GRAPHEME-PHONEME AND TONE REPRESENTATION AND THEIR EFFECT ON TRANSLATION: THE CASE OF THE 1959 NANDI BIBLE

BY

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C50/12632/09

A DISSERTATION SUBMITTED TO THE SCHOOL OF HUMANITIES AND SOCIAL SCIENCES IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF ARTS OF KENYATTA UNIVERSITY

SEPTEMBER, 2011
DECLARATION

This dissertation is my original work and has not been presented for a degree in any other university.

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This dissertation has been submitted with our approval as University supervisors.

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DEDICATION

To my husband Denis and our precious son Johanan, and my parents Rev. & Mrs. Yego.
I am eternally grateful to God for the grace to complete this work in spite of all the hurdles that came my way.

I wish to thank my supervisors, Dr. Wangia and Dr. Njiri for their advice and invaluable input, all my lecturers for their constant support and encouragement, and all the members of the English & Linguistics Department for all their assistance.

I am indebted to my classmates and friends, especially Marissa Furaha and Charity Gathoni, for their prayers and support when all was but lost.

My respondents deserve credence for accepting to read through the reading list as they were recorded.

My sincere gratitude goes to Professor Kibiwott Kurgat for taking the time to read through my work, and for his worthy input on the data in Nandi. I also duly acknowledge the support of Dr. Margaret Muthwii who gave me free access to her library.

Lastly, I thank my family, the Yegos and the Kamaus, especially my parents Rev. and Mrs. Yego for believing in me, and my husband Macharia and son Kamau for their understanding and support when this research took up most of the time that I should have spent with them.
ABSTRACT

Any good translation should pay attention to the complexities of the target language’s system. Owing to the complexity of the Nandi sound system, the proposed study looked at one criterion of a good writing system - maximum representation - by examining the graphemes used in the 1959 Nandi Bible so as to determine the effect that phoneme and tone representation has on the translation. Sampled texts were studied to identify lexical items that contain phonemes and tones with a high functional load, and are subject to various interpretations. To obtain this sample, the books of the Bible were classified into five major categories and twenty percent of the chapters of every third book in the category sampled. Out of these, forty lexical items were then categorized and presented to twenty native Nandi speakers of at least O-level education to read, as they were tape recorded, in order to test whether the representations do indeed pose a problem to the readers of the Nandi bible. The Relevance Theory was the basis of evaluation of the translation while the representation of the graphemes, phonemes and tone were illustrated using CV Phonology. Lexical access to phonological codes and meaning of homographs were accounted for by the Multiple Access Theory of lexical ambiguity resolution. Misrepresentations were analysed qualitatively using compilation sheets to categorise the misrepresentations, and tables to present the categories. SPSS version 16 was used to analyse the frequency of hesitations, pauses and repetition, and different renderings of homographs in the reading samples and results were presented in frequency tables and charts. The findings show that vowel phonemes and tone have been misrepresented in the Nandi bible and this affects reading. 52% of the readers read the target lexical items as expected, 35% read them differently while 13% read them incorrectly. 74% did not repeat nor hesitate while 26% either repeated or hesitated before or while reading the target lexical item.
LIST OF ABBREVIATIONS

ATR: Advanced Tongue Root

BTL: Bible Translation and Literacy

BSK: Bible Society of Kenya

BFBS: British and Foreign Bible Societies

C: Consonant(s)

H: High Tone (’)

HF: High Falling Tone (^)

L: Low Tone (unmarked)

LF: Low Falling Tone (‘)

MT(s): Mother Tongue(s)

N.T: New Testament

O.T: Old Testament

UBS: United Bible Societies

V: Vowel(s)
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DEFINITION OF TERMS

**Representation:** In orthographic design, representation refers to assigning of symbols to either phonemes or morphemes depending on the writing system. In a phonemic writing system it refers to assigning of symbols to phonemes. Misrepresentation refers to both underrepresentation and overrepresentation. While **underrepresentation** means representing two or more phonemes by a single symbol, **overrepresentation** is representing a phoneme using more than one symbol. In this research, the vowel phonemes and tone are underrepresented.

**Phonemes:** They are the smallest contrastive unit in the sound system of a language. They can either be **segmental** or **suprasegmental** (Nida 1961). Segmental phonemes refer to consonants and vowels while suprasegmental (or prosodic) phonemes are indications of length, ATR, tone and stress. In this research, both segmental and suprasegmental phonemes were studied.

**Graphemes:** They are fundamental units in a written language. In a phonemic writing system it refers to alphabetic letters.

**Homographs:** The relationship holding between two or more expressions which have the same spelling but different meanings is homography. **Homophonic homographs** occur when an expression has the same spelling, the same pronunciation, but different meaning unlike **heterophonic homographs** which have the same spelling, different pronunciations and different meanings. This research’s concern is heterophonic homographs.
Ambiguity: In lexical ambiguity resolution ambiguity is defined as the existence of potential alternative choices at particular points in the processing of a sentence. Ambiguity may occur due to polysemy or homonymy. The ambiguity present in the data in this research is due to heterophonic homography, which is a type of homonymy.
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CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter introduces the entire research by giving a background to the study, the statement of the problem, research questions, research objectives and research assumptions. It also explains the rationale for the study, and the scope and limitations that shaped the study.

1.1 Background to the Problem

The background to the problem presents an introduction to the Nandi dialect, a history of bible translation, and a history of the Nandi bible.

1.1.1 Introduction to Nandi

Nandi is one of the 10 dialects of Kalenjin, which is a Para-Nilotic language categorized under the Nilo-Saharan phylum and Southern Nilotic family (Anyanwu 2008). The other Kalenjin dialects include Kipsigis, Terik, Keiyo, Tugen, Merkweta, Agiek, Sabaot, Pakot and Datooga speakers in Tanzania (Lodge 1995, Mojola 1999, Otterloo 1979). Nandi is spoken in the west of Kenya, mainly in the Rift Valley Province and geographically it is the most centrally located of the Kalenjin dialects (See Appendix A).

1.1.2 A History of Bible Translation

The Septuagint is credited as the first translation of the Bible. It was a translation of the Old Testament from Hebrew to Greek, the lingua franca in Alexandria, Egypt, in the 3rd
century BC. The need for this translation arose owing to a community of Jews in the diaspora who had forgotten their Hebrew. The New Testament came later in time and was written in Greek. Early translations of the New Testament were made into the Coptic, Armenian, Georgian, Ethiopic, Gothic, Syriac and Slavonic (Vance 1993).

With the rise of the Roman Empire, Jerome (346-420) a bible scholar of the time translated the Bible - between 382 and 404 AD - into Latin, the official language of the empire. A revision of this translation by Pope Clementine VIII remains the official Latin Bible of the Roman Catholic church today (Vance 1993). The first English translation of the whole bible was done by John Wycliffe from the *Italian Vulgate*, as Jerome’s translation was termed.

In Africa, Bible translation history dates back to the earliest translation in Alexandria. In addition to this, Mojola (1999) records that some parts of the Old Testament were also translated into Aramaic. Later in the 3rd century AD the Bible was translated into the ancient Coptic language and is still in use in the Egyptian Orthodox Coptic Church. Ethiopia was the second, in Africa, to translate in 4th century AD into another ancient language, Ge’ez. This is still in use in the Ethiopian Orthodox Church. Later the spread of Christianity necessitated translations into many other languages. The translators during this period were mainly missionaries.

The first bible translation in Kenya was the Kiswahili bible which is credited to pioneer missionary Dr. Johann Ludwig Krapf (1844- 1850). Bible translation has evolved thus: voluntary unorganized Bible translation work (1844-1869), The British and Foreign Bible

Apart from the BSK, Bible Translation and Literacy (BTL) have been working among the minority languages and dialects to ensure that the bible is translated to these languages and dialects. The Bible League is another bible translation body which is currently involved in the revision of the Nandi Bible.

1.1.3 The Nandi Bible

This study draws its data from the 1959 edition of this Bible which is the last edition. This is because in 1969 the Kalenjin Union Bible replaced the Nandi Bible with the aim of providing a Bible that would meet the needs of all the Kalenjin speakers. Though it somewhat enhanced the understanding of the bible among dialects, this Bible did not sufficiently cater for all the dialects for two reasons: the varying degrees of mutual intelligibility and the use of lexical items from various dialects. This has led to the translation of the bible into other dialects of Kalenjin. The BSK launched the Pakot Bible in 2009 while the New Testament in Sabaot (1997) and Marakwet (2010) was done by BTL, with work on the Old Testament still in progress. It has also led to the Nandi people asking that the bible in their dialect be revised.

The Nandi Bible owes its translation to the missionary movement. Work on the translation of the New Testament in Nandi began in 1929 and was completed in September, 1931. The full printed and bound copy was completed in 1933 by Central Press in Australia. The Old Testament took four years (1933-1937) to translate, and the
complete Bible was first published in 1939 by the British and Foreign Bible Society (BFBS) (Bryson, 1959). The translation was done by a missionary translator (Stuart M. Bryson) with the native speaker of the language (Samwel Gimnyigei) as an informant/assistant (Larson, 1991 in Mojola 1999). Consequently, several phonological aspects of the language may not have been fully captured in the orthography that they adopted.

Coupled with this is the language policy at the time which ruled that no diacritics would be used in writing the Kipsigis language (Van Otterloo1979). From that time on a five vowel system, without diacritics was employed and it has had an impact on the writing system of all the dialects of the Kalenjin language. The Nandi Bible is written using this five vowel system.

In the Nandi Bible tongue root distinction, vowel length and tone are not represented adequately yet they all serve to distinguish a word from the other in the language. For instance, the word [piir] has two meanings depending on tongue root distinction. With advanced tongue root (+ATR) it would mean ‘spray’ while with retracted tongue root (-ATR) it means ‘grow’.

The allocation of the long vowel graphemes in the Nandi Bible is haphazard and is not an apt representation of the long vowel phonemes. For instance, in Leviticus 1:4 [ketaach] ‘to welcome’ is allocated a double vowel, and thus differs from [ketach] ‘to pick a fight with’. This is unlike with [kogonor] which is allocated a single vowel grapheme and conveys the meaning ‘to keep’ yet the intended meaning is ‘to place’ in the idiom
[kogonoor eul] which means ‘to bless’ (by placing a hand on the head of the one being blessed).

Marking tone is also essential in lexical as well as grammatical differentiation. This is because as Kioko (2002) notes, without tone marking in the orthography of a tone language it becomes difficult to relate the spoken language to the written language since a major component of the spoken language is not represented in the writing system. The word [amu] serves to exemplify this as it has two meanings- ‘narrate (a story/news)’ or ‘because’ -depending on tone distinction.

Contextual clues, it is argued, may serve to disambiguate homographs, rendering tone marking unnecessary. However, according to Bird (1999) these clues depend on where they appear in a written text. Karan concurs and in her words:

If...the contextual clues are not available when needed (because they are yet to come and are found outside the visual field), it is advisable to mark tone in some manner. ...For any system, clues have to be in ‘what has already been seen’ or ‘in what the eye is taking in at the moment’ (Karan 2006: 88).

Thus even with the presence of context, readers of a translation can still have a problem in dealing with ambiguity that arises when tone is not marked.

The use of five graphemes to represent twenty vowel phonemes (Creider, 2001 in Shosted, 2005) and the feature tone makes reading the Nandi Bible confusing to the readers because they are faced with the challenge of deciding which meaning the translator intended to convey. This contrasts with two of the requirements of a language’s orthography namely: maximum representation of speech and ease in reading (Coulmas,
1989), and the relevance theory perspective that a translation should communicate to the reader in such a way that their attempt at interpretation will yield adequate contextual effects at minimum processing cost (Gutt 1999).

It is against this background that we endeavored to examine the grapheme-phoneme and tone misrepresentation and the effect that these have on the readers of a translation with a focus on the 1959 Nandi bible translation.

1.2 Statement of the Problem

Written from an etic point of view, the Nandi bible translation to a large extent did not capture some aspects of the complexity of the language. Some of the aspects that need redress include: unnatural language structures, idiomatic expressions, instances of ambiguity and choice of lexical items. However, before these morpho-syntactic, semantic and pragmatic aspects are looked at, a writing system that captures the language's phonological complexity needs to be in place.

From the researcher's observation of bible reading in churches, and informal interviews with Nandi speakers there is a problem in reading the Nandi Bible. For example the first two words in Isaiah 52:1 written as:

\(<\text{Ng'et}>\) could mean \(<\text{ng'et}> +\text{ATR}\) remain/left over
\(<\text{ng'et}> -\text{ATR}\) get tired
\(<\text{ng'eet}> +\text{ATR}\) either 'expert at waking up' or 'the indefinite form for uninitiated boys'
\(<\text{ng'eet}> -\text{ATR}\) arise/wake up (the intended meaning)
The situation above is one that arises from the orthography in use and how it represents the phonemes available in Nandi. There is therefore a need to address underrepresentation of phonemes and tone so that vowel graphemes do not carry an excessively high functional load. To this end the study sought to identify and describe grapheme-phoneme and tone misrepresentation in the Nandi Bible, and examine the effect that this representation has on the readers of the translation.

1.3 Research Objectives

The research objectives were:

1. To identify and describe the lexical items whose vowel phonemes have been misrepresented in selected portions of the 1959 Nandi Bible.
2. To identify and describe misrepresentations of tone in selected portions of the 1959 Nandi Bible.
3. To examine the effect of these misrepresentations on readers.

1.4 Research Questions

The research sought to address the following questions:

1. Which lexical items have their phonemes misrepresented in selected portions of the 1959 Nandi Bible?
2. In which lexical items is tone misrepresented in selected portions of the 1959 Nandi Bible?
3. What is the effect of these misrepresentations on readers?
1.5 Research Assumptions

This research proceeded on the following assumptions:

1. Phonemes are misrepresented in some lexical items in the 1959 Nandi Bible.
2. There are misrepresentations of tone in the 1959 Nandi Bible.
3. These misrepresentations have a negative effect on readers.

1.6 Rationale of the Study

The writing system used in the Nandi Bible was designed by non-native speakers, and may not have accurately captured the pronunciation of Nandi words. This means that the bible translation is somehow stilted and unnatural for the Nandi reader. Many scholars have identified the phoneme inventory in Nandi, and have presented them differently in their work. This study makes a contribution to the effort of coming up with a standard writing system for the Nandi dialect so as to encourage reading and writing in Nandi.

The study also informs the revision of the Nandi Bible which is currently being undertaken by the Bible League in conjunction with the Kalenjin Translation Office of the AIC Christian Literature Department.

Translators writing in a new language grapple with the controversy of the degree of phonetic detail that should be included in a writing system. The debate on whether tone should be represented in African language’s orthography rages on (Bird, 1998a&b; Karan, 2006; Kioko, 2002; Mfonyam, 1988). This study is of interest to scholars and translators interested in designing writing systems for African languages, especially those which are tonal.
There is currently a campaign for instruction in mother tongue. UNESCO (1953: 47-8) recommends that the use of mother tongue be extended to as late a stage in education as possible (Ogechi, 2003). UNICEF also supports the implementation of mother tongue education (IPS, Apr 20, 2010). Kenya has a mother tongue policy which stipulates that children in pre-school and lower primary be taught using mother tongue in rural areas and Kiswahili in urban areas (Mathooka, 2009). The practice on the ground is different and in rare cases is mother tongue used in Kenyan primary schools. One of the problems cited for this state of affairs is the issue of mother tongue publication. According to Mathooka (2003) many publishers have a problem with publishing in mother tongues. Some of the reasons for this are: some mother tongues do not have a worked out orthography, there are difficulties in representing some aspects of MTs (such as tone) in writing and most MTs have more than one dialect hence settling for one for promotion poses a dilemma.

Considering the status of the MTs discussed above, it means that they require development so as to be able to meet this educational need. This study raises issues that have implications for materials design and preparation and publication of teaching and learning material in the Nandi mother tongue.

1.7 Scope and Limitations

This is a translation study whose focus is on translation problems caused by grapheme-phoneme misrepresentation in the Nandi Bible. The choice of the Nandi dialect is based on the researcher’s first language competence.

In this study, Nandi was treated as a dialect of the Kalenjin language which has a distinct tonal system, and some lexical items which may differ from the other dialects.
The English version, the King James Version, was used as the working language and 'source' language because the researcher has no understanding or knowledge of the original language of the Bible.

Only five books were sampled for the study (Leviticus, Proverbs, Lamentations, Luke and 2nd Corinthians) because the Bible is a massive collection of 66 books (39 books in the Old Testament and 27 in the New Testament) and it was not possible to study the whole bible. However, the data from the sampled texts was adequate in meeting the objectives of the study.

In this introduction we have given a background to the research. In the next chapter, literature related to bible translation and grapheme-phoneme and tone representation will be reviewed, and the theoretical framework that guided the study will be discussed.
CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 LITERATURE REVIEW

2.1.0 Introduction

This section aims to review the relevant literature that is available on the Kalenjin language in general and specifically on the Nandi dialect. Relevant literature on orthographic representation of phonemes and on translation will also be reviewed. This has been done in a bid to put the study into perspective by critically looking at what has already been done.

2.1.1 Studies on Kalenjin

Various studies have been carried out that focus on the Kalenjin language and on the various dialects of Kalenjin. Apart from the dialect study (Van Otterloo, 1979), the other studies on Kalenjin use examples from a particular dialect.

Toweett (1975) gives a description of the Kalenjin language and uses examples from the Kipsigis dialect. He outlines the phonemic inventory by giving both the consonant and vowel systems, and also gives the tonal classification, verbal morphology, adjectivals and other inflectionals, noun substitutes and deverbatives. The phonemic inventory is the same as the Nandi one but the tonal classification differs. The phonemic inventory used in our research is adapted from this work.
Zwarts (2003) gives a description of the phonology of Endo, a sub dialect of the Merkweta spoken in Northern Marakwet. In his description he highlights consonant and vowel phonemes, their processes, syllable structure and tone.

These two studies give the phonemic inventory and tonal classification of Kalenjin (Kipsigis) and Endo but unlike the current study did, they neither look at their graphemic representation nor how it affects readership.

Van Otterloo (1979) in his Kalenjin dialect study notes that there is a complication in the Kalenjin orthography that arises from the fact that there are ten vowel sounds and another ten long vowels which are written using the five vowel letters. He also mentions the fact that in Kalenjin the subject and object are ambiguous unless the tonal pattern is marked. This is supported by the findings of our research that one function of grammatical tone is in case distinction. Though his was a dialect study, the section on the alphabet was a basis for comparison for the current study whose theoretical orientation is translation.

Larsen et al (1990) in their work give an introduction to the phonology and grammar of the Sabaot language. In it they introduce the concepts of long and short vowels, tongue root distinction (which they call light and heavy vowels) and tonal distinction. This study was invaluable in providing a basis for comparison with another dialect whose mutual intelligibility is quite low. In their work they have used overlines (a̅) for tongue root distinction and doubling the consonant for long vowels. For tone they came up with various marks for various functions. Since our study showed the need for some sort of marking to distinguish vowels in terms of length, tongue root distinction and tonal
distinction, the study under review provides a starting point for deciding on how to do this not only for Nandi but also for the Kalenjin language in the case of standardization.

Lodge (1995) investigates the ATR harmony system in Kalenjin (specifically Tugen) and argues that the label ATR is inappropriate on many counts. He suggests an approach based on the principles of radical underspecification which would allow an elegant analysis of the three different types of morphemes (dominant, adaptive and opaque) encountered in the language. This is a morpho-phonological study unlike the current study whose focus was on an aspect of phonological representation in translation. The paper however gives the phonemic inventory and the features of tongue root distinction and that was a point of reference to our study.

2.1.2 Studies on the Nandi Language

Mumford (1951) details a grammar of the Nandi and stresses the importance of vowel quality and length in studying the language. She also gives the orthography that is used in Nandi. This work only mentions the importance of vowel quality and length in studying the language but does not say how this is so. Though the study gives the orthography used in Nandi, this orthography does not represent the aspects of vowel quality nor vowel length nor tonal distinction and neither does it analyse its effect on a translation like this study did.

Creider (1982) does a comparative study on Kalenjin nominal tonology after discussing the tonal phonetics of Nandi and segmental phonology of nouns in Nandi and Kipsigis. In the study he also analyses the nominal morphophonology of Nandi. The argument, based
on the autosegmental framework, is that the previous works on the Nandi nominal system went against existing theory because the scholars based their classification on the surface form of the commonest form of the noun, the secondary form. His study thus differs from the previous studies in that he shows that all segmental and tonal allomorphy occurs because of a small number of phonological processes. Since a study on a language’s orthography necessitates a phonological analysis, our study benefitted from the examination of the phonological processes that affect the noun in Nandi.

Creider (1989) uses italics - in the orthography in his work - for those words that have a retracted tongue root [-ATR] and highlights the fact that [-ATR] is constant within a word due to vowel harmony. In his view vowel length, like the tongue root distinction has a high functional load. He also illustrates the five surface tones which are found and gives a summary of the basic tonal processes of Nandi. This study looks at the phonology of the Nandi language in summary but does not address the issue of how ATR, vowel length and tone should be represented in the orthography. It also does not look at the effect that the representation of phonemes and tone in the orthography, as it is, has on the reader of a text written in the Nandi dialect which was the focus of this study.

Creider (2001) discusses the typology of tonal processes in Nandi with the hope of enriching Autosegmental Phonology. He gives two tonal rule types. The local rules work within a single tone bearing unit or across adjacent tone bearing units, and the processes are phonetically or phonologically motivated ones of assimilation, dissimilation and so on. Replacive rules, on the other hand, produce invariant tonal shapes or melodies, typically apply over more than one or two tone bearing units, apply without regard to
lexical tones and appear to be without phonetic or phonological motivation. This study is purely phonological and does not look at the effect of tone representation in the writing system, and especially in a translated work. It is however relevant to this study in that to discuss tone representation one had to look at the tonal process of the language.

Creider (2002) looks in detail at the semantics associated with verbs (in Nandi) formed by means of three derivational suffixes (dative /-ci/, instrumental /-e/, and itive /-ta/) and investigates the implications that this semantics has for the classification of semantic participant types or roles. In his introduction he mentions that in Nandi, there are two tonally-distinguished cases, nominative and oblique. This is a semantic study unlike this study, but the nominative and oblique cases mentioned were relevant to our study in that they are distinguished by tone.

2.1.3 Phoneme and Tone Representation in Orthography

Language structure is a key element in the accuracy of a translation. The orthographic structure of a translation plays two basic roles. The first is in the accuracy of a translation in terms of correctly representing the sounds and the words in the target language. Correct representation in turn affects the meaning that the target text intended to convey.

In addition, the orthographic structure has an impact on the naturalness of the text.

Orthographies can be categorized as logographic-phonetic, syllabic or alphabetic (DeFrancis, 1989 in Katz & Frost, 1992). An example of a logographic-phonetic writing system is Chinese. Japanese Kana is syllabic while English is alphabetic. Alphabetic writing systems differ in the degree to which they mirror the phonemic structure of their respective spoken languages. An alphabetic orthography can be either shallow
(transparent) or deep (opaque) (Spence and Hanley, 2003). In a shallow orthography, the graphemes represent only one phoneme, and one phoneme represents one grapheme. It follows the principle ‘spell a word like it sounds and speak it the way it is written’ (Katz & Frost 1992:69). A deep orthography on the other hand has individual graphemes representing a number of different phonemes (Spence & Hanley, 2003) or some letters have more than one sound and some phonemes can be written in more than one way or some phonemes are not represented in the orthography (Katz & Frost 1992). Considering the definitions above, the Nandi Bible seems to have used a deep orthography. However, the sound system was neither adequately understood nor described, and owing to this, vowel graphemes represent a number of different phonemes as many phonemes present in the language are not represented in the orthography. As a result reading is greatly hampered.

Muthwii (2005) argues for improved texts and orthographies as one of the ways of dealing with literacy challenges in Africa. She mentions the absence of well-developed acceptable orthographies in most languages and orthographic problems that keep cropping up while translating into some languages. Kioko (2002) also argues for improvement of orthographies in African languages. Using examples from Kikamba, a Bantu language spoken in Kenya, she tackles absence of tone marking as an example of underrepresentation of prosodic features. Our study shares their view of a need for orthographical improvement and goes a step further to illustrate other aspects (in addition to tone) of underrepresentation that pose a problem to the writing system used in writing the Nandi bible namely: vowel length and tongue root distinction.
Kuria (2005) examines the discrepancies between the graphological structure of Gikuyu by focusing on eight consonantal phonemes and their graphemic representation. He also examines words that are borrowed from other languages to find out the extent of their adaptation to Gikuyu orthography. He accounts for these using the Autosegmental Phonology Theory (Goldsmith 1990), phonological recodability (Koda 1997) and Linguistic Mental Representation (1992). Unlike this work which uses the Autosegmental framework to account for the consonant phonemes and their grapheme representation, our study which focuses on vowel and prosodic phonemes is guided by the Relevance Theory. It also adopts CV phonology to distinguish between the heterophonic homographs and the Multiple Access Theory to explain their processing in a translation.

Mfonyam (1988) investigates the best way of representing tone in the orthography of Bafut and related languages (spoken in Mezam Division of N.W Province, Cameroon). To begin with he looks at the role of tone in Bafut and then tests several tonal systems on subjects to find out how best to represent tone in Bafut. In his study he stresses that the first phase in coming up with a tone orthography is to do an analysis of the tonal system of the language. In his theoretical framework he adopts an eclectic approach in tone representation. He uses the Generative Phonology approach and Taxonomic Phonemic approach. Since his analysis shows that tone in Bafut carries a high functional load both for distinguishing lexical items and grammatical distinctions, the study concluded that tone should be marked. He notes that if consideration is given to native speakers then a system with minimal tone marking would work while for non-natives, marking tone fully would be helpful. The strengths and limitations of each system are given and the minimal tone marking system recommended. The current study describes the role of tone in Nandi
before examining the effect of the current representation on readers of a work translated into the language. Unlike in Mfonyam’s work this study uses the Relevance Theory, the CV Phonology and the Multiple Access Theory as its framework.

Bird (1998a) describes the problems with orthographies of African tone languages that use too few or too many tone marks and critically evaluates a wide range of creative intermediate solutions. He examines both lexical and grammatical tone marking, the theoretical considerations impacting the design of a tone orthography, and emphasizes some methodological principles which may serve as a guide for determining the tone orthography of a given language. He differentiates between zero marking, phonemic marking and reduced marking schemes in alphabetic orthographies that mark tone. Since the Nandi Bible uses zero marking in its orthography, our study is relevant in that it highlights the problems arising from using zero marking of tone in the Nandi Bible translation since Nandi is a tone language.

Bird (1998b) highlights the kind of tone marking for a given language (in this case Dschang spoken in Western province of Cameroon) that best supports efficient reading, writing and comprehension. He compares orthography options and evaluates each option for its support of fluency. This study looks at the tone marking that best supports fluency and is relevant to our study which identifies the problems that arise from tone misrepresentation in an orthography that adopts zero marking.

There are a number of features that compete in orthography design. Chief among these is ‘the linguists’ interests in an orderly system reflecting the phonology’ (Lindstroém, 2007: 199). She enumerates other features like: a practical orthography, acceptability to
Karan (2006) has similar sentiments and argues that in orthography design, linguistic analysis must not be neglected since it provides a point of departure for good decision making. She identifies the linguistic factors which influence orthographies. Under phonemic analysis, problems occur if the functional load of phonemes/features is high and there are homographs. The other factors include: phonological processes, retention of morpheme identity and marking tone.

In the assignment of symbols for each phoneme, she highlights two practices that are problematic: underrepresentation (underdifferentiation) and overrepresentation (overdifferentiation). Underrepresentation involves representing two or more phonemes by a single symbol and argues that it violates the orthography design principle of 'accuracy'. It also makes reading process less based on sound requiring more dependence on context which may work against fluency and fluidity in reading depending on the position of the disambiguating context. Conversely, overrepresentation occurs when one phoneme is represented using more than one symbol, offending the principle of 'economy' and requiring writers to learn spelling rules. The further a writing system is removed from one-to-one sound to symbol representation, the more opaque or abstract.
the system becomes. The current study examines the effect that the linguistic factors in orthography have on a translation. For this study, effects of underrepresentation of vowel phonemes are the focus.

2.1.4 Lexical Ambiguity Processing

Frost & Bentin (1992) studied the processing of lexical ambiguity in Hebrew. Using the semantic priming paradigm and a speech detection task, they concluded that heterophonic homographs are phonologically disambiguated before the semantic network is accessed. This means that the activation of an orthographic entry results in the automatic activation of all phonological entries in the mental lexicon. Semantic activation follows the activation of phonological entries.

Context, in general disambiguates the phonologically abstract strings. In the absence of biasing context, the order of activation is determined by relative word frequency; higher frequency words are accessed before lower frequency words.

Binder (2003) evaluates models of ambiguity processing which have been classified into selective, exhaustive and ordered access models (Simpson 1984). The reordered access model (Duffy et al 1988) which formed the framework for the study posits that both relative meaning frequency and context influence early stages of lexical ambiguity resolution. Results differ when neutral context precedes the ambiguous word and when disambiguating information precedes the ambiguous word with readers fixating on the ambiguous word longer when neutral context precedes it.
The reordered access model seems to lend credence to the views of Karan (2006) concerning tone marking. She says that reliability of clues (to the identity of a word or a grammatical function) as an aid depends on where they appear in a written text. If the clues precede the spot where tonal discrimination is needed, the reader is not disadvantaged by not marking tone. Nevertheless, if clues are not available when needed (because they are yet to come and are found outside the visual field), it is advisable to mark tone in some manner. Bird (1999b) is of a similar opinion and regarding contextual clues notes that orthographic ambiguity can be resolved without silent reading ahead for contextual clues if there is sufficient disambiguation information inside and to the left of the processing window. Karan (2006:88) adds that for any system, clues have to be in 'what has already been seen' or in 'what the eye is taking in at the moment'. In her view reading back and forth works against fluency.

These findings inform the present study in terms of the effect that the lexical ambiguity brought about by heterophonic homography has on the readers of the bible translation.

2.1.5 Studies on Translation

Nida (1961) discusses the principles and procedures in Bible translating. He dedicates a chapter to the importance of orthography in translation. The symbols used in a phonemic alphabet are divided into: segmental phonemes, suprasegmental or prosodic phonemes and junctures. Segmental phonemes are the consonants and vowels in a language. Suprasegmental or prosodic phonemes are indications of length, stress, tone and tongue root position, while junctures are means of indicating significant points of combination within and between words. Suggestions are offered on how the symbols should be
allocated. In Nandi, there are segmental and prosodic phonemes. Under segmental phonemes is the representation of the consonant and vowel phonemes. This study's focus is on vowel phonemes and prosodic phonemes and under this examines indications of vowel length, tongue root distinction and tone distinction in the Nandi bible and their effect on the readers of the translation.

House (1998) handles the evaluation of a translation in terms of quality and attributes quality judgment to a distinction between dimensional and non-dimensional mismatches. Dimensional mismatches are pragmatic errors that have to do with language users and language use; non-dimensional mismatches occur in the denotative meanings of original and translation elements and breaches of the target language system at various levels. The current study examines aspects of the target language system namely the orthography and phonology in a bid to contribute to highlighting the quality of the translation.

Wangia (2003) examines the different types of translation problems in the Lulogoooli Bible and synthesizes them into two broad categories namely, linguistic and socio-cultural. Receptor problems are also investigated. Under the linguistic category are: syntactic, ambiguity/obscurity, loan/new words, conceptual, idiomatic and archaic while the cultural category is further subdivided into figurative language and allusions. The nonequivalence that is evident in the Lulogoooli Bible stems from the fact that it is not related to the source language. In addition to this it is a literal translation. The fact that African languages are neither related to Greek nor English, which are the source languages for the Bible translations means that even their phonological makeup is different.
Among the factors that could account for the mistranslations are receptor languages whose written forms have not been systematically described. Thus, the significance of systematic writing systems for languages like Lulogooli which are still largely oral cannot be underestimated, in order to facilitate accurate translation into these languages. The fact that Nandi and the source language are not related therefore necessitates a writing system that is representative of the phonemic inventory which differs from the source language. Thus the current study investigates the effect of translating and writing in a language before all its linguistic aspects have been studied and taken into consideration.

In her chapter on Lulogooli morphosyntax, Wangia (2003) looks at some phonological aspects in Lulogooli and their significance in the writing system. In her view, vowel length, and tone representation pose a problem in the Lulogooli Bible and that it indicates that the orthography was not fully and systematically described and understood at the time of the translation. This study holds similar assumptions and it is interesting to note that the findings in a dialect of a Nilotic language show similar shortcomings as those of a Bantu language’s dialect.

Gimode (2006) looks at the communication process in church sermons with a focus on mistranslation by sermon interpreters. The areas that receive attention are the role of the interpreter, the causes and effects of mistranslation, and possible solutions to mistranslation. Mistranslations, in her view, occur due to incorrect interpretation of linguistic units because interpreters lack formal training in the field. For correct representation of linguistic units to take place, the translator must correctly interpret these
linguistic units. In the current study the linguistic units are graphological and phonological unlike in the interpretation of church sermons where the linguistic units were lexical items.

Ross (2005) in looking at issues in Creole language translation tackles orthographical issues and gives both the criteria considered in coming up with an orthography and the various orthographical options to choose from. The criteria he gives mirror those presented by (Lindstroöm, 2007) above. The first criterion on his list is that it should accurately and systematically represent the sound system of the language. The present study looks at aspects of the language’s sound system that may not have been accurately and systematically represented in the bible translation and how these have affected the readers of the Nandi bible.

Zaja (2006) in his conceptual framework highlights the importance of text in translation and draws our attention to the fact that we must appreciate that translation starts in text and ends in text. This is in the sense of how it is linguistically structured and how it is pragmatically and conceptually utilized. The importance of the idea of linguistic composition and pragmatic utilisation is important here in the sense that it allows both the recognition and participation of text creators and text users. The current study examines the linguistic composition and specifically at the orthographic and phonemic level as this is the starting point of any translation work.
2.2 THEORETICAL FRAMEWORK

2.2.0 Introduction
Translation being interdisciplinary necessitates the use of an eclectic approach. The problems encountered by users of the Nandi Bible translation will be explained in terms of the Relevance Theory. Grapheme representation of phonemes and tone will be explained using the CV phonology and to explain the processing of heterophonic homography, the Multiple Access Theory will be instrumental.

2.2.1 Relevance Theory
This theory was proposed by Dan Speber and Deirdre Wilson (1986) and expounded in their book *Relevance: Communication and Cognition*. They argue that having contextual effects is a necessary condition for relevance, and that other things being equal, the greater the contextual effects, the greater the relevance. In their view, the assessment of relevance is a matter of balancing output against input, which in this case is contextual effects against processing effort. Thus in defining relevance, they posit that:

> ...an assumption is relevant in a context to the extent that its contextual effects in a context are large, and an assumption is relevant in a context to the extent that the effort required to process it in this context is small (Speber & Wilson 1986:125).

In translation the relevance theory perspective was popularized by Ernst-August Gutt who used the theoretical framework provided by relevance theory to explain how translation works, and to lay down conditions for communicative success in translation (Smith 2002). According to Gutt (1991), translation falls within the realm of communication and is best accounted for as a form of secondary communication.
The relevance theory highlights two uses of language namely descriptive and interpretive use of language. In descriptive use, the thought belongs to the speaker and the speaker intends it to represent reality, while in interpretive use the thought belongs (originally) to someone other than the speaker, and the speaker intends his /her utterance to accurately represent the original thought (Smith 2002). Gutt treats translation as the interlingual interpretive use of language in which the translator tries to faithfully express the thoughts of the original author in another language.

In interpretive use of language Gutt (1991) differentiates between direct and indirect translation. Either the translator strives for interpretive resemblance (direct translation) or they settle for interpretive resemblance in relevant aspects (indirect translation). The translation objective (direct or indirect translation) combined with the principles of effective communication determine the conditions for success. Smith comments that ‘the contribution of relevance theory is to furnish the principles of communication that help predict communicative effectiveness’ (Smith 2002:110).

The study will be guided by the theory in evaluating the effect of grapheme representation of phonemes and tone on the communicative effectiveness of the translation. The condition of minimal processing cost is relevant to the study in that it determines that the translation should be clear and natural in expression in the sense that it should not be unnecessarily difficult to understand (Gutt, 1991). Hence the theory will account for the problematic words encountered by readers of the Nandi Bible translation.
2.2.2 CV Phonology

To illustrate representations and show differences in heterophonic homographs, CV Phonology will be used. CV Phonology was initiated by G.N Clements and S.J Keyser in 1983. It is a multi-tiered theory of syllable representation that introduces an additional tier- the CV tier- which consists of “strictly alternating consonantal and vocalic positions” (Anyanwu 2008:221). The CV tier, an anchoring device (hence the more appropriate name skeleton) relating the internal content of segments to other types of information (Durand 1990:242), mediates the relationship between the syllable and segments hence in this theory there are three tiers: the syllable tier (σ), the CV tier and the segmental tier. As is the case in the autosegmental framework that this theory builds on, the various tiers are linked by means of association lines. CV phonology however allows for a many-to-many relationship between the CV tier and the segments.

The need for ways of representing length and affricates has been given as evidence for the CV tier. This is exemplified in Katamba (1993) where two Luganda verbs siiga ‘smear, paint’ and siga ‘sow, plant’ are distinguished by the length of their first vowel (length is phonemic in Luganda). In a similar manner, in the proposed study, the CV tier will be instrumental in illustrating the problem of homographs caused by misrepresentation of vowel length in the orthography.
Anyanwu (2008) gives the fact that different new but related tiers can always be added to the already existing ones as the major advantage of CV phonology. She illustrates by adding a tonal tier in her representation of the Etulo word <kúlú>

\[
\begin{array}{c|c|c|c|c|c}
\sigma & \sigma \\
\hline
\text{CV} & \text{CV} \\
\hline
\text{ku} & \text{lu} \\
\hline
\text{H} & \text{H} \\
\end{array}
\]

kúlú (shell) Etulo (Anyanwu 2003 used in Anyanwu 2008)

In the current study there are three aspects of representation under study: ATR, vowel length and tone, and the relevant tiers will be used depending on the words being described. By virtue of the fact that in Nandi there are instances when ATR and tone, or length and tone play a role in differentiating a word, both would need to be illustrated and CV phonology will be best suited for this purpose.

2.2.3 Multiple Access Theory

This is a two step theory consisting of the multiple access and active suppression components. Attributed to Swinney (1979) and Seidenberg et al (1982), it posits that all meanings of an ambiguous word are recalled simultaneously, after which the correct meaning is chosen and the incorrect meanings are suppressed. Holbrook et al (1988) refine the active suppression component so as to cover instances when disambiguating cues are absent and call it the conditional retention component of the theory. They posit that no meanings are suppressed when an ambiguous word is encountered and no disambiguating information is available. Instead the competing meanings are retained so
that higher level processes and their associated knowledge sources can be applied to the disambiguation task.

Sereno et al (1992) note that access theories maintain the assumptions that there is an internal lexicon of stored representations and that the process of lexical access involves the activation of a lexical entry, which makes the contents of that entry available for further processing. Lexical access refers to the process of accessing all of the information about a word (i.e. phonological codes, orthographic codes, meaning, syntactic features). In the case of heterophonic homographs, for the correct meaning of an orthographic entry to be arrived at the phonological codes will first have to be disambiguated (Frost & Bentin (1992). The presence of many heterophonic homographs in Nandi necessitates disambiguation of phonological codes before meaning can be accessed. Since the study's focus is on the access of phonological cues which will then determine the meaning that will be accessed, this theory will inform the interpretation of the reading results from the Nandi readers.

This chapter has dwelt on the review of related literature and the theoretical framework. In the next chapter the methodology that was applied in population and data sampling, data collection and analysis will be highlighted.
CHAPTER THREE

METHODOLOGY

3.0 Introduction

Milroy & Gordon (2003) highlight the relationship between research objectives and speaker selection and add that the questions asked determine where researchers look to answer them. In this methodology section, we look at the research design, the sample, data elicitation technique and analysis approach that the study employed in a bid to meet the objectives stated.

3.1 Research Design

This was a descriptive research whose aim was to examine the orthography used in writing the Nandi bible and at the same time highlight the problems inherent due to the grapheme representation of vowel phonemes and tone in the bible translation. It involved a collection of data, classification, analysis, comparison and interpretation of data (Kombo & Tromp 2006), guided by the theories, so as to meet the objectives that the study set out to meet.

3.2 Area of study

The target population for the study should in essence have consisted of all Nandi speakers who can read and write. Since this group is too large, a sample of informants was drawn from Olessos which is found in Nandi East District, Rift Valley Province.
Since Nandi has no sub-dialects, data collected from any of the Nandi speaking population is representative and generalisable to the whole population. Olessos was chosen because speakers who use the language in their day-to-day activities are found in this area. In addition to this was its accessibility for the researcher.

3.3 Sampling Procedures

3.3.1 Sampling of Subjects

The informants were native Nandi speakers who use the language in their day-to-day activities. A pre-research interview was used to determine this and select the informants using judgemental sampling. The informants had at least O level education to ensure that they could read and write. They were aged between 20 and 75 so as to capture a wide range of the population. Speakers below age 20 mostly speak Kiswahili and English and it was felt that any difficulty in reading may then be as a result of not using the language rather than in any issues with the orthography. Though gender was not a variable, ten were male and ten female for purposes of representativeness. This gave a total of twenty informants. As Milroy & Gordon (2003) observe, samples for linguistic studies tend to be much smaller than those found with other types of surveys. Sankoff (1980a) also adds that linguistic surveys need small samples because large samples bring increasing data-handling problems with diminishing analytical returns. This was the rationale behind using twenty informants, coupled with the variety of aspects of orthographic representation that the study sought to examine. However, priests and lay leaders were excluded because they are familiar with the texts. This was to ensure that informant’s reading was not affected by their previous knowledge of the text.
3.3.2 Data Sampling

The study was based on the 1959 edition of the Nandi Bible. The bible is a collection of 66 books divided into the Old Testament (39 books) and the New Testament (27 books). The books of the bible have been categorized variously, but the study borrowed from the classification by the Bible Bookcase which divides them into ten categories namely: Law, History, Poetry and Wisdom, Major Prophets, Minor Prophets, in the Old Testament, and Gospels, History, Letters of Paul, General Letters and Prophecy in the New Testament. For purposes of this study, categorisation was adopted from Wangia (2003) and related categories were combined to come up with five categories:

i. Law and History (N.T & O.T)

ii. Poetry and Wisdom

iii. Major Prophets, Minor Prophets and Prophecy

iv. Gospels

v. Letters of Paul, General Letters

This was to ensure that each genre is represented. Systematic sampling was used to pick one book from each category. In systematic sampling every nth case in the frame is selected and for this study every third book was picked. From the five books, about 20% of the chapters were sampled per book, giving a total of 703 verses.

From the sampled verses, purposive sampling was then used to pick those texts that contain the lexical items that are problematic and would answer the questions that the research sought to answer. To determine this, an informal interviewing of informants was carried out in a pilot study, in addition to the researcher’s native speaker competence. Of
these 20 were texts that contain words with vowel phonemes that could be read variously and 20 comprised those which are ambiguous due to lack of distinctive tone marking, giving a total of 40. These were then presented to informants to test whether they are indeed problematic.

3.4 Data Elicitation

Nida & Taber (1974); Nida (1984) propose several ways of testing a translation. Among them is having a text read to a monolingual and then having that person explain to others who have not heard the text read what is involved in the content of the text. A cloze test is another of his propositions. For the purpose of this study, his proposition that to test the adequacy of a translation in terms of the level of language, have three or more people read the same text aloud as the analyst notes hesitations, areas where the readers stumble, and automatic change of the text by the reader was adopted.

Two sets of data were used. The first set of data was phrases and sentences sampled from the 1959 Nandi Bible. The second set of data was readings of the sampled texts containing phoneme and tone related ambiguity. These were elicited using a reading list and captured using a tape recorder.

3.5 Data Analysis and Presentation

Both qualitative data analysis (QDA) and descriptive statistics were used to analyse the data. To begin with, sampled texts were studied to identify and categorise the phonemes and tone that have been misrepresented in the 1959 Nandi Bible. In line with QDA, data reduction entailed an organizing scheme which was derived from the first two objectives.
and previous research. The main categories consisted of misrepresented phonemes and tone which were further classified into more specific areas of misrepresentation like tongue root distinction and vowel length (for phonemes) and lexical and grammatical tone (for tonal misrepresentation). Even further sub-categorisation yielded the grammatical categories that are misrepresented due to absence of tone marking. Categorisation was done using compilation sheets and tables (Appendices C and D), and a discussion based on the information contained in the tables availed. The misrepresentations were then described and illustrated using CV Phonology with graphemes, phonemes and tone being represented on separate tiers and linked using association lines.

In order to determine the effect of the representation on the 1959 Nandi Bible, recordings of readings from the reading lists were transcribed and corrected. Using the multiple access and conditional retention components of Multiple Access Theory, data was summarized and examined first through noting the frequency of hesitations, pauses and repeated reading of homographs and secondly through noting the frequency of different renderings of homographs: with or without ATR, short or long vowel and tonal distinction. Results of the renditions of the texts were then presented using frequency tables and graphically using pie charts coupled with a detailed explanation.

Having discussed the methodology that was employed in data collection in this chapter, the next chapter will entail an analysis and presentation of the data that was collected.
CHAPTER FOUR
DATA ANALYSIS AND PRESENTATION

4.0 Introduction

This chapter begins by giving a brief description of vowel phonemes and tone in Nandi with the aim of explaining why the current orthographic representation in the Nandi bible results in misrepresentation of vowel phonemes and tone. The analysis will be in two stages, beginning with a description of data in the form of lexical items sampled from the bible that show instances of ambiguity due to the graphemic misrepresentation of vowel phonemes. Sampled data showing ambiguity that arises due to absence of tone marking will be described next. These will be illustrated using CV phonology.

The second stage will involve an analysis of lexical items drawn from the bible in context, and read by respondents. In this analysis, the first step will involve coding of the lexical items, tabulating them to show the different interpretations that readers gave the texts. A frequency of repetition and pauses within targeted lexical items will further be presented. These will be done to ascertain the degree of difficulty in reading Nandi as it is currently written, and to prove that indeed it is due to the large number of homographs caused by phoneme misrepresentation and ambiguous sentences owing to the absence of tone marking. In this way it will determine the effect of not fully representing vowel phonemes, compounded by not marking tone in the current orthography used in writing Nandi.
4.1 Vowel Phonemes in Nandi

There are twenty vowel phonemes in Nandi, with tongue root distinction and vowel length playing an important role in differentiating the phonemes. For instance the word written as [ee] could mean ‘yes’ +ATR or ‘have this’ and ‘drink’ –ATR. The difference between ‘have this’ and ‘drink’ is in tone distinction. Toweett (1979) gives a phonemic inventory of vowels in Kipsigis, a dialect of Kalenjin which is mutually intelligible with Nandi and shares a vowel inventory. Creider (2001) also concurs that there are 20 vowel phonemes in Nandi as detailed in Table 1 below:

Table 1: Nandi Vowel Phoneme Inventory, Toweett (1979)

<table>
<thead>
<tr>
<th>Front</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+ATR</td>
</tr>
<tr>
<td>Short</td>
<td>Long</td>
</tr>
<tr>
<td>i</td>
<td>i:</td>
</tr>
<tr>
<td>e</td>
<td>e:</td>
</tr>
<tr>
<td>e</td>
<td>e:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.2 Tone in Nandi

For a detailed study on tonal phonetics and a summary of the basic tonal processes in Nandi see Creider (1989) and for a full analysis of the tonal processes in Nandi see Creider (1982). For the purpose of this study, tones are marked as:

/’/ high (H), /~/ high falling (HF), /~/ low falling (LF) and /unmarked/low (L).
4.3 Analysis of Sampled Texts

Using native speaker intuition, the researcher compiled texts containing lexical items which are misrepresented in the Nandi bible. These are presented in Appendices C and D. Purposive sampling was used to come up with the misrepresented texts that will be analysed below. A summary of these texts is presented in Table 2 below.

<table>
<thead>
<tr>
<th>Vowel Length</th>
<th>Leviticus</th>
<th>Proverbs</th>
<th>Lamentations</th>
<th>Luke</th>
<th>2 Corinthians</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lev.1:1</td>
<td>Prov.1:4</td>
<td></td>
<td>Luke 2:30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lev.1:4</td>
<td>Prov.6:9</td>
<td></td>
<td>Luke 3:8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lev.4:4</td>
<td>Prov.3:8</td>
<td></td>
<td>Luke 3:17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lev.4:13</td>
<td>Prov.6:6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lexical Tone</td>
<td>Lev.1:9</td>
<td>Prov.6:27</td>
<td>Lam.1:4</td>
<td>Luke 3:3</td>
<td>2Cor.2:1/3:11</td>
</tr>
<tr>
<td></td>
<td>Lev.3:1</td>
<td></td>
<td>Lam.1:16</td>
<td>Luke 4:2</td>
<td>2Cor.2:5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2Cor.2:7</td>
</tr>
<tr>
<td>Grammatical</td>
<td>Lev.1:1</td>
<td>Prov.1:7</td>
<td>Lam.1:5</td>
<td>Luke 1:8</td>
<td>2Cor.1:11</td>
</tr>
<tr>
<td>Tone</td>
<td>Lev.4:1/5:14</td>
<td>Prov.2:7</td>
<td>Lam.1:7</td>
<td></td>
<td>2Cor.2:6</td>
</tr>
<tr>
<td>1.case</td>
<td></td>
<td></td>
<td>Lam.1:8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lam.1:17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.person</td>
<td>Prov.1:24</td>
<td></td>
<td>Lam.1:7</td>
<td></td>
<td>2Cor.3:16</td>
</tr>
<tr>
<td></td>
<td>Prov.2:6</td>
<td></td>
<td>Lam.1:10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.tense/aspect</td>
<td>Prov.5:12</td>
<td></td>
<td>Lam.1:19</td>
<td></td>
<td>2Cor.1:23</td>
</tr>
<tr>
<td>4.voice</td>
<td>Prov.1:17</td>
<td></td>
<td></td>
<td></td>
<td>2Cor.2:11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2Cor.3:3</td>
</tr>
<tr>
<td>5.appositive</td>
<td>Lev.3:2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.4 Analysis of Sampled Texts with Vowel Phoneme Misrepresentation

This section looks at texts whose misrepresentation occurs due to vowel length and tongue root position.

4.4.1 Vowel Length

Vowel length is phonemic in Nandi in that different words may be distinguished by vowel length as illustrated by the samples below. The Nandi Bible in most instances does not represent vowel length graphemically. Consequently, homonyms that should differ due to vowel length become homographs and vowel graphemes end up carrying a very high functional load.

1. Vowel sound /a/ vs /aa/


As used in the bible, this word should mean ‘collectors of’ referring to tax collectors. The root of this word (which is a verb) contains a long vowel [taach]. The suffix [-ik-] is used with nominals and the suffix [-ab] represents the preposition ‘of’. Through the process of assimilation, /a/ becomes /g/ in the environment preceeding /i/ as seen in other examples such as:

<table>
<thead>
<tr>
<th>Verb</th>
<th>Noun</th>
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<tbody>
<tr>
<td>Teech</td>
<td>Teegik (builders)</td>
</tr>
<tr>
<td>Sich</td>
<td>Sigik (parents i.e those who bear)</td>
</tr>
<tr>
<td>Luch</td>
<td>Lugik (boxers)</td>
</tr>
</tbody>
</table>

38
Since the Nandi bible graphemically represents the lexical item above using one vowel grapheme [a], the reader may render it with a short vowel as [tach] which means ‘offend’. It similarly takes the two suffixes [-ik-] and [-ab], and undergoes the same process of assimilation.

(Akkibwa agichek tagikab aisurut inyo kibatisan…)

**Intended meaning:** and the **tax collectors** also came to be baptized.

**Other:** and the **tax offenders** also came to be baptized.

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tach (offend)  taach (collect)

For the reader to render it correctly, therefore, they first have to read through the context before settling on the intended meaning. If the short vowel were represented using the grapheme [a] and the long one [aa] the reader’s work would be simplified.

2. **Vowel sound /e/ vs /ee/**

   a. **Proverbs 6:9, [ing’ete]**

   The root of the lexical item the translators intended is [ng’eet] which means ‘wake’. The prefix [i-] stands for the second person singular. The word that is graphemically represented in the bible using a short vowel is from the root [ng’et] meaning ‘get tired’, and may give an unintended meaning to the reader.
Intended meaning: For how long will you sleep, lazy one? When will you awake from your slumber?

Other: For how long will you sleep, lazy one? When will you get tired in your slumber?

In the context of this verse, both meanings are applicable and this means that it is open to two different interpretations, leading to ambiguity.

b. Luke 3:8, [kong’etyi]

[-nget-] with a short vowel in this case may mean ‘remain’ in the sense of ‘that which is left after others are removed/taken’. This is not the meaning that the translator intended. What was intended has the root [-ng’eet-] with the meaning ‘wake’ (as in example a. above) though used in a different context to mean ‘bring back to life/resurrect’. [ko-] is the infinitive marker. Owing to the phonological process of assimilation in continuous speech, one may not pronounce the /ɛ/ sound as in [koŋeetɕi], but instead the /j/ sound as in /koŋeetji/. This is why the suffix [-chi] is written [-yi]. This suffix is the pronoun which represents the indirect object in the third person.
The translators did not take into account issues of surface and deep structure and graphemically represented the phonological process of assimilation.

(...Amu amwowok ale, eng’ koichu komuji Jehova kong’etyi Abraham lagok)

**Intended meaning:** Because I tell you that on these rocks Jehovah is able to bring to life children for Abraham.

**Other:** Because I tell you that on these rocks Jehovah is able to have some children leftover for Abraham.

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Syllable tier   \sigma \sigma \sigma \sigma
Quantity tier   CV  CV  CV  CV
Segmental tier  ko  ng’ et  ch i  ko  ng’ et  ch i
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kong’etchi  kong’eetchi

(to be left over for her/him/them)  (to bring to life for her/him/them)

c. Luke 2:30, [kagoger]

[-Ger-] with retracted tongue root (-ATR) is the root word of [kagoger] and means ‘close, shut or cover’, while [geer] with advanced tongue root (+ATR) is the root of the word [kagogeer] which means ‘see’. The second meaning is what the translators intended.

Amu kagoger konyekyuk yetuneng’ung’

**Intended meaning:** Because my eyes have seen your salvation.

**Other:** Because your salvation has covered my eyes / Because my eyes have blocked your salvation.
Kagoger (he/she has covered/seen/shut)  

 **d. Luke 3:17, [bek]**

The lexical item [beek] that means ‘floor’ in Nandi has a long vowel sound (-ATR) unlike its shorter counterpart [bek] (+ATR) which would mean ‘get finished’. Another lexical item that may cause readers confusion in this instance is [beek]. It contains a long vowel like the lexical item for ‘floor’ but is (+ATR). Thus, since the difference is not indicated the reader has to look back and forth in context to identify the intended meaning.

Tinyeaterunnyi eng’ eunnyi, ak ibuji kotililit ole ketuwe bek...

**Intended meaning:** He has a fan in His hand, and he sweeps clean the place where floor is threshed

**Other:** He has a fan in His hand, and he sweeps clean the place where you placed the water
3. **Vowel sound** /o/ vs /oo/

a. **Leviticus 1:4 [kogonor]**

The meaning of [Kogonor] is related in terms of semantic field to [kogonoor] but their uses are restricted. [Kogonor] is used in reference to enclosed places while [kogonoor] is in reference to open and/or flat surfaces. When used with ‘hand’ it is restricted to ‘place on top of’ since one cannot ‘keep/store’ a hand. In the bible the meaning intended was ‘place his hand on the head of the burnt offering’, and the lexical item in this case should contain a long vowel as in [kogonoor]

Taitio kogonor eunnyi metitab kagojinonoto kibelei

*Intended meaning:* Then he places his hand on the head of the offering that is to be burnt.

*Other:* Then the head of the offering that is to be burnt keeps his hand.
b. Proverbs 1:4 [kogoch]

There is a misrepresentation of [kogoch] in terms of vowel length as well as tongue root distinction that may lead to one reading the word with the meaning ‘to stumble’ as opposed to ‘to give’ as illustrated below:

Si kong’ omit je berber, kogoch muren naet ak ng’omnatet

*Intended meaning*: So as to make wise the foolish, to give men understanding and wisdom.

*Other*: So as to make wise the foolish, understanding and wisdom stumbled men.

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<td>+ATR</td>
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kogoch (to stumble)  kogooch (to give)
4. Vowel sound /u/ vs /uu/

a. Leviticus 1:1, [kigur]

Owing to the fact that the lexical item [kigur] that contains a short vowel means ‘he stirred’, it would not be applicable in the context it has been used in and the reader would have to settle for the right meaning ‘he called’ and lengthen the vowel sound.

Kigur Jehova Musa...

**Intended meaning:** Jehova *called* Moses

**Other:** Jehova *stirred* Moses

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kigur (he stirred)  
kiguur (he called)

### 4.4.2 Tongue Root Position

In Nandi, tongue root position distinguishes words and is hence phonemic. Those vowels produced with advanced tongue root are presented as +ATR while those produced with a retracted tongue root are presented as –ATR. We shall look at various lexical items drawn from the Nandi bible that illustrate this. Though there are harmonic processes that are inherent in tongue root position, they are beyond the scope of this research and have been studied elsewhere (Creider, 2001; Lodge, 1995).
1. Leviticus 4:4, koget /-get-/  

Depending on tongue root position, [koget] may mean ‘to bring’ or ‘to strangle’. Both meanings apply in the context since a bull could be brought as a sacrifice or it could be strangled for sacrifice (as opposed to slaughtering it). The reader in this case needs to search further afield so as to ascertain the intended meaning before settling on the right phoneme.

Ak koget eito.

*Intended meaning: And drive (bring) a bull* (+ATR)

*Other: And strangle a bull* (-ATR)

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koget (to strangle)  koget (to bring/drive, as in cattle)

2. Leviticus 4:13, ngoleel /-leel-/  

This lexical item is written as [ngoleel] in the Nandi bible, yet in actual sense it contains a long vowel phoneme and may have different meanings depending on tongue root position as illustrated below:
Ak ngolel tuiyet komugul ne bo Israel

**Intended meaning:** If the whole of Israel’s gathering sins ...  

**Other:** When the whole of Israel’s gathering is new ...

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ngolel ngolel

(If they err/sin)  (If it is new/white)

The example above illustrates instances of both vowel length and tongue root position misrepresentation.

3. Proverbs 1:33/ 2 Corinthians 1:2, tebe/ng’oteb /-teb-/  

The phrase [chametab ge] in Nandi may either refer to ‘well being’ or ‘goodness’. When the word [tebe] precedes [chametab ge] it could be an enquiry after one’s wellbeing, but it could also mean that ‘goodness dwells...’ depending on the tongue root position.

Agotebe chametab ge age tugul ne gasa

**Intended meaning:** And goodness dwells with anyone who listens to me (+ATR)

**Other:** And find out how anyone who hears me is doing (-ATR)
### Syllable tier

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- ATR

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### (Ask him/her/them) (Dwell with/sit on him/her/them)

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### 4. Proverbs 3:8 /-ndo-/

Considering the fact that [indoi] is the first word in the verse below and what can show the disambiguation in the sentence is the last word [surumbeng’ung’] ‘umbilical cord’, the reader would read [indoi] either with advanced tongue root (+ATR) or with retracted tongue root (-ATR). Upon completing the verse they would then retain the correct rendering or correct the wrong one once they come across the word [surumbeng’ung’]. If the first rendering was wrong the reader would have to re-read the verse and this, according to Bird (1999b), affects fluency.

\[
\text{Indoi nito chametab ge surumbeng’ung’}
\]

**Intended meaning**: *This puts wellbeing in your umbilical cord...* (-ATR)

**Other**: *This leads wellbeing...* (+ATR)
5. Leviticus 2:7, /-sus-/

The ambiguity in the case of [-sus-] may occur in the semantic field of ‘food’ because there are some foods that one can ‘bite’ [-sus-] (–ATR) into or those that are ‘fried’ [-sus-] (+ATR).

Ak ngo bo busiek kagojineng’ung’ je kagisus

**Intended meaning:** *And if your offering is fried floor*… (+ATR)

**Other:** *And if your offering is floor that has been bitten*… (–ATR)

**NB:** * floor can be fried and eaten amongst the Nandi.

The meaning that the translators intended is represented in the first sentence (in italics) below. It is an exhortation to the lazy to emulate the ant in its hard work and industry and [ui] is pronounced with advanced tongue root. With retracted tongue root [ui] means ‘difficult’ and the second sentence (in italics) below would then be a statement of fact that the ant’s way of life may be viewed as ‘difficult’, especially from a lazy one’s point of view.

Vi oldab birechik ne I choriren

*Intended meaning:* Go to the ant’s place you who is lazy (lazy one). (+ATR)

*Other:* The ant’s place is difficult you who is lazy (lazy one). (-ATR)

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<td>-ATR</td>
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ui (difficult)  ui (go)

It is evident from the foregoing that both vowel length and tongue root position are phonemic in Nandi and should indeed be factored into the orthography if the writing system is to mirror the spoken.
4.5 Misrepresentation due to Absence of Tone Marking

This section deals with the analysis of texts with misrepresentation occurring due to absence of tone marking in the orthography that was used in writing the Nandi bible. We will first look at lexical tone and then embark on grammatical tone.

4.5.1 Lexical Tone

In Nandi various lexical items can solely be distinguished by tone. In the examples below, CV phonology is used to show the difference in tone and the resultant difference in meaning.

1. Proverbs 6:27 [-nam-]

The root [-nam-] may mean ‘hold’ or ‘light’ depending on tone. In the context that it has been used, both meanings are applicable. This means that without tone marking one would have to refer back to the original translation so as to access the correct/intended meaning.

Imuji chi konamji mat tegennyi amalalyo ngoroikyik?

*Intended meaning:* Can one *hold* fire on their chest yet their clothes don’t burn?

*Other:* Can one *light* a fire on their chest yet their clothes don’t burn?
2. Luke 4:2 [-am-]

Depending on tone placement, [maam kiy] may either mean that ‘he did not eat anything’ or it may be an idiomatic expression that means ‘no harm befell him’ which literally translated means ‘something did not eat him’.

Ak maam kiy eng’ betusiechoto.

**Intended meaning:** And he didn’t eat anything in all those days.

**Other:** And no harm befell him in all those days.

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<tr>
<td>Tonal tier</td>
<td>L L H L L LF</td>
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konamji konamji

(to light...on) (to hold...on)

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<td>Tonal tier</td>
<td>L H LF L L H</td>
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ma'am kiy maam kiy

(he didn’t eat anything) (no harm befell him)
3. 2 Corinthians 2:7 [-gaigai-]

This lexical item, as it is written in the bible, could either mean ‘it is better’, or ‘please’ depending on tone placement. In the context that it appears, both meanings apply and readers may render it either way, though that which was intended is ‘it is better’.

Noto anyun gaigai onyoji gat ak ogaigai.

**Intended meaning:** *Thus it is better to forgive him/her and be gentle with him/her.*

**Other:** *Thus please forgive him/her and be gentle with him/her.*

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gaigai (please)  
gaigai (it is better)

4. Leviticus 3:1, 6/4:3 [-get-]

Nandi is an agglutinating language and the root [-get-] as used in these verses is in the lexical item [ngogetyi]. It contains [ng-] for ‘let’, [-o-] for third person, [-get-] for either ‘bring’ or ‘strangle’ and [-chi] for the object (pronoun in the third person). Tone gives the difference in meaning since it differs not only in the root but also in other morphemes that are bound to it (for instance [-chi]) as exemplified below:
...ngo korosiotab kalyet...ngo kirgit anan roriat, ngogetyi Jehova ne libwob.

**Intended meaning:** ...if it is a peace offering...whether bull or heifer, let him/her bring

*(specific word for cattle) for Jehovah one without blemish*

**Other:** ...if it is a peace offering...whether bull or heifer, let him/her strangle for Jehovah one without blemish.

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ngôgêtchi  
(let him strangle for)  

ngôgetchi  
(let him bring for)

5. 2 Corinthians 2:5 [-ip-]

[-ip-] means ‘bring’ or ‘take’ depending on tone placement. This means that whenever one comes across it they have to search for contextual clues in order to access the correct meaning.

Ago ngopic chi arogenet...

**Intended meaning:** And if a person causes sorrow...

**Other:** And if a person bears/carries sorrow...
6. Lamentations 1:4 [-tiny-]

The two possible meanings of [-tiny-] ‘has’ and ‘touch’ in this text are acceptable but the meaning intended is that of ‘has’ which refers to ‘possession of’

Kiusei bergeinikyik, tinyei ng’wonindo inendet.

**Intended meaning:** Her virgins are being mistreated, she herself has (is in) pain.

**Other:** Her virgins are being mistreated, pain touches (affects) her.

The same applies to [-tiny-] as used in 2 Corinthians 2:13:11. Though the tense and person is different the tone placement in the root word remains the same and so do the meanings. The intended meaning is also similar.
Ago kiaruji ayai ni, ale amanyonjok kogeny atinye arogenet.

**Intended meaning:** And I purposed that I would not come again to you having sorrow.

**Other:** And I purposed that I would not come again to you touching sorrow.

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atinye (I... having)  

atinye (I... touching)

7. **Lamentations 1:16 [-rir-]**

Ambiguity may occur in this text because there are two meanings which both make sense. However, only the meaning ‘weep’ is the intended one. If the lexical item is read to mean ‘feel sorry for them’ the meaning of the rest of the verse is distorted.

Arire amu choto.

**Intended meaning:** I weep because of those things.

**Other:** I feel sorry for them because of those things.

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arire (I cry/weep)  

arîré (I feel sorry for him/her/them)
8. Luke 3:3 [-bit-]

In this verse, to begin with, there is misrepresentation in terms of vowel length. Secondly, since both words are rendered with a retracted tongue root, the only means of distinguishing them, especially when contextual clues come further afield is through tone distinction.

Kiwa emotinwek tugul je mi tabanwekab Jordan, koamdoti kabatisanet ne bo sigunet si kobit konyor nyoetab kat ne bo chalwogik

**Intended meaning:** *...preaching the baptism of repentance so as to enable them get forgiveness of sins*

**Other:** *...preaching the baptism of repentance so as to grow to get forgiveness of sins*

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<td>ko</td>
<td>biit</td>
</tr>
<tr>
<td>Tonal tier</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>H</td>
</tr>
</tbody>
</table>

-ATR -ATR

kobiit (to enable)  kobiit (to grow)

9. Leviticus 1:9, [ngo-]

[Ngo-] may refer to the directive ‘let’ or the condition ‘if’ (both in the third person) depending on tone. It may also refer to the condition ‘if’ in the second person. The difference between the condition ‘if’ in the second or third person is however tackled in
the next section under grammatical tone. Here we look at the difference between ‘let’ and ‘if’ in the third person.

Agó ngaun tugukab ke koboto kelyek

**Intended meaning**: And *let* him wash the testicles together with the hooves (of the sacrifice)...

**Other**: And *if* he washes the testicles together with the hooves (of the sacrifice)...

\[
\begin{array}{c|c|c|c|c|c|c}
\text{Syllable tier} & \sigma & \sigma & \sigma & \sigma \\
\text{Quantity tier} & CV & VC & CV & VC \\
\text{Segmental tier} & \text{ngo} & \text{un} & \text{ngo} & \text{un} \\
\text{Tonal tier} & H & H & L & H \\
& +ATR & +ATR &
\end{array}
\]

ngóún (*let* him wash) ngaún (*if* he washes)

### 4.5.2 Grammatical Tone

Various grammatical features are tone dependent in Nandi. These include case, person, tense and aspect, and voice. Each will be examined at a time.

1. **Case**

The subject and object in a given sentence is determined by tone placement. This means that while reading Nandi, one has to first determine who the speaker/subject is so as to read it correctly using the appropriate intonation. Illustrations for this abound. Take the case of **Leviticus 1:1, Kigur Jehova Musa**. Depending on tone placement, the statement
above could have Moses as the subject and Jehovah as the object or Jehovah as the subject and Moses as the object thus:

a. Leviticus 1:1, Kigur Jehova Musa

*Intended meaning:* Kigur Jehova Musà (*Jehovah called Moses*) OR

*Other:* Kigur Jéhova Musa. (*Moses called Jehovah*)

The same applies for the following texts:

b. Leviticus 4:1, 5:14 Ak kilenji Jehova Musa

*Intended meaning:* Ak kilenji Jehova Musà (*Jehovah said to Moses*)

*Other:* Ak kilenji Jéhova Musa (*Moses said to Jehovah*)

c. Proverbs 1:7 Ago sasei ng’omnatet ak konetisiet abusanik

*Intended meaning:* Ago sasei ng’ómnatet ak konetisiet abusanik (*Fools despise wisdom and instruction*)

*Other:* Ago sasei ng’ómnatet ak konetisiet abusanik (*Wisdom and instruction despise fools*)

d. Proverbs 2:7 Konorchin che bo iman ng’omnatet ne nyitat

*Intended meaning:* Konorchin che bó iman ng’ómnatet ne nyitat (*He/she keeps sound wisdom for the righteous*)

*Other:* Konorchin che bó iman ng’ómnatet ne nyitat (*The righteous keep sound wisdom for him/her*)

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e. Lamentations 1:5 Kiboi usikyik inendet

*Intended meaning:* Kiboi usikyik inendet (*His oppressors ruled over him*)

*Other:* Kiboi usikyik inendet (*He ruled over his oppressors*)

f. Lamentations 1:7 Ibwoti Jerusalem...

*Intended meaning:* Ibwoti Jérusalem (*Jerusalem remembers...*)

*Other:* Ibwoti Jérusalem (*He/she thinks about/remembers Jerusalem*)

g. Lamentations 1:8 Kigosas inendet je kigonyiti

*Intended meaning:* Kigosas inendet je kigonyiti (*Those who honored him have despised him*)

*Other:* Kigosas inendet je kigonyiti (*He has despised those he honored*)

h. Lamentations 1:17 King’at Jehova kole, konyalil Jakobo usikyik je imuti

*Intended meaning:* King’at Jehova kole, konyalil Jakobo usikyik je imuti

(*Jehova commanded that *Israel’s enemies* that surround her will mistreat her*)

*Other:* King’at Jehova kole, konyalil Jakobò usikyik je imuti

(*Jehova commanded that *Israel* will mistreat her enemies that surround her*)

i. Luke 1:18 Kolenji Sekaria malaikayat

*Intended meaning:* Kolenji Sékaria malaikayat (*Zechariah said to the angel*)

*Other:* Kolenji Sekaria.malaikayat (*The angel said to Zechariah*)
j. 2 Corinthians 1:11 Si kobiit kogoji bik che chang kongoi eng achek

*Intended meaning:* Si kobiit kogoji bik che chang' kongoi eng achek *(So that many people can (give him thanks) thank him because of us)*

*Other:* Si kobiit kogoji bik che chang’ kongoi eng achek *(So that he can (give many people thanks) thank many people because of us)*

k. 2 Corinthians 2:6 Yame chi ne uni korooky bi k che chang’

*Intended meaning:* Yame chi ne uni korooky bi k che chang’ *(Many people should judge such a person)*

*Other:* Yame chi ne uni korooky bi k che chang’ *(Such a person should judge many people).*

The illustrations above show a distinct pattern. When both the subject and object are nouns (as opposed to pronouns), one of two things happens. A high tone may be marked on the first syllable of the first noun to make it the subject and consequently the second noun becomes the object of the verb. A low falling tone may also be marked on the last syllable of the second noun making it the subject. In this instance the first noun is the object of the verb.

When there is one noun/noun phrase and a pronoun for object and subject position, tone is marked on the available noun/noun phrase. A high tone on the first syllable of this noun/noun phrase makes it the subject while a low falling tone on the last syllable of the same noun/noun phrase renders it the object of the verb (examples e, f, g and j above).
2. Person

Tone also plays the role of distinguishing speakers in terms of person. Below are some examples of these.

a) Second person (singular) versus third person (singular or plural) in the simple present tense

The prefix [-i-] may represent the second person singular or third person either singular or plural depending on tone marking as seen in the examples below:

i. Lamentations 1:17, ...usikyik je imuuti

*Intended meaning:* ...usikyik je imuuti ...*her enemies that surround her*

*Other:* ...usikyik je imuuti ...*her enemies that she surrounds*

*Other:* ...usikyik je imuuti ...*her enemies that you surround*

ii. Lamentations 1:7 *Ibwoti Jerusalem...*

*Intended meaning:* Ibwoti Jérusalem (*Jerusalem remembers...*)

*Other:* Ibwoti Jérusalem (*He/she thinks about/remembers Jerusalem*)

*Other:* ibwoti Jérusalem (*You think about/remember Jerusalem*)

iii. Proverbs 2:6 amu *igoitoi Jehova ng’omnatet*

*Intended meaning:* amu *igoitoi Jehova ng’omnatet* (*Because Jehovah gives wisdom*)

*Other:* amu *igoitoi Jehova ng’omnatet* (*Because you Jehovah give wisdom*)
The apparent pattern in the examples given above is that for the second person singular the first and last syllable has a high tone while the third person has a low tone in all the three syllables.

b) Second person (plural) versus third person (singular or plural) in an ‘if’ conditional clause

i. 2 Corinthians 3:16 Ago ngwekyigei kiptaiyat, kinemu kereiywondonoto

**Intended meaning:** Ago ngwekyigei kiptaiyat, kinemu kereiywondonoto *(But if he (Moses) turns back to the Lord, that veil will be removed)*

**Other:** Ago ngowékyigei kiptaiyat, kinemu kereiywondonoto
*(But if you turn yourselves back to the Lord, that veil will be removed)*

The word [ngwekyigei] is made up of the morphemes {ng-}, {-o-}, {-wech-}, {-chi-}, {-gei}

{ng-} means either ‘when’ or ‘if’ but in this context it means ‘if’.

{-o-} is the second person plural marker or third person (singular or plural) marker.

{-wech-} is the root of the word and means ‘turn’.

{-chi-} is the suffix that indicates the third person (singular and plural) personal pronoun in the object position.

{-gei} is the reflexive marker and means ‘self’.
Table 3 gives an analysis of the root [-wech-] as used with the personal pronouns and the prefixes and suffixes above. It also shows how tone differentiates the second person plural from the third person (singular/plural).

Table 3: Analysis of [ng-]+[person]+[-wech-]+[chi]+[-gei-]

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>First person</td>
<td>ngawékchigei (if I turn back to him)</td>
<td>ngiwékchigei (if we turn back to him)</td>
</tr>
<tr>
<td>Second person</td>
<td>ngiwékchigei (if you turn back to him)</td>
<td>ngowékchigei (if you turn back to him)</td>
</tr>
<tr>
<td>Third person</td>
<td>ngowékchigei (if he/she turns back to him)</td>
<td>ngowékchigei (if they turn back to him)</td>
</tr>
</tbody>
</table>

Table 4 below is a reflection of the personal pronoun morphemes presented above. The third person personal pronoun changes depending on the environment and the various markers are as shown below:

Table 4: Nandi Personal Pronoun Morphemes in Subject Position

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>First person</td>
<td>{a-}</td>
<td>{ki-}</td>
</tr>
<tr>
<td>Second person</td>
<td>{i-}</td>
<td>{o-}</td>
</tr>
<tr>
<td>Third person</td>
<td>{ø}, {i} or {ø}</td>
<td>{ø},{i} or {ø}</td>
</tr>
</tbody>
</table>

From Table 3 and 4 above it is clear that the plural marker for the second person plural {-o-} is similar to the third person (singular/plural) marker used with the condition [ng-]
‘if’. The only way to differentiate them is through tone distinction as shown in Table 3 above.

From Table 3 it also emerges that the third person singular and plural are homonyms. To distinguish between the singular and plural of the third person, the noun(s) they refer to may be mentioned before or after the lexical item. The personal pronoun, [ine] for singular and [ichek] for the plural, may also be given after the word. For example, in the verse under analysis, the mention of Moses in the previous verse (2 Corinthians 3:15) could let the reader know that it is in the singular. If this information were unavailable then the pronoun [ine] would have been added to disambiguate it and the verse above would then have read:

Ago ngowekyigei ine kiptaiyat, kinemu kereiywondonoto

(But if he (Moses) turns back to the Lord, that veil will be removed)

c) First Person (singular) versus third person (singular/plural) in the immediate past versus first person (singular) in the present perfect

The past tense and the present perfective aspect in Nandi are represented by three morphemes:

{ka-} represents the immediate past, that is, events within the day ranging from a few seconds ago to several hours ago. The same morpheme (with a different tone) also denotes the present perfective aspect within the same time range.
{ko-} is mainly used for events that occurred during the previous day. It also represents the present perfective for events that began the previous day, and

{ki} represents the rest of past time together with the present perfective for events which began in the distant past but are completed.

The examples below illustrate the different tenses and aspect depending on tone placement in words with the morpheme {ka-} and how these are causes of ambiguity in the Nandi bible.

i. Proverbs 1:24 Amu kagurok, ak oesie

*Intended meaning:* Amu kágúrók, ak oesie (*For I have called you, and you refused*)

*Other:* Amu kágúrók, ak oesie (*For I called you, and you refused*)

*Other:* Amu kágúrók, ak oesie (*For he/she/they called you and you refused*)

ii. Lamentations 1:10 Amu kager koba torobek oldanyi ne itabanat

*Intended meaning:* Amu kágér koba torobek oldanyi ne itabanat (*for I have seen the heathen go into her sanctuary*)

*Other:* Amu kágér koba torobek oldanyi ne itabanat (*for I saw the heathen go into her sanctuary*)

*Other:* Amu kágér koba torobek oldanyi ne itabanat (*For he/she/they saw the heathen go into her sanctuary*)
The present perfective aspect, which carries the meaning that the translators intended to portray in the two examples, has a high falling tone on the first syllable and a high tone on the second one. In the immediate past, the first person marks a low falling tone on the first syllable and a high tone on the last syllable. The third person contains a low tone on the first syllable and a high falling tone on the last one.

3. Past tense and perfective aspect

One example showing ambiguity resulting from not marking tone to differentiate the past tense from the perfective aspect has already been detailed in 2.c. above. The examples above dealt with the recent past which is represented by the morpheme \{ka-\}. The examples below illustrate the distant past that uses \{ki-\}.

It is clear from the examples below that in the simple past tense, both the distant past tense marker \{ki-\} and the personal pronoun marker in the subject position \{-a-\} carry a high tone. In the present perfect however only \{ki-\} has a high tone while the personal pronoun marker has a low tone.

i. Proverbs 5:12 Ak ile bwa kiawech kotigonet

*Intended meaning:* Ak ile bwa kiawech kotigonet (*And say: Oh! I have despised instruction*)

*Other:* Ak ile bwa kiáwech kotigonet (*And say: Oh! I despised instruction*).
ii. **Lamentations 1:19** Kiagur che kichama, ago kiberbera

*Intended meaning:* Kiágur che kichama, ago kiberbera (*I called those that loved me, but they lied to me*)

*Other:* Kiagur che kichama, ago kiberbera (*I have called those that love me, but they lied to me*)

iii. **Luke 1:4** Si kobit inai komie ng’alechoto che kiginetin

*Intended meaning:* Si kobit inai komie ng’alechoto che kiginetin (*So that you may know with certainty those things (words) that you have been taught*)

*Other:* Si kobit inai komie ng’alechoto che kiginetin (*So that you may know with certainty those things (words) that you were taught*)

*Other:* Si kobit inai komie ng’alechoto che kiginetin (*So that you may know with certainty those things (words) that we taught you*)

iv. **2 Corinthians 1:23** Ago kagur Jehova koek baoriandet em tamirmirinnyu, ale kiarirenak si manyo Korinto agoi nguno.

*Intended meaning:* kíarirenak (*I spared you*)

*Other:* kíarirenak (*I have spared you*)

4. **Indefinite subject (passive voice) versus definite subject**

Tone also distinguishes the passive and active voice. When the subject of a sentence is apparent, the person marker in the subject position has a high tone while the last syllable
carries a high falling tone. In the passive, only the person marker takes a high tone, with the rest carrying a low tone as illustrated below:

i. **Proverbs 1:17 Kigitech meste buch**

*Intended meaning:* Kigitech meste buch (*A trap was set in vain*)

*Other:* Kigîtech meste buch (*We set a trap in vain*)

ii. **2 Corinthians 2:11 Ago kingen atebennyi**

*Intended meaning:* Ago kingên atebennyi (*and we know his character*)

*Other:* Ago kingen atebennyi (*and his character is known*)

iii. **2 Corinthians 3:3 Ibortoge kole o baruet nebo Kristo, ne kiyae, ne kigisir ama eng’ wino...**

*Intended meaning:* ne kiyâæ, ne kigísîr ama eng’ wino... (*that is done by us, that was written not in ink...*)

*Other:* ne kiyae, ne kigísîr ama eng’ wino... (*that is done, which we wrote not in ink...*)

5. **NP in apposition versus Statement**

Apart from the grammatical features discussed above, another aspect of grammar which is affected by tone is the appositive noun phrase. In the absence of a comma, the noun phrase in apposition may be identified as differing from a statement by distinction in tone as seen in the example below:
i. Leviticus 3:2 tiseiywek werikab Aron

*Intended meaning:* tiseiywek werikab Aron (*The priests, Aaron’s sons*)

*Other:* tiseiywek werikab Aron (*Aaron’s sons are priests*)

From the examples above it is clear that there are many aspects of grammar that can only be distinguished when tone is marked. Thus absence of tone marking leads to difficulty in accessing the phonological cues that are necessary before meaning can be accessed by readers.

Having analysed the various aspects of misrepresentation present in the selected portions of the Nandi bible, attention now focuses on the effect that these misrepresentations have on its readers.

4.6 Effect of Misrepresentation on Readers

To determine the effect of the phoneme-grapheme representation in the 1959 Nandi bible on readers, 40 lexical items in their biblical context were given to 20 native speakers to read. Of the 40, 10 contained vowel phonemes whose length is misrepresented, another 10 could be read variously due to tongue root distinction, further 10 needed lexical tone distinction and the last 10 needed grammatical tone distinction. Of the 20 readers 10 were female and 10 male, ranging from ages 20 to 75. They all had at least O-Level education.

The reading list was intended to elicit two kinds of data. The first kind was to determine how the readers would pronounce the lexical item in light of the heterophonic homography, and the second was to record the instances of hesitation and repetition while
reading the target lexical items. Table 5 below gives a summary of the texts that were used in the reading list. For the actual reading list refer to Appendix B.

**TABLE 5: Texts Used in the Reading List**

<table>
<thead>
<tr>
<th>Vowel Length</th>
<th>Leviticus</th>
<th>Proverbs</th>
<th>Lamentations</th>
<th>Luke</th>
<th>2Corinthians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lev. 2:4</td>
<td>Prov. 4:4</td>
<td>Lam. 1:3</td>
<td>Luke 2:27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lev. 4:4</td>
<td>Prov. 6:9</td>
<td>Lam. 1:5</td>
<td>Luke 2:30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lev. 5:11</td>
<td></td>
<td>Lam. 1:10</td>
<td>Luke 2:38</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tongue Root</th>
<th>Lev. 4:4</th>
<th>Prov. 1:33</th>
<th>Lam. 1:8</th>
<th>Luke 2:42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lev. 5:11</td>
<td>Prov. 3:6</td>
<td>Prov. 3:8</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Prov. 3:24</td>
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<td></td>
<td>Prov. 3:28</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Prov. 4:25</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lexical Tone</th>
<th>Lev. 1:9</th>
<th>Prov. 6:27</th>
<th>Lam. 1:16</th>
<th>Luke 2:39</th>
<th>2Cor. 1:13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lev. 5:14</td>
<td>Lam. 1:17</td>
<td></td>
<td></td>
<td>2Cor. 2:5</td>
<td></td>
</tr>
<tr>
<td>Lev. 4:5</td>
<td>Lam. 1:25</td>
<td></td>
<td></td>
<td>2Cor. 2:10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grammatical Tone</th>
<th>Lev. 4:1/5:14</th>
<th>Prov. 1:7</th>
<th>Lam. 1:7</th>
<th>Luke 1:18</th>
<th>2Cor. 3:16</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prov. 1:32</td>
<td>Lam. 1:7</td>
<td></td>
<td>2Cor. 3:16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prov. 1:17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prov. 5:12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prov. 1:25</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 4.6.1 Reader's Rendition per Lexical Item

The target lexical items were presented to the readers in their biblical context in the form of sentences. The researcher sought to find out how each respondent would render these lexical items so as to determine whether misrepresentation of phonemes and tone affect reading. The details of the reader's rendition per lexical item are presented in Table 6 below. After the table is a detailed analysis of the readers rendition per lexical item based on the table.
Table 6: Analysis of Reader’s Renditon per Lexical Item (in percentage)

<table>
<thead>
<tr>
<th>Lexical items</th>
<th>C</th>
<th>D</th>
<th>I</th>
<th>Lexical items</th>
<th>C</th>
<th>D</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.Ibu</td>
<td>35</td>
<td>65</td>
<td>0</td>
<td>21.Ngoun</td>
<td>35</td>
<td>40</td>
<td>25</td>
</tr>
<tr>
<td>2.Kineta</td>
<td>85</td>
<td>10</td>
<td>5</td>
<td>22.Ngolel</td>
<td>45</td>
<td>20</td>
<td>35</td>
</tr>
<tr>
<td>3.Ing’ete</td>
<td>70</td>
<td>30</td>
<td>0</td>
<td>23.Arire</td>
<td>85</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>4. Kigikyi</td>
<td>10</td>
<td>35</td>
<td>55</td>
<td>24.Konamji</td>
<td>90</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>5.Kinyalil</td>
<td>5</td>
<td>90</td>
<td>5</td>
<td>25.Amu</td>
<td>75</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>6.King’at</td>
<td>15</td>
<td>75</td>
<td>10</td>
<td>26.Tugul</td>
<td>10</td>
<td>70</td>
<td>20</td>
</tr>
<tr>
<td>7.Kigoito</td>
<td>75</td>
<td>20</td>
<td>5</td>
<td>27.Makisirwok</td>
<td>85</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>8. Kindoji</td>
<td>75</td>
<td>25</td>
<td>0</td>
<td>28.Koip</td>
<td>50</td>
<td>50</td>
<td>0</td>
</tr>
<tr>
<td>12.Kiger</td>
<td>70</td>
<td>15</td>
<td>10</td>
<td>32.Ngomnatet/abusanik</td>
<td>60</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>13.Tebe</td>
<td>85</td>
<td>15</td>
<td>0</td>
<td>33.Ijek</td>
<td>25</td>
<td>65</td>
<td>10</td>
</tr>
<tr>
<td>14.Kondoun</td>
<td>80</td>
<td>10</td>
<td>10</td>
<td>34.Ibwoi/Jerusalem</td>
<td>20</td>
<td>65</td>
<td>15</td>
</tr>
<tr>
<td>15.Indoi</td>
<td>35</td>
<td>65</td>
<td>0</td>
<td>35.Kigitech</td>
<td>30</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>16.Ui</td>
<td>85</td>
<td>10</td>
<td>5</td>
<td>36.Sekaria/malaiyat</td>
<td>85</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>17.Ger</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>37.Kiawech</td>
<td>35</td>
<td>10</td>
<td>55</td>
</tr>
<tr>
<td>18.Ameiywei</td>
<td>90</td>
<td>10</td>
<td>0</td>
<td>38.Kiginetin</td>
<td>5</td>
<td>85</td>
<td>10</td>
</tr>
<tr>
<td>20.Kingoit</td>
<td>80</td>
<td>15</td>
<td>5</td>
<td>40.NgoweKyigei/kinemu</td>
<td>20</td>
<td>30</td>
<td>50</td>
</tr>
</tbody>
</table>

**AVERAGE**

<table>
<thead>
<tr>
<th>C</th>
<th>D</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>52.25%</td>
<td>35%</td>
<td>12.75%</td>
</tr>
</tbody>
</table>

**KEY:** C – CORRECT  D – DIFFERENT  I – INCORRECT

Only 52.25% of the readers read the lexical items correctly giving the meaning intended in the bible. 35% of the readers read the lexical items differently, giving a correct meaning yet not that which was intended in the bible. 12.75% read them incorrectly.

Chart 1 below gives a summary of these percentages.
Lexical item 17 is the only one that all informants read as was expected and conveyed the meaning that the bible translation intended. This is because the sentence contained only two words which were all within the reader’s view. Another reason for this is the fact that the other word ‘taí’ (ahead/front) is a more likely collocate of ‘ger’ (look) than ‘ger’ (obstruct/close). The rest of the lexical items under study were read variously, most correctly, though a few incorrectly. Of those read correctly, most had two or more ways in which they could be read, giving different meanings all of which are correct, though not that which the bible translation intended to convey.

Out of the 40 lexical items, only 21 were read correctly by 50% or more of the informants hence conveying the meaning that the bible translators intended. 11 of the lexical items were read differently by 50% or more of the informants while only 3 lexical items were read incorrectly by 50% or more of the informants.
1. Vowel Length

10 lexical items under study were meant to test vowel length (Lexical items 1-10). From these, 5 were read correctly by more than half of the informants thus conveying the meaning that the bible translation intended. 4 of these were read differently, conveying a meaning not intended by the bible translation and 1 incorrectly, by more than half the informants.

2. Tongue Root Position

Of the 10 lexical items (Lexical items 11-20) under study, 8 were read correctly by more than half of the informants conveying the meaning that the bible translation intended while 1 was read differently by more than half of the informants thus conveying a meaning not intended by the bible translation. The remaining 1 lexical item was read differently by 45%, correctly by 25% and incorrectly by 30% of the readers.

3. Lexical Tone

4 of the 10 lexical items (Lexical items 21-30) under study were read correctly by more than half of the informants conveying the meaning that the bible translation intended. A further 3 were read differently by more than half of the informants hence conveying a meaning not intended by the bible translation. One item had 50% reading correctly and the other 50% reading differently.
4. Grammatical Tone

Lexical items 31-40 were meant to test grammatical tone. More than half the informants read 3 lexical items correctly, 3 differently and 2 incorrectly. From the remaining 2 lexical items, most read them incorrectly (35% and 40%) followed by those who read them differently (both at 35%) and the least read them correctly (30% and 25%).

These results prove that readers have a difficulty in reading the Nandi bible since it contains many heterophonic homographs. The fact that the lexical items were read variously shows that as the Nandi native speakers actually read the bible, they either access the wrong meaning, or they have to read passages more than once so as to make out its meaning. This is in agreement with what Frost and Bentin (1992) state that readers have to first disambiguate the phonological codes of the heterophonic homographs before arriving at the correct meaning of an orthographic entry.

4.6.2 Frequency of Repetition and Hesitation

Apart from the different renderings of the various lexical items presented to the readers, the study also set out to ascertain the frequency of repetitions and hesitations before or while reading the target lexical items as the readers went through the reading list. This was done so as to determine whether indeed the misrepresented lexical items presented a problem to the reader of the Nandi bible. Table 7 gives an analysis of the reader’s repetitions and hesitations per lexical item.
### TABLE 7: ANALYSIS OF READER HESITATIONS, REPETITIONS PER LEXICAL ITEM

<table>
<thead>
<tr>
<th>Lexical items /Responses</th>
<th>Correct</th>
<th>%</th>
<th>Hesitation</th>
<th>%</th>
<th>Repetition</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ibu</td>
<td>17</td>
<td>85</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>2. Kineta</td>
<td>18</td>
<td>90</td>
<td>2</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. Ing'ete</td>
<td>13</td>
<td>65</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>4. Kigikyi</td>
<td>12</td>
<td>60</td>
<td>6</td>
<td>30</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>5. Kinyalil</td>
<td>15</td>
<td>75</td>
<td>4</td>
<td>20</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>6. King'at</td>
<td>11</td>
<td>55</td>
<td>7</td>
<td>35</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>7. Kigoito</td>
<td>18</td>
<td>90</td>
<td>2</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8. Kindoji</td>
<td>19</td>
<td>95</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9. Kagoger</td>
<td>14</td>
<td>70</td>
<td>3</td>
<td>15</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>10. Kigeni</td>
<td>12</td>
<td>60</td>
<td>8</td>
<td>40</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11. Koget</td>
<td>7</td>
<td>35</td>
<td>8</td>
<td>40</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>12. Kiger</td>
<td>12</td>
<td>60</td>
<td>6</td>
<td>30</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>13. Tebe</td>
<td>16</td>
<td>80</td>
<td>3</td>
<td>15</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>14. Kondoun</td>
<td>18</td>
<td>90</td>
<td>2</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15. Inoi</td>
<td>16</td>
<td>80</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>16. Ui</td>
<td>18</td>
<td>90</td>
<td>2</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>17. Ger</td>
<td>18</td>
<td>90</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>18. Ameiywei</td>
<td>19</td>
<td>95</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>19. Kigimut</td>
<td>13</td>
<td>65</td>
<td>4</td>
<td>20</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>20. Kingoito</td>
<td>20</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>21. Ngoun</td>
<td>12</td>
<td>60</td>
<td>6</td>
<td>30</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>22. Ngolel</td>
<td>16</td>
<td>80</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>23. Arrire</td>
<td>20</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>24. Konamji</td>
<td>17</td>
<td>85</td>
<td>3</td>
<td>15</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25. Amu</td>
<td>12</td>
<td>60</td>
<td>6</td>
<td>30</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>26. Tugul</td>
<td>12</td>
<td>60</td>
<td>5</td>
<td>25</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>27. Makisirwok</td>
<td>14</td>
<td>70</td>
<td>4</td>
<td>20</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>28. Koip</td>
<td>19</td>
<td>95</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>29. Ngonyoji</td>
<td>6</td>
<td>30</td>
<td>12</td>
<td>60</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>30. Ngoip</td>
<td>15</td>
<td>75</td>
<td>3</td>
<td>15</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>31. Jehova/Musa</td>
<td>19</td>
<td>95</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>32. Ngomnate/Abusanik</td>
<td>13</td>
<td>65</td>
<td>5</td>
<td>25</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>33. Ijeck</td>
<td>12</td>
<td>60</td>
<td>7</td>
<td>35</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>34. Ibwo/Ijeresalem</td>
<td>17</td>
<td>85</td>
<td>2</td>
<td>10</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>35. Kigitech</td>
<td>10</td>
<td>50</td>
<td>9</td>
<td>45</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>36. Sekaria/Malaikayat</td>
<td>17</td>
<td>85</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>37. Kiawech</td>
<td>15</td>
<td>75</td>
<td>4</td>
<td>20</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>38. Kiginetin</td>
<td>17</td>
<td>85</td>
<td>3</td>
<td>15</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>39. Kiosas</td>
<td>11</td>
<td>55</td>
<td>6</td>
<td>30</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>40. Ngowekei/kinemu</td>
<td>10</td>
<td>50</td>
<td>9</td>
<td>45</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

73.875% 19% 7.125%
Although most of the readers (73.875%) did not hesitate nor read the target lexical items repeatedly, 19% hesitated before or while reading the target lexical item and 7.125% read the lexical item repeatedly as presented in Chart 2 below.

**Chart 2: Frequency of Repetition and Hesitation**

Only lexical items 20 and 23 had no respondent repeating or hesitating before reading them. Although there were neither repetitions nor hesitations for these lexical items, the lexical items were read variously by different informants as shown in Table 6 above proving that even these two still pose problems for the reader of the Nandi bible. For 38 of the 40 lexical items, there were respondents who hesitated before reading the word, or read the lexical item repeatedly. There were varying instances of both repetitions and hesitations as shown in Table 7 above.

2 of the lexical items (35 & 40) had half the respondents either rereading the lexical item, or hesitating before reading them, while another 2 (11 & 29) had more than half the respondents either rereading the lexical item or hesitating before reading them.
The frequency of repetition and hesitation (26.125%) together with the high percentage of different renderings (35%) as compared to the correct renderings (52.25%) indicate a notable degree of inadequacy in the 1959 Nandi bible translation in terms of the level of language, particularly in grapheme-phoneme representation, and tonal distinction in the orthography.

4.7 Conclusion

In this chapter data from the bible was analysed and grapheme-phoneme misrepresentation identified, explained and illustrated using the CV Phonology. Misrepresentation that occurs due to the absence of tone marking was similarly identified, explained and illustrated. Lastly, data from the respondents was analysed in order to determine the effect of the current representation on the readers of the 1959 Nandi bible. To do this, the rendition of every lexical item by the 20 readers was compared, and then the frequency of repetition and hesitation within the target lexical item was computed.

In the next chapter a summary of the research findings are presented after which conclusions, recommendations and suggestions for further research are offered based on the findings herein.
CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The aim of this study was to identify and describe the vowel phonemes that have been misrepresented, to identify and describe the misrepresentation arising due to the absence of tone marking in the orthography used in the Nandi bible, and to determine the effect that this misrepresentation has on its readers. The misrepresentation was highlighted and described in the previous chapter, and the resultant effect on the readers examined.

5.1 Summary of Findings

To begin with, lexical items containing the vowel phonemes were identified from the Nandi bible. A description of the misrepresentation was given under the titles vowel length and tongue root position. Under vowel length, the observation was that lexical items containing long vowel phonemes were represented using one vowel grapheme. As a result they are homographs with those lexical items that have short vowel phonemes. Tongue root position was also observed to compound the problem since for every vowel grapheme there were two vowel phonemes, one with retracted tongue root and another with advanced tongue root. Thus one vowel grapheme has been used to represent: a short vowel phoneme (+ATR), a short vowel phoneme (-ATR), a long vowel phoneme (+ATR), a long vowel phoneme (-ATR). The functional load of the vowel phoneme is therefore high and as Karan (2006) points out if a phoneme with a high functional load is not uniquely represented there is potential for confusion.
Instances of misrepresentation due to the absence of tone marking were observed in lexical items where tone was the only basis of differentiating two words. In this case the same vowel grapheme is used in writing both words (making them homographs) and since the phonological element tone is not marked, the vowel grapheme carries an even bigger functional load. For instance, a reader faced with a word containing the grapheme [a] has to decide on the previous aspects of length and tongue root position thus:

<table>
<thead>
<tr>
<th></th>
<th>Short</th>
<th>long</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ATR</td>
<td>a</td>
<td>aa</td>
</tr>
<tr>
<td>-ATR</td>
<td>a</td>
<td>aa</td>
</tr>
</tbody>
</table>

In addition to whether tone plays a role in distinguishing given words that contain the grapheme.

In the findings, tone distinction was also found to affect grammatical features such as the case (subject versus object), person, tense and aspect. Karan (2006) notes that if many common words are distinguished on the basis of a common feature, then the element has a high functional load. The findings showed that the objective case, for example, is distinguished solely by means of tone distinction in the subject and the object of a sentence. This means that the fact that tone is not marked in the orthography is a basis for confusion for readers.

The findings from the reading list presented to readers indicate that readers have difficulties in reading the heterophonic homographs because of the high functional load.
that the vowel graphemes have. When presented with a heterophonic homograph the readers would:

1. Read the lexical item variously, giving rise to different meanings,
2. Read the lexical item more than once,
3. Hesitate before reading the lexical item.

This is an indication that there was mistranslation of the Nandi bible as far as the linguistic aspects are concerned.

5.2 Conclusion

The lexical items described containing vowel phoneme misrepresentation and misrepresentation due to the absence of tone marking have shown that the vowel graphemes used carry an extremely high functional load since as they are currently used, they represent length, tongue root distinction and tonal distinction.

The fact that for 38 of the 40 lexical items there were respondents who hesitated before reading the word, or read the lexical item repeatedly is in line with the view of the Multiple Access Theory that meanings of an ambiguous word are recalled simultaneously. Since there were no disambiguating cues in the reading list, both meanings that had been accessed were retained as the reader made a choice on which of the meanings to convey. Hence some informants would read the lexical item once, reread it and then read it again as they had done at first. An example of this is lexical item 10 as read by respondent L010 who read the lexical item represented as [kigeni] as /kigeni/, then /ki:geni/ and back to /kigeni/. This goes to prove that while reading the bible, the
reader, having realized that there are competing meanings that a heterphonic homograph could convey, apply higher level processes and their associated knowledge sources as espoused by the conditional retention component of the Multiple Access Theory. This includes reading back and/or forth in the larger context to come up with the intended meaning of the lexical item. This of course adversely affects fluency in reading and consequently access of meaning as has been exemplified in the data.

The effect on the access of meaning is further illustrated by the various ways in which the informants read the target lexical items. That a word, phrase or sentence presents several possible meanings gives the reader the added task of determining which particular meaning was intended. Where both meanings could suffice, as was the case in many of the texts, the bible translation is misinterpreted and could then be said to have been mistranslated as far as the graphemic representation of phonemes is concerned.

5.3 Recommendations

Based on the findings, the orthography used in writing Nandi should be improved so as to make it easier for readers to access meaning. The full phoneme inventory should be developed, a syllabus designed and material prepared using the improved orthography so that those wishing to read Nandi can learn with ease.

Those involved in translations and revisions, and development or improvement of the orthography should include native speakers with sound linguistic knowledge so that linguistic aspects are taken into consideration while improving the current orthography or revising the current bible translation.
5.4 Suggestions for further research

Only vowel phonemes were studied in this research. Consonant phonemes need further investigation if the phonemes in Nandi are to be well and fully represented in the orthography.

This study’s focus was on the phonemic representation in the orthography used in a translation. From the study’s findings it is clear that other linguistic aspects that affect the language’s orthography need to be studied. For instance a study on morphophonemics and the phonological processes in Nandi, and how they impact on the writing system would be beneficial in orthography improvement.

The linguistic aspect of phonological representation in the Nandi bible was the basis of this study. From the findings it is clear that there are many other aspects of mistranslation at the morpho-syntactic, semantic and pragmatic levels in the Nandi bible. A study based on these other aspects of mistranslation would assist in its revision.

Though informants were aged between 20 and 75 years and an equal number of males versus females were used, age and gender were not variables. A study that would look at age, gender, geographical location (rural/urban) and education level would be necessary so as to ascertain the extent of the problem as concerns reading Nandi as it is currently written, and the need for the orthography’s improvement.
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APPENDIX A

Map of Nandi Speakers

Languages and Dialects of Kenya
APPENDIX B

READING LIST

Introduction

Thank you for accepting to participate in this study on grapheme-phoneme and tone representation and their effect on translation. Your cooperation will be invaluable. The following sentences are taken from the 1959 Nandi Bible and are intended for research only. Please read them as audibly and as naturally as possible.

1. Ak ye ibu kagojinet nebo busiek che kigiwatan
2. Kineta baba.
3. Ing’ete auyo eng ruondong’ng?
5. Amu Kinyalil Jehova amu chang’indab bistoennyi
6. Je king’at ile, amatkoba tuiyen’ung’.
8. Kindoji anyun Tamirmiriet ne Tilil.
9. Amu kagoger konyekyuk yetuneng’ung’
11. Ak koget eito
12. Ak ngoyai chi chalwok, amu kagas kaosiet, ngo kiger ak konyiit...
13. Ago tebe chametabge
14. Si kondoun eng ortinwek tugul
38. Si kobit inai komie ng'alechoto che kiginetin

39. Ago kiosa ng’aleyuk tugul

40. Ago ngowekyigei Kiptaiyat, kinemu kereiywondonoto.
APPENDIX C

COMPILATION SHEET

Below are the texts that contain misrepresentation sorted out per objective. The lexical items which contain misrepresentation are underlined.

VOWEL LENGTH

Lev.1:1  *Kigur* Jehova Musa...
Lev.1:4  Taitio *kogonor* eunnyi metitab kagochinoto kibelei...
Lev.2:4  Ak ye *ibu* kagojinet nobo busiek che kigiwatan...
Prov.2:7  konorchin je bo iman ng’omnatet ne *nyitat*...
Prov.4:4  *kineta* baba...
Prov.6:9  ...*ing’ete* auyo eng ruondong’ng?
Lam.1:3  ...*kigikyi* ole bichii usikyik.
Lam.1:5  Amu *kinyali* Jehova amu chang’indab bistoennyi.
Lam.1:10  Je *king’at* ile, amatkoba tuiyeng’ung’.
Lam.1:11  *Kigoito* tugukwak che kororon...
Lam.1:17  King’at Jehova kole *konyali* Jakobo usikyik je imuti.
Luke 2:27  *Kindoji* anyun Tamirmiriet ne Tilil kowa gotab Jehova...
Luke 2:30  Amu *kagoger* konyekyuk yetuneng’ung’...
Luke 2:38  ...*kong’ololji*...bik tugul je *kigeni* yetunet eng Jerusalem.
Luke 3:8  ...*amu*...komuji Jehova *kong’etyi* Abraham lagok
Luke 3:17  ...*ak ibuchi* kotilibit ole getuwe *bek*...
2 Cor 3:7 ...kondit noto ne kisiirtot.

TONGUE ROOT POSITION

Lev 1:13 ago ngoun tugukab ke ak kelyek eng' beek
Lev 2:7 ak ngo bo busiek kagojineng'ng je kagisus...
Lev 4:4 Ak koget eito...
Lev 4:13 Ak ngolel tuiyet komugul ne bo Israel...
Lev 5:1 ...ak koek baoriat, ngo kiger ak konyiit, amagong’any...
Prov 1:13 ...Kinyit gorikyik je kinyoboni.
Prov 1:22 ...boiboitune chotik chotisienwa...
Prov 1:33 ago tebe chametab ge age tugul ne gasa...
Prov 3:6 ...si kondoun eng’ ortinweguk.
Prov 3:8 Indoi nito chametab ge surumbeng’ung’...
Prov 3:28 amelennji chitab kokweng’ung, Ui, si iwege.
Prov 6:3 Ui igaigai chorweng’ung imi.ng’inge
Prov 3:24 Ameywei kiy ye irue
Prov 4:25 Ger tai...
Lam 1:18 ...Kigimut bergeinikyuk ak murenikyuk.
Luke 2:39 Ak kingo kagoges tugul kou karureiywekab Jehova...
Luke 2:42 Ak ye kingoit kingoit kenyisiek taman ak aeng’...
Luke 2:43 ...kotoi anyun banda kong’et lakwet Jesu eng’ Jerusalem...
Luke 3:10 Kotebe anyun inendet tuiyosiek kolenji...
Luke 3:16 ...abatisanok eng’ beek...
Luke 4:5 Komut anyun inendet kotogosta...
Luke 4:9  Komut anyun Jerusalem

2 Cor 1:2  Ngoteb kobotok mieindo ak kalyet...

LEXICAL TONE

Lev 1:9  Ago ngoun tugukab ke koboto kelyek
Lev 1:10  ...ngogoito mengit anan kwesta ne libwob.
Lev 1:13  Ak ngoipchi tiseiywot panyek tugul...
Lev 3:1/6  ...ngogetyi Jehovah ne libwob.
Lev 4:3  ...ngogetyi Jehovah eito ne mining...
Lev 4:5  ...ak koip kobwa kot ne kituiyejin...
Lev 5:17  ...ngo manai...
Prov 1:4  Kogoch muren naet ak ng’omnatet
Prov 3:18  Igosege age tugul ne namege ak inendet.
Prov 6:26  ...kot kote kong’etyi kererutiet.
Prov 6:27  Imuji chi konamji mat tegennyi, amalalyo ngoroikyik?
Lam 1:1  Ibwaw mi buch nganaset ne kinyitat bik!
Lam 1:4  tinyei ng’wonindo inendet
Lam 1:10  Amu kager koba torobek oldanyi ne itabanat...
Lam 1:16  Arire amu choto.
Luke 1:66  Ak kigonor tugul je kigas ng’alechoto eng’ mugulelwewak...
Luke 2:39  Ak kingo kagoges tugul ko u karureiwotab Jehovah...
Luke 3:3  ...koamdoti...si kobit konyor nyotetab gat ne bo cholwogik.
Luke 3:5  Tun kilong’u atebwet age tugul...

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Luke 3:11 Chi ne tinye sambusiek aeng, kogoji ne matinye…

Luke 3:12 Ak kibwa agichek tagikab aisurut nyo kibatsan

Luke 3:17 Tinye aterunnyi eng’ eunyiyi

Luke 4:1 Ak kinyitat Jesu Tamirmiriet ne Tilil…

Luke 4:1 …komut Tamirmiriet ne Tilil kowa ongatet…

Luke 4:2 Ak maam kiyi eng’ betusiechoto.

Luke 4:9 Komut anyun Jerusaalem…

2 Cor.1:10 …ak kimangu inendet kele tagosoruech.

2 Cor 1:11 …otoreta okwek em sautikwok…

2 Cor 1:13 Amu makisirwok ng’alek alak…

2 Cor 1:20 …si kegonyiti Jehova eng’ boisionikyok.

2 Cor 2:1 …ale amanyonjok kogeny atinye orogenet.

2 Cor 2:3 …komatinye orogenet eng’ ijek je kanyoljo abaibai.

2 Cor 2:5 Ago ngoip chi arogenet koma ibwa anege orogenet…

2 Cor 2:7 …noto anyun gaigai onyoji gat ak ogaigai si meterter chito ne u noto orogenennyi ne bichii

2 Cor 2:10 Ak ngonyoji chi gat eng’ kiy tugul…

2 Cor 3:11 Amu ngotinye kondit noto ne igesuge, tinye noto ne tebye kondit ne sirtoot

2 Cor 3:13 …si mager bikab Israel kagesunet nebo noto ne igesuge.
GRAMMATICAL TONE

a. Case (nominative vs indicative tone)

Lev. 1:1 Kigur Jehova Musa...

Lev. 1:1 Ilenji Israelik, Ye ipchin chi age tugul eng okwek...

Lev. 4:1/5:14 Ak kilenji Jehova Musa...

Prov. 1:7 Ago sasei ngomnatet ak konetisiet abusanik.

Prov. 1:32 Amu barei ijek katuituetab je berber.

Konorchin je bo iman ng’omnatet ne nyitat.

Prov. 2:7 Amu wechei Jehova ngelelyot...

Prov. 3:32 Kiboi usikyik inendet.

Lam. 1:7 Ibwoji Jerusalem.

Lam. 1:8 Kigosas inendet je kigonyiti...

Luke 1:18 Kolenji Sekaria malaikaiyat...

Luke 2:46 Ak kotepe ijeget...

Luke 3:10 Kotebe anyun inendet tuyosiek kolenji “kiyai nee anyun?”

Luke 3:11 Kowolji ijeget...

Luke 3:18 Kiamji bik...

Luke 4:3 Kolenji oindet...

Luke 4:4 Kowolji Jesu inendet kolenji...

Luke 4:5 Komut anyun oindet kotogosta...

Luke 4:6 Kolenji anyun oindet...

Luke 4:8 Kowolji Jesu kolenji...
Luke 4:12  Kowolji Jesu ak kolenji...
Luke 4:13  Kopagakta inendet ne matia...
2 Cor. 1:11  Si kobot kogoji bik che chang’ kongoi eng achek.
2 Cor. 2:6  Yame ji neu ni koruokyi bik che chang.
2 Cor. 2:7  Si meterter chito ne u noto orogenennyi.
2 Cor. 2:17  Amu ...je ng’eme ng’olyotab Jehova.
2 Cor 3:14  ...komi kereiywondonoto bo togoch tom keisto.

b. **Tense versus Aspect**

Prov.5:12  Ak ile, bwa kiawech kotigonet...
Lam.1:19  Kiagur je kichama, ago kiberbera...
Luke 1:4  ...si kobot inai komie ng’alecthoto che kiginetin.
2 Cor.1:23  ...ale kiarirenak si manyo Korinto agoi nguno.
2 Cor.2:2  amu ngot agonok orogenet
2 Cor.2:3  ...komatinye orogenet eng’ ijek je kanyoljo abaibai.
2 Cor.2:4  Amu kiasirwak eng’ nyalilwogik che chang’...
2 Cor.3:10  Ee, noto ne kigigoji kondit koma kigoji eng’ ni...

c. **Person**

Prov. 1:24  Amu kagurok, ak oesie.
Prov. 1:25  Ago kiosas ng’aleyuk tugul.
Prov. 2:6  Amu igoitoi Jehova ng’omnatet...
Prov. 6:8  'lumi amitwogikyik kegesisiei.

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2 Cor. 1:18  ...komaegu ng’olyondennyo eng’ okwek wei ak ajija
2 Cor. 2:1  ...ale amanyonjok kogeny atinnye orogenet
2 Cor. 2:5  ...si majilak mising’.
2 Cor. 2:7  Si meterter chito ne u noto orogenennyi.
2 Cor. 2:9  ...ale anai ngotebye eng’ iman...
2 Cor. 2:9  ...ak ngogase it tuguk tugul.
2 Cor. 2:10 Ak ngonyoji chi gat eng’ kiy tugul...
2 Cor. 3:16 Ago ngowekeyige Kiptaiyat, kinemu kereiywondonoto.

d. Indefinite subject vs definite subject

Prov.1:17  Kigitech mestet buch...
2Cor.1:4  ...si kimuch kigaigai ijeget che tinyei orogenet...
2 Cor.1:6  ...anan ngigoigoech...
2 Cor.1:7  ...kingen kele...
2 Cor.1:8  Amu magimaje oegu je mongen...
2 Cor.1:10 ...ak kimangu inendet kele tagosoruech...
2 Cor.2:11 ...ago kingen atebenyi.
2 Cor.2:15 ...eng’ ihek che je kisoru...
2 Cor.2:16 Tos ng’o ne imuji tuguchu?
2 Cor.3:3  ...ne kiyae...

e. NP in Apposition

Lev.3:2  ‘...ak koise gorotik tiseiywek werikab Aron...
## APPENDIX D

**Breakdown of Texts with Misrepresentation**

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