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ON

THE PHONOLOGY OF NKONYA

Wesley Peacock

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PREFACE

The purpose of the series entitled "Collected Language Notes" is to make available some material which, though of a tentative nature, might still be of interest to scholars concerned with West African languages. Earlier numbers consisted of field notes, often derived from a fairly short period of research. A certain amount of editing was sometimes undertaken, but no attempt was made to change the essential field-note character of the material. More recent numbers, however, including the present one, are based on a longer period of study and are more thoroughly edited. Nevertheless they still represent a stage of an on-going research programme, and as such some data is still incomplete and there may be some inconsistencies in treatment.

The present number is one of several reports contributed by members of the Ghana Institute of Linguistics, Literacy and Bible Translation. Since 1962, the Institute has been carrying out research into some of the vernacular languages of Ghana under the co-operative agreement with the Institute of African Studies of the University of Ghana. So far, teams of the Institute have commenced study in 34 languages in mid- and northern-Ghana. Preliminary stages of this research have yielded the Notes contributed by Institute members to the present series: It is anticipated that a fuller description of the phonological and syntactic structures of some of the languages concerned will eventually result from this study.

Techiman, 2006 Anthony J. Naden

APPRECIATION

Dr. Anthony J. "Tony" Naden has been heavily involved in linguistics research in GILLBT for several decades, and has authored, co-authored, or otherwise contributed to numerous linguistics works resulting from GILLBT's research activities. He has served as a Linguistics Consultant for GILLBT language project research, edited GILLBT members' contributions to the "Collected Language Notes" series for many years in the 1970's and 80's (as well as two of the more recent numbers), and has also contributed in many other ways to the work of GILLBT.

Tony is now retiring from full-time research activities with GILLBT. Since the present volume was edited under Tony's guidance, approved in 2007 for publication by IAS, but delayed in printing until the present time, I would like to take this brief opportunity to express our appreciation to Dr. Tony Naden. Thank-you for your years of service to GILLBT, particularly in the area of Linguistics.

Tamale, 2010

Paul Schaefer
Linguistics Co-ordinator
GILLBT

Nkonya Preface

Tɔ́á Nawánlín Ɔwʋlʋ́ Ánfɪtɔ

Ɔwʋlʋ́ ánfɪ nawánlín ánfɪ ɪdétɔí tsú Nkonya ɔblíɪ múa titriu asʊ́nbi ání Nkonyáfɔ bʊtɛblí bréá bʊdɛ Nkonya tɔí. Neye ɔwʋlʋ́ ánfɪtɔ akú asie. Mʊ́ ɔma ikú saasɪ bʊ.

Ikú gyankpapʊtɔ á, nɛblí ɔtínéá Nkonya ɔmá ɪbʊ. Nɔwanlín ɔblíɪ ɔtsantsan ání ɪbʊ Guan ɔblíɪ abusuantɔ ání Nkonya é bʊ mʊ́tɔ́. Nɔtɔ́í tsú awanlínpʊ́ bámba ání bawánlín atɔ́ tsú Nkonya wɪ pʊ́ tɔ́á bɛblí.

Ikú nyɔɔsɪtɔ á, nosuná asʊ́nbi ání bʊ Nkonya ɔblítɔ fɛ́ɛ́. ɪkʊ á, ɔnɔ́ titriu bʊtɔpʊ́ bwɛ́ mʊ́ (Bʊtɛtí mʊ́ 'kɔ́nsonant' Abrɔfɔ́tɔ́). ɪkʊ é á, ɔmɛ titriu bʊtɔpʊ́ bwɛ́ mʊ́ (Bʊtɛtí mʊ́ 'váwʊl' Abrɔfɔ́tɔ́). Nawánlín mʊ́ fɛ́ɛ́. Ikú saasɪ anfɪtɔ á, nosuná asʊ́n ání ɪdɛ asʊ́nbi ání ɪbʊ Nkonyatɔ fɛ́ɛ́ suná ikú gyankpapʊtɔ. Nawánlín asʊ́nbi ɔtsantsan ání ɪbʊ Nkonyatɔ ání itsú Kwawu ntɛ́ɛ ɔblíɪ ɔtsantsantɔ.

Ikú naasɪtɔ á, nawánlín alía ɔnɔ́tɔ́ asʊ́nbi múa ɔmɛtɔ asʊ́nbi bʊtowíe abatɔ bwɛ́ asʊ́n Nkonyatɔ. Ní asʊ́nbi iwíé abatɔ á, ɪkʊ tɛtsɛ mʊ́ aba. Ikú nuusɪtɔ nosuná alɪá ɪtɛtsɛ.

Ikú siesɪtɔ á, nɛblí alɪá bʊtotsú ɔmɛ fʊ́á pʊ́ alɪá bʊtɛba mʊ́ asɪ (Bʊtɛtí mʊ́ 'tón' Abrɔfɔ́tɔ́). Nɛtrá suná alɪá Nkonya múa ɔblíɪ bámbá fɛ́ Kwawu ɪna ɔtsan, asʊ́n ánfɪtɔ.

Mʊ́ nyɔɔsɪtɔ á, nosuná ɔblíɪ ɔtsantsan ání lɛlɪan Nkonya, pʊ́ múa ɪna ɔtsan.

Asʊ́n tráhɛ gyí, ɔwanlínpʊ́ ɔkʊ lɔ́wanlín alɪá bʊtotsú ɔmɛ fʊ́á pʊ́ alɪá bʊtɛba mʊ́ asɪ. Támɛ asʊ́n bʊ mʊ atɔ́ wanlínhé amʊ wɪ. Ikú saasɪtɔ á, nawánlín alɪá ɪhíɛ́ igyi.

English Translation:

This paper is about the Nkonya language, particularly about the letters and sounds that Nkonyas use when they speak Nkonya. I have divided this paper into six parts, with three appendices.

In the first section I tell where the Nkonya traditional area is, and I list the other languages in the Guang language family of which Nkonya is a part. I also discuss available works on Nkonya by other researchers.

In the second section, I describe the sounds of the Nkonya language and how they are written. These include sounds made mostly made in the mouth (consonants), and made mostly in the throat (vowels); these are listed exhaustively. In the third section, I give examples of all the sounds of the letters in Nkonya. I indicate the different sounds and letters in Nkonya that are borrowed from Twi or other languages.

In the fourth section I describe how consonants and vowels come together to make words in Nkonya. When some sounds come together they cause changes in adjacent sounds. This is described in the fifth section.

In the sixth section, I indicate how the "voice" (tone) is raised and lowered. I also tell how this process differs in Nkonya from the way that it occurs in other languages like Twi.

In the second appendix I indicate similarities and differences between Nkonya and other related languages. In the third appendix, I correct a previous writer's transcription of tone on Nkonya nouns.

(A more literal translation of this short Nkonya text appears as Appendix A.)

THE PHONOLOGY OF NKONYA

CONTENTS

Acknowledgements

This paper has been in process in fits and starts for many years. The number of people that have rendered assistance in its production exceeds my memory limitations.[*] There are however, a number of people who stand out.

First and foremost is Nana Bulu, God Almighty. He created the Nkonyas and the Nkonya language. He has given the strength for us to do this.

Jim Lear assisted with early versions of this paper. He and his wife Sheryl also helped us settle into Nkonya and provided friendship and mentoring.

Dr. Tony Naden provided useful advice in the final stages of preparation of this paper.

Emmanuel Latse of Wurupong has rendered invaluable assistance. He polished the Nkonya in the Nkonya Introduction. He checked the tone and presence or absence of glottal stops in most of the data. The majority of the sound files that accompany the electronic version of this paper are his voice.

The late M. Y. Opoku of Wurupong was given the responsibility of overseeing our work by Nana Kwadwo Asiakwa II, his elders and the people of Nkonya-Wurupong. He provided invaluable help and advice. He also gave invaluable assistance in the original acquisition of the Nkonya word list. He is sorely missed. *Papa, Gyɔwɪ!!*

Ignatius Ogyamkpa of Wurupong was our major language assistant in our early years in Nkonya and has continued to provide valuable correction and assistance. Mrs. Doris Adu also has provided language data assistance.

Joseph Goodways Kudjo of Akloba and Foster Ofori of Ntsumuru have been especially helpful with dialect differences between North and South Nkonya. Mrs. Theresa Sromany of Ahenkro and Ella Abotsi of Ntsumuru provided the utterances for the Southern dialect sound files.

My wife Katie has been a source of constant encouragement and strength.

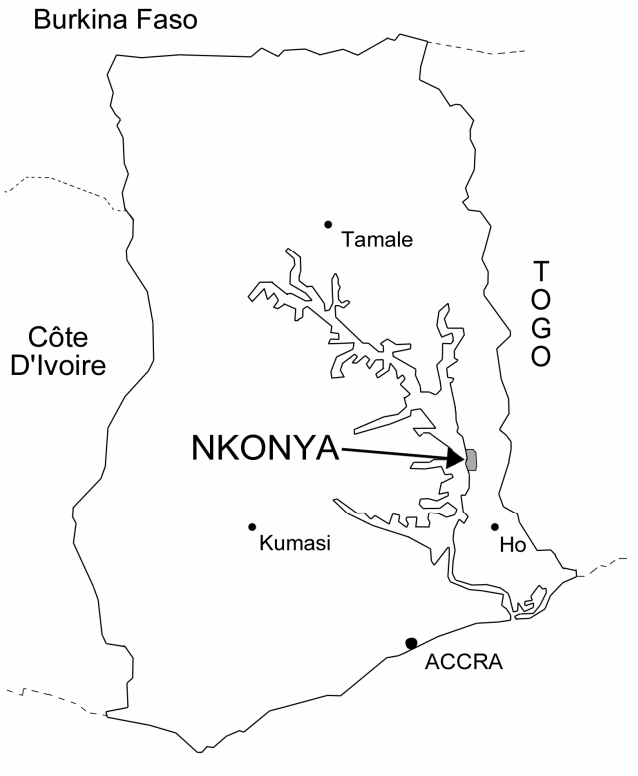
Nana Kwadwo Asiakwa II, his elders and the people of Nkonya-Wurupong, especially our landlady, Mrs. Doris Afrim have provided very generous hospitality and support over the years.

Nana Okotor Kofi II, his elders and the people Nkonya-Ahenkro have also supported our work in Nkonya.

Mlɪ fɛ́ɛ́, mlɪlabwɛ́ atɔ́-eee!
Thank you to you all!

[*] Provision of assistance does not imply responsibility for content. Any errors and omissions are the responsibility of the author.

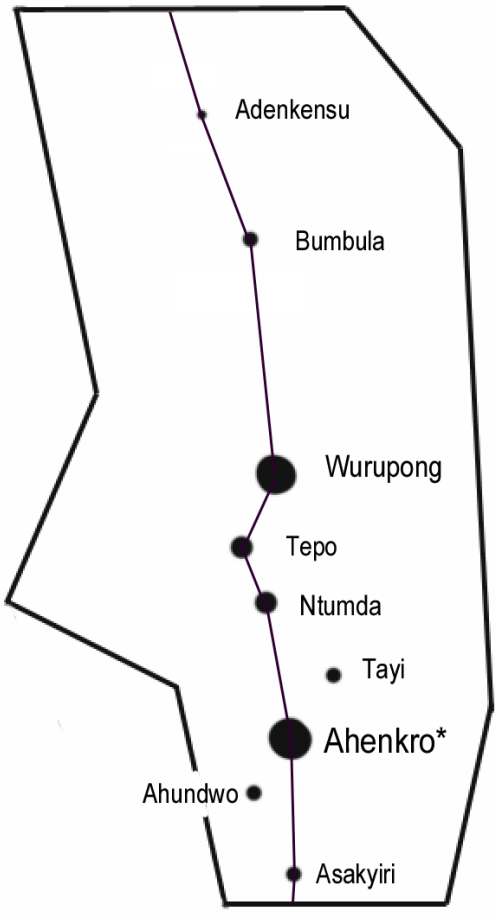
Language Maps



Nkonya Within Ghana

The Communities of Nkonya

Along the Kpando – Worawora Road



* The Community labelled Ahenkro is comprised of the towns of Akloba, Ahenkro, Ntsumuru and Kadjebi.

1 Introduction

Nkonya is a North Guang language in the Guang branch of the Volta-Comoé language group of the (New) Kwa branch of Niger-Congo (Stewart 1989). Figure 1, taken from Snider (1990a) shows its relationship to other Guang languages:[1]

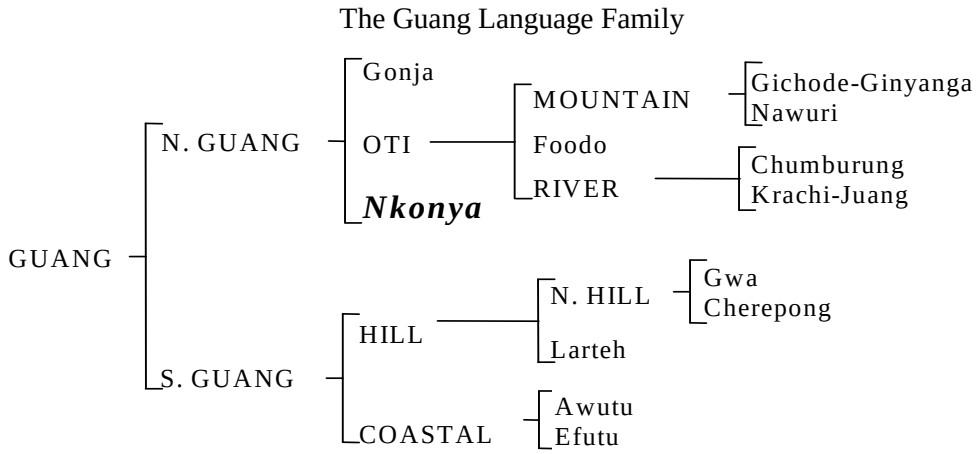


Figure 1

Foodo is spoken around Séméré, Benin and Tschumbuli, a dialect of Chumburung, is spoken near Savé, Benin. All the other Guang languages are spoken in Ghana (with a few Guang communities in bordering areas of Togo and Côte d'Ivoire) in an area roughly semi-circular in shape to the south, east and north of the Akans. See Kropp-Dakubu (1988) for a map. Appendix B is a chart showing the Nkonya's genetic relationship to surrounding languages and language families.

In the language itself, the language name is *Nkunyá* [ŋ̀kʊ̀ɲáʔ][2]. A single speaker is an *Okunyáyin* [ò kʊ̀ɲáyî ʔ] with the plural being *Nkunyáfɔ* [ŋ̀kʊ̀ɲáfɔ̀]. The land where they live is also called *Nkunyá* [ŋ̀kʊ̀ɲáʔ]. They live mainly in about 13 towns in the Volta Region, bordering on Lake Volta, between 7° 5′ N and 7° 17′ N and between 0° 15′ E and 0° 22′ E. This is an area along the Kpando-Worawora road from about 11 km north of Kpando up to (but not including) Kwamekrom, 34 km north of Kpando.

There are about 20,000 people in the Nkonya area, of whom approximately 11,000[3] speak Nkonya as their first language. The majority of the non-Nkonya residents speak Ewe. The high proportion of non-Nkonya speakers to Nkonya speakers is a recent phenomenon. There

[1] The recent documentation of Nkami, a sister language to Nkonya, has produced evidence that Nkonya may be a Southern Guang language (Peacock, to appear). It might thus be possible to propose Nkonya-Nkami as a subgroup of South Nkonya at the same level as Hill and Coastal sub-groups. However, throughout this paper I have followed the established classification and written of Nkonya as a Northern Guang language.

[2] The phonetic form used here and throughout is fairly broad. With regard to tone, downstep is not indicated. Nasalization on vowels following nasals is not marked. As well, phonetic [ʔ] before initial vowels is not marked, see section 2.4.1.1.

[3] The number of Nkonya speakers is based on estimated percentage of Nkonya speakers on a community by community basis. This estimate is compatible with the data from the 2000 Census, for which 25,599 people self-reported their ethnic identity as "Nkonya," and of these 13,085 were in the Volta Region.

are a large number of Nkonyas living outside Nkonya, perhaps as many as live in the traditional area. Most live in the larger urban centres of Ghana.[4]

There are elementary schools in all the Nkonya towns, and junior secondary schools in most towns. There is a secondary school in Nkonya-Ntumda.

Bilingualism in Akan and Ewe is high among Nkonyas. This is due to three factors: the relatively high level of formal education, the large number of Nkonyas living outside of Nkonya, and the large number of non-Nkonyas living in Nkonya. There are not many non-Nkonyas who speak Nkonya as a second language.[5] There is much lexical borrowing from Akan and a lesser amount from English and Ewe.

There are two mutually intelligible Nkonya dialects. The Northern dialect is spoken in Wurupong and towns north of it; the Southern dialect is spoken from Tepo to the south end of Nkonya.[6] Dialect differences are primarily morphological and lexical.[7] Phonological differences are discussed in the relevant sections of this paper. Elderly Nkonyas report a greater mixing of the communities in recent years, and with greater communication and intermarriage between the dialect communities, it would appear that the dialects are merging.

Previous publications regarding Nkonya include Reineke (1972), Stewart (1966) and Dolphyne and Kropp Dakubu (1988). Snider includes Nkonya in his Guang comparative studies, i.e. Snider (1988, 1989a, 1990c, 1990d). He uses data from Stewart (1966) for his analysis. Appendix C corrects some errors in Snider (1990d).

In addition to material on Nkonya phonetics and phonology, Reineke has sections on the structure of nominal lexemes, the structure of verbal lexemes, and syntactic structure. In her analysis of the phonology, Reineke posits a seven vowel system and does not distinguish either /ɪ/ from /e/ or /ʊ/ from /o/. She treats /dʷ/, /hʷ/, /kʷ/, and /tʷ/ as phonemes. My analysis (see Figure 2) has added to this inventory. She also posits retroflexed /ɖ/ and non-retroflexed versions of /d/. Reineke provides no tonal data. Stewart (1966) provides raw phonetic data in the form of a wordlist of 800 words, however, his verbs are not marked for tone, and /ʔ/ is not marked in his data. Both Reineke and Stewart documented the Southern dialect only. Peacock (in preparation) is a re-publication of Stewart's list with corrections and notes.

[4] There are reported to be Nkonya speakers in some communities on the west side of Lake Volta, in the Afram Plains area. Information on the size of these communities and the dialect differences, if any, in their speech has not been collected. There are also more recent migrant settlements between Kadjebi Akan and Nkwanta, especially along the road to Papasi.

[5] For socio-linguistic reasons, this statement is less true of Kotokoli and other northerners living in Nkonya than Ewe and Akan speakers living in Nkonya.

[6] There is actually a dialect continuum, with Asakyiri, Tayi and Tepo having the strongest Southern dialects. Ntumda, although not the northernmost town in the Southern dialect zone, is closest to the Northern dialect. There is no significant dialect variation within the Northern dialect area.

[7] More information on the non-phonological differences between the dialects is available in Nkonya Orthography Committee (1998).

Inventory of Segmental Phonemes

2.1 Consonant Inventory

Nkonya has a total of 33 consonant phonemes at six places of articulation.

CONSONANTAL PHONEMES

	labial	alveolar	(alveo-) palatal	velar	labio-velar	laryngeal
Voiceless plosive	p pʷ[8]	t	tʃ[9] tʃʷ	k kʷ	kp	ʔ
Voiced plosives	b bʷ	d dʷ	dʒ (dʒʷ)		(gb)	
Voiceless Fricatives	f fʷ	s sʷ				h (hʷ)[10]
Lateral		l (lʷ)				
Flap		r[11]				
Nasals	m mʷ	n	ɲ (ɲʷ)	ŋ		
Glides			y	w		

Figure 2

A brief inspection of the consonantal phoneme table above (*Figure 2*) shows that there are a number of 'missing' phonemes, including /g/ and /v/, which also do not occur in other Northern Guang languages. The voiced labio-velars do not exist (/ŋm/)[12] or are rare (/gb/). This is in contrast with other Northern Guang languages.

Examples of these phonemes with evidence of contrast are given in Section 3.

2.2 Vowel Inventory

Nkonya, like Akan and other Tano languages, has a nine vowel system with vowel harmony based on the attributes of Advanced Tongue Root.

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[8] See section 4.1.2.2 for discussion of interpretation issues regarding the phoneme status of labialized consonants.
[9] This phoneme is subject to dialect variation. See section 2.4.1.1 for details.
[10] This phoneme is not attested in native Nkonya words, however, Akan loan words with /çʷ/ are often pronounced [hʷ], e.g./çʷɪ:/ → [hʷí:] "nothing", /ahuçʷɛ/ → [ahùhʷɛ́] "mirror"
[11] See section 4.1.2.4. for discussion of possible interpretations of the status of /r/.
[12] For reasons of typographical convenience, I have omitted the ligature on t͡ʃ, d͡ʒ, k͡p, g͡b and ŋ͡m. None of these are consonant clusters in Nkonya. Similarly, a tone mark on ŋm̀, is marked only on one character. Likewise, I have symbolized the alveolar flap with [r] rather than the more phonetically precise symbol [ɾ].

VOCALIC PHONEMES

	-Round		+Round	
	+ATR	–ATR	+ATR	–ATR
high	i	ɪ[13]	u	ʊ
mid	e	ɛ	o	ɔ
low		a		

Figure 3

The articulatory characteristics of the feature Advanced Tongue Root (ATR) are discussed in section 2.4.3.3 below.

All vowels have phonemically long counterparts.

All vowels also have phonemically nasalized counterparts. In medial syllables, a homorganic nasal is epenthesised. See section 5.1.4 below for details.

Examples of these phonemes with evidence of contrast are given in Section 3.

Extrasystemic Phonemes

A brief inspection of the Consonantal Phoneme Chart, Figure 2, reveals that voiced fricatives /z/ and /v/ and the voiced velar stop /g/ do not occur as phonemes in regular Nkonya words, but they are pronounced where they occur in words borrowed from Ewe and English. This is similar to other Guang languages. Other extrasystemic phonemes include /ç/ and /çʷ/, which occur frequently in words borrowed from Akan. These are sometimes changed by Nkonya speakers to /h/ and /hʷ/ respectively.

For the sake of completeness[14], /ǁ/, the alveolar lateral click occurs in [ǁǁǁ][15] which is uttered by a listener as expression of disagreement or disapproval, often accompanied by a shake of the head, in much the same way [ʔḿʔm̀] is used in English.

2.3 Suprasegmentals

Nkonya has high and low tones which contrast, with tonal sandhi producing multiple phonetic tone levels. See section 6 for details. The contrast between high and low tones is illustrated by the minimal pair [ì-fà] ‘shelter for yams’ and [ì-fá] ‘grass’.[16] I have indicated high tone with [á], low tone with [à], high falling tone

[13] The phonetic value of /ɪ/, /ʊ/, /ɛ/, and /ɔ/ vary from the phonetic value of these phonemes in English. See section 2.4.3.3 for details.

[14] and entertainment

[15] some speakers pronounce this [|||||] using a dental click /ǀ/.

[16] The second syllable in [ì-fà] and the first syllable in [ì-fá] ‘grass’ are actually lowered H tones, see section 6.6. Other than in that section I have not differentiated between L and lowered H tones.

with [â], low falling tone with [a̰ʔ], and a low rising tone with [ǎ]. Tone is discussed in more detail in section 6.

2.4 Description of Phonemes

2.4.1 Consonants

Many consonants have labialized and non-labialized versions, see section 4.1.2.2 below for details.

2.4.1.1 Voiceless Plosives

Voiceless stops are pronounced with varying amounts of aspiration. The voiceless bilabial stop is /p/. The voiceless alveolar stop is /t/. The velar stop is /k/. The labio-velar stop is /kp/. The voiceless alveopalatal affricate is /tʃ/[17].

The voiceless alveolar, alveopalatal, and velar plosives are the locus of the major phonological difference between the two dialects[18]. In an innovation in the Southern dialect, the North Guang *tʃ has changed in many places, but not universally[19] to /ts/ (/ts/ does not occur in most other Guang languages[20]). [tʃ] occurs as an optional allophone of /k/ before high front vowels. For example, in /ɛ-tʃʊŋkɪ/ "mosquito", /tʃ/ is realized as [ts], and /k/ is realized as [tʃ] to produce [ɛtsʊntʃɪ]. C.f. [ɔtʃʷɪŋkɪ] in the northern dialect (The ɔ/ɛ change in the noun class marker is an unrelated morphophonemic dialect difference).

As a phoneme, the laryngeal plosive /ʔ/ (glottal stop) occurs almost exclusively at the end of a word before a pause[21]. The only exceptions are certain idiophones e.g. /ʔóʔò/ "no", and /ʔɛ̀hɛ̂ː/[22] "yes (emph.)."

Phonetically, [ʔ] also occurs in front of word initial V syllables that occur at the beginning of utterances and post-pausally. It is much less pronounced than when it occurs phonemically as mentioned in the previous paragraph. [ʔ] also has tonal significance; a word-final syllable bearing two different tones will have a glottal stop when pronounced before a pause. As well, a final syllable with L tone and a /ʔ/ coda will have a have a distinctive falling tone contour.

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[17] The alveopalatal stops /tʃ/ and /dʒ/ are affricated, and have been included among the stops for our analysis.

[18] There is also a slight difference in rounding spread see Section 5.2.2 for details.

[19] Exactly what is the allophonic conditioning for the variation between [tʃ] and [ts], and between [kɪ] is [tʃɪ] unknown. It is subject to some dialect variation within the Southern dialect community.

[20] This innovation may have spread from Larteh, which alone among the Guang languages has changed Proto-Guang *tʃ to /ts/. Nkonya tradition states that the Nkonyas migrated to their present area from Larteh. If the change has been borrowed from Larteh, it would show that the North and South dialect communities were separate when they were in contact with Larteh. If the borrowing of this feature occurred before the two dialect communities split, it should be a shared innovation rather than restricted to the South dialect. The question of whether the two communities split before or after they came to their present area is a matter of historical debate between the two communities; see Republic of Ghana (1972).

[21] This may be the result of an apocope process similar to what Snider (1986) describes for Chumburung. However, in Nkonya, unlike Chumburung, the glottal stop has no effect on vowel coalescence.

[22] This word also has variants /ʔɪ̀hɪ̂ː/ and /ʔm̀hm̂ː/

2.4.1.2 Voiced Plosives

Nkonya has voiced plosives[23] at the bilabial /ɓ/, alveolar /ɗ/, alveopalatal /ɗʒ/, and labio-velar /gb/ points of articulation. The voiced alveolar stop /ɗ/, is slightly retroflexed.[24]

The voiced labio-velar stop /gb/ is relatively rare. When it occurs in some ideophones it is subject to dialect variation. For example, the northern dialect has /ògblô:ʔ/ "ritual story beginning" and /gbógbôʔ/ "a type of tree"; In the southern dialect these are respectively /ògplôʔ/ and /kpókpôʔ/. There are other words, however in which /gb/ occurs in both the northern and southern dialects, for example, /ò-klèŋmgbə̀ʔ/ "type of shrew" and /ògbə̰̀ʔ/ "red headed lizard".

2.4.1.3 Voiceless Fricatives

Nkonya has three voiceless fricatives: a labio-dental /f/, an alveolar /s/, and a laryngeal /h/.

2.4.1.4 Liquid

The voiced alveolar lateral is /l/.

2.4.1.5 Flap

The voiced alveolar flap is /r/. This sound differs from /ɗ/ in that in /r/ the amount of voicing is reduced and although the airstream is blocked, it is blocked for a much shorter period of time. The distribution of /ɗ/ and /r/ and possible allophonic status between the two segments is discussed in section 4.1.2.4.

2.4.1.6 Nasals

The voiced bilabial nasal is /m/. The voiced alveolar nasal is /n/. The voiced alveopalatal nasal is /ɲ/. The voiced velar nasal is /ŋ/, which is relatively rare. There is also a word-initial syllabic nasal and a epenthesised syllable-final nasal, see section 4.1.1. These are homorganic with the following consonant; see sections 5.1.1 for details.

2.4.2 Glides

There are two glides in Nkonya, a palatal /y/, and a velar /w/.

2.4.3 Vowels

2.4.3.1 Overview of Vowels

Nkonya has nine vowels which can be differentiated from one another on the basis of three criteria: height, rounding and tongue root position.

The height of a vowel is either high, mid, or low.

[23] Word initially, as might be expected, voiced stops are devoiced and the voiced / voiceless distinction is actually a distinction in aspiration. Throughout this paper, the phonetic transcription used does not mark this aspiration.

[24] Reinecke (1972) p. 16 posits a contrast between retroflexed /ɖ/ and plain /d/ alveolars voiced plosives (as in Ewe). She does not give contrasting examples and the only example of the plain alveolar in her data is /adegble/ "fetish drums", which, in my data, is slightly retroflexed.

As in most Niger-Congo languages, all rounded vowels are also back. The low vowel /a/ is central; non-low, unrounded vowels are front.

2.4.3.2 Markedness in Rounding

Vowel systems often use the front/back differentiation to distinguish vowels, but the rounded/unrounded distinction seems to be primary in Nkonya, the front/back distinction secondary.

Vowels in pre-verbal particles change from front/unrounded to back/rounded on the basis of rounding in the following consonant; see section 5.2.2. As well, additional evidence that rounding is primary and front/back distinctions are secondary presents itself in the process of consonant labialization (section 4.1.2.2). When a back rounded vowel is deleted between a consonant and a front vowel, the feature [round] is retained on the consonant, but the feature [back] is lost.

2.4.3.3 Advanced Tongue Root

Non-low vowels in Nkonya are marked by the presence or absence of Advanced Tongue Root (ATR). Ladefoged (1975:203) describes the articulatory mechanisms involved in ATR in Akan, which also displays ATR. It is anticipated that similar mechanisms are involved in Nkonya[25]. The feature he has called "wide", I have called +ATR. Ladefoged states:

> *For example, in Twi (a West African language spoken mainly in Ghana) the two sets of vowels that operate in the vowel harmony sets differ mainly in the width of the pharynx. In the one set there are wide vowels, in which the root of the tongue is drawn forward so that the part of the vocal tract in the pharynx is considerably enlarged. In the other set there are narrow vowels, in which there is no advancement of the tongue root.*

Of particular note in comparison with English is the fact that the ATR distinction between Twi /i/ and /ɪ/ does not vary the height of the vowel, as it does between English /i/ and /ɪ/. Ladefoged continues:

> *In English there are no pairs of vowels that are distinguished simply by one being wide and the other being narrow. But this aspect of vowel quality does operate to some extent in conjunction with variations in vowel height. The high vowels [i] and [u], as in "heed" and "who'd," are wider than the mid high vowels [ɪ] and [ʊ], as in "hid" and "hood."*

Snider (1984) contains descriptions of ATR in Chumburung with citations of other phonetic descriptions of ATR.

2.4.3.4 High Unrounded Vowels

There are two high unrounded vowel in Nkonya, +ATR /i/ and –ATR /ɪ/.

[25] Casali states that ATR mechanisms may vary from language to language, perhaps even from speaker to speaker. (Casali, personal communication).

2.4.3.5 Mid Unrounded Vowels

There are two mid unrounded vowels, +ATR /e/ and –ATR /ɛ/.

2.4.3.6 Low Vowel

The low vowel is /a/. It is –ATR, but is not subject to the same Morpheme Structure Rules as non-low –ATR vowels. When it precedes a syllable with +ATR, it has the allophone [ɜ][26] See section 4.3.

2.4.3.7 Mid Rounded Vowels

There are two mid rounded vowels, +ATR /o/ and –ATR /ɔ/.

2.4.3.8 High Rounded Vowels

There are two high rounded vowels, +ATR /u/ and –ATR /ʊ/.

[26] This allophone is difficult to hear and has not been used in the phonetic transcriptions throughout this paper, except where a distinction is being drawn between the two allophones.

3 Evidence of Phonemic Contrasts

3.1 Consonants

	[p]		[b]	
Initial	[pɛ́ʔ]	“ripen”[27]	[bɛ̀-]	“come in order to”
	[pía]	“carry (not on the head)”	[bía]	“break”
	[pítí]	“swim”	[bítí]	“pull”
Medial	[pàpa̰ʔ]	“fan”	[bàba̰ʔ]	“termite”

	[p]		[pʷ]	
Initial	[pɛ́ʔ]	“ripen”	[pʷɛ́ʔ]	“sculpt”

	[p]		[t]	
Initial	[pɛ́ʔ]	“ripen”	[tḛʔ]	“stalk”
	[púʔ]	“take”	[túʔ]	“meet”
Medial	[pɛ́pêʔ]	“red”	[tɛ́têʔ]	“scratch the ground”
	[tápú]	“feel”	[tàtì]	“cloth”

	[tʃ][28]		[dʒ]	
Initial	[tʃa̰ʔ]	“dance”	[dʒa̰ʔ]	“trace”
	[tʃḭːʔ]	“gossip”	[dʒì]	“eat”
Medial	[tʃàtʃa̰ʔ]	“dance all over”	[dʒàdʒa̰ʔ]	“bat”

	[tʃ]		[tʃʷ]	
Initial	[tʃɛ̰ʔ]	“change”	[ì-tʃʷɛ̰ʔ]	“fist”
Medial	[ɔ̀-tʃìʔ]	“woman”	[ɔ̀-tʃʷîʔ]	“he should toss”

[27] Because of H tone lowering (see section 6.6), differentiating tones and indicating the pre-pausal /ʔ/ is not possible in all grammatical forms. Counterintuitively, the form of a verb in these examples and throughout is the perfect form with no direct object (or with a fronted direct object in the case of transitive verbs) rather than the perfective or the command form. E.g., /dʷɛ́ʔ/ as in /à-là-dʷɛ́ʔ/ “He has loved ”, rather than /dʷɛ̀/ as in /ɔ̀-lɔ̀-dʷɛ̀ mù/ “He loved him or /dʷɛ̀/ as in /dʷɛ̀ mù/ “Love him!”. Some verbs (E.g. /dɛ́/ “hold”) are not inflected for tense-aspect. The tone on these has been determined from other inflections).

[28] The Southern variant of the phoneme /tʃ/ is /ts/, see section 2.4.1.1 for details.

	[b]		[d]	
Initial	[bà]	“come”	[dáʔ]	“hit”
	[bɛ̀-]	“come in order to”	[dɛ́]	“hold”
	[bíʔ]	“know”	[dí]	“lie down”
Medial	[bàbə̀ʔ]	“termite”	[dádâʔ]	“old”

	[b]		[bʷ]	
Initial	[bɛ̀-]	“come in order to”	[bʷɛ́ʔ]	“do, make”
	[bíʔ]	“blacken”	[bʷí:]	“open”
Medial	[ì-bíʔ]	“seed”	[ì-bʷì]	“stone”

	[t]		[d]	
Initial	[tálí]	“be able”	[dálîʔ]	“leave”
	[tíʔ]	“call”	[dí]	“lie down”
	[tá]	“finish”	[dáʔ]	“beat”

	[d]		[dʷ]	
Initial	[dɛ́]	“hold”	[dʷɛ́ʔ]	“love”

	[k]		[kp]	
Initial	[káʔ]	“cut”	[kpáʔ]	“shave”
	[kə̀ʔ]	“look”	[kpíʔ]	“sniff”
	[kíé]	“give a gift”	[kpíé]	“burp”
Medial	[dʒɔ́ŋká]	“squat”	[dʒā́ŋmkpá]	“lead”
	[yírákà]	“scatter people”	[ɔ̀tsàkpə̀ʔ]	“brush-tailed porcupine”

	[k]		[kʷ]	
Initial	[kɛ̀ʔ]	“lighten”	[kʷɛ̀ʔ]	“sprout”
	[kèbìʔ]	“child”	[kʷèbḭ̀ʔ]	“grinding stone”
	[kḭ̀ʔ]	“look”	[kʷíʔ]	“dig”

	[kp]		[kʷ]	
Medial	[ɔ̀-kpɛ̀ʔ]	“trumpet”	[ɔ̀-kʷɛ́ʔ]	“honey”

	[gb]		[kp]	
Initial	/gbógbôʔ/	“a type of tree”	[kpáʔ]	“shave”
Medial	/ògblôːʔ/	“ritual story beginning”	[kpákpá]	“duck”
	/ò-klèŋmgbɛ̀ʔ/	“type of shrew”	[dʒáŋmkpá]	“lead”
	/ògbɔ̀ʔ/	“red headed lizard”	[ɔ̀tsàkpà̰ʔ]	“brush-tailed porcupine”

	[hʷ]		[h]	
Initial	[hʷíː]	“nothing”	[híâ]	“need”
Medial	[ahùhʷɛ́]	“mirror”	[hɔ̀ʔ]	“buy”

	[p]		[kp]	
Initial	[pàpà̰ʔ]	“fan”	[kpákpá]	“duck”
	[pɪ́ɛ́ɪ́]	“scrape”	[kpɪ́ḛ́ʔ]	“burp”

	[m]		[n]	
Initial	[mà̰ʔ]	“doesn’t have”	[náʔ]	“walk”
	[mɪ́]	“my”	[nɪ́ʔ]	“if”
Medial	[mámâʔ]	“yawn”	[nànàʔ]	“old woman”
	[ì-mɔ̀ʔ]	“rice”	[è-nɔ́]	“mouth”

	[m]		[mʷ]	
Initial	[mɛ́ʔ]	“swallow”	[mʷɛ́ʔ]	“be full”

	[n]		[ŋ]	
Initial	[náʔ]	“walk”	[ŋ̀ʔ]	“disappear”

	[n]		[ɲ]	
Initial	[náʔ]	“walk”	[ɲá]	“get”
	[nàmbíʔ]	“toe”	[ɲàmb̀ʔ]	“worm”
Medial	[nànàʔ]	“old woman”	[náɲâʔ]	“nastiness”

	[l]		[r]	
Initial	[làkpà]	“bad deeds”	-----	
	[làkpáʔ]	“basket”(Northern dialect)	-----	
Medial	[ì-láʔ]	“behaviour”	[yírákà]	“scatter people”
	[kúlí]	“beg for”	[ɔ̀-tʃìrà]	“moon”.
	[klɛ̀ʔ]	“like”	[brɛ́]	“time”
	[ì-fú.lîʔ]	“corpse”	[è-sɛ̀rèb̀ʔ]	“finger”

	[w]		[y]	
Initial	[wáʔ]	“put on”	[yá:]	“send to”
	[wɛ̀ʔ]	“loose (palm fruit)”	[yɛ́ʔ]	“dissolve”

	[f]		[s]	
Initial	[fáʔ]	“cross”	[sáʔ]	“fetch (water)”
	[fìà̀ʔ]	“meet”	[síá]	“insult”
	[fóʔ]	“be wet”	[sɔ́ʔ]	“be flexible”
Medial	[fùfù]	“fufu”	[súsûʔ]	“think”
	[àɱfì]	“this”	[ànsí]	“eye”

	[f]		[fʷ]	
Initial	[fì̀ʔ]	“start”	[fʷíʔ]	“blow”
Medial	[ò-fǐ]	“shin”	[ò-fʷì]	“quail”

	[f]		[h]	
Initial	[fó˨˩ʔ]	“be wet”	[hɔ̀˨˩ʔ]	“buy”
	[fìà˨˩ʔ]	“meet”	[híâ˨˩ʔ]	“need”

	[s]		[h]	
Initial	[sìà˨˩ʔ]	“leftovers”	[híâ]	“need”
	[só˨˩ʔ]	“test, try”	[hɔ̀˨˩ʔ]	“buy”

	[s]		[sʷ]	
Medial	[ì-sì]	“dirt”	[ì-sʷí˨˩ʔ]	“height”

	[˨˩ʔ] *before a pause*		*No* [˨˩ʔ] *before a pause*	
Final	[bá˨˩ʔ]	“crack”	[bà]	“come”
	[dʒà˨˩ʔ]	“trace”	[tá]	“finish”
	[tú˨˩ʔ]	“emigrate”	[nú]	“hear”
	[nù˨˩ʔ]	“hear”	[sù]	“hear”
	[bí˨˩ʔ]	“know”	[dí]	“sleep”
	[kɔ̀˨˩ʔ]	“defecate”	[kó]	“fight”
	[kì˨˩ʔ]	“turn”	[dʒì]	“eat”
	[è-bḯḗ˨˩ʔ]	“snail”	[ò-bḯā́]	“thigh”
	[kèbì˨˩ʔ]	“child”	[kùtì]	“claw”
	[ì-fú˨˩ʔ]	“fear”	[à-fú]	“air”

	Ṇ (syllabic nasal)	
Initial	[m̩-blà]	“law”
	[m̩-fɔ̀]	“oil”
	[n̩-tsù]	“water”
	[ŋ̩-klà]	“blood”
	[ŋm̩-kpà]	“path”

3.2 Vowels

[i]

[ì-pù] “stomach”

[ì-bíʔ] “seed”

[ì-bú] “hut”

[ɪ]

[ì-pú] “forest”

[ì-bɪ̈ʔ] “arm”

[ì-bù] “mountain”

[i]

[è-líʔ] “funeral (Southern)”

[ĩ]

[è-lî̃ʔ] “poison (Southern)”

[ɪ]

[bíʔ] “know”

[ò-síʔ] “father”

[tíʔ] “call”

[ɪ̃]

[bɪ̃̈ʔ] “sew”

[ò-sɪ̀̃] “pain”

[tɪ̃̈ʔ] “cut apart”

[u]

[ì-pù] “stomach”

[ì-bú] “hut”

[túʔ] “migrate”

[ʊ]

[ì-pú] “forest”

[ì-bù] “mountain”

[túʔ] “meet”

[u]

[sù] “cry”

[wú] “die”

[ì-bú] “hut”

[ũ]

[sũ̈ʔ] “push”

[wũ̈ʔ] “see”

[ì-bű̃] “well”

[ʊ]

[dúʔ] “climb”

[fúʔ] “breathe”

[ʊ̃]

[dʊ̃̈ʔ] “more”

[fʊ̃̈ʔ] “reach”

[ɪ]

[klí] “tie”

[kɪ́ɛ́] “divide”

[e]

[klɛ̀ʔ] “like”

[kíé] “give gift”

[ʊ]

[búʔ] “be drunk”

[kúlí] “beg for”

[o]

[bɔ̃ʔ] “to stink”

[kósɪ̂ʔ] “yam mound”

[o]

[dʒɔ̀ʔ] “wait”

[õ]

[dʒɔ̃ʔ] “perch”

[ɛ]

[dɛ̀] “hold”

[fɛ́ʔ] “sell”

[ɔ]

[dɔ̀ʔ] “weed”

[fɔ́ʔ] “soak”

[ɛ]

[fɛ́ʔ] “sell”

[kɛ̀ʔ] “dawn (v)”

[ɛ̃]

[fɛ̃ʔ] “blow”

[kɛ́ː] “exactly”

[ɔ]

[bɔ̀] “come in order to”

[sɔ̀ʔ] “try”

[õ]

[bɔ̃ʔ] “crow”

[sɔ́ː] “just, only”

[a]

[dàʔ] “hit”

[sáʔ] “fetch (water)”

[háʔ] “give (Northern dialect)”

[ɔ]

[dɔ̀ʔ] “weed”

[sɔ̀ʔ] “try”

[hɔ̀ʔ] “take”

[a]

[ɪ̀-láʔ] “behaviour”

[làkpáʔ] “basket”(Northern dialect)

[ã]

[ɪ̀-lá̰ʔ] “deep gorge”

[làkpà] “bad deeds”

4 Phonotactics

4.1 Syllable Structure

4.1.1 Normal Sequences

Unambiguous Nkonya syllables take one of the following forms: Ṇ, V, Vʔ, VN, CV, CVʔ, CVm, CVN.

The **Ṇ** is the syllabic nasal, and it always has the same place of articulation as the following consonant; it is restricted to certain grammatical morphemes, and occurs only word initially. The **(C)Vm** sequence is not common, and is distinct from the VN, CVN and CCVN syllables. The **N** in a **VN**, **CVN** or **CCVN** syllable also always has the same place of articulation as the following consonant; it follows a nasalised vowel and is analyzed as being the result of epenthesis. See section 5.1.4 for details.

The **V** syllable pattern occurs word initially in certain grammatical morphemes, i.e. noun class markers, pronouns and nominalizers; it also occurs morpheme finally in polysyllabic morphemes, i.e. CV.V[29]. In the morpheme final position, there is a co-occurrence restriction such that when VV sequences occur, one of the two vowels will be high.

The glottal stop /ʔ/ at the end of Vʔ and CVʔ syllables is heard only only when the syllable occurs before a pause.

Examples of some of these syllable patterns are underlined below:

Ṇ			V (word initial)		
1 a.	[m̩-bɛ́]	"palm nut trees"	2 a.	[ò-báʔ]	"he is coming"[30]
b.	[n̩-dʒá]	"firewood"	b.	[è-líʔ]	"funeral (Southern)"
c.	[ŋm̩-kpà]	"paths"	c.	[à-yɔ́]	"We go"
d.	[ŋ̩-kɛ̀]	"days"			

V (morpheme final)			VN		
3 a.	[m̩-fú.ó]	"flour"	4 a.	[àm̩.fì]	"this"
b.	[bí.ê]	"bathe"	b.	[àn.sí]	"eye"
c.	[ò-pí.ó]	"sibling"			

[29] The question of whether these sequences are to be interpreted as CV.V or are CV.CV is discussed in section 4.1.2.5.

[30] The 3rd person singular animate subjective pronoun o-/ɔ- and the 3rd person singular animate objective/possessive pronoun mù are not marked for gender. Where there is no context to disambiguate them, I have glossed them here and throughout as 'he/him/his'.

CV			CV?		
5 a.	[bà]	“come”	6 a.	[dʒə̀ʔ]	“send away”
b.	[wú]	“die”	b.	[ì-fú.lîʔ]	“corpse”
c.	[yɔ́]	“go”			

CVN			(C)Vm		
7 a.	[bā̀m.bá]	“another”	8 a.	[bi.am]	“egusi seeds”
b.	[kə̀n.tə̀ŋm.kpà]	“shelter”	b.	[mím̂]	“sink”
c.	[dūŋ.ká]	“search”	c.	[súḿ]	“serve”

4.1.2 Problematic Sequences and Segments

4.1.2.1 Ambigous CC consonant clusters

CC consonant clusters occur ambiguously in CCV, CCVN, and CCV? syllables.

The second consonant in such a CC cluster is always [l] or [r], giving either [Cl] or [Cr] at the beginning of these syllables:

CCV			CCVN		
9a.	[klá]	“notify”	10 a.	[ò-plì̀m.bì]	“mortar”
b.	[m̀lì]	“you (pl)”	b.	[klə̀n.tì.də̀ʔ]	“rag”
c.	[brɛ́]	“time”	c.	[klə̀ŋm.kpà]	“raven”

CCV?		
11.	[klɛ̀ʔ]	“want”

It could be argued that these CC sequences have an underlying CVCV structure with deletion of the first vowel. In fact, this may be the diachronic source of these clusters.

Many phonetic Cr sequences can also be shown to be underlying CVC sequences, as a result of the processes described in section 5.2.5. E.g. /ɛ̀tínɛ́/ “place” is sometimes realized as [ɛ̀trɛ̄́].

However, there is other evidence to suggest that these sequences should rather be interpreted as CCV:

In the case of [l], with slow pronunciation of a word with the Cl cluster, a copy of the vowel following the [l] is sometimes epenthesised between the consonant and the

[l]. E.g. /blù/ “God” is realized in slow speech as [bùlù]. However, this vowel is probably epenthetic, because when the first C is not a stop, the first C becomes lengthened and no vowel appears between it and the [l]. E.g. /m̀lì/ is realized as [m̀:lì] in slow speech.

Furthermore, there are contrasting sequences in which the vowel is deleted in fast speech, but not in slow speech. E.g. /bílá/ “to be blackened” is [blá] in fast speech, and [bílá] in slow speech. This contrasts with /blâʔ/ “to tell”, realized as [blâʔ] in both slow and fast speech.

Additional evidence for considering ClV sequences as a single syllable occurs in reduplicative adverbs/adjectives. Reduplicative adjectives in Nkonya occur as a single CV(N) sequence repeated three times, e.g. [tʃòtʃòtʃò] “much” and [kḯŋkḯŋkḯ] “strongly”, or a CVCV sequence repeated three times, e.g. [dɛ́kɛ́dɛ́kɛ́dɛ́kɛ́] “full”.

The single CV(N) sequences can have an optional intensifier morpheme which lengthens the middle occurrence, e.g. [tʃòtʃò:tʃò] “very much” and [kḯŋkḯ:ŋkḯ] “very strongly”. CVCV type adverbs/adjectives are not subject to this morpheme. Instead, they are intensified by further reduplication, e.g. [dɛ́kɛ́dɛ́kɛ́dɛ́kɛ́dɛ́kɛ́dɛ́kɛ́].

Adjectives which have a ClV structure however, are lengthened by the intensifier morpheme e.g. [plíplíplí] “smooth” and [plíplí:plí] “very smooth”. This suggests that the central ClV is acting as a single syllable with a leading consonant cluster rather than as a CVCV with a deleted vowel.

Therefore, this evidence suggests that the ambiguous CC consonant clusters above should be interpreted as [Cl] and [Cr], which will add the following syllable patterns to the syllable inventory: CCV, CCVN, and CCVʔ.

4.1.2.2 Labialized consonants

It is possible to analyze labialized consonants as a Cw sequence, in which case I would add [w] to [l] and [r] as second consonants in the syllable-initial consonant clusters in the previous section. But the evidence below suggests that it is more appropriate to analyze labialized consonants as single segments.

An additional complication, however, is that many occurrences of C^w can be analyzed as deriving from CVV sequences, where the two vowels are the same height, and the first is rounded, the second unrounded. The reduplicated form of verbs that contain labialized consonants illustrates this analysis.

When a two syllable verb is reduplicated, the first syllable of the verb is the locus of reduplication. For example, [nátí] “to walk” [nánátî] “to walk all over” [sírí] “to run” [sísírî] “run all over” (The meaning of the reduplication morpheme is that the action occurs simultaneously in a number of places).

When a labialized consonant is reduplicated, there is a process, sometimes optional, sometimes obligatory, where the labialization is lost on the initial consonant, and the vowel is replaced by a rounded vowel. For example, [tʃʷɪ̰ʔ] "toss" and [tʃʊtʃʷɪ̰ʔ] "contribute", not *[tʃʷɪtʃʷɪ̰ʔ]; [kʷɛ̰ʔ] "sprout" and [kɔkʷɛ] "sprout all over", not *[kʷɛkʷɛ].

The question then arises as to whether in these cases the labialisation on the consonant is merely an allophone of an underlying vowel. Possible support for this analysis may be seen in the various transcriptions Reineke used for words which I have transcribed with a labialized consonant: some she has transcribed as separate phonemes, others as VV clusters. E.g. [bʷíː] "open" she listed as bui; [fʷíʔ] "wash" she listed as foe[31]; but [kʷíː] "bring forth" she listed as kwe. See Reineke 1972, pp. 115, 119 and 122.

All native Nkonya labialized consonants occur only before front vowels. Consonants are not rounded in front of VV sequences where the two consonants are of different height. E.g. [bɔ́ɪ́] "split" → [bɔ́ɪ́] not *[bʷɪ]. The environment for the labialized consonants is thus partially, but not completely, predictable.

Evidence from the way that Akan loans are phonemicized supports the analysis that occurrences of [Cʷ] are separate labialized phonemes. [Cʷa] sequences do not occur in Nkonya words. Rather we have [ʊa] as in [fʊ́á] "lift up". Words borrowed from Akan which have [Cʷa] are not re-phonemicized as [Cʊa[. For example, Akan [kʷàsɪà] "fool" is realised in Nkonya as [kʷàsɪà] not *[kɔ̀àsɪà] or *[kʊ̀àsɪa]. Unlike the Akan /ç/ which is phonemicized to /h/, [Cʷa] remains unchanged, suggesting that [Cʷ] is actually phonemic in Nkonya. This interpretation of separate labialized phonemes is taken in this paper.

4.1.2.3 Word Final [m]

The word final [m] may occur phonetically at the end of a clause when a word-final vowel is deleted (see section 5.2.4). It may also occur phonemically but such occurrences are rare.

4.1.2.4 The distribution of [r] and [d]

The distribution of [d] and [r] is such that they are almost in complementary distribution. The [r] generally occurs in environments where one would expect devoicing, and it could be analyzed as a less-stopped allophone of [d]. For example, following voiceless consonants as in: [è-sɛ̰̀rèbɪ̰̀ʔ] "finger"; [ɔ̀-tʃɪ̀rà] "moon".

Loans from other languages which contain [d] in non-morpheme initial positions are not subject to flapping. For example, [sìdì], "cedi (English)" → [sìdì], not [*sìrì]; [brɔ̀dɪ̀] "plantain (Akan)" → [blɔ̀dɪ̀], not [*blɔ̀rɪ̀].

Casali (1995:50) analyzes [d] and [r] in Nawuri as separate phonemes, but accounts for the differences in their distributions by appeal to a more abstract level of

[31] Remember that Reineke's vowel inventory merged /ɪ/ with /e/; and /ʊ/ with /o/.

representation permitted from the theoretical perspective of lexical phonology. From this perspective the two phonemes are not distinct at the more abstract lexical level where both are represented by *D*: after word-formation *D* becomes /r/ intervocalically in non-morpheme-initial positions, and any other occurences of *D* become /d/ by default. A similar analysis could be applied to [r] - [d] distribution in Nkonya.

In Nkonya the presence of a morpheme boundary is often diachronic rather synchronic. This results in many occurrences of an inter-vocalic [d] without the perceived morpheme boundary. For example, [wúdí] "porridge", [ŋwṳ̀ŋmkpódíkpódí] "tadpole".

These factors suggest that [d] and [r] are best analyzed as separate phonemes. In any case, in Nkonya, as in Nawuri, [r] and [d] are definitely regarded as different sounds and must have separate orthographic symbols.

4.1.2.5 CVV Sequences

Morpheme final V syllables following a CV syllable result in an ambiguous sequence CV.V. As stated above in 4.1.1 above, in CVV sequences in Nkonya one of the vowels is always high: either the first vowel is high, as in [m̀-fú.ó] "flour" and [bí.ê] "bathe" or the second vowel is high, as in [bɔ́.í] "split". Because of the presence of high vowels, such CV.V sequence can be interpreted as having an intervening glide, e.g. [m̀-fú.wó] rather than [m̀-fú.ó]; [bí.yê] "bathe" rather than [bí.ê]; [bɔ́.yí] rather than [bɔ́.í]; [ò-pí.yó] "sibling" rather than [ò-pí.ó]. This interpretation would result in a CV.CV syllable structure for these words.

In my data, I have only one example of a CVV sequence where neither vowel is high, [kpao:] "Never!", a loan from Ewe. It is pronounced without an intervening glide, i.e. [kpao:], not *[kpawo:]. As a loan word, and an ideophone at that, this does not constitute firm evidence, and the question of whether these sequences are CV.V or CV.CV cannot be firmly settled on this evidence. However in this paper such sequences are interpreted as CV.V.

4.2 Morpheme and Word Structure

As stated in section 4.1.1, with the exception of a few grammatical morphemes, V syllables occur only morpheme finally in polysyllabic morphemes.

The N̩ (syllabic nasal) occurs only as a separate morpheme and is found only word initially.

Syllable-final nasals occur only as a result of epenthesis, word medially in a syllable with a nasalised vowel followed by a C(C)V syllable. See section 5.1.4.

Labialized vowels occur only morpheme initially and only before front vowels.

4.3 ATR Vowel Harmony

Nkonya morphemes display vowel harmony based on the feature Advanced Tongue Root. All of the non-low vowels in a morpheme will be either +ATR or –ATR. The low vowel /a/ is –ATR, but may occur in the same morpheme with either +ATR or –ATR vowels.

4.4 The Extent of +ATR Spread in Verbal Constructions.

The +ATR feature[32] spreads leftward (see section 5.2.1). With different verbal and nominal constructions the +ATR spreads can include a number of morphemes.[33]

In the verb phrase, the extent of the phonological word includes the pronoun, the tense-aspect marker (TAM)[34] and the first verb. The following examples will illustrate this:

12 a. /ɔ̀-dɛ̀-wú/ → [ɔ̀dɛ̀wù] "He is dying"
"3S-CONT-die"

b. /ɔ̀-dɛ̀ fùfù dʒì/ → [ɔ̀dɛ̀fùfùdʒí] "He is eating fufu"
"3S-CONT fufu eat"

In example 12a above, the +ATR spreads from /wú/ onto /dɛ̀/ and /ɔ̀/. In 11b, the presence of the noun /fùfù/ blocks the ATR from spreading from /dʒì/ onto /dɛ̀/.

In the noun, +ATR spread spans the noun class prefix and the noun. If the diminutive suffix /-bì/ is present, it will also spread onto the stem and prefix. For example,

13 a. /ɔ̀-tù/ → [ɔ̀tù] "ladle"
"NC-ladle"

b. /ɔ̀-tù-bíʔ/ → [ɔ̀tùbíʔ] "spoon"
"NC-ladle-DIMINUTIVE"

In the case of nouns formed from verbs with nominalizing affixes, the noun class marker prefix is again affected. The +ATR spreads from the verbal root onto the noun class prefix, however the nominalizing suffix remains –ATR.

For example, with the agentive prefix-suffix pair /ɔ-X-pù/, +ATR will spread from a +ATR verb to the prefix changing /ɔ-/ to [o-]. Compare /púlá/ "bury" and /dɔ̀ʔ/:

14 a. /púlá/ → [púlá] "bury"
"bury"

[32] Note that only +ATR spreads, not –ATR.

[33] The extent of +ATR spread has been chosen as constituting the orthographic word, but whether or not this constitutes the phonological word is an open question.

[34] Some tense-aspect markers differ between northern and southern dialects. The perfective markers are /yɛ/ (north) and /lɛ/ (south). There is no difference between the two dialects in the ATR behaviour of tense-aspect markers.

b. /ɔ̀-púlá-pù/ → [ɔ̀pùlápú] “one who buries”
“NC-bury-AGENTIVE”

c. /dɔ̰̀ʔ/ → [dɔ̰̀ʔ] “farm (v)”
“farm (v)”

d. /ɔ́-dɔ̀-pù/ → [ɔ̀dɔ̂pù] “farmer”
“NC-farm-AGENTIVE”

The same process is illustrated with the locative prefix-suffix pair /ɔ-X-kpa/. Compare /tʃíá/ “sit” and /tʃà̰ʔ/ “dance”:

15 a. /tʃíá/ → [tʃíá] “sit”
“sit”

b. /ɔ̀-tʃíá-kpà/ → [ɔ̀tʃìákpá] “sitting place”
“NC-sit-LOCATIVE”

c. /tʃà̰ʔ/ → [tʃà̰ʔ] “dance”
“dance”

d. /ɔ́-tʃà-kpà/ → [ɔ̀tʃâkpà] “dancing place”
“NC-dance-LOCATIVE”

In the case of the reduplicative morpheme /-dʒi-/ “every”, it spans the noun reduplicated, For example:

16 a. /ɛ̀-kɛ̀/ → [ɛ̀kɛ̀] “day (Southern dialect)”
“NC-day”

b. /ɛ̀-kɛ̀-kɛ̀-dʒí-ɛ̀-kɛ̀/- → [ɛ̀kɛ̀kɛ̀dʒíɛ́kɛ̀] “every day”[35]
“NC-day-REDUP -every-REDUP”

In the case of noun-verb compound words, +ATR will spread from a +ATR verb onto the noun. For example:

17 a. /ì-tɔ́/ → [ìtɔ́] “thing”
“NC-thing”

b. /ɲá/ → [ɲá] “get”
“get”

c. /ì-tɔ̀-ɲá/ → [ìtɔ̀ɲà] “inheritance”
“NC-thing-get”

(See section 5.2.1.2 for a discussion of /ɲa/ as a +ATR syllable.)

[35] [ɔ̀kɛ̀kɛ̀dʒíɔ́kɛ̀] “every day” shows clearly that it is only +ATR that spreads, and not –ATR.

5 Phonological Processes

5.1 Processes Affecting Consonants

5.1.1 Nasal Assimilation

Whenever a nasal precedes another consonant it assimilates to the same point of articulation. That is, [ɱ] before /f/; [m] before /p/, /b/ and /m/; [n] before /t/, /tʃ/, /d/, /dʒ/, /s/, /l/ and /n/; [ŋ] before /k/, /g/ and /ŋ/; and [ŋm] before /kp/ and /gb/.

5.1.2 Syllabic Nasal Realized as Nasalized High Vowel

With some speakers, before /w/ and /h/, /N-/ is realized as a /ĩ-/ or /ĩ-/. For example:

18 a.	/ǹ-hɔ̂ʔ/ "1S-take"	→	[ɪ̀̃-hɔ̂ʔ]	"I should take"
b.	/ ǹ-wʊ̀̂ʔ/ "1S-see"	→	[ɪ̀̃wʊ̀̂ʔ]	"I should see"

5.1.3 Alveolar Consonant Flapping

Following the deletion of a vowel between voiceless and voiced alveolar consonants, described in 5.2.5, the voiced consonant becomes /r/.

For example, /ǹsɪ̀nɛ́/ → [ǹsrɛ́] "between"; /ɔ̀sʊ̀lʊ̂ʔ/ → [ɔ̀srʊ̂ʔ] "land". This process is optional and occurs in fast speech.

5.1.4 Epenthesis of Homorganic Nasal in Syllable Final Position

A nasalised vowel in a medial syllable followed by a CV syllable will have a nasal epenthesised. The nasal will be homorganic with the following consonant.

This rule could be expressed as a deletion rule, positing a CVN syllable with the trailing nasal homorganic to the following consonant. The syllable final nasal would have anticipatory assimilation causing nasalisation on the vowel. An additional rule would delete these nasals in word final positions.

In fact, a deletion rule is more accurate diachronically. Other North Guang languages maintain a word final /ŋ/, which has been deleted in Nkonya. For example[36], compare /dɜ̃̀ʔ/ "grow" with Chumburung *daŋ*, Krachi *daŋ*, Nawuri *daŋ*, Gikyode *saŋ* and Gonja *daŋ*; or /tsʊ̃̀ʔ/ "pass" with Chumburung *tʃʊ̀ŋ*, Krachi *tʃʊ̀ŋ*, Nawuri *tʃʊ̀ŋ*, Gikyode *tʃʊ̀ŋ*, and Gonja *tʃʊ̀ŋ*.[37]

5.1.5 Glottal Stop Insertion Utterance Finally

Some long utterances which end with morphemes that do not have final glottal stops will be terminated with glottal stop. These same morphemes will not have a final glottal stop in short utterances. For an example of this, see example 30 in section 6.3.

[36] The Chumburung, Krachi, Gichode and Gonja examples are from Snider 1989c.

[37] I have presented the epenthesis analysis as being primary not because of compelling evidence, but having written the analysis both ways several times, I decided that "The Moving Finger writes; and having writ, moves on" (Omar Khayyam, *Rubáiyát. Stanza lxxi*).

This process has not been extensively investigated. It seems to depend on the tone patterns of the final morphemes. It is probably speaker dependent and related to the amount of declination. See section 6.4 for a discussion of declination.

5.2 Processes Affecting Vowels

5.2.1 ATR Spread

As previously mentioned in section 4.4, The feature +ATR will spread from right to left.

5.2.1.1 /a/ blocks the spread of +ATR

The low vowel /a/, as stated above in section 2.4.3.6, has both +ATR [ɜ] and –ATR [a] allophones. However, +ATR spreading is blocked from spreading further leftward than a syllable containing /a/. This process is similar to other Guang and Tano languages including Akan[38]. Examples 19a and 19b illustrate this, compare them with examples 13b and 16b (shown again here), which demonstrate ordinary +ATR spread.

19a.	/ɔ̀-kpà-bí/ "NC-path-DIMINUTIVE"[39]	→	[ɔ̀kpàbí]	"forked stick"
13b.	/ɔ̀-tù-bíʔ/ "NC-ladle-DIMINUTIVE"	→	[ɔ̀tùbíʔ]	"spoon"
19b.	/ɔ̀-kpà-dʒí-ɔ̀-kpà/ "NC-path-every-REDUP"	→	[ɔ̀kpàdʒíɔ́kpà]	"all means"
16b.	/ɛ̀-kɛ̀-kɛ̀-dʒí-ɛ̀-kɛ̀/- "NC-day- REDUP-every-REDUP"	→	[ɛ̀kɛ̀kɛ̀dʒíɛ́kɛ̀]	"every day"

5.2.1.2 /ɲa/ and /dʒa/ are +ATR

The syllables /ɲa/ and /dʒa/[40] carry the +ATR vowel quality, causing any syllable which occurs before one of them to be a +ATR syllable: e.g. /púɲá/ "swell"; /kòɲa̰ʔ/ "black ant"; /ɔ̀-dʒá/ "fire". Compare this with, for example /ta/, which can occur with either +ATR syllables, e.g. /bìtáʔ/ "wedding ceremony" or –ATR syllable, /bìta̰ʔ/ "hand".

As well, the morphemes /ɲá/ "to get" and /dʒa̰ʔ/ "to chase" cause +ATR agreement in the verb phrase[41]. For example, /ɔ̀-tɛ̀-ɲá/ → [ɔ̀tɛ̀ɲá] "he habitually gets"; /ɔ̀-tɛ̀-dʒa̰ʔ/ → [ɔ̀tɛ̀dʒa̰ʔ] "he habitually chases". C.f. /ɔ̀-tɛ̀-tá/ → [ɔ̀tɛ̀tá] "he habitually finishes".

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[38] This is probably a defining characteristic of 9 versus 10 vowel systems with ATR vowel harmony.
[39] This derivation of this word is open to question, the +ATR spread blocking that it illustrates is not.
[40] Close phonetic study has not been done, but these may be phonetically [ɲɜ] and [dʒɜ]. I doubt that they are phonemically /ɲɜ/ and /dʒɜ/. I suspect that the +ATR characteristic is a result of palatalization.
[41] Examples 21a –c in Section 5.2.2 illustrate normal +ATR spread in the verb phrase.

Other syllables with /ɲ/ and /dʒ/ do not do this. E.g., /ɲópú/ “suckle” /ò-tɛ̀-ɲópú/ → [òtɔ̀ɲópú] “she habitually suckles”; /dʒósí/ “doze” /ò-tɛ̀-dʒósí/ → [òtɔ̀dʒósí] “he habitually dozes”.

5.2.2 Rounding Spread in the Verb Phrase

In the verb phrase, the perfective tense-aspect marker /-lɛ-/ (/-yɛ-/ in the Northern dialect), habitual tense-aspect marker /-tɛ-/and the future tense aspect /-bɛ́-/[42] are rounded before a syllable with a rounded consonant or vowel.[43]

The rounded consonant is one of the rounded variants detailed in Figure 2 or /w/. The rounded vowels are /o/, /ɔ/, /u/ and /ʊ/.

The ATR spread rule in described above in 4.4 combines with this rule to produce 4 variants of these markers. Here are some examples:

20. /ɛ/ → [ɛ] before –ATR; –Round:

a.	kʷ̀ʔ “look”	/ànì-lé-kʷ̀ʔ/ 1P-PERFECTIVE-look	→	[ànìlékʷ̀ʔ] “we looked”
b.	káʔ “cut”	/ǹ-tɛ̀-káʔ/ 1S-HABITUAL-cut	→	[ǹtɛ̀káʔ] “I always cut”
c.	fɛ́ʔ “sell”	/ò-bɛ́-fɛ̀ʔ à-tɔ́/ 3S-FUTURE-sell PL-thing	→	[ɔ̀bɛ́fɛ̀àtɔ́] “she will sell things”

21. /ɛ/ → [e] before +ATR; –Round:

a.	kíʔ “turn”	/ànì-lɛ́-kíʔ/ 1P-PERFECTIVE-turn	→	[ànìlékìʔ] “we turned”
b.	sí “stop”	/ǹ-bɛ́-sí/ 1S-FUTURE-stop	→	[nésì] “I will stop”
c.	klé “want”	/fù-bɛ́-klé à-tɔ́/ 2S-FUTURE-want PL-thing	→	[féklèàtɔ́] “you will want things”

22. /ɛ/ → [ɔ] before –ATR; +Round

a.	kɔ́ “fight”	/bù-lɛ̀-kɔ́/ 3P-PERFECTIVE-fight	→	[bùlɔ̀kɔ̀] “They fought.”

[42] In less careful speech the continuous aspect marker /-dɛ-/, which is irregular in other ways, will occasionally be rounded as well. Thus, rounding phenomenon would appear to be productive.

[43] As this process occurs only in the verb phrase, it should be considered a morphophonemic rather than a phonetic one. C.f. /ò-fɛ́-pú/ → [ɔ̀fɛ̀pú], [*ɔ̀fɔ̀pú] “seller”. This illustrates that similar processes do not occur in nominal constructions.

b.	kʷí: "give birth"	/ɔ̀-bɛ́-kʷí:/ 3S-FUTURE-give_birth	→	[ɔ̀bɔ́kʷǐ:] "She will give birth"
c.	tú? "meet"	/ì-tɛ̀-tú àmú/ INANIM-HABITUAL-meet them	→	[ì-tɔ̀-túámɨ́] "it meets them"
d.	wá? "put on"	/ɔ̀-tɛ̀-wá? à-tɔ́/ 3S-HABITUAL-wear PL-thing	→	[ɔ̀tɔ̀wá:tɔ́] "He wears things"

23. /ɛ/ → [ɔ] before +ATR; +Round

a.	kʷí? "dig"	/n-bɛ́-kʷí? ɔ̀-bɔ́/ 1S-FUTURE-dig hole	→	[nbɔ́kʷìɔ̀bɔ́] "I will dig a hole"
b.	bɔ̃̀ "stink"	/ì-bɛ́-bɔ̃̀/ INANIM-FUTURE-stink	→	[ìbɔ́bɔ̃̀] "It will stink"
c.	tú? "travel"[44]	/ɔ̀-yɛ̀-tú? ɔ̀-kpà/ 3S-PERFECTIVE-travel NC-path	→	[ɔ̀yɔ̀tùɔ̀kpà] "he travelled (Northern dialect)"
d.	wí "steal"	/bù-tɛ̀-wí à-tɔ́/ 3P-HABITUAL-steal PL-thing	→	[bùtɔ̀wíátɔ́] "they steal things"

In the Northern dialect of Nkonya, /kp/ functions as a rounded consonant. That is, it will cause rounding in the same way as /w/ or a consonant with rounding for example /dʷ/ or /kʷ/. This dialect variation is one that Ntumda, a Southern town, shares with the Northern speakers. Thus, the sentence (in standard orthography) *Ɔlɛkpa mí,* "He guided me" is pronounced [ɔ̀lɛ̀kpàmí] in most southern Nkonya towns. In Ntumda, it is pronounced [ɔ̀lɔ̀kpàmí], c.f. [ɔ̀yɔ̀kpàmí] in the Northern dialect.[45]

5.2.3 Nasalization of Vowel following Nasal Consonant

The vowel in a syllable that starts with a nasal consonant will be nasalized. The amount of nasalization is less than in a phonemically nasalized vowel.

Examples:[46]

24 a.	/mù/ 3S-OBJ/POSS.		→	[mũ̀] "his/him"

[44] This is an interesting morpheme. It means motion in which the end-point is in focus rather than the path. Without a direct object it means "hop" or "emigrate". With the direct object /à-tsùnɔ́?/ "saliva" it means "to spit".

[45] Ntumda speakers also frequently use the Northern /ɔ-/ noun-class marker variant of the /ɛ-/ vs /ɔ-/ noun-class marker dialect mentioned in 2.4.1.1

[46] This nasalization has been marked in examples in this section. In other sections, a broader transcription has been used, and this nasalization has not been marked.

b. /ɲɔ̀pú/ → [ɲɔ̃̀pú] “breast”
breast

5.2.4 Deletion of Clause Final /ʊ/

The phoneme /ʊ/, when preceded by an /m/, is deleted clause finally. If the /ʊ/ has a high tone it is shifted onto the /m/. The /m/ and any vowel before it is lengthened.

For example (see also 22c):

25 a. /ɔ̀-lɛ̀-lá yìbì ámù/ → [ɔ̀lɛ̀làyìbìá:m̂:] “He repaired
3P-PERFECTIVE-repair trap DET the trap”

b. /nɛ̀-tú àmú/ → [nɔ̀tùă:ḿ:] “I met them.”
1P-PERFECTIVE-meet 3P-DOBJ

5.2.5 Vowel Reduction Between Voiceless and Voiced Alveolar Consonant

High unrounded vowels are reduced or optionally deleted when they occur between a voiceless alveolar consonant and a voiced alveolar consonant. For example:

26. /sírí/ → [srí] or [sɨ́rɪ] “to run”

5.2.6 Vowel Coalescence: /a/ Deletion

Word final /a/ is deleted when followed immediately by a non-high vowel. This is an optional rule. The vowel that follows it will be lengthened in compensation for the lost vowel.

For example see the following underlined segments:

27 a. /ɔ̀-lɛ̀-dá ɔ̀-kpúnú/ → [ɔ̀lɛ̀dɔ̀:kpúnú] “He rested.
3S- PERFECTIVE-render rest (Northern dialect)[47]”

b. /à-là-dá ɔ̀-kã̀ʔ/ → [àlàdɔ́:kã̀ʔ] “He has beat gong-
3S- PERFECT-hit gong-gong gong.”

c. /ǹ-tá ó-nù-kpà/ → [ǹtó:nûkpà] “drinking bar”
NC-wine NC-drink-place

d. /àmbà è-bíá/ → [àmbè:bíá] “Amba’s stool
Amba stool (Southern dialect)”

5.2.7 High Unrounded Vowel Deletion

Word initial high unrounded vowels /i-/ and /ɪ-/ are deleted except when starting a clause, or in careful speech. For example:

[47] This example is using the Northern form of /ɔ̀-kpúnú/ “rest” but the Southern form /-lɛ̀́-/ PERFECTIVE Tense-Aspect marker.

28 a.	/mù ì-tʃìá-tó ì-mà àlɛ̀/ 3S NC-stay-thing 3I-not-good	→	[mùtʃìátómà:lɛ̀] “His behaviour is bad”
b.	/ì-tʃìá-tó/ NC-stay-thing	→	[ìtʃìátó] “behaviour”
c.	/ì-mà#àlɛ̀/	→	[ìmà:lɛ̀] “It is bad”

6 Tone

6.1 Introduction

The analysis of tone in this section is rather cursory.[48] Nevertheless, a few comments on the tonal characteristics of Nkonya are necessary.

Nkonya, like other Tano languages (specifically Akan), is a two tone language with contrast between Low (L) and High (H) tones. It also shares with them the phenomenon of downstep, although there are some significant differences in the exact manifestation of the phenomenon. Nkonya also shares with other Tano languages the phenomenon of High tone spread. Unique to Nkonya is the lowering of H tones. That is, under certain conditions some H tones are lowered to the same level as that of a L tone[49].

6.2 Contrastive High and Low Tones

Nkonya has two contrastive tone levels. Here are some examples that illustrate contrastive tones[50]:

	L	H
29 a.	[mù] "3rd person animate object/possessive pronoun"	[mú] "3rd person inanimate object/possessive pronoun"[51]
b.	[ò-plìmbì-ámù] "the mortar (Northern dialect)"	[ò-plímbì-àmù] "the pestle"
c.	[ì-fà] "yam barn"	[ì-fá] "grass"
d.	[à-fù] "lumps"	[à-fúʔ] "wind"
e.	[ò-lɛ̀-dìdà] "he fell down"	[ò-lɛ̀-dìdá] "he put on (a cloth)"
f.	[à-là-pà̰ʔ] "he has borrowed"	[à-là-pá̰ʔ] "he has missed"
g.	[à-là-nṵ̀ʔ] "he has drunk"	[à-là-nú] "he has heard"

[48] Phonological sketches on African languages tend to become sketchier when it comes to tone. The topics which receive only a cursory coverage in this section are tone patterns in the verbal system and in nouns. A paper on these topics, probably a non-technical spelling guide, is planned for the future.

[49] This implies that H tone on a syllable may not necessarily result in that syllable having a raised pitch in the utterance. Given that, we may want to think of H tone as referring to a pitch pattern anchored to that syllable, but affecting and being affected by pitch patterns on neighbouring syllables. H tone then becomes a short-hand for referring to the corresponding pitch pattern(s). Gory details of this legerdemain are omitted. (Otherwise, it wouldn't be legerdemain, would it?)

[50] In these examples, lowered H tones are marked as having L tone. See section 6.6.

[51] A frame that illustrates the contrast between these words is [nòwṵ̀mù] "I saw him" vs. [nòwṵ̀mú] "I saw it."

6.3 Example Sentence with Pitch Trace

Example 30 and its accompanying Figure 4 below illustrate some features of the tonal system of Nkonya. These features are discussed in greater detail in following sections. Figure 4 is a trace of the fundamental frequency of a spoken Nkonya proverb:

30. Ɔhaa tama pú bɪna súná mʊ wói ɔkpa.
"No-one uses his left hand to show the way to his house."[52]
/#ò-hà:##tàmà##pú?##bìnà?##súná##mù##wóí##ò-kpá/
[ò-hà: tàmà pú bína súná mù wóí ɔ́kpà?]
L1-------- H1--- L2 H2- L3 H3--- L4[53]

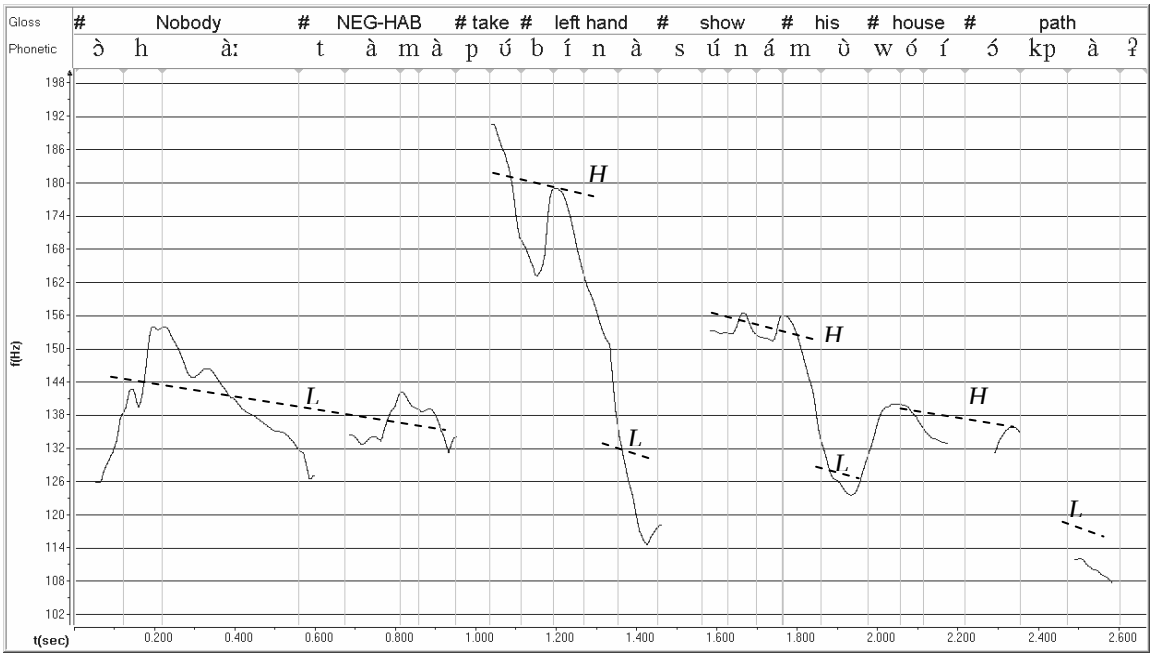


Figure 4

The dashed lines L1 through L4 and H1 through H3 show the tone levels. It should be noted that the placement of these tone level markers is a matter of judgement, and as such, is subject to more subtle bugs than the pitch trace, which is produced by a computer program[54].

6.4 Downstep and Declination

A well-documented tonal characteristic of Tano languages is the phenomenon of downstep. Like other Northern Guang languages, c.f. Snider (1990a) and Akan, c.f. Dolphyne & Kropp-Dakubu (1988:70), this phenomenon occurs in Nkonya. When a

[52] The meaning is "Don't speak evil of your own people."

[53] This utterance was spoken by Ignatius Ogyamkpa, a 30 year old male native to Wurupong. The pitch trace was produced by the computer program Speech Analyzer, (Summer Institute Linguistics. 2001. Speech Analyzer, Version 1.5.) The program is available at www.sil.org. The digitized sound file is available from the author.

[54] Of course, output of a computer program is a matter of judgement as well. It is just judgement more mechanically applied. This is a matter easily forgotten and worthy of further discursion but this is a paper on linguistics, not on epistemology or computing science.

sequence of High (H) and Low (L) tone segments occur each L segment triggers a lowering of subsequent H and L segments[55].

Following Snider (1990b) I would like to differentiate between automatic downstep and non-automatic downstep. In automatic downstep, the L tone is present in the surface form. In non-automatic downstep, the presence of a L tone must deduced from its effect on the following H tone. As is discussed below in section 6.8, non-automatic downstep does not occur in Nkonya.

The process of downstep is illustrated in Figure 4 above. The first H level, H1 is about 180 Hz, the H2 is about 154 Hz, and H3 is about 138 Hz. The L tone levels are L1, 140 Hz; L2, 132 Hz; L3, 127 Hz; and L4, 116 Hz.

The process of declination is different from and is in addition to the process of downstep. Declination is the process in which the pitch of an utterance lowers from the beginning to the end, even when the tone levels do not change. When a single tone level extends over multiple segments it gradually lowers. This can be seen in the way that tone levels L1 declines from about 144 to 134, H1 declines from 182 to 178 Hz, and H3 declines from 139 to 135 Hz in Figure 4 above.[56]

6.5 High Tone Spread

As is common in other Guang and Tano languages, in Nkonya a H tone will normally spread rightward to the first following L tone segment.

6.5.1 High Tone Spread in Noun Phrases

H tone spread occurs between a possessive pronoun and a noun:

31	Underlying Form		Surface Form	Meaning
a.	/mí dʒàdʒa̰ʔ/ 1S_poss bat	→	[mí dʒádʒa̰ʔ]	“my bat”
b.	/mí bàtɛ́/ 1S_poss chicken	→	[mí bátɛ̀][57]	“my chicken”
c.	/fú kɪ̀yàɪ̰ʔ/ 2S_poss dog	→	[fú kíyàɪ̰ʔ]	“your(sg.) dog”

It also occurs in a noun-noun possessive constructions. This can be seen in example 30 in section 6.3 where the H tone on /wóí/ “house” spreads onto the first syllable of /ɔ̀-kpà/ “path”. It is also illustrated in the following examples:

[55] Dolphyne and Kropp Dakubu (1988) do not mention the lowering of subsequent L segments following a downstepped H, in fact, their diagram shows all L segments at the same level. Snider (1990b) documents the lowering of L segments in other North Guang languages, specifically Krachi, and cites a claim by Clements (1983:172) this occurs universally.

[56] These similar phenomena have been the source of terminological confusion. What I have called downstep has also been called downdrift. What I have called declination has also been called downstep (and probably downdrift as well).

[57] The lowering of the H tone in the final syllable of /bàtɛ́/ → [bàtɛ̀] “chicken” is explained below in section 6.6.

32	Underlying Form		Surface Form	Meaning
a.	/ò-píó/ NC-sibling	→	[òpíó]	sibling
b.	/klàtìdàʔ/ rag	→	[klántìdàʔ]	rag
c.	/ò-píó klàtìdàʔ/ NC-sibling rag	→	[òpíó klántìdàʔ]	sibling's rag
d.	/klòtíʔ/ rat	→	[klòtíʔ]	rat
e.	/yàbí/ leg	→	[yàbì]	leg
f.	/klòtíʔ yàbí/ rat leg	→	[klòtí yábì]	rat's leg
g.	/ò-wú-pú/ NC-die-Agent	→	[òwùpú]	dead person
h.	/kɛ̀tɛ̀ʔ/ bag	→	[kɛ̀ntɛ̀ʔ]	bag
i.	/ò-wú-pú kɛ̀tɛ̀ʔ/ NC-die-Agent bag	→	[òwùpú kɛ́ntɛ̀ʔ]	dead person's bag

It occurs between a noun and a post-position. Following a H tone as in 33a-c the post-positions /tɔ/ "inside" and /su/ "on" are raised to H. Following a L tone (or a falling tone as in 33f & g) they are L.[58]

33	Underlying Form[59]		Surface Form	Meaning
a.	/wóí-tɔ/ house-inside	→	[wóító]	"household (lit. in the house)"
b.	/ì-bű-tɔ/ NC-well-inside	→	[ìbűntó]	"in the well"

[58] Actually they are lowered H (see section 6.6).

[59] The underlying tone of /tɔ/ and /su/ is problematic. They have the opposite tone of the final tone of the morpheme to which they attach. They are bound morphemes, so they have no citation form to determine their tone by themselves. The tone can be deduced from its effect on the tonal clitic /níʔ/ "DEMONSTRATIVE" (see section 6.6.3 for a discussion on how these tonal clitics function). That is, /tɔ/ and /su/ are L following a H tone. When 33a-c are followed by /níʔ/ they lower the tone on /níʔ/ producing [wóítónìʔ] "this is household"; [ìbűntónìʔ] "this is in the well" and [kántósúnìʔ] "this is on the chest". Following a L tone, /tɔ/ and /su/ are H. The H tone is lowered as described in section 6.6 but the presence of the H can be detected by its effect on a following /níʔ/ as in [kèntètòníʔ] "this is in the bag"; [òsùlútòníʔ] "this is in the ground"; [kèntèsùníʔ] "this is on the bag"; [òsùlúsùníʔ] "this is on the ground". In any case, H tone spreads onto /tɔ/ and /su/.

c.	/kántó-su/ chest-on	→	[kántósú]	“on the chest”
d.	/kɛ̀tɛ̀ʔ-tɔ/ bag-in	→	[kɛ̀ntɛ̀tɔ̀]	“in the bag”
e.	/kɛ̀tɛ̀ʔ-su/ bag-on	→	[kɛ̀ntɛ̀sù]	“on the bag”
f.	/ɔ̀-sùlûʔ-tɔ/ land-in	→	[ɔ̀sùlútɔ̀]	“in the ground”
g.	/ɔ̀-sùlûʔ-su/ land-on	→	[ɔ̀sùlúsù]	“on the ground”

6.5.2 High Tone Spread Following Verbs

H tone spread occurs between a verb and an object. This can be seen in example 30 in section 6.3 above, where the H tone on /púʔ/ “take” spreads onto the first syllable of /bìnà/ “left hand”. It can also be seen in these examples:

34	Underlying Form		Surface Form	Meaning
a.	/ɔ̀-tò-wíʔ#sìká/ 3S-HAB-steal money	→	[ɔ̀tòwísíkà]	“he steals money”
b.	/ɔ̀-lɔ̀-kùlí#ɔ̀kpá/ 3S-PERFECTIVE-ask_for path	→	[ɔ̀lɔ̀kùlíɔ́kpà]	“he asked permission (to leave)”

6.5.3 Blocking of High Tone Spread

A phenomenon unique to Nkonya is that H tone will not spread onto single L tone syllables that are followed by H tone syllables.[60]

This is illustrated in example 30 in section 6.3, where the H tone does not spreads from /súná/ onto /mù/ Compare this with the spread from /pú/ “take” onto /bìnà/ “left hand” and from /wóí/ “house” onto /ɔ̀-kpà/ “path”.

Another example is in noun-noun possessive constructions, see examples 35a-g. The H tone from /ɔ̀-sí/ will spread onto the first of two consecutive L tone segments in 35e and 35g. When a H tone is followed by a single L tone, as in 35c, the H tone spread is blocked. Note that in 35c, 35e and 35g, the intervening L tone causes the second H tone to be downstepped.

35	Underlying Form		Surface Form	Meaning
a.	/ɔ́-sí/ NC-father	→	[ɔ̀sí]	“father”

[60] The behaviour H tone spread in other related languages is described in section 6.8 on non-automatic downstep.

b.	/tàbí/ twin	→	[tàbí]	“twin”
c.	/ɔ́-sí#tàbí/ NC-father twin	→	[ɔ̀sí tàbí]	“father’s twin”
d.	/à-tàbí/ PL-twin	→	[àtàbí]	“twins”
e.	/ɔ́-sí#à-tàbí/ NC-father PL-twin	→	[ɔ̀sí átàbí]	“father’s twins”
f.	/fùlìtí/ antelope	→	[fùlìtí]	“antelope”
g.	/ɔ́-sí#fùlìtí/ NC-father antelope	→	[ɔ̀sí fúlìtí]	“father’s antelope”

6.6 High Tone Lowering[61]

Nkonya also has some occurrences where segments that are underlying H tone are lowered to the level of a L tone. This process is unique to Nkonya within North Guang languages[62]. A complete description of this lowering process is not presented here, but some of the circumstances in which this lowering occurs are documented below.[63]

A lowered H will always be preceded by a L or be at the beginning of an utterance. A true L at the front of a word can be distinguished from a lowered H by putting it in a frame with a preceding H tone. A true L will not be raised, and will cause downstep. A lowered H stays H and no downstep occurs.

6.6.1 Lowered High tone in Noun Phrases

Noun-noun possessive constructions where the first noun ends with a H tone provide a tone frame for differentiating a L tone from a lowered H at the beginning of the second noun. For example, in isolation, the surface tones of 35b, [tàbí] “twin” and 36b [àsʉ́] “word” are the same[64], i.e. LH.

When the two words are preceded by a word with a final H tone, the effect differs. The surface tone of /tàbí/ in 35c remains LH [tàbí]. The H tone on the second syllable is downstepped from the H tone in the preceding word.

[61] H tone lowering and its role in the diachronic analysis of Nkonya nouns is discussed in Appendix C.
[62] And probably Tano languages, including Akan.
[63] An alternative would be to analyse these lowered H tones as L tones carrying a floating H tone which docks onto the following syllable. My analysis has the advantage of being diachronically descriptive.
[64] Note that they are morphologically different. /tàbí/ “twin” has no noun class marker. However, if one posits synchronic H tone lowering on nouns as morphologically conditioned, occurring only on noun class markers, one still has the problem of H tone lowering in verbs, including when verbs are nominalized (for examples, see 42c & d). Diachronically, it has occurred within noun stems. See Appendix C for examples.

On the other hand, following a H tone as in 36c and 36d, the surface tone of /ásű/ changes from [àsű] LH to [ásű] HH with no downstep. Compare this with the surface [àsű] LH in isolation (36b) or following a L tone (36e) or a falling tone syllable (36f).

As always, following a true L tone (36f, 35c, 35e, 35g), the second H tone is downstepped.

36	Underlying Form		Surface Form	Meaning
a.	/ɔ́-sí/ NC-father	→	[ɔ̀sí]	“father”
b.	/á-sű/ NC-word	→	[àsű]	“word”
c.	/ɔ́-sí#á-sű/ NC-father NC-word	→	[ɔ̀sí ásű]	“father’s word”
d.	/mí#á-sű/ 1S NC-word	→	[mí ásű]	“my word”
e.	/mù#á-sű/ 3S_animate NC-word	→	[mù à-sű]	“his word”
f.	/ɔ̀-sùlû#á-sű/ NC-land NC-word	→	[ɔ̀-sùlú à-sű]	“land case”

6.6.2 Lowered High tone and Glottal Stop /ʔ/

A lowered H at the end of an utterance will be distinguishable from an L if the final segment ends in a glottal stop. An L segment with a glottal stop has a noticeable falling tone contour marked as V̏ in (37b, 37d) that is not present in a lowered H segment that occurs utterance finally.

37 a.	ɔ̀-lɔ̀-tɔʔ 3S-PERFECTIVE-roast	“he roasted”
b.	ɔ̀-lɔ̀-dɔ̏ʔ 3S-PERFECTIVE-farm	“he weeded”

That /tɔ́ʔ/ is H is evident in the perfect aspect. Compare the above with:

c.	à-là-tɔ́ʔ 3S-PERFECT-roast	“he has roasted”
d.	à-là-dɔ̏ʔ 3S-PERFECT-farm	“he has weeded”

If there is no glottal stop, the final contour on a lowered H is identical to a L:

38 a. ò-lò-wù (H) “he died”
3S-PERFECTIVe-die

b. ò-lò-sù (L) “he cried”
3S-PERFECTIVE-cry

That /wú/ is H is evident in the perfect aspect. Compare 38a and 38b with 38c and 38d:

c. à-là-wú “he has died”
3S-PERFECT-die

d. à-là-sù “he has cried”
3S-PERFECT-cry

6.6.3 Lowered High tone and Tonal Clitics

A lowered H will not cause either a following L tone or a following lowered H tone to be raised. For example [ò-tʃìʔ] “woman” (39a) has the characteristic glottal stop without the falling contour, showing that the second syllable has an underlying H tone. The lowered H tone, however, does not spread across a word boundary onto a L (39b) or a lowered H (39c) syllable.

There are however, a few ‘tonal clitics’ like /níʔ/ “DEMONSTRATIVE”[65]. The first syllable of these clitics is raised following a lowered H (39d and 39f). In a word like /bàtɛ́/ “chicken”, there is no final glottal stop. Still, when it is followed by /níʔ/, the presence of the lowered H tone is evident in its effect on a following /níʔ/ (39f).

Following a syllable which has a final L tone, the tone on /níʔ/ is lowered, (39g and 39h):

39	Underlying Form		Surface Form	Meaning
a.	/ò-tʃíʔ/ woman	→	[ò-tʃìʔ]	“woman”
b.	/ò-tʃíʔ#fùlìtí/ woman antelope	→	[ò-tʃì fùlìtí]	“woman’s antelope”
c.	/ò-tʃíʔ#á-sʊ́/ woman NC-word	→	[ò-tʃì àsʊ́]	“woman’s case”

[65] I have termed them tonal clitics because tonally they are raised by a lowered H which does not otherwise spread across word boundaries. They are primarily deictics. The complete list is [níʔ] “DEMONSTRATIVE”; [ámúː] “PREVIOUS REFERENCE”; [ámù] “DETERMINER”; [áŋfì] “THIS”. The tones are marked as they are following a H syllable. The underlying tone of /níʔ/ is H (it doesn’t have the characteristic falling contour when it is lowered).

d.	/ɔ̀-tʃí?-ní?/ woman-DEMONSTRATIVE	→	[ɔ̀-tʃìní?]	“This is (a) woman.”
e.	/bàtɛ́/ chicken	→	[bàtɛ̀]	“chicken”
f.	/bàtɛ́-ní?/ chicken-DEMONSTRATIVE	→	[bàtɛ̀ní?]	“This is (a) chicken.”
g.	/kɛ̀ntɛ̰̀?-ní?/ bag-DEMONSTRATIVE	→	[kɛ̀ntɛ̰̀nì]	“This is (a) bag”
h.	/ɔ̀-sùlû?-ní?/ land-DEMONSTRATIVE	→	[ɔ̀sùlúnì]	“This is the ground”

These tonal clitics provide a good tone frame for checking the difference between a L tone and a lowered H tone in word final position.

6.6.4 Lowered High tone in Verbal Constructions

The underlying tone of Nkonya verbs is not immediately evident. This is because all the H tones in a verb are lowered in the imperative (citation) form (see examples 40a and 40b). This H tone lowering differs from the normal lowering that has been mentioned above in that all H tone syllables are lowered, not just the first. It is similar in that the final syllable does have a floating H tone attached to it. A H tone verb with a glottal stop will not have the L tone falling contour (cf. 40b and 40c). Likewise, a trailing clitic will be raised (40d and 40e, cf. 40f)

40	Underlying Form		Surface Form	Meaning
a.	/súná/ show(IMPERATIVE)	→	[sùnà]	“Show!”
b.	/fɛ́?/ sell(IMPERATIVE)	→	[fɛ̀?]	“Sell!”
c.	/kɪ̰̀?/ look(IMPERATIVE)	→	[kɪ̰̀?]	“Look!”
d.	/ànì#yà:#súná?-ní?/ 1P say show(IMPERATIVE)-DEMONSTRATIVE	→	[ànìyà:sùnàní?]	“It was ‘Show!’, that we said.
e.	/ànì#yà:#fɛ́?-ní?/ 1P say sell(IMPERATIVE)-DEMONSTRATIVE	→	[ànìyà:fɛ̀ní?]	“It was ‘Sell!’, that we said.
f.	/ànì#yà:#kɪ̰̀?-ní?/ 1P say look(IMPERATIVE)-DEMONSTRATIVE	→	[ànìyà:kɪ̀nì?]	“It was ‘Look!’, that we said.

While the citation form does not show the underlying H tones in verbs, there are constructions that do. When a H tone verb occurs in the Perfect aspect (41a, 41b) or as the second verb in a serial verb construction (41d, 41e) it remains H in the surface form. A L tone verb in the same constructions produces a L surface form (41c, 41f).

41	Underlying Form		Surface Form	Meaning
a.	/ò-là-fɛ́ʔ#kɛ̀tɛ̀ʔ/ 3s-PERFECT-sell bag	→	[àlàfɛ́kɛ́ntɛ̀ʔ]	“He has sold the bag.”
b.	/ò-là-súná#kɛ̀tɛ̀ʔ/ 3s-PERFECT-take bag sell 3i	→	[àlàsúnákɛ́ntɛ̀ʔ]	“He has shown the bag.”
c.	/ò-là-kɪ̀ʔ#kɛ̀tɛ̀ʔ/ 3s-PERFECT-look bag	→	[àlàkɪ̀kɛ̀ntɛ̀ʔ]	“He has looked at the bag.”
d.	/ò-lò-pú#kɛ̀tɛ̀ʔ#fɛ́ʔ#mú/ 3s-PERFECTIVE-take bag sell 3i	→	[òlòpùkɛ̀ntɛ̀fɛ́mú]	“He used (the) bag to sell it.”
e.	/ò-lò-pú#kɛ̀tɛ̀ʔ#súná#mú/ 3s-PERFECTIVe-take bag show 3i	→	[òlòpùkɛ̀ntɛ̀súnámú]	“He used (the) bag to show it.”
f.	/ò-lò-pú#kɛ̀tɛ̀ʔ#kɪ̀ʔ#mú/ 3s-PERFECTIVe-take bag look 3i	→	[òlòpùkɛ̀ntɛ̀kɪ̀mú]	He used (the) bag to look at it.”

Regular H tone lowering, i.e., the first H tone in a sequence, occurs in the Perfective aspect (42a, 42b). It also occurs in verbs with nominalizer suffixes (42c, 42d).

42	Underlying Form		Surface Form	Meaning
a.	/ò-lɛ̀-fɛ́ʔ#kɛ̀tɛ̀ʔ/ 3s-PERFECTIVe-sell bag	→	[òlɛ̀fɛ̀kɛ̀ntɛ̀ʔ]	“He sold the bag.”
b.	/ò-lɛ̀-súná#kɛ̀tɛ̀ʔ/ 3s-PERFECTIVe-sell bag	→	[òlòsùnákɛ̀ntɛ̀ʔ]	“He showed the bag.”
c.	/kɛ̀tɛ̀ʔ#ò-fé-pú/ bag NC-sell-AGENTIVE	→	[kɛ̀ntɛ̀ʔòfɛ̀pú]	“bag seller”
d.	/ò-súná-pú/ NC-show-AGENTIVE	→	[ò-sùná-pú]	“teacher

6.7 Upstep in Verbal Constructions

Upstepping occurs in Guang languages. Snider (1990b) describes upstep in Krachi. It is not widespread, but it also occurs in Nkonya on some tense-aspect markers as an emphatic form.

In section 6.6.4, we saw that /là/ “PERFECT” aspect marker maintains a H tone on a verb with a H tone initial syllable. Example 43a shows this marker as it occurs between a noun subject with a H tone and a verb with a H tone. It carries a L tone,

which causes the H tone on /mɔ́/ to be downstepped. In the emphatic form shown in 43b, the L tone aspect marker /là/ "PERFECT" is upstepped (marked as lǎ).

Detailed phonetic studies have not been done, but it seems that just as in Krachi, a H tone before an upstepped syllable and a H tone following it are at the same level.

	Underlying Form		Surface Form	Meaning
43a.	/tàbí-là-mɔ́#kpálà?/ twin-PERFECT-kill goat	→	[tàbílàmɔ́kpálâ?]	"The twin has killed a goat"
b.	/tàbí-là-mɔ́#kpálà?/ twin-PERFECT(emph)-kill goat	→	[tábílǎmɔ́kpálâ?]	"It is the twin who has killed a goat"
c.	/ɔ́-wìè-là-mɔ́#kpálâ?/ twin-PERFECT(emph)-kill goat	→	[òwíèlàmɔ́kpálâ?]	"The chief has killed a goat"
d.	/ɔ́-wìè-là-mɔ́#kpálâ?/ NC-chief-PERFECT(emph)-kill goat	→	[òwíèlǎmɔ́kpálâ?]	"It is the chief who has killed a goat"

6.8 Non-Automatic Downstep

One of the phenomena remarkable by its absence is the lack of non-automatic downstep in Nkonya. In other Guang and Tano languages (e.g. Akan), non-automatic downstep occurs when two H tone syllables have a single intervening L tone. The first H tone spreads onto the L syllable. The L disappears but the second H tone is lowered by the same amount as occurs in automatic downstep. For example (downstep is marked with ˈ):

From Snider (1990b, figure 5):

	Underlying Form		Surface Form	Meaning
44 a.	òyú kìsíbɔ́	→	òyú kíˈsíbɔ	'thief's ear' (Chumburung)
b.	gíŋɛ́ gàmá:?	→	gíŋɛ́gáˈmá:?	'slave's back' (Nawuri)
c.	ɔ́ká gùmú	→	ɔ́ká gúˈmú	'wife's head' (Gichode)

Likewise when there is a H falling tone (underlying HL) followed by a H tone, non-automatic downstep occurs:

45 a.	m̀pínî gúdú	→	m̀píní ˈgúdú	"ten rings" (Nawuri) from Casali (1995:47)

As stated in section 6.5, H tone spreads in Nkonya, but the H tone spread is blocked on a single L segment. This and the H lowering rule work together to prevent the occurrence of non-automatic downstep. That is, if we have a construction whose surface tones produce a H#LH sequence, if the L is an underlying L tone, the H tone spread is blocked. The L tone remains as a surface tone and the downstep is

manifested as automatic downstep, as in 35c. If the L is a lowered H tone, the H tone level will be maintained throughout and no downstep occurs, as in 36c.

35c. /ó-sí#tàbí/ → [ɔ̀sí tàbí] “father’s twin”
NC-father twin

36c. /ó-sí#á-sű́/ → [ɔ̀sí ásű́] “father’s word”
NC-father NC-word

Akan loans which exhibit Non-Automatic downstep are phonemicized in Nkonya with the first downstepped H tone segment as a lowered H tone which raises a following tonal clitic.

46 a	Akan	ɔ́kɔ́ꜜtɔ́	“crab”
	Nkonya	ɔ̀kɔ́tɔ̀ʔ	“crab”
		ɔ̀kɔ́tɔ̀ níʔ	“this is a crab”
47 a	Akan	ádáꜜká	“boxes”
	Nkonya	à-dákà	“boxes”
		àdákà níʔ	“these are boxes”

The only exception to the rule that non-automatic downstep occurs in Nkonya is in conjunction with upstep described in section 6.7. Snider (1990b) argues that upstep in Krachi raises the tonal register by the same amount as normal downstepping lowers it, and that the single upstepped L syllable is a raised to H by H tone spreading, upstepped, and then followed by ordinary non-automatic downstep.

If Snider is correct about Krachi, and if Nkonya upstep functions like that in Krachi, then non-automatic downstep does occur in Nkonya. In any case, the typical occurrence of non-automatic downstep with two consecutive surface H tones, the second of which is downstepped does not occur in Nkonya.

Appendix A

Literal English Translation of the "Nkonya Preface"

This paper that I have written is about the Nkonya language and especially the letters and sounds that Nkonyas use when they speak Nkonya. I have divided this paper into six parts. There are three appendices.

In the first section I have told where the Nkonya traditional area is. I have written the other languages in the Guang language family that Nkonya is in. I have talked about what other writers have written about Nkonya and what they have said.

In the second section, I have shown all the letters in the Nkonya language. Some are mostly made in the mouth (consonants), and some are mostly made in the throat (vowels). I have written them all. In the third section, I have written about different letters that are in Nkonya that come from Twi or other languages.

In the fourth section I have written how consonants and vowels come together to make words in Nkonya. When letters come together some change their neighbours. In the fifth section I show how they change.

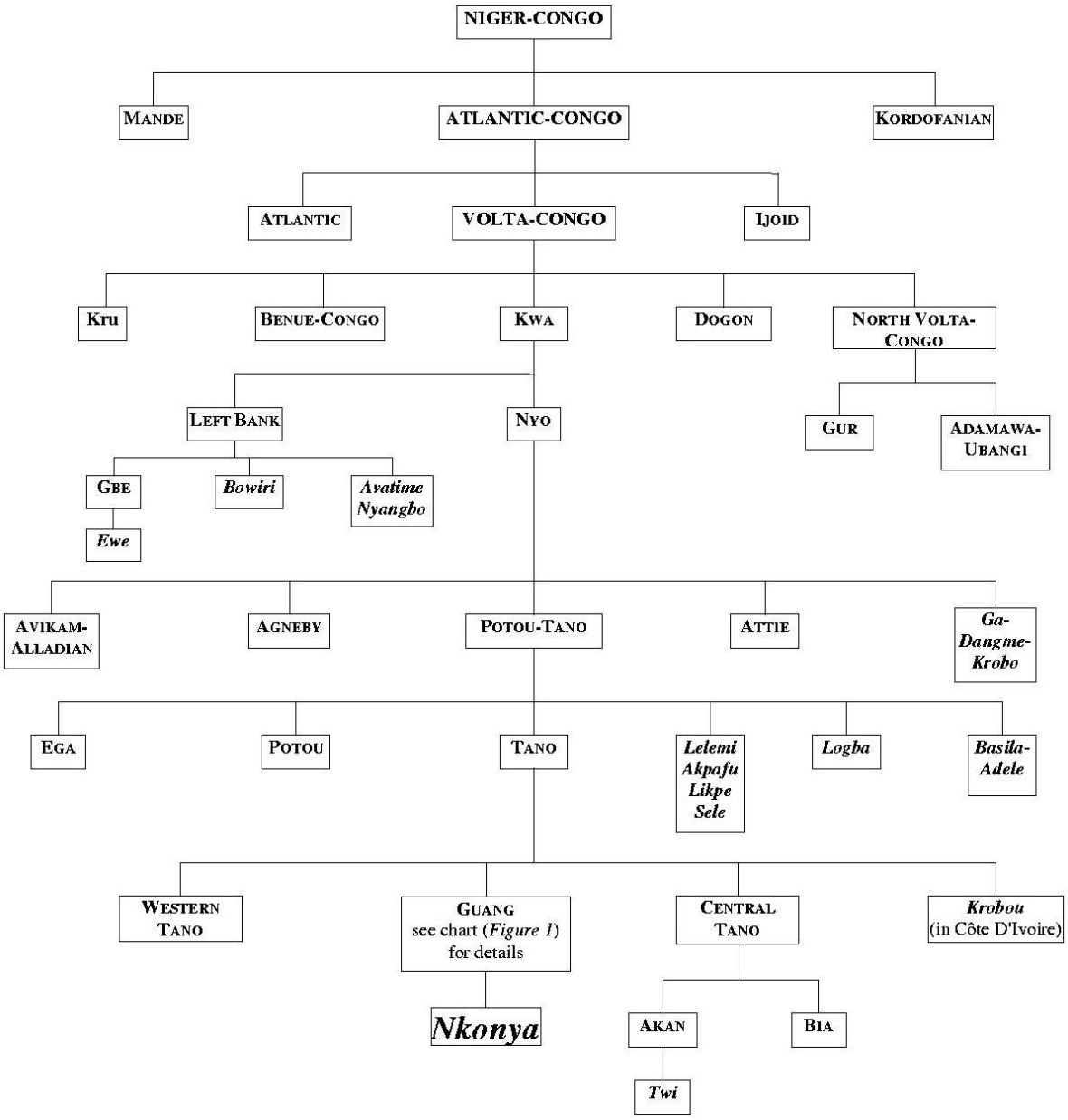
In the sixth section, I have said how they raise the voice and lower it (tone). I also tell how Nkonya is different from the way that other languages like Twi do this.

In the first appendix I give examples of all the letters in Nkonya. In the second appendix I show which languages are like Nkonya and which are different.

Lastly, one writer wrote some things about tone, but there is a problem with what he wrote. In the third appendix, I have written how it really is.

Appendix B

Nkonya and Neighbouring Languages and Language Families



Language families are indicated by SMALL CAPS, e.g. WESTERN TANO; individual languages by *italics*, e.g. *Ewe*. This table is based on Williamson (1989:21) and Stewart (1989:221, 225). A map showing the locations of the languages in Ghana may be found in Kropp-Dakubu (1988). The location of other languages can be found in maps in Bendor-Samuel (1989).

Appendix C

Diachronic Noun Tone in Nkonya

Previous published data in Nkonya, particularly Stewart (1966), has not distinguished between lowered H tones and L tones (see section 6.6). This confusion has led to an overly complicated and incorrect analysis of diachronic tone in Nkonya nouns by Snider (1990c), who used Stewart's data. He proposed that the tone on the noun root was changed at some point in the past.

Snider also mistakes some of the tone markings in Stewart (1966).[66] The patterns Snider read as X́-CV́, X́-CV́ʔ and X́-CV́CV́, are actually X̀-CV̄, X̀-CV̄ʔ and X̀-CV̀CV̄, where V̄ indicates a lowered H. They appear correctly marked in Peacock (in preparation).

Here is the table of noun tone correspondences from Snider (1990c:Fig 28) with his Underlying (UF), Proto-Guang (PG) and Proto-North Guang (PNG) forms. Corrections have been made to the current Nkonya forms, drawn from Peacock (in preparation). The forms that were L (or lowered H) that Snider took as H are marked with †. Surface L tones that can be shown to be lowered H tones through synchronic evidence are marked with a level tone mark as V̄. The choice of the Nkonya examples is from Snider (1990c) with corrections to his data. I explain the tonal characteristics of /nívʔ/ and its usefulness for determining the presence of a lowered H tone in section 6.6.2:

UF		PG	PNG	Nkonya	Example with /nívʔ/
HL H /X-CV/	→	X̀-CV́	>	X̀-CV̄ †	ǹtsù nívʔ "this is water"
HL H /X-CVʔ/	→	X̀-CV́ʔ	>	X̀-CV̄ʔ †	ò̀tsìʔ nívʔ[67] "this is a woman"
HL L /X-CV/	→	X́-CV̂	X́-CV́	X̄-CV́	ɛ̀-nɔ́ nívʔ "this is a mouth"
HL L /X-CVʔ/	→	X́-CV̂ʔ	>	X̄-CV́ʔ[68]	à-fúʔ nívʔ "this is air"
HL L /X-CVN/	→	X́-CV̂N	>	X̄-CV́N	à-kṹʔ nívʔ "this is hunger"

[66] In defense of Stewart, in his introduction (Stewart 1966), he specifically says "The lists have in most cases been collected hastily. . ." I must say that in spite of the haste, the Nkonya list was very carefully compiled and transcribed. In defense of Snider, the difference between the lowered H tones and L tones cannot be detected in the citation form that Stewart presents. As well, Stewart marked the tones as contour lines without marking glottal stops. In words that have no shift in the tone level, i.e. only L tones or a combination of L and lowered H tones, it is not easy to determine whether the tone is all L or all H. For this reason, it was easy for Snider to mistake words that are all L tone (and lowered H) to be mistaken for H.

[67] Where a glottal stop would occur pre-pausally, I have marked it even though it does not occur before /nívʔ/

[68] On two out of the three cognates for that Snider uses for this form, the glottal stop in Nkonya is incorrectly omitted (à-fú and ò-dú). They appear with glottal stop (à-fúʔ and ò-dúʔ) in Peacock (forthcoming).

HL H	→				ò-wùlú? ní?[70]
/X-CVCV/		X̀-CV́CV́	>	X̀-CV̄CV́[69]	“this is a skin”
HL L	→				ò-wíê? nì?
/X-CVCV/		X́-CV́CV̀	>	X̄-CV́CV̀	“this is a chief”
HL HL	→				ò-sùlû? nì?
/X-CVCV/		X̀-CV́CV̀	>	X̀-CV̀CV̂	“this is land”
HL LH	→				à-kùdà? ní?
/X-CVCV/		X̀-CV̀CV́	>	X̀-CV̀CV̄ †	“this is a village”

When the above corrections have been made, it is evident that with a rule applying a lowering of the first H tone, the surface Nkonya forms derive directly from the Proto-North Guang forms and that no change has been made to the tone on the noun stem in Nkonya.

All of Snider’s other conclusions are shown to be correct by the revised data.

[69] The tone on the second syllable of these words is a lowered H tone rather than a L. This cannot be verified synchronically, however, if we take an example of a nominalized verb, we find that words that have an underlying form X̀-CV́CV́ have the surface form X̀-CV̄CV́. For example, /ì-súná/ → [ìsùná] “N_izer-teach (teaching)”.

[70] Snider cites this word as ò-wùlû and mistakenly notes the tonal melody as an unexplained anomaly. That the last syllable is H with trailing ʔ can be seen in the effect on the following ní?. C.f., ò-súlû? nì? “this is land”

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