

Ministry of Scientific Research and Innovation

A sketch of the phonology and morphology of Iyasa

A preliminary description of the Iyasa language of Cameroon

Cory Shain
SIL

SIL
B.P. 1299, Yaoundé
Cameroon

2013

Abstract

This work is a wide-ranging preliminary descriptive investigation into the phonological and morphological properties of Iyasa (yko), a Bantu language (A32a) spoken by approximately 3,000 people, mostly in the country of Cameroon. Noteworthy aspects of Iyasa morphophonology include contrastive tonal upstep and downstep, tone delinking and re-linking as a result of optional prosodic processes, “ghost” consonants, syllabicity contrasts in pre-consonantal nasals (NC), a proliferation of formally distinct noun class agreement paradigms, a gender 14/4 as well as “polygender” nouns, and a range of verb derivations and inflections distinguished by some combination of morphology, auxiliary constructions, and/or tone. While this work is far from definitive or comprehensive, it represents a significant expansion of coverage of data and synthesis of analysis over previous descriptions of the language. As such, it is intended to stimulate interest in further descriptive work on Iyasa as well as to make Iyasa data available to be brought to bear on developments in linguistic theory and typology.

Abstrait

Cette oeuvre représente une large enquête préliminaire destinée à la description des propriétés phonologiques et morphologiques du iyasa (yko), une langue bantoue (A32a) de quelques 3.000 locuteurs, principalement parlée au Cameroun. Les aspects remarquables de la morphophonologie iyasa comprennent le upstep et le downstep phonologiquement contrastifs, le découplage et l’atterrisage des tons à cause des processus prosodiques facultatifs, les consonnes « phan-tômes », les contrastes de syllabicit  parmi les consonnes nasales pr -consonantiques (NC), une abondance de paradigmes de flexions d’accord de classe nominale qui sont formellement distincts, un genre grammatical 14/4 ainsi que des noms appartenant   plusieurs genres en m me temps, et toute une gamme de d rivations et flexions verbales distingu es par des combinaisons de morphologie, verbes auxiliaires et/ou tons. Bien que cette oeuvre ne se pr tende ni d finitive ni compr hensive, n’emp che qu’elle repr sente une expansion consid rable de couvrage de donn es ainsi que de synth se d’analyse sur les descriptions pr c dentes de la langue. Elle est donc cens e servir au but de provoquer de l’int r t sur la description plus approfondie du iyasa ainsi que de rendre disponibles des donn es linguistiques du iyasa afin qu’elle puissent entrer dans le d veloppement de la th orie et de la typologie linguistiques.

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List of Abbreviations

##	noun gender ## (1/2, 3/4, 5/6, etc.)
/C/	ghost consonant
1	first person
2	second person
ACNOM	action nominalizing suffix
adj.	adjective
adv.	adverb
AGNOM	agent nominalizing suffix
AM	associative marker
ARG	non-object argument
C	consonant
c#	noun class # (eg. c1, c2, c3, etc.)
C'	non-nasal, non-glide consonant
CAUS	causative suffix
CFP	Composite Far Past
CNP	Composite Near Past
COCO	consequent clause of counterfactual conditional
COMP	complementizer
DDEM	distal demonstrative
EPx	adjective- and numeral-inflecting class prefix
FP	Far Past
FUT	Future
EV	Extensional Vowel
G	glide
H	Hi tone
HAB	Habitual
IMP	imperative
INF	infinitive
inf.	infinitive
Int.	Intended meaning of ungrammatical expression
int. pro.	interrogative pronoun
K	multifunctional suffix <i>-k-</i>
L	defunct derivational suffix <i>-l-</i>
L	Lo tone
LOC	general locative preposition <i>é</i>
LP	Literary Past
N	neuter subject agreement
N	nasal
Ṇ	syllabic nasal
n.	noun
NEG	negative
NF	Near Future
NP	Near Past
NP	noun phrase
NPx	noun-inflecting class prefix
O	syllable onset
OBJ	object marker tone
OBNOM	object nominalizing suffix
OPx	object pronoun
PART	participle
PASS	passive suffix
PDEM	proximal demonstrative
pl	plural
POS	positional suffix
POSS	possessive
PP	Punctual Past
PPx	pronoun-inflecting class prefix
PRCO	Present Conditional

PRES	present tense suffix
pro.	pronoun
RECIP	reciprocal suffix
REL	relativizer
RP	Relative Present
S	sentence
SBJ	subjunctive
sg	singular
SL	(derivational) source (verb root) lost
SPx	subject prefix
TBU	tone-bearing unit
UF	Uncertain Future
V	vowel
v.	verb
VHH	Vowel Height Harmony
VP	verb phrase
↑	tonal upstep
↓	tonal downstep

Introduction

1 Overview of this work

The Iyasa language is spoken by the Iyasa people of southwestern Cameroon, primarily in the town of Campo and its outlying areas, though pockets of Iyasa speakers can be found in major cities throughout the country as well as a short distance over the border in Equatorial Guinea. Iyasa is closely related to the Kombé language of Equatorial Guinea, and the total number of Iyasa speakers is estimated to be around 2,400, with about 1,500 of these located in Cameroon (Lewis, Simons, & Fennig, 2013). Its ISO 639-3 code is ‘yko’, and its reference number in the standard Bantu classification system is A32a (Maho, 2003). It has variously been referred to in the literature as ‘Yasa’, ‘Yassa’, ‘Iyasa’, ‘Iyassa’, ‘Bongwe’, ‘Lyaasa’, and ‘Maasa’ (Lewis et al., 2013). Throughout this work, I adopt the label Iyasa because of its correspondence to the phonological form of the name as it is found in the language itself.¹ The language is currently learned and used by young people and children in the community, though some have described it as endangered (Lonfo, 2009). It currently has no widely recognized orthographic standard, though attempts have been made at developing proposals for one (Lonfo, 2009; SIL Iyasa Orthography Chart). The Iyasa are historically a coast-dwelling people with a robust fishing tradition, and many modern-day Iyasa continue to work as fishermen on at least a seasonal basis (Ndjokou Mondjeli-Mapeta, 2009).

The purpose of this work is to provide a broad preliminary description of the phonological and morphological features of this little-documented language. I am not the first to attempt linguistic description of Iyasa, and my own work is heavily indebted to the efforts of the authors of previous studies briefly outlined in the following section. However, a number of important and in some cases basic properties of the language have not yet been brought to light, and evidence is at times lacking with respect to certain minor claims made by previous analyses. This work is intended to serve as a further step toward deepening and enriching available knowledge about the Iyasa language in a wide-ranging and unified format. I expand on data presented in previous discussions regarding eg. phonemic contrasts, tone, and nominal morphology, arriving at conclusions that largely corroborate but occasionally challenge previous accounts. In addition to this, I bring to light a large amount of new data revealing segmental, tonal, and morphological phenomena that have not been addressed to-date, attempting to incorporate both known and novel data into a coherent account of Iyasa morphophonology.

However, this document is rightly titled a “sketch” and makes no pretense to definitiveness or comprehensiveness. I have accounted for the range of phenomena of which I have become aware in my research, but I readily acknowledge that (i) many important and basic issues of Iyasa morphophonology will almost certainly go undiscussed and (ii) the analyses I have presented of those data which I do discuss will almost certainly turn out to be lacking in many areas in terms of simplicity, coverage, or both. My intention is the opposite of closing the book on Iyasa morphophonology: I hope by contrast to stimulate investigation into this fascinating language by presenting an early stab at broad coverage in linguistic description that leaves many trails unfollowed. To that end, I attempt to provide a highly data-rich presentation of the phenomena, to freely acknowledge problem areas or data that potentially conflict with my conclusions, and to explicitly draw attention to research questions that are beyond the scope of this investigation, in practice if not in principle.

¹ The name refers both to the language and the people in Iyasa and is a gender 5/6 noun. As such, its form includes the c5 prefix *i-*:

- (1) *i-yàsà*
c5-Iyasa
“Iyasa”
- (2) *i-yàsà dyá⁺-sáá*
c5-Iyasa c5-good
“good (well-spoken) Iyasa”

I must further emphasize a fact that should hopefully be obvious from the title of this work: I do not here attempt to provide any systematic description of the phonetics, syntax, semantics, discourse, sociolinguistics, etc. of Iyasa. While aspects of these linguistic sub-disciplines are at times addressed to the extent that they bear on the subject at hand, I limit myself because of space and time constraints to treatment of phonological and morphological issues only in any thorough fashion.

Like many works of linguistic description, my hope is to distance myself as much as possible from any highly theory-specific presentation of data that runs the risk of obscuring the facts for those of other theoretical orientations or for future researchers should the prevailing theories be replaced by others. The theoretical framework I adopt is a generically non-linear one, assuming autonomous but interacting levels of representation for theoretical objects like segments, tones, syllabic elements (onsets, rhymes, and codas), and syllables. In this spirit, I avoid technical notations when feasible and instead formulate phonological and morphophonological rules in prose form. I nonetheless attempt to do this as precisely and falsifiably as possible, such that the predictions of my analysis are clear and unambiguous, and errors in it can be identified and challenged. Even the use of the concept of “rule” is simply a consequence of my basic theoretical assumptions and not intended to exclude the possibility of formulation in terms of “constraints” or any other approach to phonological theory. This is again done in an attempt to preserve the transparency and readability of my descriptive claims, so that what emerges from the present discussion is an understanding of what the language does from an empirical standpoint, accessible to the widest possible range of parties potentially interested in the inner workings of the Iyasa language.

Because of the nature of the topic at hand, this work is not particularly intended for a general public audience and assumes a certain amount of background knowledge about linguistics and phonology. It is simply unfeasible to attempt to sufficiently introduce for the linguistic novice all of the analytical tools brought to bear in this analysis. However, as previously mentioned, this is not a highly technical work, nor is it deeply embedded in the terminology or formalisms of particular theoretical frameworks. Given the possible importance of this subject matter to certain groups of non-linguists – Iyasa speakers, cultural anthropologists, language development and literacy workers, Cameroonian educators and clergy, etc. – my intention is to present my findings robustly enough to be useful to the linguistic community while straightforwardly enough to be accessible to other interested parties who are perhaps willing to invest a modest amount of effort at understanding the linguistic phenomena under discussion, a sometimes precarious balance.

This work is broken into chapters and sections according to the phonological and morphological phenomena addressed. Chapters 2 and 3 deal with phonology, with chapter 2 focusing on segmental phonology and chapter 3 focusing on tone. Chapter 2 is broadly divided into treatments of syllable structure, vowel contrasts and phonology, consonant contrasts and phonology, and general phonological rules. Chapter 3 includes discussion of contrastive tone levels and tonal phonology, with separate treatments reserved for the distinct behaviors of tones in underlying representations and tones floated through prosodic weakening of vowels. Chapters 4 and 5 deal with the morphology of nouns and verbs respectively. The overwhelming bulk of nominal morphology in Iyasa concerns the system of noun class inflections, the exposition of which occupies most of chapter 4. Chapter 5 is broken into discussions of the morphological structure of the verb, derivational morphology, and inflectional morphology, along with cursory treatments of certain phenomena at the edge of the morphology-syntax interface such as negation and relative clauses.

2 Literature review

Previous thesis-length descriptions of Iyasa include Bot (1992), a general description of phonology cited by other works on the language but which, unfortunately, I have not been able to access; Bouh Ma Sitna (2004), a discussion of noun phrase syntax that spends considerable time on phonology and nominal inflection as well; and Lonfo (2009), a description focusing primarily on segmental phonology and tone but with a view to making recommendations about orthography and language development. Lonfo has also assembled an unpublished French-Iyasa dictionary of almost 2,000 entries containing orthographic transcriptions in his proposed writing system, phonetic transcriptions, grammatical category labels, translations, and occasionally plural forms (Lonfo, n.d.). In addition, Bot has produced three brief descriptive journal articles dealing with particular issues of Iyasa grammar: syllable structure (Bot, 1997a), nominalization (Bot, 1997b), and tense/aspect verb inflection (Bot, 1998).

3 Data sources

The Iyasa data on which the present work is based come from ongoing elicitation sessions over the period of September, 2012 to the present. My Iyasa-speaking informant was Sammy Mbipite Tchele, to whom I owe a tremendous debt of thanks. Mr. Mbipite is a native speaker of Iyasa born to Iyasa-speaking parents in the town of Campo, in and around which most Iyasa speakers in Cameroon live. Mr. Mbipite’s hometown is Itonde Sur Mer, a village located about 6 km

north of Campo which, according to him, is virtually exclusively Iyasa speaking, despite the presence of some residents who also speak French. His childhood years were divided roughly equally between the Campo area and large cities like Yaoundé and Ebolowa to which his father had to move from time to time for work. Iyasa was the only language permitted in the home. Mr. Mbipite was 20 years old and an undergraduate in linguistics at the Université de Yaoundé I at the start of our elicitation. In the intervening time he finished his Bachelor's degree as well as the first year of a Master's program. He is generally regarded by members of the community as an excellent speaker of the language. In addition to transcriptions as primary data, I collected several thousand individual recordings of words or expressions in Iyasa, as well as some longer texts. Elicitation included the gathering of Iyasa translations of the 1700 prompts in the SIL Comparative African Wordlist (SILCAWL, Snider & Roberts, 2006). Subsequent elicitation as needed helped clarify a number of issues not directly addressed by the wordlist sessions. I hope to make a concise Iyasa lexicon available online in the near future, containing the recordings and lexicographical data obtained through these sessions. I also rely at times on data from secondary sources, such as previous descriptions of Iyasa.

4 Language representations in this work

The present work necessarily handles several languages and writing systems for various purposes: English as a meta-language and, occasionally along with French, a language of translation; Iyasa in its underlying, phonemic, phonetic, and orthographic representations – all of which in this case may be either my own or those of previous works on Iyasa; and Proto-Bantu (PB) reconstructions. It is therefore imperative to keep this potential quandary of representations clear and distinct, and I adopt the following typographical conventions throughout the remainder of this description:

- English and French **translations** are both placed in double quotes (“”). When necessary, the particular translation language used is specified parenthetically as (*e.*) or (*f.*).
- **Phonemic forms** are given in italics, occasionally with morphological segmentation (‘-’ for morpheme boundaries).
- **Phonetic forms** are given in square brackets ([]).
- **Underlying forms** are given between forward slashes (/ /).
- **Orthographic representations** are given in single quotes (‘ ’).
- **PB reconstructed forms**, again following Bantuist convention, are preceded by a star (*). Due to an unfortunate convergence in notational convention, this is also the symbol used to indicate ungrammaticality. Which meaning is intended in any given case will hopefully be apparent from context.
- I necessarily interact heavily with previous discussions of Iyasa (eg. Lonfo (2009) and Bouh Ma Sitna (2004)). I therefore at times re-present **others’ data** for discussion, which can result in confusion when such representations differ from my own. Data quoted from other works should not be understood as necessarily endorsed by my analysis, and for this reason I index quotations of such data at all levels of representation with a preceding superscript +-sign (†). Data without this index should be taken as mine, and I am to be held responsible for errors in it.

Expressions in Iyasa are given in phonemic form by default throughout this work unless otherwise specified according to the typographical conventions discussed above. The representation of tone deserves some attention at this point. For the purpose of clarity, I mark tones on all tone-bearing units in the language, with an acute accent for Hi (V́) and a grave accent for Lo (V̀). Upstepped-H or super-Hi is marked with a double acute accent (V̂). Downstep is marked with a superscript downward arrow (†). Non-contrastive tonal processes, like automatic downstep and phonetic processes affected pitches at phrase boundaries, are not overtly represented.

Segmental phonology

The principle aim of this chapter is to establish phonological contrast between consonant and vowel phonemes as well as to present and discuss phonological principles affecting the distribution and surface realization of segments. While tonal phonology and morphology inevitably bear on certain questions of segment interpretation and realization, and thus must be brought into the discussion at various points, I reserve a fuller treatment of these areas for the chapters that follow. I begin by positing and justifying vowel and consonant phoneme inventories (§1 and §2, respectively). Along the way, I address a number of related issues, including the phonological status of vowel length, the phonemic interpretation of affricate consonants, and the evidence for “ghost” consonants. I then discuss rules affecting the surface realization of segments in particular phonological environments (§3), and conclude with a treatment of the Iyasa syllable (§4).

1 Vowels

The phonemic vowels of Iyasa are given in Table 2.1. This seven vowel system (V7) is typical of Bantu languages (Hyman, 2003a). Below I present evidence for the phonemic vowel contrasts I propose, then address the general phonological issues of vowel length and Vowel Height Harmony.

1.1 Evidence of phonemic contrast between vowels

Below I establish contrast between all vowel phonemes posited in Table 2.2. I believe that, taken as a whole, the following pairwise contrasts adequately demonstrate the distinctiveness of each of the vowel phonemes posited above.

1.1.1 /i/

The close front vowel /i/ contrasts with the following vowels:

- | | |
|------------------------------------|--------------------------------|
| (1) /i/ vs. /e/ | |
| (a) <i>Word-initial</i> | |
| <i>ibáà</i> (c5) “marriage” | <i>èbáà</i> (inf) “to marry” |
| <i>ìpùlè</i> (c5) “knowledge” | <i>èpùlè</i> (inf) “to know” |
| (b) <i>Word-medial</i> | |
| <i>èvilà</i> (c7) “ebony” | <i>èvèlà</i> (inf) “to create” |
| (c) <i>Word-final</i> | |
| <i>ètìmbì</i> (c7) “pool” | <i>ètìmbé</i> (c7) “plank” |
| (2) /i/ vs. /ɛ/ | |
| (a) <i>Word-initial</i> | |
| <i>ìmbúcé</i> (c5) “mute (person)” | <i>èmbwéèdí</i> (num.) “seven” |
| (b) <i>Word-medial</i> | |
| <i>èìcí</i> (c7) “forest” | <i>ìbècè</i> (c5) “shoulder” |
| (c) <i>Word-final</i> | |
| <i>èvúdì</i> (c7) “breath” | <i>èvúdè</i> (inf) “to swell” |
| <i>nyí-</i> (c10 EPx) | <i>èné</i> (prep) “like” |
| (3) /i/ vs. /u/ ² | |

² No examples of word-initial /u/.

i	u
e	o
ɛ	ɔ
a	

Table 2.1 - Vowels of Iyasa

(a) <i>Word-medial</i> <i>èminà</i> (inf) “to swallow” <i>èdibà</i> (c7) “waterhole”	<i>èmunà</i> (inf) “to have sex” <i>èdùbà</i> (inf) “to dip”
(b) <i>Word-final</i> <i>èvùdì</i> (c7) “breath” <i>èpùsì</i> (c7) “blade (of grass)”	<i>èvùdú</i> (c7) “shell” <i>bòpùsú</i> (c14) “filth”
(4) /i/ vs. /o/ ³	
(a) <i>Word-medial</i> <i>èdilà</i> (c7) “weight” <i>èfyà</i> (c7) “regime of palm nuts” <i>ṁbìkà</i> (c3) “ulcer”	<i>èdòlà</i> (inf) “to flow” <i>èóyà</i> (inf) “to kill” <i>ṁbòkà</i> (c3) “prisoner”
(b) <i>Word-final</i> <i>sòmbí</i> (c9) “request” <i>mwàdí</i> (c3) “female”	<i>sòmbó</i> (c9) “smell” <i>mwàdó</i> (c1) “woman”
(5) /i/ vs. /ɔ/	
(a) <i>Word-initial</i> <i>ǰmò</i> (c9) “semen”	<i>imbàsà</i> (c5) “side”
(b) <i>Word-medial</i> <i>cìlì</i> (c9) “upper grinding stone” <i>èìcì</i> (c7) “forest”	<i>còlì</i> (c9) “servant” <i>èòcì</i> (c7) “curse”
(c) <i>Word-final</i> <i>èlòṅgì</i> (c7) “choir” <i>sù</i> (adj) “straight”	<i>èlòṅgò</i> (inf) “to blow into” <i>sòsò</i> (c9) “leopard”
(6) /i/ vs. /a/	
(a) <i>Word-initial</i> <i>isáá</i> (pro) “who?”	<i>ààsáá</i> (adj – c1) “good”
(b) <i>Word-medial</i> <i>èpítà</i> (c7) “bracelet”	<i>èpátà</i> (inf) “to pick”
(c) <i>Word-final</i> <i>ètìmbì</i> (c7) “pool” <i>èómì</i> (c7) “splendor”	<i>ètìmbà</i> (inf) “to return” <i>èómà</i> (c7) “baobab”

1.1.2 /e/

The close-mid front vowel /e/ contrasts with /i/ (see (26)) and the following vowels:

(7) /e/ vs. /ɛ/	
(a) <i>Word-initial</i> <i>èmwètè</i> (inf) “to smile”	<i>èmbwéèdí</i> (num.) “seven”
(b) <i>Word-medial</i> <i>bèibèi</i> (adj) “red” <i>mbéndá</i> (c9) “law”	<i>bèbèi</i> (adj) “near” <i>mbèmbò</i> (c9) “habit”
(c) <i>Word-final</i> <i>è¹vé</i> (int. pro.) “where?” <i>èvèé</i> (c7) “bone” <i>ipèmbè</i> (c5) “cave” <i>dyé</i> (neg. existential)	<i>èvè</i> (pro) “you (s) (obj)” <i>èvè</i> (pro) “you (s) (obj)” <i>pémbé</i> (c9) “bread” <i>dyéé</i> (int. pro.) “how?”
(8) /e/ vs. /u/ ⁴	

³ No examples of word-initial /o/.

- (a) *Word-medial*
mè- (c4 NPx)
mòlémà (c3) “heart”
mú- (c3 EPx)
mòlúmá (c3) “fork”
- (b) *Word-final*
èvèé (c7) “bone”
vikúbé (c19) “banana”
èvùú (c7) “stomach”
ɣgùbú (c9) “hippopotamus”
- (9) /e/ vs. /o/⁵
- (a) *Word-medial*
mbèngá (c9) “dove”
èbétà (inf) “to go up”
mè- (c4 NPx)⁶
mbòngá (c9) “earring”
èbótà (inf) “to hide”
mò- (c3 NPx)⁶
- (b) *Word-final*
ě⁴ vé (int. pro.) “where?”
ě⁴ vó (adv) “there”
- (10) /e/ vs. /ɔ/
- (a) *Word-initial*
ɔmò (c9) “semen”
èmùnà (inf) “to have sex”
- (b) *Word-medial*
èbèyiyè (inf) “to cook”
èbòyiyè (inf) “to spoil”
- (c) *Word-final*
kábe (c9) “antelope”
èbó (c7) “hand”
- (11) /e/ vs. /a/
- (a) *Word-initial*
éé (interj.) “yes”
àá (interj.) “no”
- (b) *Word-medial*
mè- (c4 NPx)
dyéngà (c5) “adultery”
mà- (c6 NPx)
dyàngà (c5) “family”
- (c) *Word-final*
èpéyè (c7) “net”
èpéyà (inf) “to be drunk”

1.1.3 /ɛ/

The open-mid front vowel /ɛ/ contrasts with /i/ (see (27)), /e/ (see (32)), and the following vowels:

- (12) /ɛ/ vs. /u/⁷
- (a) *Word-medial*
èvèvè (inf) “to fly”
èvùú⁴ vé (adj) “short”
- (b) *Word-final*
èkùmè (inf) “to heap up”
èkùmù (c7) “stump”
ivévè (c5) “flock”
ivévù (c5) “fever”
- (13) /ɛ/ vs. /o/⁸
- (a) *Word-medial*
èvélé (inf) “to put”
èbólà (adv) “quickly; early”
ibèngé (c5) “bell”
èbóngà (inf) “to harden”
békì (c9) “plate”
ibókò (c5) “place”
- (b) *Word-final*
díyè (adj) “expensive”
díyò (c5) “eye”
èvè (pro) “you (s) (obj)”
ě⁴ vó (adv) “there”
- (14) /ɛ/ vs. /ɔ/
- (a) *Word-initial*
èmbwèèdí (num.) “seven”
ɔmò (c9) “semen”
- (b) *Word-medial*
ɣngéni (c3) “slander”
ɣgónì (c9) “daughter”
sèkú (c9) “tree charm”
sòkù (c9) “elephant”

⁴ No examples of word-initial /u/.

⁵ No examples of word-initial /o/.

⁶ Since this contrast is between prefixes in a singular/plural noun class pairing, every gender 3/4 noun in which they both appear becomes a minimal pair (eg. *mòló* vs. *mèló* “head(s)”).

⁷ No examples of word-initial /u/.

⁸ No examples of word-initial /o/.

- (c) *Word-final*
 èsè (c7) “bushel basket” èsà (c7) “saw”
 ècè (inf) “to go” ècà (inf) “to catch”
- (15) /ɛ/ vs. /a/
 (a) *Word-initial*
 èmbwèèdí (num.) “seven” áɲgwé (c9) “father”
 (b) *Word-medial*
 òṅgèní (c3) “slander” ṅgàní (c9) “proverb”
 èèbè (inf) “to deceive” éàbè (adj) “long”
 (c) *Word-final*
 èsè (c7) “bushel basket” èsá (inf) “to do”
 èvùdè (inf) “to swell” èvùdà (inf) “to fart”

1.1.4 /u/

The close back vowel /u/ contrasts with /i/ (see (28)), /e/ (see (33)), /ɛ/ (see (37)), and the following vowels:

- (16) /u/ vs. /o/⁹
 (a) *Word-medial*
 mú- (c3 EPx) mò- (c3 NPx)
 èdùlà (inf) “to pull” èdòlà (inf) “to flow”
 ètùkà (inf) “to suffer” ètókà (inf) “to want”
 èlùmà (inf) “to sting” èlómà (inf) “to send (s.o.)”
 (b) *Word-final*
 èvùú (c7) “stomach” ɛ̃^h vó (adv) “there”
- (17) /u/ vs. /ɔ/¹⁰
 (a) *Word-medial*
 kùdù (c9) “turtle” ikádù (c5) “nape of neck”
 èkùliyè (inf) “to cover” èkóllyè (inf) “to curve”
 (b) *Word-final*
 sòkù (c9) “elephant” sókà (c9) “point”
 èkókólù (c7) “crest” èkókólè (inf) “to crow (as of rooster)”
 ibú (c5) “ash” ibè (c5) “footprint”
- (18) /u/ vs. /a/¹¹
 (a) *Word-medial*
 èbùmá (c7) “fruit” èbàmá (c7) “fishing line”
 ètúkà (inf) “to suffer” ètúkà (c7) “smokehouse”
 ibúkù (c5) “cheek” ibàkù (c5) “hoe”
 (b) *Word-final*
 òmbú (c3) “year” òbàá (c3) “room”
 ibú (c5) “ash” ibàà (c5) “marriage”

1.1.5 /o/

The close-mid back vowel /o/ contrasts with /i/ (see (29)), /e/ (see (34)), /ɛ/ (see (38)), /u/ (see (41)), and the following vowels:

- (19) /o/ vs. /ɔ/¹²
 (a) *Word-medial*
 mòkòdí (c3) “mountain” mòkàdí (c3) “rope”
 èbòló (c7) “work” èbólè (c7) “amount”
 (b) *Word-final*
 ɛ̃^h vó (adv) “there” èvò (inf) “to say”
 sò (c9) “time” sò (c9) “leopard”
 ikòó (c5) “east” ikòó (c5) “word”

⁹ No examples of word-initial /u/ or /o/.

¹⁰ No examples of word-initial /u/.

¹¹ No examples of word-initial /u/.

¹² No examples of word-initial /o/.

(20) /o/ vs. /a/¹³

- | | |
|---------------------------------------|------------------------------------|
| (a) Word-medial | |
| <i>èbòmà</i> (inf) “to play” | <i>èbámá</i> (c7) “fishing line” |
| <i>èbóngà</i> (inf) “ferment” | <i>èbàngà</i> (inf) “lie, deceive” |
| <i>mò-</i> (c3 NPx) | <i>mà-</i> (c6 NPx) |
| (b) Word-final | |
| <i>èdyèbò</i> (c7) “mud” | <i>èdyèbà</i> (inf) “to carve” |
| <i>é^h vó</i> (adv) “there” | <i>é và</i> (adv) “here” |

1.1.6 /ɔ/

The open-mid back vowel /ɔ/ contrasts with /i/ (see (30)), /e/ (see (35)), /ɛ/ (see (39)), /u/ (see (42)), and /o/ (see (44)), as well as /a/:

(21) /ɔ/ vs. /a/

- | | |
|------------------------------|-----------------------------|
| (a) Word-initial | |
| <i>ómò</i> (c9) “semen” | <i>ángwé</i> (c9) “father” |
| (b) Word-medial | |
| <i>èkólíyè</i> (inf) “curve” | <i>èkálíyè</i> (inf) “pray” |
| <i>ngónì</i> (c9) “daughter” | <i>ngàní</i> (c9) “proverb” |
| (c) Word-final | |
| <i>ibò</i> (c5) “footprint” | <i>ibáà</i> (c5) “marriage” |
| <i>èbòò</i> (inf) “spoil” | <i>èbàà</i> (inf) “weed” |

1.1.7 /a/

The open vowel /a/ contrasts with /i/ (see (31)), /e/ (see (36)), /ɛ/ (see (40)), /u/ (see (43)), /o/ (see (45)), and /ɔ/ (see (46)).

1.2 Vowel length

The question of the phonemic status of vowel length in Iyasa has not been satisfactorily resolved up to this point. An analysis of vowel length should ideally determine, firstly, whether or not vowel length contrasts exist or are the result of predictable phonological principles, and, secondly, if they do, whether long and short vowels are distinct phonemes or arise as the result of underlying VV sequences. From a typological point of view, vowel length is usually not phonemic in Bantu, and a number of predictable phonological alternations in vowel length have been found in other Bantu languages, including lengthening before NC clusters, lengthening in the penult, and compensatory lengthening as a result of vowel deletion, concatenation, or gliding (Hyman, 2003a). In previous studies of Iyasa in particular, both Bouh Ma Sitna (2004) and Lonfo (2009) ultimately conclude that no contrastive vowel length exists in the language, citing a lack of convincing contrastive pairs. They both note, however, that some vowels are markedly longer than others at the surface level, without offering hypotheses as to what conditions these length alternations. We are thus left without evidence of either contrast or non-contrast.

I agree with Bouh Ma Sitna's (2004) and Lonfo's (2009) conclusion that no contrast exists in Iyasa between phonemic long and short vowels. However, I do find evidence for contrast between surface long and short vowels, which though phonologically unpredictable nonetheless correlate strongly with grammatical factors. I therefore believe that surface vowel length contrast in Iyasa is best analyzed as contrast between single V and homorganic VV sequences, and I hope in what follows to defend this conclusion with evidence and make concrete predictions about when surface long vowels appear. I find two distinct sources of surface long vowels in Iyasa: (1) affixation and (2) lexically-specified underlying VV sequences, which occur most commonly in adjectives. Given the high degree of (grammatical) predictability of surface long vowels and, consequentially, their rarity in the lexically specified forms of high-frequency categories like nouns and verbs, I do not find evidence of phonemic vowel length contrast.

1.2.1 Surface long vowels through affixation

Affixation can produce surface long vowels by juxtaposing identical vowels across a morpheme boundary in an environment which does not trigger phonological change as a result. Such environments usually involve a ghost conso-

¹³ No examples of word-initial /o/.

nant.¹⁴ Since the ghost consonant essentially serves as an onset that blocks the application of vowel-sensitive phonological processes (such as Gliding or the appearance of vowel-deleted allomorphs), these long vowels are necessarily analyzed as underlyingly heterosyllabic V.CV sequences. Some examples are provided below:¹⁵

- (22) *dʏi-ísà*, /i-Cisà/ → [dʒiːsà] (c5, pl: *mà-ísà*) “entry”
dʏi-iyídí /i-Ciyídí/ → [dʒiːjídí] (c5, pl: *mà-iyídí*) “end”
mà-àlà /mà-Càlà/ → [màːlà] (c6, no singular) “worth, value”
mò-ómì /mò-Cómì/ → [mõːmì] (c3, pl: *mì-ómì*) “male”
mò-àdyó /mò-Càdyó/ → [mòːdjó] (c3, pl: *mì-àdyó*) “(body) hair”
wà-àngwé /wà-Càngwé/ → [wãːŋwé] (c2, sg: *àngwé*) “fathers”

Since most noun class prefixes in Iyasa exhibit vowel-sensitive allomorphy that eliminates surface vowel sequences across boundaries shared with underlyingly V-initial roots (see §4 and chapter 4.1 for detailed discussion of these), affixation to V-initial roots tends not to give rise to surface long vowels.

1.2.2 Surface long vowels from underlying VV sequences

Homomorphic underlying VV sequences are a second source of surface long vowels, a phenomenon that is especially noticeable in adjectives, participles, and pronominal prefix (PPx) inflections. As discussed in **Error! Reference source not found.**, in general the first vowel of the adjective root is long. This generalization has some exceptions, such as *étú^hbwé* “big”, which do not seem to contain a long vowel at all. Thus, the length requirement of adjectives is lexically exceptionable. It is also unpredictable from phonological context alone, as shown in the following alternations between adjectives and verbs with similar form and semantics:¹⁶

- (23) *é-bóó^hngá* “hard (c7)” vs. *è-bóngá* “harden (inf.)”
é-téé^hyá “brown (c7)” vs. *è-téyá* “ripen (inf.)”

The foregoing data substantiate two important generalizations: first, surface long and short vowels are in phonological contrast; and second, while homomorphic long vowels long vowels correlate strongly with certain grammatical predictors, there are lexical exceptions like *étú^hbwé*, such that grammatical category alone cannot serve as the basis for a vowel lengthening rule. Homomorphic long vowels must therefore be encoded segmentally in the lexicon, either as long vowel phonemes or as homorganic VV sequences. However, there is a remarkable lack of widespread length contrast between words belonging to the same grammatical category. Nouns and verbs, for example, almost never contain long vowels. The very rare exceptions to this like *dyàðlól/màðlól* “abscess(es)” (5/6) only further establish the need for lexical specification of length contrast without appeal to phonemic distinctions, since the absence of contrast nearly everywhere else is highly problematic under a phonemic analysis. Because vowel length contrasts are phonologically necessary but do not manifest a distribution even close to that which would be expected if length were phonemically contrastive, I contend that surface long vowels in Iyasa are best treated as homorganic VV sequences.

This contrast is perhaps even more clearly illustrated in the minimal length pair consisting of the verbs *èdyá^h* “eat” and *èdyáà* “give birth,” which sound similar in isolation due to Final HL Shortening (see chapter 3.1) but which differ in surface length phrase-medially. The difference in underlying representation between these forms is evident as well: *èdyá^h* “eat” lacks a Extensional Vowel (EV), leaving the Infinitive-Marker-L to float behind the root, while *èdyáà* does not (see chapter 5.3 for discussion). Since the relevant distinction in this case is between the presence and absence of EV, this cannot be reduced to a phonemic opposition, and the need for an analysis permitting contrast between V and homorganic VV is clear.

Returning to the grammatical correlates of vowel length, I should note that long vowels are not exclusively restricted to adjectives. The various class forms of *èepí* “all” contain them, for example, a word that does not fit cleanly into any grammatical category and whose forms appear to be fossils of historically productive inflection (see chapter 4.1.2.4 for a defense of this position). As mentioned above, surface long vowels do also occur within the roots of

¹⁴ See §chapter 2.3.5 for discussion of ghost consonants.

¹⁵ Irrelevant complexities of underlying form have been omitted for expository purposes, such as the derivational verb morphology of *dyiyíyídi*. Surprising forms of the prefixes in the following examples are handled in the relevant sections on noun class in chapter 4.1.3.

¹⁶ As discussed in chapter 3.4.3, upstepped-H does not trigger vowel lengthening. In fact, it is almost always realized on short vowels, a generalization to which adjectives are a rare and systematic exception. The tonal difference between the adjective and verb in these examples cannot therefore be appealed to as a phonological predictor of vowel length.

scattered nouns, such as nouns c9 *bàkàà* “nearness”, c9 *nyààndà* “onion”, and c9 *ngààngà* “north wind”. The latter two should not be taken as compensatory lengthening following glides or preceding NC because the majority of Iyasa lexemes do not lengthen in these environments: *nyàngé* “thread”, *viànyá* “bird”, *ndàngwé* “mud wasp”, and *ikàngó* “spear” are among many such examples.

Finally, the vast majority of monosyllabic noun and verb roots have long vowels:¹⁷

- (24) **Nouns**
mòáá “shrimp” (c3)
mòsòó “bat” (c3)
ibàá “sword” (c5)
ikóó “word” (c5)
iséé “sneeze (n.)” (c5)
iyóó “splinter” (c5)
èvèé “bone” (c7)
èvúú “stomach” (c7)
bwèé “clearing; light” (c9)
ndóó “scar” (c9)
sóó “leopard” (c9)
wèé “hair (of head)” (c9)
- (25) **Verbs**
èbàá “marry”
èbòò “spoil”
ècòò “catch”

Importantly, there are exceptions to this generalization, including *mò-ló* “head”, *vi-yó* “cane rat”, and *yé* “earth, land”. Furthermore, the entire OPx series consists of hi-toned monosyllabic words with short vowels: *mú*, *wá*, *mó*, *myó*, etc. There are thus clear examples in Iyasa of monosyllabic words with short vowels, ruling out a phonological process that lengthens underlying short vowels in monosyllables. Again, the contrasts between long and short vowels established above seem to require lexical specification of vowel length at the underlying level (i.e. contrast between underlying V and VV sequences). An outstanding question that must be addressed before coming to this conclusion, however, is the one to which I turn in the next section: can (at least some) surface variation in vowel length be predicted on the basis of tone?

1.2.3 Tone and vowel length

Tonal contours tend to favor realization on long vowels in Bantu languages, and multiple tone linkages can be a source of phonological vowel lengthening (Hyman, 2003a). In light of this, it is reasonable to explore whether some or all contoured surface-long vowels in Iyasa might best be accounted for on the basis of tone. From the outset, it should be clear in light of data such as those discussed in the preceding section that tone contours cannot be the *sole* cause of morpheme-internal long vowels in light of the abundance of examples in which homomorphic long vowels have level tones:

- (26) *-tùki* “small”
-bèé'vá “bad”
-bòòbó “soft”
-lúálò “three”
dìbùùwá “nine”
dùùyá “seated”
dyóómù “ten”
dyààlól/mààlól “abcess” (5/6)
bàkàà “nearness” (9/10)

It is therefore necessary to specify homorganic VV sequences in the underlying representations of such lexical items, as argued above. Having established that underlying homorganic VV sequences exist morpheme-internally in Iyasa, which by definition may support surface contour tones through different tone specifications on each vowel, the opera-

¹⁷ None of the following examples involve monosyllables with the melody HL because all such vowels are realized as short in isolation. I argue in the following section for a phonological rule shortening HL vowels in phrase final position and show that many such vowels are underlyingly long (homorganic VV sequences).

tive question becomes whether there is evidence that uncontroversially short vowels lengthen as a result of multiple tone linkages. The tonal processes discussed in chapter 3 do not motivate such a claim. On the contrary, floating tones do not dock to TBUs with lexical tone specification without first delinking them. The causal relationship between tones and long vowels is therefore unidirectional: underlying VV sequences offer two tonal landing sites, giving rise to contours when the tones are not identical, while excess tones in need of moras either float or delink the immediately following tone (see chapter 3 for detailed discussion of tonal phenomena). I thus find no direct evidence in Iyasa for vowel lengthening as a result of tonal contours. In light of this, it is simplest to analyze all surface long vowels in Iyasa as resulting from underlying homorganic VV sequences.¹⁸

It is necessary to note in closing that long vowels, which on the basis of the foregoing evidence I analyze as homorganic VV sequences, do exhibit particular tonal properties that distinguish them from other kinds of TBU sequences. Among these are the licensing of upstepped-H across both vowels in the sequence (which otherwise occurs only on single moras), as well as the grounding of L floated through prosodic segmental weakening processes (when L floated by these processes otherwise does not reassociate). For fuller discussion of both of these phenomena, see chapter 3 4.3 and chapter 3 4.4.4, respectively. Nonetheless, the rare and largely predictable instances in which such evidence manifests itself are insufficient to motivate a phonemic length contrast in the Iyasa vowel inventory.

1.3 Vowel Height Harmony (VHH)

Iyasa has a limited form of the Vowel Height Harmony (VHH) typical of Bantu languages (Hyman, 2003a). In Iyasa, this involves exceptionable lexical parameters governing which sequences of vowels are licensed within the root. The initial syllable of the morpheme root contrast between all 7 phonemic vowels at all 4 height levels: close, close-mid, open-mid, and open (see §2.3). However, syllables following the first mid-vowel syllable of the root only contrast close, mid, and open, with the vowel quality of subsequent mid vowels reflecting the height of the initial mid vowel (either close-mid or open-mid). VHH operates root-internally: affixes do not undergo or trigger it.¹⁹ Thus it is not a phonological process in Iyasa as such, since it never demonstrably affects the surface realization of underlying forms. Rather, VHH appears to be a lexical constraint on roots.

- (27) **Close-mid VHH**
kóbò (c9) “inheritance”
célé (c9) “sterile person”
lémbò (c13) “music”
pócé (c9) “deaf person”
- (28) **Open-mid VHH**
kótó (c9) “fence”
célé (c9) “sand”
lémó (c9) “eel”
dólè (c9) “money”
- (29) **Close-mid prefix + open-mid root**
mò-tòtò/mè-tòtò (3/4) “umbilical cord”
mò-cécé/mè-cécé (3/4) “baby”
mò-kòbé/mè-kòbé (3/4) “bag”
èélè (inf) “begin”
èécè (inf) “laugh”
- (30) **Close-mid root + open-mid suffix**
è-tèk-iyè (inf) “to diminish”
è-bénd-iyè (inf) “to make bless”
è-kót-iyè (inf) “to wring out”
è-sòs-ènè (inf) “to embrace”
è-kòc-ènè (inf) “to help”
- (31) **Open-mid root + close-mid suffix**
iyén-èèni (part) “used up”

¹⁸ Surface short vowels, by contrast, may be realized with HL contours as a result of shortening of VV sequences through Final HL Shortening (see chapter 3 1).

¹⁹ Although some prefixes do assimilate place to following vowels, this a separate phenomenon from harmony that can nonetheless sometimes result in the lowering close-mid vowels. See chapter 4 1.1 for further discussion.

stop	p	b	t	d	k	g
nasal		m		n		ŋ
affricate			c			
fricative		v	s			
lateral				l		
glide				y		w

Table 2.2 - Consonants of Iyasa

Exceptions to VHH also occur in a handful of lexemes in my data, for which no synchronic derivation is apparent and which might therefore be morphologically simple roots. However, many such forms have three or more syllables and are thus more likely to be fixed remnants of historical derivation or compounding processes:

- (32) *dyébóbè* (5/6) “tarantula”
ndàndàbòbè (9/6) “spiderweb”
kɔ̀lɔ̀bèndà (9/10) “crow”

2 Consonants

Iyasa has 15 consonant phonemes, which are laid out in Table 2.2. In addition to these, borrowed sounds appear with very low frequency. My data include three occurrences of [r], in *èréndà* “rent”, *párá* “trouble”, and its derivative *èpár-íyè* (trouble-CAUS) “annoy”, all of which appear to be loans. The sound [f] appears in my data only in the French loan *kâfé* “coffee”. The clearly marginal status of these sounds does not seem to warrant their inclusion in the Iyasa phoneme inventory. I follow Bantuist precedent in writing *c* for the voiceless palatal affricate and *y* for the palatal glide in phonemic transcriptions, while retaining conventional IPA notation for these sounds in phonetic transcriptions ([tʃ] and [j], respectively). Below I discuss some issues of segment interpretation and allophony, then present evidence for the phonemic contrasts proposed.

2.1 Evidence of phonemic contrast between consonants

Below I establish contrast between suspect pairs in Table 2.3 with respect to place and manner of articulation. I believe that, taken as a whole, the following pairwise contrasts adequately demonstrate the distinctiveness of each of the consonant phonemes posited above.

2.1.1 Labials

2.1.1.1 /p/

The voiceless bilabial stop /p/ contrasts with the following labial consonants:

- (33) /p/ vs. /b/
- | | | |
|-------------------------|---|-------------------------------------|
| (a) <i>Word-initial</i> | <i>pèkò</i> (c9) “wisdom” | <i>bèkòndá</i> (c8) “shoes” |
| | <i>púwà</i> (c9) “back” | <i>búwà</i> (c9) “elephant’s trunk” |
| (b) <i>Word-medial</i> | <i>èdùpà</i> (inf) “to bake in ashes” | <i>èdùbà</i> (inf) “to dip” |
| | <i>èpúú^hwá</i> (adj) “smooth, light” | <i>èbùwà</i> (inf) “to knead” |
| | <i>èpàtiyè</i> (inf) “to hang up” | <i>èbàtiyè</i> (inf) “to set” |
- (34) /p/ vs. /v/
- | | | |
|--------------------------------------|------------------------------|--------------------------------|
| (a) <i>Word-initial</i> | <i>pèi</i> (c9) “viper” | <i>vèi</i> (c9) “sun” |
| (b) <i>Word-medial (and initial)</i> | <i>pivi</i> (c9) “thickness” | <i>vipisi</i> (c19) “mosquito” |
- (35) /p/ vs. /m/
- | | | |
|-------------------------|---------------------------------|------------------------------------|
| (a) <i>Word-initial</i> | <i>púdi</i> (c9) “bad breath” | <i>múdi</i> (c3) “part (of house)” |
| (b) <i>Word-medial</i> | <i>èpàkà</i> (inf) “to butcher” | <i>èmàkà</i> (inf) “to draw” |
- (36) /p/ vs. /w/

- | | | |
|-------------------------|--------------------------------|----------------------------------|
| (a) <i>Word-initial</i> | <i>pèi</i> (c9) “viper” | <i>wèé</i> (c9) “hair (of head)” |
| (b) <i>Word-medial</i> | <i>m̀pèyà</i> (c3) “young man” | <i>mwè̀ngà</i> (c3) “string” |

2.1.1.2 /b/

The voiced bilabial stop /b/ contrasts with /p/, as shown in (54), in addition to the following labial consonants:

- | | | |
|-------------------------|--|---|
| (37) /b/ vs. /v/ | | |
| (a) <i>Word-initial</i> | <i>b̀òó</i> (c9) “front” | <i>v̀òò</i> (c9) “quiet” |
| (b) <i>Word-medial</i> | <i>è̀b̀oyà</i> (inf) “to break”
<i>è̀b̀uwà</i> (inf) “knead” | <i>è̀v̀oyà</i> (inf) “to dry up”
<i>è̀v̀uwà</i> (inf) “throw away” |
| (38) /b/ vs. /m/ | | |
| (a) <i>Word-initial</i> | <i>b̀è-</i> (c8 NPx) | <i>m̀è-</i> (c4 NPx) |
| (b) <i>Word-medial</i> | <i>è̀ib̀à</i> (inf) “to steal”
<i>è̀kàb̀à</i> (inf) “to separate” | <i>è̀im̀à</i> (c7) “thing”
<i>è̀kàm̀à</i> (inf) “to succeed” |
| (39) /b/ vs. /w/ | | |
| (a) <i>Word-initial</i> | <i>b̀á</i> (c8.AM)
<i>b̀è-</i> (c8 NPx) | <i>ẁá</i> (c2.AM)
<i>ẁéé</i> (c9) “hair (of head)” |
| (b) <i>Word-medial</i> | <i>è̀ib̀à</i> (inf) “steal”
<i>k̀ób̀ò</i> (c9) “inheritance” | <i>è̀iẁà</i> (inf) “cut”
<i>k̀òẁò</i> (c9) “parrot” |

2.1.1.3 /v/

The voiced labiodental fricative /v/ contrasts with the labial consonants /p/ (see (55)) and /b/ (see (58)). It also contrasts with the following labial consonants:

- | | | |
|-------------------------|--|---|
| (40) /v/ vs. /m/ | | |
| (a) <i>Word-initial</i> | <i>v̀òò</i> (c9) “quiet” | <i>m̀ò-</i> (c3 NPx) |
| (b) <i>Word-medial</i> | <i>à̀v̀é</i> (pro) “your (s)”
<i>è̀l̀ov̀à</i> (inf) “to bite” | <i>à̀m̀é</i> (pro) “my”
<i>è̀l̀óm̀à</i> (inf) “to send (s.o.)” |
| (41) /v/ vs. /w/ | | |
| (a) <i>Word-initial</i> | <i>v̀éỳi</i> (c9) “sun” | <i>ẁéỳi</i> (c9) “fish” |
| (b) <i>Word-medial</i> | <i>è̀l̀ov̀à</i> (inf) “to bite” | <i>è̀l̀oẁà</i> (inf) “to insult” |

2.1.1.4 /m/

The nasal stop /m/ contrasts with the labial consonants /p/ (see (55)), /b/ (see (58)), and /v/ (see (61)), as well as with /w/:

- | | | |
|-------------------------|---|---|
| (42) /m/ vs. /w/ | | |
| (a) <i>Word-initial</i> | <i>m̀à-</i> (c6 NPx) | <i>ẁà-</i> (c2 NPx) |
| (b) <i>Word-medial</i> | <i>è̀im̀à</i> (c7) “thing”
<i>è̀nyàm̀à</i> (inf) “to get lost”
<i>è̀l̀óm̀à</i> (inf) “to send (s.o.)” | <i>è̀iẁà</i> (inf) “cut”
<i>è̀nyàẁà</i> (inf) “to tear”
<i>è̀l̀oẁà</i> (inf) “to insult” |

2.1.1.5 /w/

The labiovelar glide /w/ contrasts with the labial consonants /p/ (see (57)), /b/ (see (60)), /v/ (see (62)), and /m/ (see (63)).

2.1.2 Coronals

2.1.2.1 /t/

The voiceless alveolar stop /t/ contrasts with the following coronal consonants:

(43) /t/ vs. /d/

(a) *Word-initial**tínà* (c9) “trunk”*tíyé* (c9) “clearing of land”*dínà* (c5) “name”*díyè* (adj) “expensive”(b) *Word-medial**ètùngú* (c7) “tribe”*ètúkà* (inf) “to suffer”*mòtò* (c1) “person”*èdùngú* (c7) “noise”*èdúkà* (inf) “to paddle”*mòdò* (c3) “hill of rocks”

(44) /t/ vs. /c/

(a) *Word-initial**témá* (c9) “middle”*tìì* (c9) “full”*cémá* (c9) “monkey”*cìlì* (c9) “upper grinding stone”(b) *Word-medial**itòkò* (c5) “soup”*èmwètè* (inf) “to smile”*icòkò* (c5) “molar”*ibècè* (c5) “shoulder”

(45) /t/ vs. /s/

(a) *Word-initial**tìì* (c9) “full”*sìì* (c9) “to straight”(b) *Word-medial**ètà* (inf) “to grow”*ètáà* (inf) “to give”*ikátà* (c5) “stupidity”*èisà* (inf) “to enter”*èsá⁴* (inf) “to do; to make”*ikàsà* (c5) “bridge”

(46) /t/ vs. /n/

(a) *Word-initial**tínà* (c9) “stem”*tìì* (c9) “full”*nìná* (c9) “louse”*nyí-* (c10 EPx)(b) *Word-medial**èitwà* (inf) “to wipe off”*ètòkò* (inf) “to boil”*étí⁷nwá* (adj) “dull”*ènókò* (inf) “to overtake”

2.1.2.2 /d/

The voiced alveolar stop /d/ contrasts with /t/ (see (64)) as well as the following coronal consonants:

(47) /d/ vs. /c/

(a) *Word-initial**dólè* (c9) “silver”*dási* (c5) “gift”*cólì* (c9) “servant”*cáàcá* (c9) “new”(b) *Word-medial**èdiyà* (inf) “to sit”*èdibwà* (inf) “to open”*èciyà* (c7) “taboo”*ècibwà* (inf) “to pour”

(48) /d/ vs. /s/

(a) *Word-initial**dílò* (c5) “ear”*sìì* (c9) “straight”(b) *Word-medial**èdìmà* (inf) “to sink”*èsímà* (inf) “to beat”

(49) /d/ vs. /n/

(a) *Word-initial**dyài* (c5) “garbage dump”*dínà* (c5) “name”*nyài* (c9) “claw”*nìná* (c9) “louse”

- (b) *Word-medial*
èdyàà (inf) “to give birth” *ènyàà* (inf) “to drink”
ngàdi (c9) “gun” *ngàni* (c9) “proverb”
ààdú (pro) “his, her” *àànú* (pro) “your (p)”
- (50) /d/ vs. /l/
(a) *Word-initial*
díló (c5) “ear” *lilój* (c13) “hernias”
(b) *Word-medial*
idúkú (c5) “latrine” *ilúkú* (c5) “sister”
èdiyà (inf) “to be” *èliyà* (inf) “to sow”
èdàngà (inf) “to draw (water)” *èlàngà* (inf) “to count”

2.1.2.3 /c/

The voiceless palatal affricate /c/ contrasts with /t/ (see (65)), /d/ (see (68)), and the following coronal consonants:

- (51) /c/ vs. /s/
(a) *Word-initially*
cémà (c9) “monkey” *ségá* (c9) “earthworm”
(b) *Word-medially*
ècè (inf) “go” *èsè* (c7) “bushel basket”
ècòò (inf) “to catch” *èsò* (c7) “saw”
- (52) /c/ vs. /n/
(a) *Word-initially*
cààcá (c9) “new” *ná* (comp.) “that”
(b) *Word-medially*
ibècè (c5) “shoulder” *ibénè* (c5) “breast”
mòcécé (c3) “baby” *mòncécé* (c3) “flea”
- (53) /c/ vs. /l/
(a) *Word-initial*
célè (c9) “weaver-bird” *lémó* (c9) “eel”
(b) *Word-medial*
èécè (inf) “to laugh” *èèlè* (inf) “to begin”

2.1.2.4 /s/

The voiceless alveolar fricative /s/ contrasts with /t/ (see (66)), /d/ (see (69)), /c/ (see (72)), and the following coronal consonants:

- (54) /s/ vs. /n/
(a) *Word-initial*
sáá (c9) “goodness” *ná* (comp.) “that”
(b) *Word-medial*
mòsàngá (c3) “necklace” *mònàngá* (c3) “star”
- (55) /s/ vs. /l/
(a) *Word-initially*
sii (c9) “straight” *li-* (c13 NPx)
(b) *Word-medially*
èsigàmà (inf) “to move” *èligàmà* (inf) “to tremble”
èvèsè (inf) “to evade” *èvélè* (inf) “put”
- (56) /s/ vs. /y/
(a) *Word-initially*
sèyá (c9) “road” *yé* (c9) “earth”
(b) *Word-medially*
èisà (inf) “to enter” *èiyà* (c7) “regime of palm nuts”
èsá¹ (inf) “to do; to make” *èyáà* (inf) “to sleep”

2.1.2.5 /n/

The alveolar nasal stop /n/ contrasts with /t/ (see (67)), /d/ (see (70)), /c/ (see (73)), /s/ (see (75)), and the following coronal consonants:

(57) /n/ vs. /l/

- | | |
|---|---|
| (a) <i>Word-initial</i>
<i>níná</i> (c9) “louse” | <i>lindyèbá</i> (c13) “marmosets” |
| (b) <i>Word-medial</i>
<i>èkùwàná</i> (inf) “to resemble”
<i>ènàṅgà</i> (inf) “to lie down” | <i>èkwàlà</i> (inf) “to scrape”
<i>èlàngà</i> (inf) “to count” |

(58) /n/ vs. /y/

- | | |
|---|--|
| (a) <i>Word-initial</i>
<i>níná</i> (c9) “louse” | <i>yé</i> (c9) “earth” |
| (b) <i>Word-medial</i>
<i>dínà</i> (c5) “name”
<i>é ònáà</i> (adv) “over there” | <i>díyà</i> (c5) “oil palm”
<i>éóyà</i> (inf) “to kill” |

2.1.2.6 /l/

The alveolar lateral approximant /l/ contrasts with /d/ (see (71)), /c/ (see (74)), /s/ (see (76)), and /n/ (see (78)), as well as with /y/:

(59) /l/ vs. /y/

- | | |
|--|--|
| (a) <i>Word-initial</i>
<i>lèmbò</i> (c13) “songs” | <i>yé</i> (c9) “earth” |
| (b) <i>Word-medial</i>
<i>èvilà</i> (c7) “ebony”
<i>mbélá</i> (c9) “pit”
<i>èvélè</i> (inf) “put” | <i>èvìyà</i> (inf) “come”
<i>mbèyá</i> (c9) “cooking pot”
<i>èvéyé</i> (c7) “desire” |

2.1.2.7 /y/

The palatal glide /y/ contrasts with /s/ (see (77)), /n/ (see (79)) and /l/ (see (80)).

2.1.3 Dorsals

2.1.3.1 /k/

The voiceless velar stop /k/ contrasts with the following dorsal consonants:

(60) /k/ vs. /g/

- | | |
|--|--|
| (a) <i>ibókò</i> (c5) “place”
<i>ikò</i> (c5) “plantain”
<i>èlikánà</i> (inf) “to remain”
<i>ètákà</i> (inf) “smokehouse” | <i>iyògò</i> (c5) “palm wine”
<i>vìgòí</i> (c13) “whistle”
<i>èligàmà</i> (inf) “to tremble”
<i>vìgágá</i> (c13) “pangolin” |
|--|--|

(61) /k/ vs. /ŋ/

- | | |
|---|---|
| (a) <i>èmákà</i> (inf) “to draw”
<i>èdákà</i> (inf) “to be sick” | <i>màṅà</i> (c9) “stench”
<i>èdyáṅà</i> (inf) “to disappear” |
|---|---|

2.1.3.2 /g/

The phone [g] co-occurs with a preceding nasal consonant in the overwhelming majority of cases in Iyasa, and is never word-initial. However, it does make rare appearances in intervocalic position (in 8 lexemes in my database), indicating phonemic status through contrast with /k/ (see (81)), as well as with /ŋ/, /w/, and the NC /ŋg/:

(62) /g/ vs. /ŋ/

- | | |
|--|---|
| <i>ivágà</i> (c5) “twin”
<i>vìgágá</i> (c19) “pangolin” | <i>màṅà</i> (c9) “stench”
<i>èdyáṅà</i> (inf) “to disappear” |
|--|---|

(63) /g/ vs. /w/

- | | |
|---|---|
| <i>ivágà</i> (c5) “twin”
<i>ségá</i> (9) “earthworm” | <i>éáwà</i> (inf) “to pay”
<i>èwá^t</i> (inf) “to die” |
|---|---|

(64) /g/ vs. /ŋg/

<i>iváǵà</i> (c5) “twin”	<i>vyáǵǵà</i> (c9) “salt”
<i>séǵà</i> (c9) “earthworm”	<i>cèǵǵà</i> (c9) “crooked”
<i>èligàǵà</i> (inf) “to tremble”	<i>èdǵǵàǵà</i> (inf) “to go around”
<i>vǵǵì</i> (c13) “whistle”	<i>cǵǵó</i> (c9) “voice”
<i>iyòǵó</i> (c5) “palm wine”	<i>myòǵǵò</i> (c3) “grass”

2.1.3.3 /ŋ/

The phone [ŋ] co-occurs with a following a velar stop in the overwhelming majority of cases in Iyasa, and is never word-initial otherwise. However, it does make rare appearances (8 in my data) intervocally or as a nasal coda, indicating phonemic status through contrast with /k/ (see (82)) and /g/ (see (83)), as well as with /w/ and the NC /ŋg/:

(65) /ŋ/ vs. /w/	
<i>màǵà</i> (c9) “stench”	<i>èáwà</i> (inf) “to pay”
<i>èdyáǵà</i> (inf) “to disappear”	<i>ènyàwà</i> (inf) “to tear”
(66) /ŋ/ vs. /ŋg/	
<i>màǵà</i> (c9) “stench”	<i>màǵǵà</i> (c6) “families”
<i>èdyáǵà</i> (inf) “to disappear”	<i>èdàǵǵà</i> (inf) “to draw (water)”

2.1.3.4 /w/

The labiovelar glide /w/ contrasts with /g/ (see (84)) and /ŋ/ (see (86)).

2.1.4 Nasals

Nasals have two unique distributional properties in Iyasa: as a class, they are the only consonants that immediately precede *C'*, and they are the only licensed codas.²⁰ Nasal place contrasts are neutralized in word-internal NC' as a result of nasal place assimilation (see §4.1). Thus, while throughout this work I represent NC' with place-distinguished nasals in phonemic transcriptions because of independently motivated phonemic place contrasts between nasals (see below), the possibility exists for any word-internal NC that the nasal is not homorganic in underlying representations and assimilates place via rule. Nasal stops themselves exhibit place contrasts in simple (or NG) onsets and coda positions. Nasals of different place specifications exhibit asymmetric distribution: although I find sufficient evidence to posit /ŋ/ as a phoneme of Iyasa (see §3.4.3.3), it appears much more rarely than /m/ and /n/ and, unlike them, never in simple word-initial onsets. Elsewhere, my data contain 6 lexemes with /ŋ/ codas and 2 with intervocalic /ŋ/ (i.e. as a word-medial onset). Furthermore, although the phoneme /n/ occurs very frequently in simple onsets, both word-initially and word-medially, it does not appear in any codas in my data. Despite these asymmetries, contrast can be established between nasals at all three places of articulation:

(67) /m/ vs. /n/	
(a) <i>Word-initial onset</i>	
<i>mà-</i> (c6 NPx)	<i>nà</i> (prep) “with”
(b) <i>Word-medial onset</i>	
<i>èkàmà</i> (inf) “to succeed”	<i>èkànà</i> (inf) “to swear”
<i>éómà</i> (c7) “baobab tree”	<i>é ònáà</i> (adv) “over there”
<i>mòdìmì</i> (c1) “younger sibling”	<i>mòvìnìnì</i> (c3) “enemy”
(68) /ŋ/ vs. /m/	
(a) <i>Word-medial onset</i>	
<i>màǵà</i> (c9) “stench”	<i>nyámà</i> (c9) “animal”
<i>èdyáǵà</i> (inf) “to disappear”	<i>èámà</i> (inf) “to shout”
(b) <i>Coda</i>	
<i>mòtòǵ</i> (c3) “stinger”	<i>mòkòǵ</i> (c3) “frog”
(69) /ŋ/ vs. /n/	
(a) <i>Word-medial onset</i>	
<i>màǵà</i> (c9) “stench”	<i>mànàkà</i> (c6) “sorrow”
<i>èdyáǵà</i> (inf) “to disappear”	<i>èdàdànà</i> (inf) “to pretend”

Nasal stops can also be shown to contrast with NC' at the same place of articulation. Contrasts between /ŋ/ and /ŋg/ were given in (87). The remaining contrastive pairings are shown below:

²⁰ See §0.

(70) /m/ vs. /mb/

- | | |
|---|--|
| (a) <i>Word-initial</i>
mà- (c6 NPx)
máni (c6) “crossroads” | mbà (prep) “without”
mbààni (c9) “co-wife/co-husband” |
| (b) <i>Word-medial</i>
èimà (c7) “thing”
èámà (inf) “to shout”
èómwà (inf) “to greet” | èimbà (inf) “to sing”
èámbà (inf) “to prepare”
èòmbwà (inf) “to get meat” |

(71) /n/ vs. /nd/

- | | |
|--|---|
| (a) <i>Word-initial</i>
nínà (c9) “louse”
nà (prep) “with” | ndibà (c9) “depth”
ndàmbwè (c9) “rubber” |
| (b) <i>Word-medial</i>
èminà (inf) “to swallow”
ìcìni (c5) “fly”
èmèndò (c7) “world” | èvĩ̀ndá (adj) “black”
itíndí (c5) “hoof”
ècèndò (c7) “journey” |

2.1.5 Fricatives

Iyasa has two fricatives: voiced labiodental /v/ and voiceless alveolar /s/. They are in contrastive distribution, as shown in (93):

(72) /v/ vs. /s/

- | | |
|--|---|
| (a) <i>Word-initial</i>
vì- (c19 SPx)
vòòò (adj) “quiet” | sì (adj) “straight”
sò (c9) “time” |
| (b) <i>Word-medial</i>
dìvì (c5) “anteater”
èvèsè (inf) “to evade”
èvùwà (inf) “to throw away” | dìsì (c5) “bowl”
èsèsè (inf) “to lift”
èsiwà (inf) “to wash” |

2.1.6 Approximants

Iyasa has three approximants: palatal glide /y/, labiovelar glide /w/, and lateral /l/. They are in contrastive distribution, as shown in for /l/ vs. /y/ in (80) and for the remaining pairings in the following examples:

(73) /y/ vs. /w/

- | | |
|--|--|
| (a) <i>Word-initial</i>
yé (c9) “earth” | wèé (c9) “hair” |
| (b) <i>Word-medial</i>
èiyà (c7) “regime of palm nuts”
èyáà (inf) “to sleep”
myálò (c4) “gossip (p)” | èiwà (inf) “to cut”
èwáà (inf) “to die”
mwálò (c3) “gossip (s)” |

(74) /l/ vs. /w/

- | | |
|---|---|
| (a) <i>Word-initial</i>
lémbò (c13) “songs” | wèé (c9) “hair” |
| (b) <i>Word-medial</i>
mòlò (c3) “head”
èilà (c7) “virgin”
èàlà (inf) “to cut open” | mòwó (c3) “argument”
èiwà (inf) “to cut”
èáwà (inf) “to pay” |

2.2 Plosive and implosive voiced stops

All three previous descriptions of Iyasa phonology with which I am acquainted posit phonemic implosive voiced stops /b/ and /d/ (Bot, 1992; Bouh Ma Sitna, 2004; Lonfo, 2009). Bot (1992) and Bouh Ma Sitna (2004) analyze them as the only voiced stops at these places of articulation, while Lonfo (2009) argues for a plosivity-based phonemic contrast between /b/ and /b̥/ as well as /d/ and /d̥/. Let me begin the present discussion by addressing Lonfo’s proposal of phonemic contrast.

Contrary to preceding analyses, Lonfo (2009) argues that plosivity is in fact contrastive in Iyasa, and thus that where others had posited two phonemes /b/ and /d/, there should in fact be four: /b/, /b̥/, /d/, and /d̥/.²¹ He provides the following evidence for this conclusion, with transcriptions and tones given here as he presents them:

- (75) Analogous phonological contexts for [d] vs. [d̥] and [b] vs. [b̥] as presented by Lonfo (2009)
- | | |
|---|---------------------------------------|
| (a) [d] | [d̥] |
| (#__a) + <i>dási</i> “cadeau” | (#__i) + <i>dībè</i> “mangue sauvage” |
| (#__ɔ) + <i>dɔdɔ</i> “bien fait, correct” | (#__ɔ) + <i>dɔdɔ</i> “bon” |
| (e__u) + <i>èdùkà</i> “tendre une corde” | (#__u) + <i>dùmbú</i> “nid” |
| (a__ɛ) + <i>ébàdè</i> “additionner” | (a__o) + <i>mùàdó</i> “femme” |
| (o__u) + <i>mòtódú</i> “ainé” | (ɛ__u) + <i>sédù</i> “moustache” |
| (ɔ__ɔ) + <i>mɔ́dóní</i> “mûr” | (e__i) + <i>iwédi</i> “mort” |
| (b) [b] | [b̥] |
| (#__a) + <i>báti</i> “plat” | (#__i) + <i>bíbà</i> “deux” |
| (#__e) + <i>bèkòndá</i> “chaussures” | (#__e) + <i>bèdìèbò</i> “boue” |
| (#__o) + <i>bòkàsò</i> “échelle” | (i__a) + <i>bíbà</i> “deux” |
| (e__o) + <i>èbóbà</i> “tater” | |

The claim that two different phones contrast in phonologically analogous environments depends crucially on two assumptions: (i) that the allophones in question are not in free variation (and thus that only one of the possible variants is not cited in each “contrast”) and (ii) that the phones in question are distinguished by feature specifications that are contrastive in the language. I believe that both of these assumptions turn out to be wrong in this case.

Regarding assumption (i), when I presented a speaker of Iyasa with Lonfo’s data, he informed me that each of the words given could be pronounced in either a plosive or implosive manner with no difference in meaning. Furthermore, according to this speaker, potentially the most convincing piece of data given in (47), the quasi-minimal pair +*dɔdɔ* “bien fait, correct” and +*dɔdɔ* “bon”, in fact turns out to be the same word (perhaps an unsurprising result given the similarity of the translations). Even without speaker intuitions, dubious parts of the above data become apparent. For example, (47) claims a plosivity contrast between the initial consonants of +*bèkòndá* “chaussures (*fr.*)” and +*bèdìèbò* “boue (*fr.*)”²². However these are two class 8 nouns in which the supposedly contrasting phones are the initial consonant of the same prefix. They are thus necessarily the same phoneme underlyingly, making it impossible to use this pair to establish contrast (if anything, it establishes the opposite). Other problems of this nature are seen more generally in Lonfo’s unpublished lexicon, which, for example, contains pairs of distinct entries differing only with respect to plosivity that happen to be identically translated:

- (76) +*bèdìèbò* “boue” vs. +*bèdìèbò* “boue”
 +*ètúbà* “percer” vs. +*ètúbà* “percer”

In other words, at each point where Lonfo finds minimal or near-minimal pairs in support of his claim of plosivity-based phonological contrast (+*dɔdɔ* vs. +*dɔdɔ*, +*bèdìèbò* vs. +*bèdìèbò*, +*ètúbà* vs. +*ètúbà*, etc.), the lexemes in question share essentially identical semantics, which is highly suspect. In the absence of other evidence which Lonfo does not provide, such examples strongly suggest an erroneous analysis of phonological contrast, and lend themselves to reanalysis of these “pairs” as really the same word transcribed differently.

The audio corpus I collected provides numerous examples of the voiced stops in question as well, and I do find that I usually perceive voiced bilabial and alveolar stops spoken carefully in isolated words as weakly implosive-sounding. However, a number of these lexical items for which I also recorded substitution frames display a noticeable weakening or complete disappearance of implosion when pronounced quickly in more complex syntactic environments. For example, the Iyasa word for “dish”, *béki*, is transcribed by Lonfo in his dictionary as +*béki* (non-implosive). However, my recording of *béki* in isolation sounds no less implosive in the initial consonant than *bèdyèbò* “mud”. When pronounced in the eight substitution frames additionally recorded for this item, implosion was significantly weaker in the shorter frames, which tended to be spoken slightly faster than the word in isolation, and absent in some of the longer frames, which were spoken quite quickly. In other words, implosion weakens with increased rates of speech. The case of *béki* typifies what I observed elsewhere in the corpus. I thus find evidence that [b] and [d] are not in contrastive distribution with [b̥] and [d̥], but rather, contra assumption (i), in a particular sort of free variation. That is to say, free with respect to segmental context, but apparently conditioned to some extent by prosodic factors such as rate

²¹ Lonfo (2009) does not propose the other logically possible plosivity contrast – /g/ vs. /g̥/ – and I do not find evidence of such a contrast either.

²² Or “shoes” and “mud”, respectively, in English.

of speech (and perhaps subject to individual variation, which cannot be ruled out since all of my recordings are from a single speaker).

A possible exception to this generalization might be surface implosion contrast between NC and ṂC, since voiced stops following N rarely surface as implosive-sounding, but often do following Ṃ (though not always). However, there are independent phonological contrasts such as tone-bearing status which establish the N/Ṃ distinction preceding voiced stops, rendering it unnecessary to appeal to plosivity in order to capture the relevant contrasts in these environments. Any systematic asymmetry in the degree of implosion in such cases could simply be an issue of the phonetic implementation of voiced stops following non-syllabic nasals.

These observations furthermore motivate a critical evaluation of assumption (ii), that plosive/implosive (or constricted glottis) is a relevant distinctive feature of the phonological system of Iyasa. As indicated above, the phonetic realization of implosion throughout the audio corpus is quite gradient, tending to be strongest in slow, careful speech, absent in very rapid speech, and of varying degrees of strength at speech rates in between. These findings point to implosion as a graduated phonetic property of voiced stops in Iyasa sensitive to equally graduated aspects of prosody, rather than as a binary opposition. This result is consistent with the phonetic characterization of plosives in Ladefoged (1980), who claims that “the difference between implosives and plosives is one of degree rather than kind” (p. 26-7) by reason of their relatively greater or lesser degree of lowering of the vocal chords during stop closure and release. Maddieson (2003) claims Bantu implosives are usually characterized only by this (relative) downward motion of the larynx and do not generally involve glottal constriction, resulting in voicing through the full duration of the stop. Accurately determining the particular details of the phonetic implementation of implosion in Iyasa probably requires thorough corpus-based study of phonetic variation, which is beyond the scope of the present work. However, I believe the foregoing discussion provides sufficient grounds to rule out a phonological implosion-based contrast. I therefore do not find clear evidence that airstream mechanism plays any role in the phonological grammar of the language, and I simply posit voiced stops /b/ and /d/ and represent them as such in phonemic and phonetic transcriptions, while leaving the treatment of their phonetic implementation to further investigation.

2.3 The phonological interpretation of affricates

On the surface, Iyasa has two palatal affricates: [tʃ] and [dʒ]. They occur in contrastive distribution:

- (77) [è-tʃótʃò]
INF-gnaw
“to gnaw”
- (78) [è-dʒódʒò]
INF-haggle
“to haggle”

For this reason, previous analyses have proposed voiced and voiceless palatal affricate phonemes for the language: *c* and *j* (Bot, 1992; Bouh Ma Sitna, 2004; Lonfo, 2009). While this analysis captures the relevant linguistic contrasts, it faces difficulties when confronted with the fact that whenever the underlying sound often surfacing as [dʒ] occurs, it may also be realized as [dy] in slow careful speech. In fact, as in the case of plosivity in oral stops, there appears to be a gradient phonetic effect allowing the sound in question to be realized with varying degrees of affrication. Throughout my data, this phenomenon (like plosive pronunciation of implosive stops, see §3.1) seems to be in free variation with respect to segmental context and conditioned to some extent by prosodic factors like speech rate, with faster rates of speech tending to favor pronunciations closer to [dʒ] than [dj]. Since motivating the de-affrication of an affricate phoneme *j* in careful speech is non-trivial, I argue that the simplest treatment of this sound is as an underlying sequence /dy/ with a tendency toward affricate-like phonetic realization. This allows for an essentially cost-free reduction of the phoneme inventory, since CG sequences are independently needed in the syllable template (see §0). Like implosive realization, I contend that affrication of /dy/ is an issue of phonetic implementation irrelevant to the grammar, and I leave a full treatment of it to future research. Examples of this variation are given in (50). The phonetic transcriptions given below should be taken as representing the output of the phonetic rather than the phonological component, and necessarily oversimplify the phenomenon at hand by representing a binary alternation between [dʒ] and [dj] rather than the cline observed in actual speech utterances.

(79)	Pronunciation variants of /dy/	
	<i>dyémi</i> (c5) “pregnancy”	[dʒémi] ~ [djémi]
	<i>dyàkási</i> (c5) “donkey” ²³	[dʒàkási] ~ [djàkási]
	<i>dyói</i> (c5) “nose”	[dʒói] ~ [djói]
	<i>èèdyò</i> (inf) “rest”	[èèdʒò] ~ [èèdjò]
	<i>mùdyú</i> (c3) “labor”	[mùdʒú] ~ [mùdjú]
	<i>èkódyiyè</i> (inf) “drop”	[èkódʒiyè] ~ [èkódyiyè]

Importantly, this affrication process only applies to the sequence /dy/, not /di/ or any other vowel:

(80)	<i>diló</i> “ear”	[diló] ~ *[dʒiló]
	<i>dínà</i> “name”	[dínà] ~ *[dʒínà]
	<i>dísi</i> “bowl”	[dísi] ~ *[dʒísi]
	<i>dívi</i> “anteater”	[dívi] ~ *[dʒívi]
	<i>díyà</i> “oil palm”	[díyà] ~ *[dʒíyà]
	<i>díyòbá</i> “tear”	[díyòbá] ~ *[dʒíyòbá]
	<i>díiyá</i> “seated”	[díiyá] ~ *[dʒíiyá]
	<i>díyè</i> “expensive”	[díyè] ~ *[dʒíyè]
	<i>èèdyiyè</i> “be able”	[èèdíyè] ~ *[èèdʒíyè]

As a result, affricate realization is an important surface signal of underlying contrast between /di/ and /dyi/. Compare the surface realizations of underlying /di/ sequences in the preceding example with those of the following, in which [dy] and [dʒ] are permitted, indicating that they are underlyingly /dyi/:

(81)	<i>dyiísà</i> “entry”	[dyiísà] ~ [dʒiísà]
	<i>dyiíyidi</i> “end”	[dyiíyidi] ~ [dʒiíyidi]
	<i>èèdyiyè</i> “make rest”	[èèdyiyè] ~ [èèdʒiyè]
	<i>dyítú⁺bwé</i> “big” (c5)	[dyítú ⁺ bwé] ~ [dʒítú ⁺ bwé]

This discussion invites the possibility of further simplification of the phoneme inventory by analyzing surface [tʃ] as underlyingly /ty/, especially since no surface sequences [ty] exist in the language. Indeed, this is how this sound is often represented in improvised Iyasa writing (where, by the way, [dʒ] is also spelled ‘dy’; see, for example, Ndjokou Mondjeli-Mapeta, 2009, as well as the SIL alphabet chart for the language). However, [tʃ] does not exhibit an equivalent free variation to [dʒ], in that it may not surface as [ty]: *cémà* (c9) “monkey” → [tʃémà] ~ *[tyémà]. Furthermore, the absence of surface [ty] is not especially compelling evidence in light of the fact that [y] *never* follows any voiceless consonants, as mentioned in §0. This is a remarkable asymmetry, and whether it is best accounted for through a restriction in the syllable template or via phonological rule (i.e. one that voices consonants preceding y) is unclear. Nevertheless, this observation further undermines the ostensible evidence that [tʃ] is underlyingly /ty/, and in the absence of compelling empirical motivation to adopt a more abstract representation, I simply include a segment /c/ in the phoneme inventory.

2.4 [w] and [ɥ] as allophones of /w/

The phoneme /w/ is underlyingly [w] but is palatalized and pronounced [ɥ] when preceding /i/:

- (82)
- (a) *è-tám-w-à* [ètámwà]
INF-walk-EV-INF.EV
“to walk”
- (b) *mò-tám-w-i* [mòtámɥi]
c3-walk-EV-AGNOM
“walker; traveler”
- (83)

²³ This word/meaning pair bears a striking resemblance to the English “jackass” and could well be borrowed. However, since it takes class 5 concord morphology on dependents and is paired with a class 6 plural (*makási*), it is still best analyzed as a class 5 noun, in which case the underlying form /dy/ (rather than /j/) of the prefix is certain.

- (a) *è-áw-à* [èáwà]
INF-pay-INF.EV
“to pay”
- (b) *mò-áw-í-dí* [mòáúídí]
c3-pay-EV-ACNOM
“payment”
- (84)
- (a) *è-ík-ú-w-è*
INF-learn-EV-CAUS-INF.EV
“to teach (lit. to make learn)”
- (b) *mò-ík-ú-w-ì* [mòikúúì]
c3-teach-EV-CAUS-AGNOM
“teacher”

Further examples of this complementary distribution across lexemes are given in (53):

- (85)
- (a) *èwísà* [èúísà] (inf) “to tighten”
ilówì [ilóúì] (c5) “insult (n.)”
wíndè [úíndè] (c9, English loan) “window”
- (b) *wéyì* [wéjì] (c9) “fish”
bwáyì [bwájì] (c14) “pain”
íwè [íwè] (pro) “us”
èíwà [èíwà] (inf) “to cut”

2.5 “Ghost” consonants

“Phantom” or “ghosts” consonants have been appealed to in analyses of Bantu languages such as Basaá for which evidence exists of underlying consonants that have no inherent segmental material associated with them (Hyman, 2003b; Schmidt, 1994).

I argue that the facts of Iyasa motivate the positing of a similar kind of analytical construct. Take, for example, the following sets of nouns and their naïve underlying representations:²⁴

- (86) Examples of differential allomorphic variation preceding surface V-initial roots
- (a) Gender 3/4
- (i) Vowel-sensitive allomorphic variation preceding V
- | | | |
|-----------------------------|-----------------------------|-----------|
| Sg: /mò-álò/ → <i>mwálò</i> | Pl: /mè-álò/ → <i>myálò</i> | “gossip” |
| Sg: /mò-ádi/ → <i>mwádi</i> | Pl: /mè-ádi/ → <i>myádi</i> | “female” |
| Sg: /mò-ákò/ → <i>mwákò</i> | Pl: /mè-ákò/ → <i>myákò</i> | “morning” |
- (ii) Full prefix preceding V
- | | | |
|-----------------------------|-----------------------------|----------------|
| Sg: /mò-áá/ → <i>móáá</i> | Pl: /mè-áá/ → <i>méáá</i> | “shrimp” |
| Sg: /mò-íyò/ → <i>móíyò</i> | Pl: /mè-íyò/ → <i>méíyò</i> | “animal track” |
| Sg: /mò-ónì/ → <i>móónì</i> | Pl: /mè-ónì/ → <i>méónì</i> | “flying ant” |
- (b) Gender 5/6
- (i) Vowel-sensitive allomorphic variation preceding V
- | | | |
|------------------------------|------------------------------|----------------|
| Sg: /ì-ái/ → <i>dyái</i> | Pl: /mà-ái/ → <i>mái</i> | “garbage dump” |
| Sg: /ì-ísi/ → <i>dísi</i> | Pl: /mà-ísi/ → <i>mísi</i> | “bowl” |
| Sg: /ì-ùmbú/ → <i>dyùmbú</i> | Pl: /mà-ùmbú/ → <i>mùmbú</i> | “nest” |
- (ii) Full prefix preceding V²⁵
- | | | |
|-----------------------------------|-----------------------------------|-------------|
| Sg: /ì-ísà/ → <i>dyíísà</i> | Pl: /mà-ísà/ → <i>máísà</i> | “entry” |
| Sg: /ì-ímbúwè/ → <i>dyíímbúwè</i> | Pl: /mà-ímbúwè/ → <i>máímbúwè</i> | “plan” |
| Sg: /ì-éíídí/ → <i>dyíéíídí</i> | Pl: /mà-éíídí/ → <i>máéíídí</i> | “beginning” |
- (c) Gender 7/8
- (i) Vowel-sensitive allomorphic variation preceding V
- | | | |
|-----------------------------|-------------------------------|----------|
| Sg: /è-òngà/ → <i>èongà</i> | Pl: /bè-òngà/ → <i>byòngà</i> | “joke” |
| Sg: /è-ómà/ → <i>èómà</i> | Pl: /bè-ómà/ → <i>byómà</i> | “baobab” |

²⁴ The contexts of application of the various noun class allomorphs by gender are discussed in chapter 4 1.3.

²⁵ In the case of c5, there is an additional allomorph (rather than the pre-consonantal one) that surfaces in these instances (see chapter 4 1.3.5).

(ii) Full prefix preceding V		
Sg: /è-òlól/ → èòlól	Pl: /bè-òlól/ → bèòlól	“lizard”
Sg: /è-ómì/ → èómì	Pl: /bè-ómì/ → bèómì	“glory”

As seen in the above examples, in some words (those in (i)) root-initial surface vowels condition vowel-sensitive allomorphic variation in prefixes, while in others (those in (ii)) they do not (see §4.2 for discussion of Gliding and chapter 4.1 for discussion of noun class allomorphic variation). No clear phonological motivation presents itself for this variation (eg. *mòáá* “shrimp” vs. *mwálò* “gossip”), implying contrast at some level. Locating this contrast in the prefix itself is problematic, since the observed distinctions are between nouns of the same class bearing the same prefix, and a basic principle of underlying representations is that they are not subject to context-dependent variation. A more satisfying approach would be to locate the contrast in the root. The solution I adopt is to posit root-initial ghost consonants in the underlying representations of lexemes that do not trigger gliding in the prefix, since gliding would be blocked in such representations by the fact that the prefix and first root vowel are not adjacent. This is virtually identical to Schmidt's (1994) and Hyman's (2003b) proposals for the Bantu language Basaá in response to similar data. Thus the underlying representations of the nouns in (i) in (96) would remain the same, while those in (ii) would require revision to include a root-initial ghost-consonant, as shown in (97):

- (87) Revised underlying representations of ghost-consonant-initial noun roots in (96)²⁶
- /-Cáá/ “shrimp”
 - /-Cíyò/ “animal track”
 - /-Còni/ “flying ant”
 - /-Císà/ “entry”
 - /-Címbúwè/ “plan”
 - /-Célídi/ “beginning”
 - /-Còlól/ “lizard”
 - /-Cómì/ “glory”

However, two important difficulties with this analysis must be considered: first, the lack of clear evidence of ghost consonants in a variety of phonological contexts, and second, their tendency to appear as a result of verb-to-noun derivation, a predictability which might undermine claims of phonological contrast.

Regarding the first difficulty, compared to Basaá, Iyasa does not show clear evidence of ghost consonants in environments other than root-initially. Ghost consonants could potentially be posited as intervening between some or all VV sequences root-internally, as eg. Lonfo (n.d.) often does implicitly, representing ghost consonants as well as morpheme-internal VV sequences with an intervening French-style “silent h”: eg. *‘eholō’ “lizard” (èòlól, c7, with root-initial ghost consonant) and *‘eyáhō’ “feather” (èyáó, c7, with root-internal VV sequence, *emphasis mine*). Independent evidence that these post-initial VV sequences involve intervening ghost consonants is hard to come by, however. One possible piece of evidence is the causative suffix, which I have indeed analyzed as underlyingly -C- (i.e. consisting of a single ghost-consonantal segment; see chapter 5.1.2). While this account simplifies my description of the behavior of this derivational morpheme and might help explain the non-application of Gliding preceding it, I do not contend that it cannot reasonably be treated in any other way. Nonetheless, I believe that the root-initial environment at least supports the existence of ghost consonants because of the fact that the roots I have identified as ghost-consonant-initial behave differently than V-initial roots with respect to multiple converging phonological phenomena. As shown above, ghost consonants block the application of Gliding. But they also prevent the prevocalic vowel-deleted allomorph of c6 *mà-* ([m-]) from surfacing, a morpheme-specific variation that is distinct from Gliding. The same is true of c2 *wà-*, in which surfaces as [w-] preceding vowels (/wà-àdól/ → wádól) but is fully realized before ghost-consonant-initial roots (eg. *wà-áni* “fighter”; sg. *mòáni*, not **mwáni*). Positing the existence of ghost consonants is therefore not trivially equivalent to simply stating that prefixes do not glide before some roots, but represents a deeper level of explanation for the fact that such roots do not take any of the distinct pre-vocalic allomorphic variants elsewhere attested in the language.

Furthermore, there are prefix allomorphs in some classes that surface preceding ghost-consonant-initial roots *only* and not before overt consonants or underlying vowels. Among them is the c5 [dyi-], which only precedes ghost consonants (i.e. exactly those surface-V-initial roots which take [mà-] rather than [m-] in the plural). Preceding underlyingly V-initial roots, the c5 NPx surfaces as [dy-] or [d-] (see above, as well as chapter 4.1.3.5.1.1).

²⁶ Irrelevant complexities of underlying form, such as the morphological composition of eg. *-ímbúwè*, are omitted for expository purposes.

Additionally, the vowel *o* of the c3 prefix *mò-* assimilates place to a following back vowel (vacuously in the case of *o*) only when affixed to ghost-consonant-initial roots, preceding overtly consonant-initial roots or underlyingly V-initial ones (see chapter 4 1.3.3.1). Take for example the following pair:

- (88) Ghost-consonant-initial root:
/mò-Cóbi/ → [mòsɔbi] (cf. pl. /wà-Cóbi/ → [wàsɔbi]) “fisherman”
- (89) Consonant-initial root:
/mò-tòkwè/ → [mòtòkwè] (cf. pl. /mè-tòkwè/ → [mètòkwè]) “bird trap”

Likewise, the c4 plural noun prefix *mè-* has an allomorph [mi-] which occurs only when affixed to a ghost-consonant-initial root in which the first vowel is [+back] (see chapter 4 1.3.4.1). Take the following examples (notice also the vowel place assimilation in the singular c3 forms):

- (90) **[mò-]/[mi-] preceding ghost consonant + back vowel**
- | | | |
|-------------------------------|------------------------------|------------------|
| Sg (c3): /mò-Cómi/ → mòómi | Pl (c4): /mè-Cómi/ → miómi | “male” |
| Sg (c3): /mò-Còdyó/ → mòdòdyó | Pl (c4): /mè-Còdyó/ → miòdyó | “body hair, fur” |
| Sg (c3): /mò-Cóni/ → mòóni | Pl (c4): /mè-Cóni/ → mióni | “flying ant” |
| Sg (c3): /mò-Còni/ → mòòni | Pl (c4): /mè-Còni/ → miòni | “flesh” |

Compare these with the ghost-consonant-initial roots in (101), in which the first vowel is non-back and the c3/c4 prefixes surface as [mò-]/[mè-], and (102), in which a back vowel follows an overt consonant and the c3/c4 prefixes still surface as [mò-]/[mè-].

- (91) **[mò-]/[mè-] preceding ghost consonant + non-back vowel**
- | | | |
|-------------------------------|-------------------------------|----------------|
| Sg (c3): /mò-Cáá/ → mòáá | Pl (c4): /mè-Cáá/ → mèáá | “shrimp” |
| Sg (c3): /mò-Cíyò/ → mòíyò | Pl (c4): /mè-Cíyò/ → mèíyò | “animal track” |
| Sg (c3): /mò-áwídí/ → mòáwídí | Pl (c4): /mè-áwídí/ → mèáwídí | “payment” |
- (92) **[mò-]/[mè-] preceding overt consonant + [+back] vowel**
- | | | |
|-------------------------------|-------------------------------|------------------|
| Sg (c3): /mò-kòbé/ → mòkòbé | Pl (c4): /mè-kòbé/ → mèkòbé | “bag” |
| Sg (c3): /mò-nóó/ → mònóó | Pl (c4): /mè-nóó/ → mènóó | “finger” |
| Sg (c3): /mò-sómbò/ → mòsómbò | Pl (c4): /mè-sómbò/ → mèsómbò | “spark” |
| Sg (c3): /mò-tòtò/ → mòtòtò | Pl (c4): /mè-tòtò/ → mètòtò | “umbilical cord” |

Additionally, the syllabic nasal allomorph [N̩-] may only precede roots beginning in overt consonants; ghost consonants in root-initial position do not appear to be sufficient to license it. Therefore [N̩-] is equally averse to being affixed either to V-initial or ghost-consonant-initial noun roots.

There are thus several pieces of evidence in Iyasa indicating that certain superficially V-initial noun roots are in fact not so underlyingly, and that this collection of roots exhibits a number of separate morphological properties unique to it as opposed to roots beginning in either underlying V or overt consonants. With respect to certain allomorphic variations that are sensitive to whether the root begins with a consonant or a vowel (eg. Gliding), roots with initial ghost consonants pattern with consonant-initial roots; with respect to certain other allomorphic variations, they pattern with vowel-initial roots (eg. distribution of /N̩-/); and with respect to yet other variations they pattern with neither (eg. distribution of [mò-], [mi-], and [dyi-]). That ghost-consonant-initial roots would resemble vowel-initial roots with respect to some phonological phenomena is unsurprising given the abstract nature of the ghost consonant and the fact that it gives rise to surface vowel sequences. These generalizations motivate a distinct representation of these roots at the underlying level in such a way that differentiates them from both C- and V-initial ones, and the abstract analytical device I have adopted for this purpose is a featureless root-initial ghost consonant.

I now turn to the second difficulty: that many ghost consonants are predictable on the basis of morphology. In fact, all nouns derived from verbs with apparently V-initial roots begin with ghost consonants. For example:

- (93) mòáwídí/mèáwídí “payment”, derived from *éáwà* “to pay”
mòáni/wàáni “fighter”, derived from *éána* “to fight”
dyíísà/màísà “entry”, derived from *éísà* “to enter”
dyíímbúwè/màímbúwè “plan”, derived from *éímbúwè* “to think”

Nevertheless, there are a number of ghost-consonant-initial roots, including some core vocabulary, for which no clear derivational source appears to exist, especially in genders 3/4 and 7/8:

- (94) *mòáá/mèáá* (3/4) “shrimp”
mòómì/mìómì (3/4) “male”
mòòdyó/mìòdyó (3/4) “hair (of body)”
mòòni/mìòni (3/4) “muscle”
mòónì/mìónì (3/4) “flying ant”
èáncè/bèáncè (7/8) “heat”
èìncè/bèìncè (7/8) “time”
èómà/bèómà (7/8) “baobab”

In all the examples in (104), the c3, c4, and c8 prefixes do not undergo Gliding as would be expected if they were vowel-initial, but rather are realized with other prefix allomorphs. Unless all such examples can be shown to be derived by independent evidence, they contradict any claim that ghost consonant phenomena always arise in Iyasa as a result of derivation.

Thus an alternative analysis in which verb-to-noun derivation itself directly gives rise to the aforementioned phenomena runs into serious difficulties. In the first place, it would require statement of phonological rules and morphological alternations in a way that crucially refers to whether or not a noun is verbally-derived, a patently non-phonological property that introduces a level of analytical power which most frameworks tend to avoid or rule out. For example, Gliding would only apply to non-deverbative nouns, and how to get this result is unclear if the underlying forms of the roots of eg. *mw^l-álò* “gossip” and *mò-áá* “shrimp” contained the same initial segments. Some other allomorphs would also appear only preceding deverbative nouns (eg. c3 [mò-], c4 [mì-], and c5 [dyì-], see chapter 4.1 for further discussion), a generalization that would be equally difficult to state in purely phonological terms. Furthermore, selecting derivation as the key differentiating factor in the first place is problematic in light of examples like those given in (104), which do not appear to be derived and nevertheless exhibit morphological properties attributed exclusively to derived nouns by such an analysis.

A third analytical approach would be simply to consider the nouns I have identified as “ghost-consonant-initial” to be lexical exceptions. However, given the number of these “exceptions” and the confluence of morphophonemic properties they share, such an analysis obscures a number of potentially important generalizations and runs the risk of being a non-explanation.

Therefore, despite the lack of compelling phonological evidence for ghost consonants in contexts other than root-initial, the important phonological differences between normal and ghost consonants in a number of respects, and the somewhat predictable relationship between verb-to-noun derivation and the appearance of ghost consonants, I argue that appealing to ghost consonants provides the most coherent account of the range of morphophonological phenomena noted above, one that generates the observed effects at the phonological level through underlying representations that make use of a single abstraction common to other analyses of Bantu languages in Zone A (eg. Basaá). Since they are segments, ghost consonants may be directly appealed to by statements of allomorphic variation and may block vowel-sensitive phonological rules like Gliding at no theoretical cost. Positing ghost consonants furthermore allows for an account of the predominance of derived nouns among ghost-consonant-initial roots by assuming some sort of constraint requiring verb roots to be consonant-initial, thus licensing consonant- and ghost-consonant-initial verb roots and ruling out vowel-initial ones. The ghost consonant of the verb root would be preserved in any derivations, giving rise to the observed pattern in Iyasa: deverbative nouns never behave as if they had underlyingly V-initial roots, while some apparently non-derived nouns behave as if they had initial ghost consonants.

2.6 Glides adjacent to high vowels

As far as I can tell, there is no surface contrast in Iyasa between VV and VGV when one of the vowels involved is high. The reason for this is that glides appear to be pronounced at effectively identical places of articulation to their corresponding high vowels, such that a surface transition from a high vowel to a non-high vowel or vice versa (or sequence of high vowels) could in principle either involve an intervening glide or not, resulting in ambiguity as to the analysis of eg. [oi], which could be underlyingly *oi* or *oyi*, and [uε], which could be underlyingly *ue* or *uwe*. Systematic phonetic investigation may of course reveal slight acoustic differences, a possibility which I do not wish to rule out. For the purposes of this investigation, however, I do not find clear criteria on which to conclude for or against the presence of an underlying intervocalic glide in these cases on the basis of surface form alone, and I must assume that both analyses are in principle available to any given surface VV sequence involving one or more high vowels. Other data must be brought to bear in deciding how to analyze them.

The first question to explore is whether one of these analyses can be categorically ruled out for the language, leaving the other as a default and thereby simplifying the analysis. For example, if it turns out that positing an underlying-

ing glide adjacent to a high vowel is never independently motivated, the analysis could be simplified by concluding that they never occur, and treating all surface VV sequences involving high vowels as such underlyingly. By contrast, if no independent evidence exists in favor of treating at least some surface VV sequences involving high vowels as *not* containing an intervening glide underlyingly, then the analysis could be simplified by assuming that glides always intervene between high vowels and any adjacent vowels on the surface. To anticipate my conclusions, I do not find either of these approaches empirically tenable: at least some expressions in Iyasa exhibit evidence of glides adjacent to high vowels, and at least some exhibit evidence against the presence of such glides. The analytical ambiguity is therefore language-internal and must be handled on a case-by-case basis. My goal in this section is to justify this claim and to establish criteria according to which an analysis can be established of any given V(G)V sequence involving a high vowel.

From the outset, there is unambiguous evidence from non-high V(G)V sequences in Iyasa that glides may or may not intervene between vowels. As discussed in §4, some roots in Iyasa exhibit homomorphic heterorganic VV sequences:

- (95) *ngwàé* (9/10) “partridge”
èyáó (7/8) “feather”
mòlàò (3/4) “danger”

Though such roots are rare (these are the only ones that occur in my data), much more systematic evidence can also be seen in ghost-consonant-initial roots in which the first vowel is non-identical to the vowel of the prefix, giving rise to surface heterorganic VV with no intervening glide. See §2.5 for detailed discussion of these data. VV sequences without an intervening glide are therefore necessary in the analysis of at least some Iyasa data. By contrast, many Iyasa expressions are unambiguously VGV. These involve either two non-high vowels or a glide which is not homorganic with either vowel:

- (96) *àáyá* (c1; c9) (3pl POSS)
mòéyà (3/4) “tail”
bè^hyé (auxiliary copula inflected for Far Past)
mòwóò (3/4) “argument”
èwɔwɔ (inf) “to deny”
kúyà (9/10) “chimpanzee”
èwísà (inf) “to tighten”
ìwédi (5/6) “mourning”

Since both structures (VV and VGV) are clearly attested in Iyasa, there is in principle no particular reason to categorically exclude or require a glide intervening between surface sequences of at least one high vowel.

Beyond this, there is independent evidence which supports analysis of at least some surface vowel sequences containing a high vowel as involving an intervening glide. For example, in chapter 5 I present arguments showing that Iyasa has a causative verb suffix which essentially consists of a ghost consonant accompanied by constraints imposed on preceding and following EV slots, such that the preceding EV becomes high and the following EV becomes ϵ . A separate rule inserts a glide (*w* adjacent to *u* and *y* otherwise) between an EV and any immediately preceding vowel, giving rise to the following causative forms, for example:

- (97)
 (a) *è-ík-w-à*
 INF-learn-EV-INF.EV
 “to learn”
 (b) *è-ík-ú-w-è*
 INF-learn-EV-CAUS-INF.EV
 “to teach”
- (98)
 (a) *è-lév-à*
 INF-advise-INF.EV
 “to advise”
 (b) *è-lév-i-y-è*
 INF-advise-EV-CAUS-INF.EV
 “to show; to guide” (lexicalized meaning)

However, in light of the present discussion, this claim as it stands is somewhat tenuous, since there is little-to-no surface contrast between eg. *ue* and *uwe* as mentioned above. So why not instead analyze these causative stems as being of the segmental structure *ue* and *ie*? Some support for the claim that there really is a glide present comes from unambiguous glide insertion preceding non-high EV such as the Far Past EV *é* (see chapter 5 3 for further discussion), since there is no clear reason to assume this rule does not apply in the context of high vowels. However, more powerful evidence comes from deverbative derivations, such as the agent nominalizer. As discussed in chapter 5 5.2.1, verbs can be agent nominalized (i.e. “X-er”) by affixing the derivational EV *i* to the verb base and assigning the output to gender 3/4. And as discussed in §2.4, *w* surfaces as [ɥ] preceding *i*. Thus, if the causative in eg. (96) simply contained the string *ue*, this glide fronting rule should not apply, whereas it should if there is an intervening glide. And in fact, the latter is the case:

- (99) *mò-ík-ú-w-i* [mòíkúɥi]
 c3-learn-EV-CAUS-AGNOM
 “teacher”

The vowel sequence analysis cannot be saved by adjusting the fronting rule to apply to both *w* and *u* (i.e. high-back vocoids regardless of consonantal status), since this would predict [mòíkúyí] rather than the actually-attested surface form in (99). There thus is clear evidence that causative *uwe* really does involve an underlying glide. This analysis can be safely extended to causative *iyé* as well, since a stipulation preventing glide-insertion only adjacent to high-front vowels is empirically unmotivated.

That said, the articulatory similarity between glides and their corresponding high vowels can be clearly seen in the agent nominalization of the causative in (97), which should be analyzed as containing the sequence *íyí* (i.e. with an intervening glide) for the reasons given above. However, on the surface the aforementioned sequence is phonetically indistinguishable from the sequence *ii* (in other words, a surface-long vowel):

- (100) *mò-lév-i-y-i* [mòlévíi]
 c3-advise-EV-CAUS-INF.EV
 “guide (n.)”

There is therefore clear reason to analyze some surface vowel sequences involving one or more high vowels as containing an intervening glide.

By contrast, other expressions involving such surface sequences are not amenable to analysis as involving an underlying glide, at least not without *ad hoc* glide-insertion rules. For example, the c3 EPx is *mú-*. This prefix usually precedes surface consonants, since most adjectives are surface-consonant-initial:

- (101) *mú-tìkí*
 c3-small
 “small”
 (102) *mú-běě⁴vá*
 c3-bad
 “bad”

However, I know of one adjective root which is surface-vowel-initial, *éàbé* “long” (which I analyze as being underlying ghost-consonant-initial). Preceding this root, the form of *mú* remains the same:

- (103) *mú-àbé*
 c3-long
 “long”

There is no independent reason to believe that a glide *w* intervenes here between the prefix and the root. The prefix is not glide-final elsewhere (at least, not without positing a non-contrastive and otherwise-unattested word-medial glide coda), and the root is not glide-initial elsewhere (cf. c7 *éàbé*, not **éwàbé*). The same could be said of the pre-ghost-consonant c5 allomorph *dyí-*, although this is less conclusive since this prefix could be reanalyzed as being of the form *dyíy-*. Additional evidence comes from the fact that the c4 prefix *mè-* surfaces as *mí-* preceding ghost-consonants followed by back vowels. This is straightforwardly accounted for through a morpheme-specific rule raising the vowel in this environment, and under this analysis no glide intervenes between the prefix and the following root. An additional rule could insert a glide in only these environments, but this essentially amounts to analytical trickery since the inserted

glide would not result in surface contrast and would serve no purpose other than to save the “required intervening glide” analysis from counterevidence.²⁷

I therefore find evidence that in some instances of surface VV involving at least one high vowel, an intervening glide is empirically motivated, and that in others it is empirically unmotivated. In terms of descriptive simplicity this is an unfortunate result, since a large number of such cases are less clear than those previously discussed, especially morphologically simple ones:

- (104) [bái] (14/4) “pain” (*bái* or *báyì?*)
 [nyói] (9/10) “be” (*nyói* or *nyóyì?*)
 [téi] (9/10) “inside” (*téi* or *téyì?*)
 [pèpèù] (9/10) “side” (*pèpèù* or *pèpèwù?*)
 [pòù] (9/10) “blind (person)” (*pòù* or *pòwù?*)
 [dià] (5/6) “oil palm” (*dià* or *díyà?*)
 [tíé] (9/10) “clearing” (*tíé* or *tíyé?*)
 [búá] (14/4) “elephant’s trunk” (*búá* or *búwá?*)
 [nyùé] (9/10) “orphan” (*nyùé* or *nyùwé?*)

In the absence of independent evidence, which happens to be unavailable in these cases, their treatment will unavoidably be largely arbitrary. As discussed in §4, aside from the cases in question, the overwhelming tendency in Iyasa is for non-initial syllables to be (surface) CV, with only a small handful of clear cases of non-initial surface V syllables. Given this trend, I opt to analyze homomorphic surface VV sequences containing a high vowel as underlyingly VGV.

3 Phonological rules

In addition to the phonemic contrasts analyzed in the preceding section, Iyasa exhibits a handful of phonological processes of varying degrees of generality which affect the surface realization of underlying segments or the segmental composition of words and morphemes. I discuss those which have become apparent through this investigation in the following sections.

3.1 Nasal place assimilation

Nasal consonants are usually identical in place to immediately following consonants, suggesting a phonological rule assimilating place features of nasals to following consonants. However, this rule does not apply over word boundaries, as shown in the following examples:

- (105) *vì-lóǰ* *vǎ^h-mé* (not: **vìlólǰ vǎ^hmé*)
 c19-hernia c19-1sg.POSS
 “my hernie”
- (106) *mò-tóǰ* *mwǎ^h-mé* (not: **mòtótǰ mwǎ^hmé*)
 c3-dizziness c3-1sg.POSS
 “my dizziness”
- (107) *mò-kóm* *tìtì* (not: **mòkóm tìtì*)
 c3-frog standing
 “standing frog”

Nasal place assimilation is therefore not a general (post-lexical) phonological rule but sensitive whether certain boundaries intervene. Specifically, nasals assimilate across morpheme-boundaries (i.e. in cases where the c3 nasal allomorph is affixed to a consonant-initial root) and morpheme-internally, but not across word boundaries.

3.2 Gliding

There is a general dispreference in Iyasa phonology for sequences of vowels. One manifestation of this is that the tense non-low vowels /i, e, u, o/ are realized as glides when (i) following a consonant and (ii) preceding another vowel. Direct evidence for such a process comes from morpheme boundaries, where the interaction between underlying and surface form is most easily observed. Hence the following examples involving NPx affixes:

²⁷ For more detailed treatment of the prefix allomorphs discussed here, see the relevant class section in chapter 4 1.3.

- (108) /mò-ákò/ → *mwákò* “morning” (c3)
 /mè-ákò/ → *myákò* “mornings” (c4)
 /bè-àncé/ → *byàncé* “heat (pl)” (c8)
 /li-éli/ → *lyéli* “hares” (c13)
 /bò-álò/ → *bwálò* “boat; canoe” (c14)
 /vi-éli/ → *vyéli* “hare” (c19)

While morpheme boundaries are an important source of information about phonological processes, certain distributional characteristics of phones within morphemes would be expected if Gliding applied morpheme-internally as well. If Gliding applies generally, there should be no morphemes in Iyasa containing vowel sequences of the form $V\left[\begin{smallmatrix} -\text{low} \\ +\text{ATR} \end{smallmatrix} \right]V$, since the first vowel should always be glided, whereas such sequences would be expected given the Iyasa syllable template if Gliding only applied at boundaries. While surface sequences such as *io* or *ua* exist in Iyasa, they are problematic evidence against Gliding: glides are articulated very similarly to high vowels, and it is therefore unclear at the phonetic level whether one vowel simply transitions into the next or whether there is an intervening glide (i.e. *iyó* and *uwa*).²⁸ However, it is important to note that Gliding also applies to non-high vowels (eg. /mè-àlo/ → [myàlò] “boats” and /mò-àko/ → [mwàkò] “morning”). In light of these facts, it is revealing that no sequences *eV* or *oV* surface in Iyasa, a generalization that follows automatically if Gliding applies morpheme-internally but is surprising otherwise. On this basis, I conclude that Gliding applies generally, and that apparent VV sequences such as *io* and *ua* should be analyzed as containing an intervening lexically-specified glide: *iyó* and *uwa*, respectively.

The class of vowels subject to gliding are all and only those that are tense and non-low (thus excluding *a*, *ɛ*, and *ɔ*, for which I do not have evidence of productive Gliding). The output of Gliding preserves the backness value of the underlying vowel; thus *i* and *e* become *y*, and *u* and *o* become *w*. These generalizations are summarized in (109):

(109) **Gliding**

Transform non-low tense vowels (*i*, *e*, *u*, *o*) into glides of the same backness specification between immediately preceding C and immediately following V word-internally.

A large body of exceptions to Gliding, in which apparently vowel-initial roots do not trigger gliding in the vowels of prefixes, are discussed in §3.5, where I analyze them as containing a root-initial “ghost” consonant that blocks its application. Additionally, as discussed in §4.4, vowels concatenated across word boundaries are governed by a similar but distinct set of processes and do not necessarily undergo Gliding, requiring the word-internal condition on the application of Gliding expressed in the above statement of the rule:

- (110) *sòku* *àa-mé*
 c9.elephant c9-1sg.POSS
 “my elephant”

Additionally, I must note that several NPx do not glide preceding certain vowels. Examples include c3 *mò-*, in which the vowel assimilates place preceding [+back] vowels, and c5 *dì-* and c14 *bò-*, in which the vowel deletes preceding homorganic vowels. These demonstrate that Gliding is not a fully productive post-lexical rule, and is superseded by morpheme-specific rules of allomorphic variation. I leave the theoretical treatment of these facts to future research.

A final issue is the interaction between Gliding and tone. When vowels with underlying tone specification undergo Gliding and cease to be tone-bearing, what happens on the tonal tier? Does the tone delete as well, or is it left floating behind? The simplest way to answer this question is to see whether the output of Gliding in substitution frames reveals evidence of floating tones or not. As previously mentioned, a common application of Gliding is to noun prefixes (NPx), which are lo-toned, preceding V-initial roots. If the lexical tone of glided vowels is also deleted, H-initial roots of this type should surface as level with the preceding H.²⁹ If on the other hand the tone is left floating, H-initial roots should downstep following H.³⁰ Unfortunately, the data are mixed in this regard. For example, while the homophonous c1 and c3 NPx *mò-* both glide pre-vocally, c1 upsteps (as a result of the tonal object marker) and c3 downsteps, indicating the presence of a floating L in c3 but not in c1:

²⁸ Whether or not testable phonetic criteria for resolving this issue can be developed for Iyasa is a question I leave to future research.

²⁹ Unless tonally object-marked, in which case they should be upstepped. See chapter 3 for discussion.

³⁰ See chapter 3 for discussion.

- (111) *m̂-vèlà mwá mw-ǎ̀nà*
 c3-color c3.AM c1-child
 “the color of the child”
- (112) *m̂-vèlà mwá mw⁺-ákò*
 c3-color c3.AM c3-morning
 “the color of the morning”

No other evidence of which I am aware suggests a difference in underlying form between the c1 and c3 NPx, and it is not clear how such a difference could be stated so as to generate identical surface segments in all contexts and identical tones everywhere but in the output of Gliding.

Furthermore, while Gliding of NPx generates floating L in classes 3, 4, 8, 13, and 19 which downsteps H-initial roots following H, it does not do so in c5 or c14. All V-initial c5 roots in which the first tone is H *upstep* following H (again because of the presence of the object marker upstepped-H on the first mora), as exemplified below:

- (113) *m̂-vèlà mwá dy-ǒ̀bà*
 c3-color c3.AM c5-day
 “the color of the day”
- (114) *m̂-vèlà mwá dy-ũ̀mbú*
 c3-color c3.AM c5-nest
 “the color of the nest”
- (115) *m̂-vèlà mwá dy-ǒ̀i*
 c3-color c3.AM c5-nose
 “the color of the nose”

Given that the variation discussed up to this point corresponds systematically to particular classes, one could in theory propose distinct underlying forms for prefixes that leave tonal traces and those that don’t along with separate phonological processes applying to each respectively. However, there is even evidence of variation within classes as to whether Gliding leaves tonal traces or not, such as that revealed in the following pair of examples:

- (116) *i-kàkà dyá my⁺-ákò* (sg. *mw⁺-ákò*)
 c5-quality c5.AM c4-morning
 “the quality of the mornings”
- (117) *i-kàkà dyá my-ũ̀dù* (sg. *b-ũ̀dù*)
 c5-quality c5.AM c4-camel
 “the quality of the camels”

As shown above, the c4 glided form [my-] carries a floating L preceding c3 *-ákò* “morning” but not preceding c14 *-údù* “camel”, a fact that cannot be the result of distinct underlying representations of the prefix since the same prefix is used.³¹

These contradictory datapoints do not lend themselves well to systematization, and I contend that the simplest approach is to propose a single phonological generalization and analyze exceptions as lexically fixed. I argue that instances involving tonal traces reveal the productive pattern, and that those that do not involve lexicalization at one level or another. There are several reasons for this. First, floating tones follow cost-free from a rule such as Gliding in a non-linear approach to phonological theory. If a vowel becomes a consonant and is therefore no longer qualified to bear tone, the lexically-specified tone must of necessity be delinked, at which point language-specific rules about the realization of unlinked tones determine its effect on surface outputs. In Iyasa, floating L triggers non-automatic downstep.³² In order to delete the lexical tone entirely, Gliding would have to be enriched to involve both transformation of the underlying V into a consonant *and* explicit deletion of its lexical tone, a less economical approach. And second, traceless glided prefixes are less frequent than trace-bearing ones in absolute terms, and the specific examples of traceless Gliding I have found are more readily analyzable as lexically fixed.

³¹ One could conceivably argue that the plural of c14 is actually not c4, and on that basis posit distinct underlying representations. Such a view has the significant burden of explaining the otherwise total formal identity between c4 and the plural of c14 in all respects except this one (see chapter 4 1.4.6).

³² See chapter 3 4.2.

In the case of traceless c1 [mw-], this is due to the very small number of 1/2 nouns in Iyasa: only 6 occur in my data. Of these, only two take the glided prefix, and of these, only one is H-initial: *mwánà*. Thus the ostensible tone distinction between c1 and c3 mentioned above is ultimately based on a single lexical item. Furthermore, *mwánà* itself has the unique property of changing its stem form depending on syntactic configuration. When it has nominal dependents, it surfaces as *mwáà*. Elsewhere, it surfaces as *mwánà*:

- (118) *mwánà*
c1.child
“child”
- (119) *à-làṅgá-ndí* *mwá^hnà*
1sg-look.at-PRES c1.child
“I look at the child”
- (120) *mwáà* *àà-mé*
c1.child c1-1sg.POSS
“my child”

There is thus independent reason to analyze *mwánà* as lexically exceptional, rendering it unconvincing as evidence against tonal traces in the output of Gliding. The same is true of *myúdu* “camels”, the only instance in my data of a glided c4 NPx affixed to a c14 root. I suggest that both *mwánà* and *myúdu* are lexically fixed fossils of historically productive inflection with c1 and c4 NPx, and leave fuller exploration of their historical evolution to future investigation.

The cases involving traceless Gliding of the c5 NPx are less amenable to analysis as lexical exceptions due to their regularity. However, I note the proliferation of allomorphs of c5, more than any other NPx form: [i-], [dyi-], [d-], and [dy-].³³ Furthermore, it is not clear which of these should be analyzed as underlying: [i-] is the elsewhere case, but deriving the other forms from it is non-trivial (as an underlying form, it does not provide a phonological context for the application of Gliding, in any case). Perhaps an abstract underlying form /di-/ is called for, though concluding this is beyond the scope of the current discussion. In any case, the allomorphs of c5 are similar to those that might be expected as outputs of productive phonological processes acting on some input /di-/, but exhibit unpredictable properties requiring lexical specification. As mentioned previously, independent evidence in Iyasa indicates that the specification of a particular allomorph in a given environment bleeds general phonological rules. I therefore analyze the glided form of the c5 NPx as a lexically-specified allomorph [dy-] rather than the output of Gliding operating on some underlying form /di-/.

Finally, traceless glides in c14 are amenable to either approach: although no glided c14 forms carry floating L traces, there are only two such forms in my data with initial H’s to reveal this absence: *bwáyì* “pain” and *bwálò* “canoe”. As discussed in chapter 4 1.4.6, the c14 roots bearing the glided prefix are exactly those which take unusual additive plural morphology. This independently suggests some kind of lexicalization either of the NPx allomorph or of the roots themselves in order to generate the exceptional plural forms. Given the small number of examples, traceless glides could equally well be the result of fossilization of historically productive inflection on certain roots or lexical specification of a toneless glided allomorph of the c14 NPx, similar to that observed for c5. Having established that these c14 exceptions do not pose a serious problem for the analysis of Gliding as a productive phonological rule, I leave the proper treatment of lexicalization in c14 to future investigation.

3.3 Vowel deletion over morpheme boundaries

Another manifestation of Iyasa’s dispreference for vowel sequences can be seen in the regular simplification of concatenated homorganic vowels over morpheme boundaries occurring between NPx and noun roots. Thus, for example, the c5 allomorph is a vowel-deleted [d-] preceding *i* (rather than [dy-], which precedes other vowels): /i-iyò/ → *dìyò* “eye” (c5, not: **dyíyò*). While this phenomenon is common enough to tempt generalization as a phonological rule, there are two significant problems with such an approach. First, homorganic VV sequences surface morpheme-internally in a number of lexemes (discussed in §2.1), preventing the rule from applying generally and requiring crucial reference to a morpheme boundary in the statement of any rule. Second, while deletion is involved in the surface realizations of a number of NPx in certain contexts, the particulars differ from class to class. Thus, while c5 has a vowel-deleted allomorph *d-* which precedes *i*, c6 *mà-* has a vowel-deleted allomorph *m-* which precedes any vowel, and c14 *bò-* has a vowel-deleted allomorph *b-* which precedes all [+back] vowels. The tendency for vowels to be deleted preceding vowels is widespread, but the specific contexts differ to such an extent as to defy concise statement via rules. I am therefore

³³ See chapter 4 1.3.5.1.1 for discussion of their distribution.

obliged to simply list the deleted allomorphs and their contexts of application for each morpheme (see chapter 4 1.1 for details).

3.4 Prosodic vowel elision and weakening

In all but slow careful speech, Iyasa exhibits two predictable processes affecting vowels that occur on word boundaries: *e*-Elision and Vowel Weakening. Like several other phonological phenomena in Iyasa (see §3.1 and §3.2, for example), these processes are not obligatory with respect to phonological environment and appear to be primarily conditioned by discourse factors such as speech rate. They are therefore “optional.” And, especially in the case of Vowel Weakening, they are also *gradient*, like the phenomena of implosive realization and affrication, as I show below. Elision and weakening processes are therefore likewise candidates for analysis as grammatically-irrelevant variation in phonetic implementation. However, they do make the important phonological contribution of delinking the tones specified for the affected vowels, which then behave in distinct ways from underlyingly-specified floating tones.³⁴ This tonal effect is binary, either applying or not regardless of the degree of application of the elision or weakening process that triggered it. *e*-Elision and Vowel Weakening thus reveal important interactions between underlying phonological representation, prosody, and phonetic implementation, the implications of which are beyond the capacity of this work to elucidate. In this section, I simply outline the segmental impact of these processes, while in chapter 3 4.3 I discuss in greater detail their tonal effect. While I of necessity indicate the tonal properties of elision and weakening in linguistic data cited in this section, I refer the reader to the aforementioned chapter for details regarding why the tones in question behave as they do.

The process of *e*-Elision can be stated as follows:

- (121) ***e*-Elision (optional)**
Delete *e* immediately following a vowel across a word boundary.

Word-initial *e* tends to occur when roots take c7 NPx (*è*-) or EPx (*é*-) prefixes, as well as in constructions involving the locative preposition *é*. This kind of elision does not occur phrase-initially:

- (122) *(*é*)-*túbwè*
c7-big

Some examples of *e*-Elision are provided below:

- (123) *tókò* (*é*)-*túb^hwé*
c9.spoon c7-big
“ladle (lit. big spoon)”
- (124) *mbúyá* (*é*)-*tùikí*
c9.rain c7-small
“drizzle (lit. small rain)”
- (125) *à-tóó-ndí* *ká^hngà* (*é*) *té^hyì*
1sg-see-PRES guinea.fowl LOC inside
“S/he sees the guinea fowl inside”
- (126) *à-tóó-ndí* *ì-ngóngò* (*é*) *té^hyì*
1sg-see-PRES c5-box LOC inside
“S/he sees the box inside”
- (127) *ṁ-vèlà* *mwá* (*é*)^h-*dyákó*
c3-color c3.AM c7-bait
“the color of the bait”
- (128) *ṁ-vèlà* *mwá* (*é*)^h-*púpúdí*
c3-color c3.AM c7-ditch
“the color of the ditch”

In all of the above cases, the tone specified for the elided vowel is delinked. When this tone is H and precedes a consonant, it has no impact on surface representation, as is the case in (123) - (126). However, when the tone is L, its presence is visible in the downstep it triggers, as shown in (127) and (128).

³⁴ See chapter 3 5.

In cases where two *e* vowels are concatenated, it becomes less obvious which is elided. Tone can help resolve the question, however. In light of the aforementioned principles, given an underlying sequence ...*è é*..., we would predict downstepped *é* to surface if the first V were elided and *è* only if the second were elided. And in fact, the latter is the case:

- (129) *à-tóó-ndí kábè (é) †tétyì*
 1sg-see-PRES antelope LOC inside
 “S/he sees the antelope inside”

The evidence therefore indicates that *e* elides word-initially even when immediately preceded by a homorganic vowel.

Vowel Weakening applies to vowels immediately followed by a vowel across a word boundary, and its output is predictable but varies by vowel:

- (130) **Vowel Weakening (optional)**
 Weaken any V immediately followed by V across a word boundary according to the Vowel Weakening Hierarchy.
- (131) **Vowel Weakening Hierarchy**
 Elision > Gliding
 [-back] > [+back]

In other words, the front vowels *i*, *e*, *ɛ*, and *a* may all fully elide preceding #V (but may be realized as shortened/glided in lower degrees of application of Vowel Weakening), while *u*, *o*, and *ɔ* generally may not fully elide but are given a shortened/glided realization:

- (132) *èlémi áá'mé* “my tongue” →
èlémi áá'mé ~ èlémyáá'mé ~ èlémáá'mé
- (133) *cèndyé àànú* “your (p) wrist” →
cèndyé àànú ~ cèndyáá'nú
- (134) *kòndá àànú* “your (p) chair”
kòndá àànú ~ kòndáá'nú
- (135) *ηgònú ààmé* “my catfish” →
*ηgònú ààmé ~ ηgònwáá'mé (*ηgònáá'mé)*
- (136) *mbòkó ààdú* “his/her young mule” →
*mbòkó ààdú ~ mbòkwáá'dú (*mbòkáá'dú)*
- (137) *cíngó ààmé* “my voice” →
*cíngó ààmé ~ cíngwààmé (*cíngààmé)*

There are some high-frequency lexemes with final back vowels that can completely elide, however:

- (138) *mòtò ààmé* “my person” → *mòtààmé*
 (139) *mòtódú ààmé* “my older sibling” → *mòtódààmé*

There is therefore some degree of interaction between the lexicon and Vowel Weakening, such that certain lexemes can be specified to fully undergo elision that would otherwise not be predicted.

In light of these facts, it is clear that the segmental output of Vowel Weakening is gradient and sensitive to vowel quality. However, in all instances of its application, regardless of degree, the tones of the affected vowels are delinked. Some further examples of Final-V Elision are provided below:

- (140) *è-índy(é) ɛɛ'pí*
 c7-time c7.all
 “all the time”
- (141) *mò-dím(i) á³⁵ tàtɛ*
 c1-younger.sibling c1.AM c9.dad
 “uncle (father’s younger sibling)”

³⁵ The lexical L of this AM is delinked by the floating H trace left behind after Vowel Weakening, which is realized on the AM instead. See chapter 3 5 for discussion.

- (142) *kwéd(i) àà-mé*
 c9.mourning c9-1sg.POSS
 “my mourning”
- (143) *è-kúl(ú) á mò-tò*
 c7.shortness c7.AM c3-person
 “dwarf (lit. shortness of person)”
- (144) *àngw(é) àà-mé*
 c9.father c9-1sg.POSS
 “my father”
- (145) *mw-àd(ó) á³⁵ Ndàndá*
 c1-woman c1.AM Ndanda
 “Ndanda’s wife”

As in the case of *e*-Elision, when elision happens in sequences of homorganic vowels it is not immediately apparent which vowel deletes. I appeal to the same test applied to *e*-Elision, using an example involving ...à# #á...:

- (146) *è-kàng(à) ‘á mà-lòngà*
 c7-field c7.AM c6-grave
 “cemetery (lit. field of graves)”

If it were the *a* of the associative marker that elided, we would expect the surface *a* to be realized as L approximately level to the initial L of *mà-lòngà* “grave”, with the resultant floating H having no discernible effect on surface tone since it would intervene between two L’s. However, in reality, the *a* surfaces with a downstepped H, as predicted if the final *a* of *èkàngà* were elided. Thus, even in the context of homorganic vowels, the evidence reveals elision of the first V.

The reader may remark at this point the similarity between Vowel Weakening and the combined result of both Gliding and the tendency for NP_x to have vowel-deleted allomorphs: namely, vowels amenable to gliding tend to be realized as glides pre-vocalically as a result of both Gliding as well as Vowel Weakening, while vowels not amenable to it tend to delete as a result of allomorphic variation as well as Vowel Weakening. This raises the question of whether there really are three distinct phenomena at play, or whether Vowel Weakening is perhaps reducible to Gliding/Deletion or vice versa. While such an approach might be tempting, I believe the data support the three distinct rules/processes I have posited. First, as discussed in the previous section, vowel deletion in prefixes defies analysis according to any single phonological principle and seems simply to be a tendency whose particular manifestations must be lexically specified on a morpheme-by-morpheme basis. It furthermore does not leave a tonal trace, unlike Vowel Weakening. Second, while Vowel Weakening can result in total deletion of high front vowels, Gliding merely causes these vowels to glide. And third, Vowel Weakening is optional, while Gliding is not.

I claimed at the beginning of this section that *e*-Elision and Vowel Weakening were crucially ordered. Crucial ordering is necessary to generate the correct results in the case of these two rules since all environments which trigger the application of *e*-Elision also qualify as triggers for the application of Vowel Weakening, and conflicting outputs result. Thus, when the sequence ...V# #e... appears, *e*-Elision predicts elision of *e*, while Vowel Weakening predicts elision of the first V. Any application of *e*-Elision therefore crucially depends on the non-application of Vowel Weakening, and in all the examples of *e*-Elision presented above it is clear that Vowel Weakening has not already applied. *e*-Elision thus crucially applies first and bleeds the context of application of Vowel Weakening.

	ONSETLESS	SIMPLE ONSET	GLIDE CLUSTER ONSET	NASAL COMPLEX ONSET	NASAL COMPLEX + GLIDE ONSET	
SYLLABIC CONSONANT	N <i>m̀p̀p̀é</i> “wind”					
LIGHT SYLLABLE	V	CV	$\left\{ \begin{smallmatrix} C' \\ N \end{smallmatrix} \right\}GV$	$\left\{ \begin{smallmatrix} C' \\ N \end{smallmatrix} \right\}y_wV$	NC'V	NC'GV
HEAVY OPEN SYLLABLE	<i>é</i> “at”	<i>sò</i> “time”	<i>èòkwà</i> “run”	<i>ínywè</i> “you (p)”	<i>mbà</i> “without”	<i>èbàmbwà</i> “avoid”
	VV	CVV	$\left\{ \begin{smallmatrix} C' \\ N \end{smallmatrix} \right\}GVV$	NC'VV	NC'GVV	
HEAVY CLOSED SYLLABLE	<i>àá</i> “yes”	<i>póò</i> “news”	<i>-nyéé</i> DDEM	<i>cèngàà</i> “scar”	<i>mbwàà</i> “dog”	
		CVN	$\left\{ \begin{smallmatrix} C' \\ N \end{smallmatrix} \right\}GVN$	NC'VN		
		<i>mòkón</i> “frog”	<i>vidyóń</i> “dizziness”	<i>mbàńmbàń</i> “sourness”		

Table 1.1 - Inventory of Iyasa syllable shapes

4 Syllable structure ##THIS SECTION UNDER CONSTRUCTION##

The syllable shapes attested in my Iyasa data are given in Table 1.1. I make use of the symbols *N* for nasal consonants, *G* for glides, and *C'* as an abbreviation for the class $\left[\begin{smallmatrix} +\text{consonantal} \\ -\text{nasal} \end{smallmatrix} \right]$, i.e. any other (non-glide, non-nasal) consonant (distinct from *C*, which includes all consonants). This serves primarily to allow concise generalizations about the restricted distribution of these three classes of consonants in the syllable, whose behaviors in Iyasa differ in a variety of typologically unsurprising ways. For example, nasals are the only consonants that may be syllabic (*l* cannot, despite its sonorance). Glides are the only consonants that may immediately follow non-nasal consonants, and nasals are the only consonants that may precede non-glide consonants. Unlike other consonants, glides do not trigger place assimilation in preceding nasals (eg. *my⁴álò* “gossip” and *ènáńwà* “borrow”, see §4.1 for discussion of assimilation) or obey general principles requiring (*C'*) consonants to be voiced and non-continuant immediately following homomorphic nasals (see below, this section). The notation *C'* is therefore useful in talking about NC clusters without making erroneous claims about nasal and glide behavior. In addition, sequences of phonemes belonging to the same category (*N*, *C'*, and *G*) are ruled out in Iyasa, a fact which becomes apparent in observing the ordering relations attested in Table 2.1. I believe these kinds of generalizations are best captured in the syllable template, and I therefore make crucial use of *N*, *G*, *C*, and *C'* in spelling it out (see §1.1 for more detailed discussion of this position).

The patterns revealed in Table 2.1 can be concisely summarized by positing the following syllable templates for Iyasa:

$$(147) (N)(C')(G)V\left\{ \begin{smallmatrix} V \\ N \end{smallmatrix} \right\}$$

$$(148) N$$

$$(149) \left\{ \begin{smallmatrix} C' \\ N \end{smallmatrix} \right\}y_wV$$

The existence of syllabic nasals in Iyasa has previously been noted by Bot (1997), though he provides little discussion of their distribution beyond noting that they cannot stand as independent words. In fact, syllabic nasals (as in (2)) only appear as allomorphs of *mò-*, the class 3 noun prefix (NPx), and are discussed in more detail below. The template in (1) accounts for the vast bulk of syllables in Iyasa. Superheavy (3-mora) syllables do not occur;³⁶ nasal consonants and vowels alternate in second-mora position. Admittedly, some syllable types are logically generated by (1) but are not attested in my data. They are all heavy and either onsetless or NC'G-initial (VN, NC'GVV, and NC'GVN). I also note that no examples exist in my data of *y* following voiceless consonants, though *w* does quite regularly. However, most cases of ζ_w involve affixation of a verb suffix or Extensional Vowel underspecified for consonantality to a ζ -final verb root and subsequent gliding preceding the following vowel. This is not always the case, as shown by eg. *èkwéle*

³⁶ Here I must acknowledge the existence of the word *vòòò* “silence”, which I take to have an underlying VVV sequence in light of its tone melody and the lack of independent evidence in Iyasa for mappings of multiple tones to a single V at the underlying level (see §2.1). However, given that this is the only such example in my data I do not believe it supports extending the syllable template to include VVV sequences, since *vòòò* could well be disyllabic.

“to cut down”, in which the *w* does appear to be part of the verb stem. The asymmetrical distribution between *w* and *y* could therefore simply be a consequence of the fact that *w* is the surface realization of common derivational morphology while *y* is not. However, these observations do reveal a general, though not categorical, dispreference in Iyasa for homomorphic C_γG sequences.

I have posited the template in (3) allowing sequences C_γw in onsets. Most such instances involve affixation, such that eg. the passive EV -U- follows a C_γ-final verb root and glides:

- (150) *è-méndy-w-è*
 INF-despise-PASS-INF.EV
 “to be despised”

However, some cases of C_γw do appear to be homomorphic, including the 2pl object pronoun:

- (151) *ínywè*
 2sg
 “you (p)”
 (152) *mò-nyúnywà*
 c3-penis
 “penis”

I have not found evidence either of heavy C_γw-onset syllables or of C_wy-onset syllables, and I therefore do not permit them in the template. Whether or not these asymmetries are accidental is a question I leave to future research.

Of the syllable shapes that are attested, some occur much more frequently than others. Light syllables with simple onsets (CV) are by far the most common. Syllables of the type V appear frequently word-initially as a result of affixation (eg. *èkwàà* “fall”) and less frequently root-internally, in heterosyllabic vowel sequences (eg. *èyáó* “feather”, *ngwàé* “partridge”). Heavy syllables are uncommon, and closed syllables are quite rare (only 8 of them appear in my data). When they do occur, the coda is always nasal (with the exception of transparent loans like *pamplémus* “grapefruit”, from French “pamplemousse”). Bot (1997) observes two Iyasa lexemes which he claims contain non-nasal codas: **èsùkùlúk* “owl” and **èpòkól* “hat”, arguing on this basis that these words are loans. While I acknowledge the possibility of dialectal variation between his informants and my own, the lexemes in question are clearly vowel-final in the variety of Iyasa in which I was eliciting: *èsùkùlú³⁷kù* and *èpòkólò*. Heavy open syllables (ending in VV) always involve homorganic vowel sequences. Diphthongs do not exist in Iyasa.

Syllables of the type N̩ (syllabic nasals) are found only as allomorphs of the class 3 noun class prefix (NPx) *mò-*, are always pre-consonantal, and always share the same place of articulation as the following segment. They are thus in contrast with the nasal of root-initial nasal complexes (NC'), which, though likewise homorganic, is not syllabic or tone-bearing. Evidence of this comes from several sources. First, at a phonetic level, syllabic nasals are longer in duration than nasals of NC onsets. To establish this, I conducted a quick-and-dirty quantitative study examining the case of *mb* vs. *mb̩*. I selected 10 word-initial tokens of each and measured the duration of the nasal component. The average duration of pre-consonantal nasals resulting from c3 inflection was 260³⁷ ms, a sizeable and statistically significant³⁸ difference in length from the 192³⁹ ms of homomorphic NC clusters.

Second, there is a contrast in tone-bearing status between syllabic and non-syllabic nasals, such that only syllabic nasals bear tone (which is always L in Iyasa, the tone of their source morpheme). This contrast is clear from the following examples.

- (153) *ì-kàkà dyá mbě̀ndá*
- | | | | | |
|---|---|---|---|---|
| [| - | - | - |] |
| [| - | - | - |] |
- c5-quality c5.AM peanut
 “the quality of the peanut”

³⁷ $\sigma = 0.020$

³⁸ $p < 0.0001$ by unpaired t-test

³⁹ $\sigma = 0.014$

- (154) *i-kaká dyá ñ-béndé*
 [- - - -]
 [- - - -]
 c5-quality c5.AM c3-calf.of.leg
 “the quality of the calf (of leg)”

In the first example, the c9 noun *mbénda* (pl. *mbénda*) is prefixless (see chapter 4 1.3.9) and H-initial, triggering the appearance of the object-marking upstepped-H on the initial mora (see chapter 3 4.3). By contrast, the second example contains the c3 noun *ñbénde* “calf (of leg)” (pl. *mèbénde*), which is prefixed by the lo-toned syllabic c3 nasal allo-morph, bleeding the appearance of the object marker. Instead, the lexical L of the nasal prefix causes the initial H of the root to be downstepped rather than upstepped.

As a final piece of evidence for a syllabicity contrast in pre-consonantal nasals, consider the fact that in all nasal complexes not resulting from affixation of the c3 prefix, the C' of the NC' is always a voiced stop: /b/, /d/, /g/.⁴⁰ These data suggest the existence of a phonological rule transforming consonants into voiced stops after nasals.⁴¹ However, the nasal prefix may precede any C', as shown in below in (9).⁴² Prefixation therefore generates sequences that are not licensed root-internally (*ŋk*, *nt*, *mp*, *mv*, *nl*, *ns*, and *nc*). The nasal in such sequences is always syllabic, as shown in (9):

(155)	SYLLABIC NASAL PREFIX (C3)		PLURAL (C4)		ROOT-INITIAL NASAL COMPLEX	
(c9)						
<i>ñmbéndé</i>	[ñbéndé]	“calf”	<i>mèmbéndé</i>	<i>mbéndá</i>	[mbéndá]	“law”
<i>ñmbúù</i>	[ñbúù]	“year”	<i>mèmbúù</i>	<i>mbúdyá</i>	[mbúdjá]	“cast net”
<i>ñŋgéné</i>	[ñŋgéné]	“slander”	<i>mèñŋgéné</i>	<i>ñgàmà</i>	[ñgàma]	“reason”
<i>ñndyúké</i>	[ñdzúké]	“problem”	<i>mèndyúké</i>	<i>ndyèngá</i>	[ndzèngá]	“centipede”
<i>ñbàndí</i>	[ñbàndí]	“crevice”	<i>mèbàndí</i>	<i>mbàdí</i>	[mbàdí]	“house”
<i>ñdómbé</i>	[ñdómbé]	“sheet”	<i>mèdómbé</i>	<i>ndóŋgwè</i>	[ndóŋgwè]	“mud wasp”
<i>mbàngá</i>	[mbàngá]	“pit”	<i>mèbàngá</i>	<i>mbàngalá</i>	[mbàngalá]	“clam”
<i>mbímbà</i>	[mbímbà]	“corpse”	<i>mèbímbà</i>	<i>mbíngò</i>	[mbíngò]	“beam”
<i>mbóká</i>	[mbóká]	“prisoner”	<i>mèbóká</i>	<i>mbókà</i>	[mbókà]	“village”
<i>ñkásá</i>	[ñkásá]	“whip”	<i>mèkásá</i>	<i>ñgàsá</i>	[ngàsá]	“fin”
<i>ñlésì</i>	[ñlésì]	“rice”	<i>mèlésì</i>			
<i>ñtàngáni</i>	[ñtàngáni]	“white man”	<i>mètàngáni</i>			
<i>ñpóló</i>	[ñpóló]	“chief”	<i>mèpóló</i>			
<i>ñvèlà</i>	[ñvèlà]	“color”	<i>mèvèlà</i>			
<i>ñcòŋgé</i>	[ñtʃòŋgé]	“bush”	<i>mècòŋgé</i>			

As the plural forms in (9) reveal, in some cases the syllabic nasal class prefix attaches to a NC-initial root (eg. *ñmbéndé/mèmbéndé*, *ñmbúù/mèmbúù*, *ñŋgéné/mèñŋgéné*, *ñndyúké/mèndyúké*). The singular forms of these lexemes are not pronounced with a longer initial nasal than those in which the nasal prefixes directly to a stop-initial root. The average nasal duration in the 7 instances of Ñ-NC in my data was 262⁴³ ms, almost identical to the 260 ms for Ñ-C mentioned above. While these data are too sparse to justify hard and fast conclusions, they could perhaps be accounted for through a degemination rule, since geminate consonants do not otherwise appear in the language.

A simple rule turning post-nasal consonants into voiced stops will therefore not work over the range of Iyasa data, given the foregoing examples of voiceless and non-obstruent consonants following syllabic nasals. Stipulating that the rule only applies to *non-syllabic* nasals fares no better, since the predicted output does not hold in cases when non-syllabic nasal codas precede consonants across word boundaries:

- (156) *vi-dyóŋ vǎ¹-mé* (not: **vidyóŋ bá¹mé*)
 c19-dizziness c19-1sg.POSS
 “my dizziness”

⁴⁰ The one counterexample to this of which I am aware is *ñlèmbì* “eight”, whose syllabic nasal is not synchronically the result of c3 NPx inflection. However, like other numerals (eg. *mòtóóbá* “six”), *ñlèmbì* appears to come historically from a c3 nominal source.

⁴¹ The c3 inflection of the numeral *-vókwò* “one”, *ñbókwò*, might further suggest this. However, I analyze *ñbókwò* as a lexicalized exception (see chapter 4 1.2.5).

⁴² The only C' phoneme for which I do not have evidence of this in my data is g. Given the rarity with which g occurs on its own in Iyasa (see §3.4.3.2), I believe that this gap is accidental.

⁴³ $\sigma = 0.05392$

- (157) *mò-tóǵ mwáʰ-mé* (not: **mòtóǵ bwáʰmé*)
 c3-stinger c3-1sg.POSS
 “my stinger”
- (158) *mò-kóm tütì* (not: **mòkóm dütì*)
 c3-frog standing
 “standing frog”

There is in fact no direct evidence in Iyasa of such a rule applying across boundaries of any kind, and the facts in question must be accounted for by a rule/constraint that governs the shapes of morphemes only.

Roots (both nominal and verbal) are typically disyllabic, with longer roots probably being the result of synchronic or diachronic derivational processes (suffixation or reduplication). Monosyllabic roots occur in both nouns and verbs, and tend to have commonly-used meanings, as shown in (13):

- (159) *è-sáʰ* (inf) “do, make”
è-dyáʰ (inf) “eat”
è-dyáà (inf) “give birth”
è-táà (inf) “give”
mò-ló (c3) “head”
yé (c9) “earth, land, world”
mò-tò (c1) “person”

Some Iyasa nominal stems are quite polysyllabic, such as those in (14):

- (160) *ndándábóbe* “spiderweb”
màngàlàkàdi “blight”
èkòlòkòlò “afternoon”

However, given the rarity of such stems, as well as their propensity to exhibit reduplicated elements, I suspect that they are synchronically or diachronically derived.

Verb roots are almost always monosyllabic. See chapter 5 for discussion of the shape of verb roots and of the rules governing their derivation.

4.1 Do consonant clusters exist in Iyasa?

Before closing this discussion of syllables, I must address an important and highly contentious problem in the analysis of languages such as Iyasa that contain NC but lack unambiguous evidence for consonant clusters generally. As is often the case in languages that exhibit NC sequences, there is a tradeoff in the analysis of Iyasa between complexity of syllable structure and complexity of phoneme inventory. Before delving further into this issue, I should note that for languages such as Iyasa which, as I show below, do not exhibit phonological or phonetic evidence that NC sequences should be treated as phonemic, decisions in one direction or the other have largely been based on researcher intuitions about economy of description and have been characterized as “often arbitrary” (Ladefoged, 1968). Whether or not phonemic prenasalized segments even exist has proved controversial in the literature (Hayes, 1989; Herbert, 1986; Hyman, 1992; Tak, 2011), as has whether they are necessarily shorter in duration than NC clusters (Downing, 2005; Herbert, 1986; Maddieson & Ladefoged, 1993; Riehl, 2008). It is therefore not clear at this point how much rides on this distinction from a descriptive point of view, and I do not wish to make too much of my particular analysis over and against other logical possibilities in the absence of compelling empirical considerations. While I do find what I consider to be satisfactory justification for positing consonant clusters in Iyasa to the exclusion of prenasalized phonemes, I acknowledge this is a primarily theoretical issue for Iyasa with little-to-no impact on the empirical predictions of my descriptive analysis.

Clear empirical support for phonemic complex consonants (as in the case of Fijian, where all voiced stops are prenasalized) or consonant clusters (as in the case of English, where a large range of consonant clusters is permitted) is lacking in Iyasa (see Riehl, 2008). In favor of a phonemic analysis, other types of consonant clusters commonly attested in the languages of the world (such as fricative-consonant, consonant-fricative, or consonant-liquid) do not occur in the language, and codas are extremely rare, effectively requiring hypothetical consonant sequences to be analyzed as tautosyllabic (i.e. onsets). The severely restricted nature of hypothetical consonant clusters would demand a syllable template that some might consider stipulative, ruling out most of the logical and elsewhere-attested combinatory possibilities. In favor of a cluster analysis, all nasal and oral consonants involved in NC sequences also occur as contrastive phonemes in their own right, and because of the combinatory potential of NC and CG sequences, a pure phonemic

analysis would demand a bloated phoneme inventory with phonemic contrasts between six classes of voiced stops: simple, prenasalized, palatal off-glide release, labiovelar off-glide release, prenasalized with palatal off-glide release, and prenasalized with labiovelar off-glide release.

An intermediary approach would be that of Bot (1997a), who analyzes prenasalized stops as phonemic and post-consonantal glides as underlying CV sequences, thereby eliminating consonant clusters from the Iyasa syllable template. Most of his stated reasons for this are problematic: 1) that the nasal and consonant “are pronounced in a single issuance of the voice”, which in the absence of precise definition is too subjective to be decisive, and 2) that “there are no contiguous consonants in Iyasa”, which begs the question (p. 37, *my trans.*). He furthermore points out that 3) the nasal and consonant cannot switch places without affecting the meaning, that 4) there is not necessarily a morpheme boundary between them, and that 5) the NC cluster is in contrastive distribution to both the N and the C alone, all of which would also be true under a consonant cluster analysis and therefore do not support his conclusion. A final argument, his claim that the labial and alveolar voiced stops are implosive (/ɓ/ and /ɗ/) while their prenasalized counterparts are plosive (/mb/ and /nd/), deserves more attention. As discussed in §3.1, it does appear to be the case that voiced stops may not be realized as plosive following (non-syllabic) N but may have slightly plosive realization following Ñ. However, as I argue in §3.1, the surface realization of plosivity in Iyasa is highly variable and subject to discourse factors such as rate of speech, and this asymmetry may simply be an issue of how voiced stops are uttered in certain articulatory contexts irrelevant to the phonology of the language.

Despite the shortcomings of some of Bot’s argumentation, his final conclusion (that there are no consonant clusters in Iyasa) cannot necessarily be ruled out at this point. Against it, I highlight two main problems. First, a very common, and according to some necessary, phonetic property of phonemic prenasalized consonants is that they only occupy one timing unit; specifically, the nasal is given super-short articulation (Tak, 2011). This is not the case in Iyasa. To show this, I conducted a rough informal quantitative study of a test case: *mb*. I took recordings of 10 lexemes beginning in *mb* and measured the durations of the nasal component, the stop component, and the entire sequence, and compared these durations to those from 20 control lexemes: 10 beginning in *m* alone, and 10 beginning in *b* alone. Importantly, the average duration of the nasal component of *mb* sequences was the roughly the same (slightly longer actually) as the average duration of simple *m*: 158⁴⁴ ms to 144⁴⁵ ms, respectively.⁴⁶ The average total duration of *mb* sequences was also statistically significantly longer (188⁴⁷ ms) than that of either *m* (144 ms)⁴⁸ or *b* (143⁴⁹ ms)⁵⁰. While it is true that the total NC sequence does not appear to occupy two full timing units as a result of the fact that the *b* of *mb* sequences was pronounced much more quickly than *b* alone (31⁵¹ ms vs. 143 ms, respectively)⁵², this could be explicable according to other phonetic or phonological factors, such as rules governing the surface realization of consonant clusters or the fact that these tokens were phrase-initial. I necessarily leave a full account of this aspect of the language to future systematic phonetic investigation. However, the operative phonetic question in deciding between one-segment and two-segment analyses of NC is widely regarded as being whether or not NC is longer than a simple nasal (Riehl, 2008). Furthermore, prenasalized phonemes cross-linguistically are characterized by a shortening of the nasal component as opposed to the stop (Tak, 2011). The data indicate that the nasal of NC is not shortened in Iyasa and that NC are substantially longer than simple nasals. Whether or not this finding rules out an analysis of Iyasa NC as phonemic is a matter of debate. However, it does show that the phonetic property usually taken to be characteristic of prenasalized segments cross-linguistically is lacking, such that a segmental analysis must proceed without the support of phonetic evidence.

A second objection to Bot’s analysis pertains to the consequences of his elimination of consonant clusters for surface CG sequences. Bot analyzes these as underlyingly CV, which undergo pre-vocalic gliding prior to surface realization. There is indeed evidence in Iyasa of a pre-vocalic gliding rule, which I propose in §4.2. However, this does not rule out a syllable template permitting CG sequences. On the other hand, analyzing these glides as underlyingly V requires permitting superheavy VVV sequences in the syllable template to handle monosyllables like *mbwáà* “dog”, which would be represented underlyingly as /mbuáà/.⁵³ This marks a significant departure from the typical syllabic properties of Bantu languages, based exclusively on economy considerations as opposed to empirical support. A further

⁴⁴ $\sigma = 0.019$

⁴⁵ $\sigma = 0.036$

⁴⁶ Not statistically significant by unpaired t-test: $p = 0.2980$.

⁴⁷ $\sigma = 0.018$

⁴⁸ $p = 0.0026$ by unpaired t-test (assuming $p < 0.05$ as the threshold for significance).

⁴⁹ $\sigma = 0.024$

⁵⁰ $p = 0.0001$ by unpaired t-test (assuming $p < 0.05$ as the threshold for significance).

⁵¹ $\sigma = 0.008$

⁵² Statistically significant: $p < 0.0001$ by unpaired t-test (assuming $p < 0.05$ as the threshold for significance).

⁵³ In fact, Bot (1997) only permits V nuclei in his template. While this avoids VVV representations, it does have as a possibly even worse consequence the counter-intuitive claim that words like *mbwáà* are trisyllabic (/mbu-á-à/).

issue is that in such trivocalic syllables, the first vowel always surfaces as a glide and must therefore be a candidate for Gliding: non-low and tense (i.e. *i*, *e*, *u*, or *o*). Thus there is little to be gained in terms of economy of syllable structure from the reanalysis of glides as vowels, since the syllable template must stipulate the kind of vowel that may intervene between C and VV. The only clear economy afforded by Bot's analysis for the syllable template is the elimination of an optional nasal before the consonant. This savings comes at the expense of a complexified phoneme inventory, which would need the additional segments *ⁿd*, *^mb*, and *^ŋg*.

As previously mentioned, these objections do not decisively favor my analysis over Bot's. They simply establish that the decision comes down primarily to economy considerations, and that those economy considerations do not appear to be conclusive. In light of this, I follow eg. Riehl (2008) in assuming that the simplest treatment of NC for which there is little independent linguistic evidence motivating a single-phoneme analysis is to analyze them as consonant clusters. I have shown this to be the case for Iyasa, and I therefore build consonant clusters into the syllable template.

DRAFT

CHAPTER 3

Tonal phonology

As is typical of Bantu languages, Iyasa has two contrastive tone levels: high (H) and low (L), with a third possibility in certain contexts of non-specification for tone. This analysis is in disagreement with that of Bouh Ma Sitna (2004) and Lonfo (2009), who see three contrastive tone levels: high, mid, and low. Of these two descriptions, Lonfo (2009) provides the most detailed discussion of the reasons for his conclusions, and I attempt to show below why his evidence for a contrastive mid tone is problematic. This section is structured as follows: first, I address the issue of the tone-bearing unit (TBU) in Iyasa (§1); I then provide evidence in support of two (and only two) contrastive tone levels for the language (§2); next, I move to a discussion of the principles governing the surface realization of tone on underlyingly toneless TBUs (§3); in §4 I discuss a number of processes affecting the surface realization of tones, some of which are themselves phonologically contrastive (i.e. upstep and non-automatic downstep); and finally, I turn to the behavior of tones floated through optional prosodic processes, behavior which differs from that of underlying floating tones (§5).

Perception of tone is notoriously challenging, especially for a non-speaker observer. Any thorough discussion of tone contrasts would therefore ideally be accompanied by robust quantitative evidence justifying the claimed tone distinctions, evidence that is unfortunately beyond my capacity to acquire for the purposes of this investigation. Nevertheless, at pertinent points in the discussion I provide F0 measurements extracted from individual recordings I have of the utterances in question. These data are simply intended to illustrate and roughly substantiate the claims of tonal contrast (or non-contrast) being made about the phonology. I recognize in presenting them the impact that unrelated performance factors can have on individual utterances, and I hope that my own informal presentation will serve to stimulate more robust quantitative study of these tonal phenomena in the future.

1 The tone-bearing unit (TBU) in Iyasa

The tone-bearing unit (TBU) is the minimal element of linguistic representation to which tones are linked and appears to vary cross-linguistically, usually being the segment, the mora, or the syllable (Yip, 2002). Determining which of these serves as the TBU can be quite difficult for a given language (Odden, 1995). This difficulty is due in part to the possibility of language-internal variation as to whether eg. the syllable or the mora is the operative element in count-sensitive tone rules (Kisseberth & Odden, 2003) as well as the potential for multiple tones to link to a single TBU (Yip, 2002). Thus the existence of a contour tone is not necessarily evidence of multiple TBUs.

In Iyasa, onsets are not tone-bearing, and as a consequence nasals can be either tone-bearing or not depending on their syllabic status: while homomorphemic pre-consonantal nasals are not tone-bearing, syllabic nasals are (see 0), as are nasal codas. This latter fact is evident from the following example in which the pitch of the H-toned AM *vá* is lowered following the H-toned vowel *ɔ* of the noun root, a fact which is difficult to explain unless the coda *ŋ* is L-toned (causing downstep):

(161)	<i>vi-ndɔŋ</i>	<i>vá</i>	<i>Jacqueline</i>
	c19-clitoris	c19-1sg.POSS	Jacqueline
	[-	-
	-	-	-
]	--]
	“Jacqueline’s clitoris”		

The TBU in Iyasa is therefore sensitive to prosodic representation and cannot link directly to segments.

The important question then for Iyasa is whether the syllable or the mora is more appropriately analyzed as the TBU, the answer to which depends crucially on whether the TBU in Iyasa supports multiple tone associations. In fact, there are examples in Iyasa of contour tones appearing on surface short vowels:

- (162) Surface short vowels with contour tone in noun roots
 [i-yâ] “rising” (c5)
 [i-bâ] “wedding” (c5)
 [nyô] “snake” (c9)
 [pô] “news” (c9)
- (163) Surface short vowels with contour tone in verb roots
 [è-dâ] “wear”
 [è-tâ] “give”
 [è-tô] “see”
 [è-yâ] “sleep”

However, I believe the data indicate that these are underlyingly VV sequences that are shortened by phonological rule. Firstly, the simple fact that these short vowels all exhibit the same HL tone contour is suspect. In fact, LH contours are never realized over short vowels in Iyasa, and HL contours are never realized over long vowels phrase-finally. This asymmetry strongly suggests that a phonological rule is at play. But how does it operate? Are \hat{V} lengthened or are $\hat{V}\hat{V}$ shortened? The most obvious indication that these are $\hat{V}\hat{V}$ sequences that are being shortened is that they are realized as long phrase-medially. Thus, while the word for “marriage” surfaces with a short vowel in isolation – [ibâ] – the vowel is realized as long when the noun heads a genitive construction: [ibâá dyá ndándá] “Ndanda’s wedding”. LH monosyllabic roots are realized with long vowels regardless of position in the phrase. In light of this and the evidence discussed in chapter 2 2.1.2 that length in non-HL contoured vowels derives from underlying VV sequences, the simplest way to account for these data is to posit a phonological rule that shortens HL-bearing VV sequences word-finally.

Before spelling out this shortening rule, I must answer the question whether the context of application of this rule is HL tone sequences themselves or simply L-final VV sequences as opposed to H-final ones. The latter analysis would prohibit surface-long phrase-Extensional Vowels that carry Lo tones, while the former would permit them. And in fact, surface-long L-Extensional Vowels regularly occur in Iyasa, as shown in (150).

- (164) **L-final words with phrase-final long vowels**
bàkàà (c9) “nearness”
byàà (c9) “lying down”
cèngàà (c9) “bent; crooked”
èbòò (inf) “spoil”
ècòò (inf) “catch”
kòlòò (c9) “crooked”
kwèè (c9) “slow”
sìì (c9) “straight; fair”
tìì (c9) “full”
tìtì (c9) “standing”
tòtòò (c9) “only”

I therefore propose the following phonological rule shortening the surface realization of underlying homorganic VV sequences bearing HL contours in phrase-final position:

- (165) **Final HL Shortening**
 Phrase-final HL homorganic vowel sequences are realized on the surface as short.

I have presented evidence that even apparent short contoured vowels are underlyingly long, and my analysis derives their surface realization by rule application. In addition to these considerations, short-voweled monosyllabic morphemes that lexically carry multiple tones usually leave one tone floating in Iyasa. This is the case for monomoraic verb roots, for example, which lack a Extensional Vowel (EV) to bear the Infinitive-Marker-L.⁵⁴ That this L surfaces in the infinitive forms of these verbs as non-automatic downstep of a following H rather than as a HL contour is revelatory: *èsá^t pǎ^tngá* “to take a step” (not: **èsáà pǎ^tngá*). This is also the case for the Present Conditional suffix *-^lndyè*, which bears a preceding L that triggers non-automatic downstep of the suffix rather than contour realization on either

⁵⁴ See §4.4.1.

the suffix or the preceding verb stem.⁵⁵ If short vowels offered two tonal landing sites, the fact that the L floats is left unexplained. However, if a one-to-one mapping between tones and moras is enforced in Iyasa phonology, it follows automatically.

In summary, the facts of Iyasa seem to indicate that multiple tones do not associate a single TBU, a finding which greatly simplifies the question of syllable vs. mora as TBU: since syllables can have two moras, assuming the syllable to be the TBU would require the arbitrary stipulation that they can bear two tones if and only if they are bimoraic. Assuming the mora as the TBU has the obvious advantage of correctly predicting the relationship between tones and TBUs automatically, and I therefore contend that the TBU in Iyasa is best analyzed as the mora, with an accompanying enforcement of a one-to-one mapping between tones and TBUs.

2 Inventory of tone levels – evidence of contrast

I argue in this section that the range of lexical tone contrasts in Iyasa requires the postulation of two (and only two) contrastive tone levels, H(igh) and L(ow), as is common of Bantu languages (Kisseberth & Odden, 2003). That H and L contrast with one another in the language is clear on the basis of the multiple minimal tone pairs in comparable environments:⁵⁶

- | | |
|---|---|
| (166) HH vs. HL (H__#) | |
| <i>céle</i> (c9) “weaver bird” | <i>céle</i> (c9) “sand” |
| <i>ékúlu</i> (c7) “piece” | <i>ékúlu</i> (c7) “type of fish trap” |
| <i>èpátá</i> (c7) “tendon” | <i>èpàtà</i> (inf) “pick” |
| (167) HH vs. LL | |
| <i>mbásá</i> (c9) “bamboo instrument” | <i>mbàsà</i> (c9) “comb” |
| <i>itútú</i> (c5) “swelling, tumor” | <i>itùtù</i> (c5) “raffia palm” |
| (168) HL vs. LL (L__L) | |
| <i>èlòci</i> (c7) “bail (for water)” | <i>èlòci</i> (c7) “caterpillar” |
| <i>mòóni</i> (c3) “flying ant” | <i>mòóni</i> (c9) “flesh” |
| <i>mòèyà</i> (c3) “tail” | <i>mòèyà</i> (c3) “intestine” |
| <i>èbàà</i> (inf) “to marry” | <i>èbàà</i> (inf) “to weed” |
| <i>èbòkà</i> (c7) “mortar” | <i>èbòkà</i> (c7) “mortar” |
| <i>èbòmà</i> (inf) “to bark” | <i>èbòmà</i> (inf) “to play (instrument)” |
| <i>èdibà</i> (c7) “river” | <i>èdibà</i> (c7) “waterhole” |
| <i>èlòngò</i> (inf) “to blow into” | <i>èlòngò</i> (inf) “to look at” |
| <i>èòlwà</i> (inf) “to evade capture” | <i>èòlwà</i> (inf) “to drag” |
| <i>èómà</i> (c7) “baobab” | <i>èòmà</i> (inf) “to go down” |
| <i>ètùkà</i> (inf) “to suffer” | <i>ètùkà</i> (inf) “to bathe” |
| <i>èvívà</i> (inf) “to suck” | <i>èvívà</i> (c7) “mask” |
| <i>ikàngà</i> (c5) “charcoal” | <i>ikàngà</i> (c5) “bait” |
| <i>ṁbòmbi</i> (c3) “bride” | <i>ṁbòmbi</i> (c3) “bundle” |
| (169) HL vs. LH | |
| <i>ibàà</i> (c5) “wedding, marriage” | <i>ibàà</i> (c5) “sword” |
| <i>èsécè</i> (inf) “to cut into pieces” | <i>èsécè</i> (c7) “baboon” |
| (170) LL vs. LH (L__#) | |
| <i>èpùtà</i> (inf) “to drive away” | <i>èpùtà</i> (c7) “rag” |

The above examples establish minimally tone-based contrast between dozens of pairs of words. They furthermore establish minimal contrast between contrastive tone atoms L and H specifically in three environments: H__#, L__#, and L__L. I believe this to be ample evidence to justify the proposal of H and L as contrastive tone levels in Iyasa. I comment in the following section on the tone analysis of Lonfo (2009), who argues for the existence of contrastive mid.

2.1 Against Lonfo's (2009) argument for contrastive mid

Lonfo (2009) proposes five contrastive tones for Iyasa: L, H, M(id), HL, and LH. There is thus a difference in theoretical starting point as to the nature of contour tones, such that Lonfo takes them to be contrastive tone atoms and I take them to be sequences of atoms. Since I agree that H, L, HL, and LH all contrast in Iyasa, I do not comment further on

⁵⁵ See chapter 5 6.1.1.6.

⁵⁶ Some minimal tone pairs involve an infinitive and a c7 noun. See chapter 4 1.3.7.3 for evidence that infinitives are syntactically c7 nouns.

this issue. A substantive disagreement between my analysis and Lonfo’s, however, lies in his proposal of a contrastive mid. I begin by laying out his principal evidence for this proposed contrast, which essentially consists of a list of lexemes which are claimed to contain mid tones (p. 28):

- (171) **mōsō̄*: “bat (animal)”
- *mbēlā* “type of trap”
- *mòtōbā* “snail”
- *mòṅgūmbā* “wealth”
- *mòkēlē* “vaccination”
- *ikō* “speech”
- *évē*: “where?”
- *èṃūnyā* “today”
- *mótōndò* “horsefly”
- *mòsópī* “intestinal worm”

Before addressing some of the particular lexemes in these data, let me first note the tendency for ostensible mid tones in Lonfo’s examples to occur phrase-finally. As I argue in §4.1, Iyasa prosody raises the pitch of phrase-initial L and lowers the pitch of phrase-final H, such that all phrase-final H tones surface with a lowered, mid-like pitch. Simply citing mid-sounding word-final surface pitches in isolation cannot then be used to argue for contrastive mid. Evidence must be presented for contrast between H vs. M in substitution frames which distance the tones in question from edge effects, and Lonfo’s study does not provide this. Many of the tones marked as mid in his data are therefore suspect H’s.

And when looking at the particular lexemes presented in more detail, this is in fact what often turns out to be the case. For example, *mòsósó* “bat”, which Lonfo transcribes **mōsō̄*, has two problems. First, the mid tone claimed for the first syllable is unlikely given that the syllable in question is the c3 NPx *mò-*, which is lo-toned (as Lonfo indicates in other c3 lexemes). Second, the second syllable, marked as mid, is actually H, since it is realized with the same pitch as an immediately following H:

- (172) *mò-sósó* *mwá* *Ndàndá*
- c3-bat c3.AM Ndanda
- $\left[\begin{array}{ccc} \text{--} & - & \\ - & & \text{--} \end{array} \right]$
- 125 147 145 Hz
- “my bat”

The case of *mòsósó* turns out to be representative of many of the other lexemes cited by Lonfo in favor of contrastive mid, including *mbélá* “pit” (also referring to a type of trap), *mòtóbá* “snail”, *mòṅgúmbá* “wealth”, *ikósó* “word” (transcribed by Lonfo with a tense vowel *o*), and others, all of whose mid tones in Lonfo’s data are actually high tones: they are realized as level with following H in substitution frames and undergo Phrase-Final Lowering in isolation. Pairs of supposed tone contrasts cited elsewhere in Lonfo (2009) fare no better. Take for example, the claimed contrast between

LH **ṅgàsá* “fin” and LM **mbòmā* “tomato”. In reality, both these lexemes surface in isolation as $\left[\begin{array}{c} - \\ - \end{array} \right]$. And in frames, both contain a final tone which is level with an immediately following H. As before, in all such examples I do not find the claimed underlying contrast, and I conclude ultimately that no convincing evidence appears in Lonfo (2009) for a contrastive mid level. The ostensibly mid-level tones throughout the work in question appear to be so labeled based on the author’s perceptions of lexemes uttered in isolation. However, given the many factors that can influence the surface realization of underlying tone in Iyasa, such factors must be understood and controlled for in establishing the inventory of atomic tonal contrasts.

A final problem with Lonfo’s analysis is the fact that even he only finds HL and LH contour tones. If M were really a contrastive level in the language, why the notable absence of HM, MH, LM, and ML? The burden of proof rests on proponents of contrastive mid to explain the absence of logically possible contours, and Lonfo (2009) unfortunately does not address this issue.

It is worth considering the possibility that Lonfo (2009) analyzes a different variety of Iyasa than the one spoken by my informant, Sammy Mbipite Tchele, and thus that the tonal systems of the two speech varieties may differ. However, it so happens that Mr. Mbipite was also one of Lonfo’s many (35) informants, who come from a number of different villages. It is in principle certainly possible that distinct speech varieties are represented in data gleaned from

such a broad swath of speakers from different places. However, Lonfo explicitly claims that speech differences between Iyasa speakers are “negligible” and that Iyasa “has no dialects” (p. 87, *my trans*). Consistent with this, he does not claim dialectal variation with respect to number of contrastive levels, and the data he presents in favor of his analysis could therefore in principle have come in part from Mr. Mbipite. Since he lists Mr. Mbipite as an informant and denies dialectal variation, Lonfo’s analysis of tone (and other phenomena) is susceptible to counterevidence from data (such as mine) also provided by Mr. Mbipite.

I therefore do not find evidence in my own investigation of contrastive lexical tone levels beyond L and H in Iyasa, and I see important empirical issues with preceding attempts to establish a third tone level. I contend that a minimally complex tone analysis for the language that covers the range of observed phenomena needs only to assume two levels: H and L.

2.2 Stem-based tone melodies

Some African languages such as Mende have been shown to have lexical tone melodies that expand or contract over the TBUs of the root, such that the actually attested tone patterns in roots are less numerous than would be logically generated by random sequencing of atomic tones (Leben, 1978). There is limited evidence of a similar principle at work in Iyasa. However, in the absence of thorough historical analysis beyond the scope of this investigation, I hesitate to claim with confidence the existence of simple roots of three or more syllables that have not been diachronically derived through compounding, derivation, reduplication, etc., processes which can affect lexical melodies even if they are no longer productive. Mono- and disyllabic noun and verb roots in Iyasa carry one of four tone melodies: H, HL, LH, and L. Note that these are simply the logically possible tone sequences over bimoraic roots. When longer roots are taken into consideration, the same tone melodies occur, with the second tone of tone sequences tending to be realized on the last TBU only:

- (173) H
è-kókódó “skull” (c7)
è-púpúdú “ditch” (c7)
vélétété “white” (c9)
kákálá “crust” (c9)
ngólóbé “cliff” (c9)
- (174) HL
è-cícíndí “heel” (c7)
nyónyópi “armpit” (c9)
è-sésékù “hiccup” (c7)
- (175) LH
è-kàbàlá “horse” (c7)
bàdùwé “story” (c9)
mbàngàlá “type of clam” (c9)
- (176) L
ṁ-vilàkò “poison” (c3)
ndòndòki “needle” (c9)
mò-sòsòdù “beak” (c3)

However, other tone melodies occur on polysyllabic roots quite frequently, including the following examples:

- (177) *mò-tótó⁴dù* “stink ant” (c3)
m-íyòbá “tears” (c6)
i-bàndáká “gizzard” (c5)
i-sèkídí “anus” (c5)
è-kókólòkò “mushroom” (c7)
è-kòlòkóló “afternoon” (c7)
è-óndyó⁴ndyò “yawn” (c7)
è-pòkólò “hat” (c7)
mbilisi “west wind” (c9)
pátòni “quality; kind” (c9)
vi-kùlèmbówá “hunchbackedness” (c19)

		Tone Melody			
		H	HL	LH	L
C1	1σ	---	---	---	mò-tò "person"
	2σ	mò-tódú "older sibling"	mw-ánà "child"	mò-dìmi "younger sibling"	---
C2	1σ	---	---	---	wà-tò "people"
	2σ	wà-tódú "older siblings"	w-ánà "children"	wà-dìmi "younger siblings"	---
C3	1σ	mò-nóó "finger"	mò-wóò "argument"	mbàá "room"	mò-dò "hill of rocks"
	2σ	mò-nàngá "star"	mò-lábè "branch"	mbàndí "crevice"	mò-kàbò "limit"
C4	1σ	mè-nóó "finger"	mè-wóò "argument"	mè-bàá "room"	mè-dò "hill of rocks"
	2σ	mè-nàngá "stars"	mè-lábè "branches"	mè-bàndí "crevices"	mè-kàbò "limits"
C5	1σ	ì-kóó "word"	ì-bàá "wedding"	ì-bàá "sword"	ì-bò "footprint"
	2σ	ì-dúdú "plug"	d-inà "name"	ì-dù má "full moon"	d-àmbò "thing"
C6	1σ	mà-kóó "words"	mà-bàá "weddings"	mà-bàá "swords"	mà-bò "footprints"
	2σ	mà-dúdú "plugs"	m-inà "names"	mà-dù má "full moons"	m-àmbò "things"
C7	1σ	---	è-lúú "night"	è-vèé "bone"	è-sò "saw (n.)"
	2σ	è-bilé "clay"	è-kóni "dirt"	è-dùkà "war"	è-bèbè "thigh"
C8	1σ	---	bè-lúú "nights"	bè-vèé "bones"	bè-sò "saws (n.)"
	2σ	bè-bilé "clay"	bè-kóni "dirt"	bè-dùkà "wasr"	bè-bèbè "thighs"
C9/10	1σ	ndóó "scar"	póó "news"	wéé "hair"	sù "straightness"
	2σ	célé "sand"	békì "plate"	cèndyé "wrist"	mbàsà "comb"
C13	1σ	lì-lòj "hernias"	lì-yóó "sleepiness"	---	---
	2σ	lì-gágá "pangolins"	lì-tútú "smoke"	lì-ndyèbá "marmosets"	lì-sòkò "mongeese"
C14	1σ	---	---	bòó "front"	---
	2σ	---	bò-lìyò "seed"	bò-pùsú "dirtiness"	bò-kàsò "ladder"
C19	1σ	vi-lòj "hernia"	vi-yóó "sleepiness"	---	---
	2σ	vi-gágá "pangolin"	vi-tútú "smoke"	vi-ndyèbá "marmoset"	vi-sòkò "mongoose"
INF	1σ	---	è-dáá "wear"	---	è-bàá "weed"
	2σ	---	è-bétà "go up"	---	è-làpà "speak"

Table 3.1 - Tone melodies in one and two syllable roots across noun classes

The existence of so many “exceptions” raises doubts about the reliability of any claims about lexical tone melodies expanding over long roots. It is certainly possible that the exceptional cases are diachronically derived and the regular cases are not, and it is true that many of the above examples, both regular and irregular, contain partial reduplications that make them suspect derivations. However, in the absence of clear criteria beyond the scope of this investigation to establish upon which to base claims that a given lexeme is derived, I do not speculate further and leave the question to future research. Nonetheless, the preference in Iyasa for four kinds of tone melodies could lie at the source of the preference for monosyllabic roots to be bimoraic, since multiple moras are necessary in the language to support contour tones.

The surface realizations of tone sequences are affected by more general tonal processes discussed in §4, especially Phrase-Initial Raising and Phrase-Final Lowering when uttered in isolation. However, no difference in tonal surface realization is attested between different noun classes, and the same melodies are attested in all classes. Tone is not used to distinguish nouns by class, and noun roots of any class are therefore phonologically comparable in the analysis of tone. Examples of one and two syllable roots of all four melodies across noun classes are given in Table 3.1. Note the absence of H-final melodies of any kind in infinitives, an asymmetry addressed in §4.4.1.

3 Tone assignment on toneless moras

The clearest cases I have found of lexically toneless TBUs in Iyasa are those occurring in derivational verb suffixes. Iyasa verbs generally involve a monomoraic root with lexical tone specification optionally followed by a sequence of derivational suffixes and Extensional Vowel (EV) slots (see chapter 5 for discussion of verb morphology). The tonal behavior of these elements is quite uniform across derivations and inflections in Iyasa, and can be captured by the following hierarchy of tone inheritance:

(178) **Hierarchy of tone spread over toneless TBUs**

- Tones spread onto toneless TBUs within the word according to the following hierarchy:
- H rightward >
- H leftward >
- L rightward >
- L leftward

- (183) *à-kàm-ú-w-é* *é* *và*
 c1-accept-EV-CAUS-NP.EVLOC here
 “S/he accepted here.”

In fact, in all inflections of which I am aware involving a hi-toned suffix or H specification on the final mora of the verb stem, leftward spreading of the same kind occurs. There is therefore diverse evidence in the language for preferential rightward over leftward spreading of H over L onto toneless TBUs.

4 Tonal processes

4.1 Phonetic effects: Phrasal edge phenomena and declination



Before delving into phonological processes affecting tone, I must account for three general phenomena in Iyasa that affect surface tone realizations: Phrase-Initial Raising, Phrase Final Lowering, and (phonetic) Declination. I find no evidence that accounting for the distribution of these processes requires appeal to contrastive tone representations at the phonological level. Instead, they simply affect the phonetic implementation of tones output by the phonological grammar at particular positions within the intonation phrase. For this reason, I treat them as phonetic effects overlaying and affecting the surface realization of underlying contrastive tonal representations. Since thorough quantitative study of these effects is beyond the scope of this work, the analysis presented here is quite superficial from a phonetic perspective. My goal is simply to note the existence of these effects in Iyasa so that they can be accounted for in understanding the phonological phenomena discussed below, and I leave robust examination of the degree of raising and lowering in various contexts to further phonetic investigation.

The processes of Phrase-Initial Raising and Phrase-Final Lowering can be summarized as follows:

- (184) **Phrase-Initial Raising**
 The pitch of the phrase-initial mora is raised iff it is L.
 (185) **Phrase-Final Lowering**
 The pitch of the phrase-final mora is lowered and level if it is H, lo-falling if it is L.

There is thus an asymmetry between these two processes: Phrase-Initial Raising affects L only, while Phrase-Final Lowering affects both. Furthermore, both processes are local in that they affect only a single mora, regardless if its tone is multiply linked to other moras underlyingly.

These two effects are observable in the following examples:

- (186) Lo-toned word
 (a) *mò-làpò*

 147 135 111 Hz
 c3-language
 “language”
 (b) *à-mú^t ètók-á mò-làpò mwá^t-mé*
 c1-FUT INF-want-EV c3-language c3-1sg.POSS

 126 125 124 Hz
 “S/he wants my language.”

In isolation, the lo-toned noun *mòlàpò* “language” has both phrase-initial and phrase-final moras. Thus, as shown above, the phrase-initial L is raised in pitch while the phrase-final one is lowered (and falling), in contrast to phrasemedial realization in which all pitches are effectively identical (around 125 Hz in this particular example). Notice also that the final mora of “S/he wants my language”, while lowered by both downstep and Phrase-Final Lowering, remains level rather than falling. This therefore becomes an important distinguishing characteristic between H and L phrase-finally: while H can be lowered through downstep, declination, and Phrase-Final Lowering to pitches quite similar to those occupied by L, especially at the end of long utterances, it is usually realized as level regardless, while L is realized as falling.

That these processes are operating on moras rather than underlying tones is clear from monomorphemic examples like the ones below, where all moras share an underlying L:

- (187) *ndàndàbòbè*
 $\left[\begin{array}{c} - \\ - \\ - \end{array} \right]$
 160 149 146 109 Hz
 c9.spiderweb
- (188) *è-ò-m-i-y-è*
 $\left[\begin{array}{c} - \\ - \\ - \end{array} \right]$
 160 150 146 109
 INF-go.down-EV-CAUS-EV
 “to lower (sth)”
- (189) *ndòndòki*
 $\left[\begin{array}{c} - \\ - \\ - \end{array} \right]$
 165 154 115 Hz
 c9.needle

In light of this, it is clear from the following data that Phrase-Initial Raising does not affect H, since the first hi-toned mora is realized at the same pitch as the second (189 Hz for both in my recording):

- (190) *lé-mó é-nyám-i-y-è^h mó*
 c9.eel c9-be.lost-EV-CAUS-EV.OBJ c3
 “The eel lost it over there.”

The net result of these effects on words in isolation is that early TBUs are given a relatively high-pitched phonetic implementation and late TBUs are given a relatively low one, regardless of underlying tone. For example, while the four melodies attested over bimoraic noun roots (with lo-toned prefixes) are H, L, HL, and LH, as described above,

in isolation these tend to be realized approximately as $\left[\begin{array}{c} - \\ - \\ - \end{array} \right]$, $\left[\begin{array}{c} - \\ - \\ \backslash \end{array} \right]$, $\left[\begin{array}{c} - \\ \backslash \\ \backslash \end{array} \right]$, and $\left[\begin{array}{c} - \\ - \\ - \end{array} \right]$, respectively.

Declination, as I use the term in this work, refers to the broad tendency for utterances to trend downward a couple of Hz between each TBU, regardless of underlying representation. This process appears to be operative in previously-discussed examples like (172), where the pitches of the lo-toned TBUs of *mòlàpò* “language”, while remaining largely similar, drop 2 Hz between TBUs 1 and 2 and 1 Hz between TBUs 2 and 3. A full account of the phonetics of declination in Iyasa is beyond the scope of this work. I simply note its probable existence and relatively small degree of impact, to the effect that considerable drops in pitch from one TBU to the next should probably not be attributed to it, but rather to other phonetic or phonological processes.

4.2 Downstep

Downstep is a well-documented phonological phenomenon found in Bantu and other languages in which the relative height of tones is lowered between one TBU and the next (see eg. Kisseberth & Odden, 2003). A distinction is often drawn between three phenomena of this type, which following Stewart (1965) I refer to as (1) automatic downstep – the relative lowering of tones caused (in rough terms) by sequences of overt HLH, (2) non-automatic downstep – the (contrastive) relative lowering of tones without an overt phonological trigger, and (3) declination – a phonetic trend discussed in the previous section toward lowered surface realization of pitch over utterances irrelevant to the phonological grammar.⁵⁷

⁵⁷ This terminology inevitably represents a particular position in ongoing debates about the appropriate treatment of these phenomena (i.e. that both kinds of “downstep” are ultimately the same phenomenon, distinguished by whether the triggering L is overt or floating), a position which I assume and upon which I base my treatment of certain tone phenomena addressed in this chapter. I do not intend this discussion to be an argument in favor of these assumptions over and against others, and it may turn out to be the case that critical evaluation of the data presented here and the analytical treatment given to them is amenable to or even motivates reanalysis along different theoretical lines.

The tone sequence HLH⁵⁸ triggers downstep in Iyasa, which following eg. Clements (1990) and Snider (1990) I take to be a lowering of the register or “key” relative to which H and L are realized. When overt HLH sequences occur, the second H surfaces with a lowered pitch relative to any preceding H (i.e. is downstepped), while any following H are realized at the same level as the downstepped one unless affected by other tonal processes. LHLH sequences therefore surface with a downward stairstep tonal pattern, as shown in the following examples. Notice that H towards the end of the expression in these cases is realized at a pitch near or below L towards the beginning:

- (191) *bw-áyì bwá mò-ló*
 c14-pain c14.AM c3-head
 [- - -]
 174 141 160 131 146 Hz
 “headache (lit. pain of the head)”
- (192) *vi-kùlèmbówà*
 c19-hunchbackedness
 [- - -]
 136 167 126 145 114 Hz
 “hunchbackedness”
- (193) *dy-émi dyá dòl-èèni*
 c5-pregnancy c5.AM flow-PART
 [- - - -]
 195 149 164 138 153 125 130 Hz
 “miscarriage (lit. pregnancy past)”

The above are examples of “automatic” downstep in that the register lowering they reveal is predictable on the basis of surface tones, and therefore does not in itself encode any phonological contrast. “Non-automatic” (i.e. contrastive) downstep is also widely attested in Iyasa. As discussed in the following section, it is often accompanied by upstep of the preceding H. This is not categorical, however. In §4.4.1 I provide evidence that the infinitive is marked by a final L which floats in certain contexts. When the L floats between two Hi tones, downstep results of a kind analogous to the non-automatic downstep discussed above:

- (194) *è-tònd-éè-épóló*
 INF-love-INF.EVc3-chief
 “to love the chief”

Non-automatic downstep can also result from optional prosodic processes that eliminate moraic segments and delink the tones associated to them. Often when the de-linked tone is L, non-automatic downstep is the tonal trace left behind. Fuller discussion of these phenomena can be found in §4.4.4.

When downstep/floating L occurs phrase-finally, a falling contour surfaces over the preceding TBU. This applies both to preceding H and preceding upstepped-H, with the respective surface realizations hi-falling and super-hi-falling. Phrase-final floating L occurs for example at the end of the VP in simple past inflection (hi-falling) as well as following a phrase-final OPx object of an infinitive (super-hi-falling).⁵⁹

- (195) *mú-nyáng-w-á* [â]
 c3-lick-EV-NP.EV
 “S/he licked.”

⁵⁸ More precisely, downstep is triggered by two H with one or more intervening L. Although the statement of the conditioning environment could perhaps be simplified to LH, systematic phonetic analysis beyond the scope of this study would be required to determine whether or not the H of phrase-initial LH really is realized at a lower pitch than phrase-initial H. I do not perceive a height contrast in these cases, and I adopt a less general statement.

⁵⁹ For discussion of upstep and its interaction with downstep, see the following section.

- (196) \dot{e} - $\dot{d}\dot{o}$ - \dot{i} - \dot{y} - \dot{e} $m\ddot{o}^4$ [$\uparrow m\ddot{o}$]
 INF-point-EV-CAUS-INF.EV OBJ.c3
 “point it (the finger)”

Given that automatic downstep does not encode phonological contrast (but is predictable on the basis of intervening surface L), only non-automatic downstep is marked in phonemic representations throughout this work.

4.3 Upstep

There are many contexts in Iyasa in which a TBU is realized at a pitch considerably higher than that of a preceding hi-toned TBU, as in the following example (upstepped H is marked with a double acute accent):

- (197) \dot{m} - $\dot{v}\dot{e}\dot{l}\dot{a}$ $m\dot{w}\acute{a}$ $n\dot{y}\ddot{o}^4\dot{l}\dot{o}$
 c3-color c3.AM c9.body

---	-	-

 141 162 106 Hz
 “the color of the body”

While “upstep” or “super-high” tone is attested with considerably less frequency than downstep from a cross-linguistic perspective, it has been observed in a number of other languages, including Acatlán Mixtec (Pike & Wistrand, 1974), Krachi (Snider, 1990), and Engenni (Snider, 1999). Claiming the existence of upstep in Iyasa raises a number of important descriptive and theoretical issues, some of which will inevitably go unnoticed or unmentioned. Be that as it may, in what follows I attempt to answer a number of questions germane to the description of the language: Is the tone in question really an upstepped H, or does it instead constitute a third contrastive tone level (i.e. a third toneme)? Is upstep iterative (i.e. is it the analogue of downstep in unboundedly shifting the register)? Does upstep affect TBUs or underlying tones (i.e. are sequences of TBUs multiply linked to a single H upstepped across the board)? Is upstep phonological, or is it analyzable as a context-sensitive process affecting the phonetic implementation of surface H (i.e. does it only appear eg. preceding L or following certain consonants)? Does upstep constitute a discrete phonological object, or can it be predicted on the basis of independently-motivated phonological entities in underlying representations?

To anticipate my conclusions somewhat, I do not find that upstep motivates a third contrastive tone level in the phonological analysis, nor do I find evidence in Iyasa that upstep is either iterative or sensitive to multiple associations in underlying tonal representations. It rather appears to apply locally (to individual hi-toned TBUs) and is immediately followed by downstep. In this respect it resembles the upstep phenomena of eg. Krachi and Engenni mentioned previously. However, there do not appear to be general phonetic processes at play which predictably result in upstep in certain surface environments (eg. no general raising preceding L or following voiceless or palatal consonants), requiring a phonological rather than purely phonetic treatment. Furthermore, unlike eg. Krachi and Engenni, upstep in Iyasa does not appear to be predictable according to (independently-motivated) underlying tonal representations. Rather, there is phonological contrast between $\acute{V}\acute{V}$, $\acute{V}\acute{V}^4$, and $\acute{V}^4\acute{V}$, as well as between $\acute{V}\acute{V}$ and $\acute{V}\acute{V}^4$, and between $\acute{V}\acute{V}$ and $\acute{V}^4\acute{V}$. In fact, upstepped H are even sequenced in special contexts, giving rise to the additional contrastive tone shape $\acute{V}^4\acute{V}^4$, and can follow simple downstep, producing the shape $\acute{V}^4\acute{V}$ (essentially level H on the surface). Furthermore, non-automatic downstep can occur without accompanying upstep, resulting in further contrast between the sequences mentioned above and $\acute{V}^4\acute{V}$. Whether these contrasts require the positing of a phonological atom “upstep” or can be accounted for as byproducts of the presence or absence of established phonological entities is a question I do not attempt to resolve, though below I note challenges faced by either approach.

The evidence against upstep as a third contrastive tone level is largely the same as that brought to bear in §2.1 against Lonfo's (2009) claim of contrast between tonemic M and H; namely, the near-absence of contrast between M vs. H (or H vs. upstepped-H) as lexically-specified tone values for TBUs in the language. As discussed in chapter 5 2, verbs roots in Iyasa are monomoraic and exhibit one of two melodies, H and L. Similarly, nouns are generally bimoraic, and bimoraic nouns exhibit only four tone melodies: H, L, HL, and LH (see §2.2). These are the logically possible tone shapes on lexemes in a ditonal system, while a three-level analysis faces the burden of explaining why some of the tone combinations it logically permits are unattested in reality: why are there no mid-toned verb roots, and why are there no nouns with the melodies M, MH, HM, ML, or LM? When upstep occurs at the lexical level, it is usually within well-defined classes of lexemes, namely adjectives and most PPx. But most cases of upstep are grammatical,

marking grammatical roles and verb tenses and being realized on TBUs that are lexically specified as simple H. This predictability again does not bode well for an analysis of upstepped H as a third contrastive tone level. While a handful of polysyllabic lexical items do exhibit lexical upstepped H, such as *mòtóǎ̀dù* “stink ant”, they are too infrequent to properly motivate a third tone level and are best analyzed as fossils of historical morphological complexity. I therefore do not find evidence in Iyasa for more than two tone levels and argue that upstep requires analysis along other lines.

A more involved issue is whether upstep is analyzable as non-phonological, a predictable property of the phonetic implementation of H in certain well-defined contexts. However, no such contexts are apparent to me on the basis of the facts of Iyasa. Perhaps the principle candidate along these lines is Pre-L Boost, a phenomenon observable in many languages in which the pitch of H is raised preceding L (cf. eg. Snider, 1999). Cross-linguistically, Pre-L Boost is usually local (applying to the preceding TBU only) but can be global (applying to the entire preceding underlying H). Local Pre-L Boost faces problems in light of examples like the following:

- (198) *lémó* *àà-nú*
 c9.eel c9-2p.POSS
 [-- -]
 --]
 174 174 Hz
 “your (p) eel”

In the above expression, a sequence of two H is immediately followed by L. In the particular recording I have of this utterance, both H are realized at the same pitch (174 Hz). The same kind of construction poses problems for the hypothesis that certain consonants (typically voiceless or palatal ones) trigger phonetic raising of H, since such raising is not attested in the relevant environments:

- (199) *célé* *àà-yá*
 c9.sand c9-3pl.POSS
 [-- -]
 --]
 178 174 Hz
 “their sand”
- (200) *ségá* *àà-yá*
 c9.earthworm c9-3pl.POSS
 [-- -]
 --]
 182 177 Hz
 “their earthworm”
- (201) *páká* *àà-yá*
 c9.itch c9-3pl.POSS
 [-- -]
 --]
 176 178 Hz
 “their itch”

While the above data do not reveal local phonetic raising effects as a result of palatal or voiceless consonants or following Lo tones, they do not rule out a global (i.e. phonologically contrastive) effect applying to the entire preceding underlying H, since all the above examples could be analyzed as exhibiting a single multiply-linked H at the underlying level which is raised in the relevant environment. However, such a possibility is ruled out by examples like the following:

(202)	<i>bè-búmbú</i>	<i>bá</i>	<i>póm-w-é-èní</i>
	c8-group	c8.AM	fade-EV-EV-PART
	[]
	--	-	--
	-		-
	147 177 174	165	169 162 159 119 125
	"the faded groups"		

The relevant feature of the foregoing example is the fact that TBUs 2-5 are all H and are all realized at essentially the same pitch within a reasonable range of variation and taking into account downdrift. The tonal jumps from L to H (30 Hz) and H to L (40 Hz) are considerably larger than any difference in tone between H's. Crucially, the sequence of H's trends slightly downward (because of downdrift) and does not spike upward at any point, contrary to what would be expected if Pre-L Boost were operative in the language. Local Pre-L Boost is ruled out by the fact that the second H of *pómwéèní* "faded" is not higher than the first (actually 3 Hz lower). And global Pre-L Boost is ruled out by the fact that underlyingly distinct H tones preceding *pómwéèní* are not lower in pitch than the initial H of the word. Similar sequences of distinct underlying H's realized at effectively the same pitch preceding L are widespread in Iyasa. Unless Pre-L Boost were taken to apply to all preceding H's or recourse were made to some otherwise empirically unmotivated rule merging H's across word boundaries, Pre-L Boost does not fare well in light of the facts of the language. The same goes for the hypothesis that voiceless consonants trigger raising, since none of the tones surrounding the phone *p* in the above example are substantially raised, regardless of whether this raising is taken to apply locally or globally. Examples like that given above are thus simultaneously counterevidence against both Pre-L Boost and raising caused by voiceless or palatal consonants, both locally and globally. Further such constructions are provided below, all of which exhibit roughly similar pitches across Hi tones.⁶⁰

(203)	<i>mò-lúmá</i>	<i>mwá</i>	<i>dyé-èní</i>
	c3-fork	c3.AM	eat-PART
	[]
	--	-	-
	-		--
	156 181 172	162	163 126 131 Hz
	"the eaten fork"		
(204)	<i>mò-lúmá</i>	<i>mwá</i>	<i>cib-w-é-èní</i>
	c3-fork	c3.AM	knock.over-EV-EV-PART
	[]
	--	-	--
	-		-
	151 176 170	170	171 167 123 128 Hz
	"the knocked-over fork"		
(205)	<i>mò-lúmá</i>	<i>mwá</i>	<i>páng-é-èní</i>
	c3-fork	c3.AM	rule-EV-PART
	[]
	--	-	--
	-		-
	158 180 181	176	177 178 136 140
	"the ruled fork"		

These observations pose considerable difficulties for any attempt to analyze upstep in Iyasa as a phonetic effect. The very rough and informal nature of these quantitative data do not permit a ruling out of any phonetic impact whatsoever as a result of Pre-L Boost or raising caused by voiceless or palatal consonants. Further phonetic research will be required to determine the existence and extent of any such phenomena. However, they do show that these effects, if they do exist, are not robust or systematic enough in Iyasa to serve as an explanatory basis for the large upward spikes in pitch which I analyze as upstep (21 Hz in (182), similar in scale to the difference observed between phrase-initial L and H in (187)-(190)).

In light of the aforementioned facts, I believe upstep in Iyasa is best analyzed as a phonological (i.e. contrastive) phenomenon. As mentioned above, upstep occurs on a single hi-toned TBU and is immediately followed by downstep. Downstep takes place from the register level *preceding* the upstepped H, such that any following H is real-

⁶⁰ These examples involve participles because, unlike most objects of associative constructions, participles are not tonally marked as objects, allowing them to participate in unusually long uninterrupted sequences of level H. For discussion of tonal object marking, see §4.4.2.

ized not at the level of H preceding upstep but lower than it. Upstep therefore has the appearance of being followed by a sort of double downstep. This fact is clearly illustrated by the following (non-sensical) example, in which the c10 hi-toned noun *ɲgólóbé* “cliffs” is subordinated to itself via associative construction. The objects of the AM are marked with upstepped-H on the initial TBU,⁶¹ and the register of the utterance drops at each occurrence of upstepped-H, resulting in a substantial drop in pitch from upstepped H to any following H:

(206)	<i>ɲgólóbé</i>	<i>nyá</i>	<i>ɲgó^hlóbé</i>
	c10.cliff	c10.AM	c10.cliff
	[---	-	-]
	187 184 186	180	204 152 142
	“the cliffs of the cliffs”		

The impact of upstep on the register is therefore unclear. It could in principle be analyzed as register raising immediately followed by register lowering (an approach similar to that of eg. Snider, 1990, for Krachi), then followed by an additional lowering of the register, or there could simply be a raising of the pitch of upstepped-H followed by register lowering (downstep). Regardless of the analysis adopted, the foregoing example also clearly illustrates the phonologically contrastive nature of upstep: the tone realized on the same word (*ɲgólóbé*) differs contrastively with respect to the presence or absence of upstepped H on the initial TBU ($\acute{V}\acute{V}$ vs. $\acute{V}^+\acute{V}$), a contrast which encodes information about grammatical role (object vs. non-object).

Upstep is roughly equal to downstep in degree. This is most clearly seen in cases in which upstepped-H follows underlying downstep which is not preceded by upstep, resulting in an effectively level realization of tone. One such environment arises when OPx occur as objects of the Present Conditional. As discussed in chapter 5 6.1.1.6, the verb of the antecedent of present tense conditional clauses is marked by the suffix *-^hndyé*, which triggers downstep without any preceding upstep. Meanwhile, as monomoraic hi-toned words, OPx do not support the upstepped-H tonal object marker, and the marker is realized on the preceding TBU (in this case that of the Present Conditional suffix).⁶² This gives rise to the following surface realizations:

(207)	<i>ɲ-póló</i>	<i>à-óndá-^hndyé</i>	<i>mw-á^hà</i>	<i>àà-dú</i>
	c3-chief	c1-love-PRES	c1-child.OBJ	c1-3sg.POSS
	[---	---	-	-]
	-	-	-	---
	“The chief calls his son.”			
(208)	<i>ɲ-póló</i>	<i>à-óndá-^hndyé^h</i>	<i>mú</i>	
	c3-chief	c1-love-PRES	c1.OPx	
	[---	---	-	
	-	-	-	
	“The chief calls him.”			

In (192), there is a 19 Hz drop in pitch from the final TBU of the verb stem to that of the downstepped suffix, while in (193) the drop is only 3 Hz, or essentially identical (within the range of normal variation of identical pitches, and possibly affected by downdrift). This establishes contrast between $\acute{V}^+\acute{V}$ and $\acute{V}^+\acute{V}^+$, as well as the approximate parity of tonal changes caused by upstep vs. downstep.

I do not find compelling evidence in Iyasa that underlying H is upstepped (when multiply-associated) as opposed to single hi-toned moras. In cases like the one mentioned above where the tonal object marker is pushed onto the verb stem, it is only the final mora of the verb which is upstepped. In (193) this fact is unrevealing, since the H of the suffix is presumably distinct from the H of the preceding stem. However, in many verb tenses in Iyasa, otherwise lo-toned verb stems are inflected with a final H that spreads leftward to the right edge of the verb root according to general principles of tone assignment (see §3). One such tense is the simple past, and when followed by a monomoraic ob-

⁶¹ See §4.4.2 for fuller discussion of tonal object marking.

⁶² For more on the tonal object marker, see §chapter 3 4.4.2.

ject (like OPx), the object marker is realized on the final TBU of the root only, despite the fact that hi-toned TBUs preceding it are multiply associated to the same underlying H through spreading:

- (209) *è-nyàm-ì-y-è*
 INF-be.lost-EV-CAUS-EV
 “to lose”
- (210) *à-nyàm-ì-y-é nyó^hlò*
 c1-be.lost-EV-CAUS-EV OBJ.c10.OPx
 $\left[\begin{array}{ccc} & \text{--} & \text{--} \\ \text{--} & & \text{--} \end{array} \right]$
 “He lost the bodies.”
- (211) *à-nyàm-ì-y-é^h nyó*
 c1-be.lost-EV-CAUS-OBJ.EV c10.OPx
 $\left[\begin{array}{ccc} & \text{--} & \text{--} \\ \text{--} & & \text{--} \end{array} \right]$
 “He lost them (the bodies).”

There are two well-defined instances in which upstep affects sequences of what I have analyzed as two consecutive TBUs: H-initial adjectives, and the c7 PPx *áá^h*. In both these cases, the upstep is lexically specified, and the TBUs in question are immediately adjacent homorganic vowels:

- (212) *é-bóó^hngá*
 c7-hard
 “hard”
- (213) *áá^h-mé*
 c7-1sg.POSS
 “my; mine”

These are not cases of sequences of upstepped H assigned to consecutive TBUs, since no downstep occurs from the first TBU to the second. These data could in principle motivate reanalysis of the vowels in question as phonologically lengthened rather than as sequences of distinct vowels. However, the phonological triggers of this lengthening are unclear, since upstep occurs frequently on short vowels and since no contour tones or other likely triggering environments for vowel length are present. Length in these instances is furthermore contrastive, as can be seen in the opposition between *ébóó^hngá* “hard” above and its verbal counterpart *ébóngà* “harden”. These long upstepped vowels are therefore best analyzed as lexically encoded. Furthermore, there is evidence (discussed in §5) from elision phenomena that the TBUs of the PPx *áá^h* are in any case distinct and multiply associated to a single underlying H. There is also abundant evidence in Iyasa that only one of the vowels in a homorganic vowel sequence can be upstepped, as seen in the following example in which the upstepped H object marker only surfaces on the first TBU of the noun:

- (214) *nà-tó-ó-ndí ngú^hú*
 1sg-see-EV-PRES OBJ.c9.correctness
 “I see the correctness.”

The status of the upstepped vowels in adjectives and the c7 PPx is therefore unclear. Perhaps these data reveal some sort of lexical vowel copying rule rather than straightforward underlying specification of sequences of homorganic vowels. Such a conclusion is fairly speculative at this point in the analysis, and I simply note the existence of this phenomenon while leaving a more thorough treatment of it to future investigation. These cases aside, upstep in Iyasa appears to be a local phenomenon.

Unlike eg. Krachi, in which upstep occurs following H-Spread, or Engenni, in which upstep occurs preceding L (see Snider, 1990 and 1999, respectively), upstep in Iyasa does not appear to have clear phonological triggers (at least, not that are obvious to me at this point in the analysis). The fact that upstep is categorically followed by downstep might suggest an analysis of it as predictable according to floating rather than overt L, a sort of “Pre-Floating-L Boost”. However, it is not clear why it should matter whether or not L is floating or grounded (associated to a TBU). Further-

more, there is evidence in Iyasa of non-automatic downstep which is not preceded by upstep and which seems best analyzed as triggered by floating L. One such case involves Infinitive Pre-L H-Insertion, in which an H is realized on the final TBU of infinitives iff they are immediately followed by L (see §4.4.1 for discussion). The infinitive already inserts an Infinitive-Marker-L preceding the last EV of the verb stem, and unless followed by H this L simply surfaces on the final TBU. However, in hi-toned infinitive stems which undergo Infinitive Pre-L H-Insertion, the L is not grounded. Instead, the inserted H is given a downstepped realization in comparison to the hi-toned moras preceding it, which do not upstep. These facts are straightforwardly accounted for if the downstep is taken to be caused by the Infinitive-Marker-L, which floats since its grounding is impeded by Infinitive Final-H Insertion:

- (215) *è-mám-á-n-à*
 INF-surprise-EV-RECIP-INF.EV
 “to startle”
- (216) *è-mám-á-n-^há sòkù*
 INF-surprise-EV-RECIP-INF.EVc9.elephant
 “to startle the elephant”

Other evidence previously mentioned comes from the Present Conditional suffix, which is hi-toned but which has a lexically-specified initial downstep, suggesting a lexical floating L:

- (217) *à-kál-i-y-é-ndí*
 c1-pray-EV-CAUS-EV-PRES
 “S/he prays.”
- (218) *à-kál-i-y-é-^hndyé*
 c1-pray-EV-CAUS-EV-PRCO
 “If s/he prays”

In neither of the above environments does upstep occur, either in the preceding TBU or over the entire preceding underlying H:

- (219) *ḡ-póló mú-imb-ú-w-é-ndí*
 c3-chief c3-think-EV-CAUS-EV-PRES
 “The chief thinks”
- (220) *ḡ-póló mú-imb-ú-w-é-^hndyé*
 c3-chief c3-think-EV-CAUS-EV-PRCO
 “If the chief thinks...”

As the preceding examples show, hi-toned TBUs following a hi-toned SPx are realized at the same level as the prefix regardless of whether they are followed by the Present (non-downstepping) or Present Conditional (downstepping) suffix. Upstepped H, by contrast, is realized substantially higher than a preceding hi-toned prefix. This is clear from the present tense in relative clauses for example, in which the verb stem is marked with upstepped H on the initial TBU and L on following TBUs:

- (221) *ḡ-bá-i mé mú-nyá^hḡg-w-à*
 c3-marry-OBNOM REL c3-lick-EV-EV
 “The groom who licks”

Thus, simple downstep ($\acute{V}^{\downarrow}\acute{V}$) is in phonological contrast to upstep-downstep ($\acute{V}^{\uparrow}\acute{V}$), and an analysis in which both upstep and downstep are predicted according to the same phonological entity (e.g. floating L) fails to cover the data at hand.⁶³

As previously mentioned, there are some environments in Iyasa which produce sequences of upstepped H. One of these involves the hi-toned relativizer *mé*, which exhibits the unique property of upstepping iff immediately preceded

⁶³ I note for future investigation an apparent phonetic tendency for hi-toned TBUs preceding simple downstep to be realized with an elevated pitch. For example, the frequency jump from L to H in *àkálíyéndí* “S/he prays” is 24 Hz in one recording, compared to 39 Hz in *àkálíyé^hndyé* pronounced immediately afterward in the same recording. However, the following utterance in the recording involves the contrastively-upstepped future auxiliary – *amú^h èkálíyé* “S/he will pray” – which jumps 68 Hz above the preceding lo-toned prefix. In light of this and data such as those in (204) and (205), which reveal no rise in pitch from a hi-toned SPx in the Present Conditional, I assume this to be some sort of (non-contrastive) phonetic effect and leave its treatment to further research.

by H (see §4.4.3 for further discussion). As discussed in chapter 4 1.2.3, the distal demonstrative marker ⁴*nyéé* upsteps any preceding H. Since distal demonstrative constructions involve a noun followed by the relativizer followed by a high-toned pronoun followed by ⁴*nyéé*, upstep sequences arise when this construction is applied to H-final nouns:

(222) *ṁ-bá-i* *mé* *mú⁴* *nyéé*
 c3-marry-OBNOM REL c3 DIST.DEM
 [- - - - -]
 [- - - -]
 “that groom”

(223) *ṁ-póló* *mé⁴* *mú⁴* *nyéé*
 c3-chief REL c3 DIST.DEM
 [- - - - - -]
 [- - - -]
 “that chief”

Another such environment occurs when present-tense relative clauses take monomoraic objects such that the upstepped-H object marker is realized on the verb stem. Compare the following to its object-less counterpart given above in (206):

(224) *ṁ-bá-i* *mé* *mú-nyá⁴ṁg-w-á⁴* *yó*
 c3-marry-OBNOM REL c3-lick-EV-OBJ.EV c9
 “The groom who licks it”

Having established the contrastive distribution of upstepped-H against H and L and explicated some of its particular phonetic and phonological characteristics, an important issue that now surfaces is what exactly upstepped-H consists of at the underlying level. Up to this point, I have essentially treated upstep as a sort of phonological axiom, on par with H, L, and downstep. This is simply done in the absence of clear evidence that upstep is “really” an epiphenomenon of something else (analogous to evidence that non-automatic downstep is really an epiphenomenon of underlying floating L). I do note, however, that since grounded H does not seem to be a trigger for any phonological processes, in contrast to grounded L which produces downstep, a hypothetical floating H would never result in surface contrast and is therefore unnecessary elsewhere in the phonological analysis of Iyasa. This makes floating H available as a cost-free⁶⁴ candidate for the trigger element of upstep. Under such an analysis, floating H could simply trigger upstep and immediately following (double) downstep via phonological rule. Decisions in this regard have as much to do with theoretical orientation as the facts of the language, and I simply acknowledge floating H as a possible analysis and suggest this issue as an area in need of further research.

4.4 Lexical and grammatical tone phenomena

A number of tone phenomena in Iyasa are specific to particular grammatical constructions or lexical items and must therefore be accounted for in some way by lexical and grammatical underlying representations distinct from the tones which surface on segments. I have opted to present many of them here in the chapter on tone rather than piecemeal in the respective chapters on morphology in order to provide an easily-accessible overview of the kinds of complexities that the tone analysis must account for. As is the case with respect to the foregoing discussion of upstep, there are multiple logically possible ways of accounting for surface tone contrasts. I have chosen to state the phenomena in question as morpheme- or construction-specific phonological generalizations or rules. This does not constitute an argument against analysis of these phenomena as involving distinct underlying tonal representations, such as floating L or H, which are subject to general phonological principles governing their surface realizations. Indeed, such an analysis would be preferable to ad hoc rule statement if empirically supported. However, as I show below, the invisible underlying tone distinctions and rules governing them would seem to need to be fairly complex in order to account for the

⁶⁴ That is, cost free in terms of the number of distinct phonological entities needed by the analysis. It does complexify the analysis in other areas by proliferating the number of “invisible” objects in underlying representations and expanding the inventory of phonological rules to account for tonal behavior in the context of floating H. It must further face the burden of explaining why the properties of floating H are so different from those of overt H.

range of data in the language, and at this point I am unable to provide satisfactory empirical motivation for such a multiplicity of abstract objects and phonological rules. For the purposes of this description, I simply state and exemplify the generalizations in the hope that future research into Iyasa might provide a simpler and more unified account.

4.4.1 Tone in infinitives

As discussed in §3, verb roots carry lexically specified tone, while most derivational material following the root is toneless and receives tone associations according to general principles of the language. However, infinitives also carry an Infinitive-Marker-L which is inserted preceding the last Extensional Vowel slot (EV). Again according to general principles of the language, this L simply associates to the following EV in most cases:

- (225) *è-báp-è*
INF-carry-INF.EV
“to carry”
- (226) *è-sù-w-à*
INF-wash-EV-EV
“to wash”
- (227) *è-sób-ò*
INF-peck-INF.EV
“to peck”
- (228) *è-nyòny-ò-m-ò*
INF-lie.down-EV-POS-INF.EV
“to lie down”
- (229) *è-òng-ì-y-è*
INF-get.well-EV-CAUS-EV
“heal (lit. make get well)”

Whenever there is a non-null EV slot, Infinitive-Marker-L must be realized (either overtly or floating) within the stem. However, in monomoraic roots such as *-sá* “do; make” with empty EV slots (such that all available TBUs already bear lexically-specified tone), the Infinitive-Marker-L simply floats following the root, producing downstep:

- (230) *è-sá-[↓]*
INF-do-INF
“to do”
- (231) *è-sá-[↓] pá[↑]ngá*

-	-
-	-

 INF-do-INF c9.step.OBJ
 “take a step (lit. do a step)”

The floating L intervening between the H of *è-sá[↓]* “do” and the H of *pá[↑]ngá* “step” lowers the tonal register such that the upstepped initial mora of the noun, caused by the object marker tone, is realized as level with the final H of the noun rather than higher.

In addition, the infinitive involves what appears at first glance to be a final “polar tone” such that the last mora of the stem is realized as H preceding L and as L either preceding H or phrase-finally:

- (232) Lo-toned root
 - (a) *è-bòm-à*
INF-bang-INF.EV
“to bang (an instrument)”
 - (b) *è-bòm-á ì-bèngé*
INF-bang-INF.EV c5-bell
“to ring the bell”
 - (c) *è-bòm-à dyǒ[↓]*
INF-bang-INF.EV c5.OBJ
“to ring it”
- (233) Hi-toned root

- (a) *è-óy-à*
INF-kill-INF.EV
“to kill”
- (b) *è-óy-à nyǒʔ*
INF-kill-INF.EV c10.OBJ
“to kill them”
- (c) *è-óy-á sàpé*
INF-kill-INF.EV again
“to kill again”

This applies regardless of the grammatical category of the following lexeme:

- (234) *è-bàp-è*
INF-carry-INF.EV
“to carry”
- (235) *è-bàp-é i-yúmbá*
INF-carry-INF.EV c5.burden
“to carry the burden”
- (236) *è-bàp-é dyǒʔ*
INF-carry-INF.EV c5.OBJ
“to carry it”
- (237) *è-bàp-è é và*
INF-carry-INF.EV LOC here
“to carry here”
- (238) *è-bàp-é kòòlò*
INF-carry-INF.EV yesterday
“to carry yesterday”

However, I believe this phenomenon is best accounted for through a rule inserting an H on the final mora of the infinitive verb stem only in case L follows, which surfaces on the final (underlyingly toneless) mora of the infinitive stem preceding L and (as I show below) spreads according to general principles of the language:⁶⁵

(239) **Infinitive Pre-L H-Insertion**

The final TBU of the infinitive stem is assigned an H iff the immediately following tone is L.

There are two reasons for this. First, the occurrence of final L both pre-H and phrase finally is an elsewhere distribution, suggesting L as the default tone. And second, the hi-toned alternant of this “polar tone” behaves differently depending on the lexical tone of the verb stem:

- (240) **Lo-toned root**
- (a) *è-dòl-i-y-è*
INF-pass-EV-CAUS-INF.EV
“to pass”
- (b) *è-dòl-i-y-è yǒʔ*
INF-pass-EV-CAUS-INF.EV c7.OBJ
“to pass it”
- (c) *è-dòl-i-y-é è-incé*
INF-pass-EV-CAUS-INF.EV c7-time
“to pass it”
- (241) **Hi-toned root**
- (a) *è-dá-í-y-è*
INF-wear-EV-CAUS-INF.EV
“dress (lit. make wear)”

⁶⁵ Exceptions to this occur in a well-defined set of cases involving non-object arguments in copular constructions. For details, see the following section.

- (b) *è-dá-í-y-è* *mw-á^hnà*
 INF-wear-EV-CAUS-INF.EV c1-child.OBJ
 “dress the child”
- (c) *è-dá-í-y-^hé* *mò-cé^hcé*
 INF-wear-EV-CAUS-INF.EV c3-baby
 “dress the baby”

As shown in the above examples, for lo-toned roots, the Infinitive Pre-L H spreads from the final mora leftward to the right edge of the root. For hi-toned roots, the Infinitive Pre-L H simply surfaces on the final mora, with the H of the root spreading rightward over the remainder of the stem. In this case, the Infinitive-Marker-L floats between the two H’s, downstepping the second of these. This contrast is marked in the phonemic representations of (226).

In other words, the Infinitive-Marker-L is realized on the infinitive stem no matter what. Preceding H it simply surfaces, while preceding L it is suddenly displaced by a “polar tone” H. The H furthermore spreads or not according to preceding tonal context. While these facts are problematic for a “polar tone” analysis which simply switches the final tone of the infinitive according to the following environment, they are easily accounted for as the combined result of the aforementioned H-insertion rule and general principles of the language governing assignment of tones to toneless TBUs.

That Infinitive Pre-L H-Insertion is restricted to the infinitive and not a phonological rule of Iyasa is clear from the numerous examples of L# #L elsewhere in the language:

- (242) *pòwù* *à* *mò-tò*
 c9.blind c9.AM c3-person
 “blind person (lit. blind one of person)”
- (243) *ndòndòki* *à-^hmé*
 c9.needle c9-1sg.POSS
 “my needle”
- (244) *sèdù* *à* *mbàsi*
 c9.beard c9.AM c9.corn
 “corn silk (lit. beard of corn)”
- (245) *sò* *è-vóó^hkó*
 c9.time c9-one
 “once (lit. one time)”

4.4.2 Tonal object marking

The foregoing discussion of tone has inevitably anticipated the conclusion that Iyasa tonally marks the object grammatical role. In rough terms, objects are marked with upstepped-H on the initial mora, as seen in the following examples in which the hi-toned 9/10 noun *ngólóbé* is marked as the object of a variety of different kinds of phrasal heads: verb, preposition, and associative marker:

- (246) *ngólóbé* *à-^hmé*
 c9.cliff c9-1sg.POSS
 “my cliff”
- (247) *nà-tó-ó-ndí* *ngó^hlóbé*
 1sg-see-EV-PRES OBJ.c9.cliff
 “I see the cliff.”
- (248) *é* *ngó^hlóbé*
 LOC OBJ.c9.cliff
 “to/from the cliff”
- (249) *ṁ-vèlà* *mwá* *ngó^hlóbé*
 c3-color c3.AM OBJ.c9.cliff
 “the color of the cliff”

That this tonal marker is indeed marking the grammatical role Object, as opposed simply to the occupant of certain syntactic slots (i.e. that following prepositions, associative markers, verbs, etc.), is clear from the fact that the same word can at times occupy the same syntactic position with and without an objective meaning, in which case the object marker is contrastively present vs. absent. One such word is *ngúú* “correct; correctness”. When used in associa-

tive constructions, *ngúú* normally contributes an adjectival meaning. However, it can have a nominal meaning as well. The distinction is formally encoded by the tonal object marker:

- (250) *i-kàkà dyá ngúú*
 c5-quality c5.AM OBJ.c9.correctness
 “the quality of the correctness”
- (251) *i-kàkà dyá ngúú*
 c5-quality c5.AM correct
 “the correct quality”

Participles also require an intervening AM in order to modify nouns, but are not objects and are not tonally marked:

- (252) *mò-kóm mwá póm-w-èèní* (not: **pó^hmwéèní*)
 c3-frog c3.AM fade-EV-PPART
 “faded frog”

Thus there is a contrastive tonal marker of grammatical objects in Iyasa which surfaces in at least some cases. However, the distribution of object marking across environments is fairly complex. To begin with, the object marker only surfaces on objects that are H-initial. Since the majority of nouns in Iyasa begin with lo-toned NPx, this leaves primarily H-initial nouns of gender 9/10 (such as *ngólóbé* above) on which an overt contrast surfaces.⁶⁶ See the following examples that lack overt marking, all of which are L-initial:

- (253) *ṁ-vèlà mwá sòkù*
 c3-color c3.AM c9.elephant
 “the color of the elephant”
- (254) *ṁ-vèlà mwá mò-cécé*
 c3-color c3.AM c3-baby
 “the color of the baby”
- (255) *ṁ-vèlà mwá è-bámá*
 c3-color c3.AM c7-fishing.line
 “the color of the fishing line”
- (256) *ṁ-vèlà mwá vi-cèndyì*
 c3-color c3.AM c19-blade
 “the color of the blade”

Object marking is also blocked by a root-initial floating L, such as that left by the application of Gliding preceding V-initial noun roots. Although the first overt tone in such nouns is H, they surface as downstepped rather than upstepped, indicating both the absence of object marking and the presence of floating L:

- (257) *ṁ-vèlà mwá mw^h-ákò*
 c3-color c3.AM c3-morning
 “the color of the morning”

Furthermore, object marking does not appear immediately following (most instances of surface) L. Contrast the foregoing examples of object marking to the following, which follow L and are unmarked:

- (258) *mbà ngólóbé*
 without c9.cliff
 “without the cliff”
- (259) *sòkù à ngólóbé*
 c9.elephant c9.AM c9.cliff
 “the elephant of the cliff”
- (260) *pátòni à yé*
 c9.quality c9.AM c9.earth
 “the quality of the earth”

⁶⁶ Class 5 also contains a number of H-initial nouns because of the appearance of the toneless NPx allomorph [dy-] preceding V-initial roots: eg. *dyàngà* “family”.

The application of object marking only following H is also observable within the VP, as seen in the following examples in which an adverb intervenes between the verb and the object. The object marker only appears when the adverb is H-final:

- (261)
- (a) *à-tó-ó-ndí é và ngólóbé é ònáà*
 c1-see-EV-PRES LOC here c9.cliff LOC over.there
 “S/he sees here the cliff over there.”
- (b) *à-tó-ó-ndí é và lé mó é ònáà*
 c1-see-EV-PRES LOC here c9.eel LOC over.there
 “S/he sees here the eel over there.”
- (262)
- (a) *à-tó-ó-ndí sòpé ngó⁴lóbé é ònáà*
 c1-see-EV-PRES again c9.cliff LOC over.there
 “S/he sees again the cliff over there.”
- (b) *à-tó-ó-ndí sòpé lé⁴mó é ònáà*
 c1-see-EV-PRES again c9.eel LOC over.there
 “S/he sees again the eel over there.”

There is thus a clear role played by both the initial tone of the object and its immediately preceding tone, such that object marking appears only on H preceded by H. However, as I suggested earlier, even this generalization must be qualified in light of the behavior of objects in the infinitive (see below, this section).

Beyond tonal context, object marking is sensitive to the number of moras contained in the object. The marker can only be realized on the object itself when it contains more than one TBU (regardless of the tone of post-initial TBUs). When the object is monomoraic, the marker is realized on the immediately preceding TBU. Monomoraic hi-toned objects are rare in Iyasa due to the system of class inflections and the tendency for nouns to have at least two moras. However, most OPx are monomoraic and trigger leftward shift of the object marker. That this shift is sensitive to moraic environment rather than simply a property of OPx is clear from its occurrence preceding the hi-toned monomoraic noun *yé* “earth”,⁶⁷ as well as from its non-occurrence in bimoraic OPx:

- (263) *nà-tónd-é-ndí⁴ mú*
 1sg-love-EV-PRES.OBJ c1
 “I love him.”
- (264) *nà-tónd-é-ndí⁴ yé*
 1sg-love-EV-PRES.OBJ c9.earth
 “I love the earth.”
- (265) *nà-tónd-é-ndí í⁴nywè*
 1sg-love-EV-PRES OBJ.2pl
 “I love you (p).”

⁶⁷ The case of *yé* is interesting in Iyasa, since it is able to be realized as either monomoraic or bimoraic. It thus varies freely with respect to leftward shift of the object marker (although my impression is that it tends to favor leftward movement of the marker):

- (3) *ì-kàkà dyá yé⁴é*
 c5-quality c5.AM OBJ.c9.earth
- (4) *ì-kàkà dyá⁴ yé*
 c5-quality c5.AM.OBJ c9.earth
 “the quality of the earth”
- (5) *à-tó-ó-ndí yé⁴é*
 c1-see-FV-PRES OBJ.c9.earth
- (6) *à-tó-ó-ndí⁴ yé*
 c1-see-FV-PRES.OBJ c9.earth
 “S/he sees the earth.”

I have not found any other lexemes in Iyasa with this property: unambiguously monomoraic objects like OPx require leftward movement of the marker, while unambiguously bimoraic objects like *sáá* “goodness” prohibit leftward movement of the marker. These data seem to suggest that *yé* is somehow unambiguously represented in the lexicon with respect to number of moras. I leave a proper treatment of this phenomenon to further investigation.

Further evidence of leftward shift of the marker can be found in prepositional phrases. For example, the prepositional phrase locative expressions for “here” and “there” differ in the height of the monomoraic object (L vs. H, respectively). “Here” therefore does not trigger the object marker, while “there” does, with the marker pushed leftward onto the preposition rather than realized on the object itself:

- (266) *à-tám-w-á-ndí é vâ*
 c1-walk-EV-EV-PRES LOC here
 “S/he walks here.”
- (267) *à-tám-w-á-ndí éʷ vó*
 c1-walk-EV-EV-PRES LOC.OBJ there
 “S/he walks there.”

Verb inflections largely confirm these generalizations about the distribution of object marking. As expected, all H-final verb inflections trigger object marking. However, which verb inflections are H-final preceding objects may not be immediately obvious from their forms in isolation. Some inflections, such as the Present, are always H-final. Others, such as the Near Past and Near Future, are H-final only in phrase-medial position. The Near Future, for example, is L-final in phrase-final position and H-final otherwise:⁶⁸

- (268) *mú-vìy-á è-l̀ng-ò-k-ò*
 c3-come-EV.NPN-look-EV-K-EV
 “S/he is about to look.”
- (269) *mú-vìy-á è-l̀ng-ò-k-ò s̀pé*
 c3-come-EV.NP N-look-EV-K-EV again
 “S/he is about to look again.”

Because of its phrase-medial final Hi tone, the Near Future triggers tonal marking of H-initial objects:

- (270) *à-vìy-á è-kàm-ú-w-é-c-éʷ yó*
 c1-come-EV.NP N-accept-EV-CAUS-EV-K-EV.OBJ c9
 “S/he is about to accept it.”

The same holds for eg. the Relative Present. Phrase-finally the last TBU of the content verb is lo-toned. However, phrase-medially, it is hi-toned:⁶⁹

- (271)
- (a) *̀̀póló mēʷ mú-l̀ng-ò*
 c3-chief REL c3-look-EV
 “the chief who looks”
- (b) *̀̀póló mēʷ mú-l̀ng-ò s̀pé*
 c3-chief REL c3-look-EV again
 “the chief who looks again”

In light of this, as expected, H-initial objects of the Relative Present are tonally marked:

- (272) *̀̀póló mēʷ mú-l̀ng-ò ngòʷlóbé*
 c3-chief REL c3-look-EV c9.cliff
 “the chief who looks at the cliff”
- (273) *̀̀póló mēʷ mú-l̀ng-òʷ yó*
 c3-chief REL c3-look-EV.OBJ c9
 “the chief who looks at it”

The tonal properties of Iyasa verb inflections, including final tones in phrase-medial and final positions, are discussed in greater detail in chapter 5 6.

The aforementioned cases are those in which a demonstrably verb-final H triggers the application of object marking, and are unsurprising in light of the general principles of the distribution of the object marker discussed above

⁶⁸ See chapter 5 6.1.1.9 for discussion of Near Future inflection.

⁶⁹ See chapter 5 6.4 for discussion of the Relative Present.

(H-initial objects immediately preceded by H). A second broad group of inflections are those that are L-final even phrase-medially. The aforementioned generalizations predict H-initial objects of such inflections to be tonally unmarked. And indeed, most phrase-medially lo-toned verb inflections do not trigger object marking, as expected. Included in this class of inflections are the Imperfects, the Subjunctive, and the Counterfactual, H-initial objects of which surface with a simple Hi tone (downstepped as a result of the preceding L) without any upstep on the initial mora of the object or preceding it:

- (274) *à-bě^h-yé* *à-dyá-k-à* *nyó*
 c1-be.FP-EV.FP c1-eat-K-EV c10
 “S/he was eating them.” (Far Imperfect)
- (275) *nà-tók-á-ndí* *ná* *á-dyě-c-è* *nyó*
 1sg-want-EV-PRES COMP c1-eat.SBJ-K-EV c10
 “I wish that s/he eat them.” (Subjunctive)
- (276) *ṁ-póló* *mú-bě^h-c-è* *mú-ṁnd-á-k-à* *nyó*
 c3-chief c3-be.FP-K-EV c3-call-EV-K-EV c10
 “If the chief had called them ...” (Counterfactual)

The analysis up to this point succeeds at handling the data. However, infinitives are exceptional in both triggering object marking following verb-final L (since the infinitive is L-final preceding H; see preceding section) and leaving the marker in situ even on monomoraic objects, where the post-upstep downstep is realized as a fall:

- (277) *è-dá-yí-y-è* *nyõ^hlò*
 INF-wear-EV-CAUS-INF.EV c9.body
 “to dress the body”
- (278) *è-dá-à* *byõ^h [byô]*
 INF-wear-INF.EV c8
 “to wear them”
- (279) *è-bàp-è* *yõ^h* *è-múnyá*
 INF-carry-INF.EV OBJ.c9 c7-today
 “to carry it today”
- (280) *è-bàp-è* *dyõ^h [dʒô]*
 INF-carry-INF.EV OBJ.c5
 “to carry it”

Thus two broad generalizations cover the bulk of the distribution of the Iyasa tonal object marker:

(281) **Distribution of tonal object marking**

- (a) Object marking only occurs on H-initial objects immediately preceded by H
- (b) The upstepped-H object marker shifts to the preceding mora when assigned underlyingly to monomoraic objects

Nevertheless, the infinitive is exceptional in both these respects: it triggers post-L object marking, and (perhaps as a result of the verb-final L) the object marker does not shift leftward from monomoraic objects.

Providing a simple and unified account of object marking in Iyasa that covers the range of data presented above by means of independently-motivated underlying tonal representations and phonological rules is non-trivial. The most promising approach to my mind seems likely to be one in which a single underlying form is posited for the object marker which interacts with the underlying tonal representations of elements in its surrounding environment in predictable ways. On the basis of the sensitivity of object marking in all cases to the initial tone of the object (it appears only when the object is H-initial) and in most cases to the preceding tone (following prepositions, associative markers, adverbs, and all verb inflections but the infinitive, the object marker appears only following H), it seems to be the case that the object marker is simply upstepped-H (however this is represented underlyingly). Similarly, the realization of the object marker to the left of monomoraic objects in all cases but the infinitive suggests a rule shifting the upstepped-H leftward if and only if the mora on which it is initially inserted is word-final. The exceptional behavior of the infinitive suggests some sort of distinct tonal representation for this inflection as opposed to others which are also L-final on the surface, perhaps by means of distinct arrangements floating tones following the verb stem. I do not believe the data permit more specific statement of these distinct underlying representations or the rules governing them at this point in the analysis, and any attempt on my part to do so runs the risk of becoming a stipulative mess of rules and floating

tones that in reality has no greater explanatory power than the list of conditioning environments presented above. I hope that the foregoing attempt to capture the facts in the clearest and least abstract way possible will stimulate others to engage in more thorough examination of these issues in the future.

Before closing this discussion of tonal marking, it is necessary to point out the existence of tonal marking in the context of non-object verbal arguments as well, a phenomenon which I henceforth simply call “argument marking”. In these cases only, the final TBU of the infinitive is hi-toned even when followed by H. Thus, the tonal marker does not produce a surface contrast in the argument itself but rather in the preceding verbal root. When the infinitival copula takes an H-initial nominal or adjectival argument, the final TBU of the verb is lo-toned according to general principles governing tone in infinitives (see preceding section). Argument marking is much more restricted in distribution than object marking. To date, the only lexical items I have found which clearly trigger it are participles as well as the word *ngúú* “correct, exact, right,” and the only context in which it contrastively manifests itself is following the infinitival form of the copula *èdiyà* “to be”:

- (282) No argument marking
- (a) *è-diy-à lɛ^hmó*
INF-be-EV OBJ.c9.eel
“to be an eel”
- (b) *è-diy-à mú-tú^hbwé*
INF-be-EV c3-big
“to be big”
- (283) Argument marking
- (a) *è-diy-á ngúú*
INF-be-EV.ARG
“to be correct”
- (b) *è-diy-á túb-é-èni*
INF-be-EV.ARG pierce-EV-PART
“to be pierced”

The argument marker surfaces only on the infinitive to my knowledge, not on eg. the associative marker:

- (284) *ndɔ̀ndòki à ngúú*
c9.needle c9.AM correct
“the right needle”

The argument marker also only occurs when eg. *ngúú* serves as a non-object argument (eg. of copular constructions), not when it has an adverbial function, which it may also manifest:

- (285) *è-tám-w-à ngúú*
INF-walk-EV-INF.EV correct
“to walk correctly”

As discussed above, *ngúú* can also be nominal, in which case it takes the upstepped-H object marker just like any other H-initial noun:

- (286) *ì-kàkà dyá ngú^hú*
c5-quality c5.AM OBJ.c9.correctness
“the quality of the correctness”

In contrast to participles and *ngúú*, some H-initial lexemes that otherwise appear to belong to the same grammatical category as *ngúú*, such as *cáàcá* “new”, do not trigger argument marking.

- (287) *è-diy-à cá^hàcá*
INF-be-EV OBJ.c9.new
“to be new”

There thus appears to be a grammatical contrast between apparent adjectival nouns, some of which trigger argument marking (*ngúú*) and some of which do not (*cáàcá*). Unfortunately, the bulk of such nouns are L-initial (*sù* “straight”, *kɔ̀lò* “curved”, etc.; see chapter 4 2.2 for further discussion). In these cases, the final TBU of the infinitival copula is always hi-toned as a result of Infinitive Pre-L H-Insertion, and contrast is neutralized. One tempting treatment of argument marking is as a floating L preceding the argument, which would trigger Infinitive Pre-L H-Insertion and give rise to the surface final H observable in these constructions. However, there does not appear to be non-automatic downstep

of the argument relative to a preceding H, contrary to the predictions of such an analysis. I therefore simply note the existence of this interesting but seemingly quite restricted form of tonal marking and suggest a fuller analysis of its underlying form, its distribution, and its syntactic implications as a subject for future research.

4.4.3 Tone on the relativizer

As previously mentioned, the relativizer *mé* exhibits the unique property of upstepping when the preceding tone is H:

- (288)
- (a) *ḡ-bá-i mé mú-nyá^hḡg-w-à*
c3-marry-AGNOM REL c3-lick.PREL-EV-EV
“the groom who licks”
- (b) *ḡ-póló mé^h mú-nyá^hḡg-w-à*
c3-chief REL c3-lick.PREL-EV-EV
“the chief who licks”
- (289)
- (a) *ḡ-bá-i mé mú^h nyéé*
c3-marry-AGNOM REL c3 DDEM
“that groom”
- (b) *ḡ-póló mé^h mú^h nyéé*
c3-chief REL c3 DDEM
“that chief”
- (c) *mò-kòdí mé^h mú^h nyéé*
c3-mountain REL c3 DDEM
“that mountain”
- (290)
- (a) *i-lúkù mé dyí^h nyéé*
c5-sister REL c5 DDEM
“that sister”
- (b) *i-bóngó mé^h dyí^h nyéé*
c5-knee REL c5 DDEM
“that knee”

Upstep does not occur in similar syntactic environments, such as in hi-toned AM, indicating that it is a property specific to the relativizer:

- (291) *è-búmbú á ...*
c7-group c7.AM
“the group of...”
- (292) *ḡgólóbé nyá ...*
c10.cliff c10.AM
“the cliff of...”

4.4.4 VP-Initial Pause

Although this is more an issue of intonation than tone, at this point I must point out that there is usually a brief pause (glottal stop) preceding SPx, whether preceded by an overt subject or an auxiliary verb. This pause can be suppressed, but according to my informant this sounds fairly unnatural in all but very fast speech:

- (293) *ḡ-póló ' mú-ḡḡáá ' mú-lḡḡ-ó*
c3-chief ... c3-LPST ... c3-look-EV
“The chief hath looked”

Based on the above data, it is difficult to determine whether this pause is linked to the SPx itself or the beginning of the VP (or perhaps the clause; see below), since the two often coincide. In light of this, it is interesting to note that in subject relatives, the pause precedes the relativizer rather than the SPx:⁷⁰

⁷⁰ For fuller discussion of relative clauses, see chapter 5 6.3.

- (294) *ṅ-póló ' mē⁴ mú-làṅg-ò*
 c3-chief ... REL c3-look-EV
 “the chief who looks”
- (295) *ṅ-póló ' mē⁴ mwá ì-lúkù dyí-làṅg-ò*
 c3-chief ... REL c3.AM c5-sister c5-look-EV
 “the chief at whom the sister looks”

This pause does not occur when the relativizer is not VP-initial:

- (296) *ṅ-póló mē⁴ mú⁴ nyéé* (no pause)
 c3-chief REL c3 DDEM
 “that chief”

The pause therefore appears to be phonologically contrastive, revealing information about grammatical structure. Its occurrence preceding the relativizer of object relatives suggests that it may in fact be marking the left edge of the clause rather than the VP as I have roughly characterized it. Such an approach would require analysis of overt subjects as clause-external (i.e. topics), since there is an intervening pause between them and the following SP_x. It would also require analysis of subordinate verbs in auxiliary constructions as belonging to distinct clauses, again because of the presence of an intervening pause. This small survey of the data is insufficient to motivate hard and fast claims about the syntactic information encoded by the pause in question. Since full treatment of its phonetic, phonological, and grammatical properties is beyond the scope of this investigation, I simply note its existence in the hope that doing so might stimulate further research. For the sake of simplicity, I omit representation of the VP-Initial Pause in phonological representations throughout the remainder of this work.

5 The tonal impact of prosodic Weakening

The optional prosodic rules of *e*-Elision and Vowel Weakening discussed in chapter 2 4.4, henceforth collectively called *Weakening*, are accompanied by tonal phenomena distinct from those discussed in the preceding sections of this chapter, which deal exclusively with tone in underlying representations. The difference between prosodic Weakening and underlying tone phenomena rests primarily in the fact that there appears to be no evidence in Iyasa that underlying tones delink each other, floating or otherwise, while tones delinked through Weakening do delink surrounding lexically-specified tones in phonologically well-defined contexts.

In brief, Weakening deletes or renders non-moraic tone-bearing segments (vowels), the underlying tones of which are consequently delinked. Depending on the value of the delinked tone, the specific properties of its environment, and whether or not the tone of the Weakened segment was multiply associated, this may or may not leave an observable tonal trace in the surface output. L and H behave asymmetrically when floated (i.e. entirely delinked) through Weakening: L remains floating, causing downstep if intervening between two H's, while H reassociates only to an immediately following vowel (i.e. across the morpheme boundary with no intervening consonants):

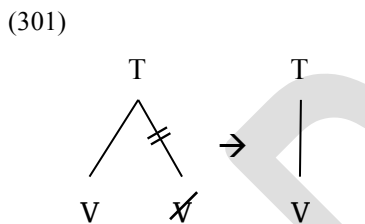
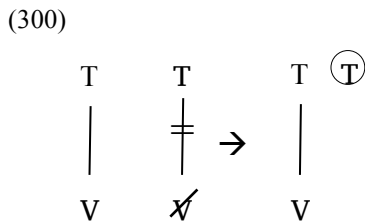
- (297) **Floated L**
- (a) *è-lémi á Ndàndá* → *èlé⁴ á Ndàndá*
 c7-tongue c7.AM Ndanda
 “Ndanda’s tongue”
- (b) *ṅ-vèlà mwá è-lémi* → *ṅvèlà mwá ⁴lémi*
 c3-color c3.AM c7-tongue
 “the color of the tongue”
- (298) **Floated H**
- (a) *mbòlí à Ndàndá* → *mbòl á Ndàndá*
 c9.flute c9.AM Ndanda
 “Ndanda’s flute”
- (b) *mò-dìcì é tē⁴yi* → *mòdìcì tē⁴i* (not: **mòdìcì tē⁴i*)
 c3-pestle LOC OBJ.inside
 “the pestle inside”
- (c) *mbúyá é-tiìkí* → *mbúyá tiìkí* (not: **mbúyá tiìkí* or **mbúyá tíkí*)
 c9.rain c9-small
 “drizzle (lit. small rain)”

Furthermore, H and upstepped-H behave differently in that while floated H does not reassociate leftward, as shown above, floated upstepped-H does:

- (299) \grave{a} - $t\acute{o}$ - \acute{o} - $nd\acute{i}$ \acute{e}^{H} $v\acute{o}$ \rightarrow $\acute{a}t\acute{o}\acute{o}nd\acute{i}^{\text{H}}$ $v\acute{o}$
 c1-see-EV-PRES OBJ.LOC there
 ‘‘S/he sees there.’’

In the above example, the upstepped-H object marker (discussed in §4.4.2) is forced leftward onto the preposition because the object ($v\acute{o}$) is monomoraic. When the preposition undergoes *e*-Elision, the upstepped H is realized on the vowel of its triggering environment to the left. Whether this represents a true asymmetry in the behavior of H and upstepped-H with respect to their behavior under Weakening, or is simply the leftward shift of the object marker onto the preceding TBU after the disappearance of the preposition, is a question I leave to further investigation.

The aforementioned properties hold only of tones that are *floated* through Weakening, such that they remain in the tonal tier but are no longer associated to any TBU. This happens in the case of tones that are singly-associated to the Weakened segment. By contrast, multiply-linked tones leave no tonal trace when one of their associated TBUs is lost through Weakening, since they remain lexically associated elsewhere. This contrast is schematically represented below, with *T* representing tone specification:



This principle gives rise to the contrast observed in the following examples, where the c9 AM is raised following the final H of *ngònú* ‘‘catfish’’ but not following the final H of *cíngó* ‘‘voice’’:

- (302) $c\acute{i}ng\acute{o}$ \acute{a} $Nd\grave{a}nd\acute{a}$ \rightarrow $c\acute{i}ngw$ \acute{a} $Nd\grave{a}nd\acute{a}$
 c9.voice c9.AM Ndanda
 ‘‘Ndanda’s voice’’
- (303) $ng\grave{o}n\acute{u}$ \acute{a} $Nd\grave{a}nd\acute{a}$ \rightarrow $ng\grave{o}nw$ \acute{a} $Nd\grave{a}nd\acute{a}$
 c9.catfish c9.AM Ndanda
 ‘‘Ndanda’s catfish’’

The most apparent explanation I find for this asymmetry is that when *ngònú* undergoes Weakening, its lexical H is floated, since it cannot be taken to be multiply associated given that the preceding tone is L (as illustrated by (285)). By contrast, *cíngó* contains a sequence of surface H TBUs. If these are analyzed as multiply-linked to a single underlying H, then nothing is floated by Weakening, since the underlying tone remains associated to the first of the two consecutive TBUs (as illustrated by (286)). The foregoing examples thus also reveal the underlying tonal structure of the lexemes in question. Failure to leave a tonal trace under Weakening provides evidence for a multiply-associated tone.

While tones floated through weakening appear to only be able to reassociate to vowels in triggering environments, as shown above, further characteristics of the principles governing this reassociation are revealed in the small subset of cases when the triggering vowel is long – namely, the c1 and c7 PPx ($\acute{a}\acute{a}$ - and $\acute{a}\acute{a}^{\text{H}}$ -, respectively). In this respect, homorganic vowel sequences do exhibit behavior distinct from other sequences of moras, though these two prefixes constitute scanty evidence for phonemic vowel length (for discussion of vowel length in *Iyasa*, see chapter 2 2.1). As is the case in the foregoing data, H and L behave asymmetrically when floated by Weakening across from a long

vowel: H reassociates to both vowel segments when they are lo-toned – delinking their lexically specified L, which floats and triggers downstep – and to the first only when they are hi-toned, while L reassociates to the first vowel segment only:

- (304) *ngùbú* *àà-mé* → *ngùbw áá⁺mé* (level H over *aa*, followed by downstep)
 c9.hippopotamus c9-1sg.POSS
 “my hippopotamus”
- (305) *è-búmbú* *ǎǎ⁺-mé* → *èbúmbw ǎǎ⁺mé*
 c7-group c7-1sg.POSS
 “my group”
- (306) *è-lémi* *ǎǎ⁺-mé* → *èlémi ǎǎ⁺-mé* (LH rise over *aa*)
 c7-tongue c7-1sg.POSS
 “my tongue”

These cases of long vowels in triggering environments are unique in that they allow reassociations of the floating tone that are otherwise unlicensed: L reassociates (to a single TBU), whereas elsewhere it does not reassociate and simply floats; and H reassociates to two consecutive TBUs, while elsewhere it only reassociates to one. How to account for the special behavior of homorganic vowel sequences in these instances is a question I leave to future research.

As a final note, the same asymmetry between singly- and multiply-linked tones under Weakening manifests itself in contexts involving long vowels as well. In the following examples, the final H of *nyàngwé* “mother” is floated through Weakening and reassociates to both the (lexically lo-toned) homorganic vowels of the following PPx, while the delinking of the final H of *ángwé* “father” leaves no tonal trace on the following PPx, since its tone is multiply-linked and does not float as a result of Weakening:

- (307) *ángwé* *àà-mé* → *ángw ààmé*
 c9.father c9-1sg.POSS
 “my father”
- (308) *nyàngwé* *àà-mé* → *nyàngw áá⁺mé*
 c9.mother c9-1sg.POSS
 “my mother”

Nominal morphology

As is typical of Bantu languages, the principle feature of nominal morphology in Iyasa is the noun class. The noun classes and noun class pairings (genders) of the language are discussed extensively below.

1 Noun classes in Iyasa

All nouns in Iyasa belong to one of 13 formally distinct noun classes, which following convention I assume to be inherited from Proto-Bantu and to which I refer using the currently accepted version of the numbering system for PB noun classes initially proposed by W.H.I. Bleek (1869). As is typical of Bantu in general, the nominal head controls agreement morphology throughout the noun phrase and in the verb. There are two independent properties of nominal head agreement in Iyasa that deserve attention: (1) the agreement patterns themselves, and (2) the systematic pairings of particular singular and plural agreement patterns. I adopt the convention of referring to individual agreement templates for nouns as “classes” and to pairings of classes as “genders”. Gender is a lexically-specified property of Iyasa nouns, and with the exception of gender 1/2, which has a humanness requirement for membership (see below), the assignment of nouns to genders is to a large extent semantically arbitrary. My exposition of the noun class system will focus first on the formal details of the morphological agreement patterns in Iyasa noun classes (§1.1-§1.3), after which I discuss the gender pairings observable in the language (§1.4). Perhaps unsurprisingly, there are some exceptions to the morphological generalizations I outline below, which I take to be best analyzed as lexically frozen ideosyncracies. In §1.5 I provide a brief overview of some notable examples of these. In §1.6 I comment on previous treatments of Iyasa noun class in light of my own findings.

Class #	NPx	PPx	EPx	SPx	OPx
1	<i>mò-</i>	<i>àà-</i>	<i>mú-</i>	<i>à-</i>	<i>mú</i>
2	<i>wà-</i>	<i>wá⁺-</i>	<i>wá-</i>	<i>wá-</i>	<i>wá</i>
3	<i>mò-</i>	<i>mwá⁺-</i>	<i>mú-</i>	<i>mú-</i>	<i>mó</i>
4	<i>mè-</i>	<i>má⁺-</i>	<i>mí-</i>	<i>mí-</i>	<i>myó</i>
5	<i>dì-</i>	<i>dyá⁺-</i>	<i>dyí-</i>	<i>dyí-</i>	<i>dyó</i>
6	<i>mà-</i>	<i>má⁺-</i>	<i>má-</i>	<i>má-</i>	<i>má</i>
7	<i>è-</i>	<i>áá⁺-</i>	<i>é-</i>	<i>é-</i>	<i>yó</i>
8	<i>bè-</i>	<i>bá⁺-</i>	<i>bí-</i>	<i>bí-</i>	<i>byó</i>
9	<i>Ø-</i>	<i>àà-</i>	<i>é-</i>	<i>é-</i>	<i>yó</i>
10	<i>Ø-</i>	<i>nyá⁺-</i>	<i>nyí-</i>	<i>nyí-</i>	<i>nyó</i>
13	<i>lì-</i>	<i>lá⁺-</i>	<i>lí-</i>	<i>lí-</i>	<i>lyó</i>
14	<i>bò-</i>	<i>bwá⁺-</i>	<i>bú-</i>	<i>bú-</i>	<i>byó</i>
19	<i>vì-</i>	<i>vá⁺-</i>	<i>ví-</i>	<i>ví-</i>	<i>vyó</i>

Table 4.1 - Noun class morphemes in Iyasa (underlying forms)

1.1 Noun class prefix series

Various prefixal forms may appear for a given noun class depending which kind of word is being inflected for class. These distinctions motivate the proposal of several separate paradigms of noun class inflections: nominal prefixes (NPx), pronominal prefixes (PPx), enumerative prefixes (EPx), and verb agreement pronouns for subject (SPx) and object (OPx). Each of these prefix types represents a paradigmatic series formally distinct from all the others in at least one class, in ways that cannot be reduced to phonologically predictable alternations. Likewise, noun classes are differentiated from each other by some degree of formal difference in agreement inflection within the noun phrase. Nouns whose agreement properties are formally identical in all respects (or whose formal differences are phonologically predictable) are considered to belong to the same class. The agreement paradigms for each of the aforementioned prefix series and noun classes are given in Table 4.1. As is evident from Table 4.1, although NPx, PPx, and EPx are all series of noun-class-related inflectional prefixes and share a good deal of formal similarity in most classes, the phonologically unpredictable differences in form between them motivate the stipulation of separate paradigms for each.

The forms given in Table 4.1 are underlying. However, most noun class prefixes in Iyasa are realized differently depending on phonological context, especially on whether the root begins with a consonant or a vowel. While some of this variation is predictable from the general phonological principle of Vowel Gliding discussed in chapter 2 4.2, the remainder is best accounted for through morpheme-specific rules. Discussion of allomorphic variation and examples of noun class agreement are found in §1.3.

1.1.1 Nominal prefix (NPx)

NPx inflect nouns directly. With the exception of some human-referring nouns (discussed in §1.4.8), nouns always inflect according to their lexical class, even when subordinate to a head noun of a different class, as seen below:

- (309) *bè-dyá* *bá* *mw⁺-ákò*
 c8-eat.INF c8.AM c3-morning
 “breakfast (lit. food of the morning)”

Somewhat atypically for Bantu languages, which tend to inflect nouns and adjectives according to the same paradigm and numerals differently (Katamba, 2003), Iyasa inflects adjectives and (inflecting) numerals according to the same paradigm and nouns differently. Thus the NPx paradigm applies to nouns alone, while EPx applies to both adjectives and numerals.

1.1.2 Pronominal prefix (PPx)

PPx inflect possessive pronouns, as well as certain other lexical items such as *-sáá* “good”. The reader may note in Table 4.1 the fact that all PPx as I analyze them contain the segment *a*, which raises the question of whether or not this *a* actually forms part of the prefix, or is rather better analyzed as part of the root to which the prefix attaches. Under the latter approach, the tonal properties of PPx-inflected forms, such as the presence of downstep following *a* in hi-toned inflections, would presumably need to be accounted for as the consequence of a lexical L of the inflected root that is delinked and floated as a result of the grounding of a lexical floating Hi tone in the prefix.

However, there are several problems with this approach. First, I do not find clear independent evidence in Iyasa that underlying floating tones delink lexical tones and reassociate to their segments (see chapter 3 for discussion of tone). The hypothetical tonal analysis of PPx inflection discussed above therefore does not appear to be particularly well motivated. Second, even accepting this analysis involving delinking of lexical tones, the shape of the c7 PPx remains unexplained: there is no apparent reason to posit a floating tone for the c7 PPx prefix, which under such an analysis would simply be *á*. Why then do c7 PPx inflections surface as *ǎǎ*... rather than as *áá*...? In other words, why does the lexical H of a prefix spread and delink an initial lexical L of the root it attaches to in this case and no other? Reinforcing this problem is the existence of the c7 inflection of “long”, *éàbé* – which given the tendency of the c7 prefix to assimilate often surfaces as *áàbé*, resulting in surface contrast between it and eg. *ǎǎmé* “my (c7)”. The phonological processes required to generate the correct result for PPx would therefore appear to be lexeme- or construction-specific. Furthermore, in other cases of clear underlying floating L in the language, there is not necessarily upstep of a preceding H (see chapter 3 4.3 for discussion). The upstep observed in most PPx inflections (and lack thereof in c1 and c9 when prosodically floated H delinks and floats the L) is therefore unexplained and must be stipulated. Third, the vowel sequence of V-initial PPx (i.e. c1, c7, and c9) behaves as if it shares a single multiply-linked underlying tone when subject to the tonal effects of prosodic weakening processes (discussed in chapter 2 4.4 and chapter 3 5). Specifically, although L floated through Weakening cannot entirely delink an underlying tone in its triggering environment and therefore usually floats, it nevertheless delinks the tone of the initial V in c7, resulting in a lo-rising contour over the sequence. This fact suggests a single underlying L shared by both vowels which permits delinking by L since doing so would not entirely delink the underlying tone. Similarly, an H floated through Weakening delinks not only the first V of c1 and c9 PPx forms, but *both* initial V’s, leaving a floating L tonal trace which downsteps the following H but does not upstep the preceding one. Elsewhere, such an H only reassociates to a single TBU, again suggesting that the initial vowels of the c1 and c9 PPx are shared by both vowels. Multiple association of underlying tones across a morpheme boundary is not to my knowledge motivated elsewhere in the grammar of the language, and these data therefore suggest that the vowel sequences in question are homomorphic.⁷¹

In light of these considerations, I believe the data are most amenable to a homomorphic analysis of apparent class prefix + *a* in the PPx paradigm, at least synchronically. Perhaps the surface shape suggesting morphological complexity is the result of a fossilized historically productive process of inflection. As noted below, there is also a strong resemblance between the PPx prefixes and the AM paradigm, in terms of both segments and tones. In fact, the only formal difference is the lack of upstep in hi-toned AM and the length contrast in classes 1, 7, and 9 (long *aa* in PPx and short *a* in AM). These facts suggest a common grammatical ancestor for these two kinds of inflection, perhaps a fairly recent one. However, the formal differences now appear to be phonologically unpredictable, and I therefore posit distinct paradigms.

1.1.3 Enumerative/adjectival prefix (EPx)⁷²

EPx inflect (inflectable) adjectives and (some) numerals. True adjectives (i.e. those that inflect) agree with the nominal head and take their class prefixes from the EPx paradigm (for examples, see discussions of individual noun classes, as well as §**Error! Reference source not found.**). All EPx prefixes are hi-toned. The EPx paradigm is formally quite similar to the paradigm of subject agreement prefixes (SPx). The only formal contrast is found in c1, between EPx *mú-*

⁷¹ See chapter 3 for more detailed discussion and exemplification of these tonal phenomena and the behavior of PPx under prosodic weakening processes.

⁷² Typically, the label EPx (enumerative prefix) refers to the prefix series attaching to nominal modifiers alone, while nouns and adjectives are both modified by the same prefix series (NPx), often formally distinct from EPx (Katamba, 2003). However, the prefix series appearing on nouns in Iyasa is formally distinct from that appearing on adjectives which is in turn identical to that appearing on inflecting numerals (see §**Error! Reference source not found.**). For convenience, I retain the conventional EPx label used elsewhere in Bantu studies, while clarifying that in Iyasa the prefix series referred to by it is not strictly enumerative and appears on adjectives as well.

Person	Number	Subject	Object
1	SG	<i>nà-</i>	<i>ngwé</i>
1	PL	<i>lí-</i>	<i>íwè</i>
2	SG	<i>è-</i>	<i>éwè</i>
2	PL	<i>è-</i>	<i>ínywè</i>

Table 4.2 - 1st and 2nd person subject and object agreement

and SPx *à-*. This difference is nonetheless phonologically unpredictable, and for this reason I posit distinct paradigms for the two.

1.1.4 Subject agreement prefix (SPx)

SPx are obligatory subject pronouns that inflect for noun class in 3rd person. In 1st and 2nd person they take the forms given in Table 4.2. While previous analyses such as Bouh Ma Sitna (2004) have included a 3rd person SPx *à-* (sg) and *wà-* (pl) and distinguished two sets of subject prefixes (“allocutive” which are sensitive to person/number and “substitutive” which are sensitive to noun class), I find a simpler analysis to be one in which all 3rd person subjects simply control inflection for class as a grammatical rule. The so-called 3rd person pronouns *à-* and *wà-* are merely the noun class subject agreement forms for gender 1/2, a human-referring gender. There is thus a single subject agreement paradigm, with separate forms for 1st and 2nd person singular and plural and 13 distinct noun class forms for 3rd person, laid out in Table 4.1.

While I have given the SPx forms with underlying tone specifications, I must note that the surface tones of SPx are often subject to modification by the TAM inflection of the verb. For example, in the Far Past (discussed in chapter 5 6.1.1.3) the SPx is always realized as L:

- (310) *wà-tá'm-w-é* (cf. *ètámwà* “to walk”)
 c2-walk-EV-EV.FP
 “They had walked.”

By contrast, in eg. the Subjunctive (discussed in chapter 5 6.1.3.3) the SPx is always realized as H:

- (311) *nà-tók-á-ndí ná mw-àdó á-lèng-é-c-é*
 1sg-want-EV-PRES COMP c1-woman c1-wander-EV-K-EV.SBJ
 “I want the woman to wander.”

However, in many tense inflections (such as the Near Past, Composite Near Past, Present, Present Conditional, Punctual Past, etc.), the SPx series exhibits a tonal contrast between c1 (lo-toned) and all others (hi-toned).⁷³ Since eliminating tonal contrast by construction-specific rules forcing L or H realization of all SPx is more straightforward than generating such contrast by rule from underlyingly identically-toned prefixes in certain inflections, I assume that these verb forms reveal the underlying tonal specification of SPx, and represent this analysis in the tone specifications of SPx given in Table 4.1. This contrast can be seen in the following examples comparing lo-toned c1 *à-* and hi-toned c2 *wá-* in the Present:

- (312) *à-tám-w-á-ndí*
 c1-walk-EV-EV-PRES
 “He is walking.”
- (313) *wá-tám-w-á-ndí*
 c2-walk-EV-EV-PRES
 “They are walking.”

A final question that must be addressed regarding the morphological properties of the SPx series is whether they are indeed *prefixes* that attach to the verb root, or whether they are better analyzed as independent pronominal words or clitics. Subject agreement markers tend to be analyzed in Bantu linguistics as prefixes, though there are certainly exceptions. However, typological generalizations should not automatically override the particular facts of the

⁷³ Verbal inflection is further discussed in chapter 5 6.

language, and linguistic evidence from Iyasa itself will be necessary in order to satisfactorily resolve the question. Unfortunately, to my knowledge this evidence is in short supply. In favor of an analysis of SPx as prefixes, the SPx is always obligatory, regardless of whether the nominal subject is explicit or implicit, suggesting that it is not filling the same syntactic argument slot as the subject NP (as would be expected if the SPx were a pronoun), in which case co-occurrence would be ruled out. However, this evidence is not decisive, since it is possible to analyze the explicit NP as a pre-sentential topic and the SPx as a full pronoun. Indeed this is exactly the analysis of Lonfo (2009), who along with Bouh Ma Sitna (2004) takes the SPx to be a full pronoun. Potential evidence in favor of this analysis (not discussed by Bouh Ma Sitna or Lonfo) comes from prosody: in normal speech, there is a pause between the explicit subject NP and the following SPx, consistent with a topic-comment sentence structure. Eliminating this pause is unnatural for speakers unless they are speaking very quickly (see chapter 3 4.4.4 for further discussion). While Lonfo himself does not justify his pronominal analysis in contrast to the prefixal one, Bouh Ma Sitna does. His stated basis for it is that the pronoun “assumes the predicative function of subject” and quotes Essono (2000) in arguing that despite the fact that the SPx is “tightly linked” to the verb at the morphological level, it forms a “complete utterance” and fulfills the “subject function” and should therefore be considered an independent word and not part of the VP (p. 50, *my trans*). While I do not have sufficient empirical basis to dismiss this account in itself (that the SPx is a word), I simply note the unconvincing nature of morphological arguments based on *a priori* claims about how subjects and verbs must interact. This argument appears to overlook the widespread phenomenon of pro-drop in the languages of the world, including Bantu (Nurse & Philippson, 2003). Lack of overt subject is therefore not a compelling motivation for an analysis of subject agreement markers as prefixes.

I thus leave the question open to future research and note that the two relevant linguistic facts I have discovered seem to point in opposite directions: non-optionality favors analysis as a prefix, while pause intonation between explicit subject and SPx favors topic-comment structure, allowing for analysis of the SPx as a clitic or word. For the purposes of this study, I adopt the typical Bantu analysis as an agreement prefix.

1.1.5 Object agreement pronoun (OPx)

Despite the fact that many Bantu languages have agreement prefixes for objects as well as subjects (Katamba, 2003), OPx in Iyasa are not prefixes, but rather post-verbal full pronouns that inflect to agree in noun class with the object. They are in complementary distribution with overt objects. That they are not suffixes either is apparent from the fact that they can also head pronominal expressions involving *èèpi* “all” (eg. c13 *lyó lyèèpi* “all (of them)”, see §1.2.4 for discussion).⁷⁴ Despite the fact that these morphemes are not affixes in Iyasa, for convenience I continue to refer to them using the conventional label OPx. First and 2nd person object pronominal forms are given in Table 4.2.

1.2 Other noun class inflection paradigms

Noun classes control inflection according to other distinct paradigms that apply only to a single construction or lexical item. Given this lack of generality I do not propose them as prefix or pronoun series, but rather list their various class forms in the following sections.

⁷⁴ This evidence is admittedly faces the problem of ideosyncratic forms in c7 and c9 (see §1.2.4), which might suggest that the pronominal forms of *èèpi* are fossils and not the compositional result of OPx + *èèpi*. While this ideosyncrasy could potentially be handled in a variety of ways, including fossilization of only the exceptional classes in question, I simply note that even if all the *èèpi* forms are fossils, they are likely recent given their homophony in most classes to what would be OPx + *èèpi*. Thus OPx must *at some point* have been able to head an NP, and therefore not have been a suffix. I find no evidence for a diachronic shift from full word to suffix.

Class #	Form	Example
1	<i>à</i>	<i>mòtò à Ndàndá</i> “Ndanda’s person”
2	<i>wá</i>	<i>wàtò wá Ndàndá</i> “Ndanda’s people”
3	<i>mwá</i>	<i>mòlémà mwá Ndàndá</i> “Ndanda’s heart”
4	<i>má</i>	<i>mèlémà má Ndàndá</i> “Ndanda’s hearts”
5	<i>dyá</i>	<i>itútú dyá Ndàndá</i> “Ndanda’s hump”
6	<i>má</i>	<i>màtútú má Ndàndá</i> “Ndanda’s humps”
7	<i>á</i>	<i>èbúmbú á Ndàndá</i> “Ndanda’s group”
8	<i>bá</i>	<i>bèbúmbú bá Ndàndá</i> “Ndanda’s groups”
9	<i>à</i>	<i>sòkù à Ndàndá</i> “Ndanda’s elephant”
10	<i>nyá</i>	<i>sòkù nyá Ndàndá</i> “Ndanda’s elephants”
13	<i>lá</i>	<i>licèndyì lá Ndàndá</i> “Ndanda’s blades”
14	<i>bwá</i>	<i>bòkùdì bwá Ndàndá</i> “Ndanda’s storm”
19	<i>vá</i>	<i>vicèndyì vá Ndàndá</i> “Ndanda’s blade”

Table 4.3 - Forms of the associative marker by noun class

1.2.1 The associative marker (AM)

Genitive constructions in Iyasa are produced using what, following Bantuist convention, I label an ‘associative marker’ (AM) that syntactically subordinates the noun that follows it to the one that precedes it, in a manner highly similar (if not identical) to a preposition. However, unlike prepositions, the AM itself agrees in class with the head noun. The inflectional forms of the associative marker are identical to those of the PPx series, with the exception that the V-initial c1, c7, and c9 forms are short (*a*) rather than long, and that hi-toned AM are not upstepped, in contrast to hi-toned PPx. This does not appear to be explicable on phonological grounds. The difference is thus idiosyncratic and must be specified in either the lexicon or the grammar, and for this reason I opt to represent the associative marker as its own paradigm, presented in Table 4.3. However, the high degree of similarity between the PPx and AM series is perhaps indicative of a single historical paradigm that has diverged slightly in form, and I leave the question to future research.

Class #	Determiner	Example	Pronoun	Example
1	<i>nù</i>	<i>mòtò mé nù</i> “this person”	<i>ánù</i>	<i>ánù</i> “this person”
2	<i>wà</i>	<i>wàtò mé wà</i> “these people”	<i>wá</i>	<i>wá</i> “these (people)”
3	<i>mù</i>	<i>mòlémà mé mù</i> “this heart”	<i>mú</i>	<i>mú</i> “this (heart)”
4	<i>mì</i>	<i>mèlémà mé mì</i> “these hearts”	<i>mí</i>	<i>mí</i> “these (hearts)”
5	<i>dyì</i>	<i>itútú mé dyì</i> “this hump”	<i>dyí</i>	<i>dyí</i> “this (hump)”
6	<i>mà</i>	<i>màtútú mé mà</i> “these humps”	<i>má</i>	<i>má</i> “these (humps)”
7	<i>énì</i>	<i>èbùmbù mé énì</i> “this group”	<i>énì</i>	<i>énì</i> “this (group)”
8	<i>bì</i>	<i>bèbùmbù mé bì</i> “these groups”	<i>bí</i>	<i>bí</i> “these (groups)”
9	<i>énì</i>	<i>sòkù mé énì</i> “this elephant”	<i>énì</i>	<i>énì</i> “this (elephant)”
10	<i>nyì</i>	<i>sòkù mé nyì</i> “these elephants”	<i>nyí</i>	<i>nyí</i> “these (elephants)”
13	<i>lì</i>	<i>lìcèndyì mé lì</i> “these blades”	<i>lí</i>	<i>lí</i> “these (blades)”
14	<i>bù</i>	<i>bòkùdì mé bù</i> “this storm”	<i>bú</i>	<i>bú</i> “this (storm)”
19	<i>vì</i>	<i>vìcèndyì mé vì</i> “this blade”	<i>ví</i>	<i>ví</i> “this (blade)”

Table 4.4 - Proximal demonstrative pronouns by noun class

1.2.2 Proximal demonstrative constructions

Proximal demonstrative constructions (i.e. constructions translated using “this” or “these”) involve a class pronoun whose forms on the whole resemble lo-toned, morphologically independent versions of those of the EPx series, with idiosyncrasies in classes 1, 7 and 9. These forms are constructed according to the following morphological template:

- (314) **Proximal demonstrative**
noun + *mé* + proximal demonstrative pronoun

That this pronoun must be analyzed as distinct from the EPx series is evident not only from the unpredictable c1, c7 and c9 forms but also from its syntactic position as an independent phrase-final word, not prefixed to any stem. While the full paradigm of these pronouns is given in Table 4.4, the relevant differences are between c1 EPx *mú-* and proximal demonstrative *nù/ánù*, as well as between c7/c9 EPx *é-* and proximal demonstrative *énì*. These differences cannot be predicted on phonological grounds and motivate a distinct paradigm in the grammar. There must furthermore be a distinction between proximal demonstratives that modify explicit nominal heads (determiners) and those that serve as independent pronouns, not only because of tonal differences but also because of the unpredictable segmental difference between c1 determiner *nù* and pronoun *ánù* (eg. **mòtò mé ánù* is ungrammatical).

Class #	Determiner	Example	Pronoun	Example
1	\emptyset nyéé	mòtò mé [↑] nyéé “that person”	á [↑] nyéé	á [↑] nyéé “that (person)”
2	wá [↑] nyéé	wàtò mé wá [↑] nyéé “those people”	wá [↑] nyéé	wá [↑] nyéé “those (people)”
3	mú [↑] nyéé	mòlémà mé mú [↑] nyéé “that heart”	mú [↑] nyéé	mú [↑] nyéé “that (heart)”
4	mí [↑] nyéé	mèlémà mé mí [↑] nyéé “those hearts”	mí [↑] nyéé	mí [↑] nyéé “those (hearts)”
5	dyí [↑] nyéé	itútú mé [↑] dyí [↑] nyéé “this hump”	dyí [↑] nyéé	dyí [↑] nyéé “this (hump)”
6	má [↑] nyéé	màtútú mé [↑] má [↑] nyéé “these humps”	má [↑] nyéé	má [↑] nyéé “these (humps)”
7	é [↑] nyéé	èbúmbú mé [↑] é [↑] nyéé “this group”	é [↑] nyéé	é [↑] nyéé “this (group)”
8	bí [↑] nyéé	bèbúmbú mé [↑] bí [↑] nyéé “these groups”	bí [↑] nyéé	bí [↑] nyéé “these (groups)”
9	é [↑] nyéé	sòkù mé é [↑] nyéé “this elephant”	é [↑] nyéé	é [↑] nyéé “this (elephant)”
10	nyí [↑] nyéé	sòkù mé nyí [↑] nyéé “these elephants”	nyí [↑] nyéé	nyí [↑] nyéé “these (elephants)”
13	lí [↑] nyéé	licèndyì mé lí [↑] nyéé “these blades”	lí [↑] nyéé	lí [↑] nyéé “these (blades)”
14	bú [↑] nyéé	bòkùdì mé bú [↑] nyéé “this storm”	bú [↑] nyéé	bú [↑] nyéé “this (storm)”
19	ví [↑] nyéé	vicèndyì mé ví [↑] nyéé “this blade”	ví [↑] nyéé	ví [↑] nyéé “this (blade)”

Table 4.5 - Distal demonstrative pronouns by noun class

1.2.3 Distal demonstrative constructions

Like proximal demonstratives, distal demonstratives (i.e. constructions translated using “that” or “those”) involve the relativizer *mé* and a demonstrative pronoun. The morphological template for an NP involving a distal demonstrative is as follows:

- (315) **Distal demonstrative**
 noun + *mé* + (upstepped) distal demonstrative pronoun + *nyéé*

The relativizer exhibits its particular characteristic of upstepping following H (see chapter 3 4.4.3 for discussion). In addition, the distal demonstrative morpheme *nyéé* triggers upstep on the preceding H. In all classes but c1, this upstep therefore surfaces on the (hi-toned) class pronoun preceding the demonstrative marker. However, since c1 lacks an overt marker, the upstep surfaces on the the relativizer, even when it is preceded by L (see Table 4.5).

Though the distal demonstrative pronoun series is quite similar in form to the proximal demonstrative series, phonologically unpredictable differences in classes 1 and 9 require the stipulation of a distinct paradigm. Furthermore, like the proximal demonstratives, the unpredictable difference in c1 between distal pronouns as modifiers of explicit nominal heads (\emptyset) and as independent pronouns (*á[↑]*) requires distinct distal demonstrative paradigms. I treat distal demonstrative pronouns as independent words but acknowledge that they may be better analyzed as prefixes of *nyéé*, a question I leave to future research.

There is also a tonal contrast among distal demonstratives between what I call “anaphoric” and “demonstrative” uses. The examples discussed above are all demonstrative, and are used when indicating a particular individual or object in the physical vicinity (as if by pointing): “that X (there)”. However, when used as an anaphor in discourse “that X (about whom I was talking)”, the distal demonstrative marker has the form *nyè* – that is, with a lo-toned short vowel. Unlike the demonstrative marker, this anaphoric marker does not trigger upstep of the preceding H:

- (316) ñ-póló mé[↑] mú[↑] nyéé
 c3-chief REL c3 DDEM
 “that chief (right there)”
- (317) ñ-póló mé[↑] mú nyè
 c3-chief REL c3 DDEM
 “that chief (just mentioned)”

Class #	Form	Example	Pronominal Construction
1	<i>mwéèpí</i>	<i>mòtò mwéèpí</i> “all people”	<i>mú mwéèpí</i>
2	<i>wáá́ pí</i>	<i>wàtò wáá́ pí</i> “all the people”	<i>wá wáá́ pí</i>
3	<i>mwéé́ pí</i>	<i>mòlémà mwéé́ pí</i> “all hearts”	<i>mó mwéé́ pí</i>
4	<i>myéé́ pí</i>	<i>mèlémà myéé́ pí</i> “all the hearts”	<i>myó myéé́ pí</i>
5	<i>dyéé́ pí</i>	<i>itútú dyéé́ pí</i> “all humps”	<i>dyó dyéé́ pí</i>
6	<i>máá́ pí</i>	<i>màtútú máá́ pí</i> “all the humps”	<i>má máá́ pí</i>
7	<i>éé́ pí</i>	<i>èbúmbú éé́ pí</i> “all groups”	<i>yó yéé́ pí</i>
8	<i>byéé́ pí</i>	<i>bèbúmbú byéé́ pí</i> “all the groups”	<i>byó byéé́ pí</i>
9	<i>èèpí</i>	<i>sòkù èèpí</i> “all elephants”	<i>èèpí</i>
10	<i>nyéé́ pí</i>	<i>sòkù nyéé́ pí</i> “all the elephants”	<i>nyó nyéé́ pí</i>
13	<i>lyéé́ pí</i>	<i>licèndyì lyéé́ pí</i> “all the blades”	<i>lyó lyéé́ pí</i>
14	<i>bwéé́ pí</i>	<i>bòkùdì bwéé́ pí</i> “all storms”	<i>bó bwéé́ pí</i>
19	<i>vyéé́ pí</i>	<i>vìcèndyì vyéé́ pí</i> “all blades”	<i>vyó vyéé́ pí</i>

Table 4.6 - Forms of *èèpí* by noun class

The same semantic distinction does not exist in proximal demonstratives, which may be used either with a demonstrative or anaphoric meaning.

1.2.4 *èèpí* “all”

The Iyasa word meaning “all”⁷⁵ appears to have its own class paradigm distinct from those previously mentioned. Its forms are given in Table 4.6. While these forms might suggest prefixation of one of the independently-established noun class series to some kind of root, there is no complete correspondence between the inflectional forms of *èèpí* and any one prefix series. For example, while PPx is a promising candidate in some classes, in others *èèpí* exhibits an unpredicted change in vowel quality within the prefix from *a* to *ε*, while still others contain segments not found in the PPx series, such as c4 *myéé́ pí* and c8 *byéé́ pí* vs. the respective PPx-inflected possessives *má́mé* and *bá́mé*, which exhibit no palatal glide in the prefix and which contain a short vowel. Furthermore, the initial segments of the c1 form *mwéèpí* do not resemble the c1 PPx *àà-*. Similarly, while EPx might conceivably have glided allomorphs before vowel-initial roots,⁷⁶ the EPx prefixes in c9 is H-toned, while the initial vowel of *èèpí* in this class is L-toned. Furthermore, there is an unpredictable tonal difference between c1 *mwéèpí* and c3 *mwéé́ pí*, such that the expression *mòtò mwéé́ pí* can only involve the c3 homophone of *mòtò* “person”, which refers to a kind of skin tumor. These facts are problematic for an account of *èèpí* as consisting of some underlying root (eg. /pí/ or /èpí/) prefixed by a class agreement series (What is the underlying form of the root? Which inflection series is used? Why the change in vowel quality in some classes? On what phonological basis does the L of hypothetical *èpí* surface as a fall in c1 and as a downstep in c3?). On the other hand, the presence of internal upstep argues against morphological simplicity, since upstep is often (though not always) indicative of the presence of tonal morphemes or boundaries (see chapter 3 4.3). I take these facts to indicate that the various forms of *èèpí* are fossils of what was once a process of class inflection on a root shaped something like *èpí*, but which now form a distinct inflectional series in their own right.

⁷⁵ With singular nouns, *èèpí* can either mean “all X” or “the whole X”. Thus *èbúmbú éé́ pí* (lit. “all group”) can mean either “all groups” or “the whole group”, depending on context.

⁷⁶ Since I have not found any clear cases of V-initial roots which take EPx, whether or not they exhibit vowel-sensitive allomorphic variation is unknown.

Class #	Form	Example
1	<i>ḡbóókó</i>	<i>mòtò ḡbóókó</i> “one person”
2	<i>wàvóókó</i>	<i>wàtò wàvóókó</i> “some people”
3	<i>ḡbóókó</i>	<i>mòkòdí ḡbóókó</i> “one mountain”
4	<i>mìvóókó</i>	<i>mèkòdí mìvóókó</i> “some mountains”
5	$\left\{ \begin{array}{l} dyì \\ i \end{array} \right\} -vóókó$	<i>ibóḡgò dyìvóókó</i> “one knee”
6	<i>màvóókó</i>	<i>màbóḡgò màvóókó</i> “some knees”
7	<i>èvóókó</i>	<i>èbùmbù èvóókó</i> “one group”
8	<i>bìvóókó</i>	<i>bèbùmbù bìvóókó</i> “some groups”
9	<i>èvóókó</i>	<i>mbwáà èvóókó</i> “one dog”
10	<i>nyìvóókó</i>	<i>mbwáà nyìvóókó</i> “some dogs”
13	<i>lìvóókó</i>	<i>licèndyì lìvóókó</i> “some blades”
14	<i>bùvóókó</i>	<i>bòkùdí bùvóókó</i> “one storm”
19	<i>vìvóókó</i>	<i>vicèndyì vùvóókó</i> “one blade”

Table 4.7 - Forms of *èvóókó* by noun class

There is also a pronominal usage of *èèpí* (meaning “all (X)”) in which the noun is implicit. In this case, for most classes it appears to be the case that the NP is headed by the relevant OPx form, which is then modified by *èèpí*. However, classes 7 and 9 do not conform to this pattern: in c7, *èèpí* takes the form *èè^hpí* as a modifier and *yèè^hpí* in the pronominal construction, a phonologically unpredictable difference; in c9, by contrast, whose modifier contains the same segments as that of c7, the pronominal form is simply *èèpí* with no OPx head. This is again unpredictable on any phonological basis. I thus find it necessary to posit distinct paradigms, despite the high degree of similarity between the modifier and pronominal uses of *èèpí*. This construction in its various class manifestations is given in Table 4.6.

1.2.5 *èvóókó* “one; same”

The inflection of the numeral *èvóókó* “one” does not appear to be reducible to any independently-attested noun class paradigm. Its various class manifestations are given in Table 4.7. While the segmental shape of many of *èvóókó*’s class prefixes resembles that of the corresponding EPx, even down to the free variation in c5 between *dyi-* and *i-*, they are lo-toned rather than hi-toned. Furthermore, the c1/c3 form *ḡbóókó* must be lexically specified given the absence both of syllabic nasal allomorphs of c1 and c3 EPx elsewhere (cf. c1/c3 *mùvóó^hv^hwá* “light”) and of any productive post-nasal fortition rules in Iyasa (cf. *ḡvèlà* “color”). The fact that the nasal is nonetheless syllabic in this case is evident from the fact that it bears a Lo tone:

- (318) *mw-àdó ḡ-bóókó* (H of numeral is downstepped)
 c1-woman c1-one
 “one woman”

The inflection of *èvóókó* is perhaps fossilized from historical productive inflection of a root *-vóókó* with EPx.

In addition to “one”, constructions involving *-vóókó* can also be used to mean “same”, albeit with a different syntax and morphology. Like other numerals and adjectives, numeral *-vóókó* directly modifies its nominal head with an intervening material. However, with the meaning “same”, *-vóókó* is subordinated to the head using the template (*mé*) + AM + Prefix + *-vóókó*.⁷⁷

⁷⁷ For discussion of relative clauses, see chapter 5 6.1.4.

- (319) *bw-álò (mɛ) bwá bù-vóókó*
 c14-canoe (REL) c14.AM c14-same
 “the same canoe”
- (320) *bw-álò bú-yé bwá bù-vóókó*
 c14-canoe c14-be c14.AM c14-same
 “the canoe is the same”

The simultaneous use of both AM and inflectional class prefixes is unknown to me elsewhere in Iyasa grammar and appears to be specific to this construction. Two idiosyncratic differences between this construction and the one meaning “one” also deserve attention. First, while the prefix *è-* is attested preceding *-vóókó* in classes 7 and 9 when it means “one”, there is a single morpheme *à* which precedes *-vóókó* in both these classes, replacing the sequence AM + class prefix attested in other classes. This morpheme is lo-toned even in c7, while the c7 AM is hi-toned (*á*). These facts perhaps suggest a diachronic process of coalescence of AM and prefix in these two classes, a possibility I leave to future research. For the purposes of this investigation, I simply note this idiosyncratic formal property of the expression meaning “same” in c7 and c9 in contrast to that meaning “one”, as illustrated below:

- (321) *è-bólò à-vóókó* (not: **á èvóókó*)
 c7-amount c7-same
 “same amount; equal”
- (322) *sòkù (mɛ) à-vóókó* (not: **á èvóókó*)
 c9.elephant (REL) c9-same
 “the same elephant”

Second, while the meaning “one” permits either *dyì-* or *ì-* prefixes, the meaning “same” only permits *ì-*:

- (323) *ì-bóngó (mɛ) dyá ì-vóókó* (not: **dyì-vóókó*)
 c5-knee (REL) c5.AM c5-same
 “the same knee”

The large number of formal and grammatical idiosyncracies that the various uses and inflections of *-vóókó* reveal suggest lexicalization, and I simply treat this root as representing a unique noun class inflectional paradigm.

1.3 The noun classes

In this section I systematically discuss and exemplify the allomorphic and agreement properties of each class individually. With the exception of a couple of class forms of EPx, the majority of allomorphic variation in noun class inflections is attested in the NPx series.

1.3.1 Class 1 (*mò-*)

The human singular class 1 (c1) takes the NPx *mò-*, reconstructed for Proto-Bantu as **mu-* (Guthrie, 1971; Meeussen, 1967). Despite the fact that their NPx forms are usually homophonous on the surface, classes 1 and 3 differ in the tone of the glided allomorph of the NPx (see §1.3.3.1 for further discussion). They also differ according to most other inflection series (see Table 4.1) and must therefore be analyzed as distinct classes.

There are few c1 nouns in Iyasa (only six in my data). They tend to be kinship terms or refer to very basic categories of people (*mòtò* “person”; *mwàdó* “woman, wife”; *mùmú*⁷⁸ “man, husband”; *mwánà* “child, son”; *mòtódú* “older sibling”⁷⁹; and *mòdìmí* “younger sibling”).

1.3.1.1 Allomorphy

In my data, the only observable allomorphic variation in the c1 NPx *mò-* is that it undergoes Gliding, producing the allomorphs [mw-] preceding underlyingly V-initial roots and [mò-] elsewhere.⁸⁰ Examples of this alternation are given below:

⁷⁸ The form of the noun prefix ([mù-] rather than [mò-]) appears to be a lexical exception (see §1.5).

⁷⁹ There is a contrast between eg. *mòtódú à tàtè* “father’s older brother” and *mòtódú mwá dyàngà* “firstborn (eldest of the family)”, where *mòtódú* takes a c1 AM in some contexts and a c3 AM in others. In fact, there are two homophonous lexemes *mòtódú* in the language, one which is c1 and is a familial term meaning “older sibling,” and another which is c3 and simply means “older person; adult; eldest”. This gives rise to the analysis of *mòtódú à tàtè* as gender 1/2, and *mòtódú mwá dyàngà* as gender 3/2. The same contrast holds of *mòdìmí* “younger sibling; younger person”.

- (324) [mò-] preceding C
mò-tódu “older sibling”
mò-dimi “younger sibling”
- (325) [mw-] preceding V
mw-ána “child”
mw-àdó “woman”

Due to the rarity of c1 nouns, I offer no conclusions on whether other morphological alternations parallel to those attested in the homophonous c3 NPx exist for c1 as well. I have no evidence of c1 ghost-consonant-initial roots, which could be an accidental consequence of their relatively small number.

1.3.1.2 Agreement

The various c1 agreement prefixes are given in Table 4.1 and exemplified below.⁸¹

- (326) **mòtò (c1, pl: wàtò) “person”**
- (a) NPx (*mò-*):
mò-tò
 c1-person
 “person”
- (b) EPx (*mú-*):
mò-tò mú-tú⁺bwé
 c1-person c1-big
 “rich man (lit. big/important person)”
- (c) PPx (*àà-*):
mò-tò àà-mé
 c1-person c1-1sg.POSS
 “my person”
- (d) SPx (*mú-*):
mò-tò mú-tám-w-á-ndí
 c1-person c1-walk-EV-EV-PRES
 “The person walks.”
- (e) OPx (*mú-*):
nà-tó-ó-ndí⁺ mú
 1sg-see-EV-PRES.OBJ c1
 “I see him/her (the person).”
- (f) AM (*à*):
mò-tò à Ndàndá
 c1-person c1.AM Ndanda
 “Ndanda’s person”

1.3.2 Class 2 (*wà-*)

The plural class 2 (c2) takes the NPx *wà-*, reconstructed for Proto-Bantu as **ba-* (Guthrie, 1971; Meeussen, 1967).

1.3.2.1 Allomorphy

There are few occurrences of *wà-* immediately preceding vowels, since its most widespread usage is with polygender nouns (see §1.4.8), whose roots are always ghost-consonant-initial. However, there are two gender 1/2 nouns without root-initial consonants: *mwàdó* “woman” and *mwána* “child”. In both of these cases, the vowel of *wà-* deletes, generating *wàdó* “women” and *wána* “children”. Stating this observation in the most general possible way, *wá-* surfaces as [w-] preceding vowels.⁸²

⁸⁰ As discussed in chapter 2 4.2, this analysis is somewhat tenuous as a result of the very small number of forms which exhibit this ostensible allomorph (2 in my data). One of these forms, *mwána* “child”, I analyze as lexically irregular. The other, *mwàdó* “woman”, does not show evidence of lexical irregularity, and I analyze it as synchronically polymorphemic (/mò-àdó/). However, I acknowledge the provisional nature of any conclusions drawn on the basis of a single example.

⁸¹ For examples of c1 in other inflectional paradigms, such as demonstratives, see §1.2.

⁸² An apparent exception is *mwéncì/wàncì* “stranger”. However, a number of factors support treating this as a lexical exception, including its atypical gender pairing (3/2) and the apparent change in the initial root vowel (*é* vs. *a*). Prevocalic deletion is attested in other classes in Iyasa –

1.3.2.2 Agreement

The various c2 agreement prefixes are given in Table 4.1 and exemplified below.

- (327) **wàtò (c2, sg: mòtò) “people”**
- (a) NPx (*wa-*):
wà-tò
 c2-person
 “people”
- (b) EPx (*wá-*):
wà-tò wá-tú^hbwé
 c2-person c2-big
 “rich people (lit. big/important people)”
- (c) PPx (*wá^h-*):
wà-tò wá^h-mé
 c2-person c2-1sg.POSS
 “my people”
- (d) SPx (*wá-*):
wà-tò wá-tám-w-á-ndí
 c2-person c2-walk-EV-EV-PRES
 “The people walk.”
- (e) OPx (*wá*):
nà-tó-ó-ndí^a wá
 1sg-see-EV-PRES.OBJ c2
 “I see them (the people).”
- (f) AM (*wà*):
wà-tò wá bàkàà
 c2-person c2.AM c9.nearness
 “neighbors (lit. people of nearness)”

1.3.3 Class 3 (*mò-*)

The singular class 3 (c3) takes the NPx *mò-*, reconstructed for Proto-Bantu as **mu-* (Guthrie, 1971; Meeussen, 1967).

1.3.3.1 Allomorphy

The c3 NPx *mò-* is homophonous with the c1 NPx and, like it, undergoes Gliding, generating the allomorph [mw-] preceding underlyingly V-initial roots. Examples of the Gliding alternation in c3 are given above in (96)(a). As discussed in §1.2.5, the glided form of the c3 NPx retains a floating L-tone, while the glided form of the c1 NPx does not, though this appears to be a consequence of lexicalization in certain c1 nouns rather than a productive formal distinction between these two prefixes.

Other allomorphic variants exist for *mò-* beyond those observable for c1, including [m̩-], a syllabic nasal that precedes certain lexically-specified consonant-initial roots. Although [m̩-] always assimilates place to the immediately following consonant, I opt to represent this allomorph as underlyingly bilabial because, being an allomorph of c3 *mò-*, it almost certainly derives from *mò-* through some diachronic process of vowel deletion. The alternation between [mò-] and its syllabic nasal variant is not phonologically predictable, and is thus in principle contrastive (compare eg. *ṁbái* “groom” and *mòbòmi* “announcer”). However, as I show below, the evidence points to an analysis of them both as allomorphs of the same class prefix, requiring a treatment of one as basic and the other as a lexically-specified variant. Although syllabic nasals overwhelmingly tend to precede roots beginning in labial consonants, they are required by some roots beginning with all the phonemic consonants of Iyasa.⁸³ Furthermore, [mò-] affixes to labial-initial roots as a result of agent nominalization of human referents via the derivational EV -i (see below). Perhaps this contrast is indicative of an inflectional system in flux, either losing or generalizing the syllabic nasal. Nevertheless, from a synchronic

c4, c5, c6, c13, 14, and c19 – while the changes in vowel quality, length, and tone apparent in *mwénci/wàánci* are not. I therefore take eg. *wána* “children” to reveal the productive pattern.

⁸³ Given that the syllabic nasal does not appear before glide-initial roots, it can be more precisely described as occurring before [+consonantal] as opposed to [-consonantal], rather than as before C as opposed to V.

perspective, the roots that require the syllabic nasal must be lexically specified. The contrast between roots that take [mò-] and those that take [ṁ-] is illustrated by the examples below:

- (328) [mò-] vs. [ṁ]
- (a) [mò-] preceding non-labials
mòtòtò “umbilical cord” (pl: *mètòtò*)
mòdàmbà “cloth” (pl: *mèdàmbà*)
mònècè “flea” (pl: *mènècè*)
mòsósó “bat (animal)” (pl: *mèsósó*)
mòlóló “head” (pl: *mèlóló*)
mòkùmú “slave” (pl: *mèkùmú*)
mòwóò “argument” (pl: *mèwóò*)
- (b) [ṁ-] preceding labials
ṁpándyì (3/4/2) “chief” (pl: *wàpándyì*)⁸⁴
ṁpípè “whole” (pl: *mèpípè*)
ṁpùmé “log” (pl: *mèpùmé*)
ṁbái (3/4/2) “groom” (pl: *wàbái*)
ṁbàá “room” (pl: *mèbàá*)
ṁbòmbì “bundle” (pl: *mèbòmbì*)
ṁmbikò “fireplace” (pl: *mèmbikò*)
ṁvèlà “color” (pl: *mèvèlà*)
ṁvilàkò “poison” (pl: *mèvilàkò*)
- (c) [mò-] preceding labials
mòbòm-ì (3/2) “announcer” (pl: *wàbòmì*)
mòvìnìn-ì (3/2) “enemy” (pl: *wàvìnìnì*)⁸⁵
mòvùw-ì (3/2) “shooter” (pl: *wàvùwì*)
- (d) [ṁ-] preceding non-labials
ṁdòmbé “sheet” (pl: *mèdòmbé*)
ṁndyùké “problem” (pl: *mèndyùké*)
ṁcòngé “type of bush” (pl: *mècòngé*)
ṁlèsí “rice” (pl: *mèlèsí*)
ṁngéni “slander” (pl: *mèngéni*)
ṁkásá “whip” (pl: *mèkásá*)
ṁsáká “coast” (no plural)⁸⁶

While it is at best difficult to identify a phonological motivation for this alternation, the distribution of these two forms is partially predictable on morphological grounds: *mò-* always surfaces as [ṁ-] preceding labial-initial roots *except* when it is assigned as a class prefix to the output of agent nominalization, in which case the vowel is (usually) retained. This generalization manifests itself, for example, in the fact that all the cases in the foregoing example of [mò-] preceding labial consonants are agent nominalizations (as are all members of gender 3/4/2, see §1.4.8). There are nevertheless exceptions to this in my data, including *ṁbái* “groom” – a nominalization of *èbàá* “marry” that nonetheless takes a syllabic nasal prefix rather than [mò-] – and *ṁpándyì* “chief” – an agent nominalization whose source verb has been lost. I leave open the theoretical question of how to allow the derivational history of a noun to interfere with the application of a rule of allomorphic variation, but note that some degree of lexical specification must be permitted in analyzing the distribution of [mò-] and [ṁ-] in light of examples such as *ṁbái*.

However, no such predictability is apparent in the opposite direction, when attention is turned to the cases of syllabic N preceding non-labials, and quite robust phonological contrast seems evident, such as between *mòkàbo* “border” vs. *ṁkásá* “whip”, *mòlémà* “heart” vs. *ṁlèsí* “rice”, and *mòtàba* “marsh” vs. *ṁtàngani* “white man”. All of these words belong (I contend) to gender 3/4, and are underived.

One natural objection that must be addressed at this point would be to my treatment of [ṁ-] and [mò-] as phonologically unpredictable allomorphs, when one could argue that their contrastive distribution justifies an analysis of them as meaningfully distinct. With regard to this possibility, to my mind the most readily apparent basis for such a

⁸⁴ Although the source verb for *ṁpándyì* has been lost, I analyze it as an agent nominalization because of its form (FV *i*) and its membership in gender 3/4/2, which is otherwise reserved exclusively for agent nominalizations.

⁸⁵ Although the source verb for *mòvìnìnì* has been lost, I analyze it as an agent nominalization because of its form (FV *i*) and its membership in gender 3/4/2, which is otherwise reserved exclusively for agent nominalizations.

⁸⁶ Although no plural form exists to demonstrate that this is indeed a syllabic nasal rather than a prenasalized /s/, *ṁsáká*'s status as a c3 noun (and thus as taking an allomorph of NPx *mò-*) is clear from its agreement properties: *ṁsáká mwá má'ngà* “coastal region (lit. coast of the beach)” takes the c3 AM *mwá*.

meaning difference would be as class prefixes for distinct classes. However, I find substantial evidence that the classes are not distinct. First, both [mò-] and [m̩-] nouns control agreement identically, as shown in the pairwise comparisons given in **Error! Reference source not found.** Second, both pair with the same plural forms as class 3, namely c2 *wà-* and c4 *mè-*, as is evident from the plural forms of the *m̩-*initial nouns given in (313). Thus this hypothetically distinct class with a nasal NPx would just happen to exhibit identical gender pairings to c3, a class with which it also shares an identical agreement paradigm, which stretches credibility. Lastly, the syllabic nasal is a frequently-attested reflex of the Proto-Bantu prefix **mɔ-* for classes 1 and 3, making the analysis advanced here typologically unsurprising. I believe these facts taken together pose significant problems for any analysis involving distinct noun classes for [mò-] and [m̩-]. Beyond the possibility of encoding distinct grammatical classes, I fail to see in light of the above evidence how [m̩-] and [mò-] could reasonably be taken to differ in their semantics: the nouns taking one vs. the other do not appear to form separate semantic classes, and the prefixes themselves do not appear to encode any grammatical information beyond class membership. I therefore analyze [mò-] as the basic c3 NPx and [m̩-] as an allomorph of it subcategorized for by a certain lexically-specified collection of nouns.

Returning to the general question of the allomorphy of *mò-*, I note that the vowel of *mò-* assimilates in place to the first vowel of ghost-consonant-initial roots when that vowel is [+back].⁸⁷ Consider the following pair:

- (329) /mò-Cáá/ → [mòáá] (cf. pl. /mè-áá/ → [mèáá]) “shrimp”
 (330) /mò-Cóni/ → [mòóni] (cf. pl. /mè-Cóni/ → [mèóni]) “flying ant”⁸⁸

Finally, the allomorph [mò-] surfaces elsewhere – i.e. preceding consonant-initial roots that are not lexically specified to take [m̩-] as well as ghost-consonant-initial roots in which the initial vowel is non-back. As the elsewhere case and as the most apparent derivational source of the aforementioned allomorphs, I analyze *mò-* as the underlying form of the c3 NPx.

1.3.3.2 Agreement

The various c3 agreement prefixes are given in Table 4.1 and exemplified below.

(331) *mòkòdí* (c3, pl: *mèkòdí*) “mountain”

(a) NPx (*mò-*):

mò-kòdí
 c3-mountain
 “mountain”

(b) PPx (*mwá^t-*):

mò-kòdí *mwá^t-mé*
 c3-mountain c3-my
 “my mountain”

(c) EPx (*mú-*):

mò-kòdí *mú-tú¹bwé*
 c3-mountain c3-big
 “big mountain”

(d) SPx (*mú-*):

mò-kòdí *mú-tám-w-á-ndí*
 c3-mountain c3-walk-EV-EV-PRES
 “The mountain walks.”

(e) OPx (*mó*):

nà tó-ó-ndí⁴ *mó*
 1sg see-PRES.OBJ c3
 “I see it (the mountain)”

(f) AM (*mwá*):

mò-kòdí *mwá* *Ndàndá*
 c3-mountain c3.AM Ndanda
 “Ndanda’s mountain”

⁸⁷ The only place where this morphological alternation applies in my data is preceding roots that begin with /Cɔ/, since there are no roots beginning with /Cu/, and the assimilation applies vacuously to roots beginning in /Co/. I simply adopt a [+back] environment in the statement of the rule because of its generality, and I note that such an analysis predicts assimilation of *mò-* to [m̩-] should such roots be found to exist.

⁸⁸ As discussed in §1.3.4.1, the c4 prefix *mè-* surfaces as [m̩-] preceding ghost-consonant-initial roots in which the first vowel is [+back].

1.3.4 Class 4 (*mè-*)

The plural class 4 (c4) takes the NPx *mè-*, reconstructed for Proto-Bantu as **me-* (Guthrie, 1971; Meeussen, 1967).

1.3.4.1 Allomorphy

The c4 NPx *mè-* undergoes Gliding, which produces the allomorph [my -] preceding heterorganic vowels, as illustrated in (96)(a). In addition to [my -], *mè-* has three allomorphs: [mì-] preceding ghost-consonant-initial roots in which the first vowel is [+back], [m-] preceding homorganic vowels (i.e. *e*), and [mè-] elsewhere (and which is therefore underlying):

- (332) [mè-] (preceding consonant- and ghost-consonant-initial roots)
mè-cèbá “waves” (sg. *mò-cèbá*)
mè-dìcì “pestles” (sg. *mò-dìcì*)
mè-kòbó “skins” (sg. *mò-kòbó*)
mè-áá “shrimps” (sg. *mò-áá*)
- (333) [my -] (preceding heterorganic vowels)
my-údu “camels” (sg. c14 *b-údu*)⁸⁹
my⁺-ákò “mornings” (sg. *mw⁺-ákò*)
my-àlò “gossip” (sg. *mw-àlò*)
my-àdí “females” (sg. *mw-àdí*)
my⁺-éì “new palm wine” (sg. *mw-éì*)
- (334) [m-] (preceding *e*)
mè-èngà “string” (sg. *mw-èngà*)⁹⁰
- (335) [mì-] (preceding ghost-consonant + back vowel)
mì-ómì “males” (/Cómì/, sg. *mò-ómì*)
mì-òdyó “hairs (of body)” (/Còdyó/, sg. *mò-òdyó*)

1.3.4.2 Agreement

The various c4 agreement prefixes are given in Table 4.1 and exemplified below.

- (336) ***mèkòdí* (c4, sg: *mòkòdí*) “mountains”**
- (a) NPx (*mè-*):
mè-kòdí
 c4-mountain
 “mountains”
- (b) PPx (*má⁺-*):
mè-kòdí ***má⁺-mè***
 c4-mountain c4-my
 “my mountains”
- (c) EPx (*mí-*):
mè-kòdí ***mí-tú⁺bwé***
 c4-mountain c4-big
 “big mountain”
- (d) SPx (*mí-*):
mè-kòdí ***mí-tám-w-á-ndí***
 c4-mountain c4-walk-EV-EV-PRES
 “The mountains walk.”
- (e) OPx (*myó*):
nà tó-ó-ndí^a ***myó***
 1sg see-EV-PRES.OBJ c4
 “I see them (the mountains)”

⁸⁹ As discussed in chapter 2 4.2, *myúdu* appears to be lexicalized in that the glided prefix does not contribute a floating L.

⁹⁰ This is the only example in my data of *mè-* preceding an *e*-initial root.

- (f) AM (*má*):
mè-kòdí má Ndàndá
 c3-mountain c3.AM Ndanda
 “Ndanda’s mountains”

1.3.5 Class 5 (*dí-*)

The singular class 5 (c5) takes the NPx *i-*, reconstructed for Proto-Bantu as **i-* (Guthrie, 1971; Meeussen, 1967).

1.3.5.1 Allomorphy

1.3.5.1.1 NPx

The c5 NPx *i-* has four allomorphs: a glided form [dy-] preceding heterorganic vowel-initial roots; a vowel-deleted form [d-] preceding root-initial *i* (i.e. deletion preceding homorganic V), [dyi-] preceding ghost-consonant-initial roots, and [i-] elsewhere (i.e. preceding consonants and root-initial vowels other than *i*) and which I take to be underlying.

With respect to the distribution of [dyi-], it affixes primarily to nouns derived from surface V-initial verb roots, which, as argued in chapter 2 3.5, are always ghost-consonant-initial underlyingly. Examples of nouns inflecting with [i-], [d-], [dyi-], and [dy-] are given in (322), (324), and (325), respectively:

- (337) [i] (elsewhere)
i-vúvá “jealousy” (pl: *mà-vúvá*)
i-ndyímà “coconut palm” (pl: *mà-ndyímà*)
i-lìnà “soul” (pl: *mà-lìnà*)
i-tépwá “lip” (pl: *mà-tépwá*)
i-bó cá “heap” (pl: *mà-bó cá*)
i-é lí dí “beginning” (pl: *mà-é lí dí*)
- (338) [d-] (preceding root-initial [i])
d-inà “name” (pl: *m-inà*)
d-í yò “eye” (pl: *m-í yò*)
d-í sì “bowl” (pl: *m-í sì*)
- (339) [dyi-] (preceding ghost consonant + *i*)⁹¹
dyi-à lá “cutting open” (/Càlá/, pl: *mà-à lá*)
dyi-é cè “laugh (n)” (/Cécè/, pl: *mà-é cè*)
dyi-í yí dí “end” (/Cíyí dí/, pl: *mà-í yí dí*)
dyi-í sà “entry” (/Cisà/, pl: *mà-í sà*)
dyi-í mbú wè “plan” (/Címbú wè/, pl: *mà-í mbú wè*)
dyi-ò kwà “running” (/Còkwà/, pl: *mà-ò kwà*)
- (340) [dy] (preceding V, except /i/)
dy-á i “garbage dump” (pl: *m-á i*)
dy-é ngà “adultery” (pl: *m-é ngà*)
dy-ò bà “day” (pl: *m-ò bà*)
dy-à mbó “species of river crab” (pl: *m-à mbó*)
dy-ù mbú “nest” (pl: *m-ù mbú*)

1.3.5.1.2 EPx

The c5 EPx *dyi-*, by contrast, exhibits somewhat different allomorphic properties. It freely varies between realization as either [dyí-] or [i-], regardless of the root-initial phoneme:

- (341) *dyí-tú^hbwé*
 c5-big
- (342) *í-tú^hbwé*
 c5-big

Although all adjectives inflect quite readily with either variant, the one more commonly given as a citation form in my data is [dyí-], which motivates my choice of it as underlying.

⁹¹ Irrelevant complexities of underlying form have been omitted for expository purposes, such as the morphological composition of *dyiyí dí*.

1.3.5.2 Agreement

The various c5 agreement prefixes are given in Table 4.1 and exemplified below.

- (343) *ibóγγó* (c5, pl: *màbóγγó*) “knee”
- (a) NPx (*i-*):
i-bóγγó
 c5-knee
 “knee”
- (b) EPx (*dyí-*):
i-bóγγó dyí-tú¹bwé
 c5-knee c5-big
 “big knee”
- (c) PPx (*dyá¹-*):
i-bóγγó dyá¹-mé
 c5-knee c5-1Sg.POSS
 “my knee”
- (d) SPx (*dyí-*):
i-bóγγó dyí-tám-w-á-ndí
 c5-knee c5-walk-EV-EV-PRES
 “The knee walks.”
- (e) OPx (*dyó*):
nà-tó-ó-ndí^a dyó
 1sg-see-EV-PRES.OBJ c5
 “I see it (the knee).”
- (f) AM (*dyá*):
i-bóγγó dyá Ndàndá
 c5-knee c5.AM Ndanda
 “Ndanda’s knee”

1.3.6 Class 6 (*mà-*)

The plural class 6 (c6) takes the NPx *mà-*, reconstructed for Proto-Bantu as **ma-* (Guthrie, 1971; Meeussen, 1967).

1.3.6.1 Allomorphy

Since the vowel in the c6 NPx *mà-* is low, it is not a candidate for Gliding. Instead, the prefix vowel deletes altogether preceding V-initial roots, and remains intact preceding consonants (including ghost consonants). Thus, *mà-* has two allophones, [m-] and [mà-]. I take [mà-] to be underlying because of the simpler mechanism it offers for arriving at its allomorph (deletion), in contrast to the less phonologically motivated insertion of [à] necessary to generate [mà-] if [m-] were taken as underlying. Evidence of this allomorphic variation is already apparent in the examples of c5 alternations discussed in §1.3.5.1, some of which are reproduced below for convenience:

- (344) [mà-] (preceding consonants)
mà-vúvà “jealousies” (sg: *i-vúvà*)
mà-ncimà “coconut palms” (sg: *i-ncimà*)
mà-linà “souls” (sg: *i-linà*)
mà-tépwà “lips” (sg: *i-tépwà*)
mà-bó cá “heaps” (sg: *i-bó cá*)
mà-iyídí “ends” (/Ciyídí/, sg: *dì-iyídí*)
mà-ísà “entries” (/Císà/, sg: *dì-ísà*)
mà-imbúwè “plans” (/Cimbúwè/, sg: *dì-imbúwè*)
- (345) [m-] (preceding vowels)
m-ínà “names” (sg: *d-ínà*)
m-ài “garbage dumps” (sg: *dy-ài*)
m-éγγà “adulteries” (sg: *dy-éγγà*)
m-óbà “day” (sg: *dy-óbà*)
m-òmbó “species of river crab” (sg: *dy-òmbó*)
m-ùmbú “nest” (sg: *dy-ùmbú*)

1.3.6.2 Agreement

The various c6 agreement prefixes are given in Table 4.1 and exemplified below.

(346) *màbòngó* (c6, sg: *ibòngó*) “knees”(a) NPx (*mà-*):*mà-bòngó*

c6-knee

“knees”

(b) PPx (*má^t-*):*mà-bòngó má^t-mé*

c6-milk c6-1Sg.POSS

“my knees”

(c) EPx (*má-*):*mà-bòngó má-tú^tbwé*

c6-knee c6-big

“big knees”

(d) SPx (*má^t-*):*mà-bòngó má-tám-w-á-ndí*

c5-knee c5-walk-EV-EV-PRES

“The knees walk.”

(e) OPx (*má*):*nà-tó-ó-ndí^a**má*

1sg-see-EV-PRES.OBJ c5

“I see them (the knees).”

(f) AM (*má*):*mà-bòngó má Ndàndá*

c6-knee c6.AM Ndanda

“Ndanda’s knees”

1.3.7 Class 7 (è-)

The singular class 7 (c7) takes the NPx è-, reconstructed for Proto-Bantu as **ke-* (Guthrie, 1971; Meeussen, 1967). Despite the fact that è- lacks the initial *k* of its reconstructed prototype, I label it class 7 on the basis of its gender pairing with plural class 8, which closely resembles the reconstructed c8 prefix of PB (see §1.3.7.3).

1.3.7.1 Allomorphy

1.3.7.1.1 NPx

Since the c7 NPx è- is not preceded by a consonant, it is not a candidate for Gliding (see chapter 2 4.2). It is in many ways a “weak” prefix: it is the only class prefix to lack a consonant in all its allomorphs, and it is susceptible to elision and assimilation in ways that the only other underlyingly syllabic V prefix, c5 *ì-*, is not. In fact, è- is usually elided, though it can be optionally retained in slow, careful speech, and it is obligatory when the c7 noun is phrase-initial (see chapter 2 4.4).

Beyond this freely varying elision process, c7 é- also exhibits optional total assimilation to immediately following surface vowels, regardless of whether the root is V- or ghost-consonant-initial, but not with overt root-initial consonants. Tendency to assimilate seems to be directly related to speech rate:

(347) *èóndyó^andyò* → *èóndyó^andyò* ~ *òóndyó^andyò* “yawn”*èómà* → *èómà* ~ *òómà* “baobab”*èóndyì* → *èóndyì* ~ *òóndyì* “oath”

The allomorphy of è- is not sensitive to whether surface V-initial roots are underlyingly V-initial or ghost-consonant-initial (since it is not preceded by C it is not a candidate for Gliding.). However, underlying contrasts between V- and ghost-consonant-initial c7 roots are revealed by the variable application of gliding in its plural counterpart, c8 *bè-* (see §1.3.7.3 for discussion). The elision and assimilation processes discussed here are not limited to NPx, and apply for example to EPx and SPx as well.

1.3.7.2 Agreement

The various c7 agreement prefixes are given in Table 4.1 and exemplified below. Note that AM and PPx differ only in tone from those of class 9.

(348) *èbúmbú* (c7, pl: *bèbúmbú*) “group”

- (a) NPx (*è-*):
è-búmbú
 c7-group
 “group”
- (b) EPx (*é-*):
è-búmbú é-tú^hbwé
 c7-group c7-big
 “big group”
- (c) PPx (*áá^h-*):
è-búmbú áá^h-mé
 c7-group c7-1Sg.POSS
 “my group”
- (d) SPx (*é-*):
è-búmbú é-tám-w-á-ndí
 c7-group c7-walk-EV-EV-PRES
 “The group walks.”
- (e) OPx (*yó*):
nà-tó-ó-ndí^h yó
 1sg-see-EV-PRES.OBJ c7
 “I see it (the group).”
- (f) AM (*á*):
è-búmbú á Ndàndá
 c7-group c7.AM Ndanda
 “Ndanda’s group”

1.3.7.3 Infinitives as c7 nouns

In many Bantu languages, infinitives are assigned to a noun class, typically c15 (which does not exist in Iyasa), but also classes 5, 9, and 14 (Schadeberg, 2003). Like these languages, I find limited evidence in Iyasa that infinitives are actually inflected nouns. However, they are in fact assigned to class 7. The prefix assigned to infinitives is at least homophonous with that of the c7 NPx:

- (349) **Infinitives**
è-àlà “cut open”
è-bàmè “reprimand”
è-dúkà “paddle”
è-ibà “steal”
è-kùmè “heap up”
è-lɔŋgò “look at”
è-òrà “go down”
- (350) **C7 nouns**
è-àndyé “heat”
è-bòlò “work”
è-cèì “iron”
è-dyákó “bait”
è-kángà “field”
è-ómà “baobab”
è-sápò “yam”

The infinitive prefix and c7 prefix both obey the same rules of allophonic variation, such as optional assimilation to following vowels:

- (351) *è-òkà* “feel” → *èókà* ~ *òókà*
è-ómà “baobab” → *èómà* ~ *òómà*

While infinitives do not permit modification by nominal dependents that might further support their inclusion in c7, such as demonstratives, possessives, genitive constructions, and so on, this is unsurprising given their semantics as verbs and the tendency in Iyasa to use nominalizations to refer to abstract concepts and actions rather than infinitives. However, at least one construction I have discovered permits infinitives to serve as subjects, and when they do, they take a c7 SPx:

- (352) *è-ás-í-y-è* *wéyi* *é-bé* *bò-ámù*
 INF-dry.out-EV-CAUS-INF.EV c9.fish c7-be.NEG c14-good
 “Drying fish is not good”

My consultant also indicated that he thinks he has heard some speakers of the language inflect the infinitive with the c8 plural NPx *bè-*, although this construction appears to be marginal and/or dialectally restricted and he himself cannot use it.

While the data from subject agreement mentioned above are revealing, the c7 and c9 SPx are homophonous (*é-*). These facts therefore do not conclusively favor treatment of infinitives as c7. However, another illuminating piece of evidence in favor of analysis of infinitives as c7 nouns is the optional use of the c7 AM *á* to subordinate objects to the verb in infinitival VPs:⁹²

- (353) *è-kàm-ú-w-é* *ì-bóηgó*
 INF-accept-EV-CAUS-INF.EV c5-knee
 “to accept the knee”
- (354) *è-kàm-ù-w-è* *á* *ì-bóηgó*
 INF-accept-EV-CAUS-EV c7.AM c5-knee
 “to accept the knee”

The AM paradigm does not present the same problem of homophony as the SPx paradigm: *á* is only c7, while the c9 AM is *à*. There is therefore evidence in Iyasa both that the infinitive triggers the appearance of morphology otherwise exclusively reserved for nouns (SPx and AM agreement) and that the infinitive belongs to c7 only. Thus, despite the fact that the full range of inflectional possibilities cannot be brought to bear in the case of infinitives, I believe the foregoing facts motivate analysis of the infinitive as a c7 noun, and hence of the “infinitive prefix” as the c7 NPx. Nevertheless, for expositional purposes, I retain the distinct glosses INF and c7 for *è-* on verbs and nouns respectively throughout this work.

1.3.8 Class 8 (*bè-*)

The plural class 8 (c8) takes the NPx *bè-*, reconstructed for Proto-Bantu as **bi-* (Guthrie, 1971; Meeussen, 1967).

1.3.8.1 Allomorphy

The only variation in morphological form observable in the c8 NPx *bè-* is that produced by Gliding, such that *bè-* is realized as [by -] preceding V-initial roots.⁹³ Whether or not a root is underlyingly V- or ghost-consonant-initial is only discernible in the c8 form of gender 7/8, since c7 *è-* exhibits no allomorphic variation sensitive to the distinction (see §1.3.7). Thus, the only means of determining the underlying form of a surface V-initial 7/8 noun is according to whether the plural prefix is [bè-] or [by -]:

- (355) *by-àncé* (/àncé/, sg: *èàncé*) “heat”
bè-àlwàmà (/Càlwàmà/, sg: *èàlwàmà*) “agreement”
- (356) *by⁺-ómì* (/ómì/, sg: *èómì*) “glory”
bè-ómà (/Cómà/, sg: *èómà*) “baobab”
- (357) *by-òηgà* (/òηgà/, sg: *èòηgà*) “joke”
bè-óncí (/Cóncí/, sg: *èóncí*) “oath”

⁹² Note that Infinitive Pre-L H-Insertion only applies in the absence of the AM, which is hi-toned.

⁹³ I leave open the possibility that the vowel of *bè-* deletes preceding homorganic vowels, as is the case for classes 4, 5, 13, 14, and 19. However, since I have no instances in my data of *e*-initial 7/8 noun roots, I cannot draw conclusions in this regard.

1.3.8.2 Agreement

The various c8 agreement prefixes are given in Table 4.1 and exemplified below.

(358) *bèbúmbú* (c8, sg: *èbúmbú*) “food”

- (a) NPx (*bè-*):
bè-búmbú
 c8-group
 “groups”
- (b) PPx (*bá¹-*):
bè-búmbú bá¹-mé
 c8-group c8-1Sg.POSS
 “my groups”
- (c) EPx (*bí-*):
bè-búmbú bí-tú¹bwé
 c8-group c8-big
 “big groups”
- (d) SPx (*bí-*):
bè-búmbú bí-tám-w-á-ndí
 c8-group c8-walk-EV-EV-PRES
 “The groups walk.”
- (e) OPx (*byó*):
nà-tó-ó-ndí^a byó
 1sg-see-EV-PRES.OBJ c8
 “I see them (the groups).”
- (f) AM (*bá*):
bè-búmbú bá Ndàndá
 c8-group c8.AM Ndanda
 “Ndanda’s groups”

1.3.9 Class 9 (Ø-)

The singular class 9 (c9) is prefixless in Iyasa, though it is reconstructed for Proto-Bantu as **n-* (Meeussen, 1967) or **ny-* (Guthrie, 1971). Prefixless reflexes of classes 9 and 10 are not uncommon in Bantu (Katamba, 2003), and the agreement paradigm of class 10, the plural counterpart of class 9, includes morphemes like *nyá* and *nyí-*, echoing the forms reconstructed for these classes in PB. These considerations motivate the assignment of the number 9 to this singular class, which is distinguishable from the other prefixless class (c10) by its unique agreement morphology in other inflection paradigms (see Table 4.1).

1.3.9.1 Allomorphy

1.3.9.1.1 EPx

Since the Iyasa c9 NPx is null, it has no allomorphs. However, the c9 EPx prefix *é-* is subject to the same phonological processes as its homophonous c7 counterpart *é-*: it undergoes *e*-Elision, and it optionally assimilates to a following vowel:

- (359) *tókò (é)-tú¹bwé*
 c9.spoon (c9)-big
 “ladle (lit. big spoon)”
- (360) *sótì é-àbé → sótì éàbé ~ sótì ààbé*
 c9.pants c7-long
 “trousers; long pants”

1.3.9.2 Agreement

The various c9 agreement prefixes are given in Table 4.1 and exemplified below. Note that the AM and PPx differ only in tone from those of c7.

- (361) *mbwáà* (c9, pl: *mbwáà*) “dog”

- (a) NPx (\emptyset -):
Ø-mbwáà
 c9-dog
 “dog”
- (b) EPx (*é*-):
Ø-mbwáà é-tú⁺bwé
 c9-dog c9-big
 “big dog”
- (c) PPx (*àà*-):
Ø-mbwáà àà-mé
 c9-dog c9-1Sg.POSS
 “my dog”
- (d) SPx (*é*-):
Ø-mbwáà é-tám-w-á-ndí
 c9-dog c9-walk-EV-EV-PRES
 “The dog walks.”
- (e) OPx (*yó*):
nà-tó-ó-ndí^a yó
 1sg-see-EV-PRES.OBJ c9
 “I see it (the dog).”
- (f) AM (*à*):
Ø-mbwáà à Ndàndá
 c9-dog c9.AM Ndanda
 “Ndanda’s drum”

1.3.10 Class 10 (\emptyset -)

The plural class 10 (c10) is prefixless in the NPx paradigm Iyasa, though it is reconstructed for Proto-Bantu as **n-* (Meeussen, 1967) or *ny-* (Guthrie, 1971). As mentioned above, synchronic realization of **n-* as null is common in Bantu, and the other inflection series for this class in Iyasa (i.e. *nyá*, *nyí*-, etc.) recall the forms reconstructed for class 10. I therefore take c10 to be the most appropriate Bleek-Meinhoff label for this plural class in Iyasa. It is distinguishable from the other prefixless class (c9) by its distinct agreement morphology (see Table 4.1). Since the Iyasa c10 NPx is null, it has no allomorphs.

1.3.10.1 Agreement

The various c10 agreement prefixes are given in Table 4.1 and exemplified below.

- (362) ***mbwáà* (c10, sg: *mbwáà*) “dogs”**
- (a) NPx (\emptyset -):
Ø-mbwáà
 c10-dog
 “dogs”
- (b) PPx (*nyá⁺*-):
Ø-mbwáà nyá⁺-mé
 c10-dog c10-1Sg.POSS
 “my dogs”
- (c) EPx (*nyí*-):
Ø-mbwáà nyí-tú⁺bwé
 c10-dog c10-big
 “big dogs”
- (d) SPx (*nyí*-):
Ø-mbwáà nyí-tám-w-á-ndí
 c10-dog c10-walk-EV-EV-PRES
 “The dogs walk.”

- (e) OPx (*nyó*):
nà-tó-ó-ndí³ *nyó*
 1sg-see-EV-PRES.OBJ c10
 “I see them (the dogs).”
- (f) AM (*nyá*):
Ø-mbwáá nyá Ndàndá
 c10-dog c10.AM Ndanda
 “Ndanda’s dogs”

1.3.11 Class 13 (*li-*)

The plural class 13 (c13) takes the NPx *li-*, reconstructed for Proto-Bantu as **to-* (Guthrie, 1971; Meeussen, 1967). Despite the lack of surface similarity between this class prefix in Iyasa and its reconstructed counterpart, I propose the label 13 because of its pairing in Iyasa with *vi-*, a clearer reflex of PB class 19 **pi-*, thus allowing it to stand in the common Bantu gender 19/13. Of the typically-attested Bantu genders, I consider 19/13 to be the most appropriate label for this Iyasa gender, and although Iyasa *li-* might arguably more closely resemble PB c11 **do-* or **lo-*, I find insufficient motivation to posit a novel noun class pairing 19/11 (unlike the well-motivated novel Iyasa gender 14/4; for discussion see §1.4.6). The Iyasa c13 NPx also closely resembles some reconstructions of PB c5 as **li-*. However, I find ample evidence that the c5 reflex in Iyasa is actually *ì-* (discussed above). I therefore adopt the Bleek-Meinhoff number 13 for this Iyasa class for the purposes of this investigation, and leave open the treatment of its historical descent from PB.

1.3.11.1 Allomorphy

The c13 NPx *li-* undergoes Gliding, surfacing as [ly ` -] preceding heterorganic vowels.⁹⁴ It also has the vowel-deleted allomorph [l-], which precedes root-initial *i*, as well as the allomorph [li-], which surfaces elsewhere (the underlying form). The vowel deletion alternation gives rise to the potential for morphological ambiguity, and in these cases, the distinction is made solely on the bases of tone. For example, is the string *libandyé* “hawks” composed of the full c13 prefix [li-] attached to a consonant-initial root (*li-bandyé*) or the vowel-deleted allomorph [l-] attached to an *i*-initial root (*l-ibandyé*)? Given that the tone of this lexeme is *libàndyé* and that the c13 prefix is lo-toned, its root must in fact be *-ibàndyé*, with the [l-] allomorph selected because of the initial [i] vowel of the root. In cases where the root-initial tone is L, there is no empirical difference between the two parses, and I arbitrarily assume such instances to involve consonant-initial roots. I have no evidence of c13 ghost-consonant-initial roots, which could be an accidental consequence of their relatively small number. Examples of the surface realizations of *li-* are given below:

- (363) [li-] (unglided, preceding consonants)
li-cèndyì “razors” (sg: *vi-cèndyì*)
li-dìmá “rings” (sg: *vi-dìmá*)
li-gágá “pangolins” (sg: *vi-gágá*)
li-kútà “fists” (sg: *vi-kútà*)
li-lámbò “traps” (sg: *vi-lámbò*)
li-nyòní “birds” (sg: *vi-nyòní*)
li-pìsí “mosquitos” (sg: *vi-pìsí*)
li-tútù “smoke” (sg: *vi-tútù*)
li-yónì “shame” (sg: *vi-yónì*)
- (364) [ly-] (glided, preceding heterorganic vowels)
ly-éli “hares, rabbits” (sg: *vy-éli*)

⁹⁴ There are only four V-initial 19/13 nouns in my data, and they exhibit inconsistent prefixal forms: *vyéli/lyéli* “hare” (Gliding), *véyà/léyà* “wood” (vowel deletion), *lóbà* “heights (no sg)” (vowel deletion), and *vyémbò/lémbò* “wood” (Gliding in sg and vowel deletion in pl). The different behavior of the prefix in comparable environments requires treating some of these examples as lexical exceptions regardless of the final analysis, but deciding which represent the productive pattern and which are exceptions is tenuous with such a small and conflicting dataset. I nevertheless find two reasons to posit the glided form as the productive one. First, two of the three lexemes involving deletion are candidate lexical exceptions for independent reasons. *vyémbò/lémbò* contrasts Gliding and vowel deletion over the same root between two prefixes with the same vowel. Motivating this phonologically is problematic. And *lóbà* lacks a singular form, making it irregular regardless of prefix form. Thus it comes down to a decision about which of the two pairs *vyéli/lyéli* or *véyà/léyà* is exceptional. This brings me to my second argument in favor of the glided form: consistency with other NPx containing tense non-low prefix vowels, all of which glide elsewhere, as well as with other manifestations of c13 in other inflection series, such as OPx, which involve pre-vocalic *y*. While I believe the aforementioned considerations support the conclusion that the c13 NPx glides pre-vocalically, I acknowledge that the limited nature of my data renders this claim inherently tentative, and I suggest this issue as an area for further investigation.

- (365) [l-] (vowel deleted, preceding *i*)
l-ibàndyé “hawks” (sg: *v-ibàndyé*)

1.3.11.2 Agreement

The various c13 agreement prefixes are given in Table 4.1 and exemplified below.

- (366) *licèndyì* (c13, sg: *vicèndyì*) “(razor) blades”

- (a) NPx (*li-*):
li-cèndyì
 c13-blade
 “blades”
- (b) EPx (*li-*):
li-cèndyì li-tú⁺bwé
 c13-blade c13-big
 “big blades”
- (c) PPx (*lǎ⁺-*):
li-cèndyì lǎ⁺-mé
 c13-blade c13-1Sg.POSS
 “my blades”
- (d) SPx (*li-*):
li-cèndyì li-tám-w-á-ndí
 c13-blade c13-walk-EV-EV-PRES
 “The blades walk.”
- (e) OPx (*lyó*):
nà-tó-ó-ndí[?] lyó
 1sg-see-EV-PRES.OBJ c13
 “I see them (the blades).”
- (f) AM (*lá*):
li-cèndyì lá Ndàndá
 c13-blade c13.AM Ndanda
 “Ndanda’s blades”

1.3.12 Class 14 (*bò-*)

The singular class 14 (c14) takes the NPx *bò-*, reconstructed for Proto-Bantu as **bo-* (Guthrie, 1971; Meeussen, 1967).

1.3.12.1 Allomorphy

The c14 NPx *bò-* surfaces as a glided allomorph [bw-]⁹⁵ preceding most vowels and as [bò-] preceding consonants. Preceding root-initial back vowels, the vowel of *bò-* deletes, and the prefix surfaces as [b-]. I have no evidence of c14 ghost-consonant-initial roots, which could be an accidental consequence of their relative infrequency (only 16 appear in my data). Examples of these variants are provided below:

- (367) [bò-] (preceding consonants)
bò-kàsò “ladder” (pl: *mè-kàsò*)
bò-kùdì “storm” (pl: *mè-kùdì*)
- (368) [b-] (preceding /u/)
b-údu “camel” (pl: *my-údu*)
b-àngú “brain” (no plural)
- (369) [bw-] (preceding other vowels)⁹⁶
bw-áyì “pain” (pl: *mè-bw-áyì*)
bw-álò “canoe” (pl: *mè-bw-álò*)
bw-àngà “medicine” (pl: *mè-bw-àngà*)

⁹⁵ While this glided prefix does not appear to contain a tonal trace, I argue in chapter 2 4.2 that the absence of a such a trace is best analyzed as the result of some process of lexicalization, either of the glided NPx allomorph or of the lexemes themselves.

⁹⁶ The surprising form of the plural in these cases is discussed in §1.4.6.

1.3.12.2 Agreement

The various c14 agreement prefixes are given in Table 4.1 and exemplified below.

(370) *bòkùdì* (c14, pl: *mèkùdì*) “storm”

- (a) NPx (*bò-*):
bò-kùdì
 c14-storm
 “storm”
- (b) EPx (*bú-*):
bò-kùdì bú-tú⁺bwé
 c14-storm c14-big
 “big storm”
- (c) PPx (*bwá⁺-*):
bò-kùdì bwá⁺-mé
 c14-storm c14-1Sg.POSS
 “my storm”
- (d) SPx (*bú-*):
bò-kùdì bú-tám-w-á-ndí
 c14-storm c14-walk-EV-EV-PRES
 “The storm walks.”
- (e) OPx (*bó*):
nà-tó-ó-ndí^a bó
 1sg-see-EV-PRES.OBJ c14
 “I see it (the storm).”
- (f) AM (*bwá*):
bò-kùdì bwá Ndàndá
 c14-ladder c14-AM Ndanda
 “Ndanda’s storm”

1.3.13 Class 19 (*vi-*)

The singular class 19 (c19) takes the NPx *vi-*, reconstructed for Proto-Bantu as **pi-* (Guthrie, 1971; Meeussen, 1967).

1.3.13.1 Allomorphy

Like its c13 plural counterpart, the c19 NPx *vi-* undergoes Gliding preceding heterorganic vowels, and deletes its vowel immediately preceding *i*.⁹⁷ Examples of this allomorphic variation were already given in (348), (349), and (350) in the discussion of c13 (the plural counterpart to c19). I have no evidence of c19 ghost-consonant-initial roots, which could be an accidental consequence of their relatively small number.

1.3.13.2 Agreement

The various c19 agreement prefixes are given in Table 4.1 and exemplified below.

(371) *vicèndyì* (c19, pl: *licèndyì*) “(razor) blade”

- (a) NPx (*vi-*):
vi-cèndyì
 c19-blade
 “blade”
- (b) EPx (*ví-*):
vi-cèndyì ví-tú⁺bwé
 c19-blade c19-big
 “big blade”

⁹⁷ For discussion of some complicating data and my justifications for this claim, see fn. 94.

- (c) PPx (*vá*¹-):
vi-cèndyì vá¹-mé
 c19-blade c19-1Sg.POSS
 “my blade”
- (d) SPx (*vi*-):
vi-cèndyì ví-tám-w-á-ndí
 c19-blade c19-walk-EV-EV-PRES
 “The blade walks.”
- (e) OPx (*vyó*):
nà-tó-ó-ndí² vyó
 1sg-see-EV-PRES.OBJ c19
 “I see it (the blade).”
- (f) AM (*vá*):
vi-cèndyì vá Ndàndá
 c19-blade c19.AM Ndanda
 “Ndanda’s blade”

1.4 The genders (noun class pairings)

The gender system of Iyasa is largely typical in comparison to other Bantu languages, though some surprising properties of it are explicated below. In broad strokes, Iyasa has 13 noun classes arranged in seven primary genders: 1/2, 3/4, 5/6, 7/8, 9/10, 14/4, and 19/13. As is common in Bantu, in addition to the prototypical genders, there are also atypical⁹⁸ singular/plural pairings (eg. 7/6) that appear to be lexically specified. There are also two subsets of polygender nouns, which are discussed in §1.4.8. In general, the genders of Iyasa lack compelling semantic motivation, and I do not attempt to provide a semantic characterization of them with the exception of gender 1/2, which is exclusively human-referring. I exemplify and provide evidence for these distinctions in the following discussion.

1.4.1 Gender 1/2

Gender 1/2 is a typical Bantu gender whose referents are all human-referring. The singular takes the c1 NPx *mò*-, and the plural takes the c2 NPx *wà*- (for discussion of the allomorphy and agreement properties of these two classes, see §1.2.5 and §1.3.2, respectively). Some examples are provided in (357):

- (372) **Gender 1/2 nouns**
- | | |
|------------------------|-------------------|
| <i>mò-dìmi/wà-dìmi</i> | “younger sibling” |
| <i>mò-tò/wà-tò</i> | “person” |
| <i>mò-tódù/wà-tódù</i> | “older sibling” |
| <i>mw-àdó/w-àdó</i> | “woman” |
| <i>mw-ánà/w-ánà</i> | “child” |

1.4.2 Gender 3/4

Gender 3/4 is a typical Bantu gender that is widely attested in Iyasa. The singular takes the c3 NPx *mò*-, and the plural takes the c4 NPx *mè*- (for discussion of the allomorphy and agreement properties of these two classes, see §1.3.3 and §1.3.4, respectively). Some examples are provided in (358):

- (373) **Gender 3/4 nouns**
- | | |
|--|--------------|
| <i>mò-ló/mè-ló</i> | “head” |
| <i>mò-dyèdyé/mè-dyèdyé</i> | “stickiness” |
| <i>mò-kòdí/mè-kòdí</i> | “mountain” |
| <i>mò-ónì/mì-ónì</i> | “flying ant” |
| <i>mw¹-álò/my¹-álò</i> | “gossip” |
| <i>ṁ-pólò/mè-pólò</i> | “chief” |

⁹⁸ Atypical both in terms of the Iyasa data, in that they apply to a small number of lexemes, and in terms of Bantu typology, in that they are not genders that are commonly attested in related languages. As discussed below, there are some typologically atypical gender pairings in Iyasa that nevertheless are robustly attested in the language, such as 14/4, which I have consequently listed as “primary” in addition to the typologically typical ones.

1.4.3 Gender 5/6

Gender 5/6 is a typical Bantu gender that is widely attested in Iyasa. The singular takes the c5 prefix *i-*, and the plural takes the c6 prefix *mà-* (for discussion of the allomorphy and agreement properties of these two classes, see §1.3.5 and §1.3.6, respectively). Some examples are provided in (359):

(374)	Gender 5/6 nouns	
	<i>i-kò/mà-kò</i>	“plantain”
	<i>i-dúkú/mà-dúkú</i>	“toilet”
	<i>i-lálè/mà-lálè</i>	“rock”
	<i>i-báì/mà-báì</i>	“liver”
	<i>dy-émì/m-émì</i>	“pregnancy”
	<i>d-inà/m-inà</i>	“name”

1.4.4 Gender 7/8

Gender 7/8 is a typical Bantu gender that is widely attested in Iyasa. The singular takes the c7 prefix *è-*, and the plural takes the c8 prefix *bè-* (for discussion of the allomorphy and agreement properties of these two classes, see §1.3.7 and §1.3.8, respectively). Some examples are provided in (360):

(375)	Gender 7/8 nouns	
	<i>è-báì/bè-báì</i>	“bark (of tree)”
	<i>è-ciyà/bè-ciyà</i>	“taboo”
	<i>è-dùwé/bè-dùwé</i>	“kidney”
	<i>è-kàbà/bè-kàbà</i>	“palm frond”
	<i>è-òngà/by-òngà</i>	“joke”

1.4.5 Gender 9/10

Gender 9/10 is a typical Bantu gender that is widely attested in Iyasa. Both classes of this gender have null NPx, with the result that singular and plural nouns of this gender are homophonous. Nonetheless, their agreement properties differ throughout the rest of the noun phrase (for discussion of the allomorphy and agreement properties of these two classes, see §1.3.9 and §1.3.10, respectively). There is a tendency for nouns referring to living creatures (non-human, i.e. animals, insects, etc.) to be 9/10, although the large number of both (i) 9/10 nouns referring to non-animals and (ii) animal nouns of other genders prevents any reliable semantics-based generalization. Some examples of 9/10 nouns are provided in (361):

(376)	Gender 9/10 nouns	
	<i>békì (à/nyá...)</i>	“plate(s) (of...)”
	<i>cìngó (à/nyá...)</i>	“voice(s) (of...)”
	<i>dólè (à/nyá...)</i>	“silver (of...)”
	<i>kábè (à/nyá...)</i>	“antelope(s) (of...)”
	<i>kóbò (à/nyá...)</i>	“inheritance(s) (of...)”
	<i>mbwàà (à/nyá...)</i>	“dog(s) (of...)”
	<i>ndíbá (à/nyá...)</i>	“depth(s) (of...)”
	<i>pèkò (à/nyá...)</i>	“wisdom(s) (of...)”
	<i>ségá (à/nyá...)</i>	“earthworm(s) (of...)”
	<i>tíndé (à/nyá...)</i>	“nail(s) (of...)”
	<i>véyì (à/nyá...)</i>	“sun(s) (of...)”
	<i>wèé (à/nyá...)</i>	“hair(s) (of...)”
	<i>yé (à/nyá...)</i>	“land(s) (of...)”

Loan nouns tend to be assigned to gender 9/10 (perhaps unsurprisingly since this gender involves no overt inflection):

- (377) *ámà* “hammer”
biyè “beer”
dèndón “turkey” (from French “dindon”)
dútè “tax” (from “duty”)
kàfè “coffee” (from French “café”)
kícínì “kitchen”
kòpí “cup”
làmbì “lamp, light”
mákétì “market”
minínì “meaning”
músíkà “music”
ngwábà “guava”
òdà “order”
pápi “porridge/pap”
páwúdà “flour” (from “powder”)
péndì “paint”
pípà “pipe” (from French “pipe” or Spanish “pipa”)
pókétì “pocket”
sòdyé “soldier”
wíndè “window”

This is not categorical, however, and some probable loans have been integrated into genders with overt class inflection:

- (378) *dyàkàsì/màkàsì* (5/6) “donkey” (possibly from “jackass”)
ìbàtùwè/màbàtùwè (5/6) “baptism” (possibly from “baptism”)
ésò/bésò (7/8) “saw (n)” (possibly from “saw”)
èkàbàlá/bèkàbàlá (7/8) “horse” (possibly from French “cheval” or Spanish “caballo”)

1.4.6 Gender 14/4

One typologically surprising aspect of Iyasa is the pairing of singular class 14 with plural class 4, since c14 typically pairs with plural class 6 in Bantu. However, it is beyond doubt that c6 does not form the plural counterpart to c14 in Iyasa. The c6 prefix is *mà-*, which never occurs on a c14 root in my data. Instead, c14 nouns always take a plural with a prefix of the form *mè-*, which is at least homophonous with the c4 prefix. The plural of c14 also controls agreement identically to c4, as shown in (364).

- (379) Identical agreement in plural between 3/4 *mòkòdì/mèkòdì* “mountain” and 14/4 *bòkùdì/mèkùdì* “storm”
- (a) NPx (*mè-*):
- (i) 3/4: *mèkòdì* “mountains” (sg. *mòkòdì*)
(ii) 14/4: *mèkùdì* “storms” (sg. *bòkùdì*)
- (b) PPx (*mǎ⁴-*):
- (i) 3/4: *mèkòdì mǎ⁴-mè* “my mountains”
(ii) 14/4: *mèkùdì mǎ⁴-mè* “my storm”
- (c) EPx (*mí-*):
- (i) 3/4: *mèkòdì mítú⁴bwé* “big mountains”
(ii) 14/4: *mèkùdì mítú⁴bwé* “big storm”
- (d) SPx (*mí⁴-*):
- (i) 3/4: *mèkòdì mítámwándì* “The mountains walk.”
(ii) 14/4: *mèkùdì mítámwándì* “The storms walk.”
- (e) OPx (*myó*):
- (i) 3/4: *nàtòndí⁴ myó* “I see them (the mountains).”
(ii) 14/4: *nàtòndí⁴ myó* “I see them (the storms).”
- (f) AM (*má*):
- (i) 3/4: *mèkòdì má Ndàndá* “Ndanda’s mountains”
(ii) 14/4: *mèkùdì má Ndàndá* “Ndanda’s storms”

In light of these facts, it is far simpler to analyze Iyasa as exhibiting an unusual gender 14/4 than to attempt to analyze the plural counterparts of c14 nouns as being either underlying c6 or as belonging to a distinct noun class from c4.

Another unusual aspect of 14/4 is its tendency to take what have elsewhere been labeled “additive” plural prefixes (Grégoire, 2003), i.e. prefixes that attach to a noun already inflected for singular rather than directly to the noun root. Some examples were provided above in (354) and are re-presented below:

- (380) *bw-áyì/mè-bw-áyì* “pain”
bw-álò/mè-bw-álò “canoe”
bw-àngà/mè-bw-àngà “medicine”

As it turns out, this “additive” inflection in the plural occurs always and only when the c14 prefix is glided (in the singular). Elsewhere, 14/4 nouns inflect normally in the plural:

- (381) *bò-kàsò/mè-kàsò* “ladder”
bò-kùdì/mè-kùdì “storm”
b-ùdù/my-ùdù “camel”

Thus, on the surface, it appears that 14/4 violates a basic principle of affixation in Iyasa, and that only in a phonologically well-defined environment, a conclusion which would indicate a high degree of interaction between phonology and grammar and whose theoretical import is beyond the scope of my discussion here. However, before arriving at this conclusion, it is worthwhile to consider other potential explanatory options.

One possible way of handling this phenomenon would be to analyze *mè-* plural of 14/4 as belonging to a different class altogether. However, such an analysis faces the burden of explaining the high degree of similarity between this supposedly distinct class and c4 shown above. It would further need to account for those 14/4 nouns which are not additive.

Another approach might be to consider the examples in (365) to be morphologically simple, either as a result of accident or historical processes. This approach would have the burden of accounting for (1) the fact that the nouns in questions all begin with the same initial segments, which happen to be exactly those which would be predicted by Gliding of *bò-* preceding V-initial roots, (2) the variety of forms for this class which hint at a segmental prefix shape something like *bò-* (eg. *bú-*, *bá-*, etc.), and (3) the absence of prefixless (i.e. additively inflecting) c14 nouns with initial segments other than *b(w)*.

All approaches are faced with the further challenge of dealing with examples like the following of additive plurals belonging to other genders:

- (382) *d-ívi/mâ-d-ívi* (5/6) “anteater”

Thus, even if the plural of 14/4 is treated as a distinct class with some “additivity” parameter, (367) still requires an account of additive inflection that allows for lexical specifications to override more general inflectional properties of the language. In light of this, I believe the most straightforward account to be one in which certain nouns (mostly 14/4, perhaps for historical reasons) are lexically specified to inflect the plural additively.

1.4.7 Gender 19/13

Gender 19/13 is a typical Bantu gender that appears relatively infrequently in Iyasa (30 roots in my data). The singular c19 NPx is *vì-*, and the plural c13 NPx is *li-* (for discussion of the allomorphy and agreement properties of these two classes, see §1.3.13 and §1.3.11, respectively). Like gender 9/10, gender 19/13 tends to contain nouns that refer to non-human animates (i.e. animals, insects, etc.). However, this generalization is far from categorical: many 19/13 nouns refer to inanimate/abstract entities, and many animal names belong to other genders. Some examples of 19/13 nouns are provided below:

Series	Frame	c9 (sg)	c1 (sg)	c10 (pl)	c2 (pl)
NPx	isolation	áŋgwé	áŋgwé	áŋgwé	wàáŋgwé
PPx	__ PPx-mé “my __”	áŋgwé àámé	áŋgwé àámé	áŋgwé nyá ⁺ mé	wàáŋgwé wá ⁺ mé
EPx	__ EPx-tú ⁺ bwé “big __”	áŋgwé étú ⁺ bwé	--- (see fn. Error! Bookmark not defined.)	áŋgwé nyítú ⁺ bwé	wàáŋgwé wátú ⁺ bwé
SPx	__ SPx-támwándí “__ walks.”	áŋgwé étámwándí	áŋgwé àtámwándí	áŋgwé nyítámwándí	wàáŋgwé wátámwándí
OPx	nátóóndí ⁺ OPx. “I see him.”	nátóóndí ⁺ yó	nátóóndí ⁺ mú	nátóóndí ⁺ nyó	nátóóndí ⁺ wá
AM	__ AM mbókà “__ of the village.”	áŋgwé à mbókà	áŋgwé à mbókà	áŋgwé nyá mbókà	wàáŋgwé wá mbókà
Prox. dem.	__ mé PDEM “this __”	áŋgwé mé ⁺ èní	áŋgwé mé ⁺ nù	áŋgwé mé ⁺ nyí	wàáŋgwé mé ⁺ wà
Dist. dem.	__ mé DDEM nyéé “that __”	áŋgwé mé ⁺ é ⁺ nyéé	áŋgwé mé ⁺ nyéé	áŋgwé mé ⁺ nyí ⁺ nyéé	wàáŋgwé mé ⁺ wá ⁺ nyéé

Table 4.8 - Examples of inflectional properties of 9/10/2. using ánewé “father”

- (383) v-éyá/l-éyá “wood”
 v-íbándyè/l-íbándyè “hawk”
 vy-éli/ly-éli “hare, rabbit”
 vy-émbò/l-émbò “song”
 vi-cèndyì/li-cèndyì “razor blade”
 vi-dìpì/li-dìpì “tail”
 vi-gòí/li-gòí “whistle”
 vi-kúbé/li-kúbé “banana”
 vi-ndyèbá/li-ndyèbá “marmoset”
 vi-sòkò/li-sòkò “mongoose”
 vi-tútú/li-tútú “smoke”

1.4.8 Polygender nouns

There are two subsets of nouns that deserve attention in light of the foregoing discussion, which I have labeled 3/4/2 and 9/10/2. These are all human-referring nouns which belong to either 3/4 or 9/10, but which have two distinctive characteristics. First, they may control agreement in dependents either according to gender 1/2, which I call “animacy agreement” since 1/2 is an exclusively human gender, or according to their lexical gender, which I call “class agreement”. This contrast carries with it a semantic distinction: use of animacy agreement (1/2) personifies the referent to some extent, emphasizing his or her specific individuality or relational proximity to the speaker, while class agreement is used with referents that are unknown, less specific, or objectified. Understanding the semantic nuances of this alternation requires thorough discourse analysis beyond the scope of the current study, and I suggest it as a subject of investigation for future research. The second distinctive characteristic of these nouns is the fact that they may themselves inflect with different NPx according to animacy or class agreement, but in the plural only. This restriction in the singular is vacuous in the case of 3/4/2, since the c1 and c3 NPx are homophonous (*mò-*). However, it is relevant in the case of 9/10/2, since the c9 NPx is null while the c3 NPx is *mò-*. In brief, these nouns control agreement either as c1 or as their lexical class in the singular while retaining their lexically-specified NPx inflection, while in the plural they inflect fully either as c2 or as their lexical class. They therefore formally resemble a gender pairing of a singular class with two distinct plural classes; hence the three class numbers in the labels I have assigned to them. See Table 4.8 for a fuller exposition of the various inflectional possibilities in the case of the 9/10/2 noun *áŋgwé* “father”. All nouns in 9/10/2 refer to intimate family relations. There are five in my data: *áŋgwé* “father”, *nyàŋgwé* “mother”, *táté* “dad”, *iyà* “mom”, and *mbámbá* “grandparent; grandchild”.⁹⁹

⁹⁹ 9/10/2 nouns may control agreement in dependents according to all four classes in all inflectional series with the exception of EPx. While 9/10/2-controlled adjectives may inflect for classes 2, 9, and 10, they may not take the c1 EPx *mú-*. Hence *áŋgwé ètíikí* “small father (c9)”, *áŋgwé nyítíikí* “small fathers (c10)”, and *wàáŋgwé wátíikí* “small fathers (c2)” are all licensed, while **áŋgwé mútíikí* (intended: c1 “small father”) is not. However, adjectives may inflect for c1 in predicative constructions, such that the following example is licensed for a 9/10/2 noun controlling c1 agreement:

Gender 9/10/2 has the additional unique property of taking distinct associative marking when heading genitive constructions with another explicit human vs. non-human NP. When its NP dependent is non-human, its AM takes the form *à* typical of c9. However, when its NP dependent is human, its AM takes the form *nà*, which could in principle be analyzed either as a distinct c9 AM *nà*, or as the homophonous preposition *nà* “with”. I do not see a clear empirical means of resolving this question. This contrast is illustrated in the following examples:

- (384) *ángwé à mbókà*
 father AM c9.village
 “the father of the village”
 (385) *ángwé ná Ndàndá*
 father with Ndanda
 “Ndanda’s father”

Nouns in 3/4/2 arise always and only as a result of verb-to-noun derivation via the agent nominalizing EV *i* when the referent is human. This derivational process is quite productive in Iyasa, and is discussed further in chapter 5 5.2.1. Examples of their four possible class manifestations are given below for *mò̀ànì* “fighter”. While the NPx could in principle be glossed as either c1 or c3, I opt for c3 in light of the fact that NPx inflection does not change in the singular of 9/10/2 nouns.

- (386)
- | | | | | | | | | |
|-----|-----------|--------------------------------|-----------|-----------|-----------|-----------------|-----------|-----------|
| (a) | c1 | <i>mò̀-àn-i</i> | <i>mé</i> | <i>nù</i> | c3 | <i>mò̀-àn-i</i> | <i>mé</i> | <i>mù</i> |
| | | c3-fight ¹⁰⁰ -AGNOM | REL | c1.this | | c3-fight-AGNOM | REL | c3.this |
| | | “this fighter” | | | | | | |
| (b) | c2 | <i>wà-àn-i</i> | <i>mé</i> | <i>wà</i> | c4 | <i>mè-àn-i</i> | <i>mé</i> | <i>mì</i> |
| | | c3-fight-AGNOM | REL | c2.this | | c3-fight-AGNOM | REL | c4.this |
| | | “these fighters” | | | | | | |

A noteworthy observation about 3/4/2 nouns is that *mò̀-* never undergoes Gliding before roots that are superficially V-initial. In light of this and the fact that all 3/4/2 stems are derived from verbs, I conclude that all verb roots are consonant-initial, and that surface V-initial verb roots all begin with underlying ghost consonants. This claim is supported by evidence from gender 5/6, in which all the examples in my data of ghost-consonant-initial roots are deverbative forms (see §1.3.5 and §1.3.6).

I must note that the particular semantics of the lexeme influence the regularity with which class or animacy agreement occurs with 9/10/2 and 3/4/2 nouns. For example, according to my informant, c3 *mò̀ànì* “fighter” takes animacy agreement more easily than c3 *mò̀bì* “thief (lit. stealer)”, for which animacy agreement is more marginal and class agreement more typical. Perhaps thieves are less readily personified than fighters. On the other hand, the 9/10/2 noun *tàté* “dad” tends to favor personification and takes animacy agreement more readily than class agreement, such that certain c9 inflections were considered marginal by the speaker (eg. c9 *?tàté étámwándí*; intended: “the dad walks.”). Again, this is perhaps motivated by the semantics of the word, which typically refers to a specific and intimate relation. Finally, certain types of class inflection seem to favor animacy or class agreement in some cases more than others. For example, while the aforementioned c9 SPx inflection for *tàté* was considered marginal, c9 inflection of demonstrative constructions was considered much more natural: *tàté mḗ éni* “this father” (c9). Teasing apart (semantic) infelicity and ungrammaticality in these cases is quite tricky, and I leave a fuller account of the lexical semantics of Iyasa and their interaction with class inflection to future research.

There is also a separate but related construction in which nouns of *any* class regardless of referent may control agreement as gender 1/2 (while retaining their lexical NPx inflections). This kind of agreement occurs much less frequently than class agreement for these nouns, and carries a particular kind of generic meaning such that the proposition is asserted of the *kind* represented by the noun. These constructions translate roughly as “X-s *verb*” (trans-

- (7) *ángwé à-yé mú-tiiki*
 c9.father c1-be c1-small
 “the father is small”

Why this inflectional difference between attributive and predicative adjectival constructions exists is unclear, and I leave it as a question for further investigation.

¹⁰⁰ The infinitive form of this verb is *éánà* “fight”.

latable perhaps more accurately in French: “le X, ça *verb*”). Unlike 3/4/2 and 9/10/2 nouns, this construction does not permit 1/2 NPx inflection in either the singular or plural (eg. 3/4 *m̀pólo* “chief” may inflect for plural as *m̀pólo* but not **wàpólo*). Thus, for example:

- (387)
- (a) *m̀-ćéćé m̀ú-yá-á-ndí*
c3-baby c3-sleep-EV-PRES
“the baby sleeps”
 - (b) *m̀-ćéćé à-yá-á-ndí*
c3-baby c1-sleep-EV-PRES
“babies sleep (*fr.* le bébé, ça dort)”
- (388)
- (a) *i-kàkò d̀yí-d̀iy-á-ndí*
c5-crab c5-stay-EV-PRES
“the crab stays”
 - (b) *i-kàkò à-d̀iy-á-ndí*
c5-crab c1-stay-EV-PRES
“crabs stay (*fr.* la crabe, ça reste)”
- (389)
- (a) *i-káŋgá d̀yí-d̀iy-á-ndí*
c5-charcoal c5-stay-EV-PRES
“the charcoal stays”
 - (b) *i-káŋgá à-d̀iy-á-ndí*
c5-charcoal c1-stay-EV-PRES
“charcoal stays (*fr.* la charbonne, ça reste)”

As is evident from the above examples, in this construction only the nominal dependents are affected by the change in agreement. The noun itself retains the NPx form of its lexical class.

1.5 Inflectionally irregular lexical items

As might be expected, some individual lexemes are exceptions to some of the morphological generalizations laid out in the foregoing discussion. I believe these cases are best analyzed as lexically fixed inflectional irregularities, and below I simply provide a collection of representative examples:

- (390) **Irregular class pairings**
è-kòó/mà-kòó (7/6) “foot”
e-bó/ma-bó (7/6) “hand”
i-ndàkí/mè-ndàkí (5/4) “promise”
mbàdí/mà-mbàdí (9/6) “house”
mbèyá/mà-mbèyá (9/6) “cooking pot”
mbókà/mà-mbókà (9/6) “village/bush”
ndàndàbòbè/mà-ndàndàbòbè (9/6) “spiderweb”
- (391) **Irregular prefix allomorphs**
d-ási (c5) “gift” (expected: **dy-ási*)
dí-lí (c5) “ear” (expected: **í-lí*, cf. pl: *mà-lí*)
dù-wéé (c5) “tear (from eye)” (expected: *í-wéé*, pl: *mà-wéé*)
l-émbò (c13) “songs” (expected: **ly-émbò*, cf sg: *vy-émbò*)
l-óbà (c13) “heights” (expected: **ly-óbà*)
v-éyà/l-éyà (19/13) “fire” (expected: **vy-éyà*/**ly-éyà*)
mú-dí/mí-dí (3/4) “room (of house)” (nominal but takes EPx agreement; expected: *mó-dí/mé-dí*)
mè-ébà (c6) “water” (cf. *mèébà mé mà* “this water”, expected: **mà-ébà* or **m-ébà*)
módòmbè/médòmbè (3/4) “lamb” (unexpectedly hi-toned NPx)
- (392) **Changes to the form of the root between singular and plural**
è-ímà/bè-émà (7/8) “thing”
mw-éncí/wà-áncí (3/2) “stranger”
m-ùmú/wà-ámú (1/2) “man”

(393) **Additive plural inflection**

- d-ìvì/mà-d-ìvì* (5/6) “anteater”
bw-áyì/mè-bw-áyì (14/4) “pain (pl: disease)”
bw-álò/mè-bw-álò (14/4) “canoe”
bw-àngà/mè-bw-àngà (14/4) “medicine”

In addition to these examples, a number of lexemes either lack a singular/plural form or exhibit unpredictably different semantics between singular and plural. Examples include:

(394) **No singular form**

- bè-dyá^t* (c8) “food”
lì-bí (c13) “excrement”
l-óbà (c13) “heights, skies”
mà-dyòkà (c6) “feast, games, ceremony”
mà-nyóṅṅò (c6) “milk”
mà-òpà (c6) “dew”
mè-ébà (c6) “water”
m-ìnyè (c6) “urine”
póní (c9) “truth”
sédù (c9) “beard”

(395) **No plural form**

- b-ḡṅú* (c14) “brain”
d-ási (c5) “gift”
ì-yògò (c5) “palm wine”
mò-sàni (c3) “peace”

(396) **Meaning difference between Sg and Pl**

- mò-kúkù* (c3) “ghost” vs. *mè-kúkù* (c4) “resting place of the dead”
bw-áyì (c14) “pain” vs. *mè-bw-áyì* (c4) “disease”
vy-émbò (c19) “song” vs. *l-émbò* (c13) “songs, music”
ì-tàmbú (c5) “chewed food” vs. *mà-tàmbú* (c6) “leftovers (pejorative)”
mò-náṅgá (c3) “star” vs. *mè-náṅgá* (c4) “stars, constellation”
mò-ḡdyó (c3) “(body) hair” vs. *mì-ḡdyó* (c4) “(body) hairs, fur”
mbámbá (c1a) “grandparent” vs. *wà-mbámbá* (c2) “grandparents, ancestors”

1.6 Differences between my account of noun classes in Iyasa and that of previous analyses

I am not the first to put forward a description of noun class morphology in the Iyasa language. Other descriptions include that of Bot (1992), whose analysis Bouh Ma Sitna (2004) adopts and revises, which Lonfo (2009) then adopts and further revises. The understanding of Iyasa noun class advanced here is heavily indebted to the pioneering efforts of the authors of all three of these works. As I argue below, while my analysis does disagree at minor points with one or more of these descriptions, I believe their primary shortcoming is not inaccuracy so much as lack of coverage, tending to simply present a single paradigm of noun class inflections without apparent awareness of the proliferation of formal contrasts within any given class which I highlight above or of the allomorphic properties of particular prefixes in specific phonological environments. Thus the value of my analysis in light of its predecessors is primarily in enriching and broadening the discussion of noun class by exploring its inflectional manifestations in a number of distinct environments not explicitly addressed in these other works. In so doing, I have more solidly established the empirical basis for the noun class distinctions I have proposed, since, while in some contexts some classes have similar or identical forms, none share all forms identically in all contexts, and the list of classes I posit is therefore irreducible.

Class	Bouh Ma Sitna (2004)				Lonfo (2009)	
	__C	__V	Sub.	Obj.	Affix	Variant
1	<i>mù-</i> , <i>mò-</i>	<i>m</i> , <i>m^w</i> , \emptyset	<i>à</i>	<i>mú</i>	<i>à-</i>	
2	<i>wà-</i>	<i>wàh-</i> , <i>w-</i>	<i>wá</i>	<i>wá</i>	<i>wà-</i>	<i>w-</i>
3	<i>mò-</i> , <i>Ñ-</i>	<i>mòj-</i> , <i>m-</i> , <i>m^w</i>	<i>mú</i>	<i>mó</i>	<i>mò-</i>	<i>m-</i> , <i>mù-</i>
4	<i>mè-</i>	<i>mèj-</i> , <i>mèh</i> , <i>m-</i> , <i>mⁱ</i>	<i>mé</i>	<i>míó</i>	<i>mè-</i>	<i>mèi</i> , <i>m-</i> , <i>mì-</i>
5	<i>dì</i> , <i>ì</i>	<i>d-</i> , <i>dʒ-</i> , <i>ìj-</i>	<i>dʒí</i>	<i>dʒó</i>	<i>dì-</i> , <i>ì-</i>	<i>d-</i> , <i>dʒ-</i> , <i>ìj</i>
6	<i>mà-</i>	<i>m-</i>	<i>má</i>	<i>mó</i>	<i>mà-</i>	<i>m-</i>
7	<i>è-</i>	<i>èj-</i>	<i>é</i>	<i>jó</i>	<i>è-</i>	<i>èj-</i>
8	<i>bè-</i>	<i>bèj-</i>	<i>bí</i>	<i>b'ó</i>	<i>bè-</i>	<i>bèj-</i>
9	\emptyset	\emptyset	<i>é</i>	<i>jó</i>	\emptyset	\emptyset
10	\emptyset	\emptyset	<i>ní</i>	<i>nó</i>	\emptyset	\emptyset
13	<i>v-</i>	<i>vì-</i>	<i>lí</i>	<i>l'ó</i>	<i>v-</i>	<i>vì-</i>
14	<i>bù-</i>	<i>b^w</i> , <i>b-</i>	<i>bú</i>	<i>b^wó</i>	<i>bù-</i>	<i>b-</i>
19	<i>lì-</i>	<i>l-</i>	<i>ví</i>	<i>v'ó</i>	<i>lì-</i>	<i>l-</i>

Table 4.9 - Comparison of noun class paradigms presented in Bouh Ma Sitna (2004) and Lonfo (2009)

While I unfortunately have not succeeded in accessing Bot (1992), in Table 4.9 I provide a comparative breakdown of the noun class paradigms as given in Bouh Ma Sitna (2004) and Lonfo (2009). They structure their presentations differently, with Bouh Ma Sitna making claims about realization of allomorphs before consonants vs. vowels and Lonfo about underlying vs. variant realizations. While I do not have space to enter into a point-by-point discussion of every detail of both of these analyses, I can make several general observations. First, the multiplicity of forms in some classes of both presentations suggests that the range of agreement types and allomorphic variation has not been fully explicated, which the foregoing discussion of noun class agreement series and allomorphy confirms. Both works appear to conflate distinct surface realizations of individual morphemes as well as distinct agreement series in too-simple paradigmatic breakdowns. As I have shown, allomorphic variation in Iyasa is sensitive to a more complex set of phonological environments than the __V and __C suggested by Bouh Ma Sitna's proposal. Second, there appears to be confusion in Bouh Ma Sitna's presentation with respect to which types of prefix represent classes 19 and 13, while Lonfo switches the classes outright. Lonfo's analysis generates a novel gender 13/19 and appears to conform less well to the common reconstructions of PB forms than a straightforward 19/13 analysis does.

Unlike Bouh Ma Sitna, Lonfo goes into detail about noun classes beyond the simple presentation of tables, and I take the time now to briefly comment upon some of his claims. First, it is notable that Lonfo differs from Bouh Ma Sitna in his treatment of c1, to which he assigns the prefix *à*, while Bouh Ma Sitna gives variations of *mò-*. Lonfo's choice of *à-* appears to be motivated by the PPx form, since the examples he provides are of possessive constructions. All words taking prefixes of the shape *mò-* Lonfo assigns to c3. My own analysis reveals three main problems with this. First, PPx is only one of many agreement series, and while its c1 form is indeed *à-*, so is its c9 form. This leads to the second problem: the three nouns Lonfo provides as examples of c1 – *béki* “dish”, *cémà* “monkey”¹⁰¹, and *ɲgàngò* “umbrella” – are all actually c9. And third, Lonfo's inclusion of all words beginning with *mò-* in c3, thus assigning eg. *mòtò* “person” (c1) and *mwèyà* “intestine” (c3) to the same class, ignores the significant and irreducible differences between the inflectional properties of these nouns which I examine at length above. An additional consequence of this conflation is Lonfo's proposal of the novel gender 3/2 rather than 1/2 as a basic gender of Iyasa, the inevitable result of treating nouns as c3 when they actually belong to c1. These misanalyses could have been avoided through an awareness of the range of distinct agreement series on different types of dependents.

I finally note that while Lonfo analyzes classes 9 and 10 as prefixless, he remarks that his corpus “did not permit [him] to obtain clear examples of nouns belonging to this class” (p. 112, *my trans.*). I suspect the primary reason for

¹⁰¹ Lonfo translates this as “gorilla”, which in Iyasa is actually *ndyiyà*.

this to be his erroneous treatment of 9/10 nouns as belonging to c1. He further claims that c9 nouns are exclusively singular and c10 nouns are exclusively plural. While this is trivially true in that c9 is a singular class and c10 is a plural class, the nouns themselves belonging to gender 9/10 are not inherently singular or plural, but inflect for plurality through class agreement. Though this plurality contrast is not evident on the nouns themselves as result of the null NPx of both classes, it is thoroughly demonstrable in nominal dependents, as I show above.

In summary, there are some divergences between my analysis of Iyasa noun class and those that have preceded it, the seriousness of which I leave to the reader to assess. I believe the analysis presented here contributes significantly to the general understanding of Iyasa noun class in its varied manifestations, and though I of course acknowledge that I probably have not exhaustively catalogued the manifestations of noun class in the language, I have elucidated a number of hitherto unnoticed patterns. While I have of necessity concentrated the present discussion on points of difference between my approach and that of others, I recognize that the most fundamental insights about noun classes in Iyasa have already been made public through the work of Bot, Bouh Ma Sitna, and Lonfo. The bulk of my conclusions agree substantially with theirs.

2 Nominal modifiers

2.1 True (inflecting) adjectives

Adjectives in Iyasa inflect for agreement in noun class with the nominal head according to the EPx series of prefixes (see Table 4.1). As is common in Bantu languages, they are relatively few in number (there are 19 in my data). They exhibit two characteristic features: (1) the presence of a long vowel (underlying homorganic VV sequence) in the first syllable of the root/second syllable of the word, and (2) the upstepping of H in H-initial roots.¹⁰²

- (397) *é-běě^avá* “bad”
é-diilà “heavy”
é-těě^ayá “brown”
é-tiiki “small”
é-viĩ^andá “black”
é-bóó^angá “hard”

There are exceptions to this, however, such as *étú^abwé* “big” and *éàbé* “long; tall”, which do not appear to contain a long vowel. All adjectival roots in my data take the tonal melodies ^aH^aH and LH, though there are HL roots found among inflecting numerals, which otherwise pattern with adjectives (*bí-láálò* “three” and *bí-táánù* “five”).

2.2 Adjectival nouns

Although they do not form a distinct grammatical category, I note the existence of a subgroup of 9/10 nouns that frequently modify other nouns in associative constructions. They are unambiguously nouns, as is evident from the fact that they can head NPs, do not inflect for class agreement, and require subordination via associative marker in order to modify other nominal heads:

- (398) *vòòò* *àà-mé*
c9.silence c9-1sg.POSS
“my silence”
(399) *vòòò* *nyá^a-mé*
c10.silence c10-1sg.POSS
“my silences”
(400) *mò-tò* *à* *vòòò*
c1-person c1.AM c9.silence
“silent person”

These nouns resemble adjectives in that they all are primarily used as modifiers and exhibit root-internal long vowels. The long vowel tends to occur in the ultimate syllable, although like adjectives there are exceptions (eg. *cáàcá* “new-

¹⁰² See chapter 3 4.3 for discussion of tonal upstep.

ness” and *díyè* “expensiveness”). The nominal meaning of these lexemes always involves abstract concepts: *bwèé* “openness, brightness”, *cèngàà* “crookedness”, *kòlúú* “darkness”, *kwèè* “slowness; calmness”, *sù* “straightness; uprightness”, etc. As such, they lend themselves well to adjective-like semantic contribution when used as modifiers:

- (401) *ṁ-póló mwá cèngàà*
c3-chief c3.AM c9.crookedness
“crooked chief (lit. chief of crookedness)”
- (402) *ṁ-póló mwá kòlòò*
c3-chief c3.AM c9.curvature
“curved chief (lit. chief of curvature)”
- (403) *ṁ-póló mwá kòlúú*
c3-chief c3.AM c9.darkness
“dark chief (lit. chief of darkness)”
- (404) *ṁ-póló mwá tii*
c3-chief c3.AM c9.fullness
“full chief (lit. chief of fullness)”
- (405) *ṁ-póló mwá vòòò*
c3-chief c3.AM c9.silence
“silent chief (lit. chief of silence)”

These “adjectival” nouns also share the unique ability to function as adverbs, especially but not necessarily in reduplicated form.

- (406) *à-tám-w-á-ndí kwèè (kwèè)*
c1-walk-EV-EV-PRES c9.calmness (c9.calmness)
“S/he walks calmly.”
- (407) *nà-sèb-w-á⁴ mú bwèé (bwèé)*
1sg-tell-EV-EV.OBJ c1 c9.openness (c9.openness)
“I told him openly/truthfully.”

I finally note the existence of many idiomatic expressions in Iyasa involving what appears to be direct modification of a head noun by an adjectival noun without an intervening associative marker. However, such constructions always have idiomatic (non-compositional) meanings and are not productive. For instance, the first example in (393) has the idiomatic meaning “daytime”, while the second, which involves the productive use of an associative construction, has the compositional meaning “bright day (lit. day of brightness)”. The third example shows the non-productivity of direct modification with *bwèé* “brightness; openness”.

- (408)
- (a) *dy-òbà bwèé*
c5-day c9.brightness
“daytime”
- (b) *dy-òbà dyá bwèé*
c5-day c5.AM c9.brightness
“bright day (as opposed to cloudy)”
- (c) **mò-tò bwèé*
c1-person c9.openness
(intended: “open person”, which correctly translated is *mòtò à bwèé*)

Other examples of idiomatic expressions involving adjectival nouns include:

- (409) *mò-ló bwèé*
c3-head c9.openness
“open-minded”
- (410) *nyólò bwèé*
c9.body c9.openness
“naked”
- (411) *nyólò kwèè*
c9.body c9.calmness
“calm”

#	Citation	1/2 “woman”	5/6 “hump”	9/10 “elephant”	19/13 “blade”
1	<i>è-vóókó</i>	<i>mwádó ñbóókó</i>	<i>itúú dyìvóókó</i>	<i>sòkù èvóókó</i>	<i>vièndyì vivóókó</i>
2	<i>bí-bàá</i>	<i>wádó wábàá</i>	<i>màtúú mábàá</i>	<i>sòkù nyibàá</i>	<i>licèndyì livóókó</i>
3	<i>bí-láálò</i>	<i>wádó wáláálò</i>	<i>màtúú máláálò</i>	<i>sòkù nyiláálò</i>	<i>licèndyì líláálò</i>
4	<i>bí-nààyi</i>	<i>wádó wánààyi</i>	<i>màtúú mánààyi</i>	<i>sòkù nyinààyi</i>	<i>licèndyì línààyi</i>
5	<i>bí-táánù</i>	<i>wádó wátáánù</i>	<i>màtúú mátáánù</i>	<i>sòkù nyítáánù</i>	<i>licèndyì lítáánù</i>
6	<i>mòtóóbá</i>	<i>wádó mòtóóbá</i>	<i>màtúú mòtóóbá</i>	<i>sòkù mòtóóbá</i>	<i>licèndyì mòtóóbá</i>
7	<i>èmbwéèdí</i>	<i>wádó èmbwéèdí</i>	<i>màtúú èmbwéèdí</i>	<i>sòkù èmbwéèdí</i>	<i>licèndyì èmbwéèdí</i>
8	<i>ñlòmbi</i>	<i>wádó ñlòmbi</i>	<i>màtúú ñlòmbi</i>	<i>sòkù ñlòmbi</i>	<i>licèndyì ñlòmbi</i>
9	<i>dìbùùwá</i>	<i>wádó dìbùùwá</i>	<i>màtúú dìbùùwá</i>	<i>sòkù dìbùùwá</i>	<i>licèndyì dìbùùwá</i>

Table 4.10 - Numerals 1 - 9

- (412) *mò-ló cèngàà*
 c3-head crooked
 “confused”

These adjective-like idioms modify nominal heads via associative constructions just like any modificatory noun:

- (413) *mò-tò à mò-ló cèngàà*
 c1-person c1.AM c3-head crooked
 “confused person”

Lexicalization of such expressions is not limited to 9/10 adjectival nouns, and occurs throughout the Iyasa lexicon:

- (414) *mò-ló bw-áyì*
 c3-head c14-pain
 “headache”
 (415) *i-bùmù bw-áyì*
 c5-stomach c14-pain
 “stomachache”

2.3 Numerals

The numeric system of Iyasa is base-10. However, “numeral” itself does not form a unified or distinct grammatical category in the language. Instead, the various atomic numeral words are distributed across other grammatical categories: some inflect as adjectives, one inflects but does not appear to do so according to any independently attested inflection series, some are non-inflecting but otherwise apparently adjectival, and others are nominal. Thus the use of a single term “numeral” in defining the discussion at hand is somewhat artificial in light of the particular facts of Iyasa grammar. The various inflectional properties of the non-nominal numerals (1-9) are exemplified in Table 4.10. Dotted lines are drawn between groups of like-inflecting numerals.

As discussed in §1.2.5, the number 1 in Iyasa appears to belong to an inflectional category all its own. All classes inflect with what appears to be a lo-toned variant of the EPx series, except that in c1 and c3 this prefix is a syllabic nasal followed by a lexeme-specific hardening of the root-initial consonant (*ñbóókó*):¹⁰³

- (416) *-vóókó “one”*
 (a) *mò-tò ñ-bóókó*
 c1-person c1.one
 “one person”

¹⁰³ See Table 4.7 for further details.

- (b) *sò* *è-vóókó*
 c9-time c9-one
 “one time, once”
- (c) *bè-indyé* *bì-vóókó*
 c8-time c8-one
 “sometimes”

That the prefix of *è-vóókó* is tonally distinct from EPx is evident from the contrast in (402), which reveals the both the tone contrast on the prefix as well as the effects of this contrasted on the remainder of the phrase: downstepped H’s in *bì-vóókó* (resulting from the initial L of the numeral) and level H on *bídòlé* (immediately following the final H of *bè-indyé*):

(417) Tone contrast between *è-vóókó* and EPx

- (a) *bè-indyé* *bì-vóókó*
 c8-time c8-one
 [--- ---]
 [- - -]
 “sometimes”
- (b) *bè-indyé* *bì-dòlé*
 c8-time c8-past
 [--- -]
 [- -]
 “the past”

The numbers 2-5 of Iyasa resemble adjectives in that they immediately follow the nominal head and agree in noun class with it via prefixes homophonous with those belonging to EPx (for semantic reasons, plural numbers of course do not occur modifying singular-class nouns). They also share the tendency of adjectives for the first vowel of the root to be long. For this reason, I analyze them as grammatically adjectives. However, as mentioned in §2.1, some exhibit a tone melody (HL) not attested in non-numeral adjectives. They also do not exhibit the stem-internal upstepped-H observable in H-initial adjective roots. Inflecting numerals in isolation, or as subordinate elements in complex numerals, surface with c8 inflection.

The numbers 6-10, on the other hand, are non-inflecting: although they appear to have remnants of singular class morphemes as their initial segments (eg. [dy] and [mo]), which is perhaps indicative of a nominal or adjectival historical source, they do not inflect for class synchronically. They furthermore exhibit the long vowel characteristic of adjectives (see §2.1). Unlike nouns (and nominal numeral counterparts discussed below), these numerals directly follow the modified nominal head.

Beyond the number 9, the names for powers of 10 in Iyasa are grammatically nouns. The name of the highest power of 10 serves as the nominal head, and the noun that is semantically modified by the numeral is grammatically subordinated it via associative construction. There is an unpredictable and presumably lexicalized formal distinction between the singular and plural forms for the number 10: *dy-óómù* and *mà-bó*, respectively. The word for 100 is *kámá*, and the word for thousand is *tódyèni* (possibly borrowed from English). The words *dy-óómù* and *mà-bó* “10” are gender 5/6, while *kámá* and *tódyèni* are gender 9/10. For obvious semantic reasons, these lexemes only manifest the class appropriate to their inherent plurality (i.e. *dyóómù* is always c5, *màbó* is always c6, etc.). Multiples of 1 stand alone and are not modified by *è-vóókó* “one” (i.e. *kámá* “one hundred”, **kámá è-vóókó*). Other multiples of these nominal numerals simply take the needed multiplicand as a numeral modifier, which agrees with its head in class:

(418)

- (a) *mà-bó* *má-bàá*
 c6-ten c6-two
 “twenty”
- (b) *mà-bó* *má-láálò*
 c6-ten c6-three
 “thirty”
- (c) *mà-bó* *ṅlòṅmbi*
 c6-10 eight
 “eighty”

- (d) *kámá* *nyí-táánù*
 c10.hundred c10-five
 “five hundred”
- (e) *tódyèni* *nyí-táánù*
 c10.thousand c10-five
 “five thousand”

Places are separated by the coordinating conjunction *nà* “and”:

- (419) *dy-óómùnà* *mòtóóbá*
 c5-ten and six
 “sixteen (lit. ten and six)”
- (420) *mà-bó* *má-bàá* *nà* *bí-bàá*
 c6-ten c6-two and c10-two
 “twenty-two (lit. two tens and two)”

As mentioned above, when numerals involving powers of 10 semantically modify nouns, the noun is in fact grammatically subordinate to the numeral, which serves as a head noun and controls agreement in the associative marker:

- (421) *dy-óómù* *dyá* *mè-lémá*
 c5-10 c5.AM c4-heart
 “ten hearts”
- (422) *mà-bó* *má-bàá* *má* *mà-bóhǵó*
 c6-ten c6-two c6.AM c6-knee
 “twenty knees”
- (423) *tódyèni* *nyí-táánù* *nyá* *mà-bóhǵó*
 c10.thousand c10-five c10.AM c6-knee
 “five thousand knees”

However, the coordinating conjunction designating any numeric content at lower powers of ten *follows* the grammatically subordinate modified head:

- (424) *dy-óómù* *dyá* *mà-bóhǵó* *nà* *mòtóóbá*
 c5-ten c5.AM c6-knee and six
 “sixteen knees (lit. ten knees and six)”

Verbal morphology

There is a rich variety of verbal forms in Iyasa used to encode a number of different kinds of meaning. The verb is the principle host for derivational morphology in the language.

1 The structure of the verbal stem

The verbal stem (verb root plus derivational morphology) is structured according to the following template:

(425) **Verb stem morphological template**
 ROOT + EV₁ (+ DER. SUF. + EV_n)*

The derivational suffixes themselves also exhibit constraints on co-occurrence and linear ordering, which are discussed in §5.1.5. The value of EV₁ is lexically specified for the verb root and can be modified by subcategorizational requirements of a following suffix on preceding EV. The value of EV_n is determined by the requirements on vowel quality imposed by any suffixes in its environment. In the absence of any such requirements, EV_n simply inherits the value of the lexical EV. All verb-to-verb derivational suffixes carry a following EV slot with the exception of passive -U-, which predictably varies in its moraic status and only requires a following EV when non-moraic (see §5.1.1). Deverbative suffixes cannot be shown to have EV (since they are always stem-final), and I simply analyze them as containing a particular vowel in their underlying forms.

Throughout the remainder of this discussion of verbal morphology, certain terminological distinctions are used. As discussed above, *root* refers only to the minimal unit of verbal meaning, without any affixes whatsoever. *Base* refers to the string Root + derivational morphology but does not include the last EV slot. *Stem* refers to the entire verb: Root + derivational morphology + (final) EV. As the following sections illustrate, certain derivations and inflections affix to roots, others to bases (in the case of inflectional or derivational EV), and others to stems.

OVO		OV		VO		Long roots	
<i>-bàd-</i>	“add”	<i>-bà-</i>	“weed”	<i>-àl-</i>	“cut open”	<i>-bùngùl-</i>	“roll”
<i>-cìk-</i>	“taste (tr.)”	<i>-bá-</i>	“marry”	<i>-ás-</i>	“dry out”	<i>-dyùngùl-</i>	“destroy”
<i>-dìy-</i>	“sit, stay, be”	<i>-bò-</i>	“spoil”	<i>-èb-</i>	“deceive”	<i>-ìngíd-</i>	“hate”
<i>-dùp-</i>	“bake in ashes”	<i>-cò-</i>	“catch”	<i>-éc-</i>	“laugh”	<i>-kákúm-</i>	“stutter”
<i>-káp-</i>	“go around”	<i>-dá-</i>	“wear”	<i>-ìng-</i>	“take; trap”	<i>-kódúm-</i>	“stumble”
<i>-lúm-</i>	“sting; prick”	<i>-dyá-</i>	“give birth”	<i>-ís-</i>	“enter”	<i>-kùkùl-</i>	“crunch”
<i>-nyàl-</i>	“get lost”	<i>-kwá-</i>	“fall”	<i>-óç-</i>	“swim”	<i>-nyàkùm-</i>	“chew cud”
<i>-pòn-</i>	“choose”	<i>-nyá-</i>	“drink”	<i>-òk-</i>	“curse”	<i>-nínýl-</i>	“whisper”
<i>-pùt-</i>	“drive away”	<i>-tò-</i>	“see”	<i>-ót-</i>	“remove”	<i>-pésúm-</i>	“limp”
<i>-sás-</i>	“rejoice”	<i>-vò-</i>	“say; tell”	<i>-òm-</i>	“go down”	<i>-sìngíl-</i>	“rub”
<i>-túb-</i>	“pierce”	<i>-vyò-</i>	“sweep”	<i>-òng-</i>	“get well”	<i>-sìsìb-</i>	“shudder”
<i>-vóy-</i>	“dry up”	<i>-yá-</i>	“sleep”	<i>-óy-</i>	“kill”	<i>-sùkùs-</i>	“brush (teeth)”

Table 5.1 - Examples of Iyasa verb roots

2 The verb root

The Iyasa verb root consists of a single vowel preceded and/or followed by a syllable onset. Verb roots consisting simply of V are not clearly demonstrable in my data¹⁰⁴ – the question of whether this is an accidental or principled fact of the language I leave to further investigation. Surface V-initial roots always begin with an underlying ghost consonant, as allomorphic behavior in deverbative forms reveals.¹⁰⁵ Being generally monomoraic, verb roots bear one of two lexically specified tone melodies: H and L. Verb roots do not occur in isolation; they require affixation either of an SPx or an infinitive prefix (except in the case of participles and imperatives) and are immediately followed by a Extensional Vowel (EV) slot. Some verb roots are exceptionally longer than O(nset) V (O). Many of these come from what appear to be synchronically unproductive derivations, such as the defunct imitative *-l-*, which possibly derived a verb from a noun X with a meaning roughly equivalent to “act like X”. Examples include *sìngì* “cat” → *èsìngìlà* “to rub” and *èbùngù* “mat” → *èbùngùlà* “to roll”. In these cases, the nominal base serves as the verb root, which is typically disyllabic. Other formally similar roots are less amenable to derivational analysis, though I certainly leave open the possibility of diachronic derivation. Among these are *-dyùngùl-* “destroy” and *-sìsìb-* “shudder”, which simply seem to be lexically specified with disyllabic verb roots. The same potential for historical derivation is true of roots involving *um*, which is not a synchronically productive affix and does not appear to have a consistent semantic contribution but which nonetheless frequently appears as the final syllable in disyllabic roots. Examples of each type of verb root are provided in Table 5.1.

A handful of very high-frequency verbs do not appear to have a lexically-specified EV: *èdyá* “to eat”, *èsá* “to do”, *èwá* “to die”, and *ècè* “to go”. The downstep marked on the hi-toned members of this list is the Infinitive-Marker-L discussed in chapter 3 4.4.1, which per general principles of the language downsteps a following H or is realized as a hi-falling contour phrase-finally. These lexical items exhibit further unique properties when derived. In *èsá* “do” and *èdyá* “eat”, the root vowel surfaces as *ε* rather than *a* preceding the causative and as *o* rather than *a* preceding the passive:

(426)

¹⁰⁴ However, as noted in the following section, cases like *èóyà* “kill” and *èwá* “die” might lend themselves under certain analytical assumptions to treatment as involving roots of the shape V and Ø (plus lexical FV), respectively, a possibility I leave to future investigation.

¹⁰⁵ See chapter 2 3.5 for discussion.

- (a) *è-sé-yí-y-è*
INF-do-EV-CAUS-INF.EV
“to make do”
- (b) *è-só-w-è*
INF-do-PASS-INF.EV
“to be done”
- (427)
- (a) *è-dyé-yí-y-è*
INF-eat-EV-CAUS-INF.EV
“to make eat”
- (b) *è-dyó-w-è*
INF-eat-PASS-INF.EV
“to be eaten”

In *èwá* “die”, the entire root surfaces as *o* preceding both the causative and the passive:

- (428)
- (a) *è-ó-í-y-è*
INF-die-EV-CAUS-INF.EV
“to make die; to make kill”
- (b) *è-ó-wú-w-è*
INF-die-PASS-CAUS-INF.EV
“to be made to die”

It is noteworthy that the causative form of “die” is homophonous with that of *èóyà* “to kill” and can mean either “to make die” or “to make kill”, as shown in the translation of the example above. In contrast to the other three lexemes, *ècè* “go” does not undergo any formal changes preceding the passive:

- (429) *è-cè-wù-w-è* (not: **ècòwùwè*)
INF-go-PASS-CAUS-INF.EV
“be made to go”

It is certainly possible that these data reveal fundamental principles regarding the shifting of segments between vowel and consonant status, as well as perhaps the underlying form of the passive suffix and/or the quality of the EV which precedes the causative (issues addressed in §5.1.1 and §5.1.2, respectively). However, the amount of formal variation from monomoraic verb to monomoraic verb shown above and the core meanings that they encode also make them strong candidates for lexicalization, and the attested forms could simply be lexically irregular. In the absence of a broader set of data revealing similar variation in a wider variety of contexts, I simply note the existence of this phenomenon and suggest it as an area for future research.

3 The Extensional Vowel (EV)

While extensions (derivational suffixes) in Bantu languages often are of the form *-VC-*, with both segments lexically specified, as in the case of PB dative **-il-* (Schadeberg, 2003), in Iyasa most extensions are of the shape *-C-*, with the quality of vowels intervening between extensions or between the root and the immediately following extension determined by the interaction of lexical specifications of the root and subcategorizational requirements of the extensions themselves. I contend that, taken as a whole, the Iyasa data do not lend themselves to an analysis of these vowels as belonging to roots/extensions and undergoing phonological rules affecting their shape. Instead, they are better handled as belonging to a distinct affix slot, which I label “Extensional Vowel” (EV), to which rules may crucially refer. The primary evidence for this are the global rules discussed below which affect the shape of vowels in extensions only and not of those in the root. This asymmetry is difficult to account for without drawing a morphological distinction between the two types of vowels.

To begin with, Extensional Vowels can be affected by local requirements. For example, the reciprocal extension *-n-* copies the quality of the preceding vowel forward:

- (430)

- (a) *è-bét-à*
INF-climb-INF.EV
“to climb”
- (b) *è-bét-á-n-à*
INF-climb-EV-RECIP-INF.EV
“to climb each other”
- (431)
- (a) *è-bàp-è*
INF-carry-INF.EV
“to carry”
- (b) *è-bàp-è-n-è*
INF-carry-EV-RECIP-INF.EV
“to carry each other”
- (432)
- (a) *è-pòn-ò*
INF-choose-INF.EV
“to choose”
- (b) *è-pòn-ò-n-ò*
INF-choose-EV-RECIP-INF.EV
“to choose each other”

The causative imposes somewhat different local restrictions on EV shape. It consists of a glide, and requires that its preceding EV be [+high] and that its following EV be ϵ :¹⁰⁶

- (433)
- (a) *è-bét-à*
INF-climb-EV
“to climb”
- (b) *è-bét-ì-γ-è*
INF-climb-EV-CAUS-EV
“to make climb”
- (434)
- (a) *è-bàp-è*
INF-carry-EV
“to carry”
- (b) *è-bàp-ì-γ-è*
INF-carry-EV-CAUS-EV
“to make carry”
- (435)
- (a) *è-púd-w-à*
INF-dig-EV-INF.EV
“to dig”
- (b) *è-púd-ú-w-è*¹⁰⁷
INF-dig-EV-CAUS-INF.EV
“to make dig”

Multiple extensions can impose conflicting requirements on a single EV, a situation which reveals crucial rule orderings. In the following pair of examples, the vowel-copying properties of the (unproductive) positional extension -*m*- are first shown transparently (in (a)), then overridden by the shape imposed by the causative on its preceding EV (in (b)):

- (436)
- (a) *è-bál-á-m-à* (the root is lost: *èbálà)
INF-bend-EV-POS-INF.EV
“to bend over”

¹⁰⁶ A full analysis of the underlying shape of the Causative is reserved for §6.1.2, where I argue that it is in fact a ghost C.

¹⁰⁷ As discussed below, I analyze this verb as taking the FV -*U*-, which exhibits certain unique properties, among which are that it must be followed by *a* stem-finally and that it surfaces as a [+back] EV preceding the causative (see below).

- (b) *è-bál-á-m-í-y-è*
 INF-bend-EV-POS-EV-CAUS-INF.EV
 “to make bend over”

The foregoing facts in and of themselves do not establish a distinct EV affix slot. As local rules, they could just as easily be accounted for through lexeme-sensitive phonological rules simply applying to immediately preceding and/or following vowels. However, Iyasa also exhibits rules which apply globally to all EV in a stem as opposed to vowels of the verb root. One such example is the Far Past inflection (discussed in §7.1.1.3), which requires that all EV of the stem be *e*:

- (437) ### Get this ###
 (a) *è-mám-á-n-à*
 INF-surprise-EV-RECIP-EV.INF
 “to surprise”
 (b) *à-má⁺m-é-n-é*
 c1-surprise.FP-EV-RECIP-EV.FP
 “S/he had surprised.”

Crafting a rule to get this result without reference to a root/extension distinction is non-trivial. Which vowels are affected by Far Past inflection, and why? One could propose a rule inserting *e* as the last vowel of the stem and copying it backward to all but the first vowel of the stem, but this runs into difficulties with polysyllabic roots, like *-dyúngúl-* “destroy”:

- (438) ### Get this ###
 (a) *è-dyúngúl-é-n-è*
 INF-destroy-EV-RECIP-EV.INF
 “to destroy each other”
 (b) *wà-dyú⁺ngúl-é-n-é*
 c2-destroy.FP-EV-RECIP-EV
 “They had destroyed each other.”

Such a rule would fail for these data, since the backward copying of *e* would need to stop prior to the initial *two* syllables, and without reference to morphology the difference between (438) and (439) is unpredictable. Finally, the causative is ordered *after* the Far Past in its effect on EV shape, as shown below:

- (439)
 (a) *è-mám-á-n-í-y-è*
 INF-surprise-EV-RECIP-EV-CAUS-INF.EV
 “to surprise (s.o.)”
 (b) *à-má⁺m-é-n-í-y-é*
 c1-surprise.FP-EV-RECIP-CAUS-EV.FP
 “S/he had surprised (s.o.)”

In this, case, the backward copying of *e* to EV slots occurs but is superceded in the penult by the requirement that the EV preceding the causative be [+high] (resulting in *i* rather than *e* for that syllable). Developing a credible phonological rule to insert *e* into the ultimate syllable of the stem, skip the penult, insert *e* into the antepenult, and leave the root vowel alone would be daunting, to say the least. These data are much more straightforwardly handled by assuming the existence of an affix slot like EV to which rules affecting vowel shape can make reference.

A second phenomenon which enacts global changes over EV is the participial suffix *-èní* (discussed in more detail in §6.3), which, like the Far Past, imposes the vowel *e* unboundedly on preceding EV:¹⁰⁸

- (440)
 (a) *è-kól-ó-m-ò*
 INF-curve-EV-POS-INF.EV
 “to curve (sth)”
 (b) *kól-é-m-è-èní*
 curve-EV-POS-EV-PART
 “curved”

¹⁰⁸ The tonal properties of these examples are interesting as well, and discussed further in §6.3.

- (441)
- (a) *è-kút-á-m-à*
INF-palpitate-EV-POS-INF.EV
“to palpitate”
 - (b) *kút-é-m-è-èní*
palpitate-EV-POS-EV-PART
“palpitated”
- (442)
- (a) *è-kév-í-y-è*
INF-thank-EV-CAUS-INF.EV
“to thank”
 - (b) *kév-í-y-è-èní*
thank-EV-CAUS-EV-PART
“thanked”
- (443)
- (a) *è-kòc-è-n-è*
INF-help-EV-RECIP-INF.EV
“to help”
 - (b) *kòc-é-n-é-èní*
help-EV-RECIP-EV-PART
“helped”
- (444)
- (a) *è-dyúngúl-è*
INF-destroy-INF.EV
“to destroy”
 - (b) *dyúngúl-è-èní*
destroy-EV-PART
“destroyed”
- (445)
- (a) *è-kùkùl-à*
INF-crunch-INF.EV
“to crunch”
 - (b) *kùkùl-é-èní*
crunch-EV-PART
“crunched”

As before, the causative supercedes the participial suffix in governing its preceding EV shape (see (442)). And, as before, one might be tempted to posit a phonological rule insensitive to morphology that simply copies *e* backward from the end of the stem through the post-initial syllable, until bisyllabic roots like those in (444) and (445) render such an approach untenable. As in the case of the Far Past, I argue that the most straightforward way of handling these data is to distinguish between vowels of the root and vowels in extensions and permit rules which make reference to these categories in governing vowel quality. Since the vowels I have analyzed as EV are not phonologically well-defined and identifiable only through crucial reference to morphology, any purely phonological treatment of these processes faces serious difficulties.¹⁰⁹

¹⁰⁹ By way of illustration of the complexity of such an approach, see Bot (1997b), who does not assume an EV slot for Iyasa and accounts for some of these data by proposing several phonological rules.

EV - <i>a</i>		EV - <i>ε</i>		EV -U-	
- <i>àl-a</i>	“cut open”	- <i>bàd-ε</i>	“add”	- <i>ák-w-a</i>	“crawl”
- <i>àm-a</i>	“shout”	- <i>bénd-ε</i>	“bless”	- <i>bàmb-w-a</i>	“avoid”
- <i>bèt-a</i>	“go up”	- <i>bám-ε</i>	“reprimand”	- <i>cíb-w-a</i>	“knock over”
- <i>bóy-a</i>	“break”	- <i>céc-ε</i>	“sprout”	- <i>díb-w-a</i>	“open”
- <i>dá-a</i>	“wear”	- <i>dèmb-ε</i>	“be tired”	- <i>ík-w-a</i>	“learn”
- <i>kàm-a</i>	“succeed”	- <i>dús-ε</i>	“plug”	- <i>kúd-w-a</i>	“go out”
- <i>kík-a</i>	“stamp”	- <i>éc-ε</i>	“laugh”	- <i>nán-w-a</i>	“melt”
- <i>kòs-a</i>	“repair”	- <i>íy-ε</i>	“cease”	- <i>òk-w-a</i>	“run”
- <i>lóm-a</i>	“send”	- <i>kòb-ε</i>	“uncover”	- <i>òmb-w-a</i>	“get meat”
- <i>ók-a</i>	“hear, feel”	- <i>óc-ε</i>	“swim”	- <i>pó-w-a</i>	“bark (tree)”
- <i>sám-b-a</i>	“buy”	- <i>síl-ε</i>	“abandon”	- <i>sèb-w-a</i>	“say”
- <i>tìs-a</i>	“trample”	- <i>tóm-b-ε</i>	“bump”	- <i>vùk-w-a</i>	“untie”

Table 5.2 - Examples of Iyasa Extension Vowels (EV)

The foregoing discussion establishes the need for EV (or something like it) in the analysis of Iyasa verb morphology and illustrates some of the constraints imposed on it by certain extensions (fuller discussion of these is provided later in this chapter). However, as mentioned previously, EV shape can also be lexically influenced by the root. In fact, there are three possible occupants of the EV slot that I argue are not semantically, grammatically, or phonologically predictable and must be lexically encoded: *a*, *ε*, and -U- (which usually surfaces as *-wa*; explained below). Examples of vowels with all four EV specifications are provided in Table 5.2. By far the most frequent lexical EV in my data is *-a* (and its allomorph *-ɔ*, see below) (233 roots), followed by *-ε* (approx. 66 roots¹¹⁰), and -U- (39 roots).

In light of data such as those presented above, I do not find clearly-identifiable semantic criteria reflected in EV specification for verb roots. Each column contains roots expressing a wide variety of meanings that do not lend themselves to semantic classification. The same is true regarding the possibility that EV encode grammatical information. For example, it is conceivable that EV encode distinctions in argument structure. However, each EV form is realized on both transitive and intransitive verbs. While I of course cannot rule out the possibility of semantic or grammatical criteria which I have overlooked, I do not find the data promising in this direction.

However, there are enough formal asymmetries between the roots that take each of these EV to tempt a phonological account of their distribution. For example, no *-a* or -U- roots contain the lax vowels *ε* and *ɔ*, while *-ε* roots show a strong preference for root-internal *ε* and *ɔ* rather than *e* and *o*. However, there are *-ε* roots which contain tense vowels, such as *-bénd-ε* “bless”, *-bòm-ε* “tell”, and *-tóm-b-ε* “bump”. A rule selecting EV *-a* following roots containing tense vowels or EV *-ε* following roots containing lax vowels will therefore fail, and the implication is merely unidirectional: if the EV is *-a*, the root will not contain a lax vowel, but not vice versa. The status of this fact of my data (is it a rule?) is not clear. However, the choice between *-a* and *-ε* must be lexically specified. I acknowledge that the absence of -U- roots with lax vowels in my data is perhaps indicative of a rule. However, the comparatively low frequency of -U- roots in my data (39, compared to 202 *-a* roots) makes such a generalization tenuous. It is also possible that whatever principle that disfavors or categorically prohibits lax vowels in *-a* roots is operative in -U- roots as well, since they both usually end in the same vowel. Why these strong but generally non-categorical formal asymmetries exist in Iyasa EV is a question I leave to future research.

Before moving on, I should note the existence of verb roots ending in surface *ɔ*:

¹¹⁰ Arriving at an exact count of underived lexically *-ε* roots is difficult if not impossible as a combined result of (1) the tendency for derivational suffixes to neutralize contrast between *-a* and *-ε* specification in roots (see §5.1.5), and (2) the tendency for historically derived roots to lexicalize and the original root to be lost. For example, *èbàtìyè* “to set” no longer has a synchronic derivational source, and based on this form alone its historical source could either have been *èbàtá* or *èbátè* (see §5.1.2); in this particular case, the historical form is revealed as involving EV *-a* by the verb *èbàtàmá* “to land” (not: **èbàtèmè*). When EV-neutralized derived forms survive but the original root does not, it becomes a matter of historical analysis which EV is underlying. Removing all such uncertain verbs from the count of *-ε* roots in my data leaves a total of 66, although some of the excluded verbs may certainly be *-ε* roots as well.

- (446) *-bók-ɔ* “twist”
-cɔ-ɔ “catch”
-dyódy-ɔ “haggle”
-kòny-ɔ “grunt”
-kós-ɔ “caught”
-lòng-ɔ “look at”
-òdy-ɔ “rest”
-òk-ɔ “curse”
-ót-ɔ “remove”
-pòn-ɔ “choose”
-vó-ɔ “say”
-wòw-ɔ “deny”

This shape only follows roots containing the vowel *ɔ*. This observation, in tandem with the observation that *a* never follows roots containing *ɔ*, strongly suggests a harmony rule changing EV *a* to *ɔ* following *ɔ*. Note that this rule cannot apply to roots with lexical EV *ε*, since *ε* roots can contain *ɔ*, as shown above (eg. *-kòb-ε* “uncover” and *-óce-ε* “swim”).

#####

Need 2 rules:

- (447) $V \rightarrow \emptyset / w _ - \text{CAUS}$
(448) $ww \rightarrow w$

Both ordered before the following rule:

- (449) $w \rightarrow u / _ - \text{CAUS}$

I have represented the fourth EV as -U-, the symbol I adopt as shorthand for my analysis of this EV as a high back segment unspecified for moraic status. At first glance, -U- roots simply appear to be -*a* roots that happen to end in an onset involving *w*. Why analyze eg. *-cib-w-a* “knock over” as such rather than *-cibw-a*? The answer is the unique behavior of these roots with respect to derivational morphology. Preceding EV-unspecified morphemes as well as derivational and inflectional EV, -U- roots do indeed behave as if they were -*a*, in that the vowel *a* only is copied through the stem and that only the vowel *a* is affected by subcategorizational requirements on preceding EV:

- (450) **EV-copying**
(a) *è-bét-à*
INF-turn-INF.EV
“to climb”
(b) *è-bét-á-n-à*
INF-turn-EV-RECIP-INF.EV
“to climb each other”
(c) *è-pòn-ò*
INF-choose-INF.EV
“to choose”
(d) *è-pòn-ò-n-ò*
INF-choose-EV-RECIP-INF.EV
“to choose each other”
(451) **Far Past EV -é**
(a) *è-tám-w-à*
INF-walk-EV-INF.EV
“to walk”
(b) *à-tám-w-é*
SPx-walk.FP-EV-EV.FP
“He had walked”

However, the entire sequence *wa* alternates with the passive suffix in much the same way that all other EV’s do (see (442)(a) below). Furthermore, like the passive suffix, EV -U- triggers a [+back] realization of the causitive which is unattested immediately following roots of any other EV, including -*a* (see (465) below). There is clearly a high back

segmental core to the passive suffix, as revealed by the introduction of *w* in the passive form of *èókà* “hear” in (442)(a).¹¹¹ Nonetheless, affixing the passive to the -U- root *-púd-* “dig” only has the effect of replacing the final *a* of the EV with the *ε* required by the passive, rather than elongating the high/back component of the root of “dig”. In other words, it appears that the passive *entirely replaces* the *-wa* ending of the verb stem (just as it does to other EV), rather than being added to the end of an ostensible base *-púdw-* as would be expected if that were indeed the form of the root. One could perhaps posit a phonological rule simplifying the succession of two high back segments created by passive suffixation, but little independent evidence motivates this. Furthermore, an analysis as *-púdw-* runs into difficulties in light of the fact that under causative suffixation, the high back component of the EV surfaces as moraic *u* rather than *w* (see (444)(b)). The causative requires a preceding EV, but why isn’t this EV *i* following *w* as it is with all other EV following all other consonants? Perhaps a phonological rule renders the glide moraic preceding glides or consonants in general. However, this rule cannot apply to palatal glides, which remain glides despite causative suffixation:

- (452) *è-méndy-è*
INF-despise-INF.EV
“to despise”
- (453) *è-méndy-í-y-è* (not: **è-ménd-í-y-è*)
INF-despise-EV-CAUS-INF.EV
“to make despise”

If glides became vocalic preceding the causative, we would predict no affrication of the *d* of the root, since affrication of this type only occurs preceding *y*, not *i* (see chapter 2 3.2). This however is not the case. Thus, a phonological rule would be required rendering *w* alone vocalic preceding glides (or possibly preceding the causative specifically). Like the hypothetical rule simplifying high back sequences, such a rule does not appear to enjoy independent empirical motivation. Therefore, while analyzing *-wa*-final stems as *...w-a* would reduce the number of distinct EV needed and account for the behavior of these roots in EV copying environments, it would require appeal to multiple *ad hoc* phonological rules in order to account for their interaction with causative and passive derivational suffixes.

The behavior of EV -U- therefore resembles that of passive -U- in that its moraic status is fully determined by its context. It cannot surface as vocalic except preceding the causative, and a default EV (*a*) must be invoked to fill the forbidden EV slot. And it is precisely this choice of EV (the passive requires *-ε*) that serves to formally distinguish the (meaningless) EV from the (meaningful) passive suffix, a contrast that often surfaces as *-wa* vs. *-wε*, respectively. Why exactly an apparently morpheme-specific requirement that EV -U- be realized as *-wa* in most environments exists is beyond the scope of this description, and I offer it as a suggestion for further investigation.

There also appears to be a rule of glide insertion between non-identical adjacent EV. This is illustrated in the following examples involving the Far Past (§6.1.1.3):

- (454) *è-tʰ-ə*
INF-see-INF.EV
“to see”
- (455) *nà-tʰnd-é*
1sg-see.FP-EV.FP
“I had loved.”
- (456) *nà-tʰ-yé*
1sg-see-EV.FP
“I had seen.”

In (421), the root *-tʰ-* “see” is followed by an identical EV in the infinitive, and no glide is inserted. That the Far Past suffix is in fact an inflectional EV *-é* (and not a suffix *-yé*) is clear from numerous examples of Far Past inflection of consonant-final verb roots like *-tʰnd-* “love” in (422), where *-é* simply occupies the EV slot and does not trigger affrication of the preceding *d*, as would be expected if it were a *y*-initial suffix (see chapter 2 3.2). However, when affixed to vowel-final roots like *-tʰ-* “see” in (423), the Far Past inflectional EV surfaces with a preceding glide *y*. The same glide insertion is exhibited when the copular auxiliary *bé* is inflected with EV *-é* to form the Composite Far Past (see §6.1.1.4):

¹¹¹ The surface variation in the passive and my analysis of its underlying form are discussed in §5.1.1.

- (457) *à-bé⁴-yé ...*
 c1-be.FP-EV.FP
 ‘‘S/he had ...’’

The inserted glide surfaces as *y* unless one of the adjacent EV is *u*, in which case the inserted glide surfaces as *w*:

- (458) *è-ík-ú-w-è*
 c7-lean-EV-CAUS-INF.EV
 ‘‘to cause to lean’’

That this insertion rule is specific to the EV and not a general principle of the phonology is clear from the many examples of non-identical surface vowel sequences in the language with no intervening glide:

- (459) *è-yáó*
 c7-feather
 ‘‘feather’’
 (460) *ngwàé*
 c9.partridge
 ‘‘partridge’’
 (461) *è-óndyí*
 c7-oath
 ‘‘oath’’

4 The infinitive

The infinitive form is constructed according to the following morphological template:

- (462) **Infinitive**
 c7 NPx *è*¹¹² + verb base + Infinitive-Marker-L + EV.

The tonal properties of infinitives, including the Infinitive-Marker-L mentioned above as well as Infinitive Pre-L H-Insertion, are discussed in chapter 3 4.4.1.

Infinitives can head complex VPs, as shown below:

- (463) *è-dá-yí-y-⁴é* *mò-cécé* *mé⁴* *mwá* *ṁ-póló* *á-bàp-é* *é* *ònáà*
 INF-wear-EV-CAUS-INF.EV c3-baby REL c3.AM c3-chief c1-carry-NP.EV LOC over.there
 ‘‘to dress the baby that the chief carried over there’’

Infinitival VPs can serve as subjects, as shown above in (337).

Infinitival VPs with objects may optionally be followed by the c7 AM *á*:

- (464) *è-tó-⁴ó* *è-ímà*
 INF-see-INF.EV c7-thing’’
 ‘‘to see the thing’’
 (465) *è-tó-ó* *á* *è-ímà*
 INF-see-INF.EV c7.AM c7-thing
 ‘‘to see the thing’’

The infinitival AM is restricted only to contexts in which an object immediately follows the verb stem. In object-less infinitival VPs or constructions in which the object is separated from the verb stem by intervening material which is otherwise licensed with in the absence of infinitival AM, the use of infinitival AM is ungrammatical:

- (466) **Without infinitival AM**
 (a) *è-kàm-ú-w-é* *ì-bóngó*
 INF-accept-EV-CAUS-INF.EV c5-knee
 ‘‘to accept the knee’’

¹¹² See chapter 4 1.3.7 for discussion of data indicating that the *è*- infinitival prefix is in fact the c7 NPx. As discussed there, I nevertheless continue to gloss this prefix as INF preceding verb stems for expository purposes.

- (b) *è-kàm-ù-w-é* *ì-bóηgó* *sòpé*
 INF-accept-EV-CAUS-INF.EV c5-knee again
 “to accept the knee again”
- (467) **With infinitival AM**
- (a) *è-kàm-ù-w-é* *á* *ì-bóηgó*
 INF-accept-EV-CAUS-EV c7.AM c5-knee
 “to accept the knee”
- (b) *è-kàm-ù-w-é* *á* *ì-bóηgó* *sòpé*
 INF-accept-EV-CAUS-EV c7.AM c5-knee again
 “to accept the knee again”
- (468)
- (a) **èkàmùwè á sòpé*
 (Int.: “to accept again”)
- (b) **èkàmùwè á sòpé ìbóηgó*
 (Int.: “to accept the knee again”)
- (c) **èkàmùwè sòpé á ìbóηgó*
 (Inf.: “to accept the knee again”)

5 Derivational morphology

The verb is the primary host for derivational morphology in Iyasa. Here I discuss the three principal types of verbal derivation: morphemes that affix to a verb and output another verb with a different meaning (verb-to-verb), morphemes that affix to a verb and output a noun with a predictable semantic relationship to its verbal source (verb-to-noun), and morphemes that transform verbs into participles (participle formation).

5.1 Verb-to-verb derivation

I identify three productive verb-to-verb derivational suffixes in Iyasa: the passive (-U-), the causative (-C-), and the reciprocal (-n-). There are a number of unproductive historical suffixes observable in the language as well, which are discussed in §5.1.4. I discuss the distribution, morphology, and semantics of these morphemes in the following sections.

5.1.1 Passive -U-

Iyasa has a highly productive passive verbal suffix. With respect to its form, the data at hand actually only motivate an analysis of it as a high back segment underspecified for moraic status much like EV -U-, and I therefore represent the underlying form of the passive as -U- as well. Preceding vowels it is realized as a consonant (*w*), while preceding consonants it is realized as a vowel (*u*). It cannot occupy the last EV slot of the stem, and when it falls stem-finally it subcategorizes for a following EV -*é* regardless of the lexical EV of the root:

- (469) **EV -a**
- (a) *è-ók-à*
 INF-hear-INF.EV
 “to hear”
- (b) *è-ók-w-è*
 INF-hear-PASS-INF.EV
 “to be heard”
- (470) **EV -ε**
- (a) *è-bàp-è*
 INF-carry-INF.EV
 “to carry”
- (b) *è-bàp-w-è*
 INF-carry-PASS-INF.EV
 “to be carried”
- (471) **EV -o**
- (a) *è-pòn-ò*
 INF-choose-INF.EV
 “to choose”

- (b) *è-pòn-w-è*
INF-choose-PASS-INF.EV
“to be chosen”
- (472) **EV -U-**
- (a) *è-pùd-w-à*
INF-dig-EV-INF.EV
“to dig”
- (b) *è-pùd-w-è* (not: **è-pùdù-w-è*)
INF-dig-PASS-INF.EV
“to be dug”

However, the grammar of Iyasa permits the combination of passive and causative derivational suffixes. The causative always follows the passive, and when this happens, like EV -U-, the passive is realized as a vowel *u* preceding the causative:

- (473) *è-dá-à*
INF-wear-INF.EV
“to wear”
- (474) *è-dá-yí-y-è*
INF-wear-EV-CAUS-INF.EV
“to dress/to make wear”
- (475) *è-dá-w-è*
INF-wear-PASS-INF.EV
“to be worn (of a garment)”
- (476) *è-dá-wú-w-è*
INF-wear-PASS-CAUS-EV
“to be made to dress”

Iyasa morphology therefore supports plain, causative, passive, and causative-passive verbal derivations:

- (477) *è-méndy-è*
INF-despise-INF.EV
“to despise”
- (478) *è-méndy-í-y-è*
INF-despise-EV-CAUS-EV
“to make despise”
- (479) *è-méndy-w-è*
INF-despise-PASS-EV
“to be despised”
- (480) *è-méndy-ú-w-è*
INF-despise-PASS-CAUS-EV
“to cause to be despised”¹¹³

As a consequence of this, when -U- roots inflect for causative, there can be ambiguity as to whether the *u* is the lexical EV, in which case the verb root semantics are simply modified with a causative meaning, or whether the *u* is the passive suffix, in which the verb is modified with a causative-passive meaning:

- (481) *è-pùd-w-à*
INF-dig-EV-INF.EV
“to dig”
- (482) *è-pùd-w-è*
INF-dig-PASS-INF.EV
“be dug”

¹¹³ In virtually all cases of productive causative-passive inflection on transitive roots, my informant tended to affirm the existence of such forms but had difficulty providing an interpretation for them. Context seemed to be an important determining factor in their meaning. I suspect that this is due to semantic rather than grammatical reasons, primarily because of uncertainty about which of the two has wider scope (“cause to be” vs. “be caused to”), as well as the apparent possibility of self-scope in at least some cases: one hesitant translation given for the infinitive in (455) was “be made to be despised”, which would involve passive-causative-passive scope (“to be caused to be”, see also example (448), which is given a passive-causative-causative translation: “be caused to cause”). Translations of such forms in this work are therefore highly tentative, and I adopt the convenient label “causative-passive” while leaving a full treatment of their semantics to future research.

- (483) *è-pùd-ù-w-è*
 INF-dig-EV/PASS-CAUS-INF.EV
 “to make dig/to cause to be dug”

Intransitive roots cannot be passivized directly:

- (484) *è-pínd-w-à*
 INF-smear.oneself-EV-INF.EV
 “to smear oneself”
 (485) *è-pínd-ú-w-è*
 INF-smear.oneself-EV/PASS-CAUS-INF.EV
 “to smear/to get smeared”
 (486) **è-pínd-w-è* (Intended: “to be smeared”)

5.1.2 Causative -C-

As is evident from the foregoing discussion, Iyasa also has a highly productive causative suffix. The causative must affix following a filled EV slot and requires that the occupant of this slot be a high vowel. When the preceding EV is *-a*, *-ε*, or *-ɔ*, the pre-causative EV surfaces as *i*. When the preceding EV is *-U-* or when a passive suffix is present, the pre-causative EV surfaces as *u*. I believe this to be the result of a morpheme-specific rule assigning [+high] specification to vowels preceding the causative:

- (487) **Pre-Causative Vowel Raising**
 Assign the feature specification [+high] to any vowel preceding the causative suffix.

That this is specific to the causative and not a general phonological rule of the language is clear from the numerous examples of non-high vowels preceding *wε* and *yε*:

- (488) *è-dyá-w-è*
 INF-give.birth-PASS-INF.EV
 “be born (lit. to be given birth)”
 (489) *è-véyé*
 c7-desire
 “desire”

The presence of the causative is revealed by the sequence EV[+high] + EV *-ε*, the last of which undergoes pre-vocalic glide insertion (see §3 for discussion). The causative therefore does not appear to have any segmental or tonal content, and simply permits the direct sequencing of EV slots. I therefore analyze the causative suffix as simply consisting of an underlying ghost consonant, with particular subcategorizational requirements imposed on preceding and following EV. Examples of the realization of the causative across verb roots of all four EV specifications, as well as following the passive, are provided below:

- (490) **EV -a**
 (a) *è-bét-à*
 INF-climb-EV
 “to climb”
 (b) *è-bét-i-y-è*
 INF-climb-EV-CAUS-EV
 “to make climb”
 (491) **EV -ε**
 (a) *è-bàp-è*
 INF-carry-EV
 “to carry”
 (b) *è-bàp-i-y-è*
 INF-carry-EV-CAUS-EV
 “to make carry”
 (492) **EV -ɔ**
 (a) *è-pòn-ò*
 INF-choose-EV
 “choose”

- (b) *è-pòn-ì-y-è*
INF-choose-EV-CAUS-EV
“to make choose”
- (493) **EV -U-**
(a) *è-púd-w-à*
INF-dig-EV-INF.EV
“to dig”
(b) *è-púd-ú-w-è* (not: **è-púdw-ì-y-è*)
INF-dig-EV-CAUS-INF.EV
“to make dig”
- (494) **Passive -U-**
(a) *è-méndy-è*
INF-despise-INF.EV
“to despise”
(b) *è-méndy-ú-w-è*
INF-despise-PASS-CAUS-INF.EV
“to make be despised”

5.1.3 Reciprocal -n-

Iyasa has a productive reciprocal suffix of the form *-n-* which copies the content of the EV slot preceding it to the one following it:

- (495) **EV -a**
(a) *è-bét-à*
INF-climb-INF.EV
“to climb”
(b) *è-bét-á-n-à*
INF-climb-EV-RECIP-INF.EV
“to climb each other”
- (496) **EV -ε**
(a) *è-bàp-è*
INF-carry-INF.EV
“to carry”
(b) *è-bàp-è-n-è*
INF-carry-EV-RECIP-INF.EV
“to carry each other”
- (497) **EV -ɔ̃**
(a) *è-pòn-ò̃*
INF-choose-INF.EV
“to choose”
(b) *è-pòn-ò̃-n-ò̃*
INF-choose-EV-RECIP-INF.EV
“to choose each other”
- (498) **EV -U-**
(a) *è-pó-w-à*
INF-bark-EV-INF.EV
“to bark (a tree)”
(b) *è-pó-w-á-n-à*
INF-bark-EV-EV-RECIP-INF.EV
“to bark each other”

5.1.4 Unproductive derivational affixes

In addition to the productive derivations discussed above, Iyasa exhibits a number of lexicalized remains of synchronically unproductive derivational affixes in many verb stems. These affixes vary in frequency and degree of synchronic semantic content, with some occurring frequently and having an apparent (though vague) semantic core, and others occurring rarely and revealing no clear semantic contribution. Probably the most commonly-attested of the unproductive affixes is what I label the “positional” (see eg. Schadeberg, 2003). The positional is of the form *-m-* and places no requirements on preceding or following EV (the preceding EV is simply copied). Although I have not discovered a

specific semantic contribution for the conditional, it tends to appear on verbs of motion or position. In some cases, the modern Iyasa lexicon contains verbs both with and without the positional:

- (499) *è-díng-à*
INF-turn-INF.EV
“to turn (in place)”
- (500) *è-díng-á-m-à*
INF-turn-EV-POS-INF.EV
“to turn (sth), to turn (in place)”

However, in most instances of the positional in our data, the verb root that serves as a derivational source has been lost:

- (501) *è-bák-á-m-à* (the source is lost: **èbákà*)
INF-approach-EV-POS-EV
“to approach”

Other unproductive suffixes occur less frequently but seem to preserve some semantic content. As discussed in §2, there are a handful of verb stems in Iyasa that appear to consist of a noun followed by a suffix *-là* and express a meaning that seems related to some characteristic of the source noun:

- (502)
- (a) *síngì*
c9.cat
“cat”
- (b) *è-síngìl-à*
INF-rub-INF.EV
“to rub”
- (503)
- (a) *è-búngù*
c7-mat
“mat”
- (b) *è-búngùl-à*
INF-roll-INF.EV
“to roll”

I tentatively label this apparent suffix “imitative”. However, it is unquestionably not part of the productive morphological inventory of the language. My consultant said the above resemblances are “purely coincidental”, and *-là* cannot be productively used to transform nouns into verbs (eg. **èsòkùlà* from *sòkù* “elephant”; intended: “act like an elephant”).

Other dead suffixes do not have any apparent semantic contribution and simply constitute formal patterns across verb stems in the language. One such suffix is *-um-*, which appears simply to form part of certain (disyllabic) verb roots. Roots with *-um-* always take EV *-a*: *èkákùmà* “to stutter”, *ètódùmà* “to stumble”, *ènyákùmà* “to chew cud”, *èpésùmà* “to limp”. Another is *-l-*, unspecified for EV, which now seems to be lexicalized in certain stems for which the original root is lost: *èsósélè* “to plead” (**èsósè*), *èkòngòlò* “to growl” (**èkòngò*).

5.1.5 Combining verb-to-verb derivations

As discussed in §5.1.1, the passive and causative suffixes can combine, necessarily in that order, though the semantic relationship between the output of this complex derivation and the root is not always entirely clear.¹¹⁴ The reciprocal suffix *-n-* combines quite productively with the causative as well, and when this happens the causative precedes the reciprocal:

- (504)
- (a) *è-búm-í-y-è*
INF-incubate-EV-CAUS-INF.EV
“to incubate (sth)”
- (b) *è-búm-í-y-é-n-è*
INF-incubate-EV-CAUS-EV-RECIP-INF.EV
“to incubate each other”

¹¹⁴ Something involving both passive and causative meanings. See fn 113.

- (505)
- (a) *è-déb-i-y-è*
INF-slide-EV-CAUS-INF.EV
“to make slide”
 - (b) *è-déb-i-y-é-n-è*
INF-slide-EV-CAUS-EV-RECIP-INF.EV
“to make each other slide”

The reciprocal does not productively combine with the passive, probably because of the likely semantic incompatibility between the de-transitivizing meaning of the passive and the obligatorily transitive meaning of the reciprocal. In lexicalized forms, however, there are instances of such co-occurrence, though the meanings associated with them are no longer compositional. Such is the case in the following example, where the reciprocal suffix appears to have no reciprocal meaning following either the lexical EV or the passive; indeed, the formally passive form actually has a causative meaning. The original root has been lost.

- (506) *è-sisib-w-à-n-à* (the root is lost: **èsisibwà*)
INF-shudder-EV-EV-RECIP-INF.EV
“to shudder”
- (507) *è-sisib-w-è-n-è*
INF-shudder-PASS-EV-RECIP-INF.EV
“to make shudder”

Such an example is so thoroughly lexicalized that it is a tenuous basis upon which to make any claims about linear ordering and co-occurrence requirements between derivational suffixes. I therefore leave open the possibility that the reciprocal suffix may follow the passive in the grammar but is often excluded for semantic or other reasons, and suggest the question for further investigation.

Unproductive derivational suffixes like *-m-* (the positional), *-l-*, *-um-*, etc. are tightly linked to the root and either precede or alternate with productive inflections. The latter case appears to be the most typical, as exemplified below:

- (508)
- (a) *è-bák-á-m-à* (the root is lost: **èbákà*)
INF-incubate-EV-POS-INF.EV
“to incubate (intr.)”
 - (b) *è-bák-i-y-è* (not: **èbákámíyè*)
INF-incubate-EV-CAUS-INF.EV
“to incubate (tr.)”
- (509)
- (a) *è-bàt-à-m-à* (the root is lost: **èbàtà*)
INF-set-EV-POS-INF.EV
“to land”
 - (b) *è-bàt-i-y-è* (not: **èbàtámíyè*)
INF-set-EV-CAUS-INF.EV
“to make land; to set”

However, the causative does appear to be able to follow such unproductive suffixes in at least some cases:

- (510)
- (a) *è-bál-á-m-à* (the root is lost: **èbàlà*)
INF-bend-EV-POS-INF.EV
“to bend over”
 - (b) *è-bál-á-m-i-y-è*
INF-bend-EV-POS-EV-CAUS-INF.EV
“to make bend over”

The foregoing observations motivate the following morphological schemata for verb-to-verb derivational morphology in Iyasa, with allowances made for lexicalized exceptions like those highlighted above:

- (511) **Linear order and co-occurrence restrictions on verb-to-verb derivational suffixes**
- (a) (PASS) > (CAUS)

- (b) (CAUS) > (RECIP)
- (c) Unproductive suffixes

5.2 Verb-to-noun derivation

A number of derivational processes productively generate nouns from Iyasa verbs. The stems of these derivations are always ghost-consonant-initial, which I take as evidence against the existence of underlyingly V-initial verb roots.¹¹⁵

5.2.1 Agent nominalizer -i

Iyasa infinitival VPs can be agent-nominalized via the highly productive deverbative Extensional Vowel *ì* (i.e. “to X” → “X-er”).¹¹⁶ Nominalized forms are assigned to gender 3/4/2.

- (512)
- (a) *è-án-à*
INF-fight-INF.EV
“to fight”
 - (b) *mò-án-ì*
c3-fight-AGNOM
“fighter”
- (513)
- (a) *è-túm-à*
INF-tell-INF.EV
“to weave”
 - (b) *mò-túm-ì*
c3-weave-AGNOM
“weaver”
- (514)
- (a) *è-sámb-í-y-è*
INF-buy-EV-CAUS-INF.EV
“to sell (lit. to make buy)”
 - (b) *mò-sámb-í-y-ì*
c3-buy-EV-CAUS-AGNOM
“seller”
- (515) *mò-án-ì* *bè-duká*
c3-fight-AGNOM c8-fight
“fighter of fights”

I should note that Bot (1997b) analyzes the agent nominalizer as involving a suffix *-yi* which affixes to verb stems from which the last vowel has been deleted. As noted in chapter 2 4.2, the phonetic difference between *i* and *yi* is usually very slight (even possibly non-existent). Such an admittedly perception-based claim demands further phonetic research to fully substantiate. Nonetheless, this rough generalization makes it difficult to adjudicate empirically between these two analyses of the agent nominalizer. However, a contrastive difference between *i* and *yi* discussed in chapter 2 3.2 is that *y* can trigger affrication of an immediately preceding *d*, while *i* cannot. It is therefore revealing that agent nominalizations of *d*-final verb bases do not surface with affricate realization:

- (516) *è-l̀nd-à*
INF-sew-INF.EV
“to sew”
- (517) *mò-l̀nd-ì* (not: **mòl̀ndyì*)
c3-sew-AGNOM
“sewer”

Finally, agent nominalizations of causatives often surface with the segments *-in-* between the end of the verb base and the derivational EV *ì*:

¹¹⁵ For discussion of ghost consonants, see chapter 2 3.5.

¹¹⁶ For a largely similar account of this phenomenon in Iyasa, see Bot (1997b). Bot posits neither a FV slot nor an infinitive final-L, and arrives at the attested surface forms through a complex series of phonological rules.

- (518) *è-bét-à*
INF-climb-INF.EV
“to climb”
- (519) *mò-bét-ì*
c3-climb-AGNOM
“climber”
- (520) *mò-bét-ì-y-ínì*
c3-climb-EV-CAUS-AGNOM
“make-climber (i.e. s.o. who makes s.o. else climb)”

This is not always the case with agent nominalizations of causatives, as is evident from eg. *mòsámbiyì* “seller” given above. How then to analyze the appearance of these seemingly extra segments in some causative nominalizations is not clear at this point in the analysis. It is possible that the *n* in question is the reciprocal suffix, though such an account would have to explain both the absence of any reciprocal meaning in the nominalized form and the change in vowel quality (from *ɛ* to *i*) of the EV following the causative. I leave a fuller treatment of this issue to future research.

5.2.2 Object nominalizer *-ní*

The objects of Iyasa verbs may also be productively nominalized. In such cases, the suffix *-ní* attaches to the verb stem, and its Hi tone spreads leftward according to general principles of the language discussed in chapter 3.3. Object nominalizations are assigned to gender 3/4.

- (521)
- (a) *è-ás-à*
INF-dry.out-INF.EV
“to dry out”
- (b) *mò-ás-á-ní*
c3-dry.out-EV-OBNOM
“dried out (thing)”
- (522)
- (a) *è-bál-è*
INF-conquer-INF.EV
“to conquer”
- (b) *mò-bál-é-ní*
c3-conquer-EV-OBNOM
“conquered (thing)”
- (523)
- (a) *è-bò-ò*
INF-spoil-INF.EV
“to dry out”
- (b) *mò-bò-ò-ní*
c3-spoil-EV-OBNOM
“spoiled (thing)”
- (524)
- (a) *è-póm-w-à*
INF-fade-EV-INF.EV
“to fade”
- (b) *mò-póm-w-á-ní*
c3-fade-EV-OBNOM
“faded (thing)”

Much like adjectival nouns (see chapter 4.2.2), object nominalizations are unambiguously nominal from a morphosyntactic point of view, as shown in the following sentence in which an object nominalization serves the subject and controls agreement in the verb:

- (525) *mè-bò-ò-ní* *mí-lík-á-n-á-ndí* *ě̀* *vó*
c4-spoil-EV-OBNOM c4-leave-EV-RECIP-EV-PRES LOC.OBJ there
“The spoiled (ones) stay there.”

However, in practice they are often used as modifiers of other nouns, with a semantic contribution quite similar to that of the past participle (see §5.3). In this usage, they must be subordinated to the head noun via an intervening AM:

- (526) *li-kúbé lá mò-bò-ò-ní*
 c13-banana c13.AM c3-spoil-EV-OBNOM
 “spoiled bananas”

5.2.3 Action nominalizer A: Class 5 inflection

Iyasa has two highly productive action nominalizing constructions, one of which is simply to assign the infinitive stem as a noun root to gender 5/6:

- (527)
 (a) *è-bét-à*
 INF-climb-INF.EV
 “to climb”
 (b) *ì-bét-à*
 c5-climb-INF.EV
 “climb (n.)”
- (528)
 (a) *è-ís-à*
 INF-enter-INF.EV
 “to enter”
 (b) *dyì-ís-à*
 c5-enter-INF.EV
 “entry”
- (529)
 (a) *è-kwá-à*
 INF-fall-INF.EV
 “to fall”
 (b) *ì-kwá-à*
 c5-fall-INF.EV
 “fall (n.)”
- (530)
 (a) *è-pùl-è*
 INF-know-EV
 “to know”
 (b) *ì-pùl-è*
 c5-know-EV
 “knowledge”
- (531)
 (a) *è-vóm-ú-w-è*
 INF-punish-EV-CAUS-INF.EV
 “to punish”
 (b) *ì-vóm-ú-w-è*
 c5-punish-EV-CAUS-INF.EV
 “punishment”
- (532)
 (a) *è-àl-à*
 INF-cut.open-EV
 “to cut open”
 (b) *dyì-àl-à*
 c5-cut.open-EV
 “cutting open”

5.2.4 Action nominalizer B: -dí

Iyasa has an additional action nominalization construction which involves suffixation of *-dí* to the verb stem (no infinitive final-H) as well as assigning the output of this derivation to gender 5/6. The lexical H of the suffix spreads or not according to general principles of the language discussed in chapter 3.3. Additionally, *-dí* imposes a preceding

EV *-i-* that is realized on all preceding EV without independent specification for vowel quality enforced by other derivational affixes.

- (533) **EV -a**
 (a) *è-bót-á-m-à*
 INF-hide-EV-POS-INF.EV
 “to hide”
 (b) *i-bót-í-m-í-dí*
 c5-hide-EV-POS-EV-ACNOM
 “hideaway; shelter”
- (534) **EV -ε**
 (a) *è-él-è*
 INF-begin-INF.EV
 “begin”
 (b) *dyì-él-í-dí*
 c5-begin-EV-ACNOM
 “beginning”
- (535) **EV -ɔ**
 (a) *è-bòmb-ò*
 INF-hold-INF.EV
 “to hold”
 (b) *i-bòmb-í-dí*
 c5-hold-EV-ACNOM
 “handle”¹¹⁷

The semantic distinction between these two action nominalizations is subtle and not particularly clear to me. My informant indicated that action nominalization via gender 5/6 assignment alone to the infinitive stem refers primarily to the action denoted by the verb, while *-dí* nominalization refers primarily to the *manner* in which the action denoted by the verb is performed. A full treatment of these semantic nuances is beyond the scope of this study, and I suggest it as a topic for future research. I simply note the formal distinction exhibited in the language, as shown in the following examples:

- (536)
 (a) *è-ís-à*
 INF-enter-INF.EV
 “to enter”
 (b) *dyì-ís-à*
 c5-enter-INF.EV
 “entry (act of entering)”
 (c) *dyì-ís-í-dí*
 c5-enter-EV-ACNOM
 “entry (of place or building)”
- (537)
 (a) *è-bét-à*
 INF-climb-INF.EV
 “to climb”
 (b) *i-bét-à*
 c5-climb-INF.EV
 “climb (act of climbing)”
 (c) *i-bét-í-dí*
 c5-climb-EV-ACNOM
 “climb (as in a long climb)”

5.3 Participle formation

Iyasa productively generates participles from verb stems with a roughly past-participle-like meaning (eg. “baked”, “stung”, “faded”, etc.). Participles are formed from verb stems through affixation of the suffix *-èní* to the verb stem. The participial suffix imposes a preceding EV *-e-* that is realized on all preceding EV without independent specification

¹¹⁷ This meaning does not appear to be fully compositional and probably indicates some degree of lexicalization.

for vowel quality enforced by other derivational affixes. It also imposes a specific tone melody on preceding moras: an H which spans 2 TBUs, followed in most cases by an L, which associates to all remaining TBUs intervening between the two initial hi-toned TBUs and the suffix (if any exist). On hi-toned roots, the two-mora H associates to the 1st and 2nd moras of the stem, while on lo-toned roots, it associates to the 2nd and 3rd moras:

- (538)
- (a) *è-kól-ò-m-ò*
INF-curve-EV-POS-INF.EV
“to curve (sth)”
 - (b) *kól-é-m-è-èní*
curve-EV-POS-EV-PART
“curved”
- (539)
- (a) *è-kút-á-m-à*
INF-palpitate-EV-POS-INF.EV
“to palpitate”
 - (b) *kút-é-m-è-èní*
palpitate-EV-POS-EV-PART
“palpitated”
- (540)
- (a) *è-kév-i-y-è*
INF-thank-EV-CAUS-INF.EV
“to thank”
 - (b) *kév-i-y-è-èní*
thank-EV-CAUS-EV-PART
“thanked”
- (541)
- (a) *è-kòc-è-n-è*
INF-help-EV-RECIP-INF.EV
“to help”
 - (b) *kòc-é-n-è-èní*
help-EV-RECIP-EV-PART
“helped”
- (542)
- (a) *è-dyúngúl-è*
INF-destroy-INF.EV
“to destroy”
 - (b) *dyúngúl-è-èní*
destroy-EV-PART
“destroyed”
- (543)
- (a) *è-kùkùl-à*
INF-crunch-INF.EV
“to crunch”
 - (b) *kùkùl-é-èní*
crunch-EV-PART
“crunched”

The leftward copying of the participial EV *e* is demonstrated in (510), (511), and (513), in which EV slots which in the infinitive assume the quality of the lexical EV of the root are realized as *e* in the participle. This copying of *e* is blocked by eg. the preceding EV specification of the causative suffix, and the pre-causative EV remains *i* in (512) as a result. The tonal behavior exhibited by the above participles is unique in that it is insensitive to derivational structure and simply counts TBUs, while other verb-internal tonal processes are bounded by the right edge of the verb stem.¹¹⁸ This is clear from the fact that bimoraic roots like *-dyúngúl-* “destroy” and *-kùkùl-* “crunch” above behave identically to monomoraic ones: the hi-toned *-dyúngúl-* exhibits a sequence of 2 hi-toned TBUs followed by L followed by the participial suffix (exactly like the root *-kév-* “thank” above), while the lo-toned *-kùkùl-* “crunch” retains its lexical L on the first mora and is followed by a sequence of 2 hi-toned TBUs (exactly like the root *-kòc-* “help” above). In the case of both *-kùkùl-* and *-kòc-*, no TBUs remain at the end of the stem preceding the suffix to manifest an intervening L, which

¹¹⁸ See chapter 3 3 for discussion.

therefore is simply not realized (and possibly floats vacuously). As a result of the aforementioned generalizations, lo-toned monomoraic verb roots do not provide enough TBUs for the H of the participial melody to be given its full bimoraic realization. It is therefore realized on only one TBU (the last one of the stem immediately preceding the suffix):

- (544)
- (a) *è-dìy-à*
INF-sit-EV
“to sit”
 - (b) *dìy-é-èní*
sit-EV-PART
“seated”

Although in meaning and function the participle is fairly similar to object nominalization, unlike object nominalization the output of the participial suffix is not nominal: it is not assigned to a noun gender (object nominalizations are assigned to gender 3/4), and it does not take tonal object marking when it appears as a modifier in associative constructions.¹¹⁹

- (545) *mò-kóm mwá póm-w-é-èní* (not: **põmwéèní*)
c3-frog c3.AM fade-EV-EV-PART
“faded frog”

I suggest more thorough treatment of the semantic and grammatical distinctions between object nominals and participles in Iyasa as an area for further research.

Two other forms suggest themselves as potential participles in Iyasa. First, verb stems suffixed with *-k-* can have a modificatory meaning fairly similar to that of the English present participle. However, verbs with *-k-* serve a large array of functions and exhibit a wide range of meanings in Iyasa, many of which have no apparent similarity to a present participle, and for this reason I avoid such a label and simply call it a “multifunctional suffix”. The suffix *-k-* is discussed in more detail in §5.4. Second, a number of verbs, primarily verbs of position or motion, have past-participle-like derivatives of the same shape as the verb stem with an elongated initial vowel and a final Hi tone. Examples of such forms are provided below:

- (546)
- (a) *è-dìy-à*
INF-sit-INF.EV
“to sit”
 - (b) *dìyá*
seated
“seated; sitting”
- (547)
- (a) *è-bàt-i-y-è*¹²⁰
INF-set-EV-CAUS-INF.EV
“to set”
 - (b) *bààtá*
set
“set”

However, this alternation is synchronically unproductive (eg. there is no word of the shape **beeta* from *èbétà* “climb” or **kaaka* from *èkákà* “tie”), and the forms in question that do exist therefore appear to be lexicalized. Whether these forms reveal a historically productive derivational process is a question I leave to future investigation.

5.4 /-k-/

The verb suffix *-k-* falls somewhat between the derivational and inflectional categories. It behaves somewhat like a gerund or present participle in that verbs inflected with it can modify a noun head with a present-participle-like meaning, while agreeing with the head noun through SPx inflection:

¹¹⁹ See chapter 3 4.4.2 for discussion of tonal object marking.

¹²⁰ The original root of this lexicalized derivation has been lost, though it is of course preserved in the participle-like form in this example, as well as in eg. *èbàtàmà* “to land”.

- (548) *mò-tò à-imb-á-k-à*
c1-person c1-sing-EV-K-EV
“the singing person”
- (549) *ì-lúkù dyí-imb-á-k-à*
c5-sister c5-sing-EV-K-EV
“the singing sister”
- (550) *kúbà é-imb-á-k-à*
c9.chicken c9-sing-EV-K-EV
“the singing chicken”

Importantly, although the verb inflects with SPx in these cases, the verb bearing *-k-* is not finite (the aforementioned examples are not sentences). However, it is required in the construction of a number of TAM verbal inflections, such as the imperative and imperfect, as I show in the following sections. It does not appear to have a consistent semantic contribution across all of its uses. For that reason, I simply call it a “multifunctional” suffix and gloss it as K, leaving more thorough treatment to future investigation.

The suffix *-k-* does not impose any requirements on preceding or following EV. It simply affixes to the verb stem, and the preceding EV value is copied over to the slot following the suffix by general principle of the language.¹²¹ However, it does surface as the phonologically unpredictable allomorph [-c-] when preceded by EV *-ε* or *-e*, an allomorphic property which must simply be specified in the lexicon (for examples, see eg. §6.1.3.1). In all uses of *-k-* except the Imperative, the vowel following it is lo-toned. This seems to suggest a lexical L which *-k-* imposes on the following vowel, and which is somehow overridden in the Imperative.

5.5 Lexicalized derivations

Iyasa has a multitude of verbally-derived forms which must be analyzed as lexicalized to some extent, either because of non-compositional semantics or because of formal properties unpredictable on the basis of synchronically-attested productive derivations. One type of lexicalized derivation comes from the PB action nominalizing suffix **-o* (Schadeberg, 2003). There are indeed lexemes in Iyasa which appear to be verbally derived via such a suffix:

- (551) *è-díng-à*
INF-coil-INF.EV
“to coil”
- (552) *mò-díngò*
c3-turn
“turn; bend (in road)”

However, the meaning of the above noun is only vaguely related to that of its verbal source and does not appear to reveal a clear semantic component associated with the suffix. Furthermore, I have found no cases in which a suffix *-ò* can be productively used to nominalize a verb in Iyasa:

- (553) *è-lóv-à*
INF-bite-INF.EV
“to bite”
- (554) **mò-lóv-ò*
(Intended: “the bite” or “the bitten thing”)

I believe examples like *mòdíngò* “turn” are best treated as lexicalized fossils of a historically productive Bantu derivation.

A number of action nominalizations appear to be formed simply by assigning apparently productively derived verb stems to unproductive noun genders (i.e. other than 5/6). For example, while the output of action nominalization with *-dí* is productively assigned to 5/6, forms exist such as *mòá⁺wídi* “payment”. While this appears to be a *-dí* nominalization of *éàwà* “pay”, it has the exceptional properties of belonging to gender 3/4 and exhibiting an Infinitive-Marker-L, while productive *-dí* inflects the verb stem directly (no floating L). It is thus best treated as a lexicalized derivation. Another example is the noun *bèdyá⁺* “food”, which appears to be the infinitive stem *-dyá⁺* “eat” assigned to c8. In addition to the surprising gender assignment, the absence of a singular form for this word supports analysis of it as lexicalized. A variety of such examples exist in my data.

¹²¹ See §3.

Verb-to-verb derivations also show a tendency to lexicalize. Lexicalization of this kind is revealed by (i) non-compositional semantics, (ii) loss of derivational source roots, and/or (iii) unproductive combinations of suffixes. Semantic modification of the original compositional meaning can range from slight to severe. As an example of the former, the meaning of the verb *èikúwè* “to teach” is quite similar to (though more specific than) the compositional meaning its derivational source: *èikwà* “to learn” + causative suffix (“make learn”). By contrast, when the causative is added to the verb *ècécé* “to sprout”, it can mean (compositionally) “make sprout” but has the additional lexicalized meaning “doubt; contradict (someone)”, which seems significantly removed from the compositional meaning. As an example of loss of derivational source, there exist the verbs *èásánà* “to spread out (intr.)”, *èásiyè* “to spread out (tr.)”, and *èásúwè* “to be spread out”, but no source **èásà*. Since derivation from non-existent roots is impossible, all of the aforementioned verbs must be lexicalized derivations, probably from some historical root *-ás-* meaning something like “spread”. An example of lexicalization of unproductive combination of suffixes already discussed above is *èmàmàniyè* “to surprise”, which derives from a lost source verb **èmàmà* and, while exhibiting both reciprocal and causative suffixes (a combination that seems to be synchronically unproductive; see §5.1.5), does not retain their expected compositional meaning.

6 Inflectional morphology

6.1 TAM

Iyasa has a range of verbal morphology used to encode information about tense, aspect, and mood (TAM), which I expound in this section. TAM inflection in Iyasa involves affixation, tonal changes to the verb and/or agreement prefixes, auxiliary verbs, or (as is often the case) a combination of the above. Affixes differ in whether they are inflectional Extensional Vowels (EV), which occupy the final EV slot of the verb stem, or suffixes, which immediately follow the last EV slot. Certain core inflections in Iyasa have already been discussed briefly in Bot (1998), though the range of inflections covered in the current presentation expands considerably beyond that of its predecessors.¹²² Perhaps unsurprisingly, (T)ense, (A)spect, and (M)ood are not neatly separated in the Iyasa inflectional system, and a number of forms cross-cut two or more of these categories: Near vs. Far vs. Future Imperfect (tense and aspect), Punctual Past (tense and aspect), Uncertain Future (tense and mood), etc. Some inflections further encode for TAM meaning *plus* some unrelated grammatical meaning, such as the unique form of the present tense which appears only in relative clauses, or the morphological marking of antecedent and consequent clauses in various kinds of conditional constructions.

Since the focus of this work is on phonology and morphology, my principal concern here is with the formal morphological contrasts used to express TAM distinctions and not the semantic distinctions themselves. I adopt crude semantic labels like *near* and *far past* primarily for convenience, but acknowledge that the semantic features connoted by such categories may only roughly correspond to the actual semantics of Iyasa TAM inflection. The following represents a breakdown of the morphologically marked TAM distinctions in Iyasa of which I am aware, and I leave a proper semantic treatment of them to future investigation.

6.1.1 Tense

6.1.1.1 Near Past

The Near Past¹²³ is constructed according to the following morphological template:

(555) **Near Past**
SPx + verb stem + H + (floating L phrase-finally)

The Near Past takes no particular suffix or inflectional EV beyond the tones mentioned in the above template – the last EV is simply the one lexically specified by the root or any derivational affixes. The H associates to the final mora of

¹²² Bot (1998) remarks that the system of temporal inflection in Iyasa is “very simple” in that it has “few nuances” which are “easily situated in the objective and even logical time of their usages” (p. 57, *my trans*). While an external observer may judge the tense-aspect system of Iyasa to be simple relative to her or his own experience or in comparison to other languages, one possible source of the perceived simplicity noted by Bot could merely be the fact that his analysis covers only a small subset of Iyasa inflections: what I have called Present, Near Past, Far Past, Near Imperfect, Future, and Uncertain Future, although he later discusses some other verb sequences (eg. “finish” + V, “start” + V), calling them “lexical aspect” forms (*my trans*). His study is therefore only representative of a small portion of the complexity of the inflectional system and not a good basis for assessing the number of “nuances” it encodes. Though I hope through this discussion to highlight some as-of-yet undocumented verb inflections in Iyasa, I acknowledge that there are almost certainly more beyond those I deal with here.

¹²³ The Near Past is discussed in Bot (1998) under the label “passé 1”.

the stem and spreads or not according to general principles of the language discussed in chapter 3.3. If and only if the verb stem is phrase-final, a floating L is inserted following the stem which is realized as a fall. Further examples of the Near Past inflection are provided below:

- (556) *mú-dyá-[↓]*
c3-eat-NP
“It ate.”
- (557) *à-bál-é-[↓]*
c1-conquer-EV-NP
“S/he conquered.”
- (558) *à-mám-á-n-í-y-é-[↓]*
c1-surprise-EV-RECIP-EV-CAUS-EV-NP
“S/he surprised (s.o).”
- (559) *ñ-póló mú-nyáng-w-á é và*
c3-chief c3-lick-EV-EV LOC here
“The chief licks here.”
- (560) *mw-àdó à-lòng-ó-[↓]*
c1-woman c1-look-EV.NP-NP
“The woman looked.”
- (561) *ñ-póló mú-kàm-ú-w-é-[↓]*
c3-chief c3-accept-EV-CAUS-EV.NP-NP
“The chief accepted.”
- (562) *ñ-póló mú-kàm-ú-w-é é và*
c3-chief c3-accept-EV-CAUS-EV.NPLOC here
“The chief accepted here.”

6.1.1.2 Composite Near Past

The Composite Near Past is constructed according to the following morphological template:

- (563) **Composite Near Past**
SPx + *bé* + Near Past

In other words, the Composite Near Past involves an auxiliary use of the copula *bé* which subcategorizes for a following Near Past inflection of the content verb. This tense imposes no tonal changes on the preceding SPx. The content verb inherits the subject agreement properties of the auxiliary.

The semantic distinction between the Near and Composite Near Past is unclear to me at this point. My informant claimed that the two can be used interchangeably in any context. Fuller semantic examination beyond the scope of this work is required to elucidate any differences. Examples of the Composite Near Past are provided below:

- (564) *mú-bé mú-nyáng-w-á-[↓]*
c3-be c3-lick-EV-EV-NP
“S/he licked.”
- (565) *à-bé à-bál-é é và*
c1-be c1-conquer-EV LOC here
“S/he conquered here.”
- (566) *ñ-póló mú-bé mú-lòng-ó é và*
c3-chief c3-be c3-look-EV.NP LOC here
“The chief looked here.”
- (567) *mw-àdó à-bé à-kàm-ú-w-é-[↓]*
c1-woman c1-be c1-look-EV-CAUS-EV.NP-NP
“The woman accepted.”

6.1.1.3 Far Past

The Far Past¹²⁴ is constructed according to the following morphological template:

¹²⁴ The Far Past is discussed in Bot (1998) under the label “passé 3”.

- (568) **Far Past**
Polar-toned SPx + (Upstepped-H) + verb base + EV *é*

The upstepped-H of the above template surfaces on the first mora of hi-toned verb stems only; lo-toned stems are tonally unmarked in the Far Past:

- (569) *mù-mǎ^hm-é-n-í-y-é*
c3-surprise-EV-RECIP-EV-CAUS-EV.FP
“S/he had surprised (s.o.)”
- (570) *mú-kàm-ú-w-é*
c3-accept-EV-CAUS-EV.FP
“S/he had accepted.”

In addition, the far past EV *é* affixes to the verb base, the tone of which spreads or not according to general principles of the language discussed in chapter 3.3. As an EV, the Far Past inflectional EV *é* triggers glide insertion when immediately preceded by a non-homorganic vowel (see §3):

- (571) *à-tǎ^hnd-é*
c1-love.FP-EV.FP
“S/he had loved.”
- (572) *à-tǎ^h-y-é*
c1-see.FP-EV.FP
“S/he had seen.”

The above template also specifies a polar tone on the SPx; specifically, the SPx is realized with opposite tone to that of the following verb root, regardless of the underlying tone specification of the prefix:

- (573) Hi-toned root
- (a) *à-nyǎ^hng-w-é* *é* *và*
c1-lick.FP-EV-EV.FP LOC here
“S/he had licked here.”
- (b) *mù-nyǎ^hng-w-é* *é* *và*
c3-lick.FP-EV-EV.FP LOC here
“S/he had licked here.”
- (574) Lo-toned root
- (a) *á-lèng-é* *é* *và*
c1-wander-EV.FP LOC here
“S/he had wandered here.”
- (b) *mú-lèng-é* *é* *và*
c3-wander-EV.FP LOC here
“S/he had wandered here.”

The meaning of the Far Past, especially in comparison to the Near Past, is beyond the capacity of this work to fully explore. In at least some cases it was translated by my informant as a pluperfect (“had X-ed”), but it is far from certain that this tense always has a pluperfect meaning (i.e., roughly, preceding a Reference Time in the past), or whether it is simply a more distant past than what I have labeled the Near Past. For the purposes of distinguishing the Far Past from the Near Past, I translate Far Past inflections as pluperfects in English, as seen in the foregoing examples. However, this should not be taken to constitute a claim about the actual semantics of this inflection, an issue which I leave to future research. Further examples of Far Past sentences are provided below:

- (575) *mw-àdó* *à-bǎ^hl-é*
c1-woman c1-conquer.FP-EV.FP
“The woman had conquered.”
- (576) *ṁ-póló* *mù-bǎ^hl-é*
c3-chief c3-conquer.FP-EV.FP
“The chief had conquered.”

- (577) *m̀-̀póló m̀-̀l̀ng-̀ó*
 c3-chief c3-look-EV.FP
 “The chief had looked.”
- (578) *m̀w-̀ádó á-̀l̀ng-̀ó*
 c1-woman c1-look-EV.FP
 “The woman had looked.”

6.1.1.4 Composite Far Past

The Composite Far Past is constructed according to the following morphological template:

- (579) **Composite Far Past**
 Composite Near Past with Far Past inflected auxiliary

The Far Past inflection is realized on the auxiliary *bé* of the Composite Near Past, polarizing the tone of the SPx, upstepping the tone of the auxiliary, and suffixing the inflectional EV *-é*:

- (580)
- (a) *à-bé^h-yé à-nyáng-w-á^h*
 c1-be.FP-EV.FP c1-lick-EV-EV-NP
 “S/he had licked.”
- (b) *m̀-̀bé^h-yé m̀-̀nyáng-w-á é và*
 c3-be.FP-EV.FP c3-lick-EV-EV LOC here
 “The chief had licked here.”
- (581)
- (a) *m̀w-̀ádó à-bé^h-yé à-̀l̀ng-̀ó é và*
 c1-woman c1-be.FP-EV.FP c1-look-EV.NP LOC here
 “The woman had looked here.”
- (b) *m̀-̀póló m̀-̀bé^h-yé m̀-̀l̀ng-̀ó^h*
 c3-chief c3-be.FP-EV.FP c3-look-EV.NP-NP
- (582)
- (a) *m̀w-̀ádó à-bé^h-yé à-kàm-ú-w-é é và*
 c1-woman c1-be.FP-EV.FP c1-accept-EV-CAUS-EV.NPLOC here
 “The woman had accepted here.”
- (b) *m̀-̀póló m̀-̀bé^h-yé m̀-̀kàm-ú-w-é^h*
 c3-chief c3-be.FP-EV.FP c3-accept-EV-CAUS-EV.NP-NP
 “The chief had accepted.”

As in the case of Near vs. Composite Near Past, the semantic distinction between the Far and Composite Far Past is unclear to me at this point in the investigation. My informant claimed that the two can be used interchangeably in any context. Fuller semantic examination beyond the scope of this work is required to elucidate any differences in meaning or distribution. As for the Far Past, translations of the Composite Far Past are given as pluperfects (as seen above). However, this is intended solely to distinguish them from what I have labeled Composite Near Past and does not constitute a firm claim about their semantics, which more research will be required to determine.

6.1.1.5 Present

The Present¹²⁵ is constructed according to the following morphological template:

- (583) **Present**
 SPx + verb stem + *-ndí*

The present suffix *-ndí* follows the full verb stem, and its lexical H spreads or not according to general principles of the language discussed in chapter 3.3. Examples are provided below:

¹²⁵ The Present is discussed in Bot (1998) under the label “présent”.

- (584) *à-dyá-ndí*
c1-eat-PRES
“S/he is eating.”
- (585) *mú-mám-á-n-á-ndí*
c3-surprise-EV-RECIP-EV-PRES
“S/he startles.”
- (586) *ṁ-póló mú-kàm-ú-w-é-ndí*
c3-chief c3-accept-EV-CAUS-EV-PRES
“The chief accepts.”
- (587) *nà-tó-ó-ndí ngúú*
1sg-see-EV-PRES correct
“I see correctly.”
- (588) *ṁ-póló mú-imb-ú-w-é-ndí*
c3-chief c3-think-EV-CAUS-EV-PRES
“The chief thinks.”
- (589) *nà-dyòk-á-ndí é và*
1sg-dance-EV-PRES LOC here
“I dance here.”
- (590) *mw-àdó à-lèng-á-ndí é và*
c1-woman c1-wander-EV-PRES LOC here
“The woman wanders here.”
- (591) *mbwàà é-tám-w-á-ndí*
c9.dog c9-walk-EV-EV-PRES
“The dog walks.”

6.1.1.6 Conditional of the Present

Although not technically a TAM inflection, I note here that clauses in the Present tense take a special suffix *-^hndyé* when functioning as the antecedent of a conditional construction. As is clear from its phonemic transcription, *-^hndyé* is hi-toned, like the present suffix, but differs in that it is downstepped. Suffixation with *-^hndyé* triggers the assignment of an H to the final mora of the preceding stem, which spreads or not according to general principles of the language discussed in chapter 3.3. Comparative examples of Present and Present Conditional inflection are provided below:

- (592)
- (a) *mú-dyá-ndí*
c3-eat-PRES
“S/he eats.”
- (b) *mú-dyá-^hndyé*
c3-eat-PRCO
“If s/he eats...”
- (593)
- (a) *nà-tó-ó-ndí*
1sg-see-EV-PRES
“I see.”
- (b) *nà-tó-ó-^hndyé*
1sg-see-EV-PRCO
“If I see...”
- (594)
- (a) *à-pòb-á-m-á-ndí*
c1-dive-EV-POS-EV-PRES
“S/he dives.”
- (b) *à-pòb-á-m-á-^hndyé*
c1-dive-EV-POS-EV-PRCO
“If s/he dives...”
- (595)
- (a) *ṁ-póló mú-dyódy-í-y-é-ndí*
c3-chief c3-judge-EV-CAUS-EV-PRES
“The chief judges.”

- (b) *ṁ-póló mú-dyódy-í-y-é-^hndyé*
 c3-chief c3-judge-EV-CAUS-EV-PRCO
 “If the chief judges...”
- (596)
- (a) *ì-bóṅgó dyí-mám-á-n-í-y-é-ndí*
 c5-knee c5-surprise-EV-RECIP-EV-CAUS-EV-PRES
 “The knee surprises (s.o.).”
- (b) *ì-bóṅgó dyí-mám-á-n-í-y-é-^hndyé*
 c5-knee c5-surprise-EV-RECIP-EV-CAUS-EV-PRCO
 “If the knee surprises (s.o.).”

This morphological alternation holds only for the Present tense. Antecedent clauses of conditionals in other tenses require marking with the conditional adverb *índyè* (which can co-occur in the Present with the Present Conditional suffix *-^hndyé*) or via clausal subordination to the expression *édiyá^hndyé ná...* “If it is (the case) that...”:

- (597) *é-diy-á-^hndyé ná ṁ-póló mú-tám-w-á é và*
 c9-be-EV-PRCO COMP c3-chief c3-walk-EV-EV LOC here
 “If the chief walked here (lit. If it is (the case) that the chief walked here).” (Near Past)

6.1.1.7 Future

In Iyasa, Future¹²⁶ inflection involves a future tense auxiliary *mú^h* that subcategorizes for an immediately following verb stem with what I analyze as neuter subject agreement (*è-*). Since the prefix *è-* is usually elided at normal speech rates, it can seem like *mú* inflects a verbal stem directly. However, in careful speech, the prefix emerges.¹²⁷

While the prefix attached to the content verb in the Future is homophonous with that of the infinitive (and c7), and while the Future is indeed analyzed as subcategorizing for an infinitive by Bot (1998), there are two difficulties that this analysis faces. First, while the verb stem in question sometimes does exhibit the L on the final mora characteristic of the infinitive, this is only the case phrase-finally. When anything follows a Future-inflected verb stem, the final mora is assigned an H, which spreads according to general principles of the language discussed in chapter 3 3 and, unlike infinitive-final H, is not downstepped. This happens regardless of the tone of the immediately following element, again differentiating the Future from the infinitive, which only inserts H preceding L (see chapter 3 4.4.1). The Future is therefore tonally distinct from the infinitive to the extent that it does not simplify the analysis to posit a future auxiliary which subcategorizes for an infinitive, since such an approach would need to be accompanied by additional construction-specific rules generating the correct surface tones. Second, several other clearly non-infinitival verb forms also take a neutral SPx of the shape *è-*, such as that required by the auxiliary *vákà* discussed in §6.1.4.2. I therefore opt simply to analyze *è-* in these cases as a neuter SPx (glossed N), used in certain constructions like the Future which happen not to pass subject inflection down to the content verb. Whether or not this “neutral” SPx is in fact identical to that of the infinitive (which as shown in chapter 4 1.3.7.3 is actually the c7 NPx) is a question I leave to future research.

In light of these considerations, I propose the following morphological template according to which the Future is constructed in Iyasa:

- (598) **Future**
 Lo-toned SPx + *mú^h* + *è-* + verb stem + {L phrase-finally, H otherwise}

The future auxiliary *mú^h* bears an upstepped-H tone. Subject inflection is always lo-toned preceding it. The tone of the final mora depends on context: phrase-finally, it is L, and non-phrase-finally, it is H. Examples of inflection for future tense are provided below:

- (599) *mò-tò à-mú^h è-ímbà*
 c1-person c1-FUT N-sing
 “The person will sing.”

¹²⁶ The Future is discussed in Bot (1998) under the label “futur 1”.

¹²⁷ Bot (1998) claims that the Future auxiliary glides preceding V-initial verb roots, producing eg. *m^hédzá* “will eat”. This appears to be a difference in speech variety between his informant(s) and mine, since in my research forms like the one mentioned above trigger *e*-Elision of the prefix, not Gliding: *mú^h édyá^h → mú^h dyá* (optionally) “will eat.”

- (600) *ɲè-póló mù-mú⁴ è-támwà*
 c3-chief c3-FUT N-walk
 “The chief will walk.”
- (601) *à-mú⁴ è-lɔ̀ng-ɔ̀ lé⁴mó àà-mé*
 c1-FUT N-see-EV.FUT OBJ.c9.eel c9-1sg.POSS
 “S/he sees my eel.”
- (602) *à-mú⁴ è-líy-á è-ímà áá⁴-mé*
 c1-FUT N-sow-EV.FUT c7-thing c7-1sg.POSS
 “S/he sows the thing.”

6.1.1.8 Future Perfect

The Future Perfect is constructed according to the following morphological template:

- (603) **Future Perfect**
 Lo-toned SPx + *mú⁴* + *è* + Composite Near Past

In other words, the Future Perfect is simply a Future inflection of the Composite Near Past, such that the future auxiliary is followed by the Composite Near Past auxiliary *bé* with neuter subject agreement, which is itself followed by the content noun with Near Past inflection (which resumes the SPx inflection of the matrix auxiliary). Examples are provided below:

- (604) *mw-àdó à-mú⁴ è-bé à-nyáŋg-w-á⁴*
 c1-woman c1-FUT N-be c1-lick-EV-EV-NP
 “The woman will have licked.”
- (605) *mù-mú⁴ è-bé mú-nyáŋg-w-á é và*
 c3-FUT N-be c3-lick-EV-EV LOC here
 “S/he will have licked here.”
- (606) *ɲè-póló mù-mú⁴ è-bé mú-lèŋg-á⁴*
 c3-chief c3-FUT N-be c3-wander-EV.NP-NP
 “The chief will have wandered.”
- (607) *mw-àdó à-mú⁴ è-bé à-mám-á-n-í-y-é é và*
 c1-woman c1-FUT N-be c1-surprise-EV-RECIP-EV-CAUS-EV LOC here
 “The woman will have surprised (s.o.) here.”

6.1.1.9 Uncertain Future

There is another future tense auxiliary in Iyasa which I label the Uncertain Future,¹²⁸ since the primary semantic difference between it and the Future appears to be that the Uncertain Future expresses uncertainty either with respect to whether the event will occur or the time at which it will occur, or both. Further semantic investigation will be required in order to more fully account for these semantic properties. For the purposes of this discussion, I simply note the existence of this inflection and describe its morphological properties. The Uncertain Future is constructed according to the following morphological template:

- (608) **Uncertain Future**
 Hi-toned SPx + *ndyè* + *è-* + verb stem + *-k-* + {L phrase-finally, H otherwise}

Thus, the Uncertain Future involves an Uncertain Future auxiliary *ndyè* and imposes a Hi tone on the SPx of all classes. The content verb is suffixed with *-k-* and takes the neuter subject agreement prefix *è-*. An L is assigned to the final mo-

¹²⁸ The Uncertain Future is discussed in Bot (1998) under the label “futur 2”. Bot analyzes *ndyè* as a verbal prefix. However, given the inflection of the content verb with *è-*, a prefix which intervenes between *ndyè* and the following verb stem, I believe *ndyè* is best treated as a standalone auxiliary verb like the Future *mú⁴*. The neuter prefix *è-* usually elides as a result of *e*-Elision (see chapter 2 4.4), a fact which perhaps gave rise to the prefixal analysis of Bot (1998). Bot also claims that this inflection encodes a “distant future” meaning. Since semantics is not the principle subject of this investigation I do not rigorously argue against this analysis. I note, however, that in the opinion of my informant the Uncertain Future primarily encodes meaning about certainty rather than time. While it is true that events tend to become less certain the further into the future they are projected, such that distant future events may lend themselves more regularly to expression via the Uncertain Future, the Uncertain Future may also express near but uncertain events, while the Future may express distant but certain events.

ra of the stem in phrase-final position, and an H in phrase-medial position, the latter of which spreads or not according to general principles of the language discussed in chapter 3.3. Examples are provided below:

- (609) *mw-àdó á-ndyè è-kàm-ú-w-é-c-é é và*
 c1-woman c1-UF N-accept-EV-CAUS-EV-K-EV LOC here
 “The woman will/might accept here.”
- (610) *ṁ-póló mú-ndyè è-lèng-à-k-à*
 c3-chief c3-UF N-wander-EV-K-EV
 “The chief will/might wander.”
- (611) *mw-àdó á-ndyè è-bál-é-c-è*
 c1-woman c1-UF N-accept-EV-K-EV
 “The woman will/might conquer.”
- (612) *ṁ-póló mú-ndyè è-lèng-ó-k-ó é và*
 c3-chief c3-UF N-look-EV-K-EV LOC here
 “The chief will/might look here.”

6.1.1.10 Near Future

The Near Future is used to express actions that will happen very soon and is roughly translatable as “be about to X”. It is constructed according to the following morphological template:

- (613) **Near Future**
 SPx + *vìyá* + *è-* + verb stem + *-k-* + {L phrase-finally, H otherwise}

The Near Future involves the auxiliary *vìyá*, a verb meaning “come” in its non-auxiliary usage. It imposes no tonal changes on the SPx, and the content verb is suffixed with *-k-* and takes the neuter subject agreement prefix *è-*. An L is assigned to the final mora of the stem in phrase-final position, and an H in phrase-medial position, the latter of which spreads or not according to general principles of the language discussed in chapter 3.3. Examples are provided below:

- (614)
- (a) *à-vìy-á è-bál-é-c-è*
 c1-NF-EV.NFN-conquer-EV-K-EV
 “S/he is about to conquer.”
- (b) *mú-vìy-á è-bál-é-c-é é và*
 c3-NF-EV.NFN-conquer-EV-K-EV LOC here
 “S/he is about to conquer here.”
- (615)
- (a) *à-vìy-á è-lèng-ó-k-ó é và*
 c1-NF-EV.NFN-look-EV-K-EV LOC here
 “S/he is about to look here.”
- (b) *mú-vìy-á è-lèng-ò-k-ò*
 c3-NF-EV.NFN-look-EV-K-EV
 “S/he is about to look.”

6.1.2 Aspect

6.1.2.1 Imperfect

Ongoing or habitual action in the past is encoded in Iyasa by adding the multifunctional suffix *-k-* to the content verb in either of the composite pasts. When in the Composite Near Past, the Imperfect designates relatively recent ongoing action, while in the Composite Far Past, it designates relatively distant ongoing action. The Near and Far Imperfect inflections are therefore constructed according to the following morphological templates:¹²⁹

- (616) **Near Imperfect**
 Composite Near Past + *-k-*
- (617) **Far Imperfect**
 Composite Far Past + *-k-*

¹²⁹ The Near Imperfect is discussed in Bot (1998) under the label “passé 2”.

Unlike eg. the Punctual Past, which also subcategorizes for a content verb with the suffix *-k-*, the Imperfect verb form inflects for subject agreement (i.e. does not take the neuter *è-*), and retains the default L of the EV slot following *-k-*, regardless of phonological context:

- (618) *à-bé à-bál-é-c-è é và*
c1-be c1-conquer-EV-K-EV LOC here
“S/he was conquering here.”
- (619) *mù-bé⁴-yé mù-lèng-à-k-à é và*
c3-be.FP-EV.FP c3-look-EV-K-EV LOC here
“S/he had been looking here.”

Further pairwise examples of Near and Far Imperfect constructions are provided below:

- (620)
- (a) *mw-àdó à-bé à-nyáng-w-á-k-à*
c1-woman c1-be c1-lick-EV-EV-K-EV
“The woman was licking.”
- (b) *mw-àdó à-bé⁴-yé à-nyáng-w-á-k-à*
c1-woman c1-be.FP-EV.FP c1-lick-EV-EV-K-EV
“The woman had been licking.”
- (621)
- (a) *ñ-póló mù-bé mù-lèng-à-k-à é và*
c3-chief c3-be c3-wander-EV-K-EV LOC here
“The chief was wandering here.”
- (b) *ñ-póló mù-bé⁴-yé mù-lèng-à-k-à é và*
c3-chief c3-be.FP-EV.FP c3-wander-EV-K-EV LOC here
“The chief had been wandering here.”
- (622)
- (a) *mù-bé mù-mám-á-n-í-y-é-c-è*
c3-be c3-surprise-EV-RECIP-EV-CAUS-EV-K-EV
“S/he was surprising (s.o.).”
- (b) *mù-bé⁴-yé mù-mám-á-n-í-y-é-c-è*
c3-be.FP-EV.FP c3-surprise-EV-RECIP-EV-CAUS-EV-K-EV
“S/he had been surprising (s.o.).”

In addition to the Near and Far Imperfect, Iyasa also has a Future Imperfect¹³⁰ (“will be X-ing”), which is constructed according to the following morphological template:

- (623) **Future Imperfect**
Lo-toned SPx + *mú⁴* + *è-* + Near Imperfect

In other words, the Future Imperfect is simply the Near Imperfect construction under Future tense inflection. The following are a handful of examples:

- (624) *mw-àdó à-mú⁴ è-bé à-lèng-à-k-à é và*
c1-woman c1-FUT N-be c1-look-EV-K-EV LOC here
“The woman will be looking here.”
- (625) *ñ-póló mù-mú⁴ è-bé mù-nyáng-w-á-k-à*
c3-chief c3-FUT N-be c3-lick-EV-EV-K-EV
“The chief will be licking.”
- (626) *mw-àdó à-mú⁴ è-bé à-mám-á-n-í-y-é-c-è*
c1-woman c1-FUT N-be c1-surprise-EV-RECIP-EV-CAUS-EV-K-EV
“The woman will be surprising (s.o.).”

¹³⁰ The Future Imperfect is discussed in Bot (1998) under the label “progressif au futur”.

- (627) *ñ-póló mù-mú' è-bé mú-lèng-à-k-à é và*
 c3-chief c3-FUT N-be c3-wander-EV-K-EV LOC here
 “The chief will be wandering here.”

6.1.2.2 Habitual

As mentioned in the preceding section, in Iyasa habitual action in the past and future is encoded via Imperfect inflection. However, in the present, three distinct habitual forms are available. According to my informant, all three are quite common and can be used interchangeably with no difference in meaning. Further investigation will be necessary to elucidate whether any semantic nuances are associated with particular habitual forms. In the following section, I simply outline their various formal characteristics. Habitual semantics are represented in English translations as “often”. Note the contrast between these forms and the Present Progressive discussed in §6.1.4.1, which denotes ongoing rather than habitual action in the present.

One habitual, which I label “Habitual 1”, is constructed according to the following morphological template:¹³¹

- (628) **Habitual 1 (*dìyándí*)**
 SPx + *-dìy-* “sit” in Present + SPx + verb stem + *-k-*

Habitual 1 therefore involves Present inflection of the verb *èdìyà* “sit; stay; dwell”, which subcategorizes for a verb stem suffixed with *-k-*. Subject agreement surfaces on the content verb as well. Examples are provided below:

- (629) *mw-àdó à-dìy-á-ndí à-lèng-ò-k-ò é và*
 c1-woman c1-HAB-EV-PRES c1-look-EV-K-EV LOC here
 “The woman often looks here.”
- (630) *ñ-póló mú-dìy-á-ndí mú-mám-á-n-í-y-è*
 c3-chief c3-HAB-EV-PRES c3-surprise-EV-RECIP-EV-CAUS-EV
 “The chief often surprises (s.o).”
- (631) *mw-àdó à-dìy-á-ndí à-nyáng-w-á-k-à*
 c1-woman c1-HAB-EV-PRES c1-lick-EV-EV-K-EV
 “The woman often licks.”
- (632) *ñ-póló mú-dìy-á-ndí mú-kàm-ù-w-è-c-è é và*
 c3-chief c3-HAB-EV-PRES c3-accept-EV-CAUS-EV-K-EV LOC here
 “The chief often accepts here.”

A second habitual, which I label “Habitual 2”, is constructed according to the following morphological template:

- (633) **Habitual 2 (*lálándí*)**
 SPx + *-lál-* in Present + *è-* + verb stem + L

Thus Habitual 2 involves a Present inflection of the root *-lál-* as the matrix verb, the neuter prefix *è-* on the content verb, and an L on the final TBU of the content verb regardless of context. The verb *-lál-* does not appear to have a meaning outside of this construction and cannot serve as a content verb in other inflections. Examples of Habitual 2 are provided below:

- (634) *ñ-póló mú-lál-á-ndí è-lèng-à é và*
 c3-chief c3-HAB-EV-PRES N-wander-EV LOC here
 “The chief often wanders here.”
- (635) *mw-àdó à-lál-á-ndí à-mám-á-n-í-y-è é và*
 c1-woman c1-HAB-EV-PRES N-surprise-EV-RECIP-EV-CAUS-EV LOC here
 “The woman often surprises (s.o.) here.”
- (636) *ñ-póló mú-lál-á-ndí è-bál-è*
 c3-chief c3-HAB-EV-PRES N-conquer-EV
 “The chief often conquers.”
- (637) *mw-àdó à-lál-á-ndí à-lèng-ò-k-ò*
 c1-woman c1-HAB-EV-PRES c1-look-EV-K-EV
 “The woman often looks.”

¹³¹ Habitual 1 is discussed in Bot (1998) under the label “habituel”.

An unusual feature of Habitual 2 is that any direct object in this inflection follows the matrix verb rather than the content verb:

- (638) *mw-àdó à-lál-á-ndí² yó è-kàm-ù-w-è*
 c1-woman c1-HAB-EV-PRES.OBJc9 N-accept-EV-CAUS-EV
 “The woman often accepts it.”

In all other TAM inflections of which I am aware, the object follows the entire verbal complex:

- (639) *mw-àdó à-diy-á-ndí (*yó) à-kàm-ù-w-è-c-è yó*
 c1-woman c1-sit-EV-PRES(*c9) c1-accept-EV-CAUS-EV-K-EV c9
 “The woman often accepts it.” (Habitual 1)
- (640) *mw-àdó à-viy-á (*yó) à-kàm-ù-w-é-c-é² yó*
 c1-woman c1-NF-EV.NF(*c9) c1-accept-EV-CAUS-EV-K-EV.OBJ c9
 “The woman is about to accept it.” (Near Future)

This property is primarily syntactic in nature and thus outside the scope of this investigation. I simply note it and suggest this contrast as a subject for further research.

The third habitual, which I label “Habitual 3”, is constructed according to the following morphological template:

- (641) **Habitual 3 (*mbé*)**
 SPx + *mbé* + *è-* + verb stem + *-k-* + {L phrase-finally, H otherwise}

In other words, Habitual 3 involves a dedicated auxiliary *mbé* and imposes no tonal change on the SPx. The content verb inflects with the neuter *è-* and is suffixed with *-k-*. An L is assigned to the final mora of the stem in phrase-final position, and an H in phrase-medial position, the latter of which spreads or not according to general principles of the language discussed in chapter 3 3.

- (642) *mw-àdó à-mbé è-nyáng-w-á-k-à*
 c1-woman c1-HAB N-lick-EV-EV-K-EV
 “The woman often licks.”
- (643) *ṁ-póló mú-mbé è-mám-á-n-í-y-é-c-é é và*
 c3-chief c3-HAB N-surprise-EV-RECIP-EV-CAUS-EV-K-EV LOC here
 “The chief often surprises (s.o.) here.”
- (644) *mw-àdó à-mbé è-bál-é-c-è*
 c1-woman c1-HAB N-conquer-EV-K-EV
 “The woman often conquers here.”
- (645) *ṁ-póló mú-mbé mú-lṁg-ó-k-ó é và*
 c3-chief c3-HAB c3-look-EV-K-EV LOC here
 “The chief often looks here.”

6.1.3 Mood

6.1.3.1 Imperative

The Imperative is constructed according to the following templates:

- (646) **Imperative (s)**
 verb stem + *-k-* + hi-toned EV
- (647) **Imperative (p)**
 verb stem + *-k-* + hi-toned EV + *nì*

Thus, somewhat exceptionally, the vowel of the EV slot following *-k-* in this inflection is hi- rather than lo-toned, and its tone spreads or not according to general principles of the language discussed in chapter 3 3. Examples of the Imperative are provided below:

- (648) *èdyá⁴* “eat”

- (a) *dyá-k-á*
eat-K-EV
“Eat!”
- (b) *dyá-k-á-nì*
eat-K-EV-pl.IMP
“(You all) Eat!”
- (649) *ètòḡ* “see”
- (a) *tó-ḡ-k-ḡ*
see-EV-K-EV
“See!”
- (b) *tó-ḡ-k-ḡ-nì*
see-EV-K-EV-pl.IMP
“(You all) See!”
- (650) *èpùmbwà* “unearth”
- (a) *pùmb-w-á-k-á*
unearth-EV-EV-K-EV
“Unearth!”
- (b) *pùmb-w-á-k-á-nì*
unearth-EV-EV-K-EV-pl.IMP
“(You all) Unearth!”
- (651) *èpùliyè* “announce”
- (a) *pùl-i-y-é-c-é*
announce-EV-CAUS-EV-K-EV
“Announce!”
- (b) *pùl-i-y-é-c-é-nì*
announce-EV-CAUS-EV-K-EV-pl.IMP
“(You all) Announce!”

6.1.3.2 Antecedent of Counterfactual Conditional

Antecedent clauses of counterfactual conditional constructions (i.e. “If X had Y-ed...”), hereafter labeled Counterfactual, take special morphological inflection in Iyasa and are constructed according to the following template:

- (652) **Counterfactual**
Composite Near Past, with *-k-* suffixed to both the auxiliary and the content verb

The Counterfactual therefore differs from the Composite Near Past in that the suffix *-k-* is present, and from the Near Imperfect in that *-k-* appears on the auxiliary as well as on the dependent verb. In both the auxiliary and the content verb, the default L of the EV slot following *-k-* is preserved in all contexts. Examples of the Counterfactual are provided below:

- (653) *mw-àdó à-bé-c-è à-nyáng-w-á-k-á*
c1-woman c1-be-K-EV c1-lick-EV-EV-K-EV
“If the woman (had) licked...”
- (654) *ḡ-póló mú-bé-c-è mú-mám-á-n-i-y-é-c-è é và*
c3-chief c3-be-K-EV c3-surprise-EV-RECIP-EV-CAUS-EV-K-EV LOC here
“If the chief (had) surprised (s.o.)...”
- (655) *mw-àdó à-bé-c-è à-lòḡ-ḡ-k-ḡ é và*
c1-woman c1-be-K-EV c1-look-EV-K-EV LOC here
“If the woman (had) looked...”
- (656) *ḡ-póló mú-bé-c-è mú-kàm-ù-w-è-c-è*
c3-chief c3-be-K-EV c3-accept-EV-CAUS-EV-K-EV
“If the chief (had) accepted...”

6.1.3.3 Consequent of Counterfactual Conditional

Consequent clauses of the counterfactual constructions (“X would X”) are constructed according to one of two morphological templates in Iyasa, hereafter labeled Conditional. The first involves auxiliary use of the verb *ètókà* “to want”, and is given below:

- (657) **Conditional 1**
SPx + *tóká* + Near Past

The second involves a clause-initial marker *tè*, under which a sentence of any verb inflection may appear:

- (658) **Conditional 2**
tè + S

The word *tè* precedes consequent clauses of counterfactual conditionals. It may not occur in non-counterfactual conditionals, such as following the Present Conditional. It may co-occur with Conditional 1. The fact that *tè* is not an inflection but simply marks clauses as consequents of conditionals permits a great deal of precision in expressing the temporal and aspectual relationship of the consequent to its antecedent, a phenomenon which I suggest as a subject of further semantic investigation. These generalizations are illustrated by the following examples:

- (659) *àbécè àlòṅgòkò...* “If he (had) looked”
- (a) *ṁ-póló à-tók-á à-tó-ó-k-ó⁴ mú*
c3-chief c1-want-EV c1-see-EV-K-EV.OBJc3
“... the chief would see it.” (Conditional 1)
- (b) *tè ṁ-póló à-tó-ó⁴ mú*
COCO c3-chief c1-see-EV.OBJ c3
“... the chief would have seen it.” (Near Past under Conditional 2)
- (c) *tè ṁ-póló á-tó⁴-yé⁴ mú*
COCO c3-chief c1-see.FP-EV.FP.OBJ c3
“... the chief would have seen it.” (Far Past Conditional 2)
- (d) *tè ṁ-póló à-bé à-tó-ó⁴ mú*
COCO c3-chief c1-be c1-see-EV-OBJ c3
“... the chief would have seen it.” (Composite Near Past under Conditional 2)
- (e) *tè ṁ-póló à-bé⁴-yé á-tó-ó⁴ mú*
COCO c3-chief c1-be.FP-EV.FP c1-see-EV.OBJ c3
“... the chief would have seen it.” (Composite Far Past under Conditional 2)
- (f) *tè ṁ-póló à-tók-á à-tó-ó-k-ó⁴ mú*
COCO c3-chief c1-want-EV c1-see-EV-K-EV.OBJc3
“... the chief would see it.” (Conditional 1 under Conditional 2)

6.1.3.4 Subjunctive

Verbs expressing certain kinds of propositional attitudes take dependent clauses with Subjunctive inflection. While the range of contexts and meanings to which this inflection may be applied is complex and beyond the scope of this investigation, I illustrate its formal properties below using one verb that subcategorizes for Subjunctive: *ètókà* “to want.” The Subjunctive is constructed according to the following morphological template:

- (660) **Subjunctive**
Hi-toned SPx + (Upstepped-H) + verb base + *é* + *-k-*

In fact, the Subjunctive involves the hi-toned EV *é* in the stem of the content verb, followed by the sequence *cè*, which in the absence of evidence to the contrary I analyze as composed of the suffix *-k-* (realized as *c* following *e* and *é*) followed by a default lo-toned EV *è* copied from the preceding EV specification. One important difference from the Far Past is that the SPx is hi-toned in the Subjunctive rather than polar-toned. As in the case of the Far Past, the upstepped-H appears only on hi-toned verb roots; lo-toned roots are tonally unmarked in the Subjunctive. The lexical H of the Subjunctive EV *é* spreads or not according to general principles of the language discussed in chapter 3.3. Examples of the Subjunctive are provided below:

- (661) *nàtókándí ná...* “I wish/want that...”
- (a) *mw-àdó á-bá⁴l-é-c-è é và*
c1-woman c1-conquer.SBV-EV-K-EV LOC here
“the woman conquer here.”

“the completive”, and (3) “the reiterative”. The “inchoative” “refers to an action which begins” and involves a conjugated form of *èélè* “to begin” followed by the verb with neuter inflection. The “completive” refers to an action “which only exists in the past” (i.e. not currently ongoing) and involves a conjugated form of *éiyè* “to finish; to stop” followed by the verb with neuter inflection. And the “reiterative” expresses the repetition of an action and involves a conjugated form of *ètìmbènè* “to repeat” followed by the verb with neuter inflection (pp. 61-2, *my trans.*). Thus, while Bot analyzes these constructions as verb inflections, they do not seem to involve construction-specific morphological properties, and their semantics appear to be more or less compositional: “to start X-ing” (an action which begins), “to stop X-ing” (an action no longer ongoing), and “to repeat/keep x-ing” (an action which is done again). In the absence of clear morphological or semantic motivation to treat these constructions as grammaticalized, I do not examine them further.

6.2 Copular constructions

There is a single copula in Iyasa which to my knowledge is overt in all contexts. It takes a variety of forms according to its inflectional setting. In the infinitive and as a subordinate content verb of auxiliary inflections, the copular stem is *-diyà*, homophonous with the verb stem meaning “sit; stay; dwell”. As a main verb and as an auxiliary, its form depends on context. The present tense copular form is *yé*, which takes an SPx prefix according to the subject. The Near Past copular form is *bé*, likewise inflected with SPx, while the Far Past copular form is *bé^hyé*, (i.e. *bé* inflected for Far Past) which inflects with a lo-toned SPx, probably as a result of the polar tone imposed on Far Past SPx. These forms also serve as the copular auxiliary in their respective composite inflections. The copula is not formally dependent on its predicative argument, which can be of any category licensed as a nominal modifier (noun, adjective, participle, etc.).¹³³ Negation of the copula, as of all verbs in Iyasa, involves a complex array of formal combinations, discussed further in the following section. Examples of the copula with a variety of complements are provided below:

- (678) *è-diy-á* *mù-mú*
INF-be-INF.EV c1-man
“to be a man”
- (679) *è-diy-à* *mú-tú^hbwé*
INF-be-EV c1-big
“to be big”
- (680) *è-diy-á* *sìì*
INF-be-INF.EV c9.straight
“to be straight”
- (681) *è-diy-á* *àà-mé*
INF-be-INF.EV c1-1sg.POSS
“to be mine”
- (682) *à-yé* *mù-mú*
c1-be c1-man
“He is a man.”
- (683) *à-yé* *mú-tú^hbwé*
c1-be c1-big
“S/he is big.”
- (684) *à-yé* *sìì*
c1-be c9.straight
“S/he is straight.”
- (685) *à-yé* *àà-mé*
c1-be c1-1sg.POSS
“S/he is mine.”

As previously mentioned, in both copular Near and Far Pasts the respective copular forms are *bé* and *bé^hyé*, which also serve as the respective auxiliary forms in the Composite Near and Far Pasts (see the discussions of these inflections in preceding sections):

¹³³ The only exception to this of which I am aware involves argument marking realized on the verb stem of certain modifiers in copular infinitives, discussed in chapter 3 4.4.2.

- (686) *à-bé m̀ò-t̀ò*
c1-be c1-person
“S/he was a person.” (Near Past)
- (687) *à-bé^h-yé m̀ò-t̀ò*
c1-be.FP-EV.FP c1-person
“S/he was a person.” (Far Past)

The Future subcategorizes for an auxiliary copula, such that the form of the copula remains *bé* even as a content verb:

- (688) *à-mú^t è-bé m̀ò-t̀ò*
c1-FUT N-be c1-person
“S/he will be a person.”

However, most inflections do not require an auxiliary form of the copula as a content verb. In these cases, as in the infinitive, the copula surfaces as *-diyá*, undergoing any tonal or inflectional changes imposed by the inflection involved:

- (689) *à-bé à-diy-á m̀ò-t̀ò*
c1-be c1-be-EV.NP c1-person
“S/he was a person.” (Composite Near Past)
- (690) *à-bé^h-yé à-diy-á m̀ò-t̀ò*
c1-be.FP-EV.FP c1-be-EV.NP c1-person
“S/he was a person.” (Composite Far Past)
- (691) *à-bé à-diy-à-k-à m̀ò-t̀ò*
c1-be c1-be-EV-K-EV c1-person
“S/he was being a person.” (Near Imperfect)
- (692) *à-bé^h-yé à-diy-à-k-à m̀ò-t̀ò*
c1-be.FP-EV.FP c1-be-EV-K-EV c1-person
“S/he was being a person.” (Far Imperfect)

Non-specific existential constructions simply involve an impersonal c7/c9 SPx *é-* prefixed to the copula, with the entity whose existence is asserted appearing as the object of a prepositional phrase headed by *nà* “with”:

- (693) *é-yé nà m̀ò-t̀ò mé...*
c7-be with c1-person REL
“There is someone who...”
- (694) *é-yé nà wà-t̀ò mé...*
c7-be with c2-person REL
“There are people who...”

Specific existentials, by contrast, exhibit SPx on the copula which agree in class with the complement of the construction:

- (695) *wá-yé nà wà-t̀ò mé...*
c2-be with c2-person REL
“There are (certain) people who...”

As suggested by the data above, there is a strong preference for existential constructions in Iyasa to involve relative clauses predicating something of the entity whose existence is asserted. This is not categorical, as shown by the grammaticality of the following example:

- (696) *nyí-yé nà kòndá nyí-bàá é mbàdí é tē^hyì*
c10-be with c10.chair c10-two LOC c9.room LOC OBJ.c9.inside
“There are two chairs in the middle of the room.”

In general, however, propositions like the above are simply encoded as straightforward copular sentences:

- (697) *m̀ò-t̀ò à-yé é mbàdí*
c1-person c1-be LOC c9.house
“There is someone in the house. (lit. A person is in the house.)”

6.3 Negation

Negation in Iyasa is complex, and in the following discussion I provide a brief overview of its core formal manifestations. Most negation involves the negative morpheme *bé*, which itself is the present tense negative copula:

- (698) *à-bé mù-mú*
 c1-be.NEG c3-man
 “He is not a man.”

In non-copular constructions, *bé* also surfaces. However, it does not appear to do so in a predictable fashion from tense to tense. Rather, the negative forms of particular tenses appear to be stipulated in the grammar, while other inflections lack a negative counterpart altogether, such as the Punctual and Literary Past. For example, in the Negative Present, *bé* is prefixed to the verb stem, intervening between it and the preceding SPx. No Present suffix *-ndí* is used, and the final mora of the stem bears a Lo tone, unless that mora is part of the verb root, in which case the L surfaces following it, causing a hi-falling contour, much like the Infinitive-Marker-L (see chapter 3 4.4.1):

- (699)
 (a) *nà-dyá-ndí*
 1sg-eat-PRES
 “I eat.”
 (b) *nà-bé-dyá-[↓]*
 c1-NEG-eat-NEG
 “I do not eat.”
- (700)
 (a) *ṁ-póló mú-nyáng-w-á-ndí*
 c3-chief c3-lick-EV-EV-PRES
 “The chief licks.”
 (b) *ṁ-póló mú-bé-nyáng-w-à*
 c3-chief c3-NEG-lick-EV-EV.NEG
 “The chief does not lick.”

By contrast, while the Negative Near Past involves a similar prefixing of *bé*, it is prefixed to the Far Past form. Meanwhile, the Negative Far Past involves the prefixing of *bé* to something resembling the Near Past form except that it retains the lo-toned SPx and upstepped-H marker characteristic of the (positive) Far Past. The same surprising relationship holds between Negative Composite Near and Far Past. The upstepped-H tonal marker of the Far Past appears in both negative forms of Near and Composite Near Past, since these forms involve Far Past morphological constructions. However, while in both Near Past forms the marker appears on the first mora of the stem, as expected, in both Far Past forms it appears instead on the negative prefix. Finally, while the negative forms of the Near Past otherwise appear to be inflecting Far Past forms and vice versa, the tone of the SPx remains polar in the negative of the Far Past and underlying in the negative of the Near Past:

- (701) Near Past
 (a) *ṁ-póló mú-nyáng-w-á-[↓]*
 c3-chief c3-lick-EV-EV-NP
 “The chief licked.”
 (b) *ṁ-póló mú-bé-nyá[↑]ng-w-é*
 1sg-NEG-eat.FP-EV.FP
 “The chief did not lick.”
- (702) Composite Near Past
 (a) *ṁ-póló mú-bé mú-nyáng-w-á-[↓]*
 c3-chief c3-be c3-lick-EV-EV-NP
 “The chief licked.”
 (b) *ṁ-póló mú-bé-bé[↑]-yé mú-nyáng-w-á-[↓]*
 c3-chief c3-NEG-be.FP-EV.FP c3-lick-EV-EV-NP
 “The chief did not lick.”
- (703) Far Past

- (a) *ṅ-póló mù-nyá^hṅg-w-é*
c3-chief c3-lick.FP-EV-EV.FP
“The chief had licked.”
- (b) *ṅ-póló mù-bé^h-nyáng-w-á-^h*
c3-chief c3-NEG.FP-lick-EV-EV-NP
“The chief had not licked.”
- (704) Composite Far Past
- (a) *ṅ-póló mù-bé^h-yé mú-nyáng-w-á-^h*
c3-chief c3-be.FP-EV.FP c3-lick-EV-EV-NP
“The chief had licked.”
- (b) *ṅ-póló mù-bé^h-bé mú-nyáng-w-á-^h*
c3-chief c3-NEG.FP-be c3-lick-EV-EV-NP
“The chief had not licked.”

However, not all negation involves *bé*. The Negative Future, for example, uses its own negative auxiliary *ṅgá^h*, which, like the positive future auxiliary *mú^h*, is realized with an upstepped-H:

- (705) **Negative Future**
Lo-toned SPx + *ṅgá^h* + *è-* + verb stem + {L phrase-finally, H otherwise}

Examples are provided below:

- (706) Future
- (a) *à-mú^h è-nyáng-w-à*
c1-FUT N-lick-EV-EV
“S/he will lick.”
- (b) *à-ṅgá^h è-nyáng-w-à*
c1-NEG.FUT N-lick-EV-EV
“S/he will not lick.”
- (707) Future Perfect
- (a) *à-mú^h è-bé à-nyáng-w-á-^h*
c1-FUT N-be c1-lick-EV-EV-NP
“S/he will have licked.”
- (b) *à-ṅgá^h è-bé à-nyáng-w-á-^h*
c1-NEG.FUT N-be c1-lick-EV-EV-NP
“S/he will not have licked.”

Likewise, the negative form of the Uncertain Future exhibits unique morphological characteristics and does not involve *bé*:

- (708) **Negative Uncertain Future**
Lo-toned SPx + *ndyè^h* + *è-* + verb stem + {L phrase-finally, H otherwise}

This inflection is quite similar in form to its positive counterpart (the Uncertain Future), with three main differences: the tone of SPx (hi-toned in the Uncertain Future and lo-toned in the Negative Uncertain Future), the tone of the auxiliary *ndye* (L in the Uncertain Future and upstepped-H in the Negative Uncertain Future), and the affixation of *-k-* on the content verb (obligatory in the Uncertain Future and prohibited in the Negative Uncertain Future). Because the Uncertain Future expresses possibility rather than certainty at the semantic level (“might”/“could”), its negation expresses impossibility and lends itself to translation as “will never” or “could never”. The following are some examples of the two inflections in contrast:

- (709)
- (a) *ṅ-póló mú-ndyè è-bál-é-c-è*
c3-chief c3-UF N-conquer-EV-K-EV
“The chief will/might conquer (someday).”

- (b) *ñ-póló mù-ndyě̀ è-bál-è*
 c3-chief c3-NEG.UF N-conquer-EV
 “The chief will not/never conquer.”
- (710)
- (a) *mw-àdó á-ndyè è-mám-á-n-í-y-é-c-é* *é* *và*
 c1-woman c1-UF N-surprise-EV-RECIP-EV-CAUS-EV-K-EV LOC here
 “The woman will/might surprise (s.o.) here.”
- (b) *mw-àdó à-ndyě̀ è-mám-á-n-í-y-é* *é* *và*
 c1-woman c1-NEG.UF N-surprise-EV-RECIP-EV-CAUS-EV LOC here
 “The woman will not/never surprise (s.o.) here.”

As mentioned at the beginning of this section, the copula has its own unique form in the present tense: *bé* as the matrix verb. The negative copula also has an idiosyncratic form in the infinitive:

- (711) **Negative Infinitival Copula**
-diy- in infinitive + *mbà* + *bé́cé*

Literally translated, this expression effectively means “to be without being”: it involves the infinitival copula *èdiyà* followed by the preposition *mbà* “without” followed by the auxiliary form of the copula *bé* suffixed with *-k-*. Unlike eg. the Future, which takes an auxiliary form of the copula as a content verb with neuter subject agreement (*è-*), the Negative Infinitival Copula does not permit subject inflection of any kind on the content (copular) verb.

- (712) *è-diy-á mbà (*è-)bé-c-é mù-mú*
 INF-be-EV.INF without (*N-)be-k-EV c1-man
 “to not be a man”
- (713) *è-diy-á mbà (*è-)bé-c-é mú-tiikí*
 INF-be-EV.INF without (*N-)be-k-EV c1-small
 “to not be small”
- (714) *è-diy-á mbà (*è-)bé-c-é ñgúú*
 INF-be-EV.INF without (*N-)be-k-EV correct
 “to not be correct/exact”

Aside from this, negation in copular constructions is constructed straightforwardly: the copula appears as the content verb in the negative form of the appropriate TAM inflection. The form of the copula in these constructions is determined by the same principles which govern positive copular constructions discussed in the preceding section. Examples of the negated copula in various inflections are provided below:

- (715) *à-bé-bě̀-yé mò-tò*
 c1-NEG-be.FP-EV.FP c1-person
 “S/he was not a person.” (Near Past)
- (716) *à-bě̀-bé mò-tò*
 c1-NEG.FP-be c1-person
 “S/he was not a person.” (Far Past)
- (717) *à-bé-bě̀-yé à-diy-á mò-tò*
 c1-NEG-be.FP-EV.FP c1-be-EV.NP c1-person
 “S/he was not a person.” (Composite Near Past)
- (718) *à-bě̀-bé à-diy-á mò-tò*
 c1-NEG.FP-be c1-be-EV-NP c1-person
 “S/he was not a person.” (Composite Far Past)
- (719) *à-bé-bě̀-yé à-diy-à-k-à mò-tò*
 c1-NEG-be.FP-EV.FP c1-be-EV-K-EV c1-person
 “S/he was not being a person.” (Near Imperfect)
- (720) *à-bě̀-bé à-diy-à-k-à mò-tò*
 c1-NEG.FP-be c1-be-EV-K-EV c1-person
 “S/he was not being a person.” (Far Imperfect)

The amount of formal ideosyncrasy observable in these negative constructions renders any attempt to concisely state a consistent negation morphology for Iyasa quite difficult. Rather, it simply seems to be the case that the grammar specifies distinct morphological templates for both the positive and negative forms of many (but not all) TAM inflections. Some of these happen to share a common segmental core (*bé*), but their formal properties in their entirety do not seem to be predictable on the basis of the positive inflections alone.

6.4 Relative clauses

The relativizer in Iyasa is *mé*, which, as discussed in chapter 3 4.4.3, exhibits the unique property of upstepping only when preceded by H. A full exposition of the syntax of relative clauses in Iyasa is beyond the scope of this discussion. However, to briefly summarize their core morphological features, relative clauses are constructed according to the following two templates:

- (721) **Subject Relative**
NP + *mé* + VP
- (722) **Object Relative**
NP + *mé* + AM + S

That is, the part of the Subject Relative co-referential with the head noun is the SPx of the verb of the relative clause, of which the nominal head is the semantic subject. By contrast, the part of the Object Relative co-referential with the head noun is an associative marker which agrees with the nominal head in class and which is fronted out of the relativized sentence, leaving a syntactic gap. Relative clauses impose a Hi tone on the SPx, regardless of tense, as seen in examples below of hi-toned SPx under eg. Present, where the c1 SPx is lo-toned in matrix clauses, as well as Far Past and Future, which take lo-toned SPx in matrix clauses.

The present tense has its own inflection in relative clauses distinct from that in main clauses, which I simply label the Relative Present. The Relative Present is constructed according to the following morphological template:

- (723) **Relative Present**
SPx + (Upstepped-H) + verb stem + {L phrase-finally, H otherwise}

As is the case with inflections under Far Past, the upstepped-H of the foregoing template appears on the first mora of hi-toned verb stems only. An L is assigned to the final mora of the stem in phrase-final position, and an H in phrase-medial position, the latter of which spreads or not according to general principles of the language discussed in chapter 3 3.

The aforementioned properties of relative clauses are exemplified below:

- (724)
- (a) *ḡ-bá-i mé mú-nyá^hḡg-w-à*
c3-marry-AGNOM REL c3-lick.RP-EV-EV.RP
“the groom who licks”
- (b) *ḡ-póló mē^h mú-nyá^hḡg-w-à*
c3-chief REL c3-lick.RP-EV-EV.RP
“the chief who licks”
- (725)
- (a) *ḡ-bá-i mé mú-lḡḡg-ḡ*
c3-marry-AGNOM REL c3-look-EV
“the groom who looks”
- (b) *ḡ-póló mē^h mú-lḡḡg-ḡ*
c3-chief REL c3-look-EV
“the chief who looks”
- (c) *ḡ-póló mē^h mú-lḡḡg-ḡ sḡpé*
c3-chief REL c3-look-EV again
“the chief who looks again”
- (d) *ḡ-póló mē^h mú-tá^hm-w-á sḡpé*
c3-chief REL c3-walk.RP-EV-EV again
“the chief who walks again”

- (e) *ṅ-póló mē^ʔ mú-lṅg-ḵ ṅḡ^ʔlóbé*
 c3-chief REL c3-look-EV c9.cliff
 “the chief who looks at the cliff”
- (726)
- (a) *mò-tò mé à ṅ-póló á-t^ʔnd-è*
 c1-person REL c1.AM c3-chief c1-love.RP-EV.RP
 “the person whom the chief loves”
- (b) *ì-lúkù mé dyá ṅ-póló á-t^ʔnd-è*
 c5-sister REL c5.AM c3-chief c1-love-EV.RP
 “the sister whom the chief loves”
- (c) *ṅ-póló mē^ʔ mwá ì-lúkù dyí-lṅg-ḵ*
 c3-chief REL c3.AM c5-sister c5-look-EV
 “the chief whom the sister loves”
- (727)
- (a) *ṅ-póló mē^ʔ mwá ì-lúkù dyí-mū^ʔ è-lṅg-ḵ*
 c3-chief REL c3.AM c5-sister c5-FUT N-look-EV
 “the chief at whom the sister will look” (Future)
- (b) *ṅ-póló mē^ʔ mwá ì-lúkù dyí-lṅg-é*
 c3-chief REL c3.AM c5-sister c5-look-EV.FP
 “the chief at whom the sister had looked” (Far Past)
- (c) *ṅ-póló mē^ʔ mwá ì-lúkù dyí-bē^ʔ-yé dyí-lṅg-ḵ*
 c3-chief REL c3.AM c5-sister c5-be.FP-EV.FP c5-look-EV
 “the chief at whom the sister had looked” (Near Past)
- (728)
- (a) *ṅ-póló mē^ʔ mwá ì-lúkù dyí-mū^ʔ è-lṅg-ḵ-k-ḵ*
 c3-chief REL c3.AM c5-sister c5-FUT N-look-EV-K-EV
 “the chief at whom the sister will be looking” (Future Imperfect)
- (b) *ṅ-póló mē^ʔ mwá ì-lúkù dyí-lṅg-é-c-è*
 c3-chief REL c3.AM c5-sister c5-look-EV.FP-K-EV
 “the chief at whom the sister was looking” (Far Imperfect)
- (c) *ṅ-póló mē^ʔ mwá ì-lúkù dyí-bē^ʔ-yé dyí-lṅg-ḵ-kē^ʔ*
 c3-chief REL c3.AM c5-sister c5-be.FP-EV.FP c5-look-EV-K-EV
 “the chief at whom the sister was looking” (Near Imperfect)

The relativizer *mé* is used in other specialized contexts in which no clause is subordinated. Among these are proximal and distal demonstrative constructions and the modifier *-vóókó* when used to mean “same” (discussed in chapter 4 1.2.2, chapter 4 1.2.3, and chapter 4 1.2.5, respectively). That these constructions have no verbal component is supported by the lack of any intonational pause preceding the relativizer, which normally occurs preceding relative clauses (see chapter 3 4.4.4). In any case, the relativizer continues to upstep following H in these constructions as well:

- (729) *ṅ-bá-ì mé mū^ʔ nyéé*
 c3-marry-AGNOM REL c3 DDEM
 “that groom”
- (730) *ṅ-póló mē^ʔ mū^ʔ nyéé*
 c3-chief REL c3 DDEM
 “that chief”
- (731) *bw-álò mé bù-vóókó*
 c14-canoe REL c14-same
 “the same canoe”
- (732) *è-àndyé mē^ʔ à-vóókó*
 c7-sweat REL c7-same
 “the same sweat”

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