation is that all roots on the left hand column in (3) are obligatorily preceded by an object marker. This means that, as shown in (3a), when the applicative extension is added, the inherently intransitive roots become transitive if the extension adds an element with beneficiary or maleficiary thematic role. The examples in (3b) illustrate the fact that the inherently transitive roots have their transitivity extended when the applicative extension is suffixed. That is, if the affixation of the applicative extension introduces a

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syntactic element with the beneficiary or maleficiary thematic role, the inherently transitive verb becomes ditransitive. This is different from what happens when the applicative extension introduces elements with thematic roles other than beneficiary or maleficiary. Thus, consider the forms in (4):

(4)   Instruments/Means

    a. intransitive → transitive

       Stems   Roots

       -gon-el-a di-kaangala   'sleep on a mat'   cf. -gon-   'sleep'
       sleep-A-FV cl.5-mat

       -eend-el-a yi-tuungulo   'move on wheels'   cf. -eend-   'walk'
       walk-A-FV cl.8-wheel

       -guluc-il-a ma-papiko   'fly with wings'   cf. -guluk-   'fly'
       fly-A-FV cl.5-wing

    b. transitive → ditransitive

       -sol-el-a ci-puula di-siimbo 'dig a hole with a knife' cf. -sol-   'dig'
       dig-A-FV cl.7-knife cl.5-hole

       -kat-il-a ci-puula dii-wupa 'cut the bone with a knife' cf. -kat-   'cut'
       cut-A-FV cl.7-knife cl.5-bone

       -dim-il-a dii-jela   'cultivate with a hoe' cf. -dim-   'cultivate'
       cultivate-A-FV cl.5-hoe

Although the examples in (4a) show that when attached to inherently intransitive roots the applicative extension can also introduce syntactic elements with an instrumental thematic role, it should be noted that there is in the language a tendency for this extension to introduce elements with instrumental thematic role only when attached to inherently transitive roots. As observed, what appear to be counterexamples in (4a) are actually

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special elements that can better be described as "means" through which an activity is carried out rather than "instruments" with which something is done. The distinction between "means" and "instruments" can be better appreciated by comparing the semantic relationships between the nouns and the intransitive verbs in (4a), and the relationship between the nouns and the transitive verbs in (4b). In the former there is some special relationship between the verb and the noun that could be interpreted as some kind of noun incorporation of some sort (i.e., to "mat-sleep", "wheel-move", or "wing-fly"), while in the latter there is nothing special between the verb and the noun. For example, while in (4b) the applicative extension could be left out if the prepositional connector ni 'with' were used, in (4a) the use of the connector ni 'with' as an attempt to produce the same grammaticality generated by the use of the applicative extension is problematic. Let us illustrate the major points with the following examples:

(5)   Instruments/Means

      S-stems   Roots

  a. ?-gon-a ni di-kaangala   'sleep on a mat'   cf. -gon-   'sleep'
      sleep-A-FV with cl.5-mat

      ?-eend-a ni yi-tuungulo   'move with wheels'   cf. -eend- 'walk'
      walk-A-FV with cl.8-wheel

      ?-guluk-a ni ma-papiko   'fly with wings'   cf. -guluk- 'fly'
      fly-A-FV with cl.6-wings

but,

  b. -sol-a di-siimbo ni ci-puula   'dig a hole with a knife' cf. -sol-   'dig'
      dig-A-FV cl.5-hole cl.7-knife

      -kat-a dii-wupa ni ci-puula   'cut the bone with a knife' cf. -kat-   'cut'
      cut-A-FV cl.5-bone cl.7-knife

      -dim-a ni dii-jela   'cultivate with a hoe' cf. -dim-   'cultivate'

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cultivate-A-FV cl.5-hoe

Note that the first example in (5a) is ruled out on the grounds that it has nothing to do with instrument/means. Its literal meaning would be 'sleep or lie side by side with a mat', while the meaning of the first example in (4a) is 'sleep on a mat'. The second and third examples in (5a) are question-marked because of their apparent ambiguity. Their literal meaning could be either 'move or fly side by side with wheels or wings' or 'move or fly through the means of wheels or wings' (in which case the wheels or wings are part of the subject of 'move' and 'fly', respectively). The first meaning is ruled out by the semantics associated with the nature of the wheels and wings that cannot move or fly on their own in the company of any other moving/flying being. This kind of semantic discrepancy does not happen between the examples in (4b), where the applicative extension is attached to the inherently transitive verbs, and the examples in (5b) where, instead of the applicative extension attached to the root, the prepositional connector **ni** 'with' is used. That is, the use of the applicative extension attached to an inherently transitive root and the use of the prepositional connector **ni** 'with' after the same kind of verbs produce equally grammatical results with exactly the same meaning. Consider next the cause (reason) thematic role as illustrated in (6):

(6)   Cause/Reason

       Stems   Roots

    a. -did-il-a ci-taabu   'cry for a book'   cf. -dil-   'cry'
        cry-A-FV cl.7-book

        -yic-il-a n-gaani   'come for problems'   cf. -yik-   'come'
        come-A-FV cl.10-problem

        -aapuc-il-a w-ooga   'defecate out of fear' cf. -aapuk-   'defecate'
        defecate-A-FV cl.14-fear

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b. -soom-el-a m-biya   'study for money'   cf.   -soom-   'study'

   study-A-FV cl.10-money

   -suum-il-a ku-salala   'buy because of beauty'   cf.   -suum-   'buy'

   buy-A-FV cl.15-beauty

   -cap-il-a Yiidi   'wash (clothes) for Ide'   cf.   -cap-   'wash'

   wash-A-FV cl.8-Ide

In (6) we observe that the applicative extension introduces syntactic elements with the cause
(reason) thematic role. Unlike the examples in (4a) and (5a), in (6) there is no special
relationship between the noun which constitutes the cause (or reason) for an activity or
event to take place and the syntactic subcategorization of the root to which the applicative
extension is attached. Both inherently intransitive and inherently transitive roots can
introduce the thematic role "cause". This fact makes the 'cause/reason' the thematic role
generally introduced by the applicative extension, since unlike the other thematic roles,
there is always a reason for an event to take place. In Ciyao this reason is expressed by
suffixing the applicative extension to the root of any verb.

    As seen in (7), below, when affixed to -CV- roots, the applicative extension
appears to be doubled because of an 'intermorph' (Hyman 1994, 1995) or "stabilizer"
(Whiteley 1966), which happens to be of the same shape as the applicative suffix, that is
attached immediately after the root-final vowel suggests that there is a bimoraic requirement
on the base that all of the roots must satisfy before they support an extension[18], as
illustrated in (7):

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[18] An alternative to the analysis of what has been called an intermorph could be to regard the sequence of
-id-il- and -el-el- as double applicativization that applies when the root has the shape -CV-. This
analysis, however, will soon be shown to be inadequate when we discuss the other extensions and observe
that the same intermorph -il-/el- is required any extension and -CV- root.

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(7)   Stems   Roots

a. -di-id-il-[19]   'eat for'   cf. -dy-   /-di-/   (< PB *-di-)[20] 'eat'

    -pi-id-il-   'burn for'   cf. -py-   /-pi-/   (< PB *-pi-) 'burn'

    -gw-iid-il-   'fall toward'   cf. -gw-   /-gu-/   (< PB *-gu-) 'fall'

    -w-iid-il-   'die for'   cf. -w-   /-bu-/   (< PB *-kʉ́-) 'die'

b. -ce-el-el-   'dawn for'   cf. -c-   /-ce-/   (< PB *-ke-) 'dawn'

    -n'w-eel-el-   'drink for (with)' cf. -n'w- /-n'o-/ (< PB *-ŋu-; -ŋo-) 'drink'

    -ny-eel-el-   'defecate at'   cf. -ny-   /-nye-/ (< PB *-ne-) 'defecate'

    -p-eel-el-   'give with (instr.)' cf. -pa- /-pa-/   (< PB *-pa-) 'give'

    -t-eel-el-   'name (child) for' cf. -ta-   /-ta-/   (< CB *-ta-) 'name (a child)'

    -v-eel-el-   'be for (reason)' cf. -va-   /-va-/   (< PB *-ba-) 'be'

    -pw-eel-el-   'dry up for'   cf. -pw-   /-po-/   (< CB *-pu-) 'dry up'

    -sw-eel-el-   'grow dark for' cf. -sw-   /-so-/   (< PB *-co-) 'grow dark'

    -tw-eel-el-   'pound with/for at' cf. -tw- /-to-/   (< CB *-tu-) 'pound'

c. *-ji-id-il-   cf. -ji   /-ji-/   (< PB *-gi-) 'go'

    *-t-id-il-   cf. -ti   /-ti/   (< PB *-ti)   'say'

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[19] Before the applicative suffix, the intermorph may optionally be left out in the infinitive and all tenses marked by prefixes. Thus,

(1)a.   D-stem:
        -di-id-il-   cf. -di-il-   'eat for/with/at'
        -n'w-eel-el-   cf. -n'w-eel- 'drink for/with/at'
        -pi-id-il-   cf. -pi-il-   'burn for/at'
        -gw-iid-il-   cf. -gw-iil-   'fall toward'
   b.   D-stem-F1:
        ci-tu-di-id-il-e   cf. ci-tu-di-il-e   'we will eat for/with/at'
        Fut.-SM-eat-Interm-A.-FV   Fut.-SM-eat-A-FV
   c.   D-stem-F2:
        ci-tu-ci-di-id-il-a   cf. ci-tu-ci-di-il-e   'we will eat for/with/at'
        Fut.-SM-Fut-eat-Interm-A-FV   Fut.-SM-Fut.-eat-A-FV

However, when the tense marker is a suffix or a prefix and a suffix, the presence of the allomorphs is obligatory as shown in the examples below:

(2)a.   D-stem-P1:
        tu-di-id-iil-e   'we ate for/with/at'   cf. *tu-di-il-e
        SM-eat-Interm-A-Pst.-FV   SM-eat-Pst.-FV
   b.   D-stem-P2:
        tw-aa-di-id-iil-e 'we had eaten for/with/at' cf. *tw-aa-di-il-e
        SM-Pst.-Interm-eat-A-Pst.-FV   SM-Pst.-eat-A-Pst.-FV

[20] Reconstructions are taken from Meeussen "PB" (1967) and Guthrie "CB" (1967-71).

Ciyao has fifteen -CV- roots. Of these, the thirteen given in (7a, b) can host the applicative extension. The two given in (7c) cannot host the applicative extension. In all examples, the intermorph -il-/-el- has the same shape and observes the same vowel harmony rule as the applicative extension. Since there is no consonant between the final vowel of the root and the vowel of the intermorph, we have a concatenation of vowels that feeds some of the hiatus resolution rules the discussed in chapter 2 such as coalescence, gliding, deletion, and vowel lengthening, according to the quality of the final vowel of the root and the initial vowel of the intermorph. It should be added that apart from the vowel-final roots (-CV-) given above, which form monomoraic S-stems (-C(G)V), in our database we only found four verbs which underlyingly end in a vowel (/i/), as shown in the following examples:

(8) Stems   Roots

  a. -weec-el- 'dress someone for'   cf. -weec- /-vueki-/ 'dress s.o.'

      -ooc-el-   'roast for'   cf. -ooc-   /-ooki-/   'roast'

  b. -cotec-el- 'act carelessly for' cf. -cotec- /-coteki-/ 'act thoughtlessly'

      -paac-il- 'denounce an accomplice for' cf. -paac- /-paaki-/ 'denounce an accomplice'

As we have seen in the glosses of the data presented so far, the applicative extension is an example of one-to-many relationships between the extension and the meanings as interpreted through the thematic roles (namely, benefactive/malefactive, instrumental, cause/reason) of the syntactic elements introduced by the extension. This argues for a suggestion that the term 'applicative' should not be regarded as having a particular meaning, but as a label that agglutinates the various meanings expressed by the allomorphs -il-/-el-. While the expression of benefactive, instrumental, and cause/reason by the applicative extension can often be predicted from the context, there is a series of meanings that cannot be completely predicted when the applicativized stem precedes

locative. That is, the affixation of this extension to a verb before a locative can be used to express a variety of unpredictable meanings such as location (setting), goal and source, in which case the noun that follows the applicativized verb has to exhibit an allomorph of one of the locative prefixes, pa- (cl. 16), ku- (cl. 17), and mu- (cl. 18). Thus, to express the setting, the use of the applicative extension is optional, as illustrated by the following examples:

(9)   Stems   Roots

       + Applicative + locative   - Applicative + locative

       -ceecud-il-a mw-iitiinji   'tear off in bush' cf. -ceecul-a mw-iitiinji 'tear off in bush'

       tear-A-FV cl.18-bush   tear-FV cl.18-bush

       -com-el-a muu-ngokwe   'burn in granary' cf. -com-a muu-ngokwe 'burn in granary'

       burn-A-FV cl.18-granary   burn-FV cl.18-granary

       -velec-el-a ku-musi   'deliver (child) at home' cf. -velek-a kum-usi   'deliver at home'

       deliver-A-FV cl.17-home   deliver-FV cl.17-home

The optional use of the applicative extension before locatives in (9) is illustrated by the fact that the meanings of the examples on the left hand column (+ Applicative + locative) and the meanings of the examples in the right column (- Applicative + locative are identical. The situation is, however, different in many other cases such as the following:

(10)   Stems   Roots

       + Applicative + locative   - Applicative + locative

   a. -wutuc-il-a m-meesi 'run into the water' cf. -wutuk-a m-meesi   'run in water'

       run-A-FV cl.18-water   run-FV cl.18-water

       -kusud-il-a n-sapaato 'empty into shoes' cf. -kusul-a n-sapaato 'empty in shoes'

       empty-A-FV cl.18-shoes   empty-FV cl.18-shoes

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     -aas-il-a pa-citutu 'throw away at the dump' cf. -aas-a pa-citutu   'throw on the dump'

     throw away-A-FV cl.16-dump   throw away-FV cl.16-dump

b. -taand-il-a ku-musi 'start from home'   cf. -taand-a ku-musi 'start at home'

     start-A-FV cl.17-home   start-FV cl.17-home

     -pad-il-a ku-Yiindiya   'import from India' cf. -pal-a ku-Yiindiya 'import in India'

     import-A-FV cl.17-India   import-FV cl.17-India

The examples in (10) show cases where the meaning of the applicativized verbs before locatives is unpredictably different from that of the respective forms of the same verbs without the applicative extension. In the first example of (10a) we have two different meanings reflecting the presence vs. the absence of the applicative extension attached to the verb before the locative. The second example shows that the use of the applicative extension may be obligatory in some cases where its absence results in an unacceptable or simply semantically odd constructions. In this case, what the example on the right hand column suggests is that the subject and object of 'empty' are both in the 'shoes', in the same way that the subject of 'run' in the preceding examples is in the 'water'. Similarly, in the following example the subject and object of 'throw away' are both in the 'dump'. Thus what we have in (10a) can be summarized as follows:

(11)a. + applicative + locative = goal: toward, onto

   b. - applicative + locative = location/setting: (with)in: or ungrammatical

In (10b), the use of the applicative extension indicates the starting point (source from) of an event, while the absence indicates the setting without any implied reference to the source or goal. So, (10b) can be summarized as follows:

(12)a. + applicative + locative = source (from)

b. - applicative + locative = location/setting: at, (with)in.

The following table reports the number of roots that express the different meanings in constructions of the type **root + applicative + locative**, in order to express the different meanings just described.

Table 3: Applicativized verbs followed by locatives per root-final consonant.

Root-endings	Roots	Applicative extension + locative		
		Location	Goal	Source
-(m)b-	41	19	2	—
-c-	5	3	—	—
-(n)d-	71	32	5	1
-(n)g-	95	60	8	1
-(n)j-	10	3	1	—
-k-	453	181	47	2
-l-	968	310	80	4
-m-	94	33	17	1
-n-	123	67	4	2
-ny-	147	77	6	—
-n'-	2	—	—	—
-p-	34	18	2	—
-s-	46	21	5	—
-t-	93	47	7	1
-v-	37	19	4	—
-w-	6	1	1	—
-y-	48	15	4	—
-(m)bw-	4	3	—	—
-(n)dw-	1	—	—	—
-(n)gw-	17	2	1	—
-kw-	8	—	—	—
-lw-	30	—	—	—
-mw-	6	1	—	—
-nw-	1	-	—	—
-n'w-	2	1	—	—
-pw-	2	1	—	—
-sw-	2	1	—	—
-tw-	3	1	—	—
-(n)dy-	2	2	—	—
-my-	19	6	5	—
-py-	2	1	—	—
-sy-	349	129	23	2
Total	**2722**	**1054**	**223**	**14**

As is observed in the Table 3, the use of the applicative extension before locative indicates, in general terms, the setting (1054 roots) where the event takes place. In 228 roots, the use

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of the applicative extension before locatives indicates the goal and only in 14 roots given in

(13), below, the use the applicative extension before locatives indicates source.

(13) Stems   . Roots

-aanj-il-a muu-ngokwe 'answer from a granary' cf. -aang-   'answer, reply'
answer-A-FV cl.18-granary

-cidiwuc-il-a p-eetala 'leave the path suddenly' cf. -cidiwuk-   'stop and leave...'
stop and leave-A-FV cl.16-path

-cikoondol-el-a pa-nseewo 'scream on the road' cf. -cikoondol- 'scream'
scream-A-FV cl.16-road

-dimwaac-is-y-a[21] apa 'drive people from here' cf. -dimwaasy- 'drive people...'
drive away-A-FV cl.16-here

-iinjid-il-a pa-nnaango 'enter through the door' cf. -iinjil-   'enter; go in'
enter-FV cl.16-door

-kopoc-el-a pa-caanya 'go/come out from top' cf. -kopok-   'go or come out'
come out-A-FV cl.16-top

-lokot-el-a paa-si   'pick up from ground' cf. -lokot-   'pick up'
pick up-FV cl.16-ground

-lokot-an-il-a pa-asala 'relate to e.o. during famine' cf. -lokot-   'pick up'
pick up e.o.-A-FV cl.16-famine

-pad-il-a ku-Malaavi' 'import from Malawi' cf. -pal-   'import'
import-A-FV cl.17-Malawi

-taand-il-a pa-nyuumba 'begin/start from home' cf. -taand-   'begin; start'
start-A-FV cl.16-home

-tivid-il-a apa   'dive from here' cf. -tivil-   'make dive, sink'
dive-A-FV cl.16-here

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[21] In this case we have an applicativized causative. In chapter 6 we discuss the details of the morphophonological processes involved in the production of this surface form.

-tividic-is-y-a[5] apa   'make dive from here'   cf.   -tivisy-   'dive, sink'

dive-A-Caus.-FV from-here

-won-el-a vaandu apa   'see people from here'   cf.   -won-   'see'

see-A-FV people cl.16-here

-wum-il-a amu   'come from in here'   cf.   -wum-   'come from'

come-A-FV cl.18-here

Of the 2696 applicativizable roots, 398 can express combinations of two or three meanings when followed by locatives as shown in Table 4:

Table 4: Multiple meanings of applicativized verbs followed by locatives.

Number	Applicative extension + locative		
	Location	Goal	Source
400	X	X	—
4	X	X	X
5	X	—	X
11	—	X	X

Table 4 shows that before locatives, 400 applicativized stems can express location (setting) or goal; 3 can express location (setting), goal, or source; 5 can express location or source; and 11 can express goal or source. In any one of the four groups, when the corresponding non-applicativized forms are followed by locatives, we have either only one of the two or three meanings we get when the applicative extension is attached, or a different meaning, but definitely never the two meanings or three combined. Examples of the combined meanings are provided in (14):

(14)   Goal/Source

A	B
+Applicative +locative	-Applicative +locative

a. -wuj-il-a ku-musi 'return to/from the village'   cf. -wuj-a ku-musi   'return from...'
    return-A-FV cl.17-village   return-FV cl.17-village

    -viinj-il-a ku-musi 'expel toward/from the village' cf. -viing-a ku-musi   'expel from...'
    expel-A -FV cl.17-village   expel-FV cl.17-village

    -swiikam-il-a pa-musi 'chase to/from the village'   cf. -swiikam-a pa-musi 'chase from...'
    chase-A-FV cl.16-village   chase-FV cl.16-village

    -vigud-il-a pa-musi 'depart to/from the village'   cf. -vigul-a pa-musi   'depart from...'
    depart-A-FV cl.16-village   depart-FV cl.16-village

b. -vilaanj-il-a ku-musi 'call to/from the village'   cf. -vilaang-a ku-musi   'call to...'
    call-A-FV cl.17-village   call-FV cl.17-village

c. -guluc-il-a apa   'jump to/from here'   cf. -guluk-a apa   'jump here'
    jump-A-FV cl.16-here   jump-FV cl.16-here

    -kosomol-el-a aku 'cough to/from there'   cf. -kosomol-a aku   'cough there'
    cough-A-FV cl.17-there   cough-FV cl.17-there

    -nyamaangud-il-a aku 'stretch to/from there'   cf. -nyamaangul-a aku   'stretch there'
    stretch-A-FV cl.16-there   stretch-FV cl.17-there

    -nyamaanguc-il-a aku 'be streched to/from there'   cf. -nyamaanguk-a aku 'be stretched...'
    be stretched-A-FV cl.17-there   be stretched-FV cl.17-there

The examples in column A of (14) show cases where the locative is preceded by applicativized verbs (i.e., +applicative), while in column B we see locatives preceded by non-applicativized (i.e., -applicative) verbs.   As seen in (14a), before locatives, applicativized verbs can express source or goal which means that the speaker/writer has to furnish the hearer/reader with enough information for him/her to make a correct

interpretation of the messages where such constructions are used. But when the locative follows the respective non-applicativized forms of these verbs the meaning is exclusively source. Thus, unlike the other cases, the summary of (14a) is:

(15)a.   + applicative + locative = source (from); goal (toward, to)

   b.   - applicative + locative = source (from)

The example in (14b), however, shows an opposite situation when the locative follows the non-applicativized form of the verb, where **-vilaang- kumusi** means 'call to the village' and not 'from the village' although the applicativized form followed by the locative means both 'to' and 'from' as the verbs in (14a). Thus, the summary of (14b) is presented in (16):

(16)a.   + applicative + locative = source (from); goal (toward, to)

   b.   - applicative + locative = goal (toward, to)

The four examples in (14c) give us another scenario where the non-applicativized forms presented in the right hand column express a third meaning which is neither goal nor source. They express the setting/location where the events take place. Thus, the summary of (14c) is as follows:

(17)a.   + applicative + locative = source (from); goal (toward, to)

   b.   - applicative + locative = location/setting: with(in)

Consider next the cases in which the applicativized verbs followed by a locative can express location/setting, goal, and source:

(18) Location/Goal/Source

     D-stems   S-stems

     -goomb-el-a m-méésí 'shoot in/toward/from the water' cf. -goomb-a m-méésí 'shoot in...'

     shoot-A-FV cl.18-water   shoot-FV cl.18-water

     -gum-ila- m-meesi   'bark in/toward/from water'   cf. -gum-a mmeesi 'bark in water'

     bark-A-FV cl.18-water   bark-FV cl.18-water

     -toony-el-a pa-caanya 'poke on/to/from the top'   cf. -toony-a pa-caanya 'poke on top'

     poke-A-FV cl.16-top   poke-FV cl.16-top

The examples in (18) show the three cases where the use of the applicative extension in a verb that is followed by a locative can have any of the three meanings (location/setting, goal, and source) we have been discussing. Note in the three verbs that when the applicative extension is absent, there is exclusively one possible reading, namely, location/setting, as is seen on the right hand column. This semantic discrepancy can be summarized as follows:

(19)a. + applicative + locative = location (on, at, in); goal (toward, to); source (from)

     b. - applicative + locative = location/setting (in, on)

Next consider first three of the five examples where the applicativized verb followed by a locative can express location/setting and source in (20):

(20)   Location/Source

     D-stems   S-stems

  a. -tyooc-el-a n-cipi 'leave in/from the dark' cf. -tyook-a n-cipi 'leave in/from the dark'

      leave-A-FV cl.18-dark   leave-FV cl.18-dark

      -suun-il-a n-cipi 'spit out in/from the dark' cf. -suun-a n-cipi 'spit out in/from the dark'

spit out-A-FV cl.18-dark	spit out-FV cl.18-dark
-won-el-a n-cipi 'see in/from the dark'	cf. -won- n-cipi 'see in/from the dark'
see-A-FV cl.18-dark	see-FV cl.18-dark

b. -suumic-is-y-a n-cipi 'sell in/from the dark' cf. -suum-is-y-a n-cipi   'sell in/from dark'

sell-A-FV cl.18-dark	sell-FV cl.18-dark
-tyooc-es-y-a ncipi 'remove in/from the dark'	cf. -suumis-a ncipi 'remove in/from the dark'
remove-A-FV cl.18-dark	remove-FV cl.18-dark

For our present purposes, consider examples in (20a) only, where the affixation of the applicative extension does not involve the complex morphophonemic processes—we will not discuss here, but see combination of extensions in chapter 6—we see in (20b). The examples in (20b) were included here in order to provide a complete list of all verbs which, when applicativized before locatives, show the behavior to be analyzed here. Thus, as seen in (20a), the suffixation of the applicative extension (left hand column) to the verb that precedes the locative does not affect the meaning of the construction where the same verbs are used without the applicative extension (right hand column) before the locative. That is, the inherent semantics of the roots is so strong that it is indifferent to the affixation of the applicative extension. The summary of (20) is as follows:

(21)a. + applicative + locative = location/setting (in); source (from)

b. - applicative + locative = location/setting (in); source (from)

Finally, let us consider the cases where the applicativized verbs followed by locatives express location/setting and goal:

(22)   Location/Goal

   D-stems   S-stems

a.   -meny-el-a n-nyuúmba 'peel off in/into the house' cf. -meny-a nnyuúmba 'peel off in...'

   peel off-A-FV cl.18-house   peel off-FV cl.18-house

   -suus-il-a ku-lutaando 'adjust on top/upward'   cf. suus-a ku-lutaando 'adjust upper side'

   adjust-A-FV cl.17-upward   adjust-FV cl.17-upper side

   -soongon-el-a p-eewíiwi 'whisper on/towards the ear' cf. -soo... p-ééwíiwi 'whisper at ear'

   whisper-A-FV cl.16-ear   whisper-FV -cl.16-ear

   -ciny-il-a n-kamwa 'dip at/into the mouth'   cf. -ciny-a n-kamwa 'dip into the mouth'

   dip-A-FV cl.18-mouth   dip-FV cl.18-mouth

   -peembenukud-il-a paa-nyuma 'open a bit backward' cf. -p... paa-nyuma 'open...in back'

   open slightly-A-FV cl.16-backward   open slightly-FV cl.16-back

   -tapic-il-a pa-nseewo 'vomit at/onto the road'   cf. -tapik-a pa-nseewo 'vomit at the...'

   vomit-A-FV cl.16-road   vomit-FV cl.16-road

   -kotam-il-a m.-bujo   'stoop in front/forward'   cf. -kotam-a m.-bujo 'stoop in front'

   stoop-A-FV cl.18-forward   stoop-FV cl.18-forward

b.   -cuvil-a muu-mbaale 'extract on/onto the plate'   cf. -cuv-a muu-mbaale 'extract from...'

   extract-A-FV cl.18-plate   extract-FV cl.18-plate

   -nyakud-il-a pa-cindaanda 'lift in/onto the bed'   cf. -nyakul-a pa-cindaanda 'lift from...'

   lift-A-FV cl.16-bed   lift-FV cl.16-bed

   -iitic-il-a n-civiga 'spill in/onto the pot'   cf. -iitik-a n-civiga 'spill from the pot'

   spill-A-FV cl.16-pot   spill-FV cl.16-pot

As mentioned above, the number of applicativized locative, express location and goal is very high and there is no uniformity to what the corresponding non-applicativized verbs express in terms of location, goal, and source. In (22) the different non-applicativized verbs express different meanings. This is what we see in the representative examples

where the semantic relationships between the constructions on the left hand column and those on the right hand column is determined by the semantics of the verbs themselves. Thus, in (22a), for example, the data on the left hand column express both setting and goal, while those on the right hand column express setting only, which is the more general pattern. We have not found in the database cases where non-applicativized verbs expressed goal. In (22b) the situation is complicated for the meanings of the non-applicativized forms have nothing to with what we could expect, i.e., that it should express goal, but is does not. What we have instead is that these examples express source, which is completely excluded when the applicative extension is used. The following is the summary of the facts just described:

(23)a. ± applicative + locative = location/setting (at, in, on); goal (to, onto, into)

    b. -applicative + locative = source (from)

(23a) summarizes what we have in (22a) where the affixation or non-affixation of the applicative extension to the verbs that precede the locatives does not affect the semantics of the output. (23b) summarizes what is seen in (22b) where the sequence of non-applicativized verb followed by a locative express the source.

        With this discussion we have completed the study of the applicative extension. Let us now move on to another extension.

5.2. The causative extension

        The Causative is another widespread extension found in most Bantu languages. In Ciyao it has three sets of allomorphs as illustrated in (24):

(24)   D-stems   Roots

    a. -wum-y-   /-wum-į-/   (C$_1$) 'remove'   cf. -wum-   'come from'

b. -eend-es-y- /-end-es-i̧-/ (C_2) 'drive' cf. -end- 'walk, move'

c. -cap-aas-y- /-cap-aas-i̧-/ (C_3) 'make wash' cf. -cap- 'wash'

As seen in (24), apart from -y- (/-i̧-/) and (/-is-i̧-/-es-i̧-/) (< PB *-ic-i̧-), the two causative suffixes found in many Bantu languages whose history is traced back to Proto-Bantu, there is a third allomorph -aas-y- (/-aas-i̧-/) which is the most productive causative, as shown in Table 5:

Table 5: Causative allomorphs after each root-final consonant.

Root-endings	Roots	Causative Allomorphs		
		-y-	-is-y-/-es-y-	-aas-y-
-(m)b-	41	3	3	41
-c-	5	—	1	3
-(n)d-	71	6	10	69
-(n)g-	95	9	14	95
-(n)j-	10	1	4	9
-k-	453	117	—	453
-l-	968	392	1	967
-m-	94	75	11	94
-n-	123	85	5	122
-ny-	147	—	11	146
-n'-	2	—	1	2
-p-	34	14	3	33
-s-	46	—	—	43
-t-	93	7	30	93
-v-	37	17	8	35
-w-	6	—	—	5
-y-	48	—	1	42
-(m)bw-	4	—	—	4
-(n)dw-	1	—	—	1
-(n)gw-	17	—	1	16
-kw-	8	—	—	8
-lw-	30	—	—	30
-mw-	6	—	1	5
-nw-	1	—	—	1
-n'w-	2	—	1	1
-pw-	2	—	1	1
-sw-	2	—	—	1
-tw-	3	—	1	2
-(n)dy-	2	—	2	—
-my-	19	—	—	19
-py-	2	—	—	1
-sy-	349	—	—	348
Total	2722	726	110	2690

The two polyphonemic suffixes -is-y-/-es-y- and -aas-y- consist of -is-+y-/-es-+y- and -aas-+y-, respectively. The monophonemic causative appears always as -y-. As will be shown below, the distribution of these suffixes is semantically conditioned in some cases and morphologically conditioned in others.

It should be mentioned that the major difference between the applicative and the causative extensions is that, as we have seen, the former introduces non-agentive thematic roles while the latter introduces agentive thematic role (i.e., the 'causee' which basically functions as the direct object of what in many (non Bantu) languages is the 'higher' verb, which is in turn the subject of the lower verb. The function of the lower verb in non-Bantu languages is performed by the root in Bantu while the function of the higher verb is performed by the extension). This ability to increase the number of arguments of the roots to which they are attached subsumes the causative and applicative (beneficiary/maleficiary) extensions into the class of 'valence-increasing' extensions (Guthrie 1970). In this study we will not provide any further elaboration of the syntactic characterization of the extensions. We will just make the necessary remarks on transitivity, when we discuss the different extensions.

Our discussion of the suffixes of causative extension starts in the next subsection with the analysis of the monophonemic suffix -y-.

5.2.1. The monophonemic causative suffix: -y- (/-i̯-/) (C_1)

As is shown in Table 5, above, after the polyphonemic suffix -aas-y-, the monophonemic -y- is the most productive suffix of the Ciyao causative extension. (25) provides some examples of verbs to which this suffix can be attached:

(25) Stems   Roots

      -tup-y-   /-tup-i̧-/   'increase the quantity'   cf.   -tup-   'be many'

      -lam-y-   /-lam-i̧-/   'save'   cf.   -lam-   'survive'

      -lum-y-   /-lum-i̧-/   'make bite'   cf.   -lum-   'bite'

      -wum-y-   /-wum-i̧-/   'remove'   cf.   -wum-   'come out/come from'

(25) shows that the monophonemic causative -y- is added to the root-final consonant. Unlike the polyphonemic allomorphs, as we will see below, the monophonemic allomorph triggers a variety of important morphophonemic processes, involving the root-final consonants to which it is attached. Let us consider some of them:

(26) -CVC- and longer roots

      Derived stems   Roots

      -pis-y-   /-pit-i̧-/   'make pass'   cf.   -pit-   'pass'

      -puus-y-   /-puund-i̧-/   'make exceed'   cf.   -puund-   'exceed'

      -tees-y-   /-teend-i̧-/   'make do'   cf.   -teend-   'do'

      -los-y-   /-lol-i̧-/   'make look'   cf.   -lol-   'look'

      -wus-y-   /-wuj-i̧-/   'return (tr.)'   cf.   -wuj-   'return (intr.)'

      -gulus-y-   /-guluk-i̧-/   'make fly'   cf.   -guluk-   'jump/fly'

      -oos-y-   /-oog-i̧-/   'make bathe'   cf.   -oog-   'have a bathe'

      -simoos-y- /-simoong-i̧-/   'make wonder at' cf.   -simoong-   'wonder at'

The examples in (26) illustrate that whenever the structural description is met, frication of the lingual consonants before the -y- causativizer applies without any exception. A special note should be made on the examples in (26) whose roots end in NC clusters. For convenience, we provide them again in (27):

(27) Stems   Roots

-puus-y-   /-puund-i̧-/   'make exceed'   cf.   -puund-   'exceed'

-tees-y-   /-teend-i̧-/   'make do'   cf.   -teend-   'do'

-simoos-ý-   /-simoong-i̧-/   'make wonder at'   cf.   -simoong-   'wonder at'

As was discussed in section 2 of chapter 3, a homorganic nasal undergoes effacement before /s/. Therefore, the preconsonantal nasal in the examples on the right hand column in (27) is deleted after the following consonant has undergone frication, as shown in the following derivation:

(28) Input: -i̧-affix.   C-frication   N-effacement

      -NC-   →   -NC-i̧-   →   -Ns-i̧-   →   -s-i̧-

      Where: N = nasal; C = /d, g/.

The general rule that fricates the root-final oral lingual consonants is informally represented as follows:

(29)   {t, d, l, j, k, (n)g} → [s]/ —+-i̧-[22]

As seen in (26) the affixation of the causative -y- results in a change (frication) of the surface realization of the root-final oral lingual consonants. The following table shows, per each lingual, the number of cases where (29) applies:

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[22] There is the following exceptional case where /mb/ is fricated as if it were a lingual:

-wuluwuus-y-a (< -wuluwuumb-i̧-) 'make roll on the ground'   cf.   -wuluwuumb- 'roll on the ground' It must be stressed that this is the only example found in the database where a labial consonant undergoes frication.

Table 6: Frication of root-final oral linguals before C_1 /-į-/.

Consonants	Total	C_1	Frication	C_2	Non-causativizable
/t/	92	7	7	30	55
/d/	65	6	6	10	49
/l/	986	393	393	1	592
/j/	10	1	1	4	5
/k/	484	125	125	ø	369
/g/	97	8	8	25	64
Total	1734	540	540	70	1134

The term "Non-causativizable" in the extreme right hand column of Table 6 refers only to those roots which do not take C_1 or C_2. So, those roots which take C_3 causativizer are include in "non-causativizable" for our purposes here. As we will show later, all roots that take either C_1 or C_2 can also take C_3. Table 6 shows that all root-final oral linguals that precede the causative /-į-/ undergo frication. This is different from the behavior of the initial vowel of the perfective -il-e seen in chapter 3 which, apart from failing to fricativize /t/, has a variable behavior towards velar consonants by fricativizing only some of them.

Consider the following examples where the monophonemic -y- is attached to -CV-roots:

(30).   -CV- roots

Stems   Roots

-di-is-y-   /-di-il-į-/   'feed'   cf.   -dy-   /-di-/   'eat'

-gw-iis-y-   /-gu-il-į-/   'make fall'   cf.   -gw-   /-gu-/   'fall'

-ce-es-y-   /-ce-el-į-/   'spend a night awake'[23]   cf.   -c-   /-ce-/   'dawn'

-nye-es-y-   /-nye-el-į-/   'make defecate'   cf.   -ny-   /-nye-/   'defecate'

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[23] Lit.: 'cause to dawn'.

-n'w-ees-y-	/-n'o-el-į-/	'make drink'	cf.	-n'w-	/-n'o-/	'drink'
-pwe-es-y-	/-po-el-į-/	'make dry up'	cf.	-pw-	/-po-/	'dry up'
-tw-ees-y-	/-to-el-į-/	'help in pounding'	cf.	-tw-	/-to-/	'pound'

(30) shows all seven -CV- roots that can be causativized. Just like the allomorphs of the applicative extension, -y- requires a prior affixation of the intermorph of the shape -VC- (i.e., -il-/-el-) to what it is directly attached. Because the final consonant of the intermorph is a lingual, it therefore undergoes frication before the causative -y- in the same way that it undergoes in final position of -CVC- or longer roots. So, the derivation of what we see on the left hand column in (30) can be represented as in (31):

(31) Input: intermorph affix.   -y-affix.   /l/ frication

-CV-   →   -CV-il-   →   -CV-il-į-   →   -CV-is-į-

It should be mentioned that C_1 /-į-/ is the only causativizer that can be attached to -CV- roots. We will come back to the derivation in (31) in section 5.4., below.

Apart from triggering frication of the linguals (29), above, in some verbs the /-į-/ turns into palatal glide the oral labials /p/ and /v/ and, exceptionally, the labial cluster /mb/ and the velar /k/, as illustrated in (32):

(32) Stems   Roots

a.	-iipiy-(y)-	/-iipip-į-/	'shorten'	cf. -iipip-	'be short'
	-leewuy(y)-	/-leewup-į-/	'lengthen'	cf. -leewup-	'be long'
	-oogoy-(y)-	/-oogop-į-/	'frighten'	cf. -oogop-	'be afraid'
	-nonoy-(y)-	/-nonop-į-/	'harden'	cf. -nonop-	'be hard'
	-naandiy-(y)-	/-naandip-į-/	'reduce (size or quantity'	cf. -naandip-	'be afraid'
	-noondiy-(y)-	/-noondip-į-/	'reduce (size or quantity'	cf. -noondip-	'be afraid'

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b. -nyoy-(y)-   /-nyov-i̜-/   'make wet'   cf. -nyov-   'be wet'

    -naay-(y)-   /-naav-i̜-/   'make wash hands'   cf. -naav-   'wash hands'

    -laay-(y)-   /-laav-i̜-/   'make leave early'   cf. -laav-   'leave early'

    -kaay-(y)-   /-kaav-i̜-/   'delay (tr.)'   cf. -kaav-   'be late'

    -toondoy-(y)-   /-toondov-i̜-/   'slacken'   cf. -toondov-   'be slack'

    -uuy-(y)-   /-uuv-i̜-/   'hide (tr.)'   cf. -uv-   'hide (intr.)'

c. -diiy-(y)-   /-diimb-i̜-/   'strengthen'   cf. -diimb-   'be strong'

    -leeleey-(y)-   /-leeleemb-i̜-/   'suspend'   cf. -leeleemb- 'be suspended'

d. -culuy-(y)-   /-culuk-i̜-/   'increase'   cf. -culuk-   'be many'

In (33) we provide an informal representation of the rule that palatalizes the oral labials before the causative /-i̜-/.

(33)   {p, v} → y / —+-i̜-

This rule produces an output in which the causative /-i̜-/ [y] precedes the palatal glide that occupies the slot of the roots-final oral labial creating an undesired *yy sequences which is repaired through deleting of the causative /y/. The examples in (32c, d) are the only ones where /mb/ and /k/, respectively, turn into palatal glide before /-i̜-/. According to Hyman (p.c.), the palatalization of the root-final /mb/ can historically be explained by the following derivation:

(34)   Roots: -diimb-   'be strong'   -leeleemb-   'be suspended'

        Morph.:   /-i̜-/-affixation.:   -diimb-i̜-   -leeleemb-i̜-

        Phon.:   /b/-frication: -diimf-i̜-   -leeleemf-i̜-

                  nasal effacement: -diif-i̜-   -leeleef-i̜-

                  /f/-deletion: -dii-i̜-   -leelee-i̜-

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As seen, the analysis in (34) is very similar to what we suggested in (28) for the for the analysis the prenasalized linguals which undergo frication.

The following table shows the number of cases where labial orals turn into palatal glide before the monophonemic causative allomorph.

Table 7: Palatalization of oral labials before C_1 /-ị-/.

Consonants	Total	C_1	C-deletion	No C-deletion	C_2	C_3 only
/p/	34	11	6	5	3	20
/v/	38	17	17	Ø	10	11
/mb/	41	2	2	Ø	2	37

As is seen in Table 7, where "C" in "C-deletion" means /p, v/-deletion, the root-final /p/ undergoes deletion in six of the eleven cases where the causative /-ị-/ is attached.-y- The following are the cases where /p/ deletion does not apply:

(35)   Stems   Roots

-ceekulup-y-   /-ceekulup-ị-/ 'make be or become old'   cf. -ceekulup-   'be old'

-cip-y-   /-cip-ị-/   'make be out of fashion'   cf. -cip-   'be out of fashion'

-kupaangup-y- /-kupaangup-ị-/   'make splash about'   cf. -kupaangup- 'splash about'

-sitop-y-   /-sitop-ị-/   'overburden'   cf. -sitop-   'be heavy'

-tup-y-   /-tup-ị-/   'increase the quantity'   cf. -tup-   'be many or much'

Unlike the root-final /p/, which before the /-ị-/ causative may or may not undergo deletion, Table 6 also shows that the root-final /v/ undergoes deletion whenever it precedes the causative /-ị-/.

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To summarize the discussion of the morphophonemic changes triggered by the /-į-/ causative on the root-final consonants, we can say that the only consonants that are completely exempted from undergoing such changes are the nasals as shown in (36):

(36) Stems   Roots

a. -gweedeen-y- /-gweedeen-į-/ 'make be loose in its socket' cf. -gweedeen- 'be loose..'

    -kaan-y-   /kaan-į-/   'prohibit'   cf. -kaan- 'deny, refuse'

    -kokon-y-   /-kokon-į-/   'slide (tr.)'   cf. -kokon- 'slide (intr.)'

    -kuungun-y-   /-kuungun-į-/ 'make pass below an obstacle' cf. -kuungun- 'pass...'

    -vin-y-   /-vin-į-/   'make girate (e.g., a top)'   cf. -vin-   'dance'

b. -aasam-y-   /-asam-į-/   'make open the mouth'   cf. -aasam- 'open one's mouth'

    -cim-y-   /-cim-į-/   'make hate'   cf. -cim-   'hate'

    -galam-y-   /-galam-į-/   'twist'   cf. -galam- 'be twisted'

    -jidim-y-   /-jidim-į-/   'make flow'   cf. -jidim- 'flow'

    -lam-y-   /-lam-į-/   'save'   cf. -lam-   'survive'

As is observed in (36) the velar and alveolar nasals are neither deleted nor fricated before the /-į-/ causative. Our database shows no single example where the /-į-/ causative can be attached to a root whose final consonant is palatal nasal or velar nasal. In the next subsection we look at the second causative suffix.

5.2.2. The polyphonemic causative allomorph -is-y-/-es-y-[24] (C₂)

In this subsection we focus attention on the set of polyphonemic allomorphs -is-y-/-es-y- (/-is-į-/-es-į-/) of the causative extension. Although this is the most common

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[24] The hyphen between /s/ and /į/ indicate that the two phonemes are different morphs. /s/ is part of the formative -is-/-es- and /į/ is the causative allomorph. Together, they form the bimorphic marker of the C₂ allomorph. Evidence for this bimorphicity is given in section 7.1.3. (Ch.7).

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allomorph in many Bantu languages, in Ciyao it is less productive than the causative suffix we have just seen. Consider the following examples:

(37) Stems   Roots

   a.   -viinj-is-y-   /-ving-is-i̧-/   'make chase'   cf.   -viing-   'chase'

        -suum-is-y-   /-suum-is-i̧-/   'make buy'   cf.   -suum-   'buy'

        -sim-is-y-   /-sim-is-i̧-/   ' make extinguish'   cf.   -sim-   'extinguish'

   b.   -sep-es-y-   /-sep-es-i̧-/   'make carve'   cf.   -sep-   'carve'

        -soom-es-y-   /-soom-es-i̧-/   'make read'   cf.   -soom-   'read'

The examples in (37) show causativized stems with the polyphonemic allomorphs /-is-i̧-/-es-i̧-/ of C_2 suffix. As seen, there are two similarities between the applicative and the causative extension. First, note that just like the applicative allomorphs, the distribution of the members of the allomorphs of C_2 suffix is determined by the vowel harmony rule described above. The second similarity is syntactic, as we have discussed earlier illustrated in the following examples:

(38) D-stems   Roots

   a.   -siinj-is-y-a   /-sing-is-i̧-/ n-guku   'make s.o. slaughter a hen' cf. -siing-   'slaughter'

        slaughter-Caus.-FV cl.9-hen

        -tav-is-y-a   /-tav-is-i̧-a/ ɲyuúmba   'make build a house'   cf. -tav-   'build, tie'

        tie-C_2-FV cl.9-house

   b.   -tem-es-y-a   /-tem-es-i̧-/ sáasu   'make break firewood'   cf. -tem-   'break'

        break-C_2-FV cl.10-firewood

        -soom-es-y-a   /soom-es-i̧-/ vaa-ndu   'make people study'   cf. -soom-   'study'

        study-C_2-FV cl.2-person

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In all examples in (38), the addition of the causative extension to a increases by one the number of inherent arguments the root. In other words, both the applicative and causative are valence-increasing extension.

Consider in the next subsection the third and last suffix of the causative extension.

5.2.3. The polyphonemic causative allomorph: -aas-y- (C$_3$)

In this subsection we focus attention on the **-aas-y-** (/-aas-i̧-/) polyphonemic suffix of the causative extension. The allomorph **-aas-y-** is the most productive causative suffix in Ciyao although, as we will see, its distribution is limited to roots which end in consonants. That is, it can be attached to all 'inherently' causativizable roots that end in C. Consider the following examples:

(39)a. -CVC- or longer roots

Stems			Roots		
-viing-aas-y-	/-ving-aas-i̧-/	'make chase'	cf. -viing-	'chase'
-paand-aas-y-	/-paand-aas-i̧-/	'make sow'	cf. -paand-	'sow'
-puund-aas-y-	/-puund-aas-i̧-/	'make exceed'	cf. -puund-	'exceed'
-tek-aas-y-	/-tek-aas-i̧-/	'make fetch'	cf. -tek-	'fetch'
-lol-aas-y-	/-lol-aas-i̧-/	'make look at'	cf. -lol-	'look at'
-tiindival-aas-y-	/-tindival-aas-i̧-/	'make kneel'	cf. -tiindival-	'kneel'
-yiingalamuk-aas-y-	/-yiingalamuk-aas-i̧-/	'make roll '	cf. -yiingalamuk-	'roll'

b. -CV- roots

Stems		Roots			
*-di-il-aas-y-	/*-di-il-aas-i̧-/	cf.	-dy-	/-di-/	'eat'
*-dy-aas-y-	/*-di-aas-i̧-/				
*-gw-iil-aas-y-	/*-gw-iil-aas-i̧-/	cf.	-gw-	/-gu-/	'fall'
*-gw-aas-y-	/*-gw-aas-i̧-/				

*-tw-eel-aas-y-	/*-tw-eel-aas-i̧-/	cf.	-tw-	/-to-/	'pound'
*-tw-aas-y-	/*-tw-aas-i̧-/				

Apart from the fact that -aas-y- cannot be attached to -CV- roots, as illustrated in (39b), there are no interesting morphophonemic processes that take place as a result of the affixation of this suffix to the roots. Therefore, we now turn to the discussion of the distribution of the three suffixes of the causative extension, considering the polyphonemic -aas-y- on the one hand, and the monophonemic and polyphonemic -y-, and -is-y-/-es-y-, respectively, on the other hand. This distribution is essentially semantic, based on the distinction between 'indirect' and 'direct' causativization (Bastin 1986). Indirect causativization refers to the cases where the subject of the higher clause ('causer') creates conditions for the object of this clause ('causee'), which is the subject of the lower clause, to act. Apart from being the only one through which the indirect causativization is expressed, which is possible with all causativizable verbs with consonant in root-final position, the suffix -aas-y- is also used to express direct causativization in those cases where the roots cannot take C_1 or C_2. This explains the near complete productivity of the C_3 in Table 6, above, in contrast with the direct C_1 and C_2 both of which create direct causatives only. Direct causativization is more restrictive in spite of there being two allomorphs that are used to express it. It refers to an action in which the 'causer' acts directly (including physically) on the 'causee'. The distinction between direct and indirect causativization is illustrated by the examples in (40):

(40) Indirect causative   Direct causative

    -aamiil-aas-y- /-aamiil-aas-i̧-/ 'make scream' cf. *-amiis-y-

                                                      *-amiid-is-y- (only as intensive)

    -amuk-aas-y- /-amuk-aas-i̧-/ 'make scold' cf. *-amus-y-

                                                        *-amuc-is-y-

-cap-aas-y-	/-cap-aas-ị-/	'make wash'	cf.	*-cap-y-
				*-cap-is-y- (only as intensive)
-caang-aas-y-	/-caang-aas-ị-/	'make bounce'	cf.	*-caas-y-
				*-caanj-is-y- (only as intensive)
-goomb-aas-y-	/-goomb-aas-ị-/	'make strike'	cf.	*-goomb-y-
				*-goomb-es-y- (only as intensive)
-veecet-aas-y-	/-veecet-aas-ị-/	'make speak'	cf.	*-veeces-y-
				*-veecet-es-ị- (only as intensive)

(40) illustrates that some roots can only accept the indirect causativizer -aas-y- to attach to them, but not any of the direct causativizers. As is observed, the attempts to derive direct causatives by suffixing -y- or -is-y-/-es-y- yield either ungrammatical forms or intensive forms. Consider next examples of verbs that accept both direct and indirect causatives:

(41) Indirect causative   Direct causative

-pit-aas-y-	/-pit-aas-ị-/	'make pass'	cf. -pis-y-	/-pit-ị-/	'make pass'
-teend-aas-y-	/-tend-aas-ị-/	'make do'	cf. -tees-y-	/-tend-ị-/	'make do'
-nyov-aas-y-	/-nyov-aas-ị-/	'make be wet'	cf. -nyo-y-	/-nyov-ị-/	'wet s.o.'
-pel-aas-y-	/-pel-aas-ị-/	'make be tired'	cf. -pes-y-	/-pel-ị-/	'tire s.o.'
-suum-aas-y-	/-suum-aas-ị-/	'make buy'	cf. -suum-is-y-	/-suum-is-ị-/	'sell'
-sep-aas-y-	/-sep-aas-ị-/	'make carve'	cf. -sep-es-ị-	/-sep-es-ị-/	'make carve'

As is observed, unlike what we saw in (40), (41) provides examples of verbs that can derive both indirect causatives, through the affixation of the polyphonemic suffix -aas-y-, and direct causatives, through the affixation of one of the direct causativizers -y- and -is-y-/-es-y- in each case. That is, the -aas-y- suffix expresses indirect causativization when the root allows the distinction between direct vs. indirect causativization. This means

that all roots that allow direct causativization, can also be indirectly causativized. But look at the example in (42):

(42)   Indirect causative   Direct causative   Roots

a. *-w-aas-y-   /*-w-aas-i̧-/   cf. *-w-y-   /*-u-i̧-/   cf. -w- /-bu-/   'die'

b. *-py-aas-y-   /*-pi-aas-i̧-/   cf. *-py-y-   /*-py-i̧-/   cf. -py- /pi-/   'burn'

but:

a'. -wulag-   'kill (make die)'

b'. -com-   'burn (tr.)'

The examples in (42) show that there are some roots whose semantics does not allow any kind of morphological causativization, in which cases the causativization is usually expressed through other verbs with "causative" (transitive) meaning such as **-wulag-** 'kill ('make die')' and **-com-** 'burn' (tr.), in (42a) and (42a') (42b'), respectively.

An interesting note to point out about direct vs. indirect causativization is shown in (43) where **-aas-y-** can be attached to stems containing direct causativizers as well as to frozen causatives:

(43)a. Productive causatives[25]

Direct causative + indirect causative   Direct causative

-pis-y-aas-y-   /-pit-i̧-aas-i̧-/   'cause to make pass' cf. -pis-y- /-pis-i̧-/ 'make pass'

-tees-y-aas-y-   /-tend-i̧-aas-i̧-/   'cause to make do'   cf. -tees-y- /-tend-i̧-/ 'make do'

-pes-y-aas-y-   /-pel-i̧-aas-i̧-/   'cauze to make tire' cf. -pes-y- /-pel-i̧- / 'tire s.o.'

-iipi-y-aas-y-   /-iipip-i̧-aas-i̧-/ 'make shorten'   cf. -ipi-i̧- /-ipip-i̧-/   'shorten'

-nyo-y-aas-y-   /-nyov-i̧-aas-i̧-/   'cause to wet'   cf. -nyo-y- /-nyov-i̧-/ 'wet'

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[25] Details on combinations of all extensions are discussed in chapter 6.

-suum-is-y-aas-y- /-suum-is-i̧-aas-i̧-/ 'cause to sell' cf. -suum-is-y- /-suum-is-i̧-/ 'sell'

-sep-es-y-aas-y- /-sep-es-i̧-aas-i̧-/ 'cause to make carve' cf. -sep-es-y- /-sep-es-i̧-/ 'make..'

b. Frozen causatives

Frozen causative + indirect causative			Frozen causatives		
-gay-aas-y-	/-gav-i̧-aas-i̧-/	'make grind'	cf. -gay-	/-gav-i̧-/	'grind'
-goy-aas-y-	/-gov-i̧-aas-i̧-/	'make bend down'	cf. -goy-	/-gov-i̧-/	'bend down'
-kuuy-aas-y-	/-kuuv-i̧-aas-i̧-/	'make follow'	cf. -kuuy-	/-kuuv-i̧-/	'follow'
-kwaay-aas-y-	/-kwaav-i̧-aas-i̧-/	'make touch'	cf. -kwaay-	/-kwaav-i̧-/	'touch'
-poy-aas-y-	/-pov-i̧-aas-i̧-/	'make pound leaves'	cf. -poy-	/-pov-i̧-/	'pound leaves'
-soy-aas-y-	/-sov-i̧-aas-i̧-/	'make err'	cf. -soy-	/-sov-i̧-/	'err'
-yuuy-aas-y-	/-yuuv-i̧-aas-i̧-/	'make swing'	cf. -yuuy-	/-yuuv-i̧-/	'swing'

The first five examples in (43a) illustrate C_1+C_3 combination, while in the last two we have C_2+C_3. All these examples show that the stems with direct causativizers **-y-** and **-is-y-/-es-y-** can still be indirectly causativized by **-aas-y-**. In (43b) we see that frozen causatives can also be indirectly causativized. The examples in (43a) illustrate the fact that the direct causativization is under the scope of the indirect causativization. When the **-aas-y-** suffix is attached to the directly causativized stem, the inner (direct causative) bracket is erased as shown in (44):

		Input	→	Output
(44)	Root:	[Root]		
		↓		↓
	Direct causative:	[[Root]-y-]	→	[Root-y-]
		↓		↓
	Indirect causative:	[[Root-y-]-aas-y-]	→	[Root-y-aas-y-]

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(44) shows that the indirect causativizer is last when it co-occurs in the same stem with the direct causativizer. We will discuss the details of the combination and order of extension suffixes in chapter 6, below.

It has been shown so far that in Ciyao, causativization is morphologically expressed by affixing to the verb root one of the three suffixes, namely, -y-, -is-y-/-es-y-, and -aas-y-. These suffixes differ from one another in terms of degree of productivity, distribution, and semantics. Thus, -aas-y- can be attached to all causativizable verbs, including the productive forms which take any of the other causative allomorphs as well as the frozen causatives with /y/ in root-final position. Exceptions to this generalization are the -CV- roots. These roots never take -aas-y- in their causative forms. The difference between the total number of roots shown in the Table 6, above, and the number of roots that take the -aas-y- causative suffix reflects the combination of two factors: (a) verbs with -CVC- or longer roots that, due to their semantics, cannot be causativized: (b) None of the 15 -CV- root accept C_3 as a causativizer, in the same way that they do not accept C_2 suffix. That is, C_1 is the only suffix that can be attached to the causativizable -CV- roots. That is, with -CV- roots we only get semantics of direct causation.

It is also important to point out that no verb whose root-final sound is palatal or voiceless fricative alveolar can take the monophonemic causative allomorph -y-. This is because, such forms are usually frozen causatives even though the causative character of some of them can no longer be transparently read from their literal translation. This suggests in a sense that all palatal ending roots have the monophonemic allomorph -y- in them and its repetition is blocked by the repeated morph constraint (Menn and McWhinney 1984).

Unlike the applicative extension, the causative extension establishes a relationship of many-to-one where 'causative' is the common denominator between the three suffixes we have seen and not a name of any of them in particular. In the next section we consider

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the impositive extension which has some semantic similarities with the two direct causatives.

5.3. The impositive extension: -ik-/-ek-

The designation "impositive" (Meeussen 1967) for this extension is some sort of description of the function of this extension which, when attached to a root, the resulting stem gets the meaning of 'putting something into certain position' (Maganga and Schadeberg 1992:163). As can be inferred from this definition, the impositive extension can only be attached to verbs that express potentially "changeable" position of the object to which the verb refers. This semantic specificity of the verbs to which the suffixes -ik-/-ek- can be attached makes the impositive a highly marked extension which is attached to a limited number of verbs. In our database we have found only 14 such verbs whose complete list is provided in (45):

(45)   Stems   Roots

a. -dii-gon-ek-   'make oneself be content'   cf. -dii-gon-   'be content'

    -iim-ik-   'put upright, stop (tr.)'   cf. -iim-   'stand up; stop (intr.)'

    -gon-ek-   'lay down'   cf. -gon-   'sleep; lie down'

    -kotam-ik-   'make bend'   cf. -kotam-   'bend; stoop'

    -pakam-ik-   'put in a rough surface to jam' cf. -pakam-   'be jammed'

    -pan-ik-   'put in narrow place to squeeze' cf. -pan-   'squeeze; grasp, grip'

    -peendem-ek-   'put slantly'   cf. -peendem-   'slant'

    -taam-ik-   'seat'   cf. -taam-   'sit down'

    -titim-ik-   'transfix'   cf. -titimil-   'be transfixed'

    -van-ik-   'put between two objects to clasp' cf. -van-   'clasp'

    -wutam-ik-   'put in a crouching position' cf. -wutam-   'crouch'

    -wuunj-ik-   'make into a heap'   cf. -wuung-   'gather up'

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b. -maambat-ik-　'stick (tr.)'　　cf. -maambatil-　'adhere; stick'

-nyaambat-ik-　'stick (tr.)'　　cf. -nyaambatil-　adhere, stick to'

In (45) we show that the roots of most of the verbs which take the impositive extension end in nasal, as seen in (44a) and only two roots out the fourteen end in an oral consonant, as seen in (45b). As in all cases where the two front vowels /i, e/ are found in the extension-initial position, the distribution of -ik-/-ek- is also governed by vowel harmony. If we were to label the extensions on the basis of their semantics, this could be called positional transitive extension or simply a positional extension. The impositive extension expresses some kind of direct causativization in that when it is attached to a root, the meaning of the resulting stem is that an agent makes a patient change a position (from whatever the prior position is). So, in this respect, it is similar to the direct causativizers C_1 -y- and C_2 -is-y-/-es-y- seen in the preceding section. The following table shows the distribution of the impositive allomorphs by final consonant of the 14 roots to which to which they can attach.

Table 8: Impositive allomorphs after each root-final consonant.

Root-endings	Roots	Impositive -ik-/-ek-
-(m)b-	41	—
-c-	5	—
-(n)d-	71	—
-(n)g-	95	1
-(n)j-	10	—
-k-	453	—
-l-	968	4
-m-	94	6
-n-	123	3
-nv-	147	—
-n'-	2	—
-p-	34	—
-s-	46	—
-t-	93	—
-v-	37	—
-w-	6	—
-y-	48	—
-(m)bw-	4	—
-(n)dw-	1	—
-(n)gw-	17	—
-kw-	8	—
-lw-	30	—
-mw-	6	—
-nw-	1	—
-n'w-	2	—
-pw-	2	—
-sw-	2	—
-tw-	3	—
-(n)dy-	2	—
-my-	19	—
-py-	2	—
-sy-	349	—
Total	2722	14

Table 8 shows the limited number of root-final consonants, all of which sonorants, to which, the impositive allomorphs can be attached.

In the next section we consider the intensive extension which has morphological and phonological similarities with C_2, the polyphonemic direct causativizer.

5.4. The intensive extension: -is-y-/-es-y-

In Ciyao, this extension is realized as -is-y-/-es-y- (/-is-į-/-es-į-/). The shape of this extension is identical to the C_2 -is-y-/-es-y- seen in 5.2.2. We provide below elements about what strategies are available to the speakers that allow them to minimize the merger of causative and intensive extensions in everyday communication.

Consider first the data in (46):

(46) Stems   Roots

a. -dim-is-y-   /-dim-is-į-/   'cultivate a lot'   cf. -dim-   'cultivate'

    -pit-is-y-   /-pit-is-į-/   'squeeze through forcibly' cf. -pit-   'pass'

    -naav-is-y-   /-naav-is-į-/   'wash hands thoroughly'   cf. -naav-   'wash the hands'

    -kamud-is-y-   /-kamud-is-į-/   'hold tightly'   cf. -kamul-   'hold'

b. -teend-es-y-   /-teend-es-į-/   'do a lot'   cf. -teend-   'do'

    -veecet-es-y-   /-veecet-es-į-/ 'speak a lot'   cf. -veecet-   'speak'

    -nyov-es-y-   /-nyov-es-į-/   'wet completely'   cf. -nyov-   'be wet'

    -lol-es-y-   /-lol-es-į-/   'stare at'   cf. -lol-   'look'

c. -gey-es-y-   /-gey-es-į-/   'belch a lot'   cf. -gey-   'belch'

    -cay-is-y-   /-cay-is-į-/   'whip intensely'   cf. -cay-   'whip intensely'

As seen in (46a, b), the distribution of -is-y-/-es-y- is determined by the vowel harmony rule. (46c) shows that frozen causatives provide input to intensive in the same way as the other roots do. Unlike the applicative and the causative extensions, the intensive extension does not modify the inherent syntactic subcategorization of the roots. Instead, as is seen in the gloss, it adds the information about the intensity with which an action or event is realized without changing the number of arguments required by the root.

From the similarity of the shape of the intensive marker and the C_2 -is-y-/-es-y- direct causativizer suffix one could expect hundreds of cases of ambiguous stems. In fact

that does not happen. In most cases, the language has developed an elaborate way of keeping the ambiguity to the minimum. For instance, most of the roots which end in linguals that are susceptible of undergoing morphological direct causativization are causativized through -y- that causes their frication into [s] (29). This way, most verbs use the morpheme -is-y-/-es-y- exclusively as an intensifier rather than as a causativizer as shown in Table 9:

Table 9: Intensive vs. causative uses of -is-y-/-es-y-.

Root-endings	Roots	Intensive -is-y-/-es-y-	Causative -is-y-/-es-y-
-(m)b-	41	35	3
-c-	5	2	1
-(n)d-	71	54	10
-(n)g-	95	70	14
-(n)j-	10	7	4
-k-	453	9	—
-l-	968	587	1
-m-	94	87	11
-n-	123	29	5
-ny-	147	36	11
-n'-	2	2	1
-p-	34	—	3
-s-	46	8	—
-t-	93	88	30
-y-	37	27	8
-w-	6	—	—
-y-	48	1	1
-(m)bw-	4	—	—
-(n)dw-	1	1	—
-(n)gw-	17	1	1
-kw-	8	—	—
-lw-	30	1	—
-mw-	6	1	1
-nw-	1	1	—
-n'w-	2	1	1
-pw-	2	1	1
-sw-	2	—	—
-tw-	3	1	1
-(n)dy-	2	2	2
-my-	19	—	—
-py-	2	—	—
-sy-	349	—	—
Total	2722	1052	111

Table 9 shows that most verbs use -**is-y-/-es-y-** to express intensive rather than causative meaning. This fact suggests that we digress back to the semantics of the suffixes of the causative extension and summarize their semantic functions as follows: C_3 -**aas-y-** is primarily an indirect causativizer except in those cases where there is no distinction between direct and indirect causativization; and C_1 -**y-** is the direct causativizer. Thus, C_2 -**is-y-/-es-y-** is a direct causativizer which is only attached to roots where for some reason the affixation of C_1 -**y-** is not allowed. Let us illustrate this with examples in (47):

(47)

Intensive		Indir. causative	Dir. causative	Roots	
-pit-is-y-	/-pit-is-i̧-/	-pit-aas-y-	-pis-y-	cf. -pit-	'pass'
-dim-is-y-	/-dim-is-i̧-/	-dim-aas-y-	-dim-y-	cf. -dim-	'cultivate'
-tapan-is-y-	/-tapan-is-i̧-/	-tapan-aas-y-	-tapan-y-	cf. -tapan-	'be unlucky'
-teend-es-y-	/-tend-es-i̧-/	-teend-aas-y-	-tees-y-	cf. -teend-	'do'
-lol-es-y-	/-lol-es-i̧-/	-lol-aas-y-	-los-y-	cf. -lol-	'look at'
-ooj-es-y-	/-oog-es-i̧-/	-oog-aas-y-	-oos-y-	cf. -oog-	'bathe'
-simoonj-es-y-	/-simoong-es-i̧-/	-simoong-aas-y-	-simoos-y-	cf. -simoong-	'wonder'
-tam-is-y-	/-tam-is-i̧-/	-tam-aas-i̧-	-tami-ik-	cf. -taam-	'sit'
-gon-es-y-	/-gon-es-i̧-/	-gon-aas-i̧-	-gon-ek-	cf. -gon-	'sleep'

While -**is-y-/-es-y-** is used primarily as an intensive extension, as shown in (46), its function as a causativizer is limited in terms of number of roots (111) to which it can be attached. In those cases where -**is-y-/-es-y-** is accepted as causativizer its use is ambiguous. We show in (48) some such stems:

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(48)　Stems

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Roots

　　　-pim-is-y-　　/-pim-is-į-/　　'make measure/measure a lot'　cf. -pim-　'measure'

　　　-pat-is-y-　　/-pat-is-į-/　　'make obtain/obtain a lot'　cf. -pat-　'obtain'

　　　-suum-is-y-　/-suum-is-į-/　'make buy (sell)/buy a lot'　cf. -suum-　'buy'

　　　-puny-is-y-　/-puny-is-į-/　'put in other's mouth/fill the mouth'　cf. -puny-　'put in the mouth'

　　　-pet-es-y-　　/-pet-es-į-/　'make decorate/decorate too much'　cf. -pet-　'decorate'

　　　-som-es-y-　　/-som-es-į-/　'make pierce/pierce deeply'　cf. -som-　'pierce'

　　　-soom-es-y-　/-soom-es-į-/　'make study (teach)/study a lot'　cf. -soom-　'study'

　　　-nony-es-y-　/-non'-es-į-/　'make be tasty/be very delicious'　cf. -non'-　'taste'

With -CV- roots however, there is no room for such an ambiguity, since C₁ -y- is the only causative suffix that can be attached to -CV- roots. Consider the examples in (49):

(49)　Stems

　　　　　　　　　　　　　　　　　　　　　　　　　Roots

　　a.　Intensive

　　　-di-id-is-y-　　/-di-il-is-į-/　　'eat a lot'　cf. -dy-　/-di-/　'eat'

　　　-gw-iid-is-y-　/-gu-il-is-į-/　'fall a lot'　cf. -gw-　/-gu-/　'fall'

　　　-nye-el-es-y-　/-nye-el-es-į-/　'defecate a lot'　cf. -ny-　/-nye-/　'defecate'

　　　-n'w-eel-es-y-　/-n'o-el-es-į-/　'drink a lot'　cf. -n'w-　/-n'o-/　'drink'

　　　-twe-el-es-y-　/-to-el-es-į-/　'pound a lot'　cf. -tw-　/-to-/　'pound'

　　b.　Direct causative

　　　-di-is-y-　　/-di-il-į-/　'eat a lot'　cf. -dy-　/-di-/　'eat'

　　　-gw-iis-y-　/-gu-il-į-/　'fall a lot'　cf. -gw-　/-gu-/　'fall'

　　　-nye-es-y-　/-nye-el-į-/　'defecate a lot'　cf. -ny-　/-nye-/　'defecate'

　　　-n'w-ees-y-　/-n'o-el-į-/　'drink a lot'　cf. -n'w-　/-n'o-/　'drink'

　　　-twe-es-y-　/-to-el-į-/　'pound a lot'　cf. -tw-　/-to-/　'pound'

As is observed in (49), the difference between the intensivized forms and causativized forms on the surface is related to two phonological rules that are applied to the /l/ of the intermorph of the intermorph -il-/-el- according to the following segment. That is, the /l/ of the intermorph undergoes hardening before /i/ of the intensive allomorph -is-y- and does not undergo any phonological process before /e/ of the intensive allomorph -es-y- as illustrated in (50):

(50)   Roots: -dy-   /-di-/   'eat'   -n'w-   /-n'o-/ 'drink'

        Interm. suffixation: -di-il-   -n'w-el-

        Intens. suffixation: -di-id-is-į-   'eat a lot' -n'w-eel-es-į-   'drink a lot'

As seen in (50) with or without hardening, the consonant (/l/) of the intermorph is realized in one way or another. But see what happens when the intermorph precedes the causative /-į-/ in (51):

(51)   Roots: -dy-   /-di-/   'eat'   -n'w-   /-n'o-/ 'drink'

        Interm. suffixation: -di-il-   -n'w-el-

        C_1 -į- suffixation: -di-il-į-   -n'w-el-į-

        /l/-frication: -di-is-į-   'feed'   -n'w-es-į-   'make drink'

As is seen, while the initial vowel of the intensive extension turns /l/ into [d], the C_1 /-į-/ fricativizes the /l/ of the intermorph -il-/-el- providing us an "/l/-less" surface form. Thus, (50) and (51) constitute a strong evidence that whenever the intermorph is preceded by the suffix -is-y-/-es-y- on the surface, this -is-y-/-es-y- can only be intensive and never C_2. Again, C_1 is the only causative suffix that can be attached to -CV- roots. Let us turn to the passive extension.

5.5. The passive extension

This extension has two suffixes in Ciyao, namely, the monophonemic -w- (P$_1$) and the polyphonemic -ig-w-/-eg-w- (P$_2$) as seen in (52):

(52)a. P$_1$-w-

    Stems   Roots

-mil-w-	'be swallowed'	cf.	-mil-	'swallow'
-tum-w-	'be ordered'	cf.	-tum-	'send'
-puut-w-	'be hit'	cf.	-puut-	'hit'

b. P$_2$-ig-w-/-eg-w-

-pim-ig-w-	'be measured'	cf.	-pim-	'measure'
-jigad-ig-w-	'be taken'	cf.	-jigal-	'take'
-sakud-ig-w-	'be hunted'	cf.	-sakul-	'hunt'
-telec-eg-w-a	'be cooked'	cf.	-telek-	'cook'
-pocel-eg-w-	'be received'	cf.	-pocel-	'receive'

As shown in (52a), the monophonemic P$_1$ suffix appears always as -w-, while, the allomorphs of the P$_2$ suffix consist of -ig-+w- and -eg-+w-. We will discuss the distribution of these passive suffixes below. As we see, this is another case of many-to-one relationship between the shape of the allomorphs and the meaning/function of the extension. So, when we say 'passive' extension we mean any one of the allomorphs. We will begin our discussion of the passive extension by looking at the monophonemic allomorph.

5.5.1. The monophonemic passive suffix: -w- (P$_1$)

In this subsection we discuss the distribution of the P$_1$ -w- (<PB*-u-). Consider the examples in (53):

(53)   Stems   Roots

   a. Long roots

       -tum-w-   'be ordered'   cf. -tum-   'order'

       -puut-w-   'be hit'   cf. -puut-   'hit'

       -kolek-w-   'be hung'   cf. -kolek-   'hang'

       -laang-w-   'be domesticated'   cf. -laang-   'domesticate'

       -log-w-   'be bewitched'   cf. -log-   'bewitch'

   b. -CV- roots

       -c-eel-w-   'be dawned'   cf. -c-   /-ce-/   'dawn'

       -sw-eel-w-   'be overtaken by dark'   cf. -sw- /-so-/   'begin to grow dark'

In (53a) we have the monophonemic passive suffix attached to long roots. In (53b) we see the same suffix attached to the only two -CV- roots that accept it which, as in all previous cases of attachment of verb extensions to -CV- roots, requires the presence of the -il-/-el- intermorph.

In contemporary Ciyao P_1 has lost its productivity considerably in favor of P_2 as illustrated in Table 10:

Table 10: Distribution of passive extension allomorphs by roots.

Endings	Roots	Pas. Allomorphs	
		-w-	-igw-/-egw-
-(m)b-	41	—	25
-c-	5	—	2
-(n)d-	71	—	38
-(n)g-	95	—	58
-(n)j-	10	—	1
-k-	453	75	10
-l-	968	15	386
-m-	94	3	26
-n-	123	—	21
-ny-	147	—	8
-n'-	2	—	2
-p-	34	—	13
-s-	46	—	32
-t-	93	2	55
-v-	37	—	10
-w-	6	—	—
-y-	48	—	—
-(m)bw-	4	—	—
-(n)dw-	1	—	—
-(n)gw-	17	—	—
-kw-	8	—	—
-lw-	30	—	—
-mw-	6	—	1
-nw-	1	—	—
-n'w-	2	—	1
-pw-	2	—	—
-sw-	2	—	—
-tw-	3	—	1
-(n)dy-	2	—	1
-my-	19	—	—
-py-	2	—	—
-sy-	349	—	—
Total	2722	96	787

As we see in Table 10, out of the 787 passivizable roots, only 96 (about percent) take P_1, while all of them accept P_2, which exclusively passivizes the remaining 691 roots that cannot accept P_1. The emergence of P_2 as a passivizer seems to have been motivated by two reasons. First, the inability of P_1, the older form, to passivize many potentially passivizable roots. Secondly, being a single vowel (/-u-/), it is easily fused with the final consonant of the root to which it is attached. This explains why it is the only one which

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appears in all of the 75 frozen passives found in the database, some of which are given in (54):

(54) Stems   Roots

  a.   -wuumb-w-   'be created'   cf. *-wuumb-

      -con-w-   'be at loss'   cf. *-con-

      -koolok-w-   'be tidy'   cf. *-koolek-

      -pag-w-   'be borne'   cf. *-pag-

  b.   -pug-w-   'be stupid'   cf. -pug-   'blow (wind)'

      -kolel-w-   'be drunk (person)'   cf. -kolel-   'inflame'

      -seeng-w-   'be pleased'   cf. -seeng   'cut (e.g., hair, grass)'

      -goomb-w-   'be exhausted'   cf. -goomb-   'strike'

In (54) we see lexicalized passive forms which do not have the corresponding non-derived roots either because the forms in the right hand column do not exist in the language, as in (54a), or are not semantically related with those in the left hand column, as in (54b). Considering that the proto-form of the passive extension is *-u-, which undergoes gliding before vowels in Ciyao, the distributional difference between -w- and -ig-w-/-eg-w- suggests that the direct reflex of the historical monophonemic suffix is in the process of decadence and that there is the chance that in future P_1 will cease to function as productive morpheme, being confined to the frozen status, in favor of P_2 for productive passive functions. Note that in those cases where -w- is a productive morpheme, its productivity is limited. It is a defective allomorph. For example, it cannot be used in -il-e past tense forms, in which case an alternative passive with the P_2 suffix is used, as illustrated in (55):

(55)

Stems		Inflected D-stems		Roots	
-mil-w-	'be swallowed'	cf. -mid-iig-w-e	'was swallowed'	-mil-	'swallow'
		*-mil-w-iil-e			
-tum-w-	'be ordered'	cf. -tum-iig-w-e	'was ordered'	-tum-	'order'
		*-tum-w-iil-e			
-puut-w-	'be hit'	cf. -puut-iig-w-e	'was hit'	-puut-	'hit'
		*-puut-w-iil-e			
-laang-w-	'be domesticated'	cf. -laanj-iig-w-e	'was domesticated'	-laang-	'domesticate'
		*-laang-w-iil-e			

In those verbs which accept P_1, this allomorphs can only occur with prefixal tense markers as well as with monophonemic (single-vowel) suffixes of some moods (e.g., imperative, subjunctive), while P_2 occurs with the suffixal tense markers realized by -il-e suffix. In the 691 verbs from which passives cannot be obtained through suffixation of P_1, no derived passives with P_1 occur in any of the tenses.

It should be mentioned that the affixation of P_2 to a root of any shape creates the structural description for *imbrication* (see in chapter 7 details about imbrication) to take place. Thus, the surface past forms given in (55) are imbricated whereby the -il- of -il-e has been infixed between the vowels (/i, e/) and /g/ of the P_2 allomorphs. Using one of the examples given in (55), the whole derivational process that produces the surface forms is summarized as follows:

(56) Root: -laang-   'domesticate'

      Morphology: P$_2$-suffixation: -laang-ig-w-

      Phonology: g-palatalization: -laanj-ig-w-   'be domesticated'

      Morphology: -il-infixation: -laanj-i-il-g-w-e

      Phonology: l-deletion: -laanj-i-ig-w-e

      Morphology: FV suffixation: -laanj-i-ig-w-e   'was domesticated'

As must have been inferred by now, the passive suffixes are attached only to inherently transitive roots whose object turns into subject and the subject turns into an overt oblique agent. This means that unlike the applicative (beneficiary/maleficiary) and causative which are 'valence-increasing' extensions, the passive is a 'valence-decreasing' extension, for it eliminates the place of grammatical object inherently required by the root to which it is attached. Let us proceed with our discussion of passive extension by considering the polyphonemic allomorph in the next subsection.

5.5.2. The Polyphonemic allomorph: -ig-w-/-eg-w- (P$_2$)

As mentioned in the preceding subsection, the suffix -igw-/-egw- of the passive extension is more productive than the monophonemic suffix -w-. P$_2$ never appears as part of frozen passives, whereas P$_1$ is frequently found. Consider the following examples:

(57) Stems   Roots

   a. -CVC- and longer roots

       -mid-ig-w-   'be usually swallowed'   cf.   -mil-   'swallow'

       -tum-ig-w-   'be usually ordered'   cf.   -tum-   'order'

       -puut-ig-w-   'be usually hit'   cf.   -puut-   'hit'

       -laang-ig-w-   'be domesticated'   cf.   -laang-   'domesticated'

       -sis-igw-   'be hidden'   cf.   -sis-   'hide'

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-suum-ig-w-	'be bought'	cf.	-suum-	'buy'
-canyaand-ig-w-	'be beaten out'	cf.	-canyaand-	'beat out'
-loomb-eg-w-	'be married'	cf.	-loomb-	'marry'
-pocel-eg-w-	'be received'	cf.	-pocel-	'receive'

b. -CV- roots

-di-id-ig-w-[26]	'be eaten'	cf.	-dy- /-di-/	'eat'
-pe-el-eg-w-	'be given'	cf.	-pa- /-pa-/	'give'
-te-el-eg-w-	'be named (e.g., a child)'	cf.	-ta- /-ta-/	'name (a child)'
-n'we-el-eg-w-	'be drunk (a drink)'	cf.	-n'w- /-ta-/	'drink'
-nye-el-egw-	'be defecated'	cf.	-ny- /-nye-/	'defecate'
-twe-el-egw-	'be pounded'	cf.	-tw- /-to-/	'pound'

In (57a) we see that the vowel harmony referred to above also applies to the distribution of

the allomorphs of P_2. (57b) shows that unlike the P_1, which is attached to two intransitive

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[26] Interestingly, unlike what we saw before the applicative extension, where in casual oral speech the intermorph can optionally be dropped in infinitive and tenses marked by prefixes of all verbs, before the passive, the intermorph can only drop optionally in these contextes of one single verb, -di- 'eat'. All of the other verbs never allow this optional dropping of the intermorph. Consier the folowing examples:
(1)a. Passive:
    -di-id-ig-w-   'be eaten'   cf.   -di-ig-w-   'be eaten'
cf.   -n'w-eel-eg-w-   'be drunk (liquid)'   cf.   *-n'w-eeg-w-
  b.   Passive-F1:
    ci-tu-di-id-ig-w-e 'we will be eaten'   cf. ci-tu-di-ig-w-e   'we will be eaten'
    Fut.-SM-eat-Interm-P_2-FV   Fut.-SM-eat-P_2-FV
cf.   ci-tu-n'w-eel-eg-w-e   'we will be drunk (liquid)'   cf. *ci-tu-n'w-eeg-w-e
    Fut.-SM-drink-Interm-P_2-FV   Fut.-SM-drink-P_2-FV
  c.   Passive-F2:
    ci-tu-ci-di-id-ig-w-a cf. 'we will be eaten'   ci-tu-ci-di-ig-w-a   'we will be eaten'
    Fut.-SM-Fut.-eat-Interm-P_2-FV   Fut.-SM-Fut.-eat-P_2-FV
cf.   ci-tu-n'w-eel-eg-w-a 'we will be drunk (liquid)'   cf. *ci-tu-ci-n'w-eeg-w-a
    Fut.-SM-Fut.-drink-Interm-P_2-FV   Fut.-SM-Fut.-drink-P_2-FV
However, just like before in the applicatized -CV- roots, when the tense marker is a suffix or a prefix and a suffix (discontinuous morpheme), the presence of the allomorph is obligatory as seen below:
(2)a.   Passive-P1:
    tu-di-id-ig-w-e   'we have been eaten'   cf.   *tu-di-ig-w-il-e
    SM-eat-Interm+Pst.-P_2-FV   SM-cat+P_2-Pst.-FV
  b.   Passive-P2:
    tw-aa-di-id-ig-w-e 'we were eaten'   cf.   *tw-aa-di-ig-w-il-e
    SM-Pst.-eat-Interm-P_2+Pst.-FV   SM-Pst.eat-Pass-Pst.-FV
Note that P_2+Pst. means that there is imbrication, where the tense morph -il- is fused with the Interm -il-.

-CV- root, P$_2$ is attached to transitive roots only. As in the preceding cases, the affixation to -CV- roots requires the presence of the -il-/-el- intermorph between the root and the initial vowel of the extension.

In our discussion of the distribution of P$_1$ and P$_2$ above we mentioned that, with one exception, all tense markers could be attached to passivized stems bearing P$_1$ and P$_2$ suffixes. The exceptional tense marker is the perfective -il-e which can never co-occur with the P$_1$ suffix. In the next examples we provide more data that show the complexity that results from the concatenation of P$_1$ suffixes, -il-e tense marker and imperfective marker -ga.

On the left hand column of (58) we have added the incompletive aspect marker -ga to the passive stems in (58a) and to the corresponding active forms in (58b), whose respective past forms appear on the right hand column.

(58)a. Pass.-D-stem+ga   Pass. D-stem-Perf.-ga

    -mil-w-aa-ga   'be usually swallowed'   cf. -mid-iig-w-ee-je   'was being swallowed'

    -tum-w-aa-ga   'be usually ordered'   cf. -tum-iig-w-ee-je   'was being ordered'

    -puut-w-aa-ga   'be usually hit'   cf. -puut-iig-w-ee-je   'was being hit'

    -laang-w-aa-ga 'be usually domesticated' cf. -laanj-iig-w-ee-je   'was being domesticated'

Compare the passive forms in (58a) with the corresponding active forms in (58b):

  b. S-stem-incompletive (active)   Perfective-incompletive (active)

    -mil-a-ga   'swallow usually'   cf. -mis-il-e-je   'was swallowing'

    -tum-a-ga   'order usually'   cf. -tum-il-e-je   'was ordering'

    -puut-a-ga   'hit usually'   cf. -puut-il-e-je   'was hitting'

    -laang-a-ga   'domesticate usually'   cf. -laanj-il-e-je   'was domesticating'

As in (55), above, the past tense forms in (58) involve "imbrication". We present in (60) the derivation of the forms on the right as follows:

(59)a. Root: -laang-   'domesticate'

   i. Morph: -ig-w- suffixation: -laang-ig-w-

       Phon: /g/ palatilization: -laanj-ig-w-   'be domesticated'

   ii. Morph: -il-infixation: -laanj-i-il-g-w-

       Phon: l-deletion: -laanj-i-i-g-w-

   iii. Morph: VF suffixation: -laanj-i-i-g-w-e 'was domesticated'

       Phon: NA   —

   iv. Morph: -ga suffixation: -laanj-iig-w-ee-ga

       Phon: FV assimiation: -laanj-iig-wee-ge

              g-palatalization: -laanj-iig-wee-je 'was being domesticated'

Compare.

   b. Root: -laang-   'domesticate'

   i. Morph: -il-infixation: -laang-il-

       Phon.: /g/ palatilization: -laanj-il-

   ii. Morph: VF suffixation: -laanj-il-e 'domesticated'

       Phon: NA   —

   iii. Morph: -ga suffixation: -laanj-il-e-ga

       Phon: FV assimilation: -laanj-il-e-ge

              g-palatalization: -laanj-il-e-je 'was domesticating'

(59) provides two more examples of phonology/morphology interleaving where the affixation of each morpheme triggers one or more phonological processes. When a front vowel is the FV, the final /a/ of the imperfective marker -ga is assimilated and,

subsequently, palatalizes the preceding /g/. If the FV of the input is /a/, the derivation ends with the suffixation of the imperfective marker -ga.

In the next section we study the stative extension closely related to the passive extension.

5.6. The Stative extension: -ik-/-ek-

The stative extension -ik-/-ek- has been analyzed/labeled differently in the various studies. Among the various names this extension has received in the literature one finds 'neuter' (Dembetembe 1987), 'stative' (Guthrie 1970), 'neutro-stative' (Matsinhe 1993), 'potential' (Sanderson 1954, Whiteley 1966), 'neuter potential' (Whiteley 1966). Mchombo (1993) also includes a string of such labels like "neuter-passive, quasi-passive, neuter-stative, metastatic-potential, descriptive passive" and observes that "Such an array of terminology reflects in part the uncertainties that have plagued the Bantuists regarding the proper characterization of the process involved" (pp. 5-6). We certainly agree with this observation, and will not discuss the details of these designations here. In this study we will use the term 'stative' as a cover term for the set of meanings suggested by the different names found in the literature and for the meaning of -ik-/-ek- in the different contexts where it appears. Although the stative extension has a multiplicity of meanings varying from one root where it occurs to the other, it has the same morphological shape and causes the same syntactic effects on all inherently transitive roots to which it is attached. That is, the stative morpheme is generally realized as -ik-/-ek- (the /k/ may have different realization in some languages according to the particular historical developments) and it is a valence-decreasing (detransitivizer) suffix. That is, when affixed to an inherently transitive root, it turns the root into intransitive by a process which sometimes is referred to as 'pseudo-passivization', since its output is equivalent to a passive without the overt oblique agent. These two factors, the morphophonology and the morphosyntax of the extension, which are less controversial in the various studies, are more crucial to our study than the

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different semantics of the morpheme *per se* which varies according to the semantics of the different roots. Of particular importance for our study is the morphological shape because it is what conditions the phonological processes (palatalization, vowel harmony, etc.) we are interested in. Consider the examples in (60):

(60)   Stative D-stems   Stative D-stems-Perfective   Roots

       -kaas-ik-   'be breakable'   cf. -kaas-iic-e   'was broken'   cf. -kaas-   'break'

       -teend-ek-   'be doable'   cf. -teend-eec-e   'was made'   cf. -teend-   'do'

       -soos-ek-   'be searchable'   cf. -soos-eec-e   'was searched' cf. -soos-   'search'

       -won-ek-   'be seeable'   cf. -won-eec-e   'was seen'   cf. -won-   'see'

As we see in (60), the meanings of the inflected stative stems are identical to the meanings of passives without oblique agent. There are at least two differences between stative and passive. The first is that unlike the passive extension which attaches to inherently transitive roots only, the stative morpheme can be affixed to both transitive and intransitive roots. When attached to inherently transitive roots, as in (60), this morpheme interferes significantly with the inherent syntactic subcategorization of the host. The fact that the stative extension can also be attached to inherently intransitive roots makes this "defective passive" (stative) extension more productive than the "standard" passive whose use is, in Ciyao, frequently avoided even in some transitive roots. See the following table for comparison of the number of roots to which each of the two extensions is suffixed.

Root-endings	Roots	Stative -ik-/-ek-	Pass. Allomorphs	
			-w-	-igw-/-egw-
-(m)b-	41	31	—	25
-c-	5	3	—	2
-(n)d-	71	63	—	38
-(n)g-	95	63	—	58
-(n)j-	10	10	—	1
-k-	453	307	75	10
-l-	968	842	15	386
-m-	94	76	3	26
-n-	123	65	—	21
-ny-	147	129	—	8
-n'-	2	2	—	2
-p-	34	26	—	13
-s-	46	38	—	32
-t-	93	86	2	55
-y-	37	17	—	10
-w-	6	1	—	—
-y-	48	—	—	—
-(m)bw-	4	—	—	—
-(n)dw-	1	—	—	—
-(n)gw-	17	—	—	—
-kw-	8	—	—	—
-lw-	30	—	—	—
-mw-	6	1	—	1
-nw-	1	—	—	—
-n'w-	2	1	—	1
-pw-	2	—	—	—
-sw-	2	—	—	—
-tw-	3	1	—	1
-(n)dy-	2	2	—	1
-my-	19	—	—	—
-py-	2	1	—	—
-sy-	349	—	—	—
Total	2722	1765	96	691

One distributional difference between stative and passive extensions is that while all of the roots that accept the passive extension also accept the stative, many of those to which the suffix of the stative can be affixed do not accept the passive extension. Such roots are those for which the stative extension is the only way to express "passivization".

The second difference between the stative and passive extensions is that while the passive turns the subject of the transitive root into an overt oblique agent, the stative simply deletes it. That is, stative does not have overt or covert 'agency'. Such a construction is

the stative. Due to its partial syntactic similarity with the passive extension in all Bantu languages, this extension is commonly affixed to inherently transitive roots which, consequently, form intransitive stems. This detransitivizing role of stative has led many scholars (Guthrie 1970, Mchombo 1993) to conclude that this extension can only be attached to inherently transitive roots, as shown in (61):

(61)   Stative/Potential

   Stems   Roots

a.   -CVC- and ong roots

   -kamud-ik-   'be held/holdable'   cf.   -kamul-   'hold'

   -puut-ik-   'be hit/hitable'   cf.   -puut-   'hit'

   -kas-ik-   'be broken/breakable'   cf.   -lokot-   'pick up'

   -paambic-ik-   'be superimposed/superimposeable' cf. -paambik- 'superimpose'

   -lap-ik-   'be admired/admirable'   cf.   -lap-   'admire'

   -won-ek-   'be seen/seeable; appear'   cf.   -won-   'see'

   -lokot-ek-   'be picked up/pickable up'   cf.   -lokot-   'pick up'

b.   -CV- roots

   -di-id-ik-a   'be eaten/edible'   cf.   -dy-   /-di-/   'eat'

   -nye-el-ek-a   'be defecated/defecatable' cf. -ny-   /-nye-/ 'defecate'

   -te-el-ek-a   'be named/namable'   cf.   -t-   /-ta-/   'name'

   -n'w-eel-ek-a   'be drunk/drinkable'   cf.   -n'w- /-n'o-/ 'drink'

   -p-eel-ek-a   'be given/givable'   cf.   -p-   /-pa-/   'drink'

   -twe-el-ek-a   'be pounded/poundable'   cf.   -tw-   /-to-/   'pound'

In (61) the allomorphs of the stative extension -ik-/-ek- are affixed to inherently transitive roots. The resulting forms of this affixation express possibility of a patient, which is the

grammatical subject, to enter a state or to undergo an action performed by a syntactically unexpressed agent. Consider the following examples:

(62)   Possibility

   Stems   Roots

a.   -CVC- and long roots

   Derived stems   Roots

   -wulad-ik-   'be possible to be injured'   cf.   -wular-   'be injured'

   -tiid-ik-   'be possible run away'   cf.   -tiil-   'run away'

   -saangalad-ik- 'be possible to be pleased'   cf.   -saangalal-   'be pleased'

   -guluc-ik-   'be possible to jump'   cf.   -guluc-ik-   'jump'

   -awud-ik-   'be possible to go'   cf.   -awul-   'go'

   -tyooc-ek-   'be possible to leave (a place)' cf. -tyook-   'leave (intr.)'

   -end-ek-   'be possible to walk'   cf.   -end-   'walk'

   -nyov-ek-   'be possible get wet'   cf.   -nyov-   'get wet'

b.   -CV- roots

   -gw-iid-ik-   'be possible to fall'   cf.   -gw-   /-gu-a/   'fall'

   -w-iid-ik-   'be possible to die; die easily' cf. -w-   /-bu-a/   'die'

The examples in (62) provide evidence that unlike in Chichewa (Mchombo 1993), Kikongo (Guthrie 1970) and other Bantu languages, in Ciyao inherently intransitive roots can also host the stative extension just like the inherently transitive roots do. The stative stems whose roots are inherently intransitive express the possibility of the event suggested by the root to happen rather than state or potential, usually expressed by the same extension when attached to inherently transitive roots.

Next we turn to the discussion of the reversive extension.

5.7. The reversive extensions: -ul-/-ol- (Rv₁); -uk-/-ok- (Rv₂)

The reversive extensions are two suffixes in Ciyao. namely. the transitive **-ul-/-ol-** (Rv₁). and the intransitive **-uk-/-ok-** (Rv₂) (Schadeberg 1982). Apart from the transitive vs. intransitive character of Rv₁ and Rv₂ respectively. there is no distributional difference between the two suffixes, as illustrated by the number of roots that take each one of the two suffixes in Table 11:

Table 12: Reversive allomorphs after each root-final consonant.

Root-endings	Roots	Reversive Allomorphs	
		-ul-/-ol-	-uk-/-ok-
-(m)b-	41	2	2
-c-	5	2	2
-(n)d-	71	3	3
-(n)g-	95	7	7
-(n)j-	10	—	—
-k-	453	24	24
-l-	968	—	—
-m-	94	5	5
-n-	123	2	2
-ny-	147	1	1
-n'-	2	—	—
-p-	34	—	—
-s-	46	—	—
-t-	93	4	4
-v-	37	2	2
-w-	6	—	—
-y-	48	—	—
-(m)bw-	4	—	—
-(n)dw-	1	—	—
-(n)gw-	17	—	—
-kw-	8	—	—
-lw-	30	—	—
-mw-	6	—	—
-nw-	1	—	—
-n'w-	2	—	—
-pw-	2	—	—
-sw-	2	—	—
-tw-	3	—	—
-(n)dy-	2	—	—
-my-	19	—	—
-py-	2	—	—
-sy-	349	—	—
Total	2722	52	52

While in Ciyao there are 217 frozen reversives, Table 12 shows that out of the 2722 roots found in the database, 52 are 'reversible' through the affixation of the reversive suffixes. The complete list of these 52 verbs is provided in (62):

(63)   List of 52 morphologically 'reversible' roots

-aanik-	'spread out to dry in sun'	-piind-	'fold; bend; curve; turn'
-aasam-	'open one's mouth'	-piindany-	'fold over'
-batik-	'put on a patch'	-pwaatik-	'put one thing top of another'
-ciing-	'wedge'	-sagamil-	'dream; say no sense'
-eejek-	'place leaning against'	-sajik-	'put on top'
-eeng-	'make oil'	-siindik-	'protect with medicine'
-guumb-	'plaster; mould; cast'	-siisin-	'close the eyes'
-iinam-	'bend down; stoop'	-siv-	'fill in a hole; close up'
-kaanganik-	'be a tight fit'	-som-	'pierce or stab; prick'
-kalamuk-	'be cunning, "smart"; be clever'	-sweek-	'insert; sheath (knife, sword)'
-kamat-	'make into a ball'	-taam-	'sit; sit down; stay; live; reside'
-kolek-	'hang up'	-taandik-	'spread (bed, mat, table-cloth)'
-koongonecel-[27]	'fasten (belt, buttons, etc.)'	-tagaluk-	'cross a path (or a road)'
-kuung-	'string (a bow, a tent, etc.)'	-teeng-	'make into a bundle'
-lovek-	'steep in water; soak'	-titimik-	'stick an obeject; transfix'
-lumik-	'have between the teeth'	-tot-	'sew; rivet; stab'
-luumbik-	'connect two pieces'	-uuv-	'hide oneself; shelter from (rain)'
-matik-	'stick'	-van-	'fix between two objects'
-nyaambat-	'be sticky'	-velek-	'carry on the back (esp. a child)'

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[27] Note that -koongonecel- is underlyingly /-koongonekel-/. The /k/ that precedes the mid front vowel is palatalized by this vowel. But when reversive extension is added to this form, the underlying /k/ surfaces as the mid back vowel follows it. We discuss later the phonological rules that motivate this vowel alternations when the reversive suffixes are added to roots.

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-ooc-	'roast; burn'	-vidig-	'wrap up; roll up; bunch together'
-oolovek-	'sleep'	-viind-	'protect a garden with medicine'
-paambanik-	'insist'	-wiimb-	'thatch'
-paambik-	'superimpose'	-wunik-	'turn upside down; close (a book)'
-paand-	'sow; plant; plant seeds'	-wuumbat-	'clench the fist; grasp in the fist'
-paang-	'arrange goods for selling'	-wuundik-	'open or store fruit by sealing up'
-peembenek-	'close partialy; put ajar'	-wuung-	'hoe earth into heaps; gather up'

The opposite meaning of the 52 verbs given in (62) is obtained by adding to the base the right allomorph of each of the suffixes of the reversive. The choice of the right suffix is determined by a version of vowel harmony that we call the 'backing rule' (BACK)[28]. Just like the intensive extension, whose morpheme does not interfere with the syntactic subcategorization of the root to which it is attached, the transitive reversive extension is essentially semantic. It does not get involved in the syntactic subcategorization of its host, as seen in (64):

(64)   Transitive → transitive (Rv_1)

· Stems   Roots

-mat-ul-	'peel off'	cf.	-mat-	'adhere'
-siw-ul-	'open up'	cf.	-siv-	'close up'
-ejek-ul-	'remove from a leaning position'	cf.	-ejek-	'put leaning on sth.'
-sweek-ul-	'pull out'	cf.	-sweek-	'insert'

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[28] Although the discussion of the details of backing rule will be presented later in this section, the following examples illustrate the essence of the rule:

	Reversive D-stem			Root	
a.	-wunuk-ul-	'uncover'	cf.	-wunik-	'cover'
b.	-peemenuk-ul-	'open slightly'	cf.	-peembenek-	'close slightly; put ajar'

As these examples show, when a front vowel is the last vowel of the root, it turns into back when the reversive suffix (whose initial vowel is back) is added to the root.

-velek-ul-	'take down from the back'	cf.	-velek-	'carry on the back'
-som-ol-	'extract'	cf.	-som-	'pierce'
-ook-ol-	'take out of the fire'	cf.	-ooc-	'roast'
-kolok-ol-	'take down what has been hung'	cf.	-kolek-	'hung'
-lowok-ol-	'remove from liquid (from soaking)'	cf.	-lovek-	'soak'

Unlike the transitive reversive allomorph which does not change the syntactic subcategorization of the root to which it is affixed, the intransitive reversive suffix, however, interferes with the syntactic subcategorization of the inherently transitive roots as shown in the following examples:

(65)   Transitive → intransitive (Rv$_2$)

Stems

Roots

-siw-uk-	'open up'	cf.	-siv-	'close up'
-ejek-uk-	'be removed from where has been leaning on'	cf.	-ejek-	'put leaning on sth.'
-sweek-uk-	'be pullable out'	cf.	-sweek-	'insert'
-velek-uk-	'be takable down from the back'	cf.	-velek-	'carry on the back'
-som-ok-	'be extractable'	cf.	-som-	'pierce'
-ook-ok-	'be taken out of the fire'	cf.	-ooc-	'roast'
-kolok-ok-	'be possibble down to take down'	cf.	-kolek-	'hung'
-lowok-ok-	'be removed from liquid (from soaking)'	cf.	-lovek-	'soak'

The examples in (65) are the corresponding intransitive reversive of some of the transitive reversive examples in (63) whose roots are also transitive. The inherently transitive roots become part of intransitive stems by turning the object into the subject and requiring the deletion of the subject. This is the same situation that was described in the discussion of

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the stative extension. Other intransitive roots become part of transitive stems after the affixation of the reversive suffix **-ul-** as shown in (66):

(66)   Intransitive → transitive (Rv_1)

Stems		Roots	
-kalamuk-ul-	'outwit'	cf. -kalamuk-	'be cunning'
-uuw-ul-	'reveal (sth. or s.o. hidden)'	cf. -uuv-	'hide (intr.)'
-taam-uk-ul-	'unseat; remove from a sitting potion'	cf. -taam-	'sit; sit down'
-iinam-uk-ul-	'straighten someone stooping'	cf. -iinam-	'stoop'
-kaanganuk-ul-	'increase the size of a tight fit'	cf. -kaanganik-	'be a tight fit'
-nyaambat-uk-ul-	'unglue'	cf. -nyaambat-	'be sticky'

The corresponding intransitive forms of the transitive reversive forms in the left hand column in (66) are produced by replacing the suffix **-ul-** by **-uk-** as in the following examples:

(67)   Intransitive → intransitive (Rv_1)

Stems		Roots	
-kalamuk-uk-	'be outwitted'	cf. -kalamuk-	'be cunning'
-uuw-uk-	'be revealed (sth. or s.o. hidden)'	cf. -uuv-	'hide (intr.)'
-taam-uk-uk-	'be unseatable'	cf. -taam-	'sit; sit down'
-iinam-uk-uk-	'be straightenable (s.o. stooping'	cf. -iinam-	'stoop'
-kaanganuk-uk-	'be possible to increase (size...)'	cf. -kaanganik-	'be a tight fit'
-nyaambat-uk-uk-	'be possible to unglue'	cf. -nyaambat-	'be sticky'

The examples in (64)-(67) give us four possible combinations of the reversive suffixes with the roots according to their transitivity as given in (68):

(68)   Summary of the four comnbinatorial possibilities of reversive suffixes with roots:

a. -Root (tr.)   -Root-ul- (tr.), as in (62)

b. -Root (tr.)   -Root-uk- (intr.), as in (63)

c. -Root (intr.)   -Root-ul- (tr.), as in (64)

d. -Root (intr.)   -Root-ul- (intr.), as in (65)

All four possibilities given in (68) are illustrated by the examples above. Thus, examples of (68a) are in (64); (68b) is illustrated with examples in (65); (68c) correspond to the examples given in (66). Finally, (68d) is illustrated with the examples in (67). As seen, the examples in (64)-(67) can be grouped in pairs (64)-(65) and (66)-(67) where the syntactic relationship is of the kind transitive vs. intransitive between Rv_1 and Rv_2. However, the relationship between each stem in the left hand columns and the corresponding root in the right hand columns in each set of examples is one of semantic opposition in that the meaning of one is the opposite ('reversal') of the meaning of the other. So, from semantic point of view Rv_1 and Rv_2 can be said to be related in that both of them express the reversal meaning of the root in the right hand column.

Although (64) and (65) also show that just like most extensions, the reversive marker is generally attached to the root-final consonant, it also allows us to see that unlike the other extensions there is a special vowel harmony rule that applies exclusively to the allomorphs of the reversive extension. According to this rule, when there is no mid back vowel (/o/) anywhere in the root, the reversive extension is realized as -ul-/-uk-. When there is a mid back vowel anywhere in the root, the reversive extension is realized as -ol-/-ok-. We call this phenomenon the "mid back identity" (MBI) rule formalized in (69):

(69)
```
         [+round]
           |
       -CVC|Root -VC-
           L _ _ _ _ _
         [-high]
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Apart from the MBI rule in (69), there is another pervasive rule, triggered by the suffixal back vowel of the reversive extension, which applies whenever the structural description is satisfied. Consider the examples in (70):

(70)   Transitive → transitive

Stems   Roots

-paambuk-ul-   'remove from a pile'   cf. -paambik-   'put on top of a pile'

-simuk-ul- 'remove what has been fixed upright' cf. -simik-   'fix upright'

-taanduk-ul-   'fold up'   cf. -taandik-   'spread (e.g., bedsheets)'

-peembenuk-ul-   'open slightly'   cf. -peembenek-   'close slightly'

b. -koongonok-ol-   'unfasten (e.g., buttons') cf. -kongonecel-   'fasten (e.g., buttons)'

-kolok-ol-   'take down (unhung)'   cf. -kolek-   'hung up'

-lowok-ol-   'remove from a liquid ("unsoak")' cf. -lovek-   'soak'

(70) shows an instance of rule ordering phenomenon whereby after the application of the MBI rule (69) which determines the height of the suffixal vowel, another rule follows where the features back and round of the suffixal vowel spread leftwards onto the last vowel of the root. We call this rule backing rule (BACK) which we formalize as follows:

(71)   ...VC|$_{Root}$-VC-
        ϕ - - - - ⌟
        [-back] [+back, +round]

The BACK rule in (71) predicts the leftward spreading of the features [+back, +rounded] of the suffixal initial vowel onto the last front vowel of the root. This rule shows that in Ciyao any root-final -iC- becomes -oC- when one of the reversive allomorphs -ol-/-ok- is attached. And any root-final -eC- becomes -ok- when one of the reversive allomorphs

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-ol-/-ok- is suffixed as a result of the MBI rule. This observation suggests that MBI and BACK apply in an ordered manner, as shown in (72):

(72) Root: -taandik- 'spread (e.g., bedsheets)' -lovek-   'soak'

 Morphology: Rv₁: -taandik-Ul-[29]   -lovek-Ul-[29]

 Phonology: MBI: -taandik-ul-   -lovek-ol-

              BACK: -taanduk-ul- 'fold up'   -lowok-ol- 'unsoak'

The MBI rule, which determines the quality of the suffix vowel, applies first. If there is no mid back vowel anywhere in the root, the default **-ul-/-uk-** is selected as the reversive suffix initial vowel. Then the BACK rule applies which turns the last front vowel of the preceding morpheme into corresponding back.

In some cases the affixation of the allomorph of the reversive extension requires a prior affixation of the morph **-ik-/-ek-**, as shown in the following examples:

(73) Stems   Roots

a. Transitive → transitive

-paand-uk-ul- (cf. *-paand-ul-)   'uproot'   cf. -paand- 'plant, sow'

-siisin-uk-ul- (cf. *-siisin-ul-)   'open eyes'   cf. -siisin- 'close eyes'

b. Transitive → intransitive

-paand-uk-uk-   (cf. *-paand-uk-)   'uproot'   cf. -paand- 'plant, sow'

-siisin-uk-uk-   (cf. *-siisin-uk-)   'be opened eyes' cf. -siisin- 'close eyes'

c. Intransitive → transitive (Rv₁)

-taam-uk-ul-   (cf. *-taam-ul-)   'unseat'   cf.   -taam-   'sit; sit down'

-iinam-uk-ul-   (cf. *-iinam-ul-)   'straighten s.o.' cf.   -iinam-   'stoop'

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[29] The /U/ is a rounded back vowel, not specified for height at this point.

d. Intransitive → intransitive (Rv$_t$)

-taam-uk-uk-	(cf. *-taam-uk-)	'be unseatable'	cf.	-taam-	'sit; sit down'
-iinam-uk-uk-	(cf. *-iinam-uk-)	'be straightenable'	cf.	-iinam-	'stoop'

The examples in (73) are crucial to the point we are making here. The starred forms in parentheses do not exist in the language. Misleadingly, the stems in the left hand column seem to be derived from the forms on the right through suffixation of **-ukul-** to the roots on the right, which is not true. What we have in (73) is that the affixation of the reversive is preceded by affixation of the morph **-ik-/-ek-**, which is another intermorph required exclusively by the reversive suffixes when they are attached to certain roots. Then the BACK rule (71) replaces the front vowel of **-ik-/-ek-** by the high back initial vowel of the reversive. (74), below, shows the derivational history of the examples in (73).

(74)

Root:		-paand-	'plant'	-siisin-	'close the eyes'
Morph.:	-ik- affix.:	-paand-ik-	'be plantable'	-siisin-ik-	'be closable (eyes)'
	-ul- affix.:	-paand-ik-ul-		-siisin-ik-ul-	
Phon.:	BACK:	-paand-uk-ul-	'be uprooted'	-siisin-uk-ul-	'be opened (eyes)'

In (74) we have examples of the interleaving between morphology and phonology where the former feeds the later. More convincing evidence on both the prior affixation of the morph **-ik-/-ek-** and the application of BACK rule is provided by the following examples where the root-final consonants can undergo palatalization:

(75)   Stems   Roots

a. Transitive → transitive

-kuunj-uk-ul-	(cf. *-kuunik-ul-)	'pull to pieces'	cf. -kuung-	'string'
-wuunj-uk-ul-	(cf. *-wuunjik-ul-)	'disperse'	cf. -wuung-	'gather up'

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| -paanj-uk-ul- | (cf. *-paanjik-ul-) | 'unmake an appt.' | cf. | -paang- | 'make an appt.' |

b. Transitive → intransitive

-kuunj-uk-uk-	(cf. *-kuung-uk-)	'be pulled to pieces'	cf.	-kuung-	'string'
-wuunj-uk-uk-	(cf. *-wuung-uk-)	'be dispersed'	cf.	-wuung-	'gather up'
-paanj-uk-uk-	(cf. *-paang-uk-)	'be unmade (appt.)'	cf.	-paang-	'make an appt.'

With the examples in (75), where we show the palatalization of the velar (g → j), make it clear that the sequences *-ukul-[30] and *-ukuk- are actually -ik-+-ul- and -ik-+-uk-, respectively. In (76) we provide the derivational history of the examples in (75):

(76) Root: -kuung- 'string' -wuung- 'gather up' -paang- make an appt.'

Morph.: -ik- affix.:   -kuung-ik-   -wuung-ik-   -paang-ik-

Phon.:   velar-palat.:   -kuunj-ik-   -wuunj-ik-   -paanj-ik-

Morph.: -ul- affix.:   -kuunj-ik-ul-   -wuunj-ik-ul-   -paanj-ik-ul-

Phon.:   BACK   -kuunj-uk-ul-   -wuunj-uk-ul-   -paanj-uk-ul-

                         'pull to pieces'   'disperse'   'umake an appointment'

(76) shows that the initial vowel of -ik- triggers palatalization of the root-final /g/ before the reversive is attached. Then, when the reversive is attached, the /i/ of -ik- undergoes the BACK rule. In (77) we consider a non-cyclic analysis of the data in (75):

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[30] In our database we have only three cases where CiCukul- is found, namely:
a.   -diimbukul-   'tumble (tr.)'
     -siimbukul   'dig up a plant with roots and soil attached'
b.   -vinukul-   'gap (of a wound)'
Considering that the labiality of the NC (/mb/) in (a) affects the following vowel, the examples in (b) remains the sole true exception.

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(77)
	-kuung-ik-Ul-	-wuung-ik-Ul-	-paang-ik-Ul-
VH:	i u	i u	i u
PAL:	j	j	j
BACK:	u	u	u
Output:	-kuunj-uk-ul-	-wuunj-uk-ul-	-paanj-uk-ul-
	'unstring'	'disperse'	'unmake (aan ppointment)'

(77) is a suggestion of a non-cyclic analysis of the data in (75) where we do all the morphology first and then apply the phonology in an ordered manner as follows. First, we apply the vowel harmony (VH), then the palatalization (PAL), and finally the backing (BACK) as: VH > PAL > BACK.

Note that BACK rule fails to apply in some cases. Of the 52 verbs where, in the database, iC/eC precede -ul-/-uk-, in 20 (10 roots) cases the -ul-/-uk- are productive reversives which fail to turn the preceding iC/eC into uC/uC. These 18 cases are reported in (78):

(78)   Stems   Roots

    a. Transitive → transitive

-ciinj-ik-ul-	(cf. *-ciinj-uk-ul-)	'remove wedge'	cf. -ciing-	'wedge'
-siindik-ul-	(cf. *-siinduk-ul-)	'unprotect w/ medicine'	cf. -siindik-	'protect with...'
-piind-ik-ul-	(cf. *-piinduk-ul-)	'stretch; unfold'	cf. -piind-	'fold'
-vidig-ul-	(cf. *-vidug-ul-)	'unroll up'	cf. -vidig-	'roll up'
-siinj-ik-ul-	(cf. *-siinjuk-ul-)	'unravel'	cf. -siing-	'twist strands'
-siid-ik-ul-	(cf. *-siiduk-ul-)	'empty a hole on the ground'	cf. -siidil-	'fill a hole'
-tej-ek-ul-	(cf. *-tej-uk-ul-)	'unset a trap'	cf. -teg-	'set a trap'
-peend-ek-ul-	(cf. *-peenduk-ul-)	'restore to a right position'	cf. -peendek-	'slant'

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-velek-ul- (cf. *-veluk-ul-) 'remove (e. from the back' cf. -velek- 'put on the back'

-ejek-ul- (cf. *-ejuk-ul-) 'remove what has been put leaning on' cf. -ejek- 'put leaning on'

b. Transitive → intransitive

-ciinj-ik-ul- (cf. *-ciinj-uk-uk-) 'be removed (wedge)' cf. -ciing- 'wedge'

-siindik-uk- (cf. *-siinduk-uk-) 'be unprotected w/ medicine' cf. -sindik-a 'protect w/...'

-piind-ik-uk- (cf. *-piinduk-uk-) 'be stretch; be unfold' cf. -piind- 'fold'

-vidig-uk- (cf. *-vidug-uk-) 'be unrolled up' cf. -vidig- 'roll up'

-siinj-ik-uk- (cf. *-siinjuk-uk-) 'be uravelled' cf. -siing- 'twist strands'

-siid-ik-uk- (cf. *-siiduk-uk-) 'be emptied (a hole)' cf. -siidil- 'fill a hole'

-tej-ek-ul- (cf. *-tej-uk-ul-) 'unset a trap' cf. -teg- 'set a trap'

-peendek-uk- (cf. *-peenduk-uk-) 'be restored (to right position)' cf. -peendek- 'slant'

-velek-uk- (cf. *-veluk-uk-) 'be remove from the back' cf. -velek- 'put on the back'

-ejek-uk- (cf. *-ejuk-uk-) 'be removed from where cf. -ejek- 'put leaning on'

has been put leaning on'

(78) provides the 18 exceptions where BACK rule fails to apply to the front vowels that precede the reversive suffix. This is directly due to the fact that all these examples have front vowel in initial syllable. With the exception of only one case, -vidig- 'roll up', all of the counter-examples in (78) have the intermorph -ik-/-ek- which, in some cases—such as -siindik- 'protect with medicine', -peendek- 'slant', -velek- 'put on the back', and -eejek- 'put leaning on'—is frozen, and other cases—such as those in (77), below—it is productive. In the second group, in (80), the affixation of the intermorph -ik-/-ek- is a requirement of the reversive suffix which cannot be directly attached to these roots. Let us see the examples in (79):

(79)   Stems   Roots

  a. Transitive → transitive

     -ciinj-ik-ul-   (cf. *-ciinj-ul-)   'remove wedge'   cf.   -ciing-a 'wedge'

     -piind-ik-ul-   (cf. *-piind-ul-)   'stretch; unfold'   cf.   -piind-   'fold'

     -siinj-ik-ul-   (cf. *-siinj-ul-)   'unravel'   cf.   -siing-   'twist strands'

     -siid-ik-ul-   (cf. *-siiduk-ul-)   'empty a hole on the ground'   cf. -siidil- 'fill a hole'

     -tej-ek-ul-   (cf. *-tej-ul-a)   'unset a trap'   cf.   -teg-a   'set a trap'

  b. Transitive → intransitive

     -ciinj-ik-ul-   (cf. *-ciinj-uk-uk-) 'be removed (wedge)'   cf.   -ciing-a 'wedge'

     -piind-ik-uk-   (cf. *-piinduk-uk-) 'be stretch; be unfold' cf. -piind-   'fold'

     -siinj-ik-uk-   (cf. *-siinjuk-uk-) 'be uravelled'   cf.   -siing-   'twist strands'

     -siid-ik-uk-   (cf. *-siiduk-uk-)   'be emptied (a hole)'   cf.   -siidil- 'fill a hole'

     -tej-ek-ul-a   (cf. *-tej-uk-ul-a) . 'unset a trap'   cf.   -teg-   'set a trap'

Although it fails to apply to the examples in (80), BACK rule is a real process in this language. It is essentially a local rule that applies to front vowels immediately before the reversive suffix. One example was found in the database of over-application of this local rule, as shown in (80):

(80)   Stems   Roots

  a. Transitive → transitive

     -tutumuk-ul-   'remove verticaly stuck object'   cf. -titimik-   'stick vertically an object'

  b. Transitive → transitive

     -tutumuk-uk-   'be removed (verticaly stuck object)' cf. -titimik-a 'stick vertically an object'

Apart from the linear concatenation of the morphemes in the examples in (80) and preceding examples, the affixation of the reversive marker can replace the verb "expansion" (Meeussen 1967) of the shape -VC- as is shown in (81):

(81) Root+Expansion   +Rv$_1$ +Rv$_2$

 a. -wug-al- 'close'   -wug-ul- 'open'   -wug-uk- 'be opened'

     -wu-al- 'put on cloths'   -wu-ul- 'take off cloths'   *-wu-uk-

 b. -tw-ik- 'put on s.o.'s head' -tu-ul- 'take off from the head' *-tu-uk-

     -wum-ik- 'put on fire'   -wum-ul- 'take from fire'   -wum-uk- 'come out from fire'

 c. -sagam-il- 'dream'   -sagam-uk-ul- 'relate a dream'   -sagam-uk-uk- 'be related'

     -taanj-il- 'fall in a trap' -taanj-uk-ul- 'take out of trap' -taanj-uk-uk- 'escape from trap'

     -siid-il- 'fill a hole'   -siid-ik-ul- 'empty a hole'   -siid-ik-uk- 'be emptied (hole)'

On the left hand column in (81) we have expanded (frozen) roots which either do not exist without the expansion (the final -VC- morph), or exist but are not semantically related to the non-expanded forms. The expansions are -al- (80a), -ik- (81b), and -il- (81c). That is, in the case of -wu-ul- vs. -wu-al- 'undress vs. dress' in (81a) and -tu-ul- vs. -tw-ik- 'take off from the head vs. put on somebody's head' in (81b), we have what seems to be the only reversible -CV- roots. These two are the only cases where we have this very unusual situation. Since we know that -ul- is a suffix of the reversive extension, we can say that in (81) this morpheme replaces the expansion -VC- (-al-, -ik-, -il-). It is difficult to tell from (81a), but it becomes clearer when we look at the data in (81b, c) where we have -ik- and -il- is /k/, i.e., morphs that are distinct from the reversive -ul-. As is seen, all of the expanded forms given in the right hand column do not exist without the expansion which functions as a frozen suffix. Thus, in (81a, b) we see that the reversive extension is attached to the final segment of what could be an unexpanded root, by replacing the expansion. In (82c) we see other examples of the application of the backing rule. The

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difference between the examples in (82c) and those in (82a, b) is that in (82c) we have the morph -ik- which, in the first two examples, surfaces as -ak- as a consequence of the application of BACK rule. In the third example of (81c) we have one of those exceptional cases where BACK rule fails to apply. This -ak- (/-ik-/) extension is absent in (81a, b).

Before we move on to another aspect of the reversive extension, it might be interesting to look at the following examples of odd application of phonological processes:

(82)   Stems   Roots

-wiimul-   /-vuimb-ul-/   'take off the thatch'   cf. -wiimb-   'thatch'

-gumul-   /-gumb-ul-/   'break or batter down'   cf. -guumb-   'plaster with mud'

The examples in (82) are the only two cases in the database which show some irregularity on reversive formation whereby the reversive extension triggers deletion of the prenasalized bilabial voiced consonant whose plausible phonological explanation still has to be found.

To complete our analysis of the reversive extension we consider frozen or pseudo-reversives whose examples are provided in (83):

(83)   Stems   Roots

i.   Rv₁

-bed-ul-   'chip off'   cf. *-bed-

-yiit-ul-   'touch off'   cf. *-yiit-

-guung-ul-   'harvest'   cf. *-guung-

-nyak-ul-   'lift'   cf. *-nyak-

-kot-ol-   'strip off'   cf. *-kot-

-nokos-ol-   'snap across'   cf. *-nokos-

-telek-ul-   'open wide'   cf. -telek-   'cook'

-paat-ul-   'knock down'   cf. -paat-   'rub off'

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-cuw-ul-	'take out of water'	cf. -cuv-	'extract'
-imb-ul-	'skim off'	cf. -imb-	'sing'
-koong-ol-	'set free from a trap'	cf. -koong-	'pour a little'
-tomok-ol-	'peel off'	cf. -tom-	'bespeak'

b. Rv₂

-bed-uk-	'be chipped off'	cf. *-bed-	
-yiit-uk-	'go off'	cf. *-yiit-	
-guung-uk-	'be harvested'	cf. *-guung-	
-nyak-uk-	'be lifted'	cf. *-nyak-	
-kot-ok-	'be stripped off'	cf. *-kot-	
-nokos-ok-	'be snapped across'	cf. *-nokos-	
-telek-uk-	'be opened wide'	cf. -telek-	'cook'
-paat-uk-	'fall from a height'	cf. -paat-	'rub off'
-cuw-uk-	'come from water'	cf. -cuv-	'extract'
-imb-uk-	'be skimmed off'	cf. -imb-	'sing'
-koong-ok-	'be set free from a trap'	cf. -koong-	'pour a little'
-tomok-ok-	'be peeled off'	cf. -tom-	'bespeak'

The examples in (83) seem to suggest some morphological concatenation of two morphemes, a root and an allomorph of one of the suffixes of the reversive extension. However, unlike the cases seen earlier where the opposite meaning of the reversive stems are obtained through subtraction of the productive suffixes of reversive extension, in (83) such opposite meaning cannot be obtained through any kind of morphological operation. That is, the deletion of what looks like a productive suffix of the reversive extension results in either (a) a non-existent form or (b) a form that exists, but is not morphologically related to what could be productively derived reversive stem. This is what pseudo-suffixes usually do (cf. the "cran-" morphemes as in "cranberry" in English). What is more

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interesting in (83), however, is that the verbs express some kind of separation. Separation of a part from a whole; separation of two parts, division (separation) of a unit in parts; separation of something from the location where is has been, etc. Thus, based on this clearly defined semantics, we can say that in Ciyao as productive suffixes, the morphs -ul- /-ol- and -uk-/-ok- express reversibility, while as the forms where they appear as frozen suffixes express separation. In some languages, the expression of 'separation' is not limited to forms with frozen suffixes. D-stems with productive suffixes may also express 'separation'. This is the reason why some scholars treat some reversives as a distinct group of "separative extensions" (Schadeberg 1982, Maganga and Schadeberg 1992). This designation could have some problems for the case of Ciyao since the term "extensions" suggests the productivity which is distinctly lacking in this language. In any case, accepting such designation, we can just say that the frozen suffixes of reversive extension -ul-/-ol- and -uk-/-ok- in Ciyao are actually separative morphs rather than reversives. We now move on to discussion of the reciprocal extension.

5.8. The reciprocal extension

The reciprocal extension in Ciyao has three realizations, namely, one biphonemic -an-, and two polyphonemic -agan-/-egan- and -aangan-. The distribution of these suffixes is mainly determined by morphological and semantic factors as we will see below. Semantically, the reciprocal extension tells us that the stem in which it appears expresses an action in which at least two subjects are involved each of which undergoes the action of the other. That is, the action referred to by the root is reciprocally performed by the subjects. It should be stressed that the fact that the internal argument, the object, is not expressed does not mean that the reciprocal extension replaces the object or is the same as the object argument (Guthrie 1970) of the root (see Mchombo and Ngunga 1994 for details on reciprocal construction in Ciyao). In this section we will be mainly concerned with the

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morphology and the semantics of the reciprocal morpheme by discussing individually each of its suffixes.

5.8.1.   The biphonemic allomorph: -an- (R_1)

Among the allomorphs of the reciprocal extension, -an- is the most widely found in Bantu languages. In Ciyao -an- is the most productive of the three suffixes of the reciprocal extension. Consider the following examples:

(84)   Stem   Root

i.   -CV(V)C- roots

a.   -pit-an-   'pass through one another'   cf.   -pit-   'pass'

     -sis-an-   'hide from one another'   cf.   -sis-   'hide'

     -puut-an-   'hit one another'   cf.   -puut-   'hit'

     -kaas-an-   'break one another'   cf.   -kaas-   'break'

b.   -pocel-an-   'receive from one another'   cf.   -pocel-   'receive'

     -lol-an-   'look at one another'   cf.   -lol-   'look'

     -soos-an-   'look for one another'   cf.   -soos-   'look for'

ii. -CV(V)CVC- roots

     -saagul-an-   'choose one another'   cf.   -saagul-   'choose'

     -kamul-an-   'hold one another'   cf.   -kamul-   'hold'

     -velek-an-   'reproduce (e.g., animals)'   cf.   -velek-   'give birth'

     -lokot-an-   'pick up one another'   cf.   -lokot-   'pick up'

iii. -CV(CV)NC- roots

     -teend-an-   'do to one another'   cf.   -teend-   'do'

     -loomb-an-   'marry one another'   cf.   -loomb-   'marry'

     -simoong-an-   'suspect one another'   cf.   -simoong-   'suspect'

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We see in (84) roots with different structures that provide evidence for the fact that -an- can be considered the basic suffix of the reciprocal extension. As seen, the affixation of this suffix does not involve any morphophonological processes worth mentioning. It represents the classical example of concatenation of morphemes that characterizes the Bantu languages. Syntactically, however, we can observe that -an- is attached to inherently transitive roots only, whose resulting stem is intransitive.

Table 12 shows the occurrence of the suffixes of the reciprocal extension with the different consonants in root-final position.

Table 13: Reciprocal allomorphs after different root-final consonants.

Root-endings	Roots	Reciprocal Allomorphs		
		-an-	-aangan-	-agan-/-egan-
-(m)b-	41	21	—	—
-c-	5	3	—	—
-(n)d-	71	7	—	—
-(n)g-	95	35	—	—
-(n)j-	10	2	1	—
-k-	453	38	18	—
-l-	968	867	49	1
-m-	94	19	—	—
-n-	123	59	8	1
-ny-	147	135	—	—
-n'-	2	1	—	—
-p-	34	9	—	1
-s-	46	23	—	—
-t-	93	49	1	—
-v-	37	10	—	—
-w-	6	—	—	—
-y-	48	—	—	—
-(m)bw-	4	—	—	—
-(n)dw-	1	—	—	—
-(n)gw-	17	—	—	—
-kw-	8	—	—	—
-lw-	30	—	—	—
-mw-	6	—	—	—
-nw-	1	—	—	—
-n'w-	2	—	—	—
-pw-	2	—	—	—
-sw-	2	—	—	—
-tw-	3	—	—	—
-(n)dy-	2	—	—	1
-my-	19	—	—	—
-py-	2	—	—	—
-sy-	349	262	—	—
Total	2722	1540	77	4

Table 13 confirms that the biphonemic -**an**- is the most productive suffix of the reciprocal extension in Ciyao, being accepted by 1540 roots. The polyphonemic suffixes can be viewed as exceptions which occur, determined by semantics or morphology of the verb, in a limited number of roots with 75 roots accepting -**angan**- and 4 accepting -**agan**-/-**egan**- and as reciprocal morphemes. In the next subsection we discuss each one of these reciprocal allomorphs.

5.8.2. The polyphonemic allomorph -aangan- (R_2)

The distribution of the reciprocal suffix -aangan- is determined by two factors, namely, semantics and phonology. See in (85) some examples where the use of the reciprocal extension is semantically determined:

(85) Stems   Roots

-pit-aangan-	'pass (large number), go (large number)'	cf.	-pit-	'pass'
-wuj-aangan-	'return (large number)'	cf.	-wuj-	'return'
-yik-aangan-	'arrive (large number)'	cf.	-yik-	'arrive'
-tyook-aangan-	'leave (large number)'	cf.	-tyook-	'leave'
-gon-aangan-	'sleep (large number)'	cf.	-gon-	'sleep'
-kaan-aangan-	'refuse "en masse"'	cf.	-kaan-	'refuse'
-leepel-aangan-	'draw (opponents)'	cf.	-leepel-	'fail to accomplish'
-soong-aangan-	'assemble in large numbers'	cf.	*-song-	

In (85) we see that unlike the R_1, which is attached to inherently transitive roots, R_2 is attached to inherently intransitive roots. From a semantic viewpoint, the meaning of the stem which contain the R_2 suffix imply the existence of many participants that take part in the event or action expressed by the extended verb. That is why we that the affixation of R_2 to intransitive verbs is semantically motivated. The affixation of the R_2 can also be required by the morphophonological configuration of the root as illustrated in (86):

(86) Transitive → intransitive

Stem   Root

-piik-aangan-	'understand e.o.'	cf.	-piikan-	'understand'	(cf. *-piik-)
-sim-aangan-	'encounter e.o.'	cf.	-siman-	'encounter'	(cf. *-sim-)
-tuk-aangan-	'insult e.o.'	cf.	-tukan-	'insult'	(cf. *-tuk-)

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In (86) we provide a complete list of the -an- ending transitive verbs where we see that when the root is constituted by at least two syllables, the root-final -an- is replaced by the R₂ suffix -aangan- making it to become part of the root. There is one exception to this, the root is -pakan- 'threaten revenge", whose reciprocal form is derived by adding the suffix -aangan- to the root final /n/, as in -pakan-aangan- (cf. *-pakaangan-) "threaten revenge each other". The other verbs with -CVCan- roots are intransitive, hence do not undergo reciprocalization. Unlike what was said about the examples in (85), above, the meaning of the examples on the left hand column in (86) does not limit the number of subjects involved in the event in terms of dual or collective provided that there are at least two participants involved in the event. This phonologically determined affixation of the R₂ -aangan- is less productive than the semantically determined affixation since the root has to meet the phonological requirement that is met by only the three examples given in (86). The only case where the affixation of -aangan- is eminently reciprocal and its affixation has nothing to do with either the semantics (collective character of the subjects involved) or the phonological configuration of the root (-an- ending), is given in (87):

(87)   Stems   Root

a. -lek-an-   'divorce (e.o.)'   cf.   -lek-   'leave'

b. -lek-aangan-   'leave one another'   cf.   -lek-   'leave'

In (87) we see that the two stems on the left hand column derive from the same root -lek- 'leave'. However, what seems to be the productive suffix R_1 is part of what is synchronically lexicalized item (root) -lekan- which means 'divorce (e.o.)'. To form the reciprocal form of -lek- 'leave', in order to mean 'leave one another', the R₂ -aangan- is used as shown in (87b). Thus, we cannot claim that -lek-aangan- results from the replacement of the final -an- (R_1) by -aangan- (R_2) in the same way we did in (86). In

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(88), below, we provide more examples to illustrate another difference between (86) and (87) on the other hand.

(88) Stem   + intensive   + passive   + stative

a. -piikan-   'understand'   cf.   -piikan-is-y-   -piikan-igw-   -piikan-ik-a

    -siman-   'encounter'   cf.   -siman-is-y-   -siman-igw-   -siman-ik-a

    -tukan-   'insult'   cf.   -tukan-is-y-   -tukan-igw-   -tukan-ik-a

b. -lekan-   'divorce'   cf.   *-lekan-is-y-   *-lekan-ig-w-   *-lekan-ik-a

As is observed, unlike the examples in (88a), that can also be followed by the intensive, passive, and stative extensions, the examples in (88b) cannot be followed by any of these extensions. This shows again that the biphonemic **-an-** in root-final position in (88a) has nothing to do with the reciprocal extension. In (88b), however, the ungrammaticality of the forms to which the intensive, passive, and stative suffixes are attached show that the final **-an-** is a suffix (frozen though) of the reciprocal extension. As will be shown in the next chapter, the reciprocal extension cannot be followed by non-valence increasing suffixes such as intensive, passive and stative. Let us see the remaining suffix of the reciprocal extension.

5.8.3. Polyphonemic allomorph -agan-/-egan- (R_3)

As was shown in Table 10, there are four verb roots that take the polyphonemic suffix **-agan-/-egan-** whose use is basically semantically motivated as shown in (89):

(89) Stem$_1$ Stem$_2$ Root

a. -CVC-

    -won-egan-   'meet'   vs. -won-an-   'see c.o.'   cf. -won-   'see'

    -lol-eegan- 'look at c.o.' vs. -lol-an-   'visit c.o.'   cf. -lol-   'look at'

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b. -CV- roots

-dy-aagan- 'eat e.o.' vs. *-di-il-an- cf. -di- 'eat'

-p-eel-egan- 'distribute among selves' vs. *-p-eel-an- cf. -pa- 'give'

(89) provides examples with R_3 suffixes whose distribution is determined by the quality of the vowel of the root. In (89a) we have -CVC- roots. In (89b) R_3 is attached to -CV-. As seen, the use of R_3 suffix seems to be required by the need to avoid ambiguity where the use of the basic R_1 either produces forms with different meanings, as in (89a), or is simply not allowed, as in (89b). Observe that all of the four roots that accept R_3 are transitive, which means that of the three allomorphs of the reciprocal extension, R_2 -aangan-, as discussed in the preceding subsection, is the only reciprocal suffix can be attached both transitive and intransitive roots.

Apart from the four roots in (89) where R_3 is productive, there is one example where -agan- is frozen as shown in (90):

(90) Stem   Root

-valagan- 'organize (selves as a group)' cf. -val- 'shine'

In (90) we provide the only example where -agan- appears as a frozen suffix where the deletion of the root-final -an- of -valagan- 'organize (selves as a group)' results in -val- 'shine', a form that is semantically unrelated with -valagan-.

It should be mentioned that the R_1 is also used in semantically complex situations, after inherently transitive roots, to express a variety of events in which plural or collective subjects are involved. It is not our intention to explore in detail all such situations here, but just to illustrate the multifunctional character of the reciprocal extension. Consider the examples in (91):

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(91)   Stems   Roots

       -wulag-an-   'kill each other (e.g., men)'   cf. -wulag-   'kill'

       -velek-an-   'reproduce (animals)'   cf. -velek-   'give birth'

       -sajik-an-   'be on top of one another'   cf. -sajik-   'put on top'

       -loong-an-   'be in company of one another'   cf. -loong-   'pack'

       -wuung-an-   'gather together'   cf. -wuung-   'gather'

(91) shows that sometimes the semantics of the reciprocal construction is not that of specific referents doing something to each other, but rather of members of one group or species to do something to other members of the same species or group. So, we have for example that men kill other men, fish eat other fish, or older animals give birth to younger animals (not vice-versa), without meaning that the very men who are killed also kill their killers, or the very fish which are eaten, eat their eaters, etc. We can say the same about **-sajik-an-** 'be on top of one another' where, as we can easily imagine, if there are two objects and one is on top of the other, the reciprocal cannot be simultaneously true.

       Another important semantic aspect about the morpheme **-an-** is related with the associative, or dissociative for that matter, meaning what is sometimes expressed in constructions as in (92):

(92)   Stems   Roots

   a.   -loong-an-   'be in company of each other'   cf. -loong-   'pack up'

       -soong-an-   'assemble'   cf. *-soong-

   b.   -kweev-an-   'congeal'   cf. -kweev-   'be thick (substance)'

       -paambik-an-   'stick together'   cf. -paambik-   'superimpose'

       -matik-an-   'be compacted'   cf. -matik-   'stick'

   c.   -sapul-an-   'go in different directions, separate'   cf. -sapul-   'take some whole'

       -pwiidiing-an-   'disperse'   cf. *-pwiidiing-

-tiind-an-   'fail to encounter each other'   cf. *-tiind-

In (92) we see that the reciprocal extension is used to apparently express the idea of togetherness or cohesion/adherence (association) as in (92a, b). Because of this, in some studies (Ngunga 1988:57, Satyo 1985:156) -an- is also identified as an "associative" morpheme different from the reciprocal. We do not see the need for such a separation if we accept the fact that the extensions are all polysemantic whose particular meaning is determined by the particular roots to which they are affixed. Besides that, if we were to label every single semantic manifestation of the extensions, we could end up with an endless list of labels mostly for the same extensions. In the case of -an-, it could be legitimate, for example, to include the dissociative extension to house the semantics of the reciprocal in (92c), a label scholars rarely mention. In (92) we also see that as in most cases of verbal extensions, there are some frozen forms of reciprocal extension that have been lexicalized as is the case of the last two examples of (92a) and the last two of (92c).

This ends the chapter 5, but before we move on to the next chapter let us summarize briefly the discussion.

5.9. Summary

In this chapter we have shown the complexity of Bantu verb stem by analyzing one aspect of its constitution, the derivational suffixes known as verbal extensions, in Ciyao. From the discussion we can conclude that although syntactic aspects of verb extension have been explained in various ways by the various studies, and are currently less complex, the semantics and morphology of verb extensions in Bantu still constitute an area where research is needed in order to be fully understood. For instance, following Guthrie (1970), we have been able to syntactically classify the verb extensions in three groups, namely: (i) valence-increasing extensions (applicative/benefactive and causative), (ii) valence-decreasing extensions (passive, stative, intransitive reversive, and reciprocal), (iii) valence-

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"blind" extensions (intensive and transitive reversive). Guthrie (op. cit.) uses the symbols +O (plus object), -O (minus object) and O⁼ (equal number of objects), to refer to the groups (i), (ii) and (iii), respectively. This classification allows us to suggest that what we call "valence-blind" extensions in (iii) are semantic extensions while the valence-changing ones, (i) and (ii), are both semantic and syntactic extensions. Phonologically, the remarkable feature of the extensions is that vowel harmony determines the distribution of front vowels in extension-initial position. While on the one hand we have the causative -i̧- and the reversive -ul-/-ol- that are triggers of specific rules, on the other hand we have what can be called the 'elsewhere' morphemes of each of the polysuffixal extensions in this language. Thus, we have -aas-y- as the default causative, -an- as the 'elsewhere' reciprocal and -ig-w- as the 'elsewhere' passive suffix. These morphemes are phonologically neutral, in that they do not trigger any phonological processes. With this summary we should conclude the study of the single extensions from the point of view of their morphological, phonological, semantic, and syntactic characterization. However, there is an important aspect which deserves a special place in the summary. That is, the way the verb extensions behave in relation to the -CV- roots. Table 13, below, provides a full list of all fifteen -CV- roots in order to give a general picture of similarities and differences among the stems with this kind of roots.

Rts.	Applicative	Causative	Intensive	Passive	Stative	Reciprocal	Gloss
-di-	-di-id-il-	-di-is-i-	-di-id-is-i-	-di-id-ig-w-	-di-id-ik-	-dv-aag-an-	'eat'
-n'o-	-n'w-eel-el-	-n'w-ees-i-	-n'w-eel-es-i-	-n'we-el-eg-w-	-n'we-el-ek-	—	'drink'
-nye-	-nye-el-el-	-nye-es-i-	-nye-el-es-i-	—	-nye-el-ek-	—	'defecate'
-pa-	-p-eel-el-	—	—	-p-eel-eg-w-	—	-p-eel-egan-	'give'
-ta-	-t-eel-el-	—	—	-t-eel-w-	-t-eel-ek-	—	'name'
-to-	-tw-eel-el-	-tw-ees-i-	-tw-eel-es-i-	-tw-eel-eg-w-	-tw-eel-ek-	—	'pound'
-ti	—	—	—	—	—	—	'say'
-ce-	-ce-el-el-	-ce-es-i-	—	-ce-el-w-	—	—	'dawn'
-gu-	-gw-iid-il-	-gw-iis-i-	-gw-iid-is-i-	—	-gw-iid-ik-	—	'fall'
-ji-	—	—	—	—	—	—	'go'
-pi-	-pi-id-il-	—	—	—	—	—	'be burnt'
-po-	-pw-eel-el-	-pw-ees-i-	—	—	—	—	'dry up'
-so-	-sw-eel-el-	—	—	-sw-eel-w-	—	—	'grow dark'
-va-	-v-eel-el-	—	—	—	—	—	'be'
-w-	-w-iid-il-		—	—	-w-iid-ik-	—	'die'

Some notes should be made about Table 14. First, of the 14 suffixes of the 8 extensions we have been studying, seven (A, C_1, Int, P_1, P_2, S, and R_3) can be singly attached to -CV- roots and seven (C_2, C_3, Imp, Rv_1, Rv_2, R_1, and R_2) cannot be atached to -CV- roots. Second, observe that from each extension the -CV- root usually accept only one suffix. The roots -ji- 'go' and -ti 'say' do not accept any extension. In both cases the reason seem to be semantic. Third, of the remaining thirteen -CV- roots that accept suffixes of the six extensions (A , C_1, Int, P_1/P_2, S, and R_3), -di- 'eat' and -to- 'pound', are the only two roots that accept suffixes of all of them. Note that all -CV- root that accept P_1 - w - can also passivize with P_2 -ig-w-/-eg-w-, but those for which we have provided the P_2 forms can not passivize with P_2.

(93) summarizes the facts presented in the Table 13 about the affixation of the thirteen suffixes of the six extensions to -CV- roots in Ciyao:

$$
(93) \quad \text{-CV-il-/-el-} \left\{
\begin{array}{ll}
\text{-il-/-el-} & A \\
\text{-i-} & C_l \\
\text{-w-} & P_1 \\
\text{-ig-w-/-eg-w-} & P_2 \\
\text{-ik-/-ek-} & S \\
\text{(-agan-/)-egan-} & R_3 \\
\text{-is-i-/-es-i-} & Int
\end{array}
\right\}
$$

As we have seen, two of the eight extensions we have been analyzing cannot be attached to -CV- roots. Furthermore, not all suffixes of the remaining six extensions can be suffixed to -CV- roots. So, (93) provides a list of seven suffixes of the six extensions that can be attached to -CV- roots. The parenthesis around the allomorph **-agan-** of the R_3 suffix indicate that, exceptionally, this allomorph does not require an intermorph to be attached to the root before it is affixed. As is observed, there are other suffixes that, for different reasons, are excluded from (93). For example, the morphotactics of the -CV- roots determine that the causatives C_3 (**-aas-y-**), C_2 (**-is-y-/-es-y-**) cannot be attached to them. Therefore, as was demonstrated earlier, the only causative extension that can follow the intermorph (attached to the -CV- roots) is the C_1 **-y-** that causes the frication of the last consonant of the intermorph. So, there is no indirect causativization of the -CV- roots. That is, the indirect causative **-aas-y-** cannot be affixed to this kind of roots. As was mentioned earlier in this chapter, the major and clear distinction between suffix C_2 **-is-y-/-es-y-** and the intensive suffix (**-is-y-/-es-y-**), is that after the intermorph that bridges between the -CV- roots and the extension, the only **-is-i-/-es-i-** allowed is intensive and never causative. The Imp (**-ik-/-ek-**) cannot be affixed to the -CV- roots because no -CV-roots because of semantic incompatibility between each of the 15 -CV- roots and the impositive extension. A similar explanation accounts for the absence of Rv_1 (**-ul-/-ol-**)

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and Rv$_2$ (-ak-/-ok-) in (93). No -CV- root is morphologically (through addition of a morpheme) "reversible".

After these observations, let us look at the Table 15, below, which provides the general distribution of the different allomorphs according to the ending of the roots.

Table 15: Summary of distribution of the extensions per root-final consonant.

Extensions: →	A	C			Imp.	Int	P		S	R v	R		
Endings	Roots	A	C$_1$	C$_2$	C$_3$	Imp.	I	P$_1$	P$_2$	S	Rv	R$_1$	R$_2$	R$_3$
-(m)b-	41	41	3	3	41	—	35	—	25	31	2	21	—	—
-c-	5	5	—	1	3	—	2	—	2	3	2	3	—	—
-(n)d-	71	70	6	10	69	—	54	—	38	63	3	7	—	—
-(n)g-	95	95	9	14	95	1	70	—	58	63	7	35	—	—
-(n)j-	10	7	1	4	9	—	7	—	1	10	—	2	1	—
-k-	453	453	117	—	453	—	9	75	10	307	24	38	18	—
-l-	968	960	392	1	967	4	587	15	386	842	—	867	49	1
-m-	94	94	75	11	94	6	87	3	26	76	5	19	—	—
-n-	123	120	85	5	122	3	29	—	21	65	2	59	8	1
-ny-	147	140	—	11	146	—	36	—	8	129	1	135	—	—
-n'-	2	2	—	1	2	—	2	—	2	2	—	1	—	—
-p-	34	34	14	3	33	—	—	—	13	26	—	9	—	1
-s-	46	46	—	—	43	—	8	—	32	38	—	23	—	—
-t-	93	93	7	30	93	—	88	2	55	86	4	49	1	—
-v-	37	37	17	8	35	—	27	—	10	17	2	10	—	—
-w-	6	6	—	—	5	—	—	—	—	1	—	—	—	—
-y-	48	48	—	1	42	—	1	—	—	—	—	—	—	—
-(m)bw-	4	3	—	—	4	—	—	—	—	—	—	—	—	—
-(n)dw-	1	1	—	—	1	—	1	—	—	—	—	—	—	—
-(n)gw-	17	17	—	1	16	—	1	—	—	—	—	—	—	—
-kw-	8	8	—	—	8	—	—	—	—	—	—	—	—	—
-lw-	30	30	—	—	30	—	1	—	—	—	—	—	—	—
-mw-	6	6	—	1	5	—	1	—	1	1	—	—	—	—
-nw-	1	1	—	—	1	—	1	—	—	—	—	—	—	—
-n'w-	2	2	—	1	1	—	1	—	1	1	—	—	—	—
-pw-	2	2	—	1	1	—	1	—	—	—	—	—	—	—
-sw-	2	2	—	—	1	—	—	—	—	—	—	—	—	—
-tw-	3	2	—	1	2	—	1	—	1	1	—	—	—	—
-(n)dy-	2	2	—	2	—	—	2	—	1	2	—	—	—	1
-my-	19	19	—	—	19	—	—	—	—	—	—	—	—	—
-py-	2	2	—	—	1	—	—	—	—	1	—	—	—	—
-sy-	349	349	—	—	348	—	—	—	—	—	—	262	—	—
Total	2722	2696	726	110	2690	15	1052	96	691	1765	52	1540	77	4

The information in Table 15 is further summarized in Table 16, below, which provides the number of roots to which each extension allomorphs can be attached.

Table 16: Number of roots to which each extension suffix can be attached.

Extensions		Suffixes	# of Roots	Extensions		Suffixes	# of Roots
1	A	-il-/-el-	2781	8	C_2	-is-y-/-es-y-	111
2	C_3	-aas-y-	2690	9	P_1	-w-	96
3	S	-ik-/-ek-	1765	10	R_2	-aangan-	77
4	R_1	-an-	1540	11	Rv_1	-ul-/-ol-	52
5	Int	-is-y-/-es-y-	1052	12	Rv_2	-uk-/-ok-	52
6	P_2	-ig-w-/-eg-w-	691	13	Imp	-ik-/-ek-	14
7	C_1	-y-	632	14	R_3	-agan-/-egan-	4

The Table 15 lists the extension suffixes from the most productive to the least productive out of 2783 verb roots in the database). The productivity of the suffixes depend in many factors, namely, phonological (if the roots ends in a consonant or in a vowel, if in a consonant, the nature of the consonant; the quality of the last vowel of the root; identity of the suffix with another suffix; the composition of the final syllable of the root, e.g., ...C-an-|Root), semantic (e.g., reversibility, position), syntactic (inherent transitivity of the root).

The analysis of the combination and order of the extension suffixes studied in this chapter is the subject of the in the next chapter to what we now turn.

CHAPTER 6: COMBINATION AND ORDER OF DERIVATIONAL SUFFIXES

6.0. Introduction

Bantuists have long been in agreement over the fact that in Bantu languages the verb morphology is more complex than the noun morphology due to the nature of its suffixes (e.g., frozen vs. active; derivational vs. inflectional), the number of combinations into which they enter, and the complexity of their functions and their ability to combine. Guthrie (1970:110) states that "one of the most complicated aspects of the occurrence of extensions is their capacity for combination, which is considerable in many languages". Despite the recognition of the complexity of the capacity of the verb extensions to combine, there are still relatively few descriptions that attempt to be exhaustive in their treatment of multiple suffixation of verb extensions in Bantu. Therefore, in this chapter we intend to take a close look at the suffixal morphology of the Ciyao verb, with particular emphasis on the combination and order of the verb extensions seen in section 2 of the preceding chapter. In this language such combination is actually "considerable" as illustrated in (1):

(1)   ci-tú-cí-taam-uk-ud-ig-w-aas-y-aan-il-a   'we will make each other be unseated for'

The morphemes of the verb complex in (1) are identified as in (2):

(2)a. Prefixes: ci-...-cí-   Fut. tense marker

                      -tu-   Subject marker

   b.   Root: -taam-   'sit'

   c.   Extensions: -ik-   Impositive

                      -ud-   Reversive

                      -ig-w-   Passive

                      -aas-y-   Causative

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-an-	Reciprocal
-il-	Applicative

d.   Final Vowel: -a   Inflectional suffix

The order in which suffixes may combine may be determined by the four factors in (3):

(3)   Constrains on suffixes combination and ordering in Ciyao:

a.   morphotactics: suffix X must precede (or follow) suffix Y;

b.   valence: suffix X may or may not be attached to inherently transitive or intransitive

                          roots;

c.   phonotactics: suffix X must occur (or must not occur) in phonological environment Y;

d.   compositionality: suffixes X and Y can only co occur if they are semantically compatible;

This chapter will be devoted to discussion of each one of these constraints in (3) since they are the ones which determine the combinability and ordering of the verb extensions in this language. To test each one of the constraints, we add one suffix to a root at a time followed by a discussion of the resulting form. First we will consider the combination and order of the suffixes after -CVC+- roots and then after -CV- roots. Thus, the remainder of the chapter is organized as follows. First we discuss the combination and ordering of two extensions as well as some phonological processes triggered by the concatenation of the morphemes. Then we analyze the order of the extensions in three-way combinations. Finally we present summary of the discussions.

6.1.   Combination of suffixes after -CVC+- roots

In this section we will analyze the combinations of extension suffixes after -CVC+- roots starting with two-combinations.

6.1.1. Combination of two suffixes after -CVC+- roots

For convenience we provide once again the list of the abbreviations, seen in the preceding chapter, that will be systematically used in the present chapter:

(4)a.   Applicative(A):   A: -il-/-el-;

   b.   Causative (C): C_1: -y (/-i-/); C_2: -is-y-/-es-y- (/-is-i-/-es-i-/); C_3: -aas-y- (/-aas-i-/);

   c.   Impositive (Imp):   Imp:-ik-/-ek-;

   d.   Intensive (Int):   Int: -is-y-/-es-y- (/-is-i-/-es-i-/);

   e.   Passive (P): P_1: -w-; P_2: -ig-w-/-eg-w-;

   f.   Stative (S):   S: -ik-/-ek-;

   g.   Reversive (Rv): Rv_1: -ul-/-ol-; Rv_2: -uk-/-ok-

   h.   Reciprocal (R): R_1: -an-; R_2: -aangan-; R_3: -agan-/-egan-.

Using the abbreviations in (4), in Table 1 we present a summary of the order of extension suffixes in two-way combinations in Ciyao:

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1st＼2nd	A	C₁	C₂	C₃	Imp	Int	P₁	P₂	S	Rv₁	Rv₂	R₁	R₂	R₃
A : -il-/-el-	■	x	x	x								x		
C₁ : -i̧-		■		x		x^{31}		x^{31}	x^{31}			x	x	
C₂ : -is-i̧-/-es-i̧-			■	x								x		
C₃ : -aas-i̧-				■								x		
Imp: -ik-/-ek-	x			x	■				x		x	x	x	x
Int: -is-i̧-/-es-i̧-				x		■						x		
P₁ : -w-				x			■							
P₂ : -ig-w-/-ig-w-				x				■						
S: -ik-/-ek-	x			x					■	x	x			
R v₁ : -ul-/-ol-	x			x			x	x	x	■		x		
R v₂ : -uk-/-ok-	x			x							■			
R₁ : -an-	x	x		x								■		
R₂ : -aangan-	x			x									■	
R₃ : -agan-/-egan-	x			x										■

As seen in Table 1, of the 196 two-way possible combinations of the 14 suffixes, only 41 (21.4 percent) yield grammatical outputs. The darker boxes, that form a diagonal from the upper left corner of the table to the lower right, show that an extension suffix cannot repeat immediately after itself. Ciyao respects the repeated morph constraint stated by Menn and McWhinney (1984), as in (5):

(5) "*XY, where X and Y are adjacent strings such that both could be interpreted as manifesting

the same underlying morpheme through regular phonological rules and where either

(a) X and Y are both affixes, or

(b) either X or Y is an affix, and the other is a (proper subpart of a) stem." (p. 529)

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[31] Only when the C₁ -i̧- is attached to the last vowel of the root, as will be shown later.

The ungrammaticality of the results of the remaining 153 possible combinations seen in Table 1 is related to the four constraints presented in (3), each one of which is considered in the next four subsections.

6.1.1.1. Morphotactics and Semantics

Morphotactics determines which derivational suffixes must precede or follow other derivational suffixes in Ciyao, where certain suffixes are restricted to certain slots in the verb structure. In this section we analyze all of the ordering restrictions imposed in the verb stem.

Table 1 leads to the observation that Imp, P_1, and R_3 are never allowed to occur in second position. That is, these three suffixes must occur only in the first slot, directly attached to the root—therefore they cannot co-occur—while all of the other suffixes which are allowed to co-occur with any one of these suffixes must come later as shown in the following examples:

(6)a.	Root:		-taam-	'sit'
	Imp:		-taam-ik-	'seat'
	Imp+:	A:	-taam-ic-il-	'seat for/with/at'
		C_3:	-taam-ik-aas-y-	'make seat'
		P_2:	-taam-ic-ig-w-	'be seated'
		Rv_1:	-taam-uk-ul-	'unseat'
		Rv_2:	-taam-uk-uk-	'be unseat'
		R_1:	-taam-ik-an-	'be piled up'
		R_2:	-taam-ik-aangan-	'seat e.o. (collective)'
b.	Root:		-mil-	'swallow'
	P_1:		-mil-w-	'be swallowed'
	P_1+:	C_3:	-mil-w-aas-y-	'cause to be swallowed'

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c. Root: -won-   'sec'

    R_3:   -won-egan-   'meet'

    R_3+:   A   -won-egan-il-   'meet for/at'

         C_3:   -won-egan-aas-y-   'make meet'

(6) provides examples of the correct two-way combinations in which Imp, P_1, and R_3 are involved. As seen in (6a), Imp -ik- can precede seven other suffixes, in which case two phonological processes affecting the consonant (palatalization of /k/) and the vowel (BACK rule) take place. (6b) shows that C_3 -aas-y- is the only suffix that can follow P_1 -w-. In (6c) we have a R_3 which can only be followed by A and C_3. Recall from chapter 5 that each one of these three suffixes has a special semantic relationship with the corresponding roots to which they are attached. For instance, as was mentioned in chapter 5, Imp can only be attached to 14 positional roots of our database; P_1 can be attached to only 96 of the 787 passivizable roots, the remaining 691 being passivized by the "new" P_2 (not found in PB); R_3 can only be attached to four roots, which when followed by R_1 have other meanings.

The distribution of R_2 is, as mentioned earlier, twofold. Its occurrence may be determined by the semantics or by the phonological configuration of the roots to which it is attached, as illustrated in (7):

(7) Root   +R_2

  a. -piikan- (cf. *-piik-)   'understand'   -piik-aangan-   'understand c.o.'

      -siman-   (cf. -sim- 'extinguish') 'encounter'   -sim-aangan-   'encounter c.o.'

      -tukan-   (cf. *-tuk-)   'insult'   -tuk-aangan-   'insult c.o.'

  b. -wuj-   (cf.*-wujan-)   'return (intr.)' -wus-y-aangan-   'return (tr.) (coll.)'

      -tyook-   (cf.*-tyookan-)   'return (intr.)' -tyook-aangan-   'leave (tr.) (coll.)'

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As we look at Table I we realize that C_1 is the only suffix that can precede -aangan-. It is not without reason that this happens. R_2 is a suffix which seems to "prefer" the position immediately after the root, not only when the roots end in -an-, as illustrated in (7a) but also when the roots end in consonant followed by -y- (especially the fricativizable ones), as in the first example in (7b). When -aangan- is attached to the C_1 functions as if it were part of the root as shown in (7b). When it occurs in roots ending with -an-, there is no way that any other suffix can precede -aangan- which replaces the root-final pseudo-morpheme -an-. Therefore, except for C_1, all of the other suffixes that are allowed to co-occur with R_2 can only be attached after it, as illustrated in (8):

(8)a.   Root   -tukan-   'insult'

        +R_2:   -tuk-aangan-   'insult e.o.'

        +R_2:   A: -tuk-aangan-il-   'insult e.o. for/at'

                 C_3:   -tuk-aangan-aas-y-   'cause to insult e.o.'

    b.   Root   -siman-   'encounter'

        +R_2:   -sim-aangan-   'encounter e.o.'

        +R_2:   A: -sim-aangan-il-   'encounter e.o. for/at'

                 C_3:   -sim-aangan-aas-y-   'cause to encounter e.o.'

As seen in (8), after R_2 we can only be followed either A or C_3. Next, consider the behavior of the suffixes of reversive extension. The suffixes -ul-/-ol- and -uk-/-ok- can occur in either the first or the second slots, as in (9):

(9)a.   Root: -nyaambat-   'adhere'

       Imp: -nyaambat-ik-   'stick (tr.)'

       Imp+: Rv_1:   -nyaambat-uk-ul-   'unstick'

                 Rv_2:   -nyaambat-uk-uk-   'be unstuck'

b. Root: -taam-   'sit'

    Imp: -taam-ik-   'seat'

    Imp+: Rv_1:   -taam-uk-ul-   'unseat'

          Rv_2:   -taam-uk-uk-   'be unseated'

It is important to note that Imp and Rv and S and Rv form a group of morphotactically tightly bound suffixes. Whenever they co-occur, they cannot be broken apart and must always appear in the order ImpRv, regardless of the number of suffixes in the same stem. That is, as shown in (6), Imp can be immediately followed by other suffixes only if no reversive suffix is present, while, as in (9), a reversive suffix can only be attached to the root if there no Imp suffix is present. Reversive suffixes can only be preceded by Imp. But due to their phonological identity with the **-ik-/-ek-** (impositive or stative), as shown in (10).

(10)a. Root: -teg-   'set a trap'

      S: -tej-ek-   'be settable (a trap)'

      S+: Rv_1:   -tej-ek-ul-   'unset (a trap)'

           Rv_2:   -tej-ek-uk-   'be unset (a trap)'

  b. Root: -teeng-   'make into a bundle'

      S: -teenj-ek-   'be made into bundle'

      S+: Rv_1:   -teenj-ek-ul-   'unmake a bundle'

           Rv_2:   -teenj-ek-uk-   'be unmade (a bundle)'

Although phonologically similar, Imp **-ik-/-ek-** and S **-ik-/-ek-** have distinct morphotactic distributions. Unlike the Imp **-ik-/-ek-**, which can exclusively occur in the slot immediately after the root, the S **-ik-/-ek-** can be found not only immediately after the

root, but also somewhere else in the verb stem, including after the allomorphs of the reversive extension, as shown in (11):

(11) Root: -siv-   'close up'

        S: -siv-ik-   'be possible to close up'

a.   S+:   A: -siv-ic-il-   'be possible to close up with'

            C_3:   -siv-ik-aas-y- 'cause to close up'

            Rv_1:   -siw-uk-ul-   'open up'

            Rv_2:   -siw-uk-uk- 'be opened up'

b.   +S: Rv_1:   -siw-ud-ik-   'be possible to open up'

            Rv_2:   -siw-uc-ik-   'be possible to open up'

When neither Imp nor S is present in a stem, the slot immediately after the root is the only one where suffixes of the reversive extension can be found, while the other suffixes that are allowed to co-occur with the reversives are attached afterwards as illustrated in (12):

(12) Root: -lovek-   'soak'

        Rv_1:   -lowok-ol-   'unsoak'

        Rv_2:   -lowok-ok-   'be unsoaked'

a. Rv_1+: A: -lowok-ol-el-   'unsoak for/with/from'

             C_3:   -lowok-ol-aas-y-   'cause to unsoak'

             Int: -lowok-ol-es-y-   'unsoak a lot'

             S: -lowok-ol-ek-   'be unsoakable'

             P_2:   -lowok-ol-eg-w-   'be unsoaked'

             R_1:   -lowok-ol-an-   'unsoak e.o'

b. Rv_2+: C_3:   -lowok-ok-aas-y-   'cause to be unsoakable'

             S: -lowok-oc-ek-   'be possible to be unsoakable'

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(12) shows the distribution of the reversive extension before other suffixes. As seen, the transitive vs. intransitive character of the Rv_1 vs. Rv_2 is clear. Rv_1 is more productive than Rv_2. The Rv_2 can only precede the clearly transitive suffix, C_3 **-aas-y-**. The fact that S can follow Rv_2 is a puzzle whose explanation must perhaps be looked for in the behavior of S rather than in the behavior of Rv_2. S has a behavior that is distinct from the behavior of the other valence-decreasing suffixes (passive, reciprocal, and intransitive reversive). Unlike the other valence-decreasing suffixes, which cannot be attached to inherently intransitive roots, S can be attached to both inherently transitive and inherently intransitive roots. This seems to explain why in the particular case of (12b), it is attached to the Rv_2, an intransitivizer. As we will see later, a question that will remain unanswered is why is it that of the four valence-decreasing suffixes, only S can follow Rv_2.

So far have seen that C_3 can follow Imp, P_1, S, Rv_1, Rv_2, R_2, and R_3. To complete the picture which shows that all suffixes can be followed by C_3, consider the following examples:

(13)i. Root: -pit-   'pass'

   C_3:   -pit-aas-y-   'cause to pass'

   a. C_3+: R_1:   -pit-aas-y-aan-   'make pass e.o'

   b. $+C_3$: A: -pit-il-aas-y-   'pass for/with/from'

           C_1:   -pis-y-aas-y-   'cause to pass'

           Int: -pit-is-y-aas-y-   'cause to pass'

           P_2:   -pit-ig-w-aas-y-   'be make be passed'

           R_1:   -pit-an-aas-y-   'make e.o. pass'

   ii. Root: -eend-   'walk, move'

   C_2:   -eend-es-y-   'drive'

   $+C_3$: C_2:   -eend-es-y-aas-y- 'cause to drive'

The examples in (13) show that apart from following the suffixes as we have seen above, C_3 can also be preceded by A, C_1, C_2, Int, P_2, and R_1. That is, while it can only be followed by R_1, as in (13a), C_3 can be preceded by all of the suffixes of verb extensions except itself. However, the fact that this generalization includes the other causative, C_1 and C_2, can be a source of preoccupation especially after we have claimed above that Ciyao respects the RMC in (5), which is apparently violated by the sequences C_1C_3 and C_1C_3. Nevertheless, the grammaticality of such sequences in (13) is evidence that although they are all causatives, they are different morphs. That is, there is no morph repetition in C_1C_3 and C_1C_3 sequences. Let us explain. There are two aspects that define the morph. One is the shape and the other is the semantics. While the shape is obligatory, the semantics is not. Thus, a morph can be either a combination of these two elements or just one of them (the shape). From what we have established in the preceding chapter, it is clear that C_1 -y- (direct causativizer) and C_3 -aas-y- (indirect causativizer) are different both in shape and in semantics. By the same token, C_3 is also both semantically and phonologically different from the other direct causativizer C_2 -is-y-/-es-y-. There are both phonological and semantic differences between C_1 and C_2 on the one hand, and C_3 on the other, accounts for the grammaticality of the C_1C_3 and C_2C_3 sequences. Therefore, these sequences do not violate the RMC. Contrast the C_1C_3 and C_2C_3 sequences with the following sequences in (14):

(14)a. *C_1C_2:   *-y-is-y-/*-y-es-y-
    b. *C_2C_1:   *-is-y-y-/*-es-y-y-

The sequences in (14a, b) show that even though C_1 and C_2 are different in shape, they are semantically similar. As was demonstrated in the preceding chapter, they are in complementary distribution. So, their co-occurrence is blocked not by their phonological

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shape, but by their semantic similarity. These facts provide us with a clear reading of the RMC in Ciyao, which is a constraint based on the semantics rather than the phonological shape of the morphs. Other evidence for the semantic basis of the RMC in Ciyao is provided by the sequences in (15):

(15)a. *ImpC$_1$:   *-ik-y-/*-ek-y-

b. *ImpC$_2$:   *-ik-is-y-/*-ek-es-y-

In (15a, b), C$_1$ and C$_2$, respectively, follow Imp. As we know, the meaning of the Imp is roughly 'putting something in a certain position'. i.e., a situation where an agent makes a patient change its position, which is some kind of direct causativization. In other words, Imp is another kind of direct causativizer. Therefore, it cannot co-occur with the two direct causativizers (C$_1$ and C$_2$). Finally, consider the following sequences which involve C$_3$ again:

(16)a. *C$_3$C$_2$:   *-aas-y-is-y-/*-aas-y-es-y-

b. *C$_3$C$_1$:   *-aas-y-y-/*-aas-y-y-

The ungrammaticality of the sequences in (16) is open to at least two interpretations. The first is semantic. That is, the order of the causative allomorphs must be direct (C$_1$ or C$_2$) followed by indirect (C$_3$) and not the reverse. Thus, the ungrammaticality of the sequences in (15) and (16) constitute strong evidence on the basis of which it is reasonable to suggest that RMC in Ciyao is a morpho-semantic constraint rather than morphophonological.

The second explanation for why C$_3$ cannot precede C$_1$ and C$_2$ is related to a general constraint which affects not only this allomorph of causative extension, but also other suffixes with the same phonological ending as the C$_3$. Therefore, its discussion will be left for the next subsection to what we turn next.

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6.1.1.2. Phonotactics

Apart from the semantic reasons for the ungrammaticality of the sequences in (16), there are phonological reasons which go beyond the one-to-one relationships between the direct and indirect causatives. There is a phonological constraint that prevents all suffixes ending in [y] (/-i̥-/) preceded by a consonant from being followed by suffixes other than those that have /a/ in initial position:

(17)a Root: -lam- 'survive'   c. Root: -pit- 'pass'
       C_1: -lam-y- 'save' C_3: -pit-aas-y- 'cause to pass'
       C_1P_2: *-lam-y-ig-w- C_3P_2: *-pit-aas-y-ig-w-
       C_1S: *-lam-y-ik- C_3S: *-pit-aas-y-ik-
       C_1Int: *-lam-y-is-y- C_3Int: *-pit-aas-y-is-y-

    b. Root: -eend- 'walk, move'   d. Root: -puut- 'hit'
       C_2: -eend-es-y- 'drive'   Int: -puut-y- 'hit hard'
       C_2P_2: *-eend-es-y-eg-w-   IntA: *-puut-is-y-il-
       C_2S: *-eend-es-y-ek- $IntC_1$: *-puut-is-y-ig-w-
       C_2Int: *-eend-es-y-es-y- $IntC_2$: *-puut-is-y-ig-w-
                                        $IntP_2$: *-puut-is-y-ig-w-
                                        IntS: *-puut-is-y-ik-

In (17) we have sequences of front vowel initial suffixes ({i. e}) following [y]-ending suffixes preceded by consonants (C-y-) where in (17a) the [y] of C-y- is C_1-y-; in (17b) it is part of C_2 -es-y-; in (17c) is part of C_3 -aas-y-; and in (17d) it is part of the intensive suffix -is-y-. All of the ungrammatical sequences are ruled out by the following constraint:

(18) *Cy+{i, e}

Where [y] and {i, e} must belong to different verb extension suffixes.

As illustrated in (17), the C that precedes [y] (/-$\underset{\cdot}{i}$-/) in (18) may be the root-final consonant as in (17a) or the /s/ of the causative or intensive suffixes as in (17b-d). Thus, from (18) we conclude that /$\underset{\cdot}{i}$/-ending suffixes preceded by consonants can only be followed by C_3 **-aas-y-** and two reciprocal suffixes, R_1 **-an-**, and R_2 **-aangan-**, as illustrated in (19):

(19)a Root: -wum-   'exude, come from'

           C_1:   -wum-y-   'remove'

           C_1C_3: -wum-y-aas-y-   'cause to remove'

           C_1R_1: -wum-y-aan-   'remove e.o.'

           C_2R_1: -wum-y-aangan-   'remove e.o. (collect.)'

  b. Root: -pit-   'pass'

           C_1:   -pis-y-   'make pass'

           C_1C_3: -pis-y-aas-y-   'cause to make pass'

           C_1R_1: -pis-y-aan-   'make pass e.o.'

           C_1R_2: -pis-y-aangan-   'make pass e.o. (collect.)'

  c. Root: -eend-   'walk, move'

           C_2:   -eend-es-y-   'drive'

           C_2C_3: -eend-es-y-aas-y-   'make drive'

           C_2R_1: -eend-es-y-aan-   'drive e.o.'

  d. Root: -pit-   'pass'

           Int: -pit-is-y-   'make pass a lot'

           $IntC_3$: -pit-is-y-aas-y-   'cause to make pass a lot'

           $IntR_1$: -pit-is-y-aan-   'make pass a lot e.o.'

e. Root: -pit- 'pass'

    C_3: -pit-aas-y- 'cause to pass'

    C_3R_1: -pit-aas-y-aan- 'make pass e.o.'

In (19) we have all possible suffixes that can follow [y]-ending preceded by a consonant. An important observation about the constraint *Cy+{i, e} in (18) involves the role of the consonant. The application of this constraint is totally conditioned by the presence of a consonant that precedes [y]. If the [y] of the suffix is preceded by a vowel, which only happens when the C_1 - y - either triggers palatalization of the root final consonant or when it functions as the last consonant of pseudo-causatives, then the constraint in (18) does not apply. In (20) we represent the contexts where - y - can be followed by suffixes with front vowels in initial position:

(20)   Vy+{i, e}

(20) is the opposite of the constraint in (18). It shows that when /y/ is preceded by a vowel the affixation of suffixes with /i, e/ in initial position produce correct results as illustrated in (21):

(21)a Root: -iipip- /-iipip-/ 'be short'

    C_1: -iipiy-(y)- /-iipip-i̧-/ 'shorten'

    C_1S: -iipiy-(y)-ik- /-iipip-i̧-ik-/ 'be shortenable'

    C_1P_2: -iipiy-(y)-ig-w- /-iipip-i̧-ig-w-/ 'be shortened'

    C_1Int: -iipiy-(y)-is-y- /-iipip-i̧-is-i̧-/ 'shorten a lot'

  b. Root: -diimb- /-dimb-/ 'be strong'

    C_1: -diiy-(y)- /-dimb-i̧-/ 'strengthen'

    C_1S: -diiy-(y)-ik- /-dimb-i̧-ik-/ 'be strengthenable'

	C_1P_2:	-diiy-(y)-ig-w-	/-dimb-i̧-ig-w-/	'be strengthened'
	C_1Int:	-diiy-(y)-(y)-is-y-	/-dimb-i̧-is-i̧-/	'wet (tr.) a lot'
c.	Root:	-oogop-	/-oogop-/	'fear'
	C_1:	-oogoy-(y)-	/-oogop-i̧-/	'frighten'
	C_1S:	-oogoy-(y)-ek-	/-oogop-i̧-ek-/	'be frightenable'
	C_1P_2:	-oogoy-(y)-eg-w-	/-oogop-i̧-eg-w-/	'be frightened'
	C_1Int:	-oogoy-(y)-es-y-	/-oogop-i̧-es-i̧-/	'frighten a lot'
d.	Root:	-wuv-	/-vuv-/	'be halfcook'
	C_1:	-wuy-(y)-	/-vuv-i̧-/	'halfcook'
	C_1S:	-wuy-(y)-ik-	/-vuv-i̧-ik-/	'be halfcookable'
	C_1P_2:	-wuy-(y)-ig-w-	/-vuv-i̧-ig-w-/	'be halfcooked'
	C_1Int:	-wuy-(y)-is-y-	/-vuv-i̧-is-i̧-/	'halfcook a lot'
e.	Root:	-nyov-	/-nyov-/	'get wet'
	C_1:	-nyoy-(y)-	/-nyov-i̧-/	'wet (tr.)'
	C_1S:	-nyoy-(y)-ek-	/-nyov-i̧-ek-/	'become wettable'
	C_1P_2:	-nyoy-(y)-eg-w-	/-nyov-i̧-eg-w-/	'be wetted'
	C_1Int:	-nyoy-(y)-es-y-	/-nyov-i̧-es-i̧-/	'wet (tr.) a lot'

In all of doubly extended forms in (21), the palatal glide is preceded by a vowel as a result of the rule that turn the root-final oral labials into palatal glide before the causative - y -, discussed in section 5.2.1. (chapter 5). It is this fact that makes it possible for the subsequent affixation of the suffixes with front vowel in initial position to yield correct outputs. This is also true for pseudo-causatives whose examples are provided in (22):

(22)a	Roots:	*-kuuv-		c. *-yuuv-	
	Pseudo-caus.:	-kuuy-(y)-	'follow'	*-yuuy-	'swing'
	S:	-kuuy-(y)-ik-	'be followable'	-yuuy-(y)-ik-	'be swingable'

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P₂:	-kuuy-(y)-ig-w-	'be followed'	-yuuy-(y)-ig-w-	'be swung'
Int:	-kuuy-(y)-is-y-	'follow a lot'	-yuuy-(y)-is-y-	'swing a lot'

b.	Roots:	*-pov-		d.	*-gov-	
	Pseudo-caus.:	-poy-(y)-	'pound leaves'		-goy-	'bend down'
	S:	-poy-(y)-ek-	'be poundable'		-goy-(y)-ek-	'be bendable down'
	P₂:	-poy-(y)-eg-w-	'be pounded'		-goy-(y)-eg-w-	'be bent down'
	Int:	-poy-(y)-es-y-	'pound a lot'		-goy-(y)-es-y-	'bend down a lot'

(22) shows pseudo-causatives whose non-derived roots do not exist in the language. As seen, also in these cases the grammaticality of the output is due to the fact that the palatal glide that precedes the front vowels in initial position of the suffixes appears after by vowels. Consider other pseudo-causatives in (23):

(23)	Root:	-kwaav-	'crawl'	b.	-sov-	'be rare'
	Pseudo-caus.:	-kwaay-	'touch'		-soy-	'err'
	S:	-kwaay-(y)-ik-	'be touchable'		-soy-(y)-ek-	'be possible to err'
	P₂:	-kwaay-(y)-ig-w-	'be touched'		-soy-(y)-eg-w-	'be wrong'
	Int:	-kwaay-(y)-is-y-	'touch a lot'		-soy-(y)-es-y-	'err a lot'

(23) presents forms whose non-derived roots exist in the language, but are not semantically related to the pseudo-causatives. Just like in (21), both in (22) and (23) the front vowel-initial suffixes are attached to the palatal glide /y/ that follows the last vowel of what is comparable to non-derived roots. Note in all these cases in (21)-(23) that unlike what one would expect after a glide in Ciyao, there is no vowel lengthening after the palatal glide. This fact suggests that in this context the C_1 suffix, be it frozen or productive, is regarded as a plain consonant and functions as the final C which becomes part of an optimal -CVC-root.

To complete our discussion of the phonological conditions on the combination and order of suffixes, we now turn to a lengthy discussion of the applicativization of the causatives.

If we compare (17a-c) with (17d), above, we notice that applicative suffixes are missing in our examples in (17a-c). This is because the surface order where we see the applicative suffixes preceding the allomorphs of the causative extensions result from special phonological processes that take place in order for the results of the combinations of these suffixes not to violate the constraint in (18). For convenience of presentation we will first discuss sequences of AC_2 and AC_3 and leave the AC_1 sequence for later in the section. Consider the following examples:

(24)a Root: -won-   'see'   -suum-   'buy'

       C_2:   -won-es-y-   'make see'   -suum-is-y-   'sell'

       AC_2:   -won-ec-es-y- 'make see for'   -suum-ic-is-y-   'sell for/at'

   b. Root: -pol-   'cool down (intr.)' -pit-   'pass'

       C_3:   -pol-aas-y-   'make cool down'   -pit-aas-y-   'make pass'

       'C_3A': -pol-aac-is-y- 'make cool down for' -pit-aac-is-y-   'pass for/at'

A close look at the surface forms in (24) tells us that they do not correspond to a linear order of causative followed by applicative suffixes. Actually what we have here is better represented in (25):

(25)a. Underlying order: [[Root]-C-A]

   b. Surface order: [[Root]-C-A-C]

As seen in (25), the surface order of C-A-C does not correspond to the underlying order which is -C-A. For a better understanding of the facts behind this difference in the order of

the suffixes, which result from a complex process of interaction between morphology and phonology, we provide in (26) the derivational histories of the forms in (24):

(26)a. Roots: -won-   'see'   -suum-   'pass'

    Morph.: C_2-suffix.:   -won-es-i̧-   'make see'   -suum-is-i̧-   'sell'

          A-interfix.:   -won-es-el-i̧-   -suum-is-il-i̧-

    Phon.:   s → c: -won-ec-el-i̧-   -suum-ic-il-i̧-

          l → s: -won-ec-es-i̧- 'make see for/at' -suum-aac-is-i̧- 'sell for'

  b. Roots: -pol-   'cool down (intr.)' -pit-   'pass'

    Morph.: C_3-suffix.:   -pol-aas-i̧-   'cool down (tr.)' -pit-aas-i̧-   'make pass'

          A-interfix.:   -pol-aas-il-i̧-   -pit-aas-il-i̧-

    Phon.:   s → c: -pol-aac-il-i̧-   -pit-aac-il-i̧-

          l → s: -pol-aac-is-i̧- 'make see for/at' -pit-aac-is-i̧- 'make pass for'

The derivations in (26) show that in contrast to the multiple affixation of other verb extensions, the applicativization of the causative is not a mere linear concatenation of suffixes where the applicative comes after the causative. In all of the derivations in (26a, b) we see that any time the applicative allomorph is allowed to combine with any /s-i̧/-ending causative, the -il-/-el- gets interfixed between /s/ and /i̧/, and the /s/ becomes /c/. the reason why we have the hyphen between the /s/ and the /i̧/, while the /l/ is fricated, or "mutated" (Hyman 1994, 1995; Zoll 1995), to /s/ by the following /i̧/. The (s → c) change is a "reversal" of a frication rule that mutates all linguals to [s] before /i̧/ causative. It is this "reversal" s → k that allows us to explain how /s/ undergoes palatalization, which would otherwise be impossible in the light of the rules of Ciyao phonology and morphology. According to Hyman (1997) this /c/ is a "replacive" consonant that has equivalents in other Bantu languages such as Kimatuumbi P.13 [k] (Odden 1996), Pangwa G.64 [h]

(Stimninmann 1983), Mwera [č] P.22 (Harries 1950). Observe the applicativization of stems causativized by C_1 in (28):

(27)a. Rts: -oog- /-oog-/ 'bathe (intr.)' -wuj- /-vus-i̧-/ 'return (intr.)'

     C_2: -oos-y- /-oog-i̧-/ 'bathe (tr.)' -wus-i̧- /-vus-i̧-/ 'return (tr.)'

     AC_2: -ooc-es-y- /-oog-el-es-i̧-/ 'bathe (tr.) for/at' -wuc-is-i̧- /-vuj-il-es-i̧-/ 'return to'

The major difference between the forms in (24) and (27) is the source of /s/. While in the former, the /s/ is part of the causative suffixes, in (27) it results from frication of the root-final linguals. However, apart from this difference whose result then constitutes a point of similarity between (24) and (27), the surface forms in (27) behave the same way as those in (24). The output forms in (27), just like those in (24), do not exhibit any relationship with the input, AC_2. In (28) we provide the real story of how the outputs in (27) are produced:

(28)a. Roots: -oog- 'bathe (intr.)' -wuj- 'return (intr.)'

    i. Morph.: C_1-suffix: -oog-i̧- -wuj-i̧-

       Phon.: {g, j} → s: -oos-i̧- 'bathe (tr.)' -wus-i̧- 'return (tr.)'

    ii. Morph.: A-interfix.: -oos-el-i̧- -wus-il-i̧-

       Phon.: s → c: -ooc-el-i̧- -wuc-il-i̧-

         l → s: -ooc-es-i̧- 'bathe (tr.) for/at' -wuc-is-i̧- 'return (tr.) for/to'

(28) represents another example of the interleaving between morphology and phonology whereby each morphological step triggers a phonological process on the consonant of the morphemes involved. Thus, the linguals /g, j/ undergo frication as a result of the C_1 affixation. Then, the /l/, another lingual, of applicative undergoes frication as a result of its affixation before C_1. The motivation of s → c was discussed under (26). The analysis presented in (26) and (28), which accounts for the applicativization of the productive

causative forms, also takes care of the applicativization of /-s-i̧-/-ending pseudo-causatives as in the following examples:

(29)a Root: -kom-   'strike with fist'

      Pseudo-causative: -kom-aas-i̧-   'greet'

      Morph.: A-interfix.:   -komaas-il-i̧-

      Phon.:   s → c: -komaas-il-i̧-

              l → s: -komaac-is-i̧-   'greet for/at'

   b. Root: *-kool-

      Pseudo-causative: -koos-i̧-   'imitate'

      Morph: A-interfix.:   -koos-el-i̧-

      Phon.:   s → c: -koos-el-i̧-

              l → s: -kooc-es-i̧-   'imitate for/at'

In (29a) we present a root whose meaning is not related to the pseudo-causative. In (29b) we have a root which, not existing in the language, ends in what is the most fricativizable consonant. /l/. If this root existed in the language, the directly causativized form would be similar to the corresponding pseudo-causative. As is observed in the two examples, when the pseudo-causative ends in /s-i̧/, the applicative extension is inserted between the /s-i̧/ and the preceding vowel and then the other phonological processes seen in (26) take place.

More complex than the derivations in (26) and (28) is the derivation of applicativization of causative stems, where the C_1 suffix is attached to non-mutable consonants, as shown in (30):

(30)a. Roots: -lam-   'survive'   b. -sitop-a   'be heavy'

      C_1:   -lam-y-   'save'   -sitop-y-   'overburden'

      AC_2:   -lam-ic-is-y- 'save for/at'   -sitop-ec-es-y-   'overburden for'

The complexity of these examples resides in the fact that unlike the preceding cases, where we were happy with one analysis, now we have to embark on at least two possible analyses. On the one hand, we seem to have one suffix of the causative extension (C_1) in the input and a different allomorph (C_2) in the output. On the other hand, we can also say that there is just one suffix of the causative extension (C_1) both in the input and in the output. These two analyses imply two different derivational histories as given in (31):

(31)a. Roots:

a. Roots:		-lam-	'survive'	-sitop-	'be heavy'
Morph.:	C_1-affix.	-lam-i̧-	'save'	-sitop-i̧-	'overburden'
	$C_1 \rightarrow C_2$:	-lam-is-i̧-		-sitop-es-i̧-	
	A-interfix.:	-lam-is-il-i̧-		-sitop-es-el-i̧-	
Phon.:	s $\rightarrow$ c:	-lam-is-il-i̧-		-sitop-es-el-i̧-	
	l $\rightarrow$ s:	-lam-ic-is-i̧-	'save for/at'	-sitop-ec-es-i̧-	'overburden for'
b. Roots:		-lam-	'survive'	-sitop-	'be heavy'
i. Morph.:	C_1 suffix.:	-lam-i̧-	'save'	-sitop-i̧-	'overburden'
	A-interfix.:	-lam-il-i̧-		-sitop-el-i̧-	
Phon.:	l $\rightarrow$ s:	-lam-is-i̧-		-sitop-es-i̧-	
ii. Morph.:	-c-epenthesis:	-lam-c-is-i̧-		-sitop-c-es-i̧-	
	-V-epenthesis:	-lam-ic-is-i̧-	'save for/at'	-sitop-ec-es-i̧-	'overburden for'

The two analyses proposed in (31) work in different ways, with some cost for each one. For (31a) the problem is that we have to go through morpheme "shift" from C_1 to C_2 as a necessary stage to produce the input needed to produce the output. This solution has the implication that causative stems with /-i̧-/ attached to non-mutable consonants cannot be applicativized unless the C_1 shifts to C_2. In order for us to maintain that the C_1 suffix is present both in the input and in the output, there is no better way than to postulate that a /c/

preceded by a front vowel is inserted between the root and the allomorph of the applicative extension as we do in (31b). Then, since the language does not allow sequences like */mc/ and */pc/, a front vowel, observing the vowel harmony rule, is epenthesized between the root final consonant and the just inserted /c/. Actually, under this solution, one could be tempted to suggest that the two epentheses in cycle ii. be collapsed so that there is just one '-Vc-epenthesis' (where: V= [+front]). It is a possibility, but we will not adopt it for now since such a move might jeopardize our analysis later as we look at other data. These two solutions are trying to motivate the appearance of the /c/ which in the cases involving C_2 and C_3, we said, resulted from s → c operation. Of the two, solution (31b) is simpler and easy to handle with the means that we have because it avoids the ad hoc stage (31a) when we shift from one suffix to another in the middle of derivation. Therefore, this solution is better than solution (31a). With solution (31b) we are able not only to account for the applicativization of the productive causative forms in (30) but also the applicativization of pseudo-causatives in the following examples:

(32)a Root: *-iigan-
       Pseudo-causative: -iigan-i̧-   'teach'

   i. Morph.: A-interfix.:   -iigan-il-i̧-
       Phon.:   l → s: -iigan-is-i̧-

  ii. Morph.: -c-epenthesis: -iigan-c-is-i̧-
                -V-epenthesis: -iigan-ic-is-i̧-   'teach for/with/at'

   b. Root: -pon-   'recover from illness'
       Pseudo-causative: -pon-i̧-   'throw'

   i. Morph.: A-interfix.:   -pon-el-i̧-
       Phon.:   l → s: -pon-es-i̧-

  ii. Morph.: -c-epenthesis: -pon-c-es-i̧-
                -V-epenthesis: -pon-ec-es-i̧-   'throw for/with/at'

The applicativized pseudo-causatives in (32), where the pseudo-suffix is attached to non-fricativizable consonant /n/, provide more evidence of the correctness of our analysis, proposed in (31b), on the applicativization of causativized forms with productive C_1 suffixed to non-fricativizable root-final consonants like /p, m/ as in (3) and /n/ as in (32). Consider the last set of examples of applicativization of productively causativized forms in (33):

(33)a. Roots: -iipip-   /iipip-/   'be short'

      C_1:   -iipiy-(y)-   /-iipiy-/   'shorten'

      AC_1:   -iipic-i-y-   /-iipip-il-i̧-/   'shorten for/at'

   b. Root: -toondov-   /-toondov-/   'slacken'

      C_1:   -toondoy-(y)- /-toondov-/   'make slack'

      'C_1A': -toondoc-e-y- /-toondov-el-i̧-/   'make slack (tr.) for'

In (33) we have causative stems whose root-final consonants undergo turn into {y} before the C_1 -y-. Consequently, their applicativization involve derivations that are different from those discussed above as shown in (34):

(34) Roots: -iipip-   'be short'   -toondov-   'slacken'
   i. Morph.: C_1-suffix.:   -iipip-i̧-   -toondov-i̧-
       Phon.:   {p, v} → y: -iipiy-i̧-   'shorten'   -toondoy-i̧-   'make slack'
   ii. Morph.: A-interfix.:   -iipiy-il-i̧-   -toondoy-el-i̧-
       Phon.:   l → Ø: -iipiy-i-i̧-   -toondoy-e-i̧-
                y → c: -iipic-i-i̧-   -toondoc-e-i̧-
                /i̧/-palataliz: -iipic-i-y- 'shorten for/at' -toondoc-e-y- 'make slack (tr.) for'

Although the data in (33) are more complex, in that the suffix of the applicative extension is added to a stem whose root has undergone a major phonological process (deletion of its final consonant), than those in (30), the derivations in (34) are based, with minor changes, upon the solution (31b) adopted for the data in (30) and applied to the pseudo-causatives in (32). The novel aspect in (34) is that instead of frication of /l/ that we could expect before C_1, /l/ undergoes deletion. In other words, /l/ deletion bleeds /l/ frication, the more general rule applied to /l/ before C_1, by being ordered first. Then, /c/ interfixation follows. Unlike in (31) where /c/-interfixation created undesired structure which had to be repaired through front vowel epenthesis, in (34) there is no need for this epenthesis since the /c/ is replaces the root-final consonant which is already preceded by a vowel. This is the reason why under (31b) we did not collapse the two "epentheses" in cycle ii. As in the other cases, there are also pseudo-causatives where the pseudo-suffix is attached to a vowel rather that consonant, as if the root-final consonant were deleted at some stage. Consider the following examples:

(35)a. Root: -kwaav-   'crawl'   *-anguv-; *-angup-

        Frozen causatives: -kwaay-   'touch'   -anguy-   'hurry'

  i. Morph.: A-interfix.: -kwaa-il-į-   -angu-il-į-

      Phon.:   l → Ø: -kwaa-i-į-   -angu-i-į-

  ii. Morph.: -c-interfix.: -kwaa-c-i-į- 'touch for/with/at' -angu-c-i-į- 'hurry for/at'

As seen, the derivations in (35) work as those in (34) where the occurrence of -y- after the last vowel of the root results from palatalization of the root-final consonant triggered by the C_1 allomorph as we demonstrated in section 5.2.1 (chapter 5). What all this discussion comes to is that the applicativization of causatives, be they productive or frozen, involve such a complex process of interaction between morphology and phonology that we end with structures whose analysis does not fit in with the classical analysis based in the view

of verb derivation as a mere concatenation of morphemes where the surface forms are mirror image of the input. In other words, there is no space for application of the "Mirror Principle" (Baker 1988) to the applicativization of causatives in Ciyao, where the allomorphs of the applicative extension are always interfixed before the /-i̱-/—be it C_1, part of C_2, or part of C_3—causative to enhance the application of frication or deletion rules according to the specific data. The analyses proposed here for the applicativization of causative stems is the best ever for they neatly account for both productive and frozen causatives for each set of data. What needs to be borne in mind, however, is that when the causative is the C_1, the surface order of the causative and applicative (A-C_1) in doubly extended stem is the opposite of the underlying order (C_1-A). When the causative allomorph is C_2 or C_3, the surface order or the applicative and causative suffixes is still different, and the suffixes are not linearly concatenated. That is, the suffixation of C_2 or C_3 allomorphs precede the suffixation of the applicative, in which case the latter gets inserted in the former between the /s/ and /i̱/, which creates conditions for a series of phonological processes just discussed. With these observations we now move on to the discussion of the morphosyntactic condition in the next section.

6.1.1.3. Morphosyntax

In chapter 5, it was noted that the verb extensions affect in different ways the inherent argument structure of the roots to which they are attached. On the basis of this, Guthrie (1970), classified the Bantu verb extensions as in (35):

(37)a. $^+$O (valence-increasing extensions):

  b. $^=$O (extensions that do not affect the valence of the base). We call these "valence-blind" extensions;

  c. $^·$O (valence-decreasing extensions).

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Where "O" = "object"

According to this classification, the 14 Ciyao verb extension suffixes we have analyzed are distributed as follows:

(37)a. $^+$O: A, C_1, C_2, C_3, Imp;

   b. $^=$O: Int, Rv_1;

   c. $^-$O: P_1, P_2, S, Rv_2, R_1, R_2, R_3.

The valence-increasing suffixes in (37a) can co-occur in the same stem provided that the morphotactic, semantic, and phonotactic constraints discussed in the preceding sections are respected. Consider the examples in (38):

(38) Root: -taam-   'sit'

  a. Imp: -taam-ik-   'seat'

    Imp+: A: -taam-ic-il-   'seat sth. for/in front of s.o.'

          C_3: -taam-ik-aas-y- 'cause to seat'

  b. A: -taam-il-   'sit for/on'

    A+: C_3: -taam-il-aas-y- 'cause to sit for/on'

Just like the valence-increasing suffixes, the 'valence-blind' (neutral) suffixes in (37b) can also co-occur in the same stem as illustrated in (39):

(39) Root: -wunik-   'cover'

    Rv_1:   -wunuk-ul- 'uncover'

    Rv_1+: Int: -wunuk-ud-is-y- 'uncover completely'

What is impossible, even when all of the other constraints are satisfied, is the co-occurrence, in two-way combinations, of the valence-decreasing suffixes in (37c), as illustrated in (40):

(40)   Combinations of suffixes of valence-decreasing extensions:

	Roots	X	+X
a.	-puut- 'hit'	P_1: -puut-w- 'be hit'	+P_2: *-puut-w-iig-w-
			+S: *-puut-w-iik-
			+R: *-puut-w-aan-
			+R_2: *-puut-w-aangan-
		P_2: -puut-ig-w- 'be hit'	+P_1: *-puut-ig-w-w-
			+S: *-puut-ig-w-ik-
			+R: *-puut-ig-w-aan-
			+R_2: *-puut-ig-w-aangan-
		S: -puut-ik- 'be hitable'	+P_1: *-puut-ik-w-
			+P_2: *-puut-ic-ig-w-
			+R: *-puut-ik-an-
			+R_2: *puut-ik-aangan-
		R: -puut-an- 'hit e.o.'	+P_1: *-puut-an-w-
			+P_2: *-puut-an-ig-w-
			+S: *-puut-an-ik-
			+R_2: *-puut-an-aangan-
b.	-wunik- 'cover'	Rv_2: -wunuk-uk- 'be uncovered'	+P_1: *-wunuk-uk-w-
			+P_2: *-wunuk-uc-ig-w-
			+R: *-wunuk-uk-an-
			+R_2: *-wunuk-uk-aangan-
c.	-won- 'see'	R_3: -won-egan- 'meet'	+P_1: *-won-egan-w-

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+P$_2$: *-won-egan-ig-w-

+S: *-won-egan-ik-

+R: *-won-egan-an-

+R$_2$: *-won-egan-aangan-

In (38) we saw that P$_1$, P$_2$, S, Rv$_2$, R$_1$, R$_2$, and R$_3$ suffixes cannot co-occur in any order in two-way combinations, except the sequence Rv$_2$S (cf. last example in (11b)). Combinations that are disallowed for morphotactic or phonotactic reasons are not included in (40) even if they also violate the morphosyntactic requirements under discussion. As seen in (37c), the reason for the ungrammaticality of the stems that derive from the two-way combinations in (40) is that they all involve suffixes that detransitivize the inherently transitive roots they are attached to. Therefore, allowing their co-occurrence amounts to detransitivization of an already detransitivized root. To avoid that, the affixation of one of the suffixes to a root blocks any subsequent affixation of any one of the others. Thus, following Guthrie's formalism presented in (36), the morphosyntactic constraint that disallows the co-occurrence of the suffixes of valence-decreasing extensions as illustrated in (40) is given in (41):

(41)   *⁻O+⁻O

In the next section we discuss the three-way combinations in order to see what the situation looks like.

6.1.2. Combinations of three suffixes after -CVC+- roots

In the preceding section we analyzed the two-way combinations of extension suffixes in Ciyao having demonstrated that a successful combination is the one that does not violate any one of the four constraints: morphotactics, semantics, phonotactics, and

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morphosyntax. In this section we will demonstrate that while some of those constraints must be strictly observed regardless of the number of suffixes strung together in the verb stem, others can be waived in three-way or more combinations provided that they are correctly ordered. For instance, it was demonstrated that in two-way combinations some suffixes such as Imp, P_1, and Rv_1, R_2, and R_3 can only occur in fixed slots in the verb stem. C_3 can occur in any slot, but it 'prefers' the last position immediately before the FV. In three-way combinations this situation prevails as illustrated in the following examples:

(42) Root: -taam-   'sit'

       Imp: -taam-ik-   'seat'

  a.   ImpA: -taam-ic-il-   'seat sth. for/in front of s.o.'

       ImpAC$_3$:   -taam-ic-il-aas-y-   'cause to seat sth. for/in front of s.o.'

  b.   ImpRv$_1$:   -taam-uk-ul-   'unseat'

       ImpRv$_1$S: -taam-uk-ud-ik-   'be unseatable'

  c.   ImpRv$_2$:   -taam-uk-uk-   'cause to unseat'

       ImpRv$_2$C$_3$: -taam-uk-uk-aas-y-   'cause to be unseatable'

cf.   AImpC$_3$:   *-taam-id-ik-aas-y-

       Rv$_1$ImpC$_3$: *-taam-ud-ik-aas-y-

       Rv$_1$SImp: *-taam-ud-ic-ik-

These examples show that just like in two-way combinations, where Imp can only be directly attached to the root, in three-way combinations the Imp cannot follow any other suffix. Note that the first starred form would be correct if the morph -ik- were stative. As it stands, with -ik- as Imp, the sequence is ungrammatical. Observe also that whenever an allomorph of the reversive extension co-occurs with Imp and another suffix, the Imp occupies the first position and the reversive occupies the second position. However, when

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Imp is not present, the allomorph of the reversive extension occupies the slot immediately after the root and the other suffixes come afterward as shown in (43):

(43) Root: -wunik-   'cover'

      Rv_1:   -wunuk-ul-   'uncover'

      Rv_1A: -wunuk-ud-il-   'uncover for/at'

      Rv_1AC_3:   -wunuk-ud-il-aas-y-   'cause to uncover for'

cf. ARv_1C_3:   *-wunic-il-ul-aas-y-

      AC_3Rv_1:   *-wunic-il-aas-y-ul-

So far we see that whenever C_3 is involved in a three-way combination, it appears in the third slot. As was mentioned earlier, this is its preferred slot unless other factors require that it appears somewhere else as in (44):

(44) Root: -mil-   'swallow'

      P_1:   -mil-w-   'be swallowed'

      P_1C_3:   -mil-w-aas-y-   'cause to be swallowed'

      $P_1C_3R_1$: -mil-w-aas-y-aan-   'cause e.o. to be swallowed'

cf. $P_1C_3R_1$: *-mil-aas-y-aan-w-

As we know, C_3 is the only suffix that can immediately follow P_1. This restriction is so important that whenever P_1 is involved in a three-way combination the distribution of the slots by the suffixes is highly predictable since the first must be occupied by P_1 -w-, the second by C_3 -aas-y-, and the third by R_1-an-, the only suffix that can be suffixed after the C_3. In (45), below, we provide examples of three-way combinations involving R_2 suffix -aangan-.

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(45)   Root: -pit-   'pass'

        R_2:   -pit-aangan-a   'pass (collective)'

        R_2A: -pit-aangan-il-   'pass (collective) for'

        R_2AC_3: -pit-aangan-il-aas-y-   'cause to pass (collective) for'

cf. C_3R_2A: *-pit-aas-y-aangan-il-

        AC_3R_2: *-pit-il-aas-y-aangan-

(45) shows a three-way combination involving the semantically determined R_2 suffix
-aangan-. Note that the semantically determined **-aangan-** is not morphotactically as free
as one might have deduced from a comparison with its morphologically determined
version, whose direct suffixation to the root is obvious, see (46):

(46)   Root: -tukan-   'insult'

        R_2:   -tuk-aangan-   'insult e.o.'

        R_2A: -tuk-aangan-il-   'insult e.o. for'

        R_2AC_3: -tuk-aangan-il-aas-y-   'cause to insult e.o. for'

cf. AR_2C_3: *-tukan-il-aangan-aas-y-

        AC_3R_2: *-tukan-il-aas-y-aangan-

The data in (46) show that it is impossible to generate any combination of the suffixes that
can involve moving the R_2 to another slot, since such a movement is equivalent to moving
some part of the root as was demonstrated in section 5.8.2 (chapter 5). Finally in (47) we
have an example of combination of three suffixes one of which is the R_3.

(47)   Root: -won-   'see'

        R_3:   -won-egan-   'meet e.o.'

        R_3A: -won-egan-il-   'meet e.o. for'

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R_3AC_3: -won-egan-il-aas-y-   'cause to meet e.o. for'

cf. AR_3C_3: *-won-el-egan-aas-y-

In (47) we see that the only alternative position for the allomorph **-egan-** of R_3 is between the two other suffixes since its affixation or the affixation of the applicative suffix after the C_3 **-aas-y-** violates the phonotactic constraint in (18). As it turns out, this alternative is wrong since it violates the morphotactic constraint that defines the first slot as the only place where an allomorph of R_3 is allowed to appear.

All of the examples in (42)–(47) show that all suffixes with fixed positions in two-way combinations maintain those positions in three-way combinations. The starred forms show that any attempt to move them from such positions yield ungrammatical results. This means that the distribution of the morphemes determined by the morphotactic constraints remain the same regardless of the number of suffixes found in the stem. This seems to be the situation of the semantically determined distributions. Consider the following examples:

(48)a. Root: -taam-   'sit'

   Imp: -taam-ik-   'seat'

   $ImpRv_1$:   -taam-uk-ul-   'unseat'

   $ImpRv_1C_2$:   *-taam-uk-ud-is-y-

   b. Root: -pit-   'pass'

   C_1:   -pis-y-   /-pit-i̧-/   'make pass'

   C_1R_1:   -pis-y-aan-   /-pit-i̧-aan/   'make e.o. pass'

   $C_1R_1C_2$:   *-pis-y-aan-is-y-   /*-pit-i̧-aan-is-i̧-/

   c. Root: -lol-   'look at'

   C_3:   -lol-aas-y-   'cause to look at'

   C_3R_1:   -lol-aas-y-aan-   'cause e.o. to look at'

$C_3R_1C_1$:   *-lol-aas-y-aan-y-

$C_3R_1C_2$:   *-lol-aas-y-aan-is-y-

In (48a) the starred form would be correct if **-is-y-** were intensive and not causative as it is. As causative it is ungrammatical because Imp and C_2 are both direct causativizers as was noted earlier. Therefore, their co-occurrence is blocked by the RMC. This fact explains also the ungrammaticality of the $C_1R_1C_2$ sequence in (48b). That is, the fact that the pairs ImpC_2, and C_1C_2 are separated by Rv_1 and R_1, respectively, does not make the ImpRv$_1C_2$ and $C_1R_1C_2$ sequences grammatical. This means that for semantic purposes, any suffix that separates the direct causativizers (Imp, C_1 and C_2) is "transparent". So, definitely, direct causativizers cannot co-occur in the same stem regardless of how far apart they are. This is also what we see in (48c) where the correct order must always be direct followed by indirect causativizers and not the reverse. Therefore, any sequence that inverts this order is ungrammatical no matter how far apart the causativizers (direct and indirect) are in the stem. So, just like for the morphotactics, the order established by the semantics is irreversible regardless of whether or not there is a morpheme between the suffixes involved. Unlike these two constraints which apply both locally and at long distance, the phonological and morphosyntactic constraints are exclusively local. Consider the following examples:

(49)a. Root: -cap-   'wash'

      Int: -cap-is-y-   'wash very well'

      IntA: *-cap-is-y-il-

but: IntR$_1$A: -cap-is-y-aan-il-   'wash very well e.o. for'

  b. Root: -eend-   'walk, move'

      C_2:   -eend-es-y-   'drive'

      C_2A: -eend-ec-es-y-   'drive for'

cf. C_2R_1A: -eend-es-y-aan-il- 'drive e.o. for'

C_2AR_1: -eend-ec-es-y-aan- 'drive for e.o.'

In (49) we see that whenever the front-vowel-initial suffix comes immediately after /-y-/ ending suffixes preceded by a consonant, the result is either ungrammatical as in (49a), or those complex morphophonemic process must be involved—where the applicative suffix is inserted within the C_2 and those complex morphophonemic rules discussed above apply— in order to yield grammatical output as in (49b). However, when an R_1 -an- suffix is inserted between the C-į- ending suffix and the front vowel-initial suffix the result is grammatical both in (49a) and (49b). This shows that the phonotactic constraint in Ciyao is exclusively local. This is apparently the situation with the morphosyntactic constraint although there are some considerations that must be made before we embark on this comparison. As noted in (37) there are seven valence-decreasing suffixes (i.e., P_1, P_2, S, Rv_2, R_1, R_2, and R_3) in Ciyao three of which (P_1, R_2, and R_3) must be directly attached to the root. Of the remaining four 'movable' suffixes (P_2, S, Rv_2, and R_1), two (P_2 and S) have the front vowel in initial position that makes them natural targets of the phonotactic constraint (18). The fact that C_3 -aas-y- is the only valence-increasing suffix that can separate the valence-decreasing suffixes reduces drastically the number of sequences where valence-decreasing suffixes can co-occur in the same stem. Consider the following examples:

(50)a. Root: -puut- 'hit'

P_1: -puut-w- 'be hit'

P_1R_1: *-puut-w-aan-

but: $P_1C_3R_1$: -puut-w-aas-y-aan- 'cause e.o. to be hit'

b. Root: -puut- 'hit'

P_2: -puut-ig-w- 'be hit'

P_2R_1:   *-puut-ig-w-aan-

but: $P_2C_3R_1$:   -puut-ig-w-aas-y-aan-   'cause e.o. to be hit'

   c.   Root: -puut-   'hit'

       SC_3R_1:   -puut-ik-   'be hitable'

       SC_3R_1:   *-puut-ik-aan-

but: SC_3R_1:   -puut-ik-aas-y-aan-   'cause e.o. to be hitable'

The examples in (50) show that the morphosyntactic constraint is, like the phonotactic constraint, a local constraint. That is, grammatical results are obtained when valence-decreasing suffixes (P_1, P_2, S, R_1) are separated by a valence-increasing suffix such as the C_3 -aas-y-. However, note that in all examples in (50) R_1 occupies the final position in the three-way combinations. Consider the following examples where the final position in three-way combinations is occupied by other than R_1:

(51)   Root: -puut-   'hit'

        R_1:   -puut-an-a   'hit e.o.'

   a. R_1P_2:   *-puut-an-ig-w-

cf. $R_1C_3P_2$:   *-puut-an-aas-y-ig-w-

   b. R_1S: *-puut-an-ik-

cf. R_1C_3S: *-puut-an-aas-y-ik-

(51) shows that because of the phonotactic constraint in (18), there is no way that we can get grammatical results from a three-way combination in which two valence-decreasing suffixes are involved unless R_1 comes last in the sequence. This is further illustrated by the following combinations where one of the suffixes in each example is R_2.

(52) Root: -tukan- 'insult'

R$_2$: -tuk-aangan- 'insult e.o.'

a. R$_2$R$_1$: *-tuk-aangan-an-

cf. R$_2$C$_3$R$_1$: *-tuk-aangan-aas-y-aan-

b. R$_2$P$_2$: *-tuk-aangan-ig-w-

cf. R$_2$C$_3$P$_2$: *-tuk-aangan-aas-y-ig-w-

c. R$_2$S: *-tuk-aangan-ik-

cf. R$_2$C$_3$S: *-tuk-aangan-aas-y-ik-

In (52) we have one of those cases where the suffix of the reciprocal extension replaces the last morph **-an-** of the root. Therefore, there is no way that **-aangan-** can be moved around in the same way we did with the other valence-decreasing suffixes in (51). Thus, the only attempt to have an **-an-** in the final position of a three-way combination that includes R$_2$ is shown in (52). The result is ungrammatical for semantic reasons. The remaining three-way combinations in (52b, c) are ungrammatical for violation of the phonotactic constraint in (18). Three-way combinations that involve R$_3$ show the same results as those in (52). Consider the following examples:

(53) Root: -won- 'see'

R$_3$: -won-egan- 'meet e.o.'

a. R$_3$R$_1$: *-won-egan-an-

cf. R$_3$C$_3$R$_1$: *-won-egan-aas-y-an-

b. R$_3$P$_2$: *-won-egan-ig-w-

cf. R$_3$C$_3$P$_2$: *-won-egan-aas-y-ig-w-

c. R$_3$S: *-won-egan-ik-

cf. R$_3$C$_3$S: *-won-egan-aas-y-ik-

The fact that the first slot in (53) is occupied by a suffix of reciprocal extension makes it impossible for three-way combinations that involve a second valence-decreasing suffix to produce grammatical results since any sequence of the two suffixes to be added would violate at least one of the constraints we have discussed.

The examples in (50)-(53) show that just like the phonotactic constraint, the morphosyntactic constraint is weaker—since it is exclusively local—than the morphotactic and semantic constraints which are both local and long distance constraints. The interfixation of the C_3 -aas-y- between the morphosyntactically incompatible suffixes is a wise solution provided that, without violating other constraints (semantic and phonotactic) the third position is occupied by R_1 -an-. Therefore, generally speaking we can say that in a sense the four constraints discussed in this chapter conspire against the combination of verb extension suffixes. As we have demonstrated, in order for a candidate to survive the conspiracy, all of the constraints must be satisfied. This is true when roots have the structure of the shape -CVC+- regardless of the number of suffixes the roots may accept, as we will be shown in the next section.

6.1.3. Combinations of four suffixes after -CVC+- roots

While the four constraints on suffix ordering are applicable to combinations of any number of suffixes, from this section on we will show that there are other issues that arise as the number of suffixes to be concatenated increases to four, five and six. With such an increase in the suffixes to be combined, the use of verbs that accept Imp (and S) in the first slot, and Rv_1 in the first or second slots becomes important in order to allow for the other relatively unrestricted allomorphs to occupy the more remote positions in the stem structure. Consider the following examples:

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(54)a. Root: -taam-

      $ImpRv_1C_3R_1$:   -taam-uk-ul-aas-y-aan-   'cause to unseat e.o.'

      $ImpR_tAC_3$:   -taam-ik-an-il-aas-y-   'cause to seat on top of e.o.'

  b. Root: -kuung-   'string'

      SAC_3R_t: -kuunj-ic-il-aas-y-aan-   'cause e.o. be able to string sth. for/with/at'

      SRv_1R_1A: -kuunj-uk-ul-an-il-   'be possible to unstring sth. for e.o.'

  c. Root: -paand-   'plant'

      SRv_1AC_3:   -paand-uk-ud-il-aas-y-   'make be uprootable for/with/from'

  d. Root: -taandik-   'spread (e.g., bedsheets)'

      $Rv_1C_1AC_3$:   -taanduk-ud-ic-is-y-aas-y-   'cause to make s.o. fold up sth.'

      $RvAR_1C_3$:   -taanduk-ud-il-an-aas-y-   'cause e.o. fold up things for/with/at'

      $RvP_2C_3R_1$:   -taanduk-ud-igw-aas-y-an-   'make e.o. be folded up'

As seen in (54), by guaranteeing that the first slot or the first two slots immediately after the roots are filled in, it becomes relatively easy to fill in the other slots. However, it is interesting to note that there seem to be some limitations on which suffixes come after the first or the first two. Thus, while immediately after the root we find one of the three suffixes, namely Imp, S. and Rv_1, in the second position we see a more diversified set of suffixes, namely, Rv_1 (54a, b, c), A (54b, d) R_t (54a), C_1 (54b, d), P_2 (54d); in the third and fourth slots only three suffixes, A, C_3, and R_1, alternate always according to the convenience imposed by the four constraints. Other four-way combinations where the initial slot immediately after the root is occupied by other suffixes are also found. This is exemplified by the following:

(55)a. Root: -pit-   'pass'

      $C_1AR_1C_3$:   -pic-is-y-aan-aas-y-   'cause to make e.o. pass through/at'

      $C_1R_1AC_3$:   -pis-y-aan-il-aas-y-   'cause to make pass sth. for e.o'

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$C_1C_3R_1A$:	-pis-y-aas-y-aan-il-	'make e.o. pass sth. through/at'
b. Root:	-diind-	'stamp on'
$C_2R_1AC_3$:	-diind-is-y-aan-il-aas-y-	'cause to make stamp on sth. for e.o.'
$C_2C_3R_1A$:	-diind-is-y-aas-y-aan-il-	'make e.o. stamp on sth. for/with/at'
c. Root:	-puut-	'hit'
IR_1AC_3:	-puut-is-y-aan-il-aas-y-	'make hit hard e.o. for/with/at'
d. Root:	-lol-	'look at'
IC_3R_1A:	-lol-es-y-aas-y-aan-il-	'make e.o. look well at sth. for/with/at'

Note in (55) that even when the suffix immediately after the root is not Imp, S, or Rv_1, the same suffixes we saw in the preceding examples, A, C_3, and R_1, alternate in the second, third and fourth slots. What is also interesting to note is that of the three suffixes (A, C_3, and R_1), only R_1 can be directly affixed to the root in a four-way combination as seen in (56):

(56)	Root:	-jigal-	'take'
	C_1-A-$C_1C_3R_1$:	-jigad-ic-is-y-aas-y-an-	'cause e.o. to make take for'

The four constraints (applied locally and at a distance) make it almost impossible to get four-way combinations in which A, C_3, or R_1, occupy the slot immediately after the root. Even in (56) where we have R_1 attached to the root in a four-way combination, this sequence is only possible through the application of the complex morphophonemic processes that involve the interfixation of the A in the neighboring causative suffix.

Consider in (57) the only grammatical sequence of four suffixes where P_1 is involved:.

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(57)a. Root: -puut-   'insult'

$P_1C_3R_1A$:   -puut-w-aas-y-aan-il-   'cause e.o. to hit for/at'

cf. b. $P_1R_1C_3A$: *-puut-w-aan-aas-y-il-

$P_1C_3AR_1$: *-puut-w-aas-y-il-aan-

$P_1AC_3R_1$: *-puut-w-il-aas-y-aan-

(57), shows that when P_1 happens to participate in a four-way combination, it must be directly attached to the root, in which case the combination and order of the four suffixes becomes predictable as they depend on whether or not the affixation of the second and subsequent suffixes does not violate any one of the four constraints. Thus, the sequence in (56a) is the only four-way combination possible where the P_1 can participate. As shown in (57b), any one of the other combinations violate at least one of the four constraints. As we look at the suffixes combined in (57a) we can also predict that no other suffix can be added to this combination without including a (long distance) violation of the semantic constraint, yielding ungrammatical results. So, we can conclude that P_1 can not participate in five-way combination.

The other 'marked' suffixes, namely, R_2 and R_3, that must be directly attached to the root, do not participate in four-way combination. At least two constraints conspire against the combination of four suffixes one of which is R_2 or R_3, namely: (a) the fact that these are valence-decreasing suffixes makes it obligatory that the C_3 be suffixed next. If C_3 is suffixed next, then we are left with R_1 as the only suffix that can follow C_3. However, (b) R_1 cannot participate in this derivation because of the long distance application of the semantic constraint since the three suffixes R_1, R_2, and R_3 are reciprocal. Therefore, they cannot co-occur regardless of how far apart they are in the stem. This means that while only twelve of the fourteen suffixes can participate in four-way combination, we can predict that only eleven or less will participate in five-way combinations and even less in six-way combinations. We have also observed that at least two of the three suffixes (A,

C_3, and R_1) must obligatorily be present in all four-way combinations. We will call these three (A, C_3, and R_1) 'core suffixes' to distinguish them from the other suffixes (C_1, C_1, Imp, P_1, P_2, S, Rv_1/Rv_2, R_2, R_3, and I) whose participation in four-way combinations is limited to the cases where they are under focus, when they occupy the slot immediately after the root. With these observations we can now move on to the section 6.1.4. where we discuss the distribution of the suffixes in five-way combinations.

6.1.4. Combinations of five suffixes after -CVC-+ roots

In the preceding subsection we suggested that the notion of "core" suffixes be used to refer to the A, C_3, and R_1. In this section we will demonstrate the usefulness of this notion. and expand the number of the "core" suffixes by two to include Imp/S[32] and Rv_1/Rv_2[33]. The remaining 'non-core' suffixes are divided into two groups: (a) "secondary" (C_1, P_2, S, and I) and (b) "peripheral" (C_2, P_1, R_2, and R_3). In five-way combinations, or more, as we will see later, there may be one—never more than one—of the secondary allomorphs. While the frequency and importance of the role of these suffixes in five-way combinations make us rank them second after the core suffixes, the four "peripheral" suffixes get their designation from their lack of participation in more complex combinations such as five- and six-way combinations as we will see.   Consider the following examples:

(58)a. Root: -taam-   'sit'

      ImpRv$_1$AR$_1$C$_3$:   -taam-uk-ud-il-an-aas-y-   'make unseat s.o. for e.o.'

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[32] Recall the difference between the "normal", full-fledged stative, and the semantic stative that precedes allomorphs of reversive suffixes. We suggested that the latter be regarded as an intermorph sometimes required by the allomorphs of the reversive extension prior to their affixation to certain roots. As is known by now, the distribution of this semantic stative, or intermorph, is restricted to the initial position where it is in complementary distribution with the Imp, while the -ik-/-ek- stative has no restrictions apart from our familiar constraints that all allomorphs have in varying degrees. This is the reason why the -ik-/-ek- (intermorph and Imp) are counted as one of the core suffixes and the -ik-/-ek- stative is counted as one of the four secondary allomorphs.

[33] Due to its intransitive character, the distribution of the Rv_2 in five-way combinations is limited. It can only precede C_2 while in the other contexts we can only find Rv_1.

$ImpRv_1AC_3R_1$:	-taam-uk-ud-il-aas-y-aan-	'make s.o. unseat sth. for e.o.'
$ImpRv_1R_1AC_3$:	-taam-uk-ul-an-il-aas-y-	'make unseat e.o. for/from, at'
$ImpRv_1R_1C_1A$:	-taam-uk-ul-an-ic-is-y-	'make unseat e.o. for/from, at'
$ImpRv_1SAC_3$:	-taam-uk-ud-ic-il-aas-y-	'make s.o. be unseatable for/at'
$ImpRv_1R_1C_1A$:	-taam-uk-ul-an-ic-is-y-	'make unseat e.o. for/from, at'
$ImpRv_1C_3R_1A$:	-taam-uk-ul-aas-y-aan-il-	'make unseat s.o. for e.o.'
$ImpRv_2C_3R_1A$:	-taam-uk-uk-aas-y-aan-il-	'make be unseatable for e.o.'

b. Root: -paand-   'plant

$SRv_1AC_3R_1$:	-paand-uk-ud-il-aas-y-aan-	'make sth. become uprootable for e.o.[34]
$SRv_1AR_1C_3$:	-paand-uk-ud-il-an-aas-y-	'make sth. become uprootable for e.o.[22]
$SRv_1R_1AC_3$:	-paand-uk-ul-an-il-aas-y-	'make be uprootable for e.o.'
SRv_1IntR_1A:	-paand-uk-ud-is-y-aan-il-	'be very uprootable for e.o'

c. Root: -wunik-   'cover'

$Rv_1SAR_1C_3$:	-wunuk-ud-ic-il-an-aas-y-	'make sth. be uncoverable up for e.o.[22]
$Rv_1SC_3R_1A$:	-wunuk-ud-ik-aas-y-aan-il-	'make sth. be uncoverable up for e.o.[22]
$Rv_1ASC_3R_1$:	-wunuk-ud-id-ik-aas-y-aan-	'make sth. be uncoverable for e.o.'
$Rv_1IntR_1AC_3$:	-wunuk-ud-is-y-aan-il-aas-y-	'make uncover totally sth. for e.o.'
$Rv_1SAC_3R_1$:	-wunuk-ud-ic-il-aas-y-aan-	'make sth. become uncoverable for e.o.'
$Rv_1R_1C_1AC_3$:	-wunuk-ul-an-ic-is-y-aas-y-	'cause to make uncover e.o. for/at'
$Rv_1IntC_3R_1A$:	-wunuk-ud-is-y-aas-y-an-il-	'make uncover sth. for e.o.'
$Rv_1P_2C_3R_1A$:	-wunuk-ud-igw-aas-y-an-il-	'make sth. be uncovered for e.o.'

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[34] One general observation about the multiply extended stems is that the English translation of the Ciyao forms can be misleading. For instance, unlike the Ciyao (and Bantu in general) causative suffixes which are flexible in terms of the slot where they may appear in multiply extended stem, within the limits imposed by the four constraints on suffix ordering, the corresponding English causative verbs ('cause' or 'make') must occupy the first slot in the translation regardless of the slot the causative suffix (it translates) occupies in the Ciyao stem. This fact can be misleading since often times we find ourselves trapped in situations where we have one single sequences of English words which translates different sequences of morphemes in Ciyao stems as seen in some examples of (58b, c). In such cases we provided these examples not for the meaning they express in English, but for the meaning they express in Ciyao which is not transparent in the English translation. In thee meantime, we wish to show that these sequences are also grammatical.

In (58) we see that the best roots that host five extension suffixes better are the semantically "positional" and/or morphologically "reversible" ones. If a root is either semantically "positional" or morphologically "reversible" we have the guarantee that at least the slot immediately after the root is automatically filled in by an allomorph of the corresponding suffix Imp or Rv. If the root is both semantically "positional" and morphologically "reversible", then the first two slots are immediately filled in by Imp and Rv suffixes. As seen in (58) the presence of at least four of the five core suffixes (Imp/S, Rv_1, C_3, R_1, A) is crucial in order to yield an acceptable combination of five extension suffixes in Ciyao. Of the total of twenty combinations given in (58), ten (58a, b) are various combinations of these five allomorphs and thirteen are combinations of four of the core suffixes with one of the secondary suffixes. In the thirteen examples where only four of the five core suffixes are found the secondary allomorphs (C_1, P_2, S, and I) are distributed as follows: S occurs in five examples[35] (58a, c), C_1 in three (58a, c), Int in three (58b, c), and P_2 (58c) in one. As seen, the peripheral suffixes (C_2, P_1, R_2, and R_3) are completely out of the picture in five-way combinations.

Before we move on to discussion of the combinations of six suffixes let us summarize in (59) the order in which the suffixes appear in five-way combinations:

(59)

Slots: 1   2   3   4   5
-Rt+{Imp/S(Rv)}+{Rv(AC_3R_1; C_1P_2SInt)}+{(AC_3R_1; C_1P_2SInt)}+(AC_3R_1)+(AC_3R_1)

(59) shows how suffixes can be ordered in five-way combinations concatenated after -CVC+- roots. The first slot can only be occupied either by Imp/S or by Rv. The second slot can be occupied by either Rv, when the Imp/S occupies the initial slot. When Rv occupies the first slot, the second slot may be occupied by any of the other core suffixes

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[35] Note that here we are counting the occurrence of S in second and subsequent slots only, since S in the first slot of five and six-way combinations is the intermorph S that is a required by the Rv_1/R_2.

(A, C_3, R_1), or a secondary (C_1, P_2, S, Int) suffixes. The third positions can only be occupied by any one of the core or secondary suffixes. The last two slots can only be occupied by two of the three core suffixes (A, C_3, R_1). This shows that while the participation of the secondary suffixes in the five-way combinations is limited to second and third slots, there is no participation of the peripheral suffixes (C_2, P_1, R_2, and R_3). This means that in six-way combinations, there will be four fewer suffixes (C_2, P_1, R_2, and R_3) to work with.

6.1.5. Combinations of six suffixes after -CVC-+ roots

In the preceding subsection we observed that semantically "positional" and/or morphologically "reversible" roots were the best inputs of five-way combinations, which is true for the derivation of six-way combinations, as we will see in the present subsection. In our attempt to form all possible six-way combinations the core and secondary suffixes resulted in six grammatical combinations in which Rv_1 is involved, as shown in (60):

(60)   Transitive

   a. $ImpRv_1ASC_3R_1$:   -taam-uk-ud-id-ik-aas-y-aan-   'cause to be unseatable for e.o.'

   b. $ImpRv_1P_2C_3R_1A$: -taam-uk-ud-igw-aas-y-aan-il-   _'make be unseated for e.o.'

   c. $ImpRv_1SAC_3R_1$:   -taam-uk-ud-ic-il-aas-y-aan-   'make be unseatable for e.o.'

   d. $ImpRv_1R_1C_1AC_3$: -taam-uk-ul-an-ic-is-y-aas-y-   'cause to unseat e.o. for/with/at'

   e. $ImpRv_1IntC_3R_1A$: -taam-uk-ud-is-y-aas-y-aan-il-   'make unseat completely for e.o.'

   f. $SRv_1IntR_1AC_3$:   -kuunj-uk-ud-is-y-aan-il-aas-y- 'make be very disassembleable for e.o.'

(60) reports six acceptable six-way combinations of the core suffixes with the secondary suffixes. As in five-way combinations, the peripheral allomorphs do not participate in the six-way combinations. In each one of the six combinations we can see only one of the secondary suffixes whose distribution is predominantly limited to the positions 3 and 4 as

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follows. The slot 3 is occupied by P_2 (60b), S (60c), Int (60e, f). In slot 4 we find S (60a) and C_1 (60d). In contrast with this highly restricted distribution of the secondary suffixes in six-way combinations, all five core suffixes are always present in different positions in all six combinations. Thus, Imp/S and Rv suffixes occupy the slots 1 and 2, respectively. Slot 3 is occupied by A (60a) and R_1 (60d). Slot 4 is occupied by A (60c), C_3 (60a, b, e), and R_1 (60f). In slot 5 we find A (60d, f), C_3 (60a, c) and R_1 (60b, e). Finally in slot 6 we have A (60b, e), C_3 (60d, f), and R_1 (60a, c). As we observed earlier, the longer the distance from the root the better for the C_3, illustrated in (60) by the fact that this suffix is only found in slots 4–6, while A and R_1 can occur in all slots from 3 through 6. Even though C_3 has this relative distributional constraint, it still performs its role of bringing together the suffixes that are morphosyntactically incompatible in contexts such as SC_3R_1 (60a), $P_2C_3R_1$ (60b), and SAC_3R_1 (60c). The presence of C_3 in (60c) is crucial for it is important evidence for our suggestion that only C_3 plays this role by bringing together parts that are not allowed to co-occur by the constraint in (40). That is, all other suffixes, including the applicatives are transparent when they occur between two allomorphs of valence-decreasing extensions. In other words, the morphosyntactically incompatible allomorphs S and R_1 see each other through the applicative in (60c). Therefore, the presence of the C_3 between the S and R_1 allows these suffixes to occur in the same stem. While the C_3 plays this role between the morphosyntactically incompatible suffixes, the R_1 serves as a link between the allomorphs that are not allowed to co-occur by the constraint (18) as is seen in C_3R_1A (60b), and $IntR_1A$ (60e, f).

A substitution of the Rv_1 in the combinations in (60) by Rv_2 yields the following three grammatical combinations of six suffixes:

(61)   Intransitive

   a. ImpRv$_2$ASC$_3$R$_1$:   -taam-uk-uc-id-ik-aas-y-aan-   'be made be unseatable for e.o.'

   b. ImpRv$_2$SAC$_3$R$_1$:   -taam-uk-uc-ic-il-aas-y-aan-   'be madee be unseatable for e.o.'

   c. SRv$_2$IntR$_1$AC$_3$: -kuunj-uk-uc-is-y-aan-il-aas-y- 'be make be very disassembleable for e.o.'

With the combinations in (61) we have the nine grammatical combinations of six suffixes concatenated after -CVC+- roots. The combinations in (61a, b, c) are labeled intransitive because they correspond to the three transitive combinations in (60a, c, e), respectively, the only ones in which the replacement of the Rv$_1$ for Rv$_2$ yields outputs which do not violate the morphosyntactic constraint. This replacement is the only operation we need in order to get the extra three grammatical combinations, without changing the order of the other suffixes.

       With these observations we can informally represent the six-way combinations of suffixes illustrated in (60) and (61) as follows::

(62)   -Root- + X$_1$X$_2$X$_3$X$_4$X$_5$X$_6$

       Where: X$_1$ = Imp/S; X$_2$ = Rv; X$_{3,4}$ = C$_1$, P$_2$, S, Int; X$_{3-6}$ = A, C$_3$, R$_1$.

(62) represents the sequences of the different suffixes in six-way combinations. As seen, the slots 1 and 2 are invariably occupied by Imp/S and Rv, respectively. One of the slots 3, and 4 is occupied by one of the four secondary suffixes (C$_1$, P$_2$, S, Int). Four slots between 3 and 6 are occupied by the remaining three core suffixes (A, C$_1$, R$_1$). In the next subsection we summarize the discussion about the combination of more than three suffixes after -CVC+- roots.

6.1.6.　Summary

In this section we have introduced, and discussed the notions of 'core' (Imp/S, Rv_1/Rv_2, A, C_3, R_1), 'secondary' (C_1, Int, P_2, S), and 'peripheral' (C_2, P_1, R_2, R_3) suffixes as useful working concepts in the analysis of multiply extended stems. As we have shown the obligatory number of core suffixes that dominate the multiply extended stems increases as the number of suffixes in the stem increases. We noted that only one peripheral suffix, P_1, participates in four-way combinations and no peripheral suffixes are involved in five- and six-way combinations. While the minimum number of core suffixes in a multiply extended stem is 2 and increases as the number of suffixes to be combined increases, the number of secondary suffixes is constant, i.e. 1, in four-, five- and six-way combinations. The presence of all five core suffixes is an obligatory condition for a successful derivation of multiply extended stems that include sequences of.six suffixes, one of which has to be secondary. This fact, combined with the four constraints on suffix ordering (morphotactics, semantics, phonotactics, and morphosyntax) that conspire against the derivation of stems by multiple concatenation of suffixes, prevents the combination and ordering of more than six suffixes after -CVC+- roots in Ciyao. In the next section we discuss the combination of suffixes after -CV- roots.

6.2.　Combinations of two suffixes after -CV- roots

In the preceding sections of this chapter we have shown that the combination and order of verb extension suffixes attached to -CVC+- roots in Ciyao is determined by four morphotactic, semantic, phonotactic, and morphosyntactic constraints. These constraints conspire against the multiple suffixation of the suffixes to form multiply derived stems. In the present section we investigate how such a "conspiracy" affects the combination of suffixes attached to -CV- roots, starting by analyzing the combinations of two suffixes next.

6.2.1. Combinations of two suffixes after -CV- roots

In the preceding chapter we saw that the half of the 14 suffixes cannot be attached to -CV- roots, due to morphotactic and semantic constraints. That is, these constraints apply to the order of the suffixes and are involved in the determination of which suffixes should be attached to what kind of roots. What is interesting, however, is that two of the suffixes that cannot be directly attached to -CV- roots are allowed to appear in second or subsequent slots in two-way or multiple combinations as illustrated in Table 2.

Table 2: Order of suffixes in two-way combinations after -CV- roots.

1st \ 2nd	A	C_1	C_3	Int	P_1	P_2	S	R_1	R_3
A : -il-/-el-	■	x	x					x	
C_1 : -y-		■	x						
C_3 : -aas-y-			■						
Int: -is-y-/-es-y-			x	■				x	
P_1 : -w-					■				
P_2 : -ig-w-/-ig-w-			x			■			
S : -ik-/-ek-	x						■		
R_1 : -an-								■	
R_2 : -agan-/-egan-	x		x						■

Of the 81 two-way combinations of the nine (including C_3 and R_1, two of the suffixes that cannot be directly attached to -CV- roots) suffixes, only 17 (19.4 percent) yield grammatical outputs. Table 2 shows a considerable decrease of the number of suffixes that can combine after -CV- roots. Of the 14 suffixes that can combine after -CVC+- roots, only nine, namely, three core (A, C_3, and R_1), four secondary (C_1, Int, P_2, and S), and two peripheral (P_1 and R_3) can combine after -CV- roots. In other words, for semantic reasons we are missing the core suffixes Imp/S and Rv_1/Rv_2, and the peripheral suffixes C_2 and R_2. Unlike Table 1, Table 2 shows two suffixes (C_3 and R_1) which, in spite of

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the fact that they are not directly attached to roots, are allowed to appear in the second slot. Apart from these two suffixes, we also see A in the second position, actually, the only suffix that can also appears in the slot immediately after the intermorph. This restriction shows that some of the combinations that are allowed after -CVC+- roots may not produce acceptable results after -CV- roots as illustrated in the following examples:

(63)   Combinations of two extensions after -CV- roots:

	Root	X		X+
i.	-di- 'eat'	A: -di-id-il- 'eat for/with/at'	a.	C_3: -di-id-il-aas-y- 'cause to eat for'
			b.	R_1: -di-id-il-an- 'eat for e.o.'
		C_1: -di-is-y- 'feed'	c.	A: -di-ic-is-y- 'feed for'
			d.	C_3: -di-is-y-aas-y- 'make feed'
			e.	R_1: -di-is-y-aan- 'feed e.o.'
		Int: -di-id-is-y- 'eat a lot'	f.	C_3: -di-id-is-y- 'cause to eat a lot'
			g.	R_1: -di-id-is-y-aan- 'eat a lot e.o.'
		P_2: -di-id-ig-w- 'be eaten'	h.	C_3: -di-id-ig-w-aas-y- 'cause to be eaten'
		S: -di-id-ik- 'be edible'	i.	A: -di-id-ic-il- 'be edible for/with/at'
			j.	C_3:-di-id-ik-aas-y- 'cause to be edible'
		R_3: -dy-aag-an- 'eat e.o.'	k.	A: -dy-aag-an-il- 'eat e.o. for/with/at'
			l.	C_3: -dy-aag-an-aas-y- 'cause to eat e.o.'
ii.	-ce- 'dawn'	P_1: -ce-el-w- 'be dawned'	m.	C_3: -ce-el-w-aas-y- 'cause to be dawned'

(63) shows that of the nine suffixes that participate in two-combinations after -CV- roots, seven can occupy the first slot and only three, the core suffixes A, C_3, and R_1, are allowed to occur in the second slot. As we see, combinations of two suffixes after -CV- roots produce grammatical result only if a core suffix occupies the second slot. This fact is of interest to us since it demonstrates the correctness of our classification of the fourteen

suffixes into three groups, namely, core, secondary and peripheral. Note in (63a, b) that A is the only core suffix which occurs in the first slot being followed by the other core suffixes. As seen in (63c-e), C_1 is the only suffix that can be followed each one of the three core suffixes. In (63f, g) the phonotactic constraint does not allow the affixation of the A after the Int. In (63h) morphosyntactic constraint limits to C_3, the indirect transitivizer, the core suffix that can be attached to P_2. In (63i, j) morphosyntactic constraint excludes R_1 from the list of core suffixes that must follow S. In (63k, l) semantic constraint disallows the affixation of R_1 after R_3. The same morphosyntactic constraint that prevents A and R_1 from following P_2 in (63h) disallows the affixation of A and R_1 after P_1 in (63m). All these examples in (63) demonstrate that in order for a combination of suffixes to yield grammatical results, all of the constraints must be satisfied, which is true regardless of the shape of the root and the number of the suffixes (provided that they are more than two) to be concatenated. Consider next the combinations of three suffixes after -CV- roots.

6.2.2.   Combinations of three suffixes after -CV- roots

Apart from the peculiar application of the morphotactic and semantic constraint, which lay the basis of the distribution of the suffixes after -CV-, the other phonotactic and morphosyntactic constraints on suffix ordering after -CV- roots apply in the same way as shown for -CVC+- roots. In fact, after the discussion of the order of the suffixes in two-way combinations after -CV- roots there does not seem to be any new facts to be discussed. Consider the examples in (64):

(64)   Combination of three extensions after -CV- roots:

Root	X		X+
-di-	A: -di-id-il- 'eat for/with'	a.	C_3R_1: -di-id-il-aas-y-aan- 'cause e.o. to eat with'
'eat'		b.	R_1C_3: -di-id-il-an-aas-y- 'cause to eat for e.o.'
	C_1: -di-is-y- 'feed'	c.	AR_1: -di-ic-is-y-aan- 'feed for e.o.'
		d.	R_1A: -di-is-y-aan-il- 'feed e.o. for/with/at'
		e.	C_3R_1: -di-is-y-aas-y-aan- 'cause to feed e.o.'
		f.	R_1C_3: -di-is-y-aan-aas-y- 'cause e.o. to feed'
	Int: -di-id-is-y- 'eat a lot'	g.	C_3R_1: -di-id-is-y-aas-y-aan- 'make eat a lot e.o.'
		h.	R_1C_3: -di-id-is-y-aan-aas-y- 'make e.o. eat a lot'
	P_2: -di-id-ig-w- 'be eaten'	i.	C_3R_1: -di-id-ig-w-aas-y-aan- 'make e.o. be eaten'
	S: -di-id-ik- 'be edible'	j.	AC_3: -di-id-ic-il-aas-y- 'cause to be edible for'
		k.	C_3R_1: -di-id-ik-aas-y-aan- 'make e.o. be edible'
	R_3: -dy-aag-an- 'eat e.o.'	l.	AC_3: -dy-aag-an-il-aas-y- 'make eat e.o. for/at'
		m.	C_3A: -dy-aag-an-aac-is-y- 'make eat e.o. for'
-ce-	P_1: -ce-el-w- 'be dawned'	n.	C_3R_1: -ce-el-w-aas-y-aan- 'make e.o. be dawned'
'dawn'			

The examples in (64) show that whenever there is a combination of three suffixes after a
-CV- root, the second and third slots must be occupied by core suffixes, provided that no
one of the four constraints (morphotactics, semantics, phonotactics, and morphosyntax) is
violated. If a core suffix occupies the first slot, it must be an A as in (64a, b). Otherwise
the first slot must be occupied by either secondary as in (64b-k), or peripheral suffixes as
in (64l-n). Let us consider the combinations of four suffixes after -CV- roots next.

6.2.3. Combinations of four suffixes after -CV- roots

The fact that after -CV- roots only the core suffixes can occupy the second and third slots, makes it clear the highest number of suffixes to be combined after -CV- roots will be four as shown in (65):

(65) Combination of four extensions after -CV- roots:

Roots X   X+

-di- C_1: -di-is-y- 'feed'
           a. AR_1C_3: -di-ic-is-y-aan-aas-y- 'make feed for e.o.'

'eat'
           b. R_1C_3A: -di-is-y-aas-y-aan-il- 'make feed e.o. for'

           c. AC_3R_1: -di-ic-is-y-aas-y-aan- 'make feed for e.o.'

           d. R_1AC_3: -di-is-y-aan-il-aas-y- 'make feed e.o. for'

Int: -di-id-is-y- 'eat a lot'
    e. C_3R_1A: -di-id-is-y-aas-y-aan-il- 'make eat a lot e.o. for'

           f. R_1AC_3: -di-id-is-y-aan-il-aas-y- 'make e.o. eat a lot for'

P_2: -di-id-ig-w- 'be eaten'
    g. C_3R_1A: -di-id-ig-w-aas-y-aan-il- 'make e.o. be eaten at'

S: -di-id-ik- 'be edible'
    h. AC_3R_1: -di-id-ic-il-aas-y-aan- 'make be edible for e.o.'

           i. C_3R_1A: -di-id-ik-aas-y-aan-il- 'make e.o. be edible for'

-ce- P_1: -ce-el-w- 'be dawned'
    j. C_3R_1: -ce-el-w-aas-y-aan-il- 'make e.o. be dawned at'

'dawn'

In (65) we have the only ten possible combinations of four extension suffixes after -CV- roots. As seen, in all of the combinations we have used all of the three core suffixes that are allowed to occur in second and subsequent positions after -CV- roots. Unlike in two- or three-way combinations, where A could also occupy the first slot, there is no four-way combination with the A in the first initial slot. This is because we need three slots after the first slot has been filled in order to have a four-way combination, and there are only three core suffixes to satisfy his requirement since the morphotactics does not allow peripheral and secondary suffixes to appear after the first slot. Apart from this constraint. RMC

would not allow for the A to repeat itself. Thus, the order of the suffixes is as we see in (65): one peripheral or secondary occupying the first slot, and the three core suffixes occupying the subsequent three slots. The order of the core suffixes among themselves, on the one hand, and between them and the peripheral and secondary suffixes, on the other hand, is established according to a strict observation of the four constraints on suffix ordering. Thus, unlike the -CVC+- root which allow combinations of up to six suffixes, -CV- roots do not allow more than four combinations of suffixes. In the next subsection we summarize our discussion on the combination and order of suffixes after -CV- roots.

6.3. Summary

In this chapter we have shown that in order for a combination and order of any number of extension suffixes to yield grammatical results in Ciyao, all of the following four constraints must all be respected:

(66)a. Morphotactics;

   b. Semantics;

   c. Phonotactics;

   d. Morphosyntax.

If a combination of extension suffixes violates at least one of these constraints the resulting stem is ungrammatical.

In the analysis of the multiple combinations of the suffixes we found it necessary to classify the suffixes into three categories according to their role and frequency (and slot where they occur) in the stem, namely:

(67)a. Core suffixes: A (-il-/-el-), C_3 (-aas-y-), R_1:(-an-), Imp/S (-ik-/-ek-),

Rv_1 (-ul-/-ol-), Rv_2 (-uk-/-ok-);

  b. Secondary suffixes: C_1 (-y-), P_2 (-ig-w-/-eg-w-), S (-ik-/-ek-), I (-is-y-/-es-y-);

  c. Peripheral suffixes. C_2 (-is-y-/-es-y-), P_1 (-w-), R_2 (-aangan-),

R_3 (-agan-/-egan-).

Two other important observations were made: (i) The number of acceptable combinations decreases as the number of suffixes to be combined increases. That is, the larger the number of suffixes to be combined, the less the possibility of producing grammatical result. (ii) The -CVC+- roots support longer strings of suffixes (up to six suffixes) than the -CV- roots (not more than 4). With this summary we conclude the study of combination and order of extension suffixes in Ciyao.

CHAPTER 7: THE INFLECTIONAL STEM

7.0. Introduction

We have seen in the preceding chapters that Ciyao has a robust agglutinative morphology where a variety of affixes are attached both to the right and to the left of the root. Except in the cases of applicativization of causatives, where the applicative morpheme is infixed within the causative morpheme between /s/ and /i̧/, the numerous data analyzed above show that Ciyao constitutes one of the best examples of concatenative morphology where the different morphemes are strung one after another in a predictable way. In this chapter we analyze the inflectional stem considering the following endings: -a. -e, -ile, -ga, which are illustrated in the following examples:

(1)   Root: -pat-   'get'

   a.   Infinitive: ku-pat-**a**   'to get'

   b.   Subjunctive: tu-pat-e   '(that) we get'

   c.   P1:   tu-pat-**ile**   'we got'

   d.   P2:   tw-aa-pat-a-**ga**   'we used to get'

While each one of these endings will be discussed, our focus in this chapter will be on -**ile** and -**ga** endings. Thus, the chapter will be divided into three sections. Section 1 discusses perfective formation marked by -**ile** (< PB *-i̧de) in P1 with particular emphasis on imbrication which reflects the interleaving between morphology and phonology; section 2 investigates the imperfective, incompletive, formation marked by -**ga**; section 3 presents the summary of the discussion of the preceding sections .

7.1. Perfective formation

In this section we will give an exhaustive account of the different realizations of the perfective formation of roots and D-stems of different shapes, considering both regular and irregular verbs. Let us consider the regular perfective formation first.

7.1.1. Regular perfective formation

We call perfective formation the affixation of perfective -il-e or its allomorphs, to the verb. By "regular perfective formation" we mean the suffixation of the perfective marker outside the root or the D-stem, regardless of the other morphological and/or phonological implications of such suffixation. Consider the following examples:

(2)   -(C)V(V)C- roots

Roots			Perfective		
a.	-moog-	'fetched'	cf.	-mooj-ile	'shaved'
	-pak-	'smear'	cf.	-pac-ile	'smeared'
	-nin'-	'constrict'	cf.	-niny-ile	'constricted'
b.	-kweel-	'climb'	cf.	-kwees-ile	'climbed'
c.	-leemb-	'survived'	cf.	-leemb-ile	'wrote'
	-piind-	'bend'	cf.	-piind-ile	'bent'
	-juj-	'rejoice at an escape'	cf.	-juj-ile	'rejoiced at an escape'
	-dim-	'cultivate'	cf.	-dim-ile	'cultivated'
	-ton-	'pinch'	cf.	-ton-ile	'pinched'
	-nyuuny-	'sprinkle'	cf.	-nuuny-ile	'sprinkled'
	-cap-	'washed'	cf.	-cap-ile	'washed'
	-lwees-	'curse'	cf.	-lwees-ile	'cursed'
	-pot-	'twisted'	cf.	-pot-ile	'twisted'

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-wuv-   'become cold during cooking' cf. -wuv-ile   'became cold during cooking'

The data in (2) are organized by the final consonant of -(C)V(V)C- roots. As seen, root-final /c/ and /y/ are missing, since they will be treated separately later in this section. Note that the affixation of the perfective marker -ile takes place outside the root outside the -(C)V(V)C- roots, and there is no vowel harmony. Apart from our familiar palatalization, which applies to root-final velars in (2a), and frication which applies to root-final /l/ in (2b)—but, as we know, it usually applies to some other linguals also—there are no other morphophonological processes resulting from the affixation of the perfective -ile to -(C)V(V)C- roots (for full account of palatalization and frication, see section 3.4.2. and 3.4.3. in chapter 4, respectively).

Unlike this general pattern where only the final consonant of the root may be affected by the high front vowel of the perfective marker, the situation changes when the perfective marker is added to derived verb bases. For instance, in the following examples perfective forms of causativized (frozen and productive) -(C)V(V)C-y- D-stems:

(3)   -(C)V(V)C-y- D-stems

    a.   Productive C_1 -y- (/-i̧-/) after non-mutable consonants

D-stems			Perfective		
-lam-y-	/-lam-i̧-/	'save'	cf. -lam-iis-y-e	/-lam-i̧-il-i̧-e/
-dim-y-	/-dim-i̧-/	'cultivate for payment'	cf. -dim-iis-y-e	/-dim-i̧-il-i̧-e/
-jiim-y-	/-jiim-i̧-/	'cause to refuse'	cf. -jiim-iis-y-e	/-jiim-i̧-il-i̧-e/
-nyeem-y-	/-nyeem-i̧-/	'handle with care'	cf. -nyeem-iis-y-e	/-nyeem-i̧-il-i̧-e/
-pim-y-	/-pim-i̧-/	'seduce'	cf. -pim-iis-y-e	/-pim-i̧-il-i̧-e/
-saam-y-	/-saam-i̧-/	'make move'	cf. -saam-iis-y-e	/-saam-i̧-il-i̧-e/
-syoom-y-	/-syoom-i̧-/	'speak w/ an accent'	cf. -soom-iis-y-e	/-soom-i̧-il-i̧-e/
-wum-y-	/-wum-i̧-/	'remove'	cf. -wum-iis-y-e	/-vum-i̧-il-i̧-e/

-cip-y-	/-cip–/	'make be unfashioned'	cf. -cip-iis-y-e	/-cip-i̧-il-i̧-e/
-tup-y-	/-tup-i̧-/	'increase'	cf. -tup-iis-y-e	/-tup-i̧-il-i̧-e/
-kaan-y-	/-kaan-i̧-/	'prohibit'	cf. -kaan-iis-y-e	/-kaan-i̧-il-i̧-e/
-pon-y-	/-pon-i̧-/	'throw'	cf. -pon-iis-y-e	/-pon-i̧-il-i̧-e/
-vin-y-	/-vin-i̧-/	'play with toy'	cf. -vin-iis-y-e	/-vin-i̧-il-i̧-e/

b. Productive C_1 -i̧- after mutable consonants

Roots				Perfective	
-las-y-	/-lal -i̧-/	'wear out'	cf.	-las-iis-y-e	/-lal-i̧-il-i̧-e/
-pis-y-	/-pit -i̧-/	'make pass'	cf.	-pis-iis-y-e	/-pit-i̧-il-i̧-e/
-tees-y-	/-teend -i̧-/	'make do'	cf.	-tees-iis-y-e	/-teend-i̧-il-i̧-e/
-oos-y-	/-oog -i̧-/	'give a bath'	cf.	-joos-iis-y-e	/-joog-i̧-il-i̧-e/
-wus-y-	/-wuj -i̧-/	'make return'	cf.	-wus-iis-y-e	/-vuj-i̧-il-i̧-e/

c. Frozen causatives

Roots				Perfective	
-paas-y-	/-paas-i̧-/	'taste'	cf.	-paas-iis-y-e	/-paas-i̧-il-i̧-e/
-mees-y-	/-mees-i̧-/	'flash'	cf.	-mees-iis-y-e	/-mees-i̧-il-i̧-e/
-ciis-y-	/-ciis-i̧-/	'urge'	cf.	-ciis-iis-y-e	/-ciis-i̧-il-i̧-e/
-kos-y-	/-kos-i̧-/	'reheat (food)'	cf.	-kos-iis-y-e	/-koos-i̧-il-i̧-e/
-wuus-y-	/-wuus-i̧-/	'ask'	cf.	-wuus-iis-y-e	/-vuus-i̧-il-i̧-e/

In (3) we illustrate different consonants that can precede the C_1 morpheme - **y** -. In (3a) we have the whole list of roots whose non-mutable final consonants can be followed by the C_1 - **y** -. Except in - **pon-y** - 'throw', in all other examples in this group the C_1 - **y** - is an active suffix. In (3b), in contrast, we have C_1 - **y** - after an /s/ that results from the application of the frication rule. Finally in (3c) we have frozen roots causatives. As seen in the right hand column, in all examples in (3) there is one common point to be noted. When - **ile** is added, to the stem, the formative - **il** - is affixed after the C_1 - **y** - which is then copied after

/l/ of **-il-**. As a result, the /l/ undergoes frication, turning it into /s/ and the sequence of the two vowels (the causativizer -**y**- and the initial vowel of the formative -**il**-) form a long vowel. This operation is represented in (4):

(4)   Root: -lam- 'save'   -lal- 'were out'   -paas-i̧-   'taste'

  i.   Morph.: C₁ -i̧- affix.:   -lam -i̧-   -lal -i̧-   NA

       Phon.:   /l/ frication: NA   -las-i̧-   NA

  ii. Morph.: -i̧l- affix.:   -lam -i̧-il-   -las-i̧-il-   -paas-i̧-il-

       Phon.:   C₁ -i̧- copying: -lam-i̧-il-i̧-   -las-i̧-il-i̧-   -paas-i̧-il-

                /l/ frication: -lam-i̧-is-i̧-e   -las-i̧-is-i̧-e   -paas-i̧-is-i̧-e

                                      'saved'   'wore out'   'tasted'

The derivation in (4) applies as it is to all examples in (3b) and partially to the examples in (3a) and (3c). Thus, the cycle 1 of the derivation (4a) does not apply to the examples in (3c) since for the frozen causatives this stage has already been lexicalized. So, the derivation for these examples starts at cycle 2 (4b) when **-ile** is suffixed. For the examples in (3a), only the morphological part of the first cycle applies, since the consonants that precede -**y**- cannot undergo frication. Thus, (4) shows that affixation of perfective marker **-ile** to -(C)V(V)C(-)i̧- D-stems, regardless of whether the final -**y**- is frozen or productive suffix, triggers copying of -**y**- between /l/ and the final vowel of -**ile** in order to enhance the application of the frication rule. The fact that the causative -**y**- can separate the final vowel -**e** of -**ile** from the -**il**- suggests that these two -**il**- and -**e** are two different morphs. More evidence will be produced to show support this view. In the meantime, from now on, we will refer to the perfective marker as a bimorphic **-il-e** and not as a monomorphic -**ile**.

In chapter 5 we saw that the C₁ -**y**- not only fricativizes preceding oral lingual consonants, but also deletes some preceding oral labials. Consider the examples in (5):

(5)   -C(V)Vy-

    a. Productive causatives

      D-stems   Perfective

-nyoy-(y)-	/-nyov-i̧-/	'wet'	cf.	-nyoy-iiy-e	/-nyoy-i̧-il-e/
-koy-(y)-	/-kov-i̧-/	'scoop'	cf.	-koy-iiy-e	/-koy-i̧-il-e/
-uuy-(y)-	/-uuv-i̧-/	'hide (tr.)'	cf.	-juuy-iiy-e	/-uuy-i̧-il-e/
-wuy-(y)-	/-wuv-i̧-/	'make halfcook'	cf.	-soy-iiy-e	/-soy-i̧-il-e/

    b. Frozen causatives

      D-stems   Perfective

-cay-(y)-	/*-cav-i̧-/	'whip'	cf.	-cay-iiy-e	/-cay-i̧-il-e/
-gey-(y)-	/*-gev-i̧-/	'belch'	cf.	-gey-iiy-e	/-gey-i̧-il-e/
-soy-(y)-	/*-sov-i̧-/	'make a mistake'	cf.	-soy-iiy-e	/-soy-i̧-il-e/
-kuuy-(y)-	/-kuuv-i̧-/	'follow'	cf.	-kuuy-iiy-e	/-kuuy-i̧-il-e/

In (5) we see that when /l/ of the perfective marker -il-e is added to a causativized (frozen or productive) stem where the root-final "C" is a palatal glide, the causativizer -y- replaces the /l/ of the perfective marker -il-e. As seen, both productive and frozen causatives realize the perfective form in the same manner. An identical process of replacement of the /l/ of the perfective -il-e by the preceding palatal segment is also found in the only two pseudo-causative stems with the surface /c/ in final position given in (6):

(6)   -(C)VVc-

      Roots   Perfective

a.	-weec-	/-wo-ek-i̧-/	'clothe'	cf.	-weec-iic-e	'clothed'
b.	-ooc-	/-ook-i̧-/	'roast'	cf.	-ooc-iic-e	'roasted'

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As seen in (6a), the alveopalatal affricate /c/ in the final position of -weec- 'clothe' results from the palatalization of the historical voiceless velar stop before high front vowel which, in this environment becomes absorbed by the alveopalatal affricate. This means that what we actually have in the final /c/ of -weec- 'clothe' and -ooc- 'roast' is a /ki̥-/. To explain the consonant alternation in the perfective marker both in (5) and (6) we suggest that perfective marker be viewed as just a -VC-V structure where the C-slot is generally occupied by /l/ or /t/ (as we will see later) and the two V-slots are occupied by front vowels in the different contexts. When the perfective marker -VC-V is attached to a stem-final causative -y- [y] (5), or palatal affricates which "contains" the causative -y- (6), rule copies the stem-final segment ([y] or [c]) onto the C-slot of the -VC-V as represented. In (7) we provide the representation of such a rule:

(7)   -Root   -i l- e
                           | ≠ |
        -C$_1$V(V)(C$_2$)i̥- VC-V
                      L----
             [-ant, +cor]
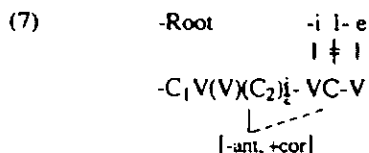
(7) represents a process which takes place regularly whenever the stem is or contains underlyingly a frozen causative -i̥- attached to a vowel or absorbed by the alveopalatal /c/.

Let us next consider the affixation of perfective marker to -CV- roots. In (8) we provide the list of the 15 -CV- roots that has been seen several times throughout this work:

(8)   S-tems   Perfective

   a. -dy-a   /-di-/   'eat'   -di-il-e   'ate'

       -j-a   /-ji-/   'go'   -ji-il-e   'went'

       -py-a   /-pi-/   'be burnt'   -pi-il-e   'burnt (intr.)'

   b. -gw-a   /-gu-/   'fall'   -gw-iil-e   'fell'

       -w-a   /-bu-/   'die'   -w-iil-e   'died'

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c.	-p-a	/-pa-/	'give'	-pe-el-e	'gave'
	-t-a	/-ta-/	'name (a child)'	-te-el-e	'named'
	-v-a	/-va-/	'be'	-ve-el-e	'was'
d.	-c-a	/-ke-/	'dawn'	-ce-el-e	'dawned'
	-ny-a	/-nye-/	'defecate'	-nye-el-e	'defecated'
e.	-n'w-a	/-n'o-/	'drink'	-n'w-eel-e	'drunk'
	-pw-a	/-po-/	'empty (intr.)'	-pw-eel-e	'emptied'
	-sw-a	/-so-/	'grow dark'	-sw-eel-e	'grew dark'
	-tw-a	/-to-/	'pound'	-tw-eel-e	'pounded'

As seen in (8), the affixation of perfective marker to -CV- roots takes place in the same manner as the affixation of this morpheme to -(C)V(V)C- roots as far as the location of affixation of -il-e is concerned. However, there is one important observation to be made. The affixation of the perfective marker to -(C)V(V)C- roots does not observe vowel harmony. That is, -il-e is the only realization of the perfective marker after -(C)V(V)C- roots. After -CV- roots, however, the perfective marker is realized by two allomorphs: -il-e, when the V of the -CV- is primary (/i, u, a/), as in (8a-c), and -el-e, when the V of the -CV- root is secondary (/e, o/) as in (8d, e). In other words, the height of the vowel of the -CV- roots determines the height of the initial vowel of the suffix. We represent this vowel height harmony as in (9).

(9)   CV-Vl-e[36]
           |
         [-high]

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[36] In the perfective, height harmony applies only when the vowels involved in the process are contiguous. If there is a consonant separating them, there is no height harmony as we have seen.

(9) shows that the initial vowel of the perfective marker is realized as mid if it the vowel of the -CV- root is mid. Otherwise it is realized as high.

Note that we deliberately excluded the root -ti 'say' from the list of -CV- root that we provided in (8). The reason for the exclusion is the way perfective is realized after -ti. Unlike the rest of the -CV- roots where the perfective marker is -il-e, the root -ti takes a different marker as shown in the following example:

(10) S-stem   Perfective

      -ti   /-ti/   'say'   -ti-it-e 'said'

In (10) we see that the root -ti takes -it-e as the perfective marker, which shows that -il-e is not the only realization of the perfective marker in Ciyao as is further illustrated in the following examples:

(11) Roots   Perfective
   a. -diind-   'wait (for)'   cf.   -diind-iit-e   'waited'
      -taand-   'start'   cf.   -taand-iit-e   'started'
      -laand-   'resemble'   cf.   -laand-iit-e   'resembled'
   b. -lel-   'nurse'   cf.   -lel-eet-e   'nursed'
      -lol-   'loot at'   cf.   -lol-eet-e   'looked at'

In (11) we provide five of the eight verbs which use -VVt-e (where "V" is front vowel which harmonizes in height with the root vowel) as their perfective marker. Apart from -ti 'say' that we saw in (10) two other verbs are kol- 'have' and -waal- 'wear' whose perfective forms are realized by imbrication as we will see later. As observed, these are -(C)V(V)C- roots. The affixation of -VVt-e allomorph to these roots is similar to the affixation of -il-e perfective marker to the other roots with two exceptions. First, note that

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unlike -il-e whose initial vowel is never lengthened except in some passive and causative forms, the initial vowel of -VVt-e is always long. Secondly, -VVt-e observes height harmony regardless of the size of the root to which it is attached, while the -il-e does not (except after -CV- roots) unless the application of morphological rules results in sequences of vowels, as we will see in longer roots which undergo imbrication ,to which we now turn.

7.1.2.   Imbrication

In this section we will discuss how the perfective formation is realized in verbs whose stems are longer than those seen in the preceding section. Consider the following examples with vowels of different qualities in the second syllable of the root:

(12)a. -CVCaC- roots

Roots		Perfective	
-wulag-	'kill'	cf. -wuleej-e	/-wula-il-g-e/
-eegam-	'lean on'	cf. -jeegeem-e	/-jeega-il-m-e/
-gaangalam-	'be big'	cf. -gaangaleem-e	/-gaangala-il-m-e/

b. -CVCeC- roots

Roots		Perfective	
-pelek-	'hand over'	cf. -peleec-e	/-pele-il-k-e/
-lovek-	'soak'	cf. -loveec-e	/-love-il-k-e/
-pyeepyetek-	'press'	cf. -pyeepyeteec-e	/-pyeepyete-il-k-e/

c. -CVCiC- roots

Roots		Perfective	
-sidik-	'faint'	cf. -sidiic-e	/-sidi-il-k-e/
-samil-	'load (a gun)'	cf. -samiil-e	/-sami-il-l-e/
-ciinjidim-	'be reliable'	cf. -ciinjidiim-e	/-ciinjidi-il-m-e/

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d. -CVCoC- roots

Roots		Perfective	
-lokot-	'pick up'	cf. -lokweet-e	/-loko-il-t-e/
-pomol-	'pound'	cf. -pomweel-e	/-pomo-il-l-e/
-solokot-	'scrape out (seeds)'	cf. -solokweet-e	/-soloko-il-t-e/

e. -CVCuC- roots

Roots		Perfective	
-puumul-	'breathe'	cf. -puumwiil-e	/-puumu-il-l-e/
-camul-	'comb'	cf. -camwiil-e	/-camu-il-l-e/
-gugulum-	'rumble'	cf. -gugulwiim-e	/-guungulu-il-m-e/

In (12) we have bisyllabic and trisyllabic roots sorted according to the quality of the last vowel. As seen on the right hand column, all these roots allow imbrication and apply the rule vowel harmony formalized in (9). If we compare the examples in (12) with those in (2), (3), (5), (8), (10), and (11), above, we will correctly conclude that the crucial condition for imbrication to apply is that the verb root must have at least two syllables. When this condition is satisfied, imbrication takes place. The proposed derivational history is shown in (13):

(13)   Imbrication in Ciyao:

Roots:	-CVCaC-	-CVCeC-	-CVCiC-	-CVCoC-	-CVCuC-
a. M[37]: -il- infix.:	-CVCa-il-C-	-CVCe-il-C-	-CVCi-il-C-	-CVCo-il-C-	-CVCu-il-C-
P[37]: /l/ delet.:	-CVCa-iC-	-CVCe-iC-	-CVCi-iC-	-CVCo-iC-	-CVCu-iC-
V+V rules:	-CVCeel-C-	-CVCeel-C-	-CVCiil-C-	-CVCweel-C-	-CVCwiil-C-
b. M[37]: -e suffix:	-CVCeeC-e	-CVCeeC-e	-CVCiiC-e	-CVCweeC-e	-CVCwiiC-e

(P[37]: {k, g} palatalization)

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[37] "M" stands for morphology and "P" stands for phonology.

(13) shows the derivational history of imbricated forms whose outputs are given on the right hand column. As seen, imbrication in Ciyao is another example of morphology and phonology interleaving. It starts the cycle 1 (13a) with the infixation of -il- formative of the perfective marker -il-e between the root-final consonant and the preceding vowel. Then phonological rules apply, namely, /l/ deletion (to avoid consonant clusters) and hiatus resolution (to avoid sequences of vowels). These phonological rules are independent from one another. Therefore, the order in which they are applied is not relevant since it does not affect the final output. The phonological component of the cycle 2 (13b) is given in parenthesis because of its limited application to root final velar consonants as seen in the first example of (12a, c) and all examples of (12b). Thus, given the evidence in (12), this analysis is correct.

Now consider the data in (14):

(14)   Roots   Perfective

a. -kwalakwaat-   'scrape'   cf.   -kwalakwaat-il-e   'scraped'

    -weeweet-   'rave as in nightmare'   cf.   -weeweet-il-e   'raved as in nightmare'

    -taajiil-   'lay eggs'   cf.   -taajiis-il-e/-taajiil-il-e/   'laid eggs'

    -soosool-   'hatch'   cf.   -soosoos-il-e /-soosool-il-e/   'hatched'

    -wuuwuul-   'groan'   cf.   -wuuwuus-il-e /-wuuwuul-il-e/   'groaned'

b. -cinyiind-   'tap (knock)'   cf.   -cinyiind-il-e   'tapped (knock)'

    -wuluwuumb-   'roll on the ground'   cf.   -wuluwuumb-il-e   'rolled on the ground'

    -melemeend-   'drizzle'   cf.   -melemeend-il-e   'drizzled'

    -kalaang-   'fry'   cf.   -kalaas-il-e /-kalang-il-e/   'fried'

The data in (14) are counterexamples to the fact that the root will undergo imbrication if is bisyllabic or longer. As seen, roots on the left hand column are bisyllabic and longer, but

do not allow imbrication. If we look closely at the examples in (14) we will realize that in (14a) the final syllable of the root is bimoraic. In (14b), we have homorganic nasals in the coda of the root-final syllable. Just like the examples in (14a) there is no imbrication. But it is not the nasal cluster *per se* that blocks imbrication, it is the bimoraicity of the last syllable of the root. We have in the database the following bisyllabic root with a nasal cluster in the final position:

(15) Roots   Perfective (with imbrication)

    -lambwand-   'boil'   cf.   -laambweend-e   /-laambwa-il-nd-e:

The verb in (15) is the only one found in the database which has a homorganic nasal in final position and does not lengthen the preceding vowels. As shown in (15), the only nasal clusters that block imbrication are those whose preconsonantal nasal is moraic and thus lengthens the preceding vowel. That is, it does not matter what the source of the bimoraic syllable is, imbrication cannot take place if a long vowel is found in the imbrication site, i.e., between the final consonant of the base and the preceding vowel. In other words, the syllable count of the root is a necessary condition, but not sufficient for imbrication to apply. There are other factors which must be taken into account. In this regard, Hyman (1995), for example, identified the following four factors considered as crucial to the study of imbrication in Cibemba:

(16)   Conditioning factors for imbrication to apply

    a. the size of the base;

    b. the nature of the final consonant of the base;

    c. the nature of the vowel preceding the final consonant of the base;

    d. the identity of the last morpheme of the base.

Factor (16a) is relevant to Ciyao imbrication. As seen in (12), above, the size of the bases, i.e., number of syllables, is one of the factors that condition imbrication. Factors (16b, c) play no role on imbrication in Ciyao. Imbrication takes place regardless of the type of final consonant of the base or the quality of the vowel preceding the last consonant of the base. The vocalic element that affects (blocks) imbrication after the factor (16a) is met is the length of the vowel that precedes the final consonant of the base as we demonstrated in (14) and (15). Thus, we can say that there two conditions that must be cumulatively observed for imbrication to take place in Ciyao:

(17)a. The base must be least two syllables long;

b. The last syllable of the base must be monomoraic.

So far we have not been able to find examples of violation of the second requirement (i.e., bimoraicity of the final syllable of the root) in our database, but the first requirement (i.e., bisyllabicity minimal condition of the root) is violated by five verbs, two of which are given in (18)[38], and the remaining three will be provided in section 4 since they involve other issues which must be treated separately:

(18)   Roots   Perfective

    -pit-   'pass'   cf.   -piit-e   /-pi-il-t-e/

    -yik-   'arrive'   cf.   -yiic-e   /-yi-il-k-e/

In (18) we have two -CVC- roots. According to the rule of perfective formation in Ciyao, the affixation of the perfective marker should take place after the final consonant of each

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[38] The other four, that will be discussed later, are:

    -iim-   'stop'   cf.   -iim-i   'stopped'
    -taam-   'sit'   cf.   -teem-i   'sat'
    -won-   'see'   cf.   -ween-i   'saw'

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root as happens in all -C(V)VC- roots do. As seen, this is not what we have in (18). Here the perfective marker is infixed between the last consonant of the root and the preceding vowel. In other words, these two roots exceptionally violate the bisyllabicity minimal condition which is mentioned in (17). Apart from these two roots which are subminimal and exceptionally accept imbrication of the basic -il-e allomorph of the perfective marker, the generalization stated in (17) applies to all verbs of the language. So, we will maintain the generalization in (17) while regarding these two roots as mere exceptions. Next let us discuss the affixation of the perfective marker to derived stems.

7.1.3. Perfective formation of D-Stems

In this section we will discuss the perfective formation of derived stems. Ciyao derivational suffixes can be divided into three groups according to their structure. (i) one suffix with bimoraic vowel before the final consonant plus glide (-aas-y-); (ii) suffixes with short vowel before the final consonant or consonant plus glide (A -il-/-el-; C_2. -is-y-/-es-y-; Imp. -ik-/-ek-; Int -is-y-/-es-y-; P_2 -ig-w-/-eg-w-; S -ik-/-ek-; Rv_1 -ul-/-ol-; Rv_2 -uk-/-ok-; R_1 -an-; R_2 -agan-/-egan-; R_3 -aangan-); and (iii) suffixes with single vowels which glides before other vowels (C_1 -i̧- and P_1 -u̧-). The affixation of these different types of suffixes to -(C)V(V)C- roots yield different D-stems that constitute inputs to perfective formation. Let us see perfective forms of D-stems with the suffix in (19) first.

(19)a. -(C)V(V)C-aas-y-

D-stem			Perfective	
-tav-aas-y-	'make tie'	cf.	-tav-aas-iis-y-e	/-tav-aas-i̧-il-i̧-e/
-lum-aas-y-	'make bite'	cf.	-lum-aas-iis-y-e	/-lum-aas-i̧-il-i̧-e/

b. -CVCVC-aas-y-

    D-stems   Perfective

    -lovek-aas-y- 'make soak'   cf.   -lovek-aas-iis-y-e   /-lovek-aas-i̧-il-i̧-e/

    -lokot-aas-y- 'make pick up'   cf.   -lokot-aas-iis-y-e   /-lokot-aas-i̧-il-i̧-e/

As seen in (19), the affixation of **-aas-y-** to any root adds a bimoraic syllable to the root-final position which blocks imbrication regardless of whether the input root is -(C)V(V)C-, as in (1a) or -CVCVC-, as in (19b). The proposed derivation that yields the output in ((19) is provided in (20):

(20)   Root: -(C)V(V)C(VC)-

       Morph.: C_3 -aas-i̧- affix.:   -(C)V(V)C(VC)-aas-i̧-

                 -i̧l- affix.:   -(C)V(V)C(VC)-aas-i̧-il-

       Phon.:   -i̧- of C_1 -aas-i̧- copying: -(C)V(V)C(VC)-aas-i̧-il-i̧-

                 /l/ frication: -(C)V(V)C(VC)-aas-i̧-is-i̧-e

Apart from the difference between C_1 and C_3 causative markers, the derivation in (20) is similar to the derivation in (4), above. Let us look at some perfective forms of D-stems with the suffixes of the second group.

(21)a. D-stems with -(C)V(V)C- roots

    Exts.   D-stems   Perfective

    A: -tav-il-   'tie for'   -tav-iil-e   /-tavi-il-l-e/

    C_2:   -diind-is-y-   'make stamp on'   -diind-iis-y-e   /-diindi-il-s-y-e/

    Imp: -gon-ek-   'lay down'   -gon-ooc-e   /-gone-il-k-e/

    Int: -tav-is-y-   'tie firmly'   -tav-iis-y-e   /-tavi-il-s-y-e/

    P_2:   -tav-ig-w-   'be tied'   -tav-iig-w-e   /-tavi-ig-w-y-e/

S:	-tav-ik-w-	'be possible to tie'	-tav-iic-e	/-tavi-il-k-e/
Rv₁:	-som-ol-	'extract'	-som-weel-e	/-somo-il-l-e/
Rv₂:	-som-ok-	'be possible to extract'	-som-weec-e	/-somo-il-k-e/
R₁:	-tav-an-	'tie each other'	-tav-een-e	/-tava-il-n-e/
R₂:	-wuj-aangan-	'return in large groups'	-wuj-aangeen-e	/-wuj-aanga-il-n-e/
R₃:	-won-egan-	'meet one another'	-won-egeen-e	/-wonega-il-n-e/

b. D-stems with long roots

Exts.	D-stems		Perfective	
A:	-lovec-el-	'soak for'	-lovec-eel-e	/-lovec-e-il-l-e/
C₂:	-senyeend-es-y-	'make sift flour'	-senyeend-ees-y-e	/-senyeend-e-il-s-y-e/
Imp:	-kotam-ik-	'bend (tr.)'	-kotam-iic-e	/-senyeend-e-il-s-y-e/
Int:	-kamud-is-y-	'grab firmly'	-kamud-iis-y-e	/-kamud-i-il-s-y-e/
P₂:	-kamud-ig-w-	'be grabbed'	-kamud-iig-w-e	/-kamud-i-il-gw-e/
S:	-kamud-ik-	'be possible to grab'	-kamud-iic-e	/-kamud-i-il-k-e/
Rv₁:	-lowok-ol-	'unsoak'	-lowok-weel-e	/-lowok-o-il-l-e/
Rv₂:	-lowok-ok-	'be possible to unsoak'	-lowok-weec-e	/-lowok-o-il-k-e/
R₁:	-kamul-an-	'grab one another'	-kamul-een-e	/-kamul-a-il-n-e/
R₂:	-leepel-aangan-	'draw'	-leepel-aang-een-e	/-leepel-aanga-il-n-e/

c. D-stems with -CV- roots

Exts.	D-stems		Perfective	
A:	-di-id-il-	'eat for'	-di-id-iil-e	/-di-id-i-il-l-e/
Int:	-di-id-is-y-	'eat a lot'	-di-id-iis-y-e	/-di-id-i-il-s-y-e/
P₂:	-di-id-ig-w-	'be eaten'	-di-id-iig-w-e	/-di-id-i-il-g-w-e/
S:	-di-id-ik-	'be possible to eat'	-di-id-iic-e	/-di-id-i-il-k-e/
R₃:	-dy-aag-an-	'eat one another'	-dy-aageen-e	/-dy-aaga-il-n-e/
R₃:	-p-el-egan-	'distribute among...'	-p-el-egeen-e	/-p-el-ega-il-n-e/

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The examples in (21) show that the affixation of verb extensions with monomoraic vowel in initial position to a root-final "C", turns this "C" into an onset of a monomoraic syllable, and creates conditions for imbrication to apply when the perfective marker is added. This is true for both -(C)V(V)C- roots (21a) and long roots (21b) regardless of the length of the vowel of the final syllable of the root since when the extension suffix is added, the imbrication site is moved from the last syllable of the base to the syllable whose nucleus is the extension vowel. In the case of -CV- roots, as in (21c), the final "C" to which the extension is attached is the /l/ of the intermorph. The facts in (19) and (21) are straightforward. As seen, the perfect formation of D-stems containing derivational suffixes with long or short vowel is easy to understand now that the conditioning factors for imbrication to apply are known. Let us consider perfective forms of D-stems with of the suffixes of the third group. Since we have already analyzed the perfect forms of the D-stems with causative - y - (productive and frozen), now we will be exclusively be concerned about the passivized D-stem with P_1 - w -.

(22)   Passivized D-stems

	D-stems		Perfective	
a.	-con-w-	'be at loss'	-con-w-il-e	
	-koond-w-	'be lively'	-koond-w-il-e	
	-pug-w-	'be stupid'	-pug-w-il-e	
b.	-puut-w-	'be hit'	-puut-iig-w-e	/-puut-i-il-g-w-e/
	-tum-w-	'be ordered'	-tum-iig-w-e	/-tum-i-il-g-w-e/
	-lap-w-a	'be mischievous'	-lap-iig-w-e	/-lap-i-il-g-w-e/
	-pat-w-	'be involved in difficulties'	-pat-iig-w-e	/-pat-i-il-g-w-e/
c.	-mil-w-	'drown'	-mid-iil-w-e	/-mil-i-il-l-w-e/
	-pal-w-	'have indigestion'	-pad-iil-w-e	/-pal-i-il-l-w-e/
	-tel-w-	'be feeble on the legs'	-tel-eel-w-e	/-tel-e-il-l-w-e/

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d. -ce-el-w- /-ke-el-w-/   'be dawned'   -ce-el-eel-w-e   /-ce-ele-il-l-w-e/

   -sw-eel-w- /-so-el-w-/   'be overtaken by dark'   -sw-eel-eel-w-e   /-so-ele-il-l-w-e/

   -twe-el-w- /-to-el-w-/   'be pounded'   -tw-eel-eel-w-e   /-to-ele-il-l-w-e/

In (22) we show the various ways how perfective formation of passivized D-stems with P_1 suffix is realized. Although there are only a handful non-long roots which take the passivizer - w -, the way they realize the perfective form is complex. As seen in (22) the passivized D-stems can be divided into three groups according to the way they realize the perfect formation. Thus, we have in (22a) three passivized D-stems whose roots have -CVC- structure. The perfective form of these roots is realized in a regular manner as if the - w - were part of the root. The first and the third are frozen, but the second is derived from **-koond-** 'be cheerful; be gladden; amuse'. In the D-stem in (22b) the passive suffix - w - is productive. As was observed in chapter 5, for the purposes of perfective formation, the P_1 suffix is replaced by is the P_2. In (22c) we provide examples of passivized D-stems with -CVV- roots. To our surprise, the perfective marker requires an -il- intermorph between the root final C and the P_1 marker - w -, before it is added to these passivized D-stems. The intermorph creates an extra monomoraic syllable which for imbrication to apply, since the verb roots have now -CVCVC- structure. Then the formative -il- of the perfective marker -il-e is interfixed between the vowel /i/ and /l/ of the intermorph. In (22d) we have another surprise. Just like in (22c), the perfective marker requires an extra intermorph affixed immediately before the passive marker. This means that we now have two intermorphs, one required by the passive marker, and another one required by the perfective marker. Then the perfective formation takes place just like in (22c). In (23) we provide the derivational histories that produce the outputs in (22c, d).

(23) Roots: -mil-   'swallow'   -tw-   'pound'

		-mil- 'swallow'	-tw- 'pound'
Morph.:	interm. affix.:	NA	-tw-eel-
	-w- affix.:	-mil-w-	-tw-eel-w
	interm. affix.:	-mil-il-w-	-tw-eel-el-w-
Phon.:	l → d:	-mid-il-w-	NA
	-il- interfix.:	-mid-i-il-l-w-	-tw-eel-e-il-l-w-
Phon.:	/l/-deletion:	-mid-ii-l-w-	-tw-eel-e-i-l-w-
	Vowel fusion:	-mid-ii-l-w-	-tw-eel-e-e-l-w-
	FV affixation:	-mid-ii-l-w-e	-tw-eel-e-e-l-w-e
		'was drowned'	'was pounded'

With the derivation in (23) we can now say that perfect formation of passivized D-stems is realized in three different ways summarized as follows:

(24)a. -CVC-w-il-e: Regular suffixation of the -il-e where -w- treated as art of the root;

    b. -CV(V)C-iig-w-e: Regular imbrication after P_1 / P_2 shift;

    c. -CV(VC)-il-w-e   Addition of an (extra) intermorph in order to create structural description for imbrication to apply.

Note that in (24b) and (24c) there is an obligatory harmony of the initial vowel of the perfective marker with the vowel of the roots. Let us consider the irregular perfective formation next.

7.1.4. Irregular perfective formation

As we have seen, most Ciyao verbs form the P1 tense by affixing the morpheme -il-e (*-įl-e) to the verb roots or derived stems. In this section we consider what we call

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irregular perfective formation, whereby the perfective marker is realized not by our familiar -il-e, but by one of the two allomorphs, namely, -il-i and -VVt-e (we mentioned this above). Let consider the -il-i suffix in the following examples first:

(25) Roots   Perfective

    a. -iim-   'stop'   cf.   -iim-i   /-jiim-il-i/   'stopped'

        -taam-   'sit'   cf.   -teem-i   /-taam-il-i/   'sat'

        -won-   'see'   cf.   -ween-i   /-won-il-i/   'saw'

    b. -pagw-   'be born'   cf.   -padi   /-pagw-il-i/   'was born'

(25) provides the complete list of the four -(C)(V)VC- roots which take -il-i as their PI tense marker. As seen, the roots in (25a) form the perfective by affixing, through imbrication, the allomorph -il-i of the perfective marker. Although there is no way to prove the presence of /l/ in these perfective forms, since it never surfaces, we are confident that the this form contain an /l/ since the imbrication process is realized exactly in the same manner as when the basic perfective maker -il-e is involved. In other words, we have imbrication in the perfective forms given on the right hand column in (25a) where the imbricated formative is the same -il- used in the regular imbrication and other procedures are the same except the quality of the final vowel which is high front instead of mid front. The example in (25b) is just exceptionally defective. As seen, after the affixation of the perfective marker -il-i, the middle syllable of the stem is a truncated, as shown in (26):

(26) Root: *-pag-

    Morphology: -w- affixation: -pag-w-   'be born; exist'

                -il-i affixation: -pag-w-id-i

    Phonology: mid σ truncation: -pad-i   'was borne'

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Thus, we suggest that **-il-i** be considered a second allomorph of perfective marker in Ciyao which is mostly realized under imbrication in exceptional cases where the roots violate the bisyllabicity minimal condition.

In (10), above, we saw five -(C)V(V)C- roots which use **-iit-e/-eet-e** as perfective marker. Apart from those roots, the following are the other two which make up the seven roots of the same group we mentioned:

(27)   Roots   P1

    a. -kol- /-kol-/   'have: possess' cf.   -kweet-e   /-ko(l)-it-e/

    b. -waal- /-wo-al-/[39] 'wear'   cf.   -weet-e   /-wo-a(l)-it-e/

In (27) the perfective tense is marked by the **-VVt-e**. We suggest that this be considered a third allomorph of the perfective marker, which is affixed to -C(V)VC- roots. From what we have seen so far, one could expect the affixation of the perfective marker outside the root, according to the rules of regular perfect formation in Ciyao. Contrary to our expectation from the examples in (10), **-VVt-e** is not attached to the last consonant of the root. It is not even suffixed between the last consonant of the root and the preceding vowel, what could allow us to include these roots in the list of the exceptionally imbricated forms as we did in the case of the examples in (18). What is unique with these forms is that the perfective marker **-VVt-e** replaces the root-final consonant (in parentheses), creating, consequently, sequences of vowels subject to the gliding (plus compensatory lengthening) rule discussed in chapter 2. Thus, the root-internal /o/ turns into /w/ before the initial vowel of the perfective marker. In (28) we represent the derivational history of the data in (27):

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[39] Cf. /-wo-ek-/ discussed earlier.

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(28) Roots: -kol-   'have'   -wo-al-   'wear'

Morph: -Vt-e affix.:   -ko-etl-e   -wo-etl-e

Phon.:   /l/ deletion: -ko-et-e   -wo-et-e

          o → w (CL):   -kw-eet-e   -ww-eet-e

          Glide simplification: NA   -ww-eet-e   'wore'

In (28), the perfective marker allomorphs are attached to the roots with the relevant vowels according to what we have said about the height harmony. Then, phonological processes follow. First, the final consonant of the root is deleted and then the phonological rules that result from the concatenation of vowels take place. Although marginal, happening only with these two verbs, this can be regarded as a third type of affixation of the perfective marker to the root, apart from the regular perfect formation and the imbrication we have discussed.

The problems posed by the non-derived roots in (25) and (27) and other roots seen in (11) and (18) cease to exist when we attach to them the derivational affixes shown in the following examples:

(29)   D-stems   P1

   a. -pit-il-   'pass by'   cf. -pit-iil-e   'passed by'

       -yic-il-   'arrive for'   cf. -yic-iil-e   'arrived for'

   b. -diind-il-   'wait for (reason)'   cf. -diind-iil-e   'waited for (reason)'

       -laand-il-   'resemble for'   cf. -laand-iil-e   'resembled for'

       -lol-el-   'look at for'   cf. -lol-eel-e   'looked at for'

       -lel-el   'babysit for'   cf. -lel-eel-e   'nursed for'

       -taand-il-   'start for'   cf. -taand-iil-e   'started for'

       -waad-il-   'wear for'   cf. -waad-iil-e   'wore for'

       -kol-el-   'have for'   cf. -kol-eel-e   'had for'

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c.	-iim-il-	'stop for'	cf.	-iim-iil-e	'stopped for'
	-taam-il-	'sit on'	cf.	-taam-iil-e	'sat for'
	-dii-won-el-	'be arrogant for'	cf.	-dii-won-eel-e	'was arrogant for'
	-won-el-	'see from'	cf.	-won-eel-e	'saw from'
	-pag-w-il-a	'be born at'	cf.	-pag-w-iil-e	'was born at'
d.	-ooc-el-a	'roast for'	cf.	-jooc-eel-e	'roasted for'
	-weec-el-a	'clothe for'	cf.	-weec-eel-e	'clothed for'

As (29) shows, the irregular roots become regular when derivational suffixes are attached to them. Thus, in (29a) we have D-stems whose roots are the two -CVC- roots that take the regular perfective marker -il-e, but imbricate in clear violation of the bisyllabicity minimal condition. The D-stems in (29b) take the perfective marker -VVt-e. In the first four the affixation is realized normally, whereby the -VVt-e is attached to the root-final consonant, while in the last two the perfective marker replaces the root-final consonant. Note that one of the roots which take the -VVt-e is -ti 'say'. This root is not included (29) because it never participates in any derived stem formation. The D-stems in (29c) are those that imbricate the -il-i perfective marker. Finally, the D-stems in (29d) we have those causatives where the /l/ of the -il-e is replaced by the preceding alveopalatal /c/ to which the perfective marker is attached. The only perfective marker that is attached to all D-stems including those with abnormal roots is the basic -il-e. Therefore, there is no need for the duplication of the exercise that was done with the other (regular) verbs for at this point they behave normally and are subject to all morphological and phonological rules applied to all regular roots where imbrication is allowed.

In Table 1 we provide completive affirmative forms of infinitive (-a, -i, -u) perfective (-(V)Vl/-V/-(V)V/t-V), subjunctive (-e, -i, -u), imperative, and conditional (-e, -i, -u), of all irregular verbs seen in this chapter and the defective verbs seen in chapter 4.

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	S-stems	Gloss	P1	Subjunctive	Conditional
a.	-diiwon-a	'be arrogant'	-dii-ween-i	-dii-won-e	-kaa-dii-won-e
	-diind-a	'wait'	-diind-iit-e	-diind-e	-kaa-diind-e
	-iim-a	'stop'	-iim-i	-jiim-e	-kaa-jiim-e
	-kol-u	'have'	-kw-eet-e	-kol-e	-kaa-kol-e
	-laand-a	'resemble'	-laand-iit-e	-laand-e	-kaa-laand-e
	-lel-a	'nurse'	-lel-eet-e	-lel-e	-kaa-lel-e
	-lol-a	'look at'	-lol-eet-e	-lol-e	-kaa-lol-e
	-ooc-a	'roast'	-jooc-iic-e	-jooc-e	-kaa-jooc-e
	-pagw-a	'be born'	-pad-i	-pagw-e	-kaa-pagw-e
	-pit-a	'pass'	-piit-e	-pit-e	-kaa-pit-e
	-taam-a	'sit down'	-teem-i	-taam-e	-kaa-taam-e
	-taand-a	'start'	-taand-iit-e	-teend-e	-kaa-teend-e
	-waal-a	'wear'	-w-eet-e	-waal-e	-kaa-waal-e
	-woc-a	'clothe'	-weec-iic-e	-woc-e	-kaa-woc-e
	-yik-a	'arrive'	-yiic-e	-yic-e	-kaa-yic-e
b.	-an-a	'there is'	—	—	—
	-cukulu	'thank'	-cukuulu	-cukulu	-kaa-cukulu
	-jil-a	'say'	-	-jil-e	-kaa-jil-e
	-nawudi	'develop well'	-nawuudi	-nawudi	-kaa-nawudi
	-paayi	'match well'	-paayi-iy-e	-paayi	-kaa-paayi
	-swaadi	'pray'	-swaas-il-e	-swaadi	-kaa-swaadi
	-ti	'say'	-ti-it-e	—	—

Table 1 summarizes our discussion of irregular verbs. Since the focus of our study is the D-stem, we only provide forms whose tense/aspect and mood markers are realized by suffixes. Note some consonant alternations in the imperative. Although not marked in the table, the only subject marker of the imperative is the syllabic nasal which triggers some alternations in some consonants they precede such as whose l → n, y → ny, and v → b. Apart from the defective verbs in (b) whose final vowels /i, u/ never change in the different

verb forms, each verb in (a) present one of the following three vowels in final position: /a, e, i/. In Table 2 we provide the corresponding negative forms of all verbs in Table 1.

Table 2: Completive negative forms of P1, subjunctive, and conditional of irregular verbs.

	Neg.-Stems	Gloss	Neg.-P1	Neg. Subjunctive	Conditional
a.	nga-dii-won-a	'to not be arrogant'	ngani-dii-won-a	-ka-dii-won-a	-ka-dii-won-a
	nga-diind-a	'to not wait'	ngani-diind-a	-ka-diind-a	-ka-diind-a
	nga-jiim-a	'to not stop'	ngani-iim-a	-ka-jiim-a	-ka-jiim-a
	nga-kol-a	'have'	ngani-kol-a	-ka-kol-a	-ka-kol-a
	nga-laand-a	'to not resemble'	ngani-laand-a	-ka-laand-a	-ka-laand-a
	nga-lel-a	'to not nurse'	ngani-lel-a	-ka-lel-a	-ka-lel-a
	nga-lol-a	'to not look at'	ngani-lol-a	-ka-lol-a	-ka-lol-a
	nga-jooc-a	'to not roast'	ngani-jooc-a	-ka-jooc-a	-ka-jooc-a
	nga-pagw-a	'to not be born'	ngani-pagw-a	-ka-pagw-a	-ka-pagw-a
	nga-pit-a	'to not pass'	ngani-pit-a	-ka-pit-a	-ka-pit-a
	nga-taam-a	'to not sit down'	ngani-taam-a	-ka-taam-a	-ka-taam-a
	nga-taand-a	'to not start'	ngani-taand-a	-ka-teend-a	-ka-teend-a
	nga-waal-a	'to not wear'	ngani-waal-a	-ka-waal-a	-ka-waal-a
	nga-weec-a	'to not clothe'	ngani-weec-a	-ka-weec-a	-ka-weec-a
	nga-yik-a	'to not arrive'	ngani-yik-a	-ka-yik-a	-ka-yik-a
b.	nga-cukulu	'to not thank'	ngani-cukulu	-ka-cukulu	-ka-cukulu
	nga-jil-a	'to not say'	ngani-jil-a	-ka-jil-a	-ka-jil-a
	nga-nawudi	'to not develop...'	ngani-nawudi	-ka-nawudi	-ka-nawudi
	nga-paayi	'to not match well'	ngani-paayi	-ka-paayi	-ka-paayi
	nga-swaadi	'to not pray'	ngani-swaadi	-ka-swaadi	-ka-swaadi
	nga-ti	'to not say'	ngani-ti	—	—

In negative forms, the subject marker occurs:

(i)   after the negative marker **ngani-** in perfective;

(ii)   before the negative marker **-ka-** in subjunctive and conditional;

(iii)   before the negative marker **-ka-** in imperative.

As seen in Table 2, the only FV that appears in negative forms is the default /a/. Note that with the exception of the present tense marker, all other tense/aspect/mood marker do not surface in completive negative forms. The only the other tense/aspect/mood markers are realized is though the different tones as can be observed in the examples in Table 2. Therefore the only FV of the completive aspect forms is /a/. This fact will have important consequences in incompletive forms as we will see in the next section to what we now turn.

7.2. The incompletive aspect (-ga)

The focus of this section is the imperfective formation. Unlike the completive aspect, which has no morphological marker, the incompletive aspect is marked by -ga which has various allomorphs according to the endings of the stems to which it is attached. This -ga is usually added to the I-stem as shown in the following examples:

(30)   -(C)V(V)C- roots

S-stem-incompletive

			Perfective incompletive	
-paac-a-ga	'accuse secretly usually'	cf.	-paac-il-e-je	'was accusing secretly'
-leemb-a-ga	'survived usually'	cf.	-leemb-il-e-je	'was writing'
-piind-a-ga	'bend usually'	cf.	-piind-il-e-je	'was bending'
-moog-a-ga	'fetched usually'	cf.	-mooj-il-e-je	'was shaving'
-juj-a-ga	'rejoice at an escape usu.'	cf.	-juj-il-e-je	'was rejoicing...'
-pak-a-ga	'smear usually'	cf.	-pac-il-e-je	'was smearing'
-kweel-a-ga	'climb usually'	cf.	-kwees-il-e-je	'was climbing'
-dim-a-ga	'cultivate usually'	cf.	-dim-il-e-je	'was cultivating'
-ton-a-ga	'pinch usually'	cf.	-ton-il-e-je	'was pinching'
-nyuuny-a-ga	'sprinkle usually'	cf.	-nuuny-il-e-je	'was sprinkling'

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-nin'-a-ga	'constrict usually'	cf.	-niny-il-e-je	'was constricting'
-cap-a-ga	'washed usually'	cf.	-cap-il-e-je	'was washing
-lwees-a-ga	'curse usually'	cf.	-lwees-il-e-je	'was cursing'
-pot-a-ga	'twisted usually'	cf.	-pot-il-e-je	'was twisting'
-wuv- a-ga	'become cold... usually'	cf.	-wuv-il-e-je	'was becoming cold...'

The examples in (30) show how the incompletive aspect of P1 tense is formed. As seen, the incompletive aspect has two realizations: **-ga** and **-jV** (where "V" is the front vowel that occurs in I-stem-final position. The derivation that produces the **-jV** when the I-stem has a front vowel in final position can be summarized as follows:

(31)   Root: -(C)V(V)C-

    a.   Stem:

      Morphology: -a affixation: -(C)V(V)C-a

                   -ga affixation: -(C)V(V)C-a-ga

    b.   P1:

      Morphology: -il-e affix: -(C)V(V)C-il-e

                   -ga affixation: -(C)V(V)C-il-e-ga

      Phonology: FV-assimilation: -(C)V(V)C-il-e-ge

                /g/ palatalization: -(C)V(V)C-il-e-je

In verb forms where the FV of the I-stem is /i/, as will see later, it replaces the /a/ and, consequently, palatalizes the /g/ of **-ga**. Let us consider incompletive aspect of -CV- roots in the following examples:

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(32)   S-stem-incompletive   Perfective-incompletive

a.   -dy-aa-ga   /-di-/   'eat usually'   -di-il-e-je   'was eating'

     -j-aa-ga   /-ji-/   'go usually'   -ji-il-e-je   'was going'

     -py-aa-ga   /-pi-/   'be burnt usually"   -pi-il-e-je   'was burning'

b.   -gw-a a-ga   /-gu-/   'fall usually'   -gw-iil-e-je   'was falling'

     -w-aa-ga   /-u-/   'die usually'   -w-iil-e-je   'was dying'

c.   -p-aa-ga   /-pa-/   'give usually'   -pe-el-e-je   'was giving'

     -t-aa-ga   /-ta-/   'name (a child) usually' -te-el-e-je   'was naming'

     -v-aa-ga   /-va-/   'be usually'   -ve-el-e-je   'was being'

d.   -c-aa-ga   /-ke-/   'dawn usually'   -ce-el-e-je   'was dawning'

     -ny-aa-ga   /-nye-/   'defecate usually'   -nye-el-e-je   'was defecating'

e.   -n'w-aa-ga   /-n'o-/   'drink usually'   -n'w-eel-e-je   'was drinking'

     -pw-aa-ga   /-po-/   'empty (intr.) usually' -pw-eel-e-je   'was emptying'

     -sw-aa-ga   /-so-/   'grow dark usually'   -sw-eel-e-je   'was growing dark'

     -tw-aa-ga   /-to-/   'pound usually'   -tw-eel-e-je   'was pounding'

The examples in (32) show that the incompletive forms of P1 are formed n the same manner as the incompletive forms of -(C)V(V)C- roots in (30). The only phonological difference we see, the length of the FV /a/ in the left hand column, does not surprise us since it results from the application of hiatus resolution rules seen in chapter 2. Thus, in infinitive, since the FV is /a/, the incompletive suffix is realized as -ga, its basic form. In P1, it is realized as -je since all verbs in (30) have -e as FV. Let us consider incompletive forms of P1 of derived verbs in the next two sections starting with the causativized D-stems.

7.2.1. P1 incompletive forms of causatives

In this section we investigate the formation of the incompletive form of P1 of causativized D-stems. Consider the following examples:

(33) -(C)V(V)C-y- D-stems

	S-stem-incompletive		Perfective incompletive	

a. -C₁VC₂-y- (where C₂≠ /s/)

-lamyaaga	/lam-į-a-ga/	'save usually'	-lam-iis-y-ee-je	/lam-į-il-į-e-ge/
-nyeemyaaga	/-nyeem-į-a-ga/	'handle with care..'	-nyeem-iis-yee-je	/-nyeem-į-il-į-ee-ge/
-jiimyaaga	/-jiim-į-a-ga /	'cause to refuse usually'	-jiim-iis-y-ee-je	/-jiim-į-il-į-e-ge/
-syoomyaaga	/-syoom-į-a-ga/	'speak w/ an accent usu.'	-soomeesyeeje	/-soom-į-el-į-e-ge/
-wumyaaga	/-wum-į-a-ga /	'remove usually'	-wumiisyee-je	/-wum-į-il-į-e-ge/
-tupyaaga	/-tup-į-a-ga /	'increase usually'	-tupiisyeeje	/-tup-į-il-į-e-ge/
-kaanyaaga	/-kaan-į-a-ga /	'prohibitusu.'	-kaaniisyeeje	/-kaan-į-il-į-e-ge/
-ponyaaga	/-pon-į-a-ga/	'throw usually'	-pon-iis-į-ee-je	/-pon-į-il-į-e-ge/
-vinyaaga	/-vin-į-a-ga/	'play with toy usu.'	-viniisyeeje	/-vin-į-il-į-e-ge/

b. -CV-s-y- sequences

-lasyaaga	/-lal-į-a-ga/	'wear out usually'	-lasiisyeeje	/-lal-į-il-į-e-ge/
-teesyaaga	/-teend-į-a-ga/	'make do usually'	-tees-iis-į-ee-je	/-teend-į-il-į-e-ge/
-pisyaaga	/-pit-į-a-ga/	'make pass usually'	-pis-iis-į-ee-je	/-pis-į-il-į-e-ge/
-oosyaaga	/-oog-į-a-ga/	'give a bath usually'	-joosiisyeeje	/-joog-į-il-į-e-ge/
-wuusyaaga	/-wuus-į-a-ga/	'ask usually'	-wuusiisyeeje	/-wuus-į-il-į-e-ge/

c. -C(V)Vy-

-cayaaga	/*-cab-į-a-ga/	'whip usually'	-cay-iiy-e-je	/-cab-į-il-į-e-ge/
-geyaaga	/*-geb-į-a-ga/	'belch usually'	-gey-iiy-e-je	/-geb-į-il-į-e-ge/
-diiyaaga	/-diimb-į-a-ga/	'fasten firmly usu.'	-diiy-iiy-e-je	/-diimb-į-il-į-e-ge/
-nyoyaaga	/*-nyob-į-a-ga/	'wet usually'	-nyoy-iiy-e-je	/*-nyob-į-il-į-e-ge/

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| -uuyaaga | /-uuv-į̓-a-ga/ | 'hide (tr.) usually' | -juuy-iiy-e-je | /juuv-į̓-il-į̓-e-ge/ |

In (33) we have causativized D-stems. We are not interested in the productivity of their affixes. We are exclusively concerned with how these causativized D-stems realize the perfective incompletive forms. As seen, causativized D-stems realize the perfective incompletive forms in the same fashion as the -(C)V(V)C- roots and -CV- roots seen in (29) and (31), according to the derivation given in (30). This similarity is due to the fact that the incompletive suffix is added outside the I-stem. Of course, in the case of causatives, for examples, we see that all morphophonological changes that affect the perfective /l/ take place before the affixation of the incompletive - ga. Before we look at the irregular verbs, consider also the perfective incompletive of passivized D-stems in the next subsection.

7.2.2. P1 incompletive forms of passives

In this section we will briefly discuss the perfective incompletive forms of the same passivized D-stems. Consider the following examples:

(34) Passivized D-stems

Passive-ga		Perfective-ga	
a. -con-w-aa-ga	'be at loss usually'	-con-w-il-ee-je	'was being at loss'
-koond-w-aa-ga	'be lively usually'	-koond-w-il-ee-je	'was being lively'
-pug-w-aa-ga	'be stupid usually'	-pug-w-il-ee-je	'was being stupid'
b. -puut-w-aa-ga	'be hit usually'	-puut-iig-w-e-je	'was being hit'
-tum-w-aa-ga	'be ordered usually'	-tum-iig-w-e-je	'was being ordered'
-lap-w-aa-ga	'be mischievous usually'	-lap-iig-w-ee-je	'was being mischievous'
-pat-w-aa-ga	'be involved in difficulties'	-pat-iig-w-ee-je	'was being involved...'
c.i. -ce-el-w-aa-ga	'be dawned usually'	-ce-el-eel-w-ee-je	'was dawning'

-sw-eel-w-aa-ga	'be overtaken by dark usually'	-sw-eel-eel-w-ee-je	'was being overtaken...'
-twe-el-w-aa-ga	'be pounded usually'	-tw-eel-eel-w-ee-je	'was being pounded'

ii.
-mil-w-aa-ga	'drown usually'	-mid-iil-w-ee-je	'was drowning'
-pal-w-aa-ga	'have indigestion usually'	-pad-iil-w-ee-je	'was having indigestion'
-tel-w-aa-ga	'be feeble on the legs'	-tel-eel-w-ee-je	'was being feeble on...'

The data in (34) show us once again that the derivation provided in (30) is the best way to account for the distribution of the allomorphs -ga and -jV of the incompletive morpheme. Just like in the preceding cases, the incompletive marker is suffixed outside the I-stem without interfering with the internal structure of the I-stem. But before we draw conclusion it will be important to see what happens with the irregular verbs in the next section.

7.2.3. Incompletive forms of irregular verbs

In the present subsection we consider the incompletive aspect formation of the irregular verbs studied in the preceding section of this chapter. In order to test the derivation provided in (31) we will also look at other tenses like P2, Present, and future. We also consider some imperative, subjunctive and conditional forms. But first let us consider the perfective (P1) incompletive in the following examples:

(35) S-stem-incompletive   Perfective incompletive

a.
-pit-a-ga	'pass usually'	-piit-e-je	'was passing'
-yik-a-ga	'arrive usually'	-yic-e-je	'was arriving'

b.
-diind-a-ga	'wait for usually'	-diind-iit-e-je	'was waiting'
-laand-a-ga	'look alike usually'	-laand-iit-e-je	'were looking alike'
-lol-a-ga	'look at usually'	-lol-eet-e-je	'was looking at'
-lel-a-ga	'babysit usually'	-lel-eet-e-je	'was nursing'
-taand-a-ga	'start usually'	-taand-iit-e-je	'was starting'

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-waal-a-ga	'wear usually'	-weet-e-je	'was wearing'
-kol-a-ga	'have usually'	-kweet-e-je	'was having'

c.

-iim-a-ga	'stop usually'	-jiim-i-ji	'was stopping'
-taam-a-ga	'sit usually'	-teem-i-ji	'was sitting'
-dii-won-a-ga	'be arrogant usually'	-dii-ween-i-ji	'was being arrogant'
-won-a-ga	'see usually'	-ween-i-ji	'was seeing'
-pag-w-aa-ga	'be born usually'	-padi-ji	'was being born'

d.

-ooc-aa-ga	'roast usually'	-jooc-iic-e-je	'was roasting'
-weec-aa-ga	'clothe usually'	-weec-iic-e-je	'was clothing'

In the left hand column in (35) we see that in the infinitive the incompletive aspect is marked by **-ga**, just like in the regular verbs seen above, while in P1 given in the right hand column we have two allomorphs, **-ji** and now familiar **-je**. As seen, when the FV of the I-stem is /i instead of /e/, the /i/ replaces the /a/ of **-ga** and, just like /e/, palatalizes the preceding /g/. We prove the truth of this through examples with other tenses/moods in (36) where we show that with only one exception, P2, in all other tenses/mood where a front vowel occurs in final position, replaces the FV of the incompletive aspect marker and subsequently palatalizes the /g/ as demonstrated in (31). In order to save space we do not have a column for the bare roots, but we clearly mark the morpheme boundaries and provide the "infinitive" gloss with the hopes that it will not be difficult for the reader to figure out what the roots of the different verbs are.

(36)	P2	Present	F1[40]	Subjunctive	Gloss
a.	-aa-diind-a-ga	-ku-diind-a-ga	ci-SM-diind-e-je	-diind-e-je	'wait'
	-aa-jiim-a-ga	-kw-iim-a-ga	ci-SM-jiim-e-je	-jiim-e-je	'stop'
	-aa-kol-a-ga	-ku-kol-a-ga	ci-SM-kol-e-je	-kol-e-je	'have'

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[40] Except in F1, where we have marked the SM, in all other forms the subject marker occurs in initial position of the verb complex.

-aa-laand-a-ga	-ku-laand-a-ga	ci-SM-laand-e—je	-laand-e-je	'look alike'
-aa-lel-a-ga	-ku-lel-a-ga	ci-SM-lel-e-je	-lel-e-je	'nurse'
-aa-lol-a-ga	-ku-lol-a-ga	ci-SM-lol-e-je	-lol-e-je	'look at'
-aa-jooc-aa-ga	-k-ooc-aa-ga	ci-SM-jooc-ee-je	-jooc-e-je	'roast'
-aa-pagw-aa-ga	-ku-pagw-aa-ga	ci-SM-pagw-e-je	-pagw-ee-je	'be born'
-aa-pit-a-ga	-ku-pit-a-ga	ci-SM-pit-e-je	-pit-e-je	'pass'
-aa-taam-a-ga	-ku-taam-a-ga	ci-SM-taam-e-je	-taam-e-je	'sit down'
-aa-taand-a-ga	-ku-taand-a-ga	ci-SM-teend-e-je	-taand-e-je	'start'
-aa-waal-a-ga	-ku-waal-a-ga	ci-SM-waal-e-je	-waal-e-je	'wear'
-aa-weec-aa-ga	-ku-weec-aa-ga	ci-SM-weec-e-je	-weec-ee-je	'clothe'
-aa-yik-a-ga	-ku-yik-a-ga	ci-SM-yic-e-je	-yic-e-je	'arrive'

b.

-aa-cukuluu-ji	-ku-cukuluu-ji	ci-SM-cukuluu-ji	-cukuluu-ji	'thank'
-aa-nawudii-ji	-ku-nawudii-ji	ci-SM-nawudii-ji	-nawudii-ji	'develop...'
-aa-paayii-ji	-ku-paayii-ji	ci-SM-paayii-ji	-paayii-ji	'match well'
-aa-swaadi-ji	-ku-swaadi-ji	ci-SM-swaadi-ji	-swaadi-ji	'pray'
-aa-ti-ji	-ku-tii-ji	—	—	'say'

As we see, while in all other tense/aspect/mood the incompletive form is obtained by suffixing **-ga** to the I-stem, the incompletive form of P2 is obtained by exceptionally adding **-ga** to the S-stem. P2 is unique in this regard where the completive ending is completely replaced by the default FV /a/ so that the incompletive marker can suffixed. In other tenses, **-ga** is only attached to S-stems of verb forms whose tense markers are prefixes and the FV is the default /a/. If the tense marker is a suffix, or a prefix which requires a front vowel in I-stem final position, this front vowel defines the shape of the vowel that goes after the /g/ of **-ga** which is then palatalized. Therefore, with the exception of the first example in (36b) which also takes **ji** across the board, the only incompletive aspect marker of the defective verbs which have a constant /i/ in final position is always **-ji**.

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Since we have demonstrated that the internal structure of the stem does not affect the realization of the incompletive aspect whose morpheme is added outside the stem we next consider the negative forms of the verbs in (36):

(37)	P2	Present	F1	Subjunctive	Gloss
a.	ngani-diind-a-ga	nga-ku-diind-a-ga	nga-diind-a-ga	-ka-diind-a-ga	'wait'
	ngani-jiim-a-ga	nga-kw-iim-a-ga	nga-jiim-a-ga	-ka-jiim-a-ga	'stop'
	ngani-kol-a-ga	nga-ku-kol-a-ga	nga-kol-a-ga	-ka-kol-a-ga	'have'
	ngani-laand-a-ga	nga-ku-laand-a-ga	nga-laand-a-ga	-ka-laand-a-ga	'resemble'
	ngani-lel-a-ga	nga-ku-lel-a-ga	nga-lel-a-ga	-ka-lel-a-ga	'nurse'
	ngani-lol-a-ga	nga-ku-lol-a-ga	nga-lol-a-ga	-ka-lol-a-ga	'look at'
	ngani-jooc-aa-ga	nga-k-ooc-aa-ga	nga-jooc-aa-ga	-ka-jooc-aa-ga	'roast'
	ngani-pagw-aa-ga	nga-ku-pagw-aa-ga	nga-pagw-aa-ga	-ka-pagw-aa-ga	'be born'
	ngani-pit-a-ga	nga-ku-pit-a-ga	nga-pit-a-ga	-ka-pit-a-ga	'pass'
	ngani-taam-a-ga	nga-ku-taam-a-ga	nga-taam-a-ga	-ka-taam-a-ga	'sit down'
	ngani-taand-a-ga	nga-ku-taand-a-ga	nga-teend-a-ga	-ka-taand-a-ga	'start'
	ngani-waal-a-ga	nga-ku-waal-a-ga	nga-waal-a-ga	-ka-waal-a-ga	'wear'
	ngani-weec-aa-ga	nga-ku-weec-aa-ga	nga-weec-a-ga	-ka-weec-aa-ga	'clothe'
	ngani-yik-a-ga	nga-ku-yik-a-ga	nga-yic-a-ga	-ka-yik-a-ga	'arrive'
b.	ngani-cukuluu-ji	nga-ku-cukuluu-ji	nga-cukuluu-ji	-ka-cukuluu-ji	'thank'
	ngani-nawudii-ji	nga-ku-nawudii-ji	nga-nawudii-ji	-ka-nawudii-ji	'develop'
	ngani-paayii-ji	nga-ku-paayii-ji	nga-paayii-ji	-ka-paayii-ji	'match'
	ngani-swaadi-ji	nga-ku-swaadi-ji	nga-swaadi-ji	-ka-swaadi-ji	'pray'
	ngani-ti-ji	nga-ku-tii-ji	nga-tii-ji	-ka-tii-ji	'say'

In (37), the SM follows immediately the negative markers **ngani-** in P2, and **nga-** in present and F1, but precedes the **-ka-** negative marker in subjunctive. If we compare (37)

with (35) we realize that in (36a), where we have affirmative forms, P2 and present are the only tenses which take the completive allomorph -**ga** while FI and subjunctive take -**jV**. In negative forms in (37a), all tenses take -**ga** as their incompletive aspect marker. So, the negative form is the only place where we see a clear separation between (37a), the irregular but normal verbs, and (37b) the irregular and defective verbs, since the former take -**ga** while all of the latter take -**ji**. The reason for the uniformity in (37a) and lack of it in (36a) is what we pointed out earlier. The negative form prevents the suffixal tense/mood markers from surfacing. Therefore, all the tenses/moods take the default /a/ as their FV, which allows the -**ga** to have no competitor as incompletive aspect marker in negative form.

7.3. Summary

In this chapter we presented an exhaustive descriptive account of the I-stem in Ciyao. Section 1 of this chapter discussed the completive form of the perfective where it was shown that the Ciyao perfective marker is a trimorphemic suffix which can in abstract terms be represented as follows:

(38)   -(V)VI/t-V

(Where all "V's" are |+front|)

In (39) we provide the actual realization of the three allomorphs:

(39)a. -il-e

   b. -il-i

   c. -(i)it-e/-(e)et-e

In (39a) we have the basic form of the perfective marker, the one which is reconstructed as *-įde. The allomorph in (38b) appears mostly in exceptional cases of imbrication, where the -il- formative is infixed within four -(C)(V)VC- roots and the rest of the procedures take place normally as we know them under regular imbrication. The perfective allomorph in (39c), whose height of its initial front vowel is determined by the height of the vowel of the root, occurs in seven verbs. What is interesting about this allomorph is that apart from being attached outside (in five roots), it also replaces the root-final consonant (in two roots) allowing for their vowels to connect directly to the vowels of the roots and, consequently, triggering the phonological processes resulting from the concatenation of vowels. Finally, this allomorph and the allomorph in (39b) are affixed to monosyllabic roots only. With this summary we complete the discussion of the inflectional stem.

With this coverage of inflectional endings we have completed the analysis of the Ciyao verb stem. Chapter 8 sums up the major contribution of this work.

CHAPTER 8: SUMMARY

In this study we have presented an analysis of the major phonological and morphological properties of the Ciyao verb stem. In this chapter we summarize these findings by chapter. Thus, following the introductory chapter 1, in chapter 2 we discussed the vowel processes and demonstrated that vowel length is not only underlying, but can also be generated phonologically when the structural descriptions are met. In this chapter, we also demonstrated that vowel harmony, as a major characteristic of the verb stem, determines the quality of the vowels that must follow each other not only across morphemes (stem-internally) but also within the root (morpheme-internally).

In chapter 3 we investigated consonant processes, where we pinpointed three segments (two consonants and one vowel) that play a major role in determining the surface segmental phonology of the language: (i) the moraic nasal, which voices a following voiceless consonant, deletes a voiced consonant and undergoes effacement before /s/ in verbs and before /s/ and /w/ in nouns; (ii) the syllabic nasal, which hardens the labial approximants and nasalizes the lingual approximants; and (iii) the high front vowel /i/ which affects the surface realization of some consonants. When it occurs in the initial position of perfective markers, it palatalizes velars and fricativizes the lateral approximant; as a causative allomorph, it fricativizes all linguals and deletes the oral labials in some verbs.

In chapter 4 we classified and discussed the different kinds of verb stems, which includes the simplex stem, derived stem (from verb to verb and from other parts of speech to verb), reduplicated stem, and inflectional stem. This classification was another major contribution of this study to the understanding of the verb structure in Ciyao.

In chapter 5, we discussed the derivational suffixes known as verb extensions in the Bantu literature, showing that while the semantics of two extensions (impositive and intensive) is apparently "transparent", the same can not be said about the other extensions.

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Thus, we investigated the semantic intricacy of the applicatives before locatives, the three causatives, the two passives, the stative, the three reciprocals, and the two reversives.

In chapter 6 we investigated the order and combination of the different verb to verb derivational suffixes, or verb extensions, where we demonstrated that the combination of the derivational suffixes is determined by the following four linguistic factors: (a) morphotactics; (b) semantics; (c) phonotactics; and (d) morphosyntax.

Finally, in chapter 7 we discussed the inflectional stem where we showed that the perfective suffix -il-e can either be attached to the final segment of the root or its formative -il- can be infixed in the verb root between the final consonant of the base (root or derived stem) and the preceding vowel, a process known as imbrication. The option to use one or the other form of affixation of the perfective marker depends upon the size of the base and the number of moras of the last syllable of the base. Based on the analysis of the irregular perfective formation we argued for the representation of the perfective marker as -(V)VI/t-V (where V is a front vowel) which surfaces as: (a) -il-e; (b) -(i)il-i/-(e)el-i; -(i)it-/ -(e)et-e. The distribution of the allomorphs in (b) and (c) is determined by height harmony. The allomorphs of the perfective marker occur in the final position of the inflectional stem in completive forms, which is marked by zero. When the incompletive marker -ga is affixed, it occupies the final position, its permanent location in the inflectional stem.

To handle the various morphophonological facts that characterize the verb stem as we have summarized here, we used the framework of Lexical Phonology and Morphology (Kiparsky 1985, Mohanan 1982 and others) as well as moraic theory (Hyman 1985, Hayes 1989 and others). We hope in the future to apply this research experience to other Bantu languages, especially those spoken in Mozambique.

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APPENDIX A: VERBS DERIVED FROM OTHER PARTS OF SPEECH

In this appendix we present the list of all verbs derived from other parts of speech through affixation of a verbalizer as they appear in the database: 3 verbs derived from adverbs, 15 from adjectives, 23 from nouns, and finally, 138 from ideophones the major pool where most of the verbs derived from other parts of speech are drawn.

I.   Adverbs

Total in of adverbs in the database: 453

Verbs derived from adverbs: 3

	Adverb	Gloss	Verb	Verbalizer
1.	matiindiva	'(shuffling along) on the knees'	-tiindival-	l
2.	diiwumi	'total absence of people'	-wumil-	l
3.	mbaambo	'surplus; remainder'	-paambul-	l

II.   Adjectives. Total in the database: 51

Verbs derived from adjectives: 15

	Adjective	Gloss	Verb	Verbalizer
1.	-kaamidi	'trustful'	-kamidik-	k
2.	-tepatepa	'slander and pliable'	-teepaan-	n
3.	-suuma	'unccompanied'	-suumaang-	ng
4.	-naandi	'little, small'	-naandiy-	y
5.	-noondi	'little, small'	-noondiy-	y
6.	-ceekulu	'old'	-ceekulup-	p
7.	-jiipi	'short'	-iipip-	p
8.	-naandi	'little, small'	-naandip-	p
9.	-noondi	'little, small'	-noondip-	p
10.	-ceejewu	'red'	-ceejel-	l
11.	-jiiwu	'ripe'	-iiwul-	l
12.	-juumu	'dry'	-uumul-	l
13.	-piidiwu	'black, dark'	-piidil-	l
14.	-sweela	'white'	-sweejel-	-j-e-l
15.	-visi	'green, fresh, unripe'	-visikal-	-k-a-l

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III. Nouns

Total of nouns in the database: 2063

Verbs derived from nouns: 23

	Noun	Gloss	Verb	Verbalizer
1.	dii-tika	'half-full'	-tikam-	m
2.	ci-luulu	'ululation'	-luuluut-	t
3.	wu-kadi	'anger'	-kadip-	p
4.	wu-koto	'beauty'	-kotop-	p
5.	wu-leewu	'length, height'	-leewup-	p
6.	w-ooga	'fear'	-oogop-	p
7.	lu-kole	'handle'	-kolek-	k
8.	ci-konyo	'hard lump on top of pumpkin'	-konyok-	k
9.	lu-mudi	'torch'	-mudik-	k
10.	n-nove	'husked and soaked corn'	-lovek-	k
11.	ci-wuvi	'cupping horn'	-wuvik-	k
12.	N-buumu	'breath'	-puumul-	l
13.	n-cokwe	'corn that has been husked'	-cokol-	l
14.	dii-powo	'hole'	-powol-	l
15.	ci-pyaaji	'broom'	-pyaajil-	l
16.	dii-soto	'hole'	-sotol-	l
17.	ci-soto	'small hole'	-sotol-	l
18.	n-swaaci	'tooth brush'	-swaaciil-	l
19.	ci-konyo	'hard lump on top of pumpkin'	-konyol-	l
20.	ci-kupi	'failure to pay attention'	-kupil-	l
21.	syeeto	'side'	-syeetel-	-e-l
22.	lu-soonga	'sharp pointed stick'	-soongol-	-o-l
23.	ci-kulupi	'confidence'	-kulupidil-	d-i-l

IV. Ideophones

Total of ideophones in the database: 279

Verbs derived from ideophones: 138

	Ideophone	Gloss	Verb	Verbalizer
1.	dyoodyoodyo!	'of sweetness'	-dyoop-	p
2.	powaapowa	'soft, pulpy'	-poowaan-	n
3.	wakaa!	'of rustling of dry grass or leaves'	-waakaany-	ny
4.	kanyaa!	'of crushing'	-kanyat-	t

5.	nyikaa!	'of pressing suddenly'	-nyikat-	t
6.	pwataa!	'of falling flat'	-pwatat-	t
7.	tokotoko!	'sound of water beginning to boil'	-tokot-	t
8.	keeee!	'of tearing: outing'	-keecul-	-c-ul
9.	tomaatoma	'of being pulpy'	-tomaasy-	s-y
10.	tomaatoma	'of being pulpy'	-tomaasik-	s-ik
11.	mweetuu!	'of smiling'	-mweetuudil-	d-il
12.	nyanyuunyanyu	'of stalking'	-nyaanyuudil-	d-il
13.	kosookoso!	'of coughing'	-kosomol-	m-ol
14.	dyoodyoodyo!	'of sweetness'	-dyoodyoopel-	p-el
15.	tepetepe!	'disappearance'	-tepetel-	t-el
16.	gojogojo!	'not properly fastened'	-gojom-	m
17.	jaasaa!	'gaping for a log time'	-aasam-	m
18.	kwekwelee!	'of dragging along the ground'	-kwekwelemy-	m-y
19.	ndundudi!	'of swelling: piling up'	-ndundudimy-	m-y
20.	nyesinyesi	'of glittering: sparkling'	-nyesim-	m
21.	sisisisi	'cold, tasteless'	-sisim-	m
22.	tetetete!	'all day long'	-tetemy-	m-y
23.	tikaa!	'stop suddenly before filling up'	-tikam-	m
24.	toji!	'of being startled'	-tojim-	m
25.	kanyaa!	'of crushing'	-kany-	Ø
26.	kwengweejuu!	'of hanging up'	-kweengweej-	Ø
27.	luundumukuu!	'sudden general exodus'	-luundumuk-	Ø
28.	miloo!	'of something being swallowed'	-mil-	Ø
29.	nin'anin'a	'be constricted'	-nin'-	Ø
30.	petaa!	'of a puff of gust of wind'	-pet-	Ø
31.	pito!	'of passing quickly'	-pit-	Ø
32.	punyuu!	'of putting into the mouth'	-puny-	Ø
33.	sangaa!	'of leaping'	-saang-	Ø
34.	takanyutakanyu	'scattered or spread about'	-takany-	Ø
35.	toonyoo!	'of poking'	-toony-	Ø
36.	tuucii!	'volumes of smoke'	-tuuk-	Ø
37.	vadi!	'of flashing'	-val-	Ø
38.	balaadi!	'moving in large number, in confusion'	-baladik-	k
39.	balalaa!	'dispersed in panic'	-baladik-	k
40.	cidiwuu!	'of leaving suddenly a place'	-cidiwuk-	k

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41.	coti!	'full up; packed full'	-cotik-	k
42.	gwebede!	'sound of a falling metal'	-gwebedek-	k
43.	jagadijagadi	'of being restless'	-jagadik-	k
44.	jidijidi	'of quivering'	-jidijiitik-	k
45.	jijidijijidi	'of being fidgeting or busy'	-jijidik-	k
46.	kaci!	'throat's reaction to puff of smoke'	-kacik-	k
47.	koloondoo!	'squirting'	-koloondok-	k
48.	kudii!	'setting a fire'	-kudik-	k
49.	kudubuu!	'of taking out (the tube) from the tyre'	-kudubuk-	k
50.	kulupuu!	'of slipping out of the hand'	-kulupuk-	k
51.	kuudii!	'come out from the socket'	-kuudik-	k
52.	kwengweenduu!	'out of the proper course'	-kwengweenduk-	k
53.	kwetee!	'of being stuck in between'	-kwetek-	k
54.	lakataa!	'of falling over'	-lakatik-	k
55.	letu!	'of moving quickly past'	-letuk-	k
56.	lopotoo!	'nervelessly; weakly; feebly'	-lopotok-	k
57.	mudimudi!	'shining'	-muduk-	k
58.	pyaalu!	'of being tripped up'	-pyaaluk-	k
59.	sembeenduu!	'of going astray'	-seembeenduk-	k
60.	supu!	'of being startled'	-supuk-	k
61.	tagalaambwii!	'with legs widely apart'	-tagalaambuk-	k
62.	tusuutusu	'that bursts easily'	-tusuk-	k
63.	tyaalaambuu!	'of slipping up'	-tyaalaambuk-	k
64.	tyaa!	'of smearing'	-tyaak-	k
65.	tyaalaambuu!	'of slipping up'	-tyaalaambuk-	k
66.	valuu!	'of splitting; bursting open'	-valuk-	k
67.	yingalamu!	'of rolling about'	-yiingalamuk-	k
68.	yiituku!	'discharge suddenly (esp. of a trap)'	-yiituk-	k
69.	cadii!	'exposure of a person'	-cadil-	l
70.	cecena!	'of showing the teeth'	-cecenal-	l
71.	ciisuu!	'of kicking (once) backwards'	-ciisul-	l
72.	gagaambaa	'of being stumpy'	-gagaambal-	l
73.	gogovaa!	'of hanging; bending down'	-gogoval-	l
74.	gopoo!	'of untying'	-gopol-	l
75.	gowoo!	'of plucking'	-gowol-	l
76.	gumuu!	'of falling in lumps'	-gumul-	l

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77.	jajavaa!	'of floating'	-jajaval-	1
78.	josopa!	'of being worried'	-oosopal-	1
79.	kaluu!	'splitting or breaking nearly through'	-kalul-	1
80.	kapii!	'sinking'	-kapil-	1
81.	katuu!	'of gnawing; nibbling'	-katul-	1
82.	kokosaa!	'of showing the teeth'	-kokosal-	1
83.	kolotoo!	'of emerging from an enclosure'	-kolotol-	1
84.	kotopoo!	'of chuckling under the chin'	-kotopol-	1
85.	kowoo!	'of abrasing the skin'	-kowol-	1
86.	kudubuu!	'of taking out (the tube) from the tyre'	-kudubul-	1
87.	kwapuu!	'of sweeping out; whipping'	-kwapul-	1
88.	kwiisuu!	'of retracting the prepuce'	-kwiisul-	1
89.	lapu!	'of flaring up'	-lapul-	1
90.	lelu!	'of showing the whites of the eyes'	-leludil-	1
91.	longolongo	'of going straight to the destination'	-loongol-	1
92.	metu!	'of twinkling (once)'	-metul-	1
93.	ndendenga!	'shortness of worn cloths'	-ndendengal-	1
94.	nyan'amaa!	'of being tall and slim'	-nyan'amal	1
95.	nyapanyapa	'of drizzling rain'	-nyapal-	1
96.	nyokopoo!	'lifting a child with one hand'	-nyokopol-	1
97.	nyoocoo!	'of plucking up by the roots'	-nyoocol-	1
98.	mosoo!	'of breaking off something soft in texture'	-mosol-	1
99.	nyetu!	'of twinkling (once)'	-nyetul-	1
100.	nyidididi	'of being very tiny'	-nyidil-	1
101.	pakuu!	'dish up'	-pakul-	1
102.	palaanda!	'of staring'	-palaandal-	1
103.	piinduu	'making profit'	-piindul-	1
104.	pikuu!	'dangerously sloping'	-pikul-	1
105.	pikuu!	'of overturning'	-pikul-	1
106.	pojoo!	'finding a way through a bush'	-pojol-	1
107.	powoo!	'of punching right through'	-powol-	1
108.	pyaalu!	'of being tripped up'	-pyaalul-	1
109.	pyootoo!	'of retracting the prepuce'	-pyootol-	1
110.	sapuu!	'taking a share or a small quantity'	-sapul-	1
111.	sepuu!	'of dazing; cutting a slice'	-sepul-	1
112.	sokoo!	'of being very deep'	-sokol-	1

113.	sotoo!	'of punching right through'	-sotol-	I
114.	swiipuu!	'of snatching away'	-swiipul-	I
115.	taanyuu!	'of kicking (once) backwards'	-taanyul-	I
116.	tapuu!	'of stickiness'	-tapul-	I
117.	teguu!	'of taking (a pot) off the fire'	-tegul-	I
118.	tidididi!	'smooth; highly polished; finely ground'	-tidil-	I
119.	tipitipi!	'sunset'	-tipil-	I
120.	tivii!	'of diving, sinking, sunset'	-tivil-	I
121.	togowaa!	'exposure of a person'	-togowal-	I
122.	toonyoo!	'of poking'	-toonyol-	I
123.	tupuu!	'of extracting (e.g., a tooth with forceps)'	-tupul-	I
124.	tusuu!	'of bursting'	-tusul-	I
125.	tutuumba!	'of being bent'	-tutuumbal-	I
126.	tuumbuu!	'cutting open and removing the contents'	-tuumbul-	I
127.	vaanduu!	'of hammering metal'	-vaandul-	I
128.	valuu!	'of splitting; bursting open'	-valul-	I
129.	veeveeve!	'thin and transparent; soft'	-veeveel-	I
130.	vidikuu!	'looking aside'	-vidikul-	I
131.	vidikuvidiku!	'vomiting or defecating in great quantities'	-vidikl-	I
132.	vidividi	'black or dark in color; long absent'	-viidil-	I
133.	viguu!	'beginning a motion'	-vigul-	I
134.	wuguu!	'opening'	-wugul-	I
135.	wukuu!	'of excavating; disinterring'	-wukul-	I
136.	wunukuu!	'of uncovering'	-wunukul-	I
137.	yingalamuu!	'of starting rolling about'	-yiingalamul-	I
138.	yiituku!	'discharge suddenly (esp. of a trap)'	-yiitul-	I

The following is the lexicon of 2,838 Ciyao verbs which are part of thoroughly modified version of Sanderson's (1954) *A Dictionary of Yao Dictionary Language* to which we have added tone, vowel length marking, new vocabulary, causatives, applicatives, and perfectives. Most of these additions do not appear in this appendix, but they can all be seen in the whole dictionary, which is part of CBOLD (Comparative Bantu On-Line Dictionary) Project of the Department of Linguistics of the University of California at Berkeley, that can be accessed at httm//bantu.berkeley.edu.cbold.html:

-aala	lay in order side by side; stand in a row.
-aalucilwa	be light in weight.
-aaludila	drag along a net.
-aaluka	be light in weight; be light of character; be light-headed.
-aalukaangana	be very light either of character or in weight; be nimble, active.
-aalukula	remove one by one (things superimposed); remove the top layer.
-aalula	catch pigeons in their cote.
-aalusya	lighten (in weight); disparage; disrespect; insult; slander; libel; use foul language.
-aamba	cover with the open palm of the hand.
-aamba	speak about; mean; refer to; just do something.
-aambila	lure; decoy.
-aambucila	pass from one place to another; reach; infect (with a disease); contaminate.
-aambucisya	pass on; transmit (a disease).
-aambudila	seek for the scent (of a dog, but it may be used figuratively).
-aambula	tape-record; photograph; video-record; draw; copy; eaves-drop; overhear.
-aamiila	shout at; scream.
-aamuka	rebuke; scold; punish.
-aanga	answer, reply.
-aanga	catch (anything thrown).
-aanga	be reached by fire.
-aangaangana	engage in cross-chat; talk all at once.
-aangala	dance about.
-aangalusya	disregard a warning; finish quickly.

-aanganya	pour from one container into another.
-aangata	carry in the hands or arms.
-aanguciya	treat with disrespect.
-aanguya	hurry; make haste.
-aanicila	cut trees and leave them in the bush to dry for firewood.
-aanika	spread out to dry in sun.
-aanjiila	intrude in others' conversation; catch (by the birds) the flying on air.
-aanukuka	be gathered up what has been spread out in the sun to dry.
-aanukula	gather up what has been spread out in the sun to dry.
-aapuka	defecate (of a child); have diarrhea.
-aasa	loose; throw away; bury (of a person).
-aasaanga	abort (of women only).
-aasama	gape; yawn; open one's mouth.
-aasamukuka	be open (a mouth).
-aasamukula	open somebody's mouth.
-aasasya	spread (of flour) out to dry.
-aasiidila	offer a useless thing to somebody.
-aasika	be lost; be dead.
-aasima	lend; borrow (esp. for a short period).
-aasimika	be willing to give credit, be accommodating in lending; be available for borrowing.
-aasimila	complete a set (temporarily) with something from a different set.
-aatuusya	put to dry by the fire.
-aawula	go away; "leave for" (another place).
-aawusya	cause or permit to leave; let go; let a visitor see that he is unwelcome.
-balaadisya	scatter.
-baladika	move in large number (people or animals) in confusion; be scattered; scatter.
-bambadika	bolt one's food.
-bangula	roar; bellow; shout (as warning); make very loud noise.
-batika	put on a patch; stick; close an opening (e.g., in a fence).
-batukuka	be removable (a patch); be unstuck.
-batukula	remove a patch; unstuck.
-beduka	break off a portion.
-bedula	break off a portion.
-beka	pay for a song in order to dance or to listen to.
-benyula	chip off little by little.
-bidiviitala	be dark in color.

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-bogojola	wrench open.
-bunyuka	become jagged; become broken off.
-bunyula	take the edge off; notch; chip.
-buuka	rise up; wake up; get angry; shout angrily.
-bwaasya	drive (people) away by bad behavior.
-bwabwaatala	be low and flat-topped (of a hill or mound); be flat; crouch.
-ca	dawn; clear up (after rain); end of rain season; be ripe for gathering.
-caacaaganya	procrastinate; put off somebody's words in a discussion.
-caanga	bounce; rebounce.
-caanjamisya	hurry up.
-caanjamukuka	rise (as yeast); struggle to get up from the ground, from a pool, from a pit.
-caanjamukula	lift slightly; tilt.
-caanjuka	walk fast.
-cadiidila	resolve firmly; persist; insist.
-cadila	be irascible; resolve firmly; persist.
-cadiya	raise the voice.
-cakama	walk quickly with short steps.
-cakamila	dry up (of water in a pot, stream, etc.).
-cakapuka	begin a quarrel; get angry at somebody suddenly; interrupt; refuse to listen.
-cakapula	hoe hard ground (unprepared); begin a quarrel; interrupt; refuse to listen.
-calacaata	flit about; be restless.
-calacaatika	flit about; be restless.
-calamaandala	be tough; be stiff and unpliable; be obstinate; stubborn; be abrupt in manner.
-camilwa	come to a dead stop; be graveled; nonplused.
-canyaanda	beat out (e.g., metal); crush.
-canyaanda	run away, "bolt".
-capa	wash.
-capika	be washed out.
-capuka	get suddenly angry.
-cecela	be unfair in distributing things; give a smaller share than the deserved.
-cecema	cause burning pain; be uneasy (of a sore or wound); rustle.
-cecenala	grin; show the teeth.
-cecenukuka	crack; split; gape.
-cecenukula	crack; split.
-ceecuka	be torn off (a strip).
-ceecula	cut or tear off a strip; pierce below the skin.

-ceejela	be red; become red.
-ceekulupa	be old, be or become aged.
-ceekulupya	make be or become old.
-ceelwa	be overtaken by sunrise.
-ceembesya	bear the first child.
-ceembulukuka	be treated with disrespect or contumely.
-ceembulusya	be rude, disrespectful; sneer.
-ceenga	dazzle; exchange.
-ceengulanya	interfere in a quarrel.
-ceenjela	defend.
-ceenjelesya	reconcile.
-ceenjewuka	be troubled; bewildered; be excited: be inquisitive.
-ceenjewula	trouble excite.
-ceesa	scrub the sole of the feet (usually with a stone); play (e.g., cards).
-ceesya	be awake all night; continue (e.g., dancing) all night.
-cegudila	look over the shoulder.
-cejecesya	meddle in other people's affairs; "butt in".
-cejuka	fade (of colored material); be "washed out".
-cejusya	fade; dye.
-ceka	saw; cut in sawing motion.
-cela	tease out cotton; remove contents of fruit; castrate.
-celeenga	be in a hurry;
-celeesya	hasten; hurry (another).
-celega	cut all round (e.g., tree); carve.
-celewa	be late; loiter.
-celewaasya	delay (another); smooth off (a job).
-celewudila	look over the shoulder.
-celewuka	draw off attention.
-celewula	be sore of eyes with smoke or dust.
-celewusya	startle; delay.
-celuka	encounter danger; take a risk.
-cenama	be quarrelsome; be excitable; be brusque.
-cenuka	fall; stumble; die (euphemistic) become dry and ripe for sowing; be abusive.
-cenula	strike a woman.
-cenyeendela	trim the hair round the forehead.
-cesela	be without eyelashes.

-cesuka	go bad (especially cooked food).
-cesula	brew beer (first day): dye or stain red.
-cidicila	add a condiment to food; assist in a case-at-law; prop up; support.
-cidiimbika	determine, settle.
-cidika	make acid by straining ashes of certain plants.
-cidikula	lever up.
-cidimika	persevere; carry through an undertaking; keep one's word.
-cidimula	clear the throat (not cough).
-cidiwuka	stand up and leave the place suddenly say nothing to the others.
-ciga	render secure; fence round; protect by means of charms.
-ciicidicisya	compel; oblige; assent.
-ciimaasika	pant; be out of breath; strain (as at stool): moan; groan.
-ciimbicisya	honor; reverence; pay respect; do honor or obeisance to.
-ciinga	herd (cattle); grasp (a stick); shade the eyes with the hand; parry; foster.
-ciinga	wedge.
-ciinga	clench the fist; defend; grasp (a stick); store up carefully. catch rainwater.
-ciingaangana	encounter (with enemy).
-ciingamila	go to meet the visitor and escort him into the village (an honor).
-ciingamisya	send an escort or refreshment to meet a visitor.
-ciingamwa	get stuck.
-ciingana	look after one another; live in harmony.
-ciinjidicisya	catch anything that is trickling down or leaking out; reply quickly.
-ciinjidima	be regular in habits; be dependable, reliable; hold firmly to one's opinion.
-ciinjika	put a supporting object; prop something against another.
-ciinjikuka	be removable (a wedge).
-ciinjikula	remove a wedge.
-ciinjila	guard oneself as with a shield; drive toward.
-ciisa	trim the edge (e.g., grass of eaves, threads in weaving).
-ciisila	press down; compress.
-ciisula	kick backwards.
-ciisya	urge; coerce.
-cima	hate; abhor.
-cimaasya	vex; disgust; make hate.
-cimula	dance with rattles on the ankles.
-cina	be happy.
-cinula	rejoice over.

-cinya	dip.
-cinyiinda	tap (knock); tie together the ends of cloth in making a fringe.
-cinyiindika	press down.
-cinyiindila	ram; pack tightly.
-cinyila	cram in.
-cipa	be out of fashion; be no longer beautiful.
-cipya	make be out of fashion; make be no longer beautiful.
-codima	be steep; be in a hurry; go far away.
-cokola	begin pounding grain (husking); begin any undertaking; "get underway".
-cokopola	dig a hole with a stick; extract the charge from a gun.
-cokotola	hoe a little and soon stop for rest; be dilatory.
-colocooteka	leave home for good; emigrate.
-colocootesya	make somebody leave home for good; make somebody emigrate.
-colovana	be out of line; go amiss (of a plan).
-colovanya	fail to finish properly; disregard the decision of a court; get one's point mixed.
-coma	burn; roast.
-comoongoka	start crying very loudly.
-conwa	be at loss (uncomplimentary).
-coocoola	break up the bush in preparing a new garden; start a new garden.
-coocoola	run away, "bolt".
-coola	overdo; exaggerate.
-cooma	groan.
-coondeeleka	be the subject of supplication.
-coondeelela	supplicate; entreat; beg; beseech.
-coondola	express disgust or contempt as by "clacking" the tongue.
-coonjoosya	chatter like a monkey; backbite.
-coosiidila	be blackened with soot; plead with tears.
-copa	stab; jab.
-copa	pedal.
-copela	frighten (fish) into a net by probing the water with a stick or a spear.
-coteca	act thoughtlessly or carelessly; go off the track; exaggerate.
-coteka	plant in unprepared ground.
-cukulu	thank.
-culuka	be much or many.
-culuya	increase a quantity; make, add, etc.; make be too much or too many.
-cunyuunda	crush; bruise.

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-cuva	uproot; pick out or remove anything prominent; extract.
-cuva	taste food while it is cooking.
-cuwuka	come out of water.
-cuwula	take out of water; (save from drowning).
-cuya	dip quickly in and out of water.
-cuyika	dip in water.
-daala	take for granted; to not care.
-daandawula	grumble; solicit a favor; ask for assistance; lament.
-delela	be grasping; rapacious; sordid; avaricious; underestimate the enemy.
-deleleka	be exploited, taken advantage of.
-dicisya	condole with.
-dicitika	die in great numbers or quantity (e.g., fish, birds, etc.).
-diicisya	sustain (e.g., the family); wind a watch or clock.
-diidicika	be appetizing.
-di(id)igwa	be eaten.
-diidisya	overeat; eat a lot.
-diimba	be strong; be hard; be firm.
-diimbaangana	be very strong and muscular.
-diimbicila	try hard; resist strongly.
-diimbiidila	be tight; be firm.
-diimbika	be strong; tie or fasten securely; encourage; insist.
-diimbila	persist; persevere; speak strongly or boldly.
-diimbukuka	tumble; sag; fall over slowly (e.g., a tree or a pole).
-diimbula	taste the first fruits.
-diinda	wait; wait for.
-diinda	stamp on.
-diindiidila	guard.
-diindima	roar (rain, wind, fire).
-diindimila	hum.
-diinga	try; experiment; measure.
-diingaanya	adjust; put straight; make tidy; repair.
-diingana	be equal in size.
-diinganicisya	repair for, at, etc.
-diingudila	peep continuously; observe carefully (e.g., through a microscope).
-diingula	peer; peep.
-diisya	feed.

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-diiya	do thoroughly and efficiently; fasten firmly; be firm, obstinate.
-dijila	await the outcome (esp. with confidence); beat strongly.
-dikula	announce somebody's death;
-dila	weep; mourn; cry.
-dilaasika	repent not having followed a certain course.
-dima	hoe; cultivate.
-dimuka	be scared away; cease visiting a place or a person.
-dimula	scare away.
-dimwaasya	drive people away by bad behavior.
-dimya	hoe for payment or for beer.
-dipa	pay.
-dipucilwa	be utterly exhausted; be feverish.
-dipuka	be feverish.
-dipula	tease; invent; originate.
-dita	be burned out (of fire); be extinguished; be settled (of a case-at-law).
-divadila	forget.
-divata	step on; tread; trample on; be bewitched by "medicine" placed on the path.
-divatila	press down something (esp. with the foot).
-divatukuka	be removed (foot); be lifted after stepping on.
-divatukula	removed (foot); lifted the foot after stepping on.
-diwudika	be sufficiently pounded (of flour).
-diwudila	pound the fine grains in making flour (the final stage).
-diwuka	be pounded and reduced to flour.
-diwula	pound to extract flour.
-dodoloka	be greedy.
-dodoma	hesitate; be dilatory; stutter.
-doondoceya	pour a little at a time; pour drop by drop.
-dududisya	drag along the ground anything that does not run smoothly; bite on a hard object.
-duuma	shout angrily.
-dya	eat. Fig., spend (e.g., somebody's money); destroy, seduce, make love.
-dyaa-dyaa-dya	eat frequently.
-dyoodyoopela	taste sweet.
-dyoopa	taste sweet.
-dyuudyuusya	wave or wiggle from side to side (e.g., the finger as in reproof).
-dyuunga	swing; sway about; be untrustworthy; be mischievous.
-dyuungaasya	confuse; cause confusion.

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-eegama	lean on; be supported.
-eegamika	lean up something against another.
-eegamukuka	be removed from a leaning against something else.
-eegamukula	remove what has been leaning against something else.
-eejeka	place leaning against or on.
-eejekuka	be removed from a leaning against something else.
-eejekula	remove what has been placed leaning against or on.
-eejetukuka	be separable (esp. oil from water by decanting).
-eejetukula	separate oil from water by decanting.
-eeleesya	pass water in a recipient and pour it out.
-eeluka	be shallow; be superficial; burrow close to the surface; become level, heal over.
-eelusya	advise.
-eembeceya	await; have patience.
-eembula	remove the pith from a split bamboo; scrape off the surface.
-eenanila	suffice.
-eenda	walk; proceed; travel; progress.
-eenda-jeenda	travel about; walk about.
-eendesya	drive, ride, direct.
-eenecesya	satisfy (in matters other than food).
-eenela	cover (a flat surface); spread; suffice.
-eenesya	spread a report; proclaim; suffice; satisfy.
-eenga	make oil (esp. castor oil).
-eesya	trade.
-gaadila	stare at.
-gaala	crack; split.
-gaaluka	crack.
-dii-gaamba	be penitent; repent; regret.
-gaamba	mention somebody's characteristics (physical or behavioral) in derogatory way.
-gaamba	refer to.
-gaambatukula	lay open; peel off.
-gaanda	be or become lean (of person or animal).
-gaandaasika	be continuously leaning.
-gaanga	split (fish or fowl) down the back and lay open; spatchcock.
-gaangaasika	burst, crack or split because of pressure from within.
-gaangaasya	cause to burst, crack or split open by pressure from within the surface.
-gaangalama	be big (and roundish), strong, sturdy; have good health.

-gaangula	split.
-gadama	lie on the back; lean back.
-gadamika	turn to its (his, her) back.
-gagaambala	be stumpy.
-gagaatala	be "thick" and "heavy" (of a swollen part of the body).
-gagaceya	fasten together loosely; take hold carefully.
-gagada	hack; cut roughly into shape.
-galaambuka	turn over; fall.
-dii-galagaasya	roll about on the ground.
-galagaata	roll about on the ground, esp. in salute to a chief or to the spirits.
-galagaatika	be double faced, untrustworthy; walk quickly; bustle about.
-galama	be twisted.
-galamya	twist.
-galawuka	turn round; overturn; change (transform).
-galawusya	turn round; overturn; change (transform).
-ganiicisya	be in doubt about; "wonder".
-dii-ganiicisya	fancy; imagine oneself.
-ganiisya	think; consider.
-gava	cut up; cut up for division.
-gavanya	divide (distribute).
-gaya	grind.
-geya	belch.
-gogovala	be bent; stoop.
-gojoma	be useless; be loosely tied.
-goloka	be straight; be even.
-golosya	adjust; straighten.
-goma	be baffled; tap a rubber tree.
-gomela	lose a case-at-law.
-gona	sleep; lie down.
-dii-gona	be content.
-gonaasika	take one's time; not to be on great hurry; spend consecutive nights away.
-goneka	lay down.
-dii-goneka	lie at full length.
-gonela	sleep on (top of); sleep at a certain place during a journey.
-googodecela	inform against; disparage.
-googootela	lose a case at a court of law.

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-goomba	beat; strike; play musical instrument; fire a gun; knock a door.
-dii-goomba	harm (only) oneself; run one's head against a wall or a pole; "ask for a trouble".
-goombela	shoot; parry a blow.
-goombelecesya	announce; give a warning; dilate on a subject; act at crier; appeal.
-goombokola	untie; explain; break an agreement; go back on a bargain; rescue.
-goombokolanya	solve a problem; resolve a difficulty; interfere as a mediator.
-goombwa	be exhausted, tired out.
-goonga	make cooking oil (from groundnuts, sunflower, etc.).
-goongomala	be crooked, awry.
-goosa	refrain from; eschew; put a taboo or spell on a thing or person; preserve.
-dii-goosa	refrain from; beware of.
-gopola	untie; release.
-gopolanya	separate two or more things from one another; explain; untie many things.
-gopolela	explain to; translate; offer one's own used clothes.
-gowola	pluck cobs of dried corn; harvest.
-goya	bend down.
-gudubuka	roll (intr.).
-gudubula	roll (tr.).
-gudula	cut down (a tree) having a stump; pluck grass (leaving the roots).
-gudumuka	roll; flee in terror; bolt.
-gudumula	roll; make flee in terror; bolt.
-gudumusya	startle; start an engine.
-guguda	graze.
-gugudila	graze at.
-guguduka	be close cropped (of beard or hair).
-gugudula	crop (different from shave) the beard or hair very short.
-guguluma	rumble (distant thunder, intestines).
-gugumila	tremble, throb.
-guguundala	fail to mature; be dwarfed or stump; contract, shrink.
-guluguusya	be unruly, insubordinate, refractor; be mischievous.
-guluka	jump; fly.
-gulula	swill down with water (e.g., floor); rinse (utensil).
-guluma	have diarrhea; flow.
-gulupanya	be headstrong, obstreperous, impatient of advice; be obstinate.
-gulusya	allow to fly away; make fly; run off, carrying the boys for circumcision.
-guma	bark (of a dog).

-gumiila	shout; scream.
-gumuka	break or crumble away in lumps.
-gumula	break or batter down (plaster, brickwork, side of a hole in the ground, etc.).
-guuguusika	rush away; be very short.
-guuguusya	knock lightly, tap.
-guumba	plaster (with mud, cement, etc.); mould (pots); shape or cast (bricks).
-guumbadicisya	fill too full; fill to utmost capacity.
-guumbadila	be very full; be full to overflowing.
-guumbala	be full.
-guumbasya	fill.
-guunda	stumble; knock; run over; bump into.
-guundima	be stout (obese); grow fast.
-guundudila	chew anything tough; bring the wrong thing; give a false report.
-guundulula	pluck indiscriminately everything, leaving the soil completely uncovered.
-guunduma	rush in and seize hold; "tackle".
-guundumuka	roll down (intr.).
-guungudika	be collectable (of crops).
-guunguka	leave at once in a very large number; be caught in great number (fish, birds, etc.).
-guungula	collect crops from the garden; harvest.
-guunguluma	act without plan or system, at haphazard.
-guungulumya	rush aimlessly about; rush off; scurry away; disperse (of a crowd).
-guungumila	sound hollow; rumble.
-guungunukula	liberate; loose.
-guuta	shout; cry out (esp. when hit).
-guutaanga	mourn.
-gwa	fall.
-gwaagula	strip off (bark, skin, etc.).
-dii-gwaagula	moult; cast the skin.
-lu-gwaagula	run away, "bolt".
-gwaagwaasula	tear off forcibly (esp. clothes on somebody's body).
-lu-gwaagwaasula	run away, "bolt".
-gwaajidisya	pass over quickly (of rain).
-gwaala	go away secretly; hide; disappear.
-gwaandama	steal.
-lu-gwaandula	run away, "bolt".
-gwaasya	stow away out of sight; hide.

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-gwaavidicika	stalk (intr.).
-gwaaviidila	stalk (tr.).
-gwapula	slash with a knife, scythe, sword, etc.
-gwebedesya	stumble onto something that produces metallic sound.
-gweedeena	be loose in its socket (nail, knife, etc.).
-gweeseela	be sleepy; nod with sleep.
-gwesima	be dullwitted, "half-baked", stupid.
-gwiila	fall for, at, etc.; get by chance; be lucky.
-gwiindimala	be short and stout, be sturdy; be hard and compact.
-gwiisya	knock down.
-iigaanya	teach.
-iikuta	be satisfied; be content; have had too much.
-iilana	be on terms of friendship; get well with each other; match; be similar; harmonize.
-iilanya	reconcile.
-iiluka	break out in a rash.
-iilula	skim.
-iilusya	startle.
-iima	stand up; stop.
-iimba	sing; tell (a story); judge (in a case-at-law).
-iimbala	be fat (of a person).
-iimbula	skim off.
-iimiidila	represent; stand by; stand for; relief oneself.
-iimika	set upright.
-iimila	defend; support somebody's opinion or cause.
-iimisya	refuse.
-iimuka	wake up; get up after sleep; rise or get up from a recumbent posture.
-iimusya	awaken; rouse; "call".
-iinama	bend down; stoop.
-iinamila	be initiated on other pregnant woman's initiation ceremony.
-iinamukuka	straighten oneself after stooping.
-iinamukusya	lift and set upright.
-iinicila	bless; bestow good luck; make prosperous; pay respect to; honour; revere.
-iinicilana	keep peace, observe the proprieties (of a community).
-iinicilwa	prosper, have good luck; be blessed.
-iinicisya	give effect to; fulfill.
-iinikana	agree together; be on friendly terms.

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-iinikanya	reconcile.
-iinjiidila	take a certain direction; go.
-iinjila	enter; go in.
-iinjilanya	interrupt.
-iipipa	be or become short.
-iipiya	shorten.
-iisa	come.
-iisamula	sneeze.
-iisya	sigh.
-iita	pour; pour out, throw out (liquid).
-üticisya	accept; consent; agree.
-iitika	answer when called by name; accept; consent.
-iitika	drop (e.g., liquid).
-iitila	irrigate; "water".
-iitisya	boil and leach out the bitter taste (as in cooking of cassava of certain type).
-iiva	steal.
-iivika	be easily stolen.
-iiwula	ripen; come to a head (of a boil or abscess).
-ja	go (also auxiliary); go and do something.
-dii-jaalusya	disgrace oneself; make a laughing-stock of oneself.
-dii-jaanda	throw the end of a cloth, worn like a cloak, over the shoulder.
-dii-jaasa	leave home and settle elsewhere.
-jagadika	be restless and worried.
-jagama	hobble (in walking), limp.
-jajavala	float.
-javadika	search in vain; waste.
-javaluka	spring to the feet; get up quickly.
-jawusya	halfcook.
-dii-jeesya	walk carefully or unobtrusively; be a prostitute.
-jejema	strain at stool.
-jididika	be covered up and hidden from view.
-jidijiitika	quiver; tremble; twitch (esp. of a part of the body).
-jidima	trickle; flow slowly.
-dii-jiigaanya	learn; teach oneself.
-jiima	to not give; refuse to give (a person).
-jiimya	cause to not give; cause to refuse (a person).

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-dii-jiiticisya	confess (in an investigation).
-jijidika	be restless; do various things in the same time.
-jila	say. This verb is used only in some tenses (present and future).
-jina	dye black (us. by steeping in mud).
-jogoja	talk noisily.
-joja	make noise (people talking).
-dii-joogoceya	bluster; bluff.
-dii-joongola	stretch one's limbs; "go for a constitutional".
-joongolomya	scare game; give away secret; betray confidence.
-joveta	keep tame animals; speak indistinctively, mumble.
-juba	sign up (daily job ticket or time sheet).
-juga	beg.
-juguvala	blister.
-juguvasya	cause appearance of blister(s).
-juja	rejoice at an escape from danger.
-jujika	be over-liberal, foolishly generous.
-jujulusya	be acid in taste.
-jumana	quarrel; come to blows or to altercation.
-jutuka	rebound (as a spring); stagger backwards.
-jutula	jar oneself.
-juunda	be sodden; be over-ripe; be thin (lean).
-kaana	deny; refuse.
-kaanda	knead (dough or the muscles as massage).
-kaandapala	be thick (esp. of cloth but used also for planks).
-kaandavila	perplex.
-kaanga	fall down (a tree); make the picture models at the boys' initiation ceremonies.
-kaangaacila	equivocate; be evasive.
-kaangaaciya	doubt.
-kaangaana	quarrel.
-kaangala	be frequent.
-kaangamala	walk fast.
-kaanganawukuka	be gaped (as a wound).
-kaanganawukula	gape (as a wound).
-kaanganicila	force one's will; insist.
-kaanganicisya	compel; persuade strongly; influence; insist.
-kaanganika	be a tight fit.

-kaanganukuka	be open out by force (e.g., a metal bracelet); be increasable (size)'.
-kaanganukula	open out by force (e.g., a metal bracelet); increase the size of a tight fit.
-kaangula	cut open the breast of an animal.
-kaanidicila	be stuck and refuse to come apart; refuse to leave.
-kaanila	deny a lie.
-kaanjiidila	be industrious; persevere; sew or fasten up lightly.
-kaanjila	pass by without entering (e.g., a village); pass heedlessly.
-kaanjula	open out; pull or tear down, off, or apart.
-kaanya	forbid.
-kaanyula	separate; force open.
-kaasa	shatter; break in pieces; smash; ravage (a country, a village).
-lu-kaasa	run away, "bolt".
-kaasanya	break into small portions.
-kaasicila	be in great numbers.
-kaava delay;	be late.
-kaciidila	wrap around.
-kacika	be industrious, persevere.
-kacila	react to puff of smoke; inhale smoke.
-kacukula	force or split open or apart; tear into bits; pull to pieces.
-kacula	break nearly through; tear off.
-kadipa	be or become angry; be bad-tempered; be aggressive in manner.
-kadipila	scold.
-kagula	follow; reply to an argument.
-kakadika	walk sideways (as a crab); walk warily as if expecting an attack.
-kakawukuka	be eaten without being peeled off.
-kakawukula	attack with the teeth; eat (fruit, sweet-potato, etc.) without peeling off.
-kalaambala	be stiff; get old; be aged.
-kalaanga	fry; scorch in a potsherd (e.g., corn).
-kaladicisya	treat with cruelty or harshness.
-kaladika	be cruel.
-kaladisya	be cruel.
-kalakaatala	be stiff and unpliable; be tough; be brittle.
-kalama	change direction, alter the course.
-kalamucila	outwit; take advantage of.
-kalamuka	be cunning, "smart"; be clever.
-kalamukuka	be outwitted; have one's eyes "open".

-kalamukula	outwit; 'open someone's eyes'.
-kalamusya	snatch away.
-kalavaandukula	remove the scab of a healing wound or ulcer.
-kalavila	spoil (water or food) by introducing dirty hand(s) into its container; contaminate.
-kalawiisa	mix with water.
-kaludila	fulfill, give effect; arrive (of somebody expected for a long time).
-kalula	split or break through; separate the things; strike a path in the bush; explain.
-kama	milk; squeeze out; extract oil from seed by pounding; get back .
-kamata	make into a ball (e.g., wax, stiff porridge).
-kamatana	stick together.
-kamatukuka	be disintegrated (a mass).
-kamatukula	disintegrate a mass.
-kamucisya	help; support.
-kamudila	hold in hands; rape.
-kamula	seize; capture; take hold of; grab.
-kamulaanjila	grasp.
-kamusya	help (esp. in physical activity).
-kan'aanda	hit; cut anything hard and dry.
-kanyata	crush; bruise; stamp upon (with foot); trample underfoot.
-dii-kanyata	hurt oneself.
-dii-kapa	cut oneself.
-kapa	stab; injure with a cutting instrument; scoop up water in the hands.
-kapicila	splash or throw water about.
-kapila	set (of sun); dive into water; sink.
-kapula	hoe deeply, as for seed-beds, planting rice, etc.
-kasidika	be sulky.
-kata	cut; cut off; bring to an abrupt end.
-katapula	hoe deeply; dig out clay or soil in lumps.
-katudila	break off portion of porridge with the teeth.
-katula	gnaw; nibble at.
-kava	gather vegetables or herbs; pluck; gather (fruit).
-kawula	taste of the kind of unripe banana.
-kiya	lock.
-kocela	come ashore; come to an anchor; disembark.
-kocesya	take ashore.
-kodiga	speak or sing very well (esp. as regards to enunciation).

-kodola	beckon; cluck with the tongue; scratch with the finger.
-kojola	pass water; urinate.
-kokoma	roar; rumble (of thunder, heavy rain, a water-fall); be or become stiff; be curdled.
-kokomesya	salute; greet; set at variance; prize (an article), set store by.
-kokomoka	be gluttonous.
-kokona	slide the buttocks on the ground or on a pole.
-kokonya	slide.
-kokoola	gather up; pick up after gathering into a heap.
-kokoola	run away, "bolt".
-kokopola	take without permission.
-kokosola	split or break into pieces.
-kokota	scrape together; scrape off; gripe (of abdominal pain); have colic.
-kokova	loiter; delay; linger.
-kokoya	loiter; delay; linger.
-kola	have; possess.
-kolaanga	greet; invoke or mention; give someone's name as reference; ask for news.
-kolaangana	greet each other; be at good terms with.
-koleesya	light (a fire); switch on (lights).
-koleka	hang up; carry a parcel on a stick; prove another in the wrong.
-kolekana	be at variance; walk arm in arm; be hooked together.
-kolekanya	hook together; involve; entangle; set at variance.
-kolekwa	be hung; be caught by thorns.
-kolela	inflame (fire).
-kolela	be salty enough; utilize (e.g., house utensils).
-kolelwa	be drunk; be or become intoxicated.
-kologanya	stir (a liquid); interrupt.
-kolojela	add the flour in brewing beer (on the fourth day).
-kolokoka	be possible to take down (anything hung up).
-kolokola	take down (anything hung up).
-kolokolanya	take down many things that have been hung up; settle a dispute; give judgment.
-kolokoomboka	fall from a height.
-kolokoombola	take down from a height by means of a long stick.
-kolokoosoka	be shellable.
-kolokoosola	shell.
-kolola	mend; amend; improve; renew; clean out; clear the throat by hawking up phlegm.
-koloma	snort; snore; growl; speak very loudly; "bellow".

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-kolon'oondola	scrape or dig out.
-kolongoosa	meddle the fire with a stick.
-koloombana	be interlaced; be intertwined; overlap; be variegated in color.
-koloomboka	come out of the husk (grain); emerge from the egg; be prominent (eyes); bulge.
-koloombola	take out of the husk (grain).
-koloondosya	open the eyes widely.
-kolopoka	spring forward; jump out.
-kolopola	throw away with an object; snatch away.
-kolosa	poke in the eye.
-kolotola	startle; tap out (dottle from a pipe); knock out with a blow; pick out from a cavity.
-kolowola	scoop out (esp. with a finger or stick).
-koma	strike, beat with fist in the head; pay (tax); reach, extend (esp. of distribution).
-komaacisya	entertain as a guest; greet for, at, etc.
-komaanga	finish off a wounded animal; hit a men when he is down (esp. figuratively).
-komaangala	be full grown; be mature.
-komaasya	greet; salute.
-komadila	eat before an energy consuming activity (esp. physical).
-komala	be matured; possess supernatural power.
-komela	snore; secure a hoe in its handle by tapping the latter on a stone; hit with hammer.
-komesya	set at variance.
-komoka	faint; lose consciousness. .
-kon'oonda	tap, hammer; beat; excel in speaking (in court).
-kon'oondela	hammer at; make a tapping sound.
-konya	deprive; act foolishly; injure.
-dii-konya	destroy one's own property in anger; out off one's nose to spite one's face.
-konyoka	be broken off; be chipped off.
-konyola	break off from the stalk (e.g., banana).
-koocola	get used to.
-kookoomba	loiter; delay.
-koolokwa	be tidy, be well finished.
-koolooceka	be smoothed; be mended; be well done.
-dii-kooloosya	dress neatly; take pride in one's appearance; reform; mend one's ways; embellish.
-kooloosya	put straight; arrange; make tidy; take care.
-koomba	scrape out a pot or a plate with a finger.
-pa-koombola	be able; succeed; manage;
-koombola	be able to; "can"; be adept.

-koomboleka	be possible; be accomplished.
-dii-koombolela	have hability; sustain oneself.
-koonda	be cheerful; be gladden; amuse.
-koondola	cry very loudly; scream.
-koondwa	be lively or develop well (esp. plants).
-koonga	pour a little; sprinkle.
-koongola	set free game from a trap; borrow, hire.
-koongoleka	be easily borrowed from.
-koongolekanya	gather together a number of articles.
-koongonecela	fit an arrow in the bow-string; fasten (belt, buttons, etc.); cling to another person.
-koongonoka	mature quickly (esp. of a person).
-koongonokoka	be opened out (e.g., a bracelet, a button, a belt).
-koongonokola	open out (e.g. a bracelet, a belt, buttons, etc.).
-koongoondeka	cackle (of a fowl); chatter.
-koongosya	lend; hire out; advance goods on credit.
-koongotala	curl up (e.g.. leaves, paper, etc.).
-dii-koonja	dress well or neatly.
-koonjanya	put things together; reconcile (people).
-koonjela	be mild and placid in disposition; be good-tempered; sprinkle with the hand.
-koonjesya	be frequent; visit a place frequently; go frequently by the same route..
-koosa	stab, jab; poke in a hole with a stick.
-koosovadila	concentrate one's attention on an activity.
-koosya	imitate; follow the example.
-kopa	hook out of a hole; bale out canoe; entice away from home; borrow (esp. cadge).
-kopocela	appear; visit a mourning person.
-kopoka	go or come out; be discharged; rise (of sun or moon).
-koposya	take out; discharge.
-kosoka	be smashed up; be husked (beans); be pounded to a pulp; shine brightly, blaze.
-kosola	smash up; husk (beans); pound to a pulp.
-kosomola	cough.
-kosya	reheat; warm up (food).
-kotama	bend; stoop.
-kotocesya	shrug the shoulder at.
-kotoka	be stripped off (a tree); shrug the shoulder (in refusal).
-kotola	strip off (a bark); make a bark-cloth.
-kotopa	be beautiful; be well, good.

-kotopola	hit (or "chuck") under the chin; nudge.
-kotosya	seize; capture; take by force; dispossess; expropriate.
-kova	scrape up; scoop (e.g., mud, grain) in handfuls; take a sample; hook up.
-kovanya	serve; scoop; put a mass from one container in many containers .
-dii-koveelela	plaster oneself with mud; eat a large quantity of gruel or other semi-liquid food.
-koveka	work all day without resting; be long winded; last a long time.
-kovela	plant in wet ground.
-dii-kovela	take one's share; "butt in".
-kowola	strip off (e.g., bark); abrase the skin.
-dii-koya	interfere in a quarrel and cause to recoil on oneself.
-kucika	open girls' initiation ceremonies; throw earth (e.g. to extinguish the fire).
-kudika	support somebody's opinion; join a party; join a company (for a journey).
-kudikana	come together; meet or joining several; be firm friends.
-kudila	hoe up earth round roots of a plant (corn, beans, potatoes, etc.).
-kudubuka	come out (a tube) from the tyre.
-kudubula	take out (a tube) from the tyre.
-kujiya	be invited; be bidden.
-kujuukuka	be stripped, laid bare (e.g., a bark from a pole on the sun or flesh from the bone).
-kujuukula	strip off a covering (e.g., bark, flesh from bone) with the hands.
-kukuma	hum; rumble (distant thunder, heavy rains, waterfall).
-kukumika	cover a rent with a patch; cover a grave-hut with a cloth.
-kula	grow big; grow up.
-kulucisya	injure unintentionally.
-kulukuuta	scrape off (e.g., the of an animal's skin); rub.
-kulukuutala	be hard and stiff.
-kulukuutika	be scrapped out; live a long time in one place; be old.
-kulula	unravel; slacken; draw threads, us. in making a fringe to material.
-kululucila	forgive.
-kululuka	be merciful; become slack, lose, come undone.
-kulumicika	be finished quickly.
-kulumicila	hurry over a job.
-kulumika	be ready; be about to go.
-kulumisya	make ready; hurry, expedite.
-kulumula	rub the body (us. with a stone) when bathing.
-kulupidila	believe in, trust.
-kulupucika	free oneself (from another's grasp or embrace).

-kulupuka	escape; slip out of the hand.
-kulupusya	let slip out of the hand; let go , run away, escape (a prisoner).
-kulusya	misfire (of a gun); miss the target (in general); make a mistake.
-kuluta	finish off neatly; do "a good job".
-kuluunga	make into smooth and round (mass); smoothen off with a stone; tie firmly.
-kumika	take a share; join in; sew on, fasten on; cover with a patch.
-kumuka	fade (color).
-kun'uunda	shake out or beat out dust; beat dew off the grass.
-kun'uundika	stride along; walk quickly, "step out"; be stiff with cold.
-kunuka	die of the ordeal poison; die (insult).
-kunuka	be struck, beaten.
-kunula	run away, "bolt".
-kunula	strike, beat.
-kupa	stir (e.g., gruel or thin porridge).
-kupaangupa	splash (water) about.
-kupaangupya	make splash (water) about.
-kupaanjila	bathe, lave; throw water (repeatedly) with the hands.
-dii-kupaanjila	splash oneself when bathing.
-kupila	wink; blink.
-kupisya	forget instantaneously; pass over, omit; be absent-minded; (lit.: make blink).
-kupudila	overhear (intentionally); eavesdrop.
-kupula	beat dew or rain-water off grass along a path; fan; drive off flies; sunk.
-dii-kupula	fan oneself.
-kusa	cultivate in preparation for the rainy season.
-kusaangusa	shake; mix by shaking; begin a quarrel.
-kusaangusana	abuse each other; engage in a wordy warfare.
-dii-kusika	huddle up; hug oneself (as when cold).
-kusikanya	bring together; put together.
-kusula	empty out; refuse to listen; turn a deaf ear.
-kusya	make bigger; augment (in size); enlarge.
-kuta	rasp (metal); sharpen with a file.
-kutaanguta	wrench, twitch, jerk; attract attention by twitching another's clothes.
-kutika	be scrub (the teeth).
-kutula	break (a string); snap (of a rope); remove the taint of death from a widow.
-kutumula	start (an engine); splash water about.
-kuudika	be tapped out (hoe or ax from its handle); fall (as a child tooth).

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-kuukuudika	be well known for hospitality; dun, press for a debt.
-kuukuusya	call her chickens (of the hen).
-kuula	tap out (hoe or ax from its handle); extract (a tooth).
-kuumba	hoe up into heaps; rake into heaps; sweep along the ground.
-kuumbatila	embrace; hug.
-kuumbiidila	gather into heaps (grass; corn stalks, etc.).
-kuumbika	be envious.
-kuumbikanya	pick up several things together.
-kuumbila	envy (a person); covet.
-dii-kuumbila	distinguish oneself; attain renown.
-kuumbucila	recall, remember; think over.
-kuumbucisya	make remember (esp. bad, sad, things).
-kuumbusya	remind.
-kuunda	rub another's back when bathing; wash the corpse for burial; give a bath.
-kuunda	consent; accept; allow.
-kuundidicila	accept (of a child being taken from a parent's hands).
-kuunga	string (a bow, a bed, a tent, a musical instrument); carry a pole between two men.
-kuungaacisya	make a mistake.
-kuungula	take off and lay aside (clothes); gather fish out of a net; gather fruit.
-kuunguluka	converse, chat; talk about non-serious matters; pay a visit.
-kuungulusya	entertain (a guest); make welcome.
-kuunguna	stoop (as in passing under an obstacle).
-kuungunukuka	be blown down or away; recover consciousness; be uncovered; be toppled over.
-kuungunukula	blow down or away; recover consciousness; uncover a veil; topple over.
-kuunjiidila	net over a pot.
-kuunjika	be stretched.
-kuunjukuka	be pulled to pieces; be unstrung (e.g., a tent).
-kuunjukula	pull to pieces.
-kuusa	flay, skin.
-kuusya	allow; lay aside for future use, save.
-kuuya	pursue; follow.
-kuva	hem; weave a selvage on a mat or cloth; bind the edge.
-kuvala	trip up; stumble; collide with an obstacle.
-kuvasya	make somebody stumble.
-kuvila	meet or find unexpectedly.
-kuvita	thrash, beat.

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-kwaaga	flatter, esp. cajole; deceive; lead astray; shave (an animal).
-kwaakula	snatch away; rob.
-kwaamba	hollow out (e.g., a drum, a mortar, etc.).
-kwaambanya	pass the first thread through the reeds in making a mat; snatch.
-kwaambidisya	clean up a plate or basin with a piece of stiff porridge or with a finger.
-kwaana	bellow; scream.
-kwaangula	finish to the last drop.
-kwaangwaasya	sharpen (a cutting object).
-kwaapata	carry under the arm.
-kwaasula	eat tasty food (meat, fish, etc.) by itself (not merely as a relish).
-kwaata	clap hands; test powder by flashing a little in the pan; cock a gun.
-kwaatila	clap hands towards somebody.
-kwaava	crawl.
-kwaavila	stalk (game, enemy, etc.); walk slowly toward.
-kwaaya	touch.
-kwaayisya	lay hands on (lit. not fig.).
-kwalamaasika	be besmeared; become thin; be pinched with cold; get "goose flesh" from cold.
-kwana	fit (esp. in space); be enough; suffice.
-kwanila	be sufficient; be enough.
-kwapa	cut grass (as with scythe or sickle, not without sweeping movement).
-kwapula	knock down from a height (e.g., fruit); whip.
-kwata	trip up.
-kweecesya	pull up (trousers, waist-cloth, etc.); tuck away, tuck in.
-kweekama	get caught up; be "stuck"; conceal part of the truth.
-kweela	climb; rise (of ground).
-kweelana	go on top of one another; have sexual intercourse; copulate.
-kweelegula	joke; banter.
-kweelemecesya	set dogs on game, intruders, etc.
-kweemba	suck out; suck up; smoke.
-kweembekanya	joint two or more things together; seize a person, pinioning the arms.
-kweendusya	slop; slant; place or do anything obliquely.
-kweengweeja	hang oneself (as in playing).
-kweengweenduka	reel from side to side; zigzag; stagger; stumble.
-kweengweendusya	go crookedly (as in hoeing); get out of line; misreport.
-kweenya	pucker; shrivel; bunch together (reeds; cloth); frown; gnaw (of pain).
-kweesaambula	strip off (corn stalks).

-dii-kweesya	be conceited; be arrogant; boast.
-kweesya	raise, lift; exalt, magnify; cover the breasts with the cloth.
-kweeva	curdle; be thick or muddy (of any substance).
-kweevana	congeal.
-kwekwelemya	drag along the ground.
-kwetemukuka	be sprained, wrenched or twisted.
-kwetemukula	pull to pieces; burst, esp. a gun.
-kwiidula	twist the mouth in derision.
-kwiikwiidika	poke into something soft (e.g., stick into mud or into fire); hide away (an article).
-kwiikwiitika	sob.
-kwiima	become hard (e.g., porridge).
-kwiinaambuka	rush forward, charge.
-kwiinda	fold over and tuck in (esp. a cloth round the waist); "gird up the loins".
-kwiindimala	be or become stiff, hard, firm.
-kwiinya	sew tucks or gathers in cloth.
-kwiinyala	be creased; be puckered; be shriveled; have sucked cheeks.
-kwiinyula	push into folds; pull back the foreskin; role or tuck up clothes.
-kwiipuka	be startled; "jump"; leave without the necessary arrangements.
-kwiisila	push the firewood into the fire.
-kwiisula	pull back the foreskin.
-laadika	summon; call up (a number of people); convoke; invite.
-laakala	be very dried up (e.g., firewood, grass); become parched (e.g., throat).
-laalaata	taunt; deride.
-laalaatila	shout at; rail at.
-laamba	admit defeat; surrender; lick; do obeisance to (a chief), worship (God).
-laambucisya	slander; make a pretense; feign; give a false account or report.
-laambula	make an appointment; make tidy (a place).
-laambusya	tell lies; deceive.
-laanda	be like; resemble.
-laandana	look alike.
-laandanicisya	compare; pretend, feign; give a demonstration, a practical example.
-laandavala	bend down, stoop.
-laanga	bid farewell; keep cattle, fowl or pets; domesticate.
-laangucilwa	be easy in mind; look relieved or pleased.
-laanguka	be clear and bright (weather); be free from obstructions; have a polish.
-laangwa	be tamable (of animals); be domesticated.

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-laanjila	point out to; indicate.
-laasya	make children look like oneself (father); resemble.
-laava	go for a scheduled activity.
-laava-laava	go frequently to the same place (job, school, garden, etc.) at a given time; frequent.
-laavila	start early in the morning; visit in the morning.
-lacilwa	choke (with water, food, etc.).
-laga	suffer; have trouble; be miserable; be poor.
-lagaasya	persecute; harass.
-lagala	become dry (cloth, flour, utensil, etc.).
-lagasya	dry; warm up.
-lagudila	look for; spy out; stake a claim; mark out a garden; bespeak (a site).
-lagula	be moist; damp.
-lagusya	notice (at the very first time) the absence of something (that has disappeared).
-lajidila	doing something uncertain of the outcome.
-lajila	long for.
-lajisya	ask somebody a favor to do something; order something to be manufactured.
-lakalaka	long for; cry out for (esp. in vain).
-lakanya	be stringent; cause coughing; tickle the throat; create a disturbance.
-lakasa	choke because of having inhaled some foreign substance (eg., dust, smoke, etc.).
-lakatika	trickle down (e.g., grain, water); fall in a continuous stream.
-lakatula	be humorous, funny, amusing.
-lala	be worn out (e.g., hoe, axe); be hoarse.
-lalucila	long for something specific (as the pregnant women usually do).
-laludila	do anything to excess; amplify a statement.
-laluka	long for; cry for.
-lama	survive; revive; recover; flourish; prosper.
-lambwanda	boil.
-lamila	suffice; live on; last (endure).
-lamisya	save (a person).
-lamudila	give an order for an action.
-lamukwa	become ripe; be cured after circumcision.
-lamula	command; give an order; give judgment.
-lamya	save; cure.
-lapa	admire; wonder at; confess; go and report news.
-lapiidila	praise, thank.
-dii-lapiidila	boast.

-lapila	tell interesting news.
-lapita	lick.
-lapula	flare up (of fire or, fig. of sudden anger); take a taste (of a liquid).
-lapwa	laugh or look out of season; show off, swank; be mischievous.
-lasima	crouch down.
-lasya	wear out; make be bare (of the ground); wear down; finish off.
-latama	lie prone.
-latula	be very sharp.
-lavalava	be restless, always on the move; be unreliable; be naughty.
-laya	be hard to please; be "spoiled"; be importunate; ask continually for more.
-leceelesya	forgive.
-lecela	leave (something) for somebody.
-lecesya	leave some (food, drink) over for another; hand on to (cup in drinking, etc.).
-lecetula	hit hard with a pole.
-leeleeceya	balance (esp. on the head); suspend.
-leeleemba	be suspended; be hanging.
-leemba	mark; write; engage (write on) as a worker.
-leembeelela	mark out the plan of a building.
-leembela	vaccinate.
-leembesya	enlist.
-leembuka	feel faint.
-leembweesuka	be melted; be dissolved.
-leembweesula	melt; dissolve.
-leenda	be sticky; speak slowly; drawl; be without fat; be weak and listless; be tasteless.
-leendevala	be soft.
-leenga	cut into strips.
-leengula	pare; hollow out; cat the toe- or finger-nails.
-leenjela	be pure, clean, unpolluted (e.g., water); be fortunate; be "blessed".
-leepela	fail; be unable to; be outdone.
-leepelana	be well matched (of opponents); draw.
-leepelela	miss an opportunity; fail at the last moment; leave unfinished.
-leesanya	tear into strips.
-leesya	speak clearly or intelligibly; repeat accurately.
-leeteka	be kind-hearted, compassionate; be feeble; speak in a low tone.
-leeva	err, do wrong; commit a crime.
-leevela	offend.

-leewa	be drunk (a person).
-leewupa	be or become long or tall.
-leewuya	lengthen, heighten.
-lejela	be loosely tied or fastened; be easily detached; be flabby; be tired out; lay (an egg).
-lejesya	loosen, slacken.
-leka	leave; let alone; give up; spare; let go; allow; separate (in marriage).
-lekaangana	be different; leave one another.
-lekaanganya	separate two people fighting.
-lekaasya	prevent; prohibit.
-lekana	divorce.
-lela	take care of; nurse; babysit; bring up, raise; rear.
-lelemuka	feel faint or dizzy; have thick or averted lips.
-leludila	show the whites of the eyes, as in dancing.
-lelula	roll the eyes.
-lema	be too difficult for; prove in the wrong; fail.
-lemala	be handicap; be steep, be rough and difficult (of a path or hill); be deformed.
-lemela	be heavy.
-lemwa	err, do wrong; make a mistake; fail.
-lemweceka	fail; "let down".
-lemwecesya	sin against; offend.
-lepetala	be weak, feeble; be friable, easily torn.
-lesa	be noisy and quarrelsome (as when drunk).
-letuka	run about; spread scandal; be a gossip, scandalmonger.
-lewaalewa	swing about.
-locesya	face something in one direction (e.g., weapons against the enemy).
-lodika	heap up; add something to a pile of many other things.
-lodikanya	put things one on top of another; pile up.
-loga	bewitch.
-loka	become pregnant.
-lokota	pick up; find by chance; menstruate.
-lokotana	relate to e.o. (between two handicapped, poor, or unfortunate, people)
-lokotanya	pick up one by one; sort out; classify.
-lola	look at; see; be directed towards.
-lolana	visit one another.
-lolecela	be noticeable.
-loleecesya	look very well at; take care; think thoroughly about.

-loleegana	look (stare) at one another.
-loleela	watch for; look out for; hope for; aim at (intend); expect.
-loleesya	look around; search; look for.
-loleka	be conspicuous or notorious; be famous.
-longomana	agree together; get on well together; be on good terms with each other.
-longomanya	arrange in order; speak (a case).
-longosola	arrange in order; give curative medicine; treat an illness.
-looloosya	dandle a child.
-loomba -	marry (of a man).
-loombegwa	marry (of a woman); lit. be married.
-loombekanya	arrange a marriage.
-loombela	marry.
-loombesya	make somebody get married.
-dii-loombesya	living with a man without the formality of marriage.
-loonda	follow after (succeed); speak clearly and fully (in court); keep watch; aim a gun.
-loondeka	be reliable; be in order; be well organized.
-loondola	consult the divining instruments.
-loondoongana	coincide; follow one another; agree with a previous speaker.
-loondoonganya	look through a gap.
-dii-loonga	intrude; force one's company on others; "gate-crash"; embark; "pile in".
-loonga	pack things together in a container; put in a container.
-loongana	accompany; go together.
-loongola	lead; guide; precede, go in front.
-loongolela	go before; be first; precede, go in front.
-loongolesya	drive ahead of one.
-loongolokoka	fall out or off, one by one.
-loongolokola	remove one by one.
-loongolola	bicker; nag.
-loongosya	put in front; send ahead; put first and hence, prefer.
-loongosyaana	go together (one after another); be inseparable.
-loonjela	tarry; stay for some time; last a long time.
-lopa	be insufficiently cooked; be lumpy; be badly rendered; be ill-made; be dull.
-loposya	catch fish with hook or rod and line.
-lopotoka	be feeble and helpless; cook to rags.
-lopotola	cook to rags.
-losoka	be foolish; say insultuous words.

-lotomala	be solid, bashful, oafish.
-loveka	steep in water; soak.
-dii-loveka	wallow.
-lovela	be silly, foolish; abound, be plentiful (i.e. easily obtained).
-lowoka	go to live at a husband's village.
-lowokoka	jump or come out of the water; "rise" (of fish)'.
-lowokola	remove from water (from soaking); "unsoak".
-lowosya	take a wife to one's village.
-dii-loya	seek for a husband.
-ludilwa	relieve oneself (esp. at night) because of having over-eaten; be over-tired.
-luka	weave (basket work); plait.
-lukula	retch; regurgitate food; chew the cud; ruminate; spit out food after chewing.
-lula	froth up; ferment; effervesce.
-luluka	be tasteless (food); be weak (person).
-lulumala	be full bellied.
-luma	bite; taste (esp. formally).
-dii-lumaanganya	gnash the teeth; bite the tongue; set the teeth.
-lumanya	join together; cause a quarrel; gnash the teeth; get courage to do something.
-lumicisya	make bleed by cupping with.
-lumika	bleed by cupping; put something between the teeth.
-lumila	have a first taste of game one has killed (a ritual act) ; foretell the result of a case.
-lumukuka	be taken out of the mouth; start coming out (words from the mouth); be uttered.
-lumukula	take out of the mouth; start talking; speak weightily.
-lupata	follow spoor; go hunting.
-lusa	be bad-tempered; be quarrelsome; be cruel, prowl, looking for prey (lion, leopard).
-lusuka	be boiled (flour on the first day of brewing beer).
-lusula	boil the flour on the first day of brewing beer.
-lutula	graze.
-luukala	be greedy; be mean.
-luuluuta	ululate; buzz (as a fly).
-luumba	invoke; praise; creak (of a tree about to fall).
-dii-luumba	boast.
-luumbaanjila	invoke in prayer (an ancestor or dead chief); praise; flaunt.
-luumbana	be good (used mostly as an adjective).
-luumbika	increase the length of a string by attaching to it another; connect two pieces.
-luumbikana	be united, stuck together; be linked.

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-luumbikanya	fasten together.
-luumbukuka	be possible to unfasten.
-luumbukula	unfasten.
-luunda	add to; lengthen; come next in order.
-luundamila	come next in order or in seniority; fire at game wounded by another.
-luundanya	sort out and arrange; edit; classify.
-luundila	give a message incorrectly.
-luunduka	fit badly; be out of shape; be unsuitable.
-luundukwa	be mocked, treated with ridicule; be disparaged, scoffed at.
-luundusya	mock; hold up to ridicule; scoff at; disparage.
-luunduumbilwa	be at a loss; be nonplused.
-luunduunga	catch in the act; interrupt.
-luunga	make; create.
-luungama	go direct ; keep a straight course.
-luungamika	be correct; speak the truth; speak to the point.
-luungucisya	convey a message to; translate for.
-luungudila	pass on to (a place).
-luungula	pass straight through a place, or stay there for a very short time.
-luungusya	convey a message; interpret (better amplified by addition of words).
-luunjika	be well finished.
-luvila	fasten on the bamboo rim of a woven basket.
-luwudila	command; tell.
-luwula	tell; inform.
-lwaala	be ill.
-lwaanya	roister; brag; be offensive, troublesome, aggravating.
-lwaasya	nurse (illness).
-lweesa	curse.
-lwiisya	finish off a wounded animal; aiming accurately (killing outright).
-maambatila	adhere; stick.
-madiicika	be completed; be completely finished.
-madiicisya	be last; finish off; complete.
-madiisya	finish; accomplish; consume; fulfill.
-madila	complete; terminate.
-mala	master (an accomplishment); finish; end.
-manya	know or recognize a person; be competent; "know one's job"; behave correctly.
-manyicisya	ascertain; know very well.

-manyiidila	know; know how or why; understand.
-manyika	be known; be understandable; be well-known; be of a well-known family.
-manyisya	make aware; pass news.
-mata	adhere (as a swarm of bees).
-matika	throw mud in applying the first coat to a wall; stick.
-matikana	be compacted.
-matukuka	be peeled off; chafe, "rot"; be removed (mud from the wall).
-matukula	peel off; chafe, "rot", "pull the leg of"; remove the mud from the wall.
-matula	peel off; chafe, "rot", "pull the leg of".
-mbwandukuka	open out; gap.
-mbwandukula	open out; gap.
-meemeesya	cry before the other sex (primarily of goats).
-meesa	pluck (a bird); beat.
-meesya	flash, glitter; show signs of anger or impatience.
-mela	sprout.
-melemeenda	glitter; drizzle (of rain).
-memena	gnaw hard stuff (e.g., a bone).
-menya	peel off (e.g., fruit); beat.
-lu-menya	run away, "bolt".
-dii-menyaanga	injure only oneself; quarrel with a relative.
-menyana	fight.
-menyania	set at variance.
-menyanisya	set on to fight.
-menyeka	be aggressive, war-like; hunt well (of a dog).
-menyula	nibble; break off a portion with the fingers.
-meta	shave.
-meteelela	shave round the edge of the hair.
-meteka	throw mud, as at a wall.
-metula	twinkle (the stars, fireflies, etc.); quiver (as air on a hot day).
-midicisya	hum.
-midimiisika	contort the body in dancing, striking grotesque attitudes; shrug the shoulders.
-miisa	scatter (e.g., seeds).
-miisaanga	scatter far and wide; spend (money), esp. prodigally; squander.
-miisila	splash.
-mila	swallow.
-milwa	be drown; be suffocated; be choked;

-minaanguka	over-eat oneself. (Said to one's host, of oneself, in compliment to his hospitality).
-minala	be gorged with food (jocular or derisive).
-minigala	have prominent buttocks.
-minigasya	twist the body at the hips when dancing.
-miniinga	beat (a drum) with two sticks.
-lu-miniinga	run away, "bolt".
-miniinguka	be bent to and from (in preparation to breaking); be broken across.
-miniingula	bend to and from (in preparation to breaking); break across.
-dii-miniingula	stretch oneself , esp. when sitting.
-minika	hem.
-minya	squeeze; wring. (The idea of extraction is implicit).
-minyikanya	overpower, overbear (prevail).
-dii-minyuula	stretch oneself; twist the body in dancing.
-misya	make swallow.
-monyoka	be chipped.
-monyola	chip off; break off.
-mooga	shave (any part of the body).
-mooloonga	tie, wrap, very tightly.
-moomoka	fall out (of hair).
-moomola	pluck (a bird); pluck out (hair).
-mosola	break off something soft in texture (hot coal); shake the buttocks when walking.
-motola	peel off anything soft.
-mudika	light; illuminate.
-mulumuunya	mumble food.
-mun'unya	roll about in the mouth; mumble (food); twist the mouth in derision or disgust.
-munyula	take a chip out of (e.g., a cup).
-mwa	drink.
-mwaaga	scratch.
-mweela	take poison, esp. the ordeal poison; drink for certain purpose.
-mweesya	give to drink, but esp. the ordeal poison.
-mweetuudila	smile.
-myaalala	stop crying; be quiet; be silent.
-myaalasya	soothe, quieten.
-myaata	be soft; stalk; move quietly with a view to surprise.
-myaatika	be smooth tongued, cunning, plausible; smooth the surface.
-myoola	shave.

-myuuka	beat (of the heart or pulse); peel off (e.g., skin after a scald).
-n'aambila	swim.
-n'aambula	parry a blow; ward off a person.
-n'aanda	play (games); play about.
-n'aandila	play with (an object); touch; mock.
-n'aasula	scratch (the skin) deeply.
-n'akala	be hot-tempered, cruel, fierce.
-n'alan'aanduka	be awakened suddenly.
-n'alan'aandula	awaken suddenly.
-n'amuka	be startled; "jump".
-n'amula	startle; make "jump".
-n'amwita	speak confusedly; be incoherent (as just awakened from sleep); be quarrelsome.
-n'anamuka	be turned over (esp. anything flat); be amusing; be jovial.
-n'anamula	turn over (esp. anything flat); amuse.
-n'anan'ana	look (esp. furtively) from side to side.
-n'anapuka	be startled.
-n'anapula	startle.
-n'anima	flash.
-n'anyan'anya	show a glimpse of something and then put it away; tantalize.
-n'olon'oondokola	scrape; break up a hard mass; loosen anything caked or impacted.
-n'ou'oondala	shrink; shrivel up; contract.
-n'onyoolela	mumble food (rolling it about in the mouth).
-n'ulun'uunda	scrape out (e.g., a pot or pipe).
-n'un'una	scrape out with teeth; gnaw at a bone.
-n'una	trim (hair, grass) with knife (or scissors).
-n'unudila	crane the neck; eavesdrop; eat daintly; examine very carefully.
-n'unula	break off from a lump (as with teeth or fingers).
-n'unuunda	strain (filter) liquid.
-n'uun'uusya	mumble; speak indistinctly; mutter; grumble to oneself; grope about.
-n'wa	drink; get drunk.
-n'waaga	scratch (as when it is itching).
-n'waan'waasya	be quarrelsome, hot tempered; be "touchy"; look furtively about.
-n'waasula	tear a piece out.
-n'weela	drink for a specific purpose or with something; be mischievous; be contumacious.
-n'ween'weesya	squeak; drag along the ground.
-n'weenya	bite off (e.g., corn from the cob); nibble at.

-n'weesula	abrase the skin.
-n'weesya	give drink to.
-n'wiinaambuka	show fight; be aggressive.
-naanda	be sticky.
-naandipa	be or become small or a few.
-naandiya	make small; reduce (size or quantity).
-dii-naandiya	give oneself a smaller share.
-naava	wash (or rinse) the hands.
-naavika	be washable (hands).
-naaya	wash somebody else's (us. child's) hands.
-nakana	be fat (of meat).
-nakanya	smear with grease.
-naminila	slander; spread false reports.
-dii-naminila	tell lies about oneself.
-namuka	be elastic; rebound.
-nan'amula	laugh; joke.
-nanaambuka	be sticky; be elastic.
-nawudi	develop well (esp. plants); be healthy.
-ndaambika	run or trickle down (as a plaster, condensed milk, honey, etc.).
-ndeenguma	be tossed about (e.g., branches in wind); quiver; sway from side to side.
-ndiingwiina	shake; be loose.
-ndundudika	be at a loss; be at the end of one's resources.
-nduundumila	shiver, as with cold.
-neeneemba	keep one's balance.
-nema	swagger; strut; be well oiled (of body), and well turned out (neatly dressed).
-nemeka	swank, "show off"; prevaricate.
-nemela	regard as an ally; rely on for help; show happiness.
-nemesya	gloat over a possession; flaunt.
-nen'ena	cut off the heads of corn when reaping (esp. millet).
-nen'enula	rotate the abdomen and buttocks in dancing ("dance du ventre"); break across.
-neneembala	be almost broken through.
-ngalangaanduka	be startled; be start off quickly.
-ngalangaandula	startle; start off quickly.
-ngun'uunda	winnow (grain).
-nguumba	deceive.
-nguunguunda	shiver.

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-nguunguvila	burn rubbish a second time.
-ngwaasuka	be chipped (e.g., a pot, a cup, etc.); have a piece torn out (of anything soft).
-ngwaasula	chip off (e.g., a pot, a cup, etc.); tear out a piece (of anything soft).
-ngweengweela	waddle; toddle.
-ngwengweluka	stagger.
-ngwiinya	rinse out the mouth.
-nika	dye (esp. dye black).
-nin'a	constrict.
-nin'winicisya	stir the grain in a mortar while pounding; relate clearly, speak to the point.
-njanjandala	be tough (of meat, wood, etc.).
-njiinjidicisya	meet ("run into") a person by chance; strike a path in the bush.
-njoonjoka	hop like a bird.
-njoonjola	run with knees; suck the teeth in token of depreciation, disgust, or contempt.
-njunjunduka	be in a bad temper or humor.
-njunjundula	cut (divide) into two parts; chop into small pieces (e.g., meat, firewood, etc.).
-nokola	break off (esp. the upper part).
-nokosoka	snap across; fall in torrents (of rain).
-nokosola	break across.
-non'a	taste well; be sweet, pleasant to taste or experience.
-non'ona	backbite, slander; whisper.
-nonoceya	speak in a loud tone; do anything exaggerating way to impress; explain clearly.
-nonopa	be difficult; be hard; be expensive.
-nonoya	harden; to go up in price; to raise the price of.
-nonyela	like; love; to amuse oneself.
-dii-nonyelesya	amuse oneself.
-noola	sharpen.
-noondipa	be or become small or little
-noondiya	make small; reduce (size or quantity).
-dii-noondiya	humble; belittle (oneself).
-nosya	take care of; assist; befriend.
-nun'umicisya	use or adopt a wrong size (esp. a size under the required standard).
-nuna	cut off a little; trim.
-nunila	protrude.
-nunuka	be exceptionally skillful; be over-cooked; be over-heated.
-nupuka	break, tear, or crumble anything old or rotten; break off.
-nuunga	stink.

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-nuunjiila	smell sweetly.
-nuusya	smell at; sniff.
-nya	defecate (vulgar).
-nyaakala	be distasteful; be unprepossessing.
-nyaala	wither; dry up.
-nyaamba	surrender.
-nyaambata	be sticky.
-nyaambatila	adhere, stick to.
-nyaambatukuka	be possible to unglue.
-nyaambatukula	unglue.
-nyaandala	be stiff (and dry).
-nyaanduka	be startled; be "hurt" (offended); be "fed up".
-nyaandula	startled; "hurt" (offend).
-nyaanyaata	be indifferent; uninterested; be careless.
-nyaanyuudila	walk very carefully; stalk.
-nyaata	be sticky.
-nyaatila	cover the genitals as when bathing; sit careful to not expose the genitals.
-nyaatuudila	warm up very slowly as the sun in a cloudy (foggy) day.
-nyakapala	be wet (esp. of ground).
-nyakuka	be lifted; be raised.
-nyakula	lift; raise.
-nyala	cut into strips; avoid one's relations-in-law as required by custom.
-nyalapa	feel disgust; be squeamish, dainty.
-nyalasya	hush (a child).
-nyalaya	disgust.
-nyaluka	fray out (e.g., fibres of a "toothbrush", edge of cloth, etc.); get one's deserts.
-nyalula	tease (cotton).
-nyamaanguka	jump up (from sitting or lying).
-nyamaangula	straighten; stretch.
-nyan'anya	taste like soap; be sour, stringent.
-nyan'anyika	be soured (as with disappointment); be discontented; be stolen.
-nyanya	itch.
-nyanyama	project; be elevated; be sour (of beer).
-nyanyamidila	approach steadily; stalk; reach up to anything high.
-nyanyika	raise the voice; place (anything) high up.
-nyanyuka	become angry.

-nyanyula	rouse to anger.
-nyasya	tear to shreds.
-nyeekula	be strike, beat.
-nyeela	over-eat; be greedy.
-nyeelwa	~ be soaked by heavy rain (esp. of ground).
-nyeemba	repair (e.g., a partial fracture) by binding; wrap.
-nyeembeelela	wind (e.g., string around a stick).
-nyeemya	handle with care.
-dii-nyeemya	move along carefully and quietly; be good tempered; to care about oneself.
-nyeenga	cheat, deceive; "conquer" a woman; seduce.
-nyeenjeelela	be too clever (for another).
-nyeenya	cut slowly into small pieces; slice.
-nyeenyeelela	cut into slices.
-nyeenyeka	be sliced in long strips.
-nyeenyela	desert, elope, abscond.
-nyeesanya	split up; tear into strips; unravel
-nyeesya	strike; hit.
-nyeka	bubble up out of the ground (of spring).
-nyelenyeenduka	melt; dissolve.
-nyelenyeendula	melt; dissolve.
-nyelenyeesya	tickle; stroke.
-dii-nyelesya	squeeze oneself through a narrow or small opening.
-nyeleta	squeeze through a narrow opening.
-nyeluka	be lighted; regarded as of no account.
-nyelula	lighten; regard as of no account.
-nyelusya	despise; scorn.
-nyema	cut or break off a piece.
-nyenula	break across; tear apart.
-nyepala	be mean, stingy.
-nyesima	glitter; be bright; shine.
-nyetula	twinkle (the stars, fireflies, etc.); quiver (as air on a hot day).
-nyididika	be fine ground; be made of fine (showy) or good material; glide away (of snake).
-nyidisya	grind (of grain) to fine flour.
-nyiinda	reprove; frown.
-nyiinyiisika	cry in a very low sound.
-nyiinyiita	hum (a tune); talk or mutter to oneself.

-nyiinyiitika	make a confused sound in which words are indistinguishable.
-nyikanyika	jog; jostle, bump into (esp. another person); dandle a child.
-nyikata	compress; crush down.
-nyikula	tilt; retch.
-nyin'udila	throw the head back in assent.
-nyin'waanyin'wa	complain; undertake a task unwillingly.
-nyinya	speak to a person in a disapproving or disparaging manner; express disapproval of.
-nyinyidika	grumble; take offense; reprove.
-nyisya	try the weight of anything by lifting it.
-nyodogoka	be underrated.
-nyodogola	underrate others; be conceited.
-nyokopola	lift a child with one hand by grabbing one of the arms.
-nyokotola	hoe lazily with frequent stops; make a small hole with a stick in the ground.
-nyolola	be stunted; be choked with weeds; be sticky.
-nyoloomboka	be straightened out; be thinned out; be elastic; be weak, thin.
-nyoloombola	straighten out (e.g., iron, cotton, thread).
-nyonyomala	squat, sit on the hams.
-nyonyomwa	have a guilty conscience.
-nyonyoondala	shrivel; shrink.
-nyoocola	pluck up by the roots; hoe badly, leaving patches undug; shave similarly.
-nyoonga	twist; wring; gnaw (of hunger).
-nyoongoka	be stirred (grain in the mortar while being pounded); rotate (the buttocks).
-nyoongola	stir grain in the mortar while pounding; rotate the buttocks.
-nyoongolecesya	stir grain in the mortar while pounding; fasten a waist-cloth firmly.
-nyoongolokoka	stand up heavily; creep away.
-nyoongonyeka	be exhausted, "run down", spent (after illness or strain).
-nyoonyola	pluck out; pull out by the roots (e.g., hair, feathers, or plants).
-nyoosomala	sit on hams.
-nyoosya	despise; be disobedient; be inattentive (esp. owing to conceit); treat with contempt.
-nyopola	break easily; pull out easily.
-nyova	get wet; get damp.
-nyoveka	be wet; be damp.
-nyoya	make be wet; bend down a tree or branch.
-nyukula	raise the eyebrows in doubt, derision, etc.; regurgitate; loosen.
-nyulula	beat out flat (metal).
-nyulunyuunda	fall in a light shower (of rain, water, or powder); sprinkle.

-nyun'unya	be sour.
-nyutuka	jerk.
-nyutula	wrench, twitch, jerk.
-nyuunya	add, by sprinkling with the hand, the flour in making porridge, or salt in food.
-ooca	roast; burn.
-ooceelela	burn a hole (in a handle for a hoe or axe) with a hot iron; brand with a hot iron.
-ooga	bathe; have a bath.
-oogaasya	adorn.
-oogopa	be afraid of; fear; be dreadful.
-oogoya	frighten; be frightful, awe-inspiring; be forbidden; be tabooed.
-oojela	dress up; dress for a special occasion (dance, religious ceremony, etc.).
-ookoka	be possible to take out of fire.
-ookola	take out of fire.
-oolova	be soft; be cheap.
-ooloveka	steep grain (as in making malt) or ropes to be used in construction.
-oolowokoka	be taken out of the steeping container.
-oolowokola	take out of the steeping container .
-ooloya	soften; sell for low price.
-oomboka	cross (e.g., a stream, a road, a border between countries, etc.).
-oombosya	ferry over.
-oonaanga	spoil; waste; destroy.
-oonaasika	get spoiled.
-oonga	suck.
-oongola	straighten; straighten out; stretch.
-oongolela	steer a straight course; straighten a tortuous road or path; settle a point at issue.
-oongolosya	scare a lot of game.
-oongosya	straighten.
-oonjecesya	add to; increase (number or amount).
-oonjela	take after another (in act of appearance).
-oonjesya	suckle; breastfeed.
-oosocela	diminish in bulk; contract; settle (as in earth, rice in a basket, etc.).
-oosopala	be worried or afraid; be preoccupied.
-oosya	bathe someone or something; give a bath.
-oota	warm oneself at a fire.
-ootela	bask (in the sun).
-pa	give.

-paaca	denounce an accomplice; accuse secretly; betray the companion(s).
-paacuka	part company; dissociate (e.g., a branch of a tree) from a whole.
-paacula	pull apart; split up; divide.
-paadika	touch; play the game of "touch".
-paala	seek after (esp. women); hunt; pay a call; visit.
-paalana	be sociable, visit one another, be friendly or in neighborly terms (with).
-paamba	dip a portion of porridge in the relish before eating it; light a lamp or torch.
-paambadika	join a group or crowd of people.
-paambadila	become accustomed; be addicted; adorn oneself.
-paambanicisya	hold firmly up against something firm; fasten securely; persist in a statement.
-paambanika	insist (e.g., ask the same question several times as in criminal investigation).
-paambanukuka	be possible to enlarge a hole; rime out.
-paambanukula	enlarge a hole; rime out.
-paambanula	enlarge an opening by stretching.
-paambicila	add to; increase (a quantity).
-paambika	superimpose; add to a load.
-paambikana	stick together; be superimposed.
-paambikanya	put one thing on top of another; pile up.
-paambila	persecute; take a shortcut way in order to meet somebody.
-paambukuka	be possible to remove part from the top of a pile, separate.
-paambukula	remove part from the top of a pile, separate.
-paambula	to remain; to be extra; be in addition to.
-paambusya	add extra element to a number; increase a number.
-paanda	sow; plant; plant seeds; dispense (mix or prepare).
-paandamula	give offense; render oneself liable to legal proceedings.
-paandicila	transplant.
-paanducila	take a portion (e.g., of food).
-paanduka	rebel against.
-paandukuka	be possible to uproot.
-paandukula	uproot.
-paandula	take a chip out of anything.
-paanga	make an appointment; fix a day; arrange goods for selling.
-dii-paanga	hold oneself aloof; be unsociable; be independent; be self-reliant.
-paangaanya	make.
-paangala	drop; become flaccid (esp. of breasts).
-paanganyicisya	make with or for; prepare.

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-paanguka	be enlarged (mouth of a gourd; a road, etc.); be diluted (any liquid) by adding water.
-paangula	enlarge; open up; add water when brewing beer; dilute any liquid by adding water.
-paanjiila	test; essay.
-paanjika	burst; alternate.
-paanjukuka	be possible to remove goods arranged for selling.
-paanjukula	remove goods arranged for selling.
-paapaamba	be in feverish hurry; be excited and impatient.
-paapula	knock down from a height.
-paasa	invade; ravage.
-paasya	taste.
-paata	rub down; massage by rubbing.
-dii-paata	despise oneself; insult oneself; rub off oneself.
-paatika	be rubbed off.
-paatula	knock down from a height.
-paayi	match well. This verb is used only in some tenses (present and future).
-pacika	insert; put between.
-pacila	fasten a door on the inside; load with;
-pacisya	insert in between; "supply" (replace dead seedlings).
-padila	plant before the rains break; hoe up weeds.
-pagala	tie on the battens of roof.
-pagwa	be born; be present; exist; happen.
-paka	smear; paint.
-pakala	smear.
-pakama	be stuck fast; be detained, "hang up"; have difficult labor; become jammed.
-pakamika	put away out of sight; exercise a right to bespeak a girl for marriage.
-pakamukuka	be taken down from a height.
-pakamukula	take down from a height.
-pakana	desire revenge; threaten revenge; await an opportunity to get revenge.
-pakanila	shoot game already wounded by another; find game in a trap set by another.
-pakasa	plait.
-pakasya	smear another with oil, soap, etc.; anoint.
-pakata	hold (esp. a child).
-pakatika	fall one by one; shed leaves; die in rapid succession.
-pakula	serve food; take out (food from pot); "dish up"; choose (a person).
-pala	import; obtain elsewhere (e.g., fire from another house; food during famine).
-pala	scrape; clean of grass (a road).

-palaandasya	gaze at with wide-open eyes; stare at.
-paladila	harrow the ground; roughen grindstone : give warning.
-palagula	despoil; capture in war.
-dii-palakasula	scratch (self) or by a thorn in the bush.
-palakula	remove the bark of a tree, first scraping it clean.
-palala	be blind; be barren.
-palamaandukula	cut out a chip.
-palamaandula	remove a part from end or top; peel off.
-palangwiisa	scrape with the feet (esp. of a fowl); "wipe" the feet on a mat.
-palapaasya	grope about (as in dark); handle, finger.
-palapaata	scrape off (as the scales of fish).
-palapaatula	scrape.
-palasa	paddle; row; beckon with the hand.
-palasa	scrape the first earth into the grave during burial of a relative.
-lu-palasa	run away, "bolt"; run a race; race.
-palasula	run away, "bolt".
-palasya	crush up; shell peas or beans on a stone.
-palatula	stab; make an opening in a cavity.
-palavaandula	take a chip out of wood.
-palusya	deflect the course of a stream; change the line of a road; break intentionally.
-palwa	have indigestion (pain) after food.
-pamaanda	fill in between the poles (studs) of a wall with straw or reed.
-pamidila	persist; set one's mind only; be obdurate.
-pamudila	throw any soft substance (e.g., clay); leave the path temporarily.
-pana	squeeze; torture squeezing the testicles; grasp, grip, clasp.
-panika	compel.
-panila	become jammed.
-panudila	turn aside from the path; give false account.
-panya	notch; chip.
-papalala	flutter the wings; work on without a rest.
-papalasya	explode with a series of reports (e.g., sound of motor-cycle, a machine gun).
-papatika	repair by patching; cover private parts.
-papila	drink off the whole content at a draught.
-papudila	take a short cut.
-papuka	be torn.
-papula	tear; burst.

-pasa	clean grass for thatching; tease cotton; swear, use foul language.
-pasuka	be out of order; be destroyed; be depopulated; driven away; be devastated, ravaged.
-pasula	destroy; depopulate; drive (people) away; devastate, ravage.
-pata	obtain, get; gain, make profit.
-patana	be friendly (with each other).
-patika	be accessible, be obtainable, be within one's reach.
-patikana	be found; be met; be caught; be held.
-patukula	cut out a section; remove a patch.
-patula	chip off.
-patula	run away, "bolt".
-patula-patula	chip here and there; shave the head in patches.
-patwa	be involved, esp. in difficulties.
-pawa	pry.
-pecesa	bore; drill; twirl; rub (fire) with stick.
-peecesya	escort; accompany; see off (by escorting part of the way).
-peelegwa	be given.
-dii-peembecesya	atone; seek reconciliation; excuse oneself.
-peembeeka	soothe; appease.
-peembeneka	close slightly or partially; put (or leave) ajar.
-peembenukuka	be slightly open (e.g., buds, eyes); fall open (e.g., a waist-cloth).
-peembenukula	open slightly.
-peembenula	separate two things forming a gap; open (a box).
-peenda	try the omens as before a journey.
-peendecela	turn, or be turned, to one side, esp. a cap or a heat; tip or be tipped up; heel over.
-peendeka	slop; slant; decline.
-peendema	slop; slant; decline.
-peenga	blow the nose (by holding it between finger and thumb); be mischievous.
-peepeela	blow up (fire); blow into with the mouth (tube of tyre).
-peepeelela	smoke out (e.g., field-mice, bees).
-peepeesya	inflate.
-peesa	make a gap or opening.
-peesya	conciliate the spirits by an offering (flour, beer, etc.); confess.
-peeta	sift flour; blow (as a puff or gust of wind).
-peetula	cut a way through thick bush.
-peka	twirl (esp. the male fire stick); drill or bore.
-pela	suppose, assume; be like; resemble.

-pela	be tired.
-peleembela	be insufficient (in size or quantity); be missing.
-peleenganya	pass on (to another place); pass through.
-pelegana	hand over to one another; give one another; distribute among selves.
-peleganya	distribute; send word all round (e.g., general summons).
-pelegula	bore a hole (e.g., in an ear, an ala of a nose, or a gourd).
-peleka	convey; conduct; hand over.
-dii-peleka	surrender to the enemies.
-pelela	cease; come to an end; miss something distributed to other members of the group.
-pelenyeendula	bore a hole.
-pelepeeta	be loose; be too large (e.g., a finger-ring); be irresolute; be half-hearted.
-pelesya	cause to pass through; thrust into.
-peleta	pass through; go beyond.
-pemeelela	snort.
-pemeendela	sprinkle with the hand.
-penula	lift, or hold aside; open the eyes with an effort; peer with half closed eyes.
-penyula	chip (take a chip out of).
-pepa	reduce the intensity of heat (of sun, esp. in summer afternoons).
-pepeluka	stagger about.
-pepula	sift; winnow corn in a basket separating flour from chaff, ejecting the chaff.
-pesigwa	be perplexed; repeat ad nauseam.
-pesya	complete; sift a matter to the bottom.
-peta	decorate; ornament; beatify.
-dii-peta	adorn oneself; dress up.
-peteenga	inspect; take stock of; scrutinize.
-petula	bend with the wind; look carefully about.
-piciidila	"whip" the end of a rope (naut.); serve the head of an arrow; serve (naut.).
-picika	weave strips together; secure the door.
-picikulana	argue; wrestle.
-picila	wrap round a core; "serve" a rope (naut.); roll a cigarette; gird on equipment.
-picisika	be busy, "on the move"; bustle about; interweave.
-pidimala	be raised or projected, above a surface (esp. on the body after having been hit).
-pidimiinda	roll about; wriggle about.
-pidipiita	wriggle about.
-piganya	be industrious; work well; prepare food for cooking.
-piidila	be black or dark in color; be soiled; nod the head.

-piidilwa (-piilwa)	have belongings burnt (esp. clothes while on the body).
-piikana	hear; obey; feel; understand (what is said).
-piikanicisya	obey; hear well; listen carefully to; pay attention.
-piikanila	listen to; believe, trust.
-piila	desire strongly.
-piiluka	lurch (e.g., a pot on the fire).
-piimba	be (become) erect (of penis).
-piimbitala	be bent, crooked.
-piinda	fold; bend; trade in; keep for sale; curve; turn (left or right).
-dii-piinda	tuck the legs under when sitting; draw up the legs when lying.
-piindanukuka	be stretched; be unfolded.
-piindanukula	stretch; unfold.
-piindanya	fold over.
-piindiingula	twist another's words; give differing accounts of an event.
-piindikuka	stretch; overthrow.
-piindikula	stretch; overthrow.
-piindila	turn to; bend round.
-piindimasya	make things worse (of would-be-peace maker); warp.
-piindimukuka	oscillate; roll as a large rock.
-piinducila	change one's attitude to another; be fickle; take an unfair advantage.
-piinduka	be overturned; be upset; change color.
-piindula	bend round; disobey willfully; be self-opinated; change color.
-dii-piindula	change one's clothes or presentation (really or figuratively).
-piingulana	lie across.
-piingusya	object; protest.
-piinjikanya	cross.
-piinya	blunt.
-piisa	blunt.
-piisuka	lurch, topple over (as pot on a fire); ruffle.
-piitula	roll the eyes.
-pika	plait; "serve" a rope (naut.); carry a load slung on a pole between two men.
-pikanya	border on; adjoin.
-pikinicisya	push through; squeeze through.
-dii-pikinicisya	force one's way through; squeeze oneself through.
-pikuka	be possible to push or knock over, upset, overturn; be inclined.
-pikula	push or knock over; upset; overturn.

-pikusya	turn on to its side (pot, tin); turn upside down.
-pilula	tilt.
-pima	measure; weigh.
-pimicisya	recall a warning; say, "I told you so".
-pimidila	endure; be long-suffering; persist; be chronic (illness).
-pimiindika	bind to secrecy.
-pimisya	put a big price on a thing so cannot be sold; make high bid to "freeze out" others.
-pimya	entice a woman away from her husband; seduce.
-pinyaasika	become stubbed, reduced to a stub (e.g., a hoe); be undersized.
-pipidisya	speak at a person; speak by allusions, intelligible only to the person addressed.
-pisya	make pass; allow to pass; hand on; put through; reeve; make room for another.
-pisyaambisya	make pass several times (as a rope in tying something).
-pisyaangana	exchange sits.
-pita	pass; go away; leave; pass on; come in.
-pitaangana	pass in a large number.
-pitikudila	rebel against; fold the edges of material; heap soil round a corn-stem.
-pitikuka	reverse; turn round; turn back; change the subject; change one's mind.
-pitikula	reverse; turn round; change the subject.
-pocela	receive; relieve (at work, a weight, etc.); respond in part-singing.
-pojola	find a way or go through a bush; capture a position, a village, etc., in war.
-pokola	lend a helping hand.
-pokolanya	act as a peace-maker; arbitrate.
-pokosola	break off part of a long and dry.
-pokosya	be noisy in conversation.
-pola	be healed (of a sore or wound); cure; cool down.
-poleenganya	interlock; interweave; exchange places (in bed, to the near fire).
-polola	abort.
-polomoka	slip off (esp. a piece of cloths, from waist downward).
-polomola	slip off (esp. a piece of cloths, from waist downward).
-polopooteka	be useless; be abortive; be impotent (of a male).
-polosya	abort (of an animal); give birth to dead offspring (of an animal).
-polota	be flabby; be weak; be slow.
-poma	tie on battens of wall.
-pomola	husk corn; abrase the skin.
-pomoonda	strike with the fist.
-ponya	throw; throw at or to.

-ponyokola	bend; crook.
-poocela	rejoice; be happy in the possession of a new acquisition or for an achievement.
-pooka	to enjoy the life; be well off; dance; swank; attitudinize, esp. in dance.
-pooloongana	go together; walk in file.
-pooloonganya	put together.
-poomboonganya	mismanage; "make a mass of things"; "let the cat out of the bag".
-poombotala	be bent.
-poonda	pound anything soft (e.g., leaves); knead; puddle clay by treading .
-poondogola	trample all over.
-poonga	breakdown (e.g., a car, any kind of machine).
-poongola	break.
-poongolwa	be wet through; be full of uncooked lumps (porridge).
-poopola	cut long grass with knife or sickle; knock down from a height.
-lu-poopola	run away, "bolt".
-poopolanya	tie together crossed bamboos or sticks.
-poopooloka	forgive; be merciful.
-poopoosya	request admittance to get in (indoors) or to pass nearby (outdoors).
-poosya	stop a quarrel; scare away a bird of prey or a fierce animal; rescue from attack.
-poowaana	be soft and smooth; be juicy; be pulpy.
-popeela	pray to or for.
-popeelesya	excel in initiation ceremonies dances.
-popotoka	be bent or warped; change an intention.
-popotokola	twist; wring.
-posya	cure; heal; cool.
-posyaambosya	make cool down (e.g., porridge) by blowing and shaking.
-pota	twist round; spin thread by rubbing along the thigh; begin to bud (corn); wring.
-poteka	hurt; pain; ache.
-potekana	hurt one another in a fight.
-potola	husk millet; tear apart (e.g., paper, cloth).
-poveela	call out persistently because unanswered.
-powola	pierce; bore through; penetrate; prick.
-powolaanganya	bore right trough.
-poya	pound leaves; be peevish; be querulous, difficult to please.
-pucika	put a door ajar; shuffle.
-pudicila	be stupid.
-puga	blow (of wind).

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-pugwa	be stupid.
-pujuka	be soft and pulpy.
-pujula	beat or break something soft and pulpy.
-puka	make a fuss about nothing; decide suddenly.
-pukusa	twirl between the hands (esp. the fire-stick); clean the ears.
-pukuswa	be bored by insects; be worm-eaten.
-pukuta	wipe; shed leaves; fall (e.g., leaves in Autumn).
-pukutika	be bare of leaves.
-pulana	be crushed flat; collapse (e.g., an umbrella); be dinted; be collapsed.
-pulanya	shut an umbrella.
-pulula	strip off (e.g., beads, leaves); unthread (a needle).
-pulupuuta	wriggle about.
-pulusya	stir porridge whole fluid; strike with the hand.
-puluva	form lumps of uncooked flour; be foolish.
-puma	roar; shout; make deliberately somebody drop something (a game).
-pumuunda	batter down (as plaster from a wall); beat out dust (as from a mat).
-punila	dance together (of man and woman, an impropriety).
-punya	put something in one's mouth.
-pupa	wiggle or flatter about (as a fowl in its death-throes).
-pupudika	walk uncertainly as a blind person.
-pupujila	flutter the wings; flap about (as a fowl in dust).
-pupukusa	stir beans while cooking.
-pupulusya	set fire to grass (bush) prematurely; roast superficially green corn.
-puta	erase.
-putukuka	be easily detached.
-putukula	strip corn from the cob.
-putula	gesticulate violently (as in anger or excitement); jump about.
-puucila	attack an innocent person; injure another without reason.
-puukuunya	waggle; shake (esp. the head in refusal).
-puumaasika	breathe heavily; pant.
-puumudila	take a break; stop during a journey in order to eat, relax; stop temporarily (pain).
-puumula	breathe; rest.
-puumusya	give a holiday; allow to rest; refresh by rest.
-puunda	excel; surpass; go beyond; exceed; transgress.
-puunduka	become handicapped.
-puundula	maim.

-puundumukula	collapse; peel off.
-puunga	gyrate (of "dust-devil").
-puungula	decant; decrease; diminish.
-puungwa	fail to ripen or to reach maturity.
-puunja	use obscene language to.
-puusya	eavesdrop; overhear a conversation; overdo.
-puuta	strike; beat; hit.
-puutwa	be hit.
-puuvaana	be withered; wither.
-puva	wither; be low cheeked.
-puvika	be dinted.
-pwa	soak away or dry up (stream); empty (air).
-pwaaguka	be reduced in numbers; be tired; be completely clear (the sky); be husked (rice).
-pwaagula	husk grain (esp. rice); decimate; deflower.
-pwaamuka	be beaten; struck.
-pwaamula	beat; strike.
-pwaanika	change one's intention.
-pwaanya	commit a fault of omission; not to care about anything; be disobedient; default.
-pwaapwaata	hammer (metal) flat; forge iron; annoy.
-pwaatika	put on c thing top of other(s) things; add.
-pwaatikanya	pile up.
-pwaatukuka	be possible to remove something from the top of another.
-pwaatukula	remove something from the top of another.
-pwalapwaatasya	flatten out a soft substance; fail to settle a case-at-law.
-pwatata	lie flat; be flat on the ground.
-pweela	dry up (water in a pot; tear on the cheek).
-pweelela	be frightened; be anxious; be distressed.
-pweetecela	go aground; topple over between firestones (of a pot).
-pwelembweesuka	become soft; drop to pieces; be upset (grieve or annoyed).
-pwelembweesula	soften; drop to pieces; upset annoy.
-pwetudila	exaggerate.
-pwidipwiitika	laugh out of season; be unable to take anything seriously.
-pwiidiingana	disperse; flee; scatter in every direction.
-pwiidiinganya	disperse; scatter in every direction.
-pwiinya	be offended; take offense; be sulky; blunt.
-pwiipwiiganya	startle game.

-pwiisa	pass wind from the bowels.
-pwiitudila	misreport.
-pwiya	better down; make a dent.
-pya	be burnt; be ready (equiv. of "be cooked", if food).
-pyaacisya	talk at a person; look away purposely; "out" a person.
-pyaajila	sweep; clean up; cleanse a village ceremonially of disease or discord.
-pyaaluka	be tripped up; slip; be swung round by a current (of a canoe).
-pyaalula	trip up; upset by pulling at the base (e.g., a pole, a pile of things).
-pyaapyaaluka	flit about (as a bat).
-pyaapyaanduka	be carried off one's feet as by current.
-pyaataangula	trip up; tackle low.
-pyaatiidila	be suspicious; cover the genitals with the hand.
-pyeepyetecesya	press against; push down.
-pyeepyeteka	press.
-pyokonyola	sprain or twist (a joint).
-pyonyokoka	twist off.
-pyoolola	sharpen to a point; end a song.
-pyoonyola	squeeze out content (e.g., of fruit); bruise.
-pyoopyoolosya	under-rate; scorn; "run down"; sharpen to a very fine point.
-pyootola	retract the prepuce.
-saadicisya	affirm; certify; guarantee.
-saadila	tell; inform.
-saadisya	confirm another's words; clinch an argument.
-saagula	choose; pick over.
-saakala	be dirty; be soiled; be bad.
-saakasya	defile; soil; spoil.
-saala	say; relate; mention; accuse; report.
-dii-saala	speak for oneself; (esp.) act as one's own advocate in court; offer an excuse.
-saama	change one's abode; move".
-saamba	pass wind from the bowels.
-saambula	throw things about when in search of something; annoy; scold; punish.
-saamisya	move things about.
-saamula	comb out (hair).
-saamya	move things from one place to another; make move.
-saanda	struggle in death agony (esp. a bird or animal); kick backward.
-saandamuka	be triggered; teased; started (a quarrel).

-saandamula	trigger; tease; start a quarrel; be treacherous.
-saandula	amputate (i.e., cut off an appendage, e.g., limb, branch, etc.); pollard (a tree).
-saanga	jump from one branch of the tree to the other as the baboons; be restless.
-saanga-saanga	jump about; leap from branch to branch (as a monkey); put across (as a lintel).
-saangalala	be pleased; be happy; feel well; rejoice.
-saangula	complete an initiation ceremony.
-saanja	sharpen a tool by hammering the edge; lay poles side by side (for bed, bridge, etc.).
-saanjila	reap by cutting at the roots (e.g., sorghum).
-saasaamwanya	split and open out (a fish or bird) for drying or cooking (spatchcock).
-saasika	be crazy; be noisy, boisterous.
-saasula	finish up (a function); clear a way to the ruins of a dead man's house.
-saawula	soak into clean water in order to clean the surf (when washing dishes, cloths, etc.).
-sabadika	be out of order; be destroyed.
-sabadisya	put out of order; destroy.
-saciidila	want; intend.
-sacila	conspire to obtain; agitate for; fit a feather into an arrow.
-sacisya	put into the care of another; keep temporarily in somebody's house.
-sadima	be strong and aggressive.
-sagama	be hooked or hung up; go aground (of a boat).
-sagamila	dream; say no sense.
-sagamukuka	be possible to relate a dream; interpret a dream.
-sagamukula	relate a dream; interpret a dream.
-sagamula	take down from a height.
-sajika	put on top.
-sajikana	be on top of one another.
-sajikanya	put on top of one another; pile up; grow irregularly (of teeth).
-sajukuka	be removable from the top of something else.
-sajukula	remove from the top of something else.
-saka	want; wish.
-saka-saka	be restless, constantly on the move (as a hen when it is about to lay an egg).
-sakadika	get angry; be angry.
-sakadila	condemn.
-sakadisya	annoy; weary; destroy; molest; disturb.
-sakama	get caught up or impacted (e.g., fish bone in the throat; cloth on a thorn); loop up.
-sakamwa	be choked (when swallowing).
-sakata	carry in the crook of the arm; grip a bow.

-sakatula	take a part (of number or mass).
-sakula	hunt game with beaters or dogs (with or without nets); fish with nets.
-sala	split up (specially firewood); strike (of lightning).
-salacika	be stored up; be kept, be saved; put aside.
-salacisya	keep for someone.
-salala	be beautiful or handsome; be good; pleasing; comely, clean; be of use; avail.
-salamaanda	wriggle about; dance badly.
-salasya	lay aside; store for future use; keep; store.
-samadila	keep clean and neat.
-samala	make neat; take care of.
-samila	load a gun or rifle; ram; lean on.
-samuka	be changed in disposition; let alone; refrain from meddling.
-sanya	scrape together into a heap.
-sanyaanda	cut across; cut in two; lop off (branches).
-sanyaanguka	open out; gap (as a wound); project (of teeth).
-sapa	tease (cotton).
-sapaangana	be in disorder; untidy; be in a rough (e.g., unplanned).
-sapaangula	unfold (e.g., cloth); unravel.
-sapila	be in good conditions; live well; be in good heath; escape from danger.
-sapudila	share with another.
-sapula	take a share or a small quantity (of countable things, grains or flour).
-sapulana	share out among a number; go in different directions; separate.
-sasa	curdle; coagulate.
-sasajika	go bad; rot.
-sasamudila	replenish; take a drink of beer the morning after a debauch.
-sasava	swell up; expand; rise (e.g., bread, cake).
-sasavila	swell up; expand; rise in flood (of a river).
-sawa	be watery and tasteless (e.g., potatoes, cassava); grow luxuriously (plant).
-sawadika	be unlucky.
-sawuka	be poor; be miserable; suffer.
-sawusya	be difficult; afflict; punish; annoy; trouble.
-sayina	sign one's name; decide.
-seceelela	rejoice.
-seembana	miss one another (fail to meet).
-seembeendula	glance off (e.g., a missile).
-seembeendusya	parry; deviate (eg., a missile); adjust.

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-seembula	peel or scrape off the surface; abrase (the skin).
-seenda	peel off rind; strip off the sheath of corn-cob.
-seendekula	restore to a correct position (e.g., pot on the fireplace).
-seenga	cut (the hair or the grass with a pair of scissors).
-seengula	cut down close to the roots (as in reaping sorghum).
-seengwa	rejoice; be pleased; be happy.
-seenjelemuka	fall, or slip, into a hole down a steep slope.
-seenjelemula	make fall, or slip into a hole or down a steep slope.
-seesa	scrape off (e.g., rough part of bark, grain of a cob).
-seesevala	be vicious (in character); be stupid.
-sejela	move aside.
-sejesya	move, shift.
-seka	laugh; deride; laugh at; chaff.
-seleleka	slide; totter; be on point of falling.
-selema	slide along; drag oneself along.
-seleveenda	fit loosely (esp. of clothing).
-seluka	come voluntarily or aptly.
-selula	vomit (of an infant).
-sema	adze.
-semucila	boil over; froth over.
-semula	boil; ferment (e.g., beer); simmer; hoe into heaps for planting.
-senya	show the teeth.
-senyeenda	run away, "bolt".
-senyeenda	sift out the coarse grains of flour for final pounding.
-sepa	shape with an adze; carve (e.g., masks, sculptures, etc.).
-sepuka	turn aside from a path. Hence, Euph., defecate; (redup.) have diarrhea; avoid.
-sepula	adze; cut a slice; break open; force a way through.
-sewuka	overflow; be numerous; be abundant.
-sewusya	fill too full; cause to overflow.
-sicidila	be respectful.
-sicila	be rich, prosperous.
-sicina	rumble (e.g., thunder, earthquake); quiver.
-sicita	cut the throat; slaughter.
-sicituka	be cut or broken in two.
-sicitula	cut or break in two.
-sidika	faint.

-sidila	give grudgingly; covet.
-siga	cut carefully; cut to size or shape.
-sigadila	remain behind.
-sigala	remain.
-sigasya	leave over.
-siiciidila	put a log between bed and fire.
-siidikula	empty a hole on the ground; take out earth from a hole.
-siidila	fill a hole (us. with earth); cover with earth; bury; inter.
-siilala	smoulder; go out (of fire); extinguish (fire).
-siilasya	put off a fire by scattering the embers; overuse (soil); Euph.. kill a person.
-siiluka	be or become stupid.
-siimbukula	dig up a plant with roots and soil attached.
-siimbula	cut the roots of grass or plant (with a hoe); test; know a person well.
-siimbwa	behave in a jovial or boisterous way.
-siimbwisya	make be reckless.
-siinda	spend at least one night; overeat; prolong a visit; fail to report at work or school;
-siindamila	be very numerous, be plentiful; eat a great variety of food; live well.
-siindicisya	escort a guest out of the village; "see off".
-siindika	protect a village or house with medicine; destroy medicine after recovery.
-siindikuka	be unprotected (with medicine); be divided unequally.
-dii-siindikula	to make oneself vulnerable to dangers by disrespecting certain taboos.
-siindikula	unprotect a village or house that has been protected with medicine.
-siinduka	go downstream.
-siindula	pound the last grains in the mortar.
-siinga	twist strands (of cotton, sisal, etc.) into thread or rope.
-siinga	slaughter.
-dii-siinga	be content; make the best of untoward circumstances.
-siingaanga	talk a lot; make a noise or disturbance; be disorderly; rattle; squeak.
-siingadilwa	be at a loss; be anxious; be in trouble.
-siingana	meet; find.
-siinguka	be a convert to Islam; be converted.
-siingula	convert to Islam.
-siinjiidila	misreport; slander; revenge oneself perversely or indirectly.
-siinjikuka	unravel; disentangle.
-siinjikula	unravel; disentangle.
-siinjila	splice; make a detour.

-siinjinika	be resolved; be determined; insist; be annoyed.
-siisina	close the eyes.
-siisinukula	open the eyes.
-siisya	contract.
-sijidika	be sharp.
-sijidila	shave round the edge of the hair.
-sikama	be pleased with oneself; be self-satisfied.
-sila	be dissatisfied with a share.
-sima	extinguish; put out (a fire or light); go out (of fire or light).
-simaambala	overeat.
-simaasya	rub out; obliterate; erase.
-simana	encounter; find; come up with; join; meet.
-simanya	snap (of a dog).
-simidila	disappear. Euph., die.
-simidisya	hide. Euph., bury (the dead).
-simika	fix upright; vanish.
-simoonga	wonder at; be suspicious.
-simoongana	give cause for offense; be at cross purposes.
-simoongwa	be puzzled; astonished; at a loss.
-simoonjeka	be puzzling.
-simoosya	puzzle; astonish.
-simukula	remove what has been fixed upright; vanish.
-simula	add cold water to hot water to cool down; try out (test).
-sipuka	sprout; put forth leaves; originate; grow; occur to one; spring into one's mind.
-sipukwa	be reminded of own accord.
-sisa	hide.
-sisima	be cold; be mild (not pungent (e.g., tobacco); be clean and fresh to the palate .
-sisimuka	be startled out of sleep; revive from a faint.
-sisimya	cool; quench thirst.
-sisya	begin to hoe a new garden; invent; be the first to think of anything.
-sita	smoothen (as by ironing); iron; press.
-sitopa	be heavy.
-sitopelwa	be overburdened.
-sitopya	put weight on; overburden.
-situka	be startled.
-siva	fill in a hole; close up; shut up; dam, plug up.

-sivalwa	go hoarse.
-sividikaangana	be confused; be messed up; be distracted.
-sividikaanganya	interfere with (negatively); surround on every side; confuse; mess up; distract.
-sividikanya	hem in; surround.
-siviidila	obstruct; protect partially.
-sivila	obstruct.
-sivilwa	be impeded to leave a place; surrounded; be detained; be obstructed, thwarted.
-siwuka	become leaky; spring a leak (of boat or canoe).
-siwukuka	be removed (objects or substance obstructing a passage).
-siwukula	remove objects or substance obstructing a passage.
-siwula	open up; cut open and remove contents; gut; wipe dry; dry up; remove obstruction.
-soceelela	go astray; lose one's way; disappear; get lost (of a person).
-soceya	be disrespectful, rude; speak rudely to (or of) another.
-sodima	walk quickly with large large steps.
-sogoda	speak (esp. disparagingly) of the absent; backbite.
-sogoja	be loosely (inefficiently) tied.
-sogola	bear fruit.
-sogosya	bear well (of tree or plant); grow (of the planter).
-sojiga	carve or gouge out.
-soka	overload; fill to the very brim.
-sokoka	be deep; go deep; be famous; excel.
-sokola	hollow or dig out.
-sokolola	explain; collect.
-sokonecela	disappear; become invisible or not to be found; be lost.
-sokonyola	pick the teeth; dig with a pointed stick.
-sokota	carve.
-sola	dig.
-solocela	wear round the waist.
-solokota	scrape out (e.g., seeds); entice a person away from his (her) home.
-solola	pull out; hoe a long strip.
-sololoka	protrude; become thin and long (as appearance of fingers in illness).
-solomoka	arrive first; win a race.
-solota	go ahead.
-solotoka	come out one-by-one through a small hole (e.g., grain from a sack).
-solotola	take out one-by-one through a small hole (e.g., grain from a sack).
-soma	pierce or stab; hit the target; strike (wound) with a missile; prick.

-somecesya	set (dogs) on game.
-someelela	announce; explain; elucidate; warn.
-somoka	be extractable from the skin; lead in song; sample; take a first taste.
-somola	extract (a thorn) from the skin; lead in song; strike up (a song); sample.
-somoongoka	be ripe for threshing (of sorghum); rush forward.
-sona	sound (of a bugle or horn); become famous; sew.
-soneelela	sew on a patch; two pieces of cloths.
-sooma	read; study.
-soombola	snatch away.
-soombolela	rob openly; interrupt; speak rudely.
-soombotasya	disarrange; bend (make crooked); distort the truth (facts).
-soonda	follow; go forward to look; scout ahead; visit; pay a call; put into the palm.
-soondoka	become tilted; lurch (as a pot on the firestones).
-soongaangana	assemble in large numbers.
-soongana	assemble.
-soongola	sharpen to a point.
-soongoona	whisper.
-soonjela	accuse.
-soonjomala	be very tall (esp. a person).
-soonya	suck the lips (in scorn or annoyance).
-soosa	search for; look for; want. (also used as auxiliary).
-soosela	procure for.
-soosoola	hatch (egg); poke the fire.
-sopa	peck; bespeak; lick the fingers after eating (derisive); hollow out (a drum).
-sopela	ram (load) a gun.
-sopola	hollow out (esp. a drum).
-dii-sopoolola	preen the feathers (bird); tide one's attire; smoothen or pull into shape..
-sosodima	do in hurry; outdo.
-sotola	pierce right through; break through.
-sova	be without; lack; be lacking to; be scarce.
-sova-sova	be usually rare; be normally absent.
-soveela	be generous, liberal.
-soya	err; do wrong; make a mistake.
-soyaasoya	err (in a drill, in orchestra); make a mistake.
-soyaasya	lead astray.
-sudiya	pay homage to the dead.

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-suga	snort.
-sugama	be or become beautiful or handsome.
-sujila	hesitate.
-suka	wash (utensils); plait.
-sukusa	be addled.
-sukusula	wash the face.
-sula	do or happen something ill-omened.
-sulucisya	drop a drop or drops upon.
-suluka	fade (of color); be strained (of brine); be tasteless; insipid; be found out.
-sulula	leak out (of liquid).
-sulumuunda	be or become loose; be sifted; sift through; be faint-hearted, cowardly.
-sulusya	drop a drop; strain brine.
-sumaanga	eat porridge without relish.
-sumucila	disappear; become invisible (esp. of sun and moon).
-sumula	take by force; dispossess; expropriate.
-supuka	be startled; "jump"; have a sudden recollection.
-supula	abrase the skin; wet one's clothes (insult).
-susudicisya	expound; enlarge upon (a subject); draw toward oneself.
-susukwa	be greedy (for food).
-susula	rebuke; scold; eat early in the morning; breakfast (early).
-suuga	swim.
-suuka	be mean, niggardly.
-suukuuna	be loose.
-suukuunya	shake, loosen (esp. by wrenching); intimidate (by threats, etc.).
-suuma	buy; exchange (in barter).
-suumanya	exchange, barter.
-suumba	leap; jump.
-suumisya	sell.
-suuna	spit out.
-suundudila	bite (of leeches).
-suunga	take care of; keep.
-suungana	befriend; live in harmony.
-suungula	strain.
-suungulumuka	regain consciousness (as after fainting or drink).
-suungupula	dissolve.
-suunjika	be valuable; be handsome; be highly steemed.

-suunjila	be thrifty, saving; be careful of one's things.
-suusa	adjust; put straight; (esp.) hoist a child with a jerk; prove another wrong.
-suusanya	make a fire by pushing up the half burnt sticks.
-suusiila	sniff, snuffle.
-suusila	add to length; go ahead, in advance; push (e.g., firewood in the fireplace).
-suusudila	surpass; outrip; make a long march (esp. without stopping for food); sob; snivel.
-suva	wash one's legs; cast slough (snake); desquamate.
-suya	disregard; overlook; "wink at".
-swa	begin to grow dark.
-swaadi	pray.
-swaadisya	lead religious service.
-swaakaanya	cause (e.g., dry leaves) to rustle.
-swaamba	raid (for slaves); kidnap.
-swaanya	smash or crush to bits.
-swaaswaaguka	be shelled (e.g., an egg, peas, beans); be told the whole story.
-swaaswaagula	shell (e.g., an egg, peas, beans); tell the whole story.
-swaaswaata	reduce to powder.
-swanyaanda	smash, reduce to powder.
-sweejela	be very light in color; be or become white.
-sweeka	insert; sheath (knife, sword).
-sweekeena	be loose in a socket; be "wobbly".
-sweekuka	be pullable out; unsheathe.
-sweekula	pull out; unsheathe.
-sweelwa	be overtaken by dark.
-sweenga	ooze.
-swiikama	chase.
-swiinyala	wither away; shrivel up.
-swiipula	snatch away; pull out by force.
-syaaga	grind (to flour or to powder).
-syaana	hammer (iron); forge.
-syaangaandala	live happily.
-syaasya	imitate; echo another's words; repeat (words, action) after another.
-syaasyaajila	plaster with thin mud.
-syeelewuka	delay (another person).
-syeenga	coil round; rebel; challenge.
-syeetela	go to the other side of; go round (an obstacle, e.g., a house).

-syooka	turn round.
-syooma	read; study.
-syoomya	speak with an accent; speak like a foreigner; pronounce incorrectly.
-syoosya	turn round; change a load from one shoulder to the other; hitch up a load.
-syoosyootana	come to blows (during a quarrel).
-syoovekana	be (become) on terms of friendship.
-syoovelela	be (become) accustomed to; be wont to.
-syoowola	eat something tasty after consuming bitter stuff; wipe dry; clean a gun; clean out.
-syuudula	indicate disgust or derision by "clucking" with tongue, or by twisting the mouth.
-syuuka	be transformed (into); rise (from the dead); resuscitate; arise.
-syuula	wipe dry.
-syuulula	turn or look away in disgust; wince.
-syuunga	spin round; twist the body; hover.
-syuungudika	perform a miracle (as by witchcraft).
-syuungula	go round about; gyrate.
-syuungunukuka	be blown away or dissolved by sun clouds); ferment (beer); recover consciousness.
-syuungunukula	make recover consciousness.
-syuungusya	turn or spin round; be round or spiral.
-syuusya	resuscitate; revive surgery; revive a corpse by witchcraft.
-ta	name (e.g., a child).
-dii-ta	assume a name; name oneself.
-taaga	pour (in a container).
-taagudila	tell; inform.
-taajiila	lay egg.
-taajula	kick.
-taalala	be or become hard, tough, stiff, difficult; be (become) barren (of a women).
-taama	sit; sit down; stay; live; reside.
-taamba	dance about (by oneself); execute a pas seul; play.
-taambadika	be extended, stretched out (e.g., the legs).
-taambadisya	stretch out.
-taambala	spread (of a plant).
-taambalala	lay (or spread out) on the ground; roam about.
-taambalasya	speak at great length.
-taambalukula	unfold; spread out (e.g., cloth).
-taambiila	speak of; mention.
-taambula	go farther on; go farther than its fitting; transgress.

-taamicila	put down after using; speak slowly and clearly.
-taamidicila	sit with the buttocks on the ground; to stay a very long time in one place.
-taamidisya	stay a long time (hours).
-taamiidila	wait for.
-taamika	set down; cause to live at a certain place; settle.
-taamukuka	be unseatable; be liftable from sitting position; be removable.
-taamukula	unseat; lift from sitting position; raise; remove.
-lu-taamukula	run away, "bolt".
-taanda	begin; start; pick a quarrel; provoke; tease.
-taandaacisya	walk unsteadily; hobble.
-taandaajila	walk with care, pick one's way; hobble along.
-taandaasya	make walk carefully; toddle (of a child).
-dii-taandaasya	walk carefully; toddle (of a child).
-taandadika	bridge a gap (with a pole or tree).
-taandagala	spread (e.g., table-cloth).
-taandiidila	cause; be the cause of (e.g., pain, disease).
-taandika	spread (e.g., bed, mat, table-cloth).
-taandila	start again from the beginning; repeat; do again; hesitate.
-taandukuka	be folded up; be removed (material, blanket or alike, that has been spread).
-taandukula	fold up (e.g., table cloth); unmake the bed.
-taanga	relate, narrate; propound a riddle; discuss.
-taangawala	be tall; be large.
-taanjika	be easily taken or caught in a trap.
-taanjila	be caught (e.g., in a trap); be waged (of war).
-taanjisya	lead into a trap; catch (in a trap).
-taanjukula	take out of a trap.
-taanyula	kick backwards.
-taapula	scrape the surface with a hoe.
-taataasika	throw out sparks; explode and fly out (e.g., producing popcorn); crackle.
-taataavana	argue, be argumentative; be, or get, all tangled up.
-taatanukula	open the eyes with difficulty; split open, force open, with the hands.
-tacilwa	be seriously (dangerously) ill.
-tadika	be distant; be far away.
-tagala	stride; take a long stride.
-tagaluka	cross a path (or a road).
-tagalukuka	be crossable back a path (or a road).

-tagalukula	cross back a path (or a road).
-tagalusya	disregard instructions; be inattentive; make gross or pass over.
-takalaka	long for.
-takanya	spread (of an ulcer or stain).
-takula	wear or put on (clothes).
-talan'anya	be split up (of a crowd); disperse; stand or be placed apart.
-talasa	tap up (knock gently); bind (edge of material) with thread.
-tanuka	give way; yield (us. cloth, plank, etc., figuratively).
-dii-tapa	boast; swank; glory in.
-tapana	be unlucky; meet with bad luck; contract a disease; be unfortunate'
-tapasya	overcook; speak at inordinate length.
-tapata	be overcooked; be weak and spiritless.
-tapika	vomit.
-tapisya	administer an emetic.
-tapuka	be sticky; be elastic; be bogged.
-tapula	be infected by a disease; be smeared; be clogged with earth; draw the bow string.
-tasya	set a big price; refuse to reduce the price asked.
-tatadika	throw out sparks; sparkle; scintillate.
-tatala	be blind.
-tatamala	be or become rich.
-tava	bind, tie; build (with poles and grass); fasten.
-dii-tava	gird oneself.
-tavaandavana	be intertwined; be interlaced.
-tavana	agree on a course of action.
-tavanya	be brave, indifferent to danger; be incorrigible; be insolent; be ruthless.
-taviidila	tie on.
-dii-taviidila	make up one's mind; take a calculated risk; hang oneself.
-taviidisya	stay some time.
-tavika	be well built; be large (of a village).
-tavila	enclose; fasten (e.g., a belt).
-tawala	reign over; be supreme in; govern.
-tawucila	repeat; do again.
-tawucisya	force; accustom somebody to; persuade.
-tawula	order (command).
-tawuna	chew.
-tecetuka	be brittle; be friable; be breakable (piece of dry wood, dry fish, etc.).

-tecetula	snap across.
-teelwa	be named.
-teemba	carry a load between two persons; love; like.
-teembweela	go for a stroll.
-teenda	do; be in the act of; regard (as); tell.
-dii-teenda	boast.
-teendegula	take to pieces.
-teendela	behave towards.
-teendelela	force.
-teenga	make into a bundle; tie first buttons on the rafters; make roof.
-dii-teenga	sit à la"tailor" or "Turkish" fashion; keep far apart the legs while sitting.
-teengaanya	shake; move (articles); wag.
-teengaanyika	stire (move); wriggle.
-teengudila	have vaginal discharge during pregnancy.
-teenguka	be or become flacid; droop; be languid. weak, powerless; arrive at puberty.
-teengula	prepare vegetables for cooking; sing to responses of a song.
-teengusya	lower; set down.
-teenjekuka	be unmade (e.g., a bundle of firewood); be untied (e.g., first buttons on the rafters.
-teenjekula	unmake (a bundle, firewood, a roof of a house).); untie first buttons on the rafters.
-teenjela	flourish (of a plant or tree) proper; be prosperous.
-teenjelemuka	level off (e.g., heaps); slide (e.g., mud, rocks).
-teenjelemula	level off (e.g., heaps); make slide (e.g., mud, rocks).
-teepaana	be slender and pliable; be frail, weak.
-teepuula	skim off; flutter; wave about (as the tail of fish).
-teeteeka	appease; quieten down; console.
-teeteela	cackle (of a hen).
-teetelecesya	speak slowly and ponderously (esp. in warning).
-dii-teewa	stoop.
-tega	set (a trap); cock a gun; cast a net.
-tegula	take (a pot) off the fire; take (pounded grain) out of the mortar.
-tejeka	be easily set (a trap); be cocked (a gun).
-tejekuka	unset (a trap, a gun).
-tejekula	unset (a trap); uncock a gun; uncast a net.
-teka	draw water; ladle beer or any liquid.
-tekanya	ladle out beer (specific term).
-tekenya	itch.

-teketeka	fluttering down as falling leaves or tears.
-teleka	put on the fire; cook (food in a pot); brew (beer).
-telekuka	be enlarged or spread (of an ulcer).
-telekula	open wide (a hole in cloth, a wound).
-telemuka	slip; slide; abort (of a woman).
-telesya	be slippery; slip.
-teluka	be totally incapacitated; be paralyzed.
-telwa	be feeble on the legs.
-tema	cut down (e.g., reeds, maize); break off (anything brittle); snap off; be sharp.
-temaandemanya	change the subject; break off a conversation; go to and from; interfere.
-temaangula	break off (e.g., a branch); break across (e.g., a stick).
-temaangulanya	shatter.
-temanya	break across.
-dii-temanya	strut, swagger; break oneself as in "break dance".
-temudila	bespeak.
-temula	go out (get up) early in the morning; skim off.
-tenaandena	sway to and from; toss about (e.g., branches in the wind).
-tenaandenya	cause to toss about.
-tenekula	break down after having healed (of an ulcer or wound).
-tepeendala	be soft and flabby; be smooth, silky; be loosely joined; be gentle.
-tepela	lack perseverance; be in firm of purpose.
-tepeta	be sloppy (i.e., too liquid).
-tepetela	be smooth; blow about (e.g., straws); disappear.
-tetekula	skim off; steal in large quantity; steal a huge amount.
-tetela	give a warning cry.
-tetema	shudder; shake.
-tetemela	tremble; shiver.
-dii-tetemuka	fear discovery.
-tetemya	remain all day long (at work, on a visit, etc.); startle; frighten.
-tetesa	crush (e.g., an insect).
-teteseka	burst (of an insect); pop (of corn in the pan).
-teteva	sit down with a bump (unexpectedly).
-tetevala	collapse; be soft and pliable; sit quiet; be good tempered; "sober up".
-teteya	rest for short time; give quietus (wounded animal); bray (a hide); suppress; torture.
-tewucila	revert to a subject already fully discussed.
-tewuka	be late in starting.

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-teya	dodge (a missile); loop off branches; pollard.
-ti	say; be about to; be on the point of (with subjunctive).
-ticita	rub.
-tididika	be very smooth (e.g., silk, highly polished wood); be finely ground.
-tidila	be smooth (e.g., the top of a table).
-tidinyisya	throttle, strangle.
-tidisya	smoothen, polish; plane (wood).
-tiidila	run away to.
-tiikula	rotate the buttocks as in dancing.
-tiila	flee (from); run away.
-tiimba	run away, "bolt".
-tiimba	strike; hit; touch; nudge, poke in the ribs.
-tiimbajila	limp.
-tiimbidikanya	mix (things) together; make a hash of a job.
-tiimbidisya	splice (rope).
-tiimbuka	desert, abscond, elope.
-tiimbula	pound steeped corn.
-tiimbwinya	waddle (as a fat man); nudge; poke in the ribs.
-tiimbyajila	limp.
-tiindana	miss each other (i.e., fail to encounter each other); differ from; disagree with.
-tiindanya	exchange; create problems between people; oppose two opinions.
-tiindigala	be short and stout; strut.
-tiindikwa	be tired of eating the same thing for consecutive days; "be fed up".
-tiindisya	wear a great variety of clothes; eat a great variety of foods; be difficult to please.
-tiindivala	kneel.
-tiindiwika	dip (a cup, ladle, etc.) into a liquid.
-tiingala	be old and useless, worn out (of articles).
-tiingamika	shake, wobble.
-tiinjinya	give way (collapsing, e.g., a plank, branch, morass).
-tiisya	drive away.
-tiitidika	plant (seed) deeply; roast (e.g., sweet potato) deep in hot ashes.
-tiitiila	be sleepy; nod with sleepiness; smoulder.
-tiitiimba	develop healthily (many plants of the same species in a farm).
-tiitiisya	pirouette (in dancing).
-tika	tempt; lure with false promise; dupe.
-dii-tika	be self-confident.

-tikama	be unfilled.
-tikamisya	make leave unfilled; fail to fill.
-tikamya	leave unfilled; fail to fill.
-tikatika	tickle.
-timadika	be honest, trustworthy.
-dii-timadika	forbear, show restraint; be unassuming, modest; hearten oneself; be easy going.
-tina	tie tightly so as to constrict; stretch oneself; adjust by pulling or stretching.
-tiniinguka	be forced to bend; sprain; be dislocated (a joint).
-tiniingula	bend forcibly; sprain; dislocate (a joint).
-dii-tiniingula	sprain.
-tinika	be scorched; be burnt (in cooking).
-tinula	stretch joints (until they "crack" as a form of massage).
-tipaasya	smear on; stroke.
-tipila	set (sun or moon).
-tipitila	be soft and smooth; have a clean skin; have the hands or lips soiled with food.
-tipitisya	cajole; hoodwink; deceive with soft words.
-tipula	hoe deeply (as for groundnuts). .
-titima	patter (of footsteps, rain, etc.).
-titimala	be standing overburdened for long time.
-titimika	stick (vertically) an object; transfix.
-titimila	run aground; be stuck (vertically) in mud or snow; be transfixed.
-tiva	plait.
-tivadika	live in comfort; be comfortable, snug.
-tivila	be or go under water; dive; sink; set (sun or moon).
-tivisya	immerse.
-togaandoga	flit about (e.g., a bat).
-togolela	rejoice.
-dii-togolela	rejoice; be pleased with; thank.
-togowala	sit with the legs widely apart.
-tojima	be startled; be frightened; flinch.
-dii-tojima	hesitate (in speech); have difficulty in speech; denounce indirectly oneself.
-tojimya	startle.
-tokosa	poke.
-tokota	boil.
-tolola	bore the ear or ala of nose.
-toma	bespeak; ask for friendship; engage beforehand (e.g., a servant); hire out an animal.

-tomeka	mention (somebody's name); appoint.
-tomela	choose; esp. betroth.
-tomelwa	be chosen (for marriage).
-tomokoka	be peeled off.
-tomokola	take a piece out of a consistent mass; drop to pieces; peel off; leap over:.
-tona	pinch; hurt.
-toneelela	be firmly rooted.
-tonoosya	hit on a tender spot (e.g., the "funny bone); touch in a hurt area of the body.
-toocomala	be weak and feeble; be loose (of the ropes of a bed); be "full", "baggy", shapeless.
-toocomasya	loosen (e.g., the springs of a bed).
-tookoonya	disturb (esp. of bees' nest); tease; annoy; entice away.
-toola	fetch; bring; pick up; adopt a custom.
-toolana	exchange presents; look alike.
-toomaasika	be pulpy.
-toomaasya	palpate; feel (test) with the fingers.
-toomba	copulate (of the male only), (vulgar).
-toombana	have sexual intercourse.
-toombolesya	protrude; stick out; hang down (a corner of waistcloth); hang out (handkerchief)
-toombwa	copulate (of woman).
-toondesya	be avaricious, domineering.
-toondola	sag; drop; give way.
-toondova	be slack; loose; become less acute (of pain); become less fierce (of sun); relent.
-toondovela	soften towards (of a person); forgive partly.
-toondoya	slacken, loosen; relieve.
-toongola	roar, bellow, moo, etc. (of animals); crow (cock); sing (bird); backbite.
-toonya	fend off; parry; poke; pick the teeth.
-toopwaana	be slack; be feeble, weak.
-tootola	pluck (feathers); snatch away.
-tootoocela	be poor.
-tootoocelwa	be at a loss; be chocked with weeds.
-tootoogana	be frequent.
-tootooganya	repeat over and over again.
-tootoosya	tap lightly; cluck the tongue (in annoyance or disapproval).
-tootoota	rap (e.g., the door) with the knuckles.
-toowaajila	be fully ripe (fruit).
-toowaanya	palpate; feel (test) with the fingers.

-toowaasya	test a person's disposition.
-topa	be heavy.
-topola	drive away; expel; "sack" (a servant); wear a waistcloth reaching to the ground.
-tota	sew; rivet; fasten together (as by screws or nails); stab.
-toteelela	sew up tightly.
-totoka	fall out in patches (of hair, e.g., in Alopecia or Secondary syphilis); be packed.
-totokoka	be unpicked (the sewing); be torn apart (things fastened together); be forced open.
-totokola	unpick (the sewing); tear apart (two things fastened together); force (a lock).
-totokwa	bolt one's food.
-totomeka	put on a spit; transfix; hammer in.
-dii-tova	overdo (anything); be conceited; be self-satisfied.
-tukana	insult grossly; swear (at); use foul language (to); treat shamefully
-tukucila	move out of the way.
-tukucisya	push towards; lay aside (e.g., food) for another.
-tukudila	be heated; be rotten at the core; suppurate deep down (abscess)
-tukuka	move out of the way; give way.
-tukusila	scab over (of a sore); rise (of a blister).
-tukusya	clear the way.
-tukuta	become heated; be hot; become rotten.
-tuluka	come down; descend (a slope).
-tuluma	utter a low growl; purr.
-tulumula	clear the throat; "cough" to call attention.
-tulumusya	move.
-tulusya	bring down; become pregnant again.
-tuluumbala	be distended (as an overfull bag); be fully, or over, inflated (as a tyre); be salient.
-tuluumbasya	inflate.
-tuma	order; send (a person).
-dii-tuma	relieve oneself (very formal).
-tumicila	serve another person.
-tumika	act as a servant; be under orders.
-tumisya	send (e.g., a parcel).
-tumiya	menstruate (formal).
-tumula	enlarge (a house); swell or belly out (e.g., a net or sail).
-tumusya	disperse; shake.
-tumwa	be ordered; be sent.
-tupa	be (too) much or many; be abundant.

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-tupigwa	have indigestion from over-eating.
-tupula	uproot; extract a tooth (with forceps).
-tupya	increase the quantity.
-tusuka	burst (fruit, blister, etc.).
-tusula	burst.
-tusya	be content, happy; be quiet.
-tuta	move things several times from one place to another.
-tutudika	explode and fly out (as corn when fried).
-tutuluka	be scorched.
-tutuma	froth up; boil up; boil over; pother (of smoke); flee to another country.
-tutumila	boil up or over.
-tutumukuka	come to the surface; rise into view.
-tutumukula	bring to the surface; extract; risen into view.
-tutumya	smoke.
-tutuva	increase the size from inside out; swell.
-tutuya	increase the size; make swell.
-tuugala	walk quickly with long strides.
-tuuka	rise in a cloud (smoke); pother.
-tuukuunya	pulsate; throb; be heaved up.
-tuula	put down; take off from the head.; alight.
-tuulala	be mild, gentle, in disposition; be good tempered; calm down; become peaceful .
-dii-tuumba	crouch.
-tuumbigwa	(of a child) be made ill because the mother has become pregnant before weaning.
-tuumbila	be angry; be upset.
-tuumbucila	sink; get into water; drown; be too short; flood (of a river).
-tuumbucilwa	be destitute; be at the end of one's resources; "be sunk".
-tuumbucisya	drown; add fermented beer to gruel; pack one thing inside another; "nest".
-tuumbuka	burst open (e.g., an abscess); flourish (e.g., corn, millet, wheat).
-tuumbula	cut open and remove the contents; gut (aa animal); incise an abscess; operate on.
-tuumbulukanya	take the most direct route; pass through a village without stopping.
-tuunda	pass urine, micturate.
-tuundajila	limp.
-tuundila	eject semen.
-tuunducila	come voluntarily or aptly.
-tuunduka	be changed in disposition; change one's mind.
-tuundumadila	turn the back to; abandon; desert; leave behind; be inconsiderate, selfish, egotistic.

-tuundumala	be bent; be uneven; protrude; turn around.
-tuundumasya	bend; segregate; isolate; ostracize; quarantine.
-tuundumuka	project; stick out or up.
-tuundumukuka	come to surface.
-tuundumukula	prop up; adjust; align.
-tuundumula	come to the surface.
-tuundumusya	bring to the surface.
-dii-tuundunya	go farther and fare worse; make an unwise decision.
-tuunduvila	be perplex.
-tuunga	string (e.g., beads).
-tuungala	suffer from a chronic disease, esp. leprosy.
-tuungata	be good tempered.
-tuungulumuka	abort.
-tuungulumula	roll along; cause a woman to abort; disperse (scatter).
-tuunguluvanya	disperse bees from a swarm; cause one's neighbors to move elsewhere.
-dii-tuunguluvanya	make oneself be foolishly generous.
-tuunguluvila	be about to ripe.
-tuunguunya	shake; cause another to move elsewhere.
-tuunguvadila	foster.
-tuunguvila	be inflamed (of a limb, the skin, etc.).
-tuuta	push; push up earth; be evergreen (of tree, "because new leaves push out the old").
-tuutula	push with the nose (as a pig).
-tuutuugana	disperse.
-tuutuumbadila	push up (in helping somebody to climb up a tree).
-tuutuumbala	stoop.
-tuutuusya	sprout out of the ground.
-tuutuuta	tease (cotton); wash clothes; hoe the burnt bush; threaten.
-tuuyaana	compete; try to outdo; emulate.
-tuva	strip off (skin, bark).
-tuvila	fall short.
-tuwuunguka	be enlarged from inside out (e.g., a basket); stoop.
-tuwuungula	enlarge from inside out (e.g., a basket); stoop.
-twa	pound in a mortar; be weak in the legs.
-twaamuka	be broken in the middle.
-twaamula	bellow; low; break in the middle.
-twaanga	strike with a fist; boast.

-twaangula	roar; grunt; snort; finish off; be unfair when dividing something.
-dii-twaanjila	boast, talk big, draw the long bow.
-twaatwaagula	excel in pounding; (slang) be erotic (of a woman).
-twaatwaajila	confirm a statement; amplify a statement.
-tweenga	ooze.
-tweesela	be plentiful; be full grown.
-twiicila	put (a load) on one's head.
-twiika	put something (a load) on other's head; load.
-twiinidicisya	press down; compress; drown.
-twiinya	make be blunt; wear away; pack tightly; repulse; rebuff.
-dii-twiinya	fall flat on one's face (accident).
-twiisa	pack tightly.
-tyaaka	singe; burn the bush.
-tyaakalasya	set down carelessly.
-tyaakula	stir to and fro (e.g., porridge).
-tyaala	skip (dance) about; dodge; "duck" (to avoid a blow or missile); disavow; dance.
-tyaalaambuka	slip up.
-tyaanga	bounce, rebound; clamor to be taken up (of a child).
-tyaanga-tyaanga	flit about; prevaricate; make false promises.
-tyaatyaaganya	take more than one's share or due; evade an awkward question; equivocate.
-tyaatyaatika	bolt; run away.
-tyoocesya	remove from one place to another; remove for, with, etc.
-tyooka	go away; set out.
-tyoosya	remove.
-uumiidila	dry up (esp. water).
-uumudila	grapple with; dry out (esp. plaster).
-uumula	dry; be hard (owing to dissection).
-uungumika	meet unexpectedly; bang a drum.
-uunguusya	wash out the mouth; gargle; beat the water; tresh about in water; agitate.
-uuva	hide oneself; shelter from (e.g., rain).
-uuviidila	lie in wait for; ambush.
-uuwuka	be revealed (secret); come from the hiding place.
-uuwula	reveal (something or somebody hidden); bring out; denounce.
-va	be; become; dwell.
-vaamba	roast a (e.g., a corn-cob); warm oneself; stretch (e.g., a drum skin); extend.

-vaambala	avoid by a detour; detour; step aside; go round an obstacle; stroll about.
-vaambanya	draw together.
-vaambiidila	stretch the skin of a drum.
-vaanda	beat down tall grass.
-vaandaangula	run away, "bolt".
-vaandicila	approach.
-vaandicisya	bring or take closer; approach.
-vaandika	be near; be easy.
-vaandula	sharpen by hammering the edge of an iron tool.
-vaanga	open a new garden; peddle things for sale; file notches in the teeth.
-dii-vaanga	sell oneself (e.g., as prostitute); formerly, sell oneself into slavery.
-vaangala	seem; resemble.
-vaanganya	make one's way through the bush (where there is no path).
-vaangudila	top a tree.
-vaangula	run away, "bolt".
-vaangula	split open (e.g., as in shelling peas); open up a path or a road.
-vaasa	take out (a lot) of storage.
-vadika	flash; throw out sparks; burst (of ripe fruit); transfix.
-vadisya	invest (with a distinctive token or robe). Hence, appoint; recognize as adult.
-vagajila	tremble.
-vagudilwa	meet anything of bad omen.
-vagula	be of bad omen.
-vajila	be (become) fitting or suitable for.
-vajilwa	be behoven; ought.
-vaka	build in brick or stone.
-vala	shine (esp. of the sun).
-valaanga	count; enumerate (mention); read.
-dii-valaanga	plead for oneself; justify for oneself.
-valagana	organize (selves as a group).
-valaganya	organize (things); be placed at intervals; be "in open order".
-valama	be (become) scarce.
-valavaandudila	give conflicting evidence; be self-contradictory.
-valavaanduka	appear; become visible.
-valavaandula	run away, "bolt".
-valavaandula	speak at great length; hoe out of line; notch; cut a chip out (of a wood).
-valavaasya	beat a drum heavily.

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-valavadila	tie a batten to an upright pole or a rafter; be ready to move off (esp. of a journey).
-valuka	split; burst open.
-valula	burst open; split up (e.g., bamboo).
-vana	clasp between two objects; fix between two sticks for convenience of transport.
-vanigwa	be caught or jammed between two objects (e.g., poles or trees).
-vanika	transfix; skewer.
-vanukuka	be unjammed, freed or removed from between two objects.
-vanukula	free something jammed between two objects.
-vanula	knock down; bring to the ground; lower; change direction; drop out of the hand.
-vata	level off (e.g.. earth).
-vata	run away, "bolt".
-vatama	be level and flat; be smooth (of lake or river).
-vatamicisya	lay flat on the ground.
-vatamisya	lay flat on the ground.
-vatika	sharpen by rubbing; rub flat or smooth; rub in (e.g., oil on skin).
-vatila	scrape (clean) the threads (weaving).
-vava	be or become bitter or acid in taste.
-vavicisya	burn the bush, preparatory to making a new garden.
-vawula	burn of the grass preparatory to hoeing; burn superficially; singe.
-vaya	half burn; burn superficially.
-ve(l)eceta	speak; scold.
-veecetela	negotiate the reduction of price of merchandise.
-veenda	beg for; cadge; stalk (game).
-veenga	cause skin eruption (of broken taboo); cause allergy; be allergic; hate.
-veengwa	have a rash in the skin.
-veeveela	be or become thin (transparent) in texture.
-velecela	bear a child to.
-velecetela	accuse; scold somebody because of something.
-veleenjela	be postponed.
-veleenjesya	postpone.
-veleka	carry on the back (esp. a child); bear (and by analogy beget) a child.
-velekana	breed; bear; reproduce (animals); carry on the back one another.
-velekuka	be swung (a child) round from the back to hip preparatory to putting down.
-velekula	swing a child round from the back to hip, preparatory to putting down.
-velekulanya	divide in two; settle a dispute.
-veluka	knock off; finish work.

-veteka	mould (clay); knead (e.g., dough); curry favor.
-vetekusya	grimace; make faces at.
-veveluka	blow about in the wind; stagger about.
-vidicila	surpass; excel.
-vidiga	wrap up; roll up; bunch together.
-vidiganya	roll up into a ball; bunch together.
-vidiguka	stretch out; be unwrapped; be unrolled up.
-vidigula	stretch out (e.g., unmake a ball of thread); unwrap; unroll up.
-vidiinga	make into a ball.
-vidiingala	be repeated in rapid successions.
-vidiinganya	repeat in rapid successions.
-vidiingula	insinuate, or imply, that one is not speaking the truth; display incredulity.
-vidikula	roll up in clouds (fog or smoke); boil up; pother; vomit.
-vidima	flow fast (water); bitter; give a loud spot (gun); travel a long way (missile).
-vidimala	be short and stumpy; be rounded at the end.
-vidiviinduka	have a relapse (or an illness); return to a subject (or point) already fully discussed.
-vidiviitala	be dark in color.
-vidiviitula	flee; bolt.
-viga	build a game fence; fence in, enclose with hedge; rain at a distance.
-vigama	be bewitched (esp. of a village).
-vigula	start moving; depart; set off; be in motion (of a "caravan").
-viiciidila	insert the heated tang of hoe or axe into a prepared hole in the handle.
-viicila	"palm" anything; keep food for somebody absent.
-dii-viicila	boast.
-viidila	be overgrown with weeds.
-viika	put; place; appoint a time and place for hearing a case-at-law.
-dii-viika	leave home to settle in another village.
-viinda	protect a garden with medicine; burn the bush while hunting.
-viindicila	deny oneself; stay a long time in one house or place.
-viindika	protect with medicine.
-viindikuka	be unprotectable (a garden) with medicine.
-viindikula	unprotect a garden with medicine; burn the bush while hunting.
-viindisya	overturn (a canoe).
-viinga	drive away; chase; expel; have sexual intercourse (used exclusively for animals).
-viingula	cut up firewood.
-dii-viinjila	defend oneself; protect oneself.

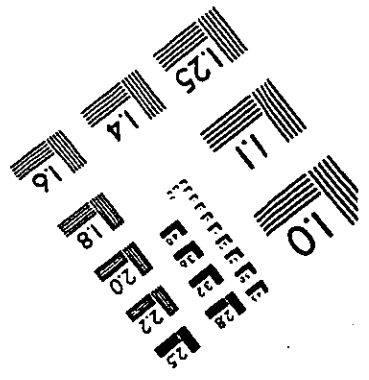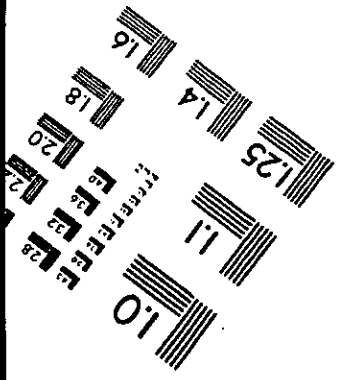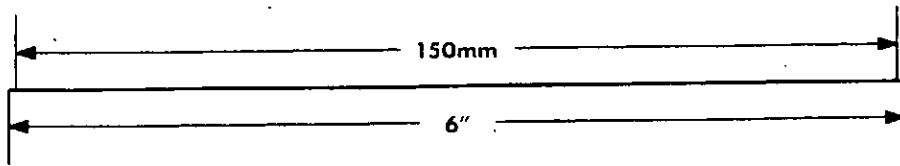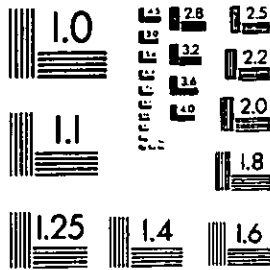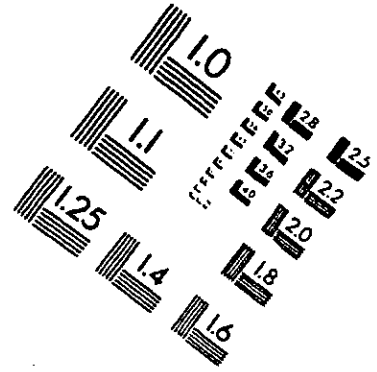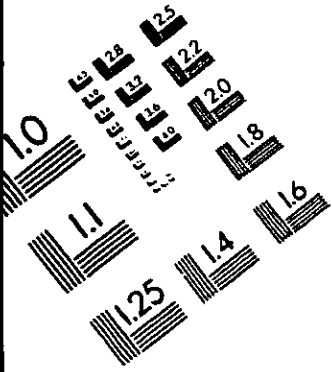|	
-viiviila	blow gently (of wind).
-vijiidila	wrap in a fold of clothes (e.g., money).
-vijika	distract one's attention.
-vijikana	crowd round or together; entangle; grow in tangle (bush); interrupt; be narrow.
-vijikanya	be "in the way " ("unwanted").
-vilaanga	call (name); summon.
-vilaanjila	invite.
-vilasya	recall (something lended to somebody).
-vilula	be nauseated.
-vilusya	nauseate; belch.
-vina	dance; drill; initiate.
-vinigwa	be initiated; be drilled.
-vinuka	go over (as opposed to go round) an obstacle.
-vinukuka	gap (of a wound).
-vinusya	pass an object over anything; cover completely the top sides.
-vinya	play with toy objects (esp. cars, bicycles, etc.).
-visikala	be fresh (green); be moist.
-visikasya	moisten, dampen; look like rain; screw up the face before starting to cry.
-visyaavisya	screw up the face before start to cry (of a child).
-wa	die.
-waakaanya	make a rustling noise (in grass, leaves, etc.).
-waala	put on clothes; dress oneself; wear.
-waanda	spread (a news or a fashion); be common; be prevalent, rfe.
-waanga	mix.
-waangaanya	mix.
-waanganicisya	mix thoroughly; mix a number of specified things.
-waanicisya	be in doubt; wonder.
-waasa	search thoroughly.
-waasya	think over; contemplate; compare; appear to be; fall slightly (of rain).
-waawaata	fail to ripen properly; grow up feeble-minded (of a child); be noisy in conversation.
-waawula	buzz.
-walamula	run away, "bolt".
-walawaasya	sprinkle; fall lightly (of rain); patch a roof with grass.
-wawanya	steal openly.
-weeca	clothe; make wear; dress someone.
-weeceka	be clothed.

-weeseka	be given up; fall into disuse.
-weeva	be calm; be quiet; soft.
-weeweeta	rave as in nightmare or trance.
-wiidicisya	repeat for; do again (an activity) for.
-wiidilwa (-wiilwa)	be bereaved; be mourned.
-wiidisya	repeat (e.g., say words said before); grow (shoot) up of own or accord (plant).
-dii-wiila	get involved in a quarrel.
-wiimba	thatch.
-wiimuka	be removed (the thatch); be unthatched.
-wiimula	remove the thatch; unthatch.
-wiimula	run away, "bolt".
-wiisala	be old and worn-out (esp. cloth).
-wiisuka	be feverish; twist the mouth (in disgust or derision).
-wiisya	boil, leach and dry in order to keep for the following season.
-wiita	pulsate; throb; husk sorghum or rice.
-wojola	force one's way through (e.g., a thicket).
-wola	rot; go bad.
-wona	see; be of opinion; feel (have a feeling of).
-wona	graduate (at school); complete studies.
-dii-wona	be arrogant, conceited.
-wonegana	meet; be in terms of friendship.
-woneka	be visible; be found; appear; seem.
-woomboka	break down (of a healing wound or ulcer).
-woombola	redeem (a pledge); compensate; ransom; propose in marriage.
-woomola	remove a part or a piece.
-woonga	bribe.
-wosya	cultivate in a new garden in order to sow seed in the following rainy season; rotten
-wotoka	leave suddenly; "do a bunk".
-wowocelwa	sink down; give way; come undone (e.g., of a knot).
-wucisya	restore; put back; leave a door partly open or ajar.
-dii-wucisya	retaliate.
-wudika	burst with a pop (corn in a pan); explode; appear above-ground; ooze.
-wuga	stir (porridge) while adding the flour.
-wugadisya	shut fast; close tight.
-wugala	shut; close (e.g., a door).
-wugula	open.

-wuja	return; come or go back.
-wujaangana	return in a large number.
-wujaanganya	go and return the same day.
-wujidila	turn back on the way.
-wujila	return to a former wife; eat a powder (flour, sugar etc.) from the palm of the hand.
-wujilana	reconcile (of spouses after a separation or divorce).
-dii-wukudila	dig oneself in (e.g., a fowl, a crocodile, etc.).
-wukula	excavate; dig deeper (removing the earth); disinter; dig up; rake up the past.
-wukuta	blow up (specif. with bellows in a forge); inflate (e.g., with a tire pump).
-wukutuka	be cut down (the shrubs) with a hoe.
-wukutula	cut down the shrubs with a hoe.
-wulaga	kill.
-wulajigwa	be killed.
-wulajilwa	be bereaved.
-wulala	be wounded; be hurt.
-wulama	bend double (slang).
-wulukuta	fidget.
-wulula	glean (corn); pick cotton.
-wululuka	be blown away (by wind or draught).
-wululusya	winnow, e.g., by pouring grain from a height.
-wulumula	remove things a few at a time; pull or scrape towards one; dig up the past.
-wuluta	roast (esp. grain in hot ashes).
-wulutuka	exude.
-wulutula	remove contents; gut; stab (esp. in abdomen); pick out of a receptacle.
-wuluunga	make into a round mass (e.g., wax, tobacco).
-wuluwuumba	roll about on the ground covered by sand or powder.
-wuluwuusya	roll about on the ground; smother with dust; humiliate.
-wuluwuuta	tread down grass, crops, etc.; speak indistinctly.
-wuma	come from; emerge in large quantities (e.g., water; milk; sap); come out; exude.
-wumika	put wood (fuel) on the fire.
-wumila	be deserted, abandoned.
-wumuka	be tasteless; go bad; rot.
-wumya	remove; move to another place; take out.
-wuna	reap by cutting ears; (e.g., rice); (Euph.) castrate.
-wunicila	cover; shut as with a lid.
-wunika	turn (e.g., a vase or any container) upside down; close (a book).

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-wunikanya	cover one thing with another; put together two flat surfaces
-wunukuka	be uncoverable; be openable.
-wunukula	uncover; open.
-wupa	give present to the boys or girls the day they come from the initiation ceremonies.
-wusya	return, give back, take back; tie the mouth of bag; reduce the size, adjust.
-wusyaanukula	undo; unmake.
-wuta	pull; draw; drawl.
-wutama	crouch; be doubled up, as in hiding.
-wutamila	sit (upon eggs, of the hen).
-wutika	be elastic; tuck into a belt or girdle; wrap up (e.g., in a cloth).
-wutuka	run.
-wuucidicisya	question closely; cross-examine; question apart.
-wuuciidila	be smoked (of food); be gray.
-wuucisya	question closely.
-wuudila	conceal a fact; suppress the truth.
-wuuka	be dirty (of the skin); be covered by dust.
-wuula	undress; take off (clothes, shoes, etc.).
-wuumbala	undergo circumcision; be initiated.
-wuumbasya	circumcise; initiate.
-wuumbata	clench the fist; grasp in the fist.
-wuumbatukuka	burst open (esp. of a bud).
-wuumbatukula	unclench the fist; open the palm of the hand.
-wuumbuka	wake up; appear suddenly; run away; flee; bolt; awake with a start.
-wuumbusya	scare away; disturb game; awaken.
-wuumbwa	be created.
-wuunda	begin to rot or go bad; "turn" sour; give instruction about good manners, advise.
-wuundika	ripen or store fruit by sealing up in a pot a sack, hold in the mouth.
-wuundudila	stir or shake in order to mix.
-wuunduka	run away from home temporarily as a protest against injustice, real or imagined.
-wuundukuka	be taken (fruit) out of a sealed pot; unseal; be uncovered.
-wuundukula	take (fruit) out of a sealed pot; unseal; uncover.
-wuundula	pound husks of grain; hoe thoroughly; he a large garden.
-wuunga	hoe earth into heaps; gather up; unite.
-wuungala	be infected with leprosy.
-wuungana	be together; be united; gather; assemble.
-wuunganya	put together (things).

-wuungulumya	search for.
-wuunguusya	search thoroughly; solicit.
-wuunjiidila	put a bundle of grass on a fire (to make a blaze).
-wuunjika	gather into a heap; pile up.
-wuunjukuka	be dispersed (e.g., people after a gathering).
-wuunjukula	disperse (e.g., people after a gathering).
-wuusya	ask; inquire.
-wuutala	be overgrown with grass, brushwood, weeds.
-wuutasya	let be overgrown with grass, brushwood, weeds.
-wuuwuula	groan; moan.
-wuuwuuta	bray (a skin); prepare leather; tread down grass or crops.
-wuva	become cold (during cooking); become or begin to ripe (corn).
-wuvata	catch with the teeth (without biting).
-wuvila	tie loosely; put leaves in a pot of water to prevent splashing while being carried.
-wuya	half cook (food) for keeping; parboil.
-yaataangula	collapse; ease the spring of a trap or gun.
-yaatila	cover the genitals with the (left) hand as when bathing.
-yeeyeeka	tie temporarily; wash grain.
-yicila	lodge, stay; hit (a thrown or shot object) coming from somewhere.
-yiimba	swell.
-yiinda	swell (of seeds when steeped); become stained with damp.
-yiingalamuka	roll on the ground.
-yiingalamula	roll on the ground.
-yiipa	be sour.
-yiituka	go off (a gun or a trap).
-yiitula	fire (a gun); touch off (a trap).
-yika	arrive; come; reach.
-yikaangana	arrive, assemble, in a large number.
-yikaanganya	bring, let come in large number.
-yoonda	suck; be lean; kiss.
-yuutula	pull out.
-yuuya	winnow; shake or swing to and from; swing a skipping rope round the head.

IMAGE EVALUATION
TEST TARGET (QA-3)

150mm

6"