

# **A GRAMMAR OF VERBAL EXTENSIONS IN BEMBA**

BY

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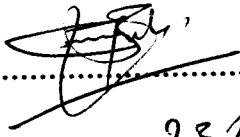
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## DECLARATION

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## APPROVAL

This dissertation of BERNARD A. KAMFULI is approved as fulfilling the partial requirement for the award of the degree of Master of Arts in Linguistic Science of the University of Zambia.

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## ABSTRACT

The aim of this study has been to present an investigation into the nature and character of the verbal extensions in Bemba and to postulate a model for the analysis, parsing and description of Bemba verbal grammar that is based on morphemes. Extensions are morphemes that are suffixed to the radicals in order to express different ways that the action stated by the radical is achieved. For example, an extension may indicate the reversal, intensity, extensiveness or reciprocity of the action stated by the radical. Some extensions increase valency or the argument structure while others either block or preserve the valency permitted by their radicals. This paper posits that these verbal extensions must be consistently and predictably analyzed in a consistently and predictably defined structure.

This study was conducted by means of open-ended interviews. Ten adult native speakers of Bemba were interviewed on the copperbelt; five in Luanshya and five in Kitwe. Relevant responses were elicited and documented. These were supplemented by information from the works of other linguists, from other books and from the researcher's own introspection.

The findings of this study have resulted in the placement of the verbal extensions into two major groups: the *main* and the *sequential* or *combined* or *compound* extensions. A main extension is a derivational suffix that is attached to a radical to provide an additional nuance of meaning to that of the simplex radical. A sequential or Combined extension is an extension made of two or more main extensions in a sequence. These extensions, in the present study, have been analysed in terms of their phonology, morphology, syntax and semantics.

In conclusion, arising from the findings, this study has postulated the application of more suitable parametric means to the analysis of Bantu languages. Parameters are appropriate linguistic options or mechanisms for investigating a language. For Bantu languages, the parameters employed are expected to be suitable to the natural configuration of morphemes in agglutinative languages like Bemba. Parsing will not only reveal the natural nodes and projections of all meaningful morphemes, it will also expose clearly all verbal extensions. This will thereby enhance the understanding and appreciation of their value.

## **DEDICATION**

To my wife: Milicah Mwape Kamfuli, for having been a true and mature friend,  
and to all my children, for their patience and endurance.

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**ABBREVIATIONS**

A	.....	Adjective
Adv	.....	Adverb
AdvP	.....	Adver Phrase
AP	.....	Adjective Phrase
Applic	.....	Applicative Extension.
Caus	.....	Causative Extension
End	.....	Ending
Pass	.....	Passive Extension
Persist	.....	Persistive Extension

Extens .....	Extensive Extension
Intens .....	Intensive Extension
Recip .....	Reciprocal Extension
Revers .....	Reversive Extension
APPEX .....	Applied-Passive Extension
CAPEX .....	Causative-Passive Extension
CAREX .....	Causative-Reciprocal Extension
REPEX .....	<i>Reversive-Passive Extension</i>
EXSEX .....	<i>Extensive-Stativ Extension</i>
EXPEX .....	<i>Extensive-Passive Extension</i>
EXCEX .....	<i>Extensive-Causative Extension</i>
EXCAPEX .....	<i>Extensive-Causative-Passive Extension</i>
EXCAREX .....	<i>Extensive-Causative-Reciprocal Extension</i>
CP .....	Complimentizer Phrase
D .....	Determiner
DP .....	Determiner Phrase
N .....	Noun
NP .....	Noun Phrase
V .....	Verb
VP .....	Verb Phrase
GB .....	Government-Binding
GP .....	Genitive Phrase



IP .....	Inflectional Phrase
SM / SP.....	Subject Marker /Subject Prefix
OM / Obj .....	Object Marker
Rad .....	Radical
P .....	Preposition
PP .....	Preposition Phrase
Pr.p .....	Pre prefix
Po.P .....	Post prefix
P. End .....	Post Ending
PRE.E .....	Pre-Ending
PB .....	Proto- Bantu language
TM .....	Tense Marker
AM/Asp .....	Aspect Marker
EXT/EX. ....	Extension
Aug .....	Augment
Neg .....	Negative
Infin .....	Infinitive
SR .....	Surface Representation
UR .....	Underlying Representation
LF .....	Logical Form
PF .....	Phonetic Form

# Chapter One

## Introduction

### 1.0 General

This chapter presents an introduction to the present study. It discusses the background to the work, the statement of the problem and the aim and objectives of the study. It discusses the significance, the research design and the theoretical framework of the study. The chapter further discusses the relevant related literature, the scope, the limitations and the general structure of the whole study.

Verbal extensions are morphemes adjoined to verbs, where they add different shades of meaning. When extensions are attached to Bemba verbs, there are changes that apply to the meaning of the verbal stems. They add new nuances of meaning to the meanings of their radicals. Some extensions increase valency or the argument structure while others do not. Analyzing Bemba verbal grammar with the help of tree diagrams has not been easy because of lack of agreement on whether to use the **word** as the smallest meaningful unit in Bemba or not. Moreover there is little or no consensus on the definition of the concept of **word** in Bemba. As such, many short sentences written in Bemba<sup>a</sup> have been referred to as words by default. This study aims at postulating a model for Bemba verbal grammar that is based on **morphemes** whereby words and sentences, will be sufficiently distinguished. ←

The syntax will be dealt with under the framework of the Government-Binding Theory and the X-Bar Theory. Phonology and Morphology will be dealt with under the framework of the tenets of the Phonological and Morphological theories. Owing to limited time, and the intricate nature of the task, no attempt will be made to mark tones in this work.

## 1:1 Back ground

This study is informed and motivated by the behaviour or intricate morphology exhibited by Bemba verbs when attached to different extensions and by the debate that has gone on for years and that has hitherto been unresolved concerning the distinction between a **word** and a **sentence** in a Bantu language such as Bemba. One problem which most of the linguists, if not all, have encountered in their attempts to describe Bemba verbal grammar has been to initially find the difference between a word and a sentence. Being very short, most of the Bemba sentences are by default referred to as 'words'. However, when one translates a number of Bemba verbals with their extensions into English, one finds that many are actually not words but **sentences**. Every native speaker will very quickly agree that 'verbals' like '**Ndetela**' which means '**Bring for me**' cannot be analyzed as one word. The definition of a 'word' in Bemba, especially a word with its extensions, is slippery and elusive. This study stipulatively defines a word as *a form in Bemba that is made of one or more morphemes forming a single unit and is able to stand (partially or fully) on its own, but includes neither a subject, subject marker, object, object marker nor a predicate*. A morpheme on the other hand is defined as the smallest meaningful linguistic unit that can never be divided further into smaller meaningful units (Fromkin, 2002:76). Words do have internal structure that is rule-governed. They can be simple, compound or complex. A word is simple if it is made of only one independent or free morpheme. It is compound if it consists of two or more free morphemes, and it is complex if it consists of a free morpheme and one or more bound (inflectional or derivational) morphemes (Lynn, 2007:13). The concept of word is still important and valid, especially if the above stipulative definition of 'word' is employed, (after all many single free morphemes are actually words in their own right) but this study does not select the concept of 'word' for the analysis of Bemba verbal grammar owing to its elusive nature.

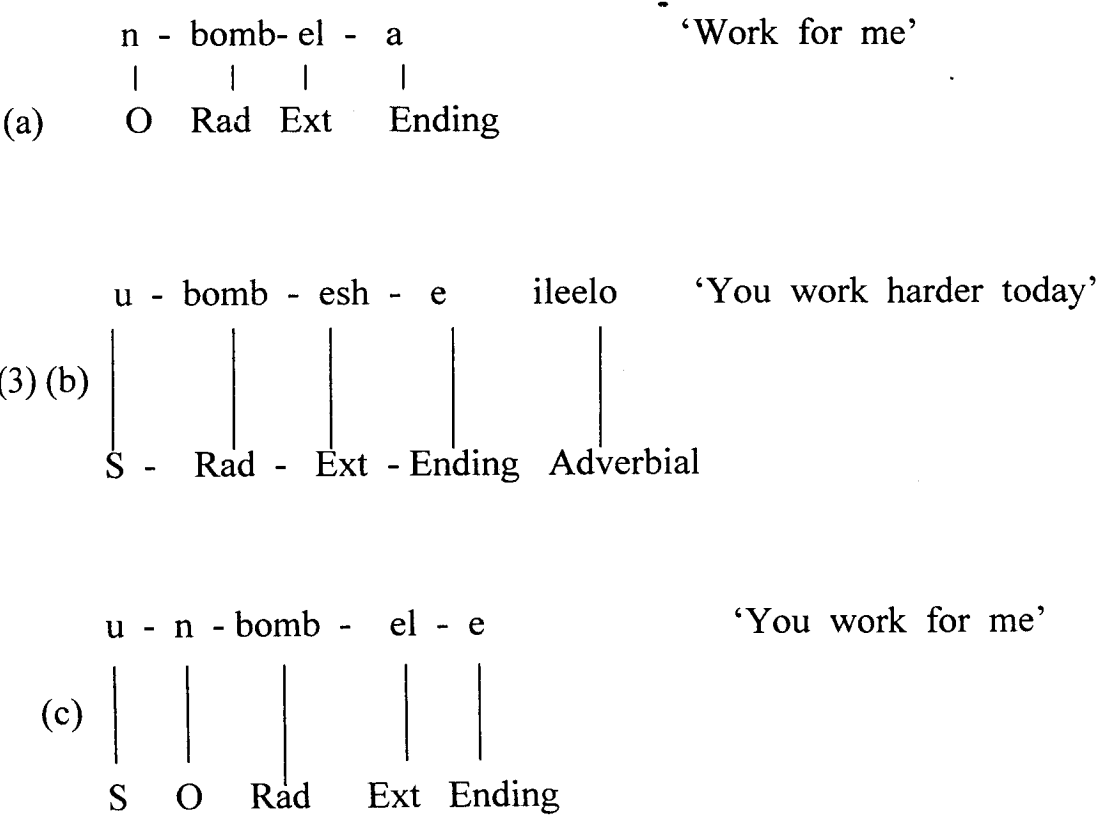
In analytic or isolating languages such as English, the distinction between a word and a sentence is fairly convincing. This is not so in agglutinative languages such as Bemba. In English, a word is a single unit of language that can be represented in writing or speech or in written, and has a space on either side of it (Collins COBUILD Dictionary). This definition is fair for sentences in English like those in (1) below:

- (a) Work for me.
- (1) (b) You should work harder today.
- (c) You should work for me.

It is easy to see that in English, sentence (a) has three words, sentence (b) has five words and sentence three has five words. But, if we look at the same sentences translated into Bemba, it will be difficult to determine the number of words and wheather these strings are actually words or sentences. Let us study the translations as presented in (2) below:

- (a) Mmombela.
- (2) (b) Ubombeshe ileelo.
- (c) Ummombe.

Clearly, the temptation here is to assume that what we have in (a) is one word , in (b) we have two words while in (c) we have one word. As a compromise, some linguists will say that (a) is a one-word sentence, (b) is a two-word sentence and (c) is a one-word sentence. Chanda (2007:12) acknowledges the reality of this compromise in Bantu languages. This study holds that these three are sentences made of morphemes, because they include subjects and predicates, and they can be analysed in terms of the subjects and the predicates. Hence we have the following linear analysis:



The examples analysed above are all sentences, where **S** stands for the subject, **O** stands for the object, **Rad** stands for the radical, **Ext** stands for the extension and **Ending** stands for the final vowel which may be **-a** or **-e** . After the subject marker indicated by S, the rest of the remaining morphemes together form the predicate in sentence (b) and sentence (c). Sentence (a) is an imperative sentence with a **covert subject** ‘you’ and an **overt object** ‘me’. There should be a thick boundary between a word and a sentence, but there is usually a fuzzy or hazy boundary between a word and a morpheme.

A sentence is said to be the highest ranking unit of grammar, and **the purpose of a grammatical description of any natural language is to describe by means of whatever descriptive apparatus** may be necessary, **what counts as a grammatical sentence** in that language (Chanda, 2007: 7). This important statement has far reaching consequences because it means that failure to distinguish a sentence from other units such as phrases, words and morphemes

will inevitably compromise the quality of grammatical description. Bantu languages have **various extensions** which are added to the verbal radicals to provide different shades of meaning. Since verbal extensions carry their own stable meanings, they must have a distinguished hierarchical place in the sentential structure of a Bantu language. These verbal extensions must be consistently and predictably analyzed in a consistently and predictably defined structure. A statement which seems fair to make at this point is that while a sentence or clause in English is a **sequence of words** comprising a subject and a predicate, a sentence or clause in Bemba is a **sequence of morphemes** comprising a subject and a predicate. Sentences should not be reduced by default to words nor should the words be raised to sentences. The only word that qualifies to be called a sentence is the imperative form which stands as an **overt predicate** with a **covert subject** (and this subject is almost always understood to be 'You'). All the other strings that are called 'one word sentences', by default, should be called full sentences for they comprise subject morphemes called **subject markers** and a sequence of **morphemes** marking the **predicate**.

According to Radford, (1997:18) and Sells, (1985:30), all phrases must have a head word, while Horrocks (1987:101) says that every phrase is projected from its head lexical constituent. Since the head of any clause is a covert or overt inflection or INFL, it follows, therefore, that all clauses or sentences are actually phrases which are headed by INFL (Radford, 1997:99). Radford (1997:18) adds that it is a general (indeed, universal) property of phrases that **every phrase has a head word** which determines the nature of the overall phrase. Clauses or sentences are Inflectional Phrases or IP's because they are always headed by auxiliary verbs, also called the inflections or INFL.

The projection principle is crucial to the present work, for it is indispensable to the central tenets of the Government-Binding Theory, to the concept of '**head**',

to the lexicon and to the X-Bar theory, which (1985:27) puts it, the phrase is said to be a projection of the head.

## 1.2 Statement of the problem

Analytic or isolating languages like English are often easily parsed, analyzed and described by means of tree diagrams. This is not the case with synthetic or agglutinative languages like Bemba. This is partly because there is a problem of whether to employ the 'word' as the smallest meaningful unit in Bemba, or the 'morpheme'. The other reason is that there are some phonological processes that mutate or change the visible appearance of morphemes (such as the verbal extensions) and words. Processes such as the Meinhof's Law of assimilation in which a plosive consonant mutates into a nasal, tend to confound those attempting to parse and analyze Bemba verbal strings. For example consider the following three versions of the same sentence, '*Mmombela abantu.*' '*I work for people*' where the initial consonant of the radical has been mutated:

- (a) n-bomb-ela a-bantu. Nbombela abantu 'I work for people'
- (4) (b) m- bomb-ela a-bantu. Mbombela abantu. 'I work for people'
- (c) m-momb-ela a-bantu. Mmombela abantu 'I work for people'

The three sentences above are all correct in the following sense: The morpheme 'n' is the Bemba first person singular morpheme, therefore (a) is correct. The morpheme 'n' becomes 'm' by assimilation when followed by the bilabial plosive 'b', therefore (b) is correct. By assimilation, the initial consonant 'b' of the verb 'bomba' becomes 'm', hence 'bomba' becomes 'momba' and when the first person singular subject marker 'n' is adjoined to the verb, we have 'm momba' 'I work'. Therefore (c) is correct. However, although all the three sentences are correct, the most appropriate one that meets the well formedness condition is (c). If this sentence was to be placed on a tree diagram, there certainly may be a

problem of whether to employ (a), (b) or (c) on the tree.

Since tree diagrams should show the native speaker's internalised knowledge of their language, this study suggests that (a) is the best candidate for the tree diagram because it shows the underlying forms that give rise to the surface forms in (c). This knowledge affects the nature of tree diagrams constructed. Tree diagrams are cardinal in the analysis of any language because they are graphic representations of the native speaker's internalized knowledge of the sentence structure in their language. Morphemes representing tense markers, aspect markers, agreement markers, mood markers as well as the role of **polarity** as an **inherent property of INFL** in Bemba verbal grammar should be explained. *Polarity is the state in which a sentence or phrase is understood to be either positive or negative.* The extent to which verbal extensions affect, or are affected by these inflectional categories and other syntactic phenomena and how they may be shown on tree diagrams are crucial to this present study. Therefore, stated as a question, the problem being pursued in this study is: ***How can one parse, analyze and describe Bemba verbal grammar satisfactorily and consistently and place various verbal extensions and other morphemes in their rightful hierarchical nodes?***

The present study considers this to be an important linguistic gap that must be filled so as to make the analysis of Bemba verbal grammar predictable and consistent, and to make the syntactic roles of the **verbal extensions** (and other related morphemes) understood and appreciated.

## **1.3 Aim and Objectives**

### **1.3.1 Aim**

The aim of this study is *to postulate a model for the analysis, parsing and description of Bemba verbal grammar that is based on the concept of morpheme* (and not on the concept of word) by applying the X-Bar theory within the framework of the modular theory of Government-Binding.



### 1.3.2 Specific Objectives

In order to achieve the above aim, this study will pursue the following specific objectives:

- a) to identify verbal extensions in Bemba;
- b) to parse Bemba inflectional phrases (IPs) on tree diagrams using the X-bar schema;
- c) to analyze the phonology and morphology of Bemba verbal extensions;
- d) to analyze the syntax and semantics of Bemba verbal extensions; and
- e) to ascertain the **relevance** of the Government - Binding Theory to Bemba verbal grammar.

### 1.4 Research Questions

This study shall attempt to answer the following questions:

- (a) What are the main categories of verbal extensions in Bemba?
- (b) What is the outcome of parsing a Bemba inflectional phrase (IP) on a tree diagram using the X-bar schema?
- (c) What phonological and morphological patterns do Bemba extensions take?
- (d) What syntactic and semantic patterns do Bemba verbal extensions take?
- (e) How plausible is Government-Binding theory to Bemba verbal grammar?

### 1.5 Rationale

The significance of this study lies in suggesting an approach to the analysis of Bemba verbal grammar that departs from the canonical yardstick of the concept of 'word' as the basic building block for Bemba verbal grammar to that of the 'morpheme' as the smallest, meaningful and the most suitable unit of linguistic analysis. It is hoped that this study will entreat Bantu linguists to employ this approach as an alternative, yet effective way of analysing Bemba verbal grammar by applying the current universal linguistic theories and principles

while sticking to those parameters that best represent a Bantu language. While there is nothing wrong with different linguists analyzing Bemba verbal grammar differently, and although such differences are welcome, this study seeks to suggest a common approach, which will hopefully be relevant to all Bantu languages generally. It is further hoped that this study will contribute to the various attempts by different linguists to make Bemba verbal grammar not only consistent and predictable, but also understood and appreciated.

## **1.6 Research Methodology**

This research employed the qualitative method of collecting and analysing data. Information was collected and processed in such a way as to meet the set objectives. Being purely syntactic, the study did not employ any quantitative means of either collecting or analyzing the data.

### **1.6.1 Data Collection**

#### **1.6.1.1 Study Area**

The research was conducted partly in **Luanshya** and partly in **Kitwe** where the researcher interviewed ten respondents. In addition, the researcher generated a lot of primary data since he is a native speaker of Bemba. The bulk of the secondary research data was obtained from the University of Zambia library in Lusaka where most of the data was sourced from various books, newspapers, journals and pamphlets as well as from the British Council Library in Lusaka.

#### **1.6.1.2 Sampling Techniques**

The researcher interviewed ten speakers of Bemba (**adult natives speakers**, five from Luanshya and five from Kitwe), employing **open-ended interviews** to **elicit** information from them about Bemba verbal grammar. Although the researcher could have generated all the necessary data, (since this study is

purely syntactic hence requiring data from the native speakers, which the researcher is) yet the researcher involved other people for two reasons:

- (i) To exploit the possibility of other native speakers supplying more linguistic resources, if possible, other than those generated by the researcher; and
- (ii) For the researcher to validate certain of the verbal structures he had invented, thereby avoiding the possibility of any bias that the researcher may be tempted to harbour in an attempt to justify his work.

#### **1.6.1.3 Data Collection Instruments**

As mentioned above the researcher employed open-ended or unstructured interviews to elicit information from the respondents. Being purely syntactic and qualitative, the research required neither the questionnaires nor the recording instruments in collecting data. As a native speaker, the researcher could have depended on his intuitions for the bulk of the primary data. However, with the help of the interviews the researcher elicited substantial primary data from other native-speakers of Bemba, who were very purposefully selected. The **note book and a pen** were the main instruments used in the collection of data.

#### **1.6.1.4 Data Collection Procedure**

Data collection was conducted as follows:

- (i) The researcher interviewed five adult Bemba speakers in Luanshya and five adult Bemba speakers in Kitwe and by elicitation documented their responses.
- (ii) The researcher generated several verbal structures in Bemba from his introspection.
- (iii) The researcher consulted various available relevant literatures in Lusaka at the University of Zambia Library and the British Council Library.

### 1.6.2 Data Analysis

The process or procedure for analyzing data was conducted in such a way as to answer the research questions and meet the set objectives. The following was the procedure:

- (i) After collecting data, the researcher sorted it out to remove unnecessary material.
- (ii) The remaining information was analysed and classified according to the type e.g. phonology, morphology and syntax were classified separately.
- (iii) Various Bemba verbal extensions were taken note of from the data.
- (iv) The researcher processed all the data and applied the Government-Binding theory to it.
- (v) The researcher finally suggested modifications to some of the theoretical models without shaking the foundations of the existing theories .
- (iv) The researcher used his intuitions to make judgments about the effects of the verbal extensions in the collected data.

The justification for taking such the move in (iv) above is that almost all the famous linguists including Chomsky and others have placed a lot of authority on the native speaker's judgment on matters of well-formedness of strings in their native language. Atkinson (1982) for instance, wrote about the significant role played by the native-speaker's intuitions about his or her language in which he or she is also conducting the research:

*...the linguist is a native – speaker of the language he is investigating. He will be able to distinguish between well formed strings of words. He is entitled to investigate sentences and non-sentences to formulate his hypothesis (Atkinson, 1982:38).*

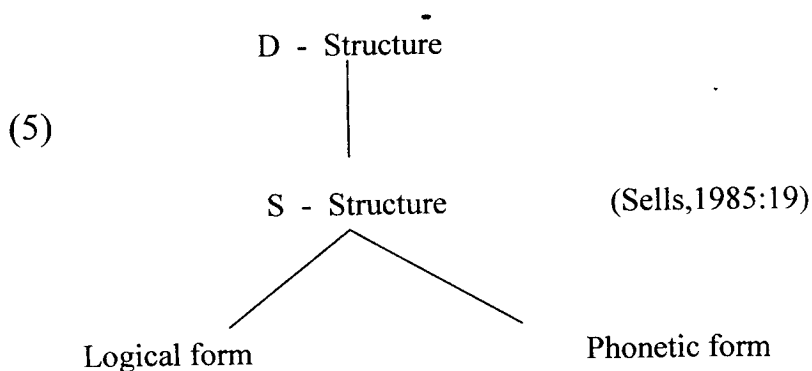
The above words mean that in the analysis of any language, the knowledge of a native-speaker is authoritative. According to Atkinson, the analysis and judgement of the linguist (who is also a native speaker of the language (he is investigating) about the data collected is final.

### **1.7 Theoretical Framework**

This study is based on the modular theory of **Government - Binding, (GB)** and its various attendant sub-theories like the X- Bar theory and other principles. The Government-Binding Theory encompasses several other sub-theories and principles which are relevant for the adequate description of a language. Comprising several modules, GB theory attempts to analyze grammar by providing both explanatory and descriptive adequacy which every good theory should provide, given that a grammar of a language is a model of the competence of a fluent speaker of the language, and that competence is reflected in intuitions about grammaticality and interpretation (Radford,1997:4-5). GB is an approach to the analysis of language that makes use of four structural levels which are:

- (i) The D – structure;
- (ii) The S – structure;
- (iii) The phonetic form; and
- (iv) The logical form.

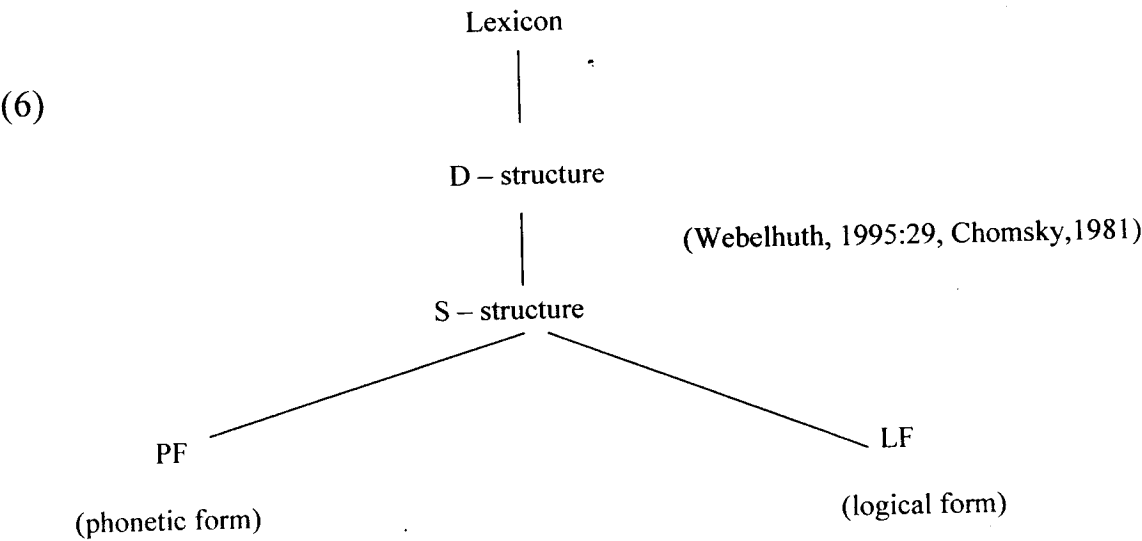
These are represented as in (5) below:



Because the **lexicon** is so central to this study and to the theories under discussion, we add the lexicon to the top of the above four structural levels shown above, in accordance with the Chomsky (1981) model, which is also reflected in Webelhuth (1995:29) as follows:

- (i) The Lexicon;
- (ii) The D – structure;
- (iii) The S – structure;
- (iv) The phonetic form; and
- (v) The logical form.

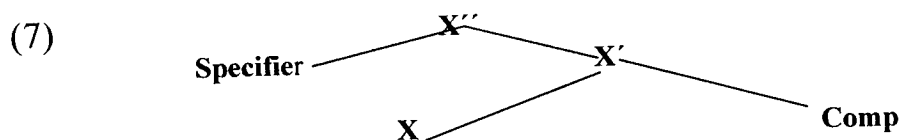
These are represented as in (6) below:



The lexicon is important because it is the repository of the information associated with lexical items. It contains information with relevant aspects of a lexical entry. The relationship between the lexicon and the four syntactic levels shown above is established by the Projection principle which ensures that the lexical items at all syntactic levels of representation appear in configurations that are in accordance with their lexical properties (Webelhuth, 1995:31). The lexicon posited in this study is the morpheme-based lexicon proposed by Schane, (1973:41). In this type of lexicon, there is a list of morphemes, and for each morpheme information is given about its meaning, syntactic properties, exceptional behaviour, if any, and pronunciation. This morpheme-based lexicon will capture all information about a morpheme. It includes all derivations, all inflections, all free or independent morphemes, also known as lexemes and all roots or radicals (Allan, 1986:225).

This study draws its efficacy from the works of such linguists as Chomsky (1981), Horrocks, (1987), Sell, (1985), Radford, (1997), Webelhuth, (1995) and others. The X-Bar theory is a central module of Principles and Parameters approach to syntactic theory. According to Webelhuth (1995:18) all other modules in one way or another draw on the basic structures the X-Bar theory makes available, together with the **lexicon** and the **projection principle** in defining their own concepts. For this reason, this study will heavily lean on these three above: **the X-Bar theory, the lexicon and the projection principle**, of course without ignoring the significance of other related theories and principles which are also part of the Government-Binding theory. The projection principle, according to Sells (1985:33), is a fundamental tenet of GB because it is responsible for many deductions that lead to hypotheses that are distinctive features of the theory.

The X-Bar theory provides a language-wide template for characterising phrasal and sentential structure because as Sells (1985:27) puts it, when one looks at the structures internal to different phrases in a language, one finds a similar pattern within each; for example a preposition always precedes its object. In addition, the concept of ‘head’ is a fundamental and central concept in all contemporary syntax (Sells, 1985:27), because a phrase is but a projection of its head. The basic X – Bar phrasal template adopted by this study is shown in (7) below:



(Asher, 1994: 5065)

All Bemba sentences and phrases will be rendered on this template in various ways by means of an inter play of the **lexicon**, the **X – bar scheme** and the **Projection Principle** interposed by the concept of ‘**head**’ while employing morphemic parametric options in the process. All phrases and verbal extensions will acquire different projections on the X – Bar schema. Phonology will be dealt with under the theoretical framework of the Phonological Theory.

### 1.8 Operational Definitions of Terms and Concepts

The following terms and concepts have been used in this study. They have been defined and explained here. Some of them have been explained in additional detail and in words suitable to this study to avoid the possibility of misunderstanding them:

**Agreement**      These are word ( usually verb) or morpheme markers that are determined by the characteristics of some other words in the



same construction. Such markers may indicate properties such as tense, person, gender and number.

**Argument structure** This is the structure of arguments or nouns performing the function of subject, or object in a sentence.

**Binding theory** This is a theory concerned primarily with the conditions under which noun Phrases are co-referential with each other (Horrocks, 1987:102).

**Covert constituent** A **covert** constituent is one that cannot be visibly seen in a sentence but whose presence is fully **understood**. In this study the Empty category Principle and the covert constituent phenomenon are core issues.

**Construct,** These are the processes according to this study in which all  
**Deconstruct,** sentences are fully segmented and deconstructed as they are  
**and** parsed on tree diagrams so that all surface segments like  
**Reconstruct** gliding, coalescence, insertions, truncations and elisions are carefully handled since they are a result of underlying morphophonological processes. Deconstruction reveals underlying forms that give rise to surface forms. Then comes reconstruction which leads to the placement of all necessary surface forms or segments to a sentence away from the tree diagram. Such surface forms may include glidings, intrusions, coalescence, truncations and elisions.

**Determiner phrase** This is a phrase headed by determiners such as articles, demonstrative pronouns and personal pronouns. In Bemba, and in this study, these will include all subject and object markers of all noun classes and demonstrative pronouns. Augments may optionally be attached to the subject or object markers. Each determiner will be immediately

followed by noun class specifications below it. In this study all the determiner phrases will assume both the intermediate and the maximal projections even though they may have no daughters to immediately dominate (Radford, 1997:38-45, 298). Nominals such as 'mwana' 'child', pronominals like 'candi' 'mine', and verbals like 'twamona' 'we have seen' will all be analyzed in terms of their determiners on tree diagrams in form of the pattern: 'mu - ana', 'ci - andi' and 'tu - a - mona' respectively.

**Etymon** This is a linguistic (older) form from which another is derived.

**Extension** This is a morpheme that gives extended meaning to the verb it is attached to.

**Extension phrase** This is a phrase, according to the present study, which is headed by an extension. Because of its position, the extension phrase, does not achieve maximal projection (it is never independent) rather it operates from the intermediate phrasal level where it always follows the radical to which it is attached.

**Genitive Phrase** This is a phrase according to this study which indicates who or what possesses what. In Bemba this is shown by such words as 'cobe', 'candi', 'fyabo', etc. A genitive will indicate the possessor and the possessed.

**Head** The head of a phrase is a constituent in the phrase on which all other constituents in that phrase depend for their identity. In this study the concept of 'head' is central because all Phrases are projections of their head lexical constituents and because the Projection principle, the Lexicon and the

X-theory all rely on the concept of 'head' (Sell, 1985:29).

- I – bar** This is an intermediate inflectional phrase, also written as **I'**.
- I – double bar** This is a full inflectional phrase - with maximal projection, also written as **IP** or **I''**
- Inflection** These are properties of verbs and nouns indicating number, tense, aspect, mood and agreement. The infinitive particle 'to' is also an inflection in recent Scholarship (Radford, 1997:64). The concept of inflection is core to this study because verbal extensions are adjoined to verbal radicals which are often associated with inflections for tense, mood, number, honour and agreement.
- Inheritance** This is a process by which features of a word are copied from a higher level of constituency to a lower level. This concept is very crucial to this study. See also 'percolation'.
- Interjection Phrase** This is a phrase according to this present study which is headed by such words in Bemba as 'Bushe?', 'Ala!' which often introduce Bemba interrogative sentences.

### **Intermediate projection**

This is the projection of a phrase which is above word level and below full phrasal level (below maximal projection level). In this study, intermediate levels for verbs, nouns, adjectives and prepositions will be left out if they do not branch. But they will be present for all extensions and all constituents of INFL (Sells, 1985:29).

### **Maximal projection**

This is the projection of a full phrase, written as **XP** where

**X** is the head of the phrase and can be a verb, noun, preposition, adjective, inflection and so on and **P** stands for 'phrase'

**Mood** This is a category (inherent in verbs) covering indications either of a kind of Speech Act or of the degree of certainty with which something is said (Katamba, 1993:220). Mood can be imperative, indicative or subjunctive as exemplified below:

(i) **Indicative mood:**

Ulabombela bambi. 'You do work for others'

(ii) **Imperative mood:**

Bombela bambi. 'Work for others'

(iii) **Subjunctive mood:**

Ubombeke bambi. 'you should work for others'

**Move – alpha** This is the only rule in Government and Binding by which elements in a sentence can be moved from one syntactic position to another subject to restrictions imposed either by principles or parameters or in specific instances (Matthews, 2005: 235). In this study, this rule will move morphemes from one point in a sentence to another, where possible. (Lieber, 1992:121).

**Overt constituent** An overt constituent is one that can be visibly seen in a sentence or clause.

**Parameters** These are language-specific optional rules or alternatives that different languages of the world select as their possible choices.

## Percolation

This is a process by which features of a word are copied from a lower to a higher level of constituency. It is through this process that **covert** constituents or **empty categories** are understood and vindicated. This process is very important to this study. (See inheritance)

## Polarity

If a sentence is positive or negative, then it has positive or negative polarity respectively. **Negative polarity** in the present study belongs to INFL because it bears and is glued to auxiliary and to modal verbs in the manner similar to 'do not', 'cannot', 'should not', 'will not' Similarly, **positive polarity though covert**, belongs to **INFL** too.

## Principles

These are rules that apply to all languages on Earth.

## Projection principle

This is a central principle of Government and Binding theory which requires lexical properties to be projected to all levels of syntactic representation (Horrocks, 1987:99). The head of a phrase is the basis for this projection because a phrase is said to be the projection of a head word (Sells, 1985:27) .

## PRO/ pro

**PRO** is a covert null-case pronoun which represents the understood subject of an infinitive complement of a control predicate. **Pro** is a covert nominative-case pronouns which represents the understood subject of a finite clause, (Radford, 1997: 269).

<b>Reflex</b>	This is a linguistic form from which another is derived.
<b>X – Theory</b>	This is a theory which provides principles for the projection of Phrasal categories from lexical categories and imposes conditions on the hierarchical organization of lexical categories in form of general schemata (Horrocks, 1987:101).
<b>X –bar schema</b>	This is a combination of two or more rules under an abbreviatory convention.
<b>X –bar Syntax</b>	This is a model of phrase structure grammar according to which for any Category X there is a fixed hierarchy of units e.g X , X' and X'' (Matthews, 2005: 407) .

## 1.9 Literature Review

This study depends upon the works done by other linguists that have been undertaken both in the Bantu languages and in English. Popular among these studies are the works of such linguists as Chomsky, Radford, Lieber, Guthrie, Hymen, Chanda(1985), Miti (1988, 2001 & 2006) Nkolola (1997) and others whose compilations have not only enriched but also shaped the scope of this research.

Chanda (2006:99) says that the **ending** of a **verbal extension** in Bantu languages can be analysed in three ways: the pre-ending, the ending and the post ending. The pre-ending is the element that precedes the ending. The post-ending is the element that follows the ending. The ending is the element which usually occurs in final position and participates in the forming of tenses, moods and polarity. For example in Lozi language 'ku-lim-a' ( to cultivate), 'ne-nilim-ile' (I cultivated), the last vowels are the ending vowels or final vowels (Chanda,

2006:99). Chanda continues that in some languages the ending may be preceded by a morpheme called the pre-ending which denotes some **aspect**. He says the difference between extensions and pre-endings denote aspect. These comments by Chanda (2006:99) about the final vowels and other tense or inflectional morphemes are both important and central to the core arguments of the present study. Different verbal structures in Bemba have endings that include tenses, polarity, mood and aspect. They also often show vowel harmony, nasal assimilation and spirantization. *The extent to which verbal extensions affect, or are affected by these inflectional categories and other syntactic phenomena and how they may be shown on tree diagrams are crucial to this present study.*

The ending **-ile** is very important in Zambian languages generally and Bemba in particular. Chanda (1985) describes the different functions of **-ile** in Bemba, that there are more functions of **-ile** than the four suggested by Guthrie (1967). He explains that the phonetic shape of **-ile** is determined by the processes of vowel harmony and nasal harmony. Chanda's arguments open one's mind to the necessity of not regarding what others have discovered as the final truth. This study will add to, and apply Chanda's analysis of **-ile** and its functions and go a step further by slotting it into the X-bar schema where it will assume an intermediate inflectional phrasal node, ( **I'** ), to be read as 'eye bar' (Radford, 1997:65), the interpretation of which will depend upon its functions in various phrasal and sentential structures.

Sambeek (1953) describes **-ile** as an inflectional suffix for the Bemba past tense. While this is true, there is more to it than the past tense only (Chanda, 1985). Sambeek's work is however, very important especially in the way he has listed different verbal extensions in Bemba. Like Givon (1969:154), who provided useful information about some Bemba causative verbal extensions, Sambeek (1953) has identified the various verbal extensions in Bemba, but

without showing how they may be represented on tree diagrams. *Tree diagrams are important in the analysis of any language because they help to designate lexical items to local trees and nodes of different projections.* Sambeek (1953) has also listed the noun classes that are found in Bemba. He has provided a list of only nine (9) classes. He does not regard the locatives such as MU-, KU-, and PA- as separate and additional classes, rather he discusses them under prepositions. Noun classes are very important in the analysis of verbal extensions because often, subject and object markers (which are all noun classes) precede the radical and its extension in a phrase or sentence.

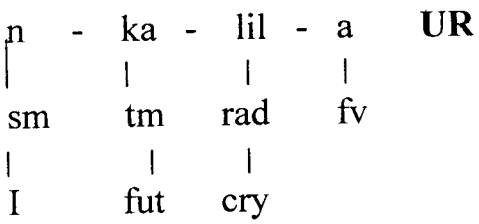
The basic verbal structure in Bantu languages according to Miti (1988, 2001:79, 2006:209) consists of a radical (rad.) and affixes. The affixes may include subject marker (s.m), object marker (o.m), tense (t.m), aspect marker (a.m) and the final vowel (f.v) which signals the mood and various derivational suffixes. He suggests that the basic verbal form may be summarized as indicated below:

Sm - tm - rad - fv

The final vowel suffix (fv) is generally the |a|, and its function is to indicate that the verb radical with which it co-occurs is used in the indicative mood. Below is an example of this type of analysis in the sentence ***nkalila*** ‘I will cry’.

(8) **Nkalila**      ‘I will cry.’

This is analysed as:



Nkalila      ‘I will cry’      **SR** (Miti, 2006: 301)



In the above example ‘sm’ means subject marker, ‘tm’ means tense marker, ‘rad’ means radical, ‘fv’ means final vowel, ‘md’ means mood, ‘UR’ means underlying representation and ‘SR’ means surface representation.

The above sentence ‘**Nkalila**’ is clearly a very short sentence. Many people will **by default**, call it a ‘word’. The present study proposes that such impressions must be corrected, and that no matter how short a string might be, if it is understood to be a sentence, it must be called a sentence. The morphemes that are understood to be subject markers, object markers, tense and aspect markers must be made to occupy important nodes in arboreal structures. Sentences such as the one analysed by Miti (2006: 301) shown above must be parsed by means of tree diagrams using the X-Bar template. We should now turn to the X-bar theory and see how morphemes can fit in its schematic frame work.

Lieber (1992) had this to say about the morphemes and the X-bar theory:

*...the basic principles of word structure are the principles made available by X-bar theory and the theory of percolation. We have seen as well that the principles of Theta-theory also act both above and below word level. (Lieber, 1992:121)*

What Lieber is saying is that the principles of X- bar syntax can operate both at word level and below word level. By ‘below word level’, Lieber means at morphemic level. This is not surprising because we know that some morphemes are in fact full words. He further states that principles of Theta theory act both above and below word level. This seems to justify the option of selecting the morpheme as the key unit in parsing languages like Bemba, where the concept of ‘**word**’ is blurred. He touches on the issue of **percolation**, and this is a very important concept in recent linguistic theory (Radford,1997:90-91, 122-126). It

is a process by which features of a word are copied from a lower to a higher level of constituency (Matthews,2005:271). This operation justifies the efficacy of the Empty Category principle (ECP), where head features of a lexical item percolate up to the mother node where they make sense of the null or empty category, since they will ensure that the invisible or absent category is understood (Radford, 1997:99, 101-102).

Lieber (1992:121) continues that:

*Since morphology and syntax are no longer strictly separated by the strong lexicalist hypothesis, we would expect to find evidence that syntactic principles other than those of X-bar theory apply below  $X^0$ , (Lieber, 1992:121).*

What is being suggested here is that besides X-bar theory, there are other syntactic principles that would apply to operations **below word level** (abbreviated as **below  $X^0$** ) because syntax and morphology are no longer regarded as totally distinct or separate from each other. He has gone on to prove with examples that patterns of coreference and disjoint reference do exist which can only best be explained by the Binding theory of Chomsky (1986b), and that there is evidence in some varieties of the English language where morphemes of certain sorts receive indices and that those indices are visible to or attributable to the Binding theory (Lieber,1992: 121). From Lieber's words, four operations are clearly possible at morphemic level:

- (i) The X-bar theory can operate at sub lexical level;
- (ii) The Theta-theory can apply too;
- (iii) The Binding theory can apply as well; and
- (iv) The Projection principle too can operate at morphemic level.

Lieber gives an example of a sentence where Binding applies at morphemic level:

- (9) (a) Reagan<sub>i</sub> ites no longer believe in him<sub>j</sub>.  
(b)\*He<sub>i</sub> no longer believes in Reagan<sub>j</sub> ites. (Lieber, 1992:121)

In the above examples, the derivational suffix ‘-ites’ refers to the followers of Reagan who no longer believe in him. ‘**Reagan**’ which is a root morpheme for the word ‘**Reaganites**’ is co indexed with ‘**him**’ at the end of sentence (a), and the sentence is well formed because the co referents are correctly chained or bound to each other. Sentence (b) on the other hand is ill formed because the indexes distort the intended meaning.

Lieber has given several examples showing that **binding** below word level is possible. In fact he has gone further to prove that the rule **Move-alpha** is able to operate below word level, and at that level the rule Move-alpha is free to:

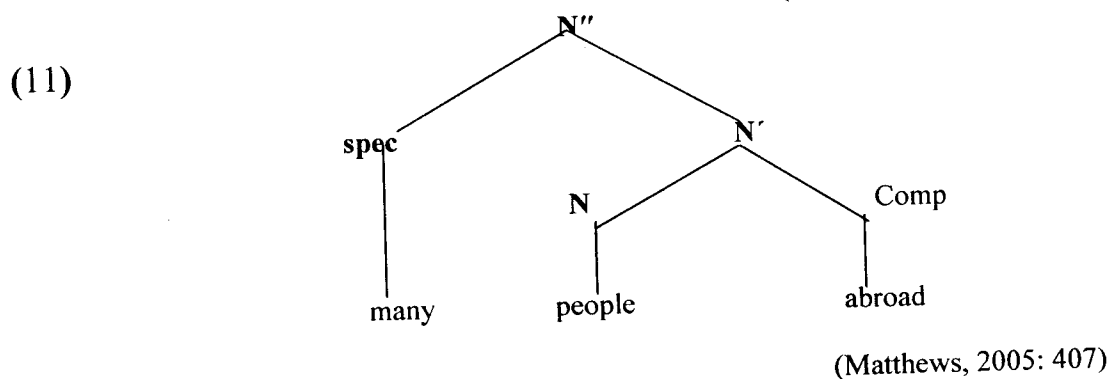
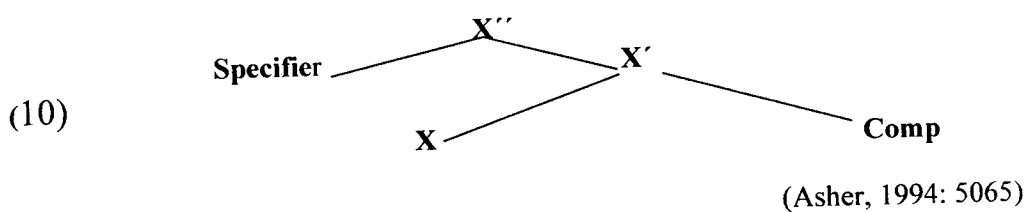
- (i) move morphemes into words
- (ii) move morphemes out of words
- (iii) move morphemes from one position to another in a word

Other linguists who have argued in support of Move-alpha operations below word level include Baker (1988a) and Pollock (1989).

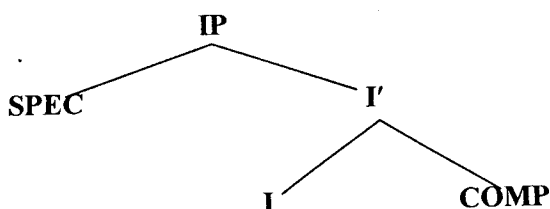
The present study will draw a lot of strength from advocates of morphemic level or sub lexical level operations of the Government-Binding theory. This knowledge will be applied to the verbal extensions in Bemba.

Concerning the place of inflections in a sentence, Radford (1997:99) says all clauses are inflectional phrases, or IP constituents, headed by overt or covert INFL constituents. The present study will show why it agrees with this assertion.

To appreciate this position fully, all clauses need to be parsed with the help of tree diagrams using the principles of X-bar syntax. X-bar syntax is a theory of syntactic categories with their associated syntactic structures, which provides a way of formally associating lexical and phrasal expressions of the same general type (Asher, 1994:5065). It is essentially a theory of syntactic categories, according to which for any category X there is a fixed hierarchy of units. In its original notion, the theory was distinguished by successive levels of barring (Matthews, 2005:407). In this theory, **X** would be at word level, **X'** would be at intermediate phrasal level and **X''** would be at full phrasal level. **X''** can also be written as **XP**. **X** can be any category such as noun, verb, adjective, preposition complementizer and others. **XP** is a maximal projection headed by a word category **X**. The **INFL**, a category devised by Chomsky (1981:18, 1986b: 3) whose members include finite auxiliaries (which are inflected for tense, agreement or the infinitival particle) is critical to the X- bar theory. The present study will benefit greatly from the insights about what constituents should occupy the **INFL** maximal projection node (**IP** or **I'**) and which **INFL** should occupy the intermediate node (**I'** or **I-bar**). Below are examples of the X-bar schema:

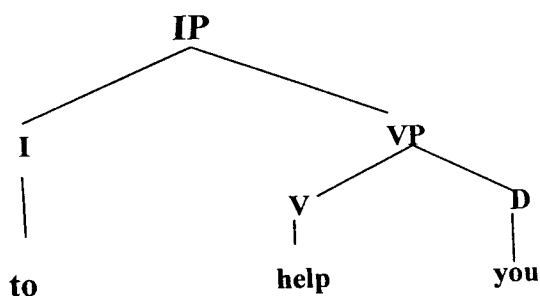


(12)



(Radford, 1997:152)

(13)



(Radford, 1997: 63)

Radford (1997:63-64) helps us to classify what should belong to the branch of specifiers and determiners. He argues that finite auxiliaries and the infinitival particle 'to' belong to **INFL** or **I'** category. He continues that a phrase that is headed by an auxiliary verb is an intermediate phrase or **I'** or **I-bar**, and if such a phrase is merged with a subject, it will become a full phrase **IP**. Phrases headed by the infinitive particle 'to' are full **IPs** too. The subject that is merged with the intermediate INFL (**I'**) to make it a full INFL (**IP**) is known as a *specifier* (Radford, 1997:64-65). If such a subject is a *pronominal* (one of the *personal pronouns* such as 'he', 'she', 'it', 'we', 'you', 'they', or any of the *demonstrative pronouns* like 'this', 'that', 'these' e.t.c.) then it constitutes a *Determiner phrase (D) or (Det)*. This means that all pronominals do not only function as subject and object markers, they are also specifiers and determiners at the same time. In Bemba, all subject and object markers will constitute determiner phrases and all tense, aspect and agreement markers will be constituents of the INFL node.

Horrocks (1987:101) says the X' - theory provides principles for the projection of phrasal categories from lexical categories and imposes conditions on the hierarchical organization of the categories in form of schemata. The concept of 'head' is crucial in this theory. Radford (1997:113) says that all phrases and clauses are of a 'head word' category. And Sells (1985:27) acknowledges the centrality in contemporary syntax of the concept of a 'head'. This concept requires that no phrase (whether intermediate or maximal) should have no head. As such, head morphemes in Bemba will assume both intermediate and maximal phrasal nodes. It is a known fact that where the head of a phrase is considered important the projection principle is central because phrases are projections of the head words. It is further known that where the projection principle is important, the lexicon plays a pivotal role in supplying lexical information. Webelhuth says the following words about the lexicon:

*The lexicon is still conceptualized as the repository of information associated with lexical items that cannot be predicted on the basis of universal principles or category wide language - particular parametric choices (Webelhuth, 1995: 29).*

The above words stress the autonomy of the lexicon, that it is so powerful that neither the universal principles nor the parameters can predict its operations. The **lexicon** works with the **X-bar** principles and the **projection principle** in imposing order on the structures of a language (Horrocks, 1987: 101).

Katamba (1993: 220) has discussed the inherent verbal properties and has listed them as tense, aspect, mood and conjugation. He has agreed with Radford (1997) that INFL is the head of the inflectional phrase **IP** and that all clauses are actually inflectional phrases which are headed by covert or overt INFL constituents. This present study, as mentioned earlier considers all the inherent

verbal properties such as tense, aspect, mood, infinitive particle 'to', some agreement markers, finite auxiliary verbs and negative polarity markers as INFL constituents and must be carefully represented on tree diagrams. Concerning the differences in languages Katamba says:

*There are parameters within which most differences between languages occur...pre-set parameters determine the structural patterns from which different languages may select...There are a number of strongly preferred patterns which recur in language after language, while other patterns are rare or non-existent.*  
(Katamba, 1993: 56)

From Katamba's words above and the words of other linguists quoted earlier, it would appear that whether or not a **morpheme**, **word** or **paradigm** is to be used in the analysis of a language should depend on the type of language being analysed. It seems plausible that isolating languages should select the **word**, agglutinative languages should select the **morpheme**, and highly inflectional case languages should select the **word paradigm**. In the analysis of Bemba verbal grammar, clearly, the morpheme will prove essential.

Different verbal extensions affect the argument structure of a sentence differently. Grimshaw (1990) has discussed the principles of argument structure representation. She has defined argument structure as the lexical representation of grammatical information about a predicate, and that it is projected from lexical semantic structure, while the d-structure is projected from both the argument structure and from the principles of X-bar theory (Grimshaw, 1990:1). The present study will establish whether Bemba verbal extensions do acquire additional arguments to those projected from their radicals. It will be confirmed

whether or not they block some arguments and allow others to remain unchanged.

Nkolola (1997:80), has argued that causative verbs do retain all their arguments and the theta roles associated with their simplex radicals, and she calls this as 'argument increment principle'. She further argues for what she calls 'argument inheritance principle', according to which the number of arguments of an applied causative verb is equal to the number of arguments of the simplex radical plus one. This important assertion will be investigated to see whether it applies to Bemba as well.

Mwape (1994) and Miti (1988) in their discussions of the rules of autosegmental phonology have shed light on the morphophonological processes at play in determining such phenomena as coalescence, gliding, segment deletion, segment insertion, vowel harmony and nasal harmony. This information is vital to the balanced understanding of the fact that the same extension may assume different shapes in different structural contexts. And this further stresses that in Bantu grammar, what determines the category of a form is not the shape, but the function and meaning of that form in a given structure. This study will proceed on the basis of insights from such knowledge.

Fromkin (2002) emphasizes that the smallest meaningful linguistic unit of grammatical form is the morpheme and not the **word**. Since, as we have seen above, modern theories and principles of linguistic analysis can operate very effectively at morphemic level, this study selects these morphemes in the analysis of Bemba Syntax on tree diagrams. On the **importance of tree diagrams**, Fromkin (2002:123- 128) says tree diagrams are important in the analysis of grammar and syntax because:



- (i) They are graphic representations of a native speaker's knowledge of the sentence structure in their language;
- (ii) The natural groupings and sub-groupings reflect the hierarchical structure of the tree;
- (iii) The natural groupings show **phrasal**, **lexical** as well as **Functional** categories;
- (iv) Trees convey the same information as the nested parentheses, but more clearly;
- (v) Trees simultaneously show the **linear order** of words and their **hierarchical structure**; and
- (vi) It is easier to see the parts and the sub-parts of a sentence in a tree diagram (Fromkin, 2002:123).

These above reasons, stress the importance of arboreal structures in the analysis of a grammar.

From the literature review just discussed above, the following issues have been found to beg further explanation, and this study has attempted to explain them:

- (i) Is it possible to posit an approach that can describe all languages of the world **in exactly the same way** without compromising the quality of the description?
- (ii) How may we apply the current linguistic theories to Bantu languages in general and to Bemba in particular?
- (iii) Can the verbal extensions be successfully slotted on tree diagrams?
- (iv) What type of Bemba morphemes should be captured by, and reflected in the X-bar Schematic framework? Are all morphemes **equally** essential?
- (v) Should the verbal extensions be raised to the **full or maximal phrasal node** or to the **intermediate phrasal node**, and why should that be so?

- (vi) Do the extensions affect the argument structure of a sentence?
- (vii) When, does the intermediate INFL (I' or I-bar) become full or maximal INFL (I'' or IP).
- (viii) How should we determine what should be **optionally** included and what should be **obligatorily** included on tree diagrams?
- (ix) Is it necessary to pattern Bemba verbal grammar after the current linguistic theories and principles?
- (xi) How can peculiar phonological cases such as imbrications (segment reshuffle) be represented on tree diagrams?
- (xii) How should words whose initial, medial or final consonants have been mutated by the constraints of the various Laws of assimilation (like the Meinhof's Law) be represented on tree diagrams.

### 1.10 Scope of the study

This study explores the grammar of verbs or radicals and their extensions in Bemba. It discusses the possible distinctions among Bemba morphemes, Bemba words and Bemba sentences and how these may be slotted and analysed on tree diagrams by employing the X-Bar template. It analyses the morphology, phonology, syntax and semantics of the most productive or the most frequently used extensions in Bemba. The study emphasises the need to reflect as much as possible, the underlying morphemes of Bemba sentences on tree diagrams. These underlying morphemes are realised and identified by the process of **deconstruction** and **segmentation**. The hierarchical locations or nodes and the levels of projection for all verbal extensions on the X-Bar schema for Bemba are discussed. The study discusses the argument structures and the semantic or theta-roles associated with the verbal extensions in different sentential structures of Bemba.

### 1.11 Limitations of the study

This study has not discussed all the different aspects of Bemba grammar because it is restricted to the verbal extensions. It has not discussed nominals in detail, and although it has discussed verbal grammar, it has confined itself to those aspects of verbals that bring out the extensions clearly. In addition, not all verbal extensions have been fully discussed because although all extensions collected by the researcher have been briefly mentioned in this study, only the most productive ones have been given a fairly detailed treatment. The part of this study dealing with the phonology of the verbal extensions has not included Tone Marking, except for those sentences, if any, whose intended meaning depends entirely on it. This is because Tone Marking is a wide study in its own right, and as such, it requires full treatment of its own for it to be fully appreciated.

### 1.12 Structure of the Dissertation

This Dissertation is organised in four chapters. Chapter one introduces the study. It presents the back-ground to this study, the statement of the problem, the significance of the study, the objectives of the study and discusses some available literature. Chapter two, presents the typology or an inventory of various verbal extensions compiled. The chapter gives an overview of all Bemba verbal extensions collected. The chapter suggests a possible model for the Bemba lexicon. Chapter three discusses the extensions in two parts: Part A discusses the morphology and phonology, while Part B discusses the syntax and semantics of the verbal extensions. It discusses the processes of construction, deconstruction and reconstruction which must take place **before, during** and **after** analyzing the sentences on tree diagrams. It demonstrates the process of analyzing sentences on syntactic tree diagrams by applying the X-Bar model and employing the Bemba morphemes. The chapter discusses argument structure generated by the verbal extensions as well as their semantic roles. Chapter four

summarises the whole study, draws the conclusions and makes suggestions for further research.

### **1.13 Chapter Summary**

This chapter has introduced the present study. It has presented the statement of the problem, the rationale, the aim and objectives of the study. The chapter has discussed the methodology used to collect and analyze the data. It has discussed the theoretical framework and the related literature from the works compiled by other linguists. The chapter has stated that this study is based on the Government- Binding (GB) theory and other sub-theories. This chapter has discussed the scope and limitations of the present study and it has outlined the order of the main topics that this study comprises. It has laid the foundation for handling the findings concerning the typology and nature of Bemba verbal extensions. The next chapter, therefore, presents these findings.

# Chapter Two

## Presentation of the Findings

### 2.0 General

The previous chapter introduced this study, stating the aim and objectives of the study. It explained the rationale or significance of the study and the theoretical framework under which the whole study is discussed. The chapter has discussed both the methodology used and the related literature review. The present chapter presents all the findings related to Bemba verbal extensions. Bantu verbal structure is generally associated with concordial and conjugational affixes (Miti, 2006:307). When all of these affixes are deleted from the verbal form, one remains with the core element called the **radical** or the **root**. The radical is that part of a verbal form or that morpheme in a verbal that remains unchanged when all the affixes have been removed, and is present in all the word forms of that verb (Chanda, 2006:96). Radicals are said to be **simplex** if they do not incorporate any extension, and are **extended** if they incorporate one or more affixal extensions. Affixes can be **prefixal** if they appear word initially, **suffixal** if they appear word finally or **suprafixal** if they represent supra segments such as tone. According to Chanda (2006:89), when describing Bantu verb forms it is important to take into account verbal grammatical categories such as nominal verbal forms, mood, aspect, tense, polarity and clausal status.

*Nomial-verbal forms* refer to those forms (especially infinitives) that behave both as verbs and as nouns, as in the following:

- |     |     |                 |              |                         |
|-----|-----|-----------------|--------------|-------------------------|
| (1) | (a) | U-ku-bomb-ela   | ukubombela   | ‘to work for’           |
|     | (b) | U-ku-bwel-elela | ukubwelelela | ‘to come back for good’ |
|     | (c) | u-ku-bomb-esha  | ukubombesha  | ‘to work hard’          |

*Mood* refers to indications of a kind of speech act or the degree of certainty with which something is said. It can be indicative, subjunctive or imperative.

*Aspect* refers to the way that a verbal structure shows whether an activity is **continuing**, **repeated** or **completed**. It includes among others the **punctual** aspect (eg *tuli* in *tuli mun'ganda* 'we are in the house'), the **progressive** aspect (eg *tule* in *tuleelanda* 'we are talking'), the **habitual** aspect (eg *tula* in *tulalya* 'we do eat'), the **persistent** aspect (eg *tucili* in *tucili tulebomba* 'we are still working') and the **perfective** aspect (eg *naatu* in *naatupwa* 'we have finished').

*Tense* refers to the form of the verb that shows whether one is referring to the past, present or the future.

*Polarity* refers to the state of the verbal structure being positive or negative.

*Clausal status*, according to Chanda (2006:89), refers to whether the verb form concerned is used in a relative clause or in a non-relative clause.

To the above verbal categories, one adds morpho-syntactic categories of **number** and **person**. Number can be **singular** or **plural**. Person can be **first**, **second** or **third**. These categories associated with verbal forms are important because it is among these sorts of verbal elements that verbal extensions are to be found, and they directly or indirectly affect the phonology, morphology and syntax of the verbal extensions.

## 2.1 Inventory and Typology of the Bemba Verbal Extensions

According to Guthrie (1948:104), before the extensions of any language are listed, some observations must be made about ways of grouping them together. It should be clear which feature must be used as the primary one for the list. Groupings may be by meaning or by function. This means that under a particular extensional heading, such as 'applicatives' or 'causatives' one would find several variants of different shapes but of the same meaning or performing the same function collected and grouped together as representing the same extension. In other cases different shapes, or even the same shape may assume different meanings or different functions. On the other hand, it is important to mention that the same extension can assume apparently one or more morphological shapes. Allomorphs or variants of the same morpheme are caused partly by the fact that the shape of the extension is constrained and governed by the morphophonological rules of vowel harmony, nasal harmony and other assimilations, and partly by the diachronic processes of spirantization.

Table 1 below contains a list of all the extensions collected. Some extensions have more variants than others. Variants are not all included on the table. Instead, they are only discussed later in the body of the dissertation. An extension that appears alone represents both the underlying and the surface forms of itself. This may mean that in all linguistic contexts, such an extension is not constrained by the forces of harmony or assimilation. For instance the shape of the Reciprocal Extension is always '**-an-**'. There is no other form for this extension. The list in Table 4, therefore, constitutes the inventory of all the main verbal extensions in Bemba collected in this study (in a suggested descending order of the frequency of application, beginning with the most frequently used in most Bemba texts):

(The rules accounting for the vowel ‘I’ realised as spirants ‘-sh-’ in some contexts or ‘-fy-’ in other contexts or still as ‘-y-’, or as ‘**j**’ wrtten also as ‘**ny**’ are given in chapter three, sections (3.1.1.1.2) and (3.1.1.2.1).)

**Table 2.1 List of all Bemba Verbal Extensions collected**

Serial Number	Name of the Extension	Form of the Extension	Example
1	<b>Applied Extension</b>	<b>-il-</b>	ukubiip-il-a 'to be bad for'
2	<b>Stative Extension</b>	<b>-ik-</b>	ukuona-ik-a 'to be damaged'
3	<b>Passive Extension</b>	<b>-iw-</b> or <b>-iu-</b> <b>-w-</b>	ukutash-iw-a 'be praised' ukushit -w-a 'to be bought'
4	<b>Causative Extension</b>	(a) <b>-isi-</b>  (b) <b>-I-</b> (SUPER HIGH)  (c) <b>-ik-</b>	ukuly-isi-a 'to cause to eat.' ukuleep-I-a 'to cause to be long' ukuim-I-a 'to cause to rise' ukushim-I-a 'to cause to be extinguished' ukuim-ik-a 'to cause to stand'
5	<b>Reciprocal Extension</b>	<b>-an-</b>	ukumon-an-a 'to see



			each other'
	<b>Intensive Extension</b>	<b>-isi-</b>	ukulim <b>-isi</b> -a 'to caltivate harder'
	<b>Extensive Extension(i)</b> (a) <b>Transitive</b>  <b>(ii)</b>  <b>(i)</b> (b) <b>Intransitive and Stative</b>  <b>(ii)</b>	<b>-aul-</b>   <b>-ail-</b>   <b>-auk-</b>   <b>-aik-</b>	ukutul- <b>aul</b> -a 'to prick extensively' ukushind- <b>ail</b> -a 'to press down extensively' ukubil- <b>auk</b> -a 'to boil extensively' ukutul- <b>aik</b> -a 'to be punctured extensively'
	<b>Reversive Extension</b>	<b>-ulul-</b>	ukukak- <b>ulul</b> -a 'to untie'
	<b>Persistive or Completive Extension</b>	<b>-ilil-</b>	ukuis <b>-ilil</b> -a 'to come for good'
(a)	<b>Sequential/Combined Extensions</b> <b>Applied + Passive</b> (APPEX)	<b>-il- + -w-</b>	Ukushimik- <b>il-w</b> -a 'to be preached to
(b)	<b>Causative + Passive</b> (CAPEX)	<b>-I- + -w-</b>	ukwend- <b>I-w</b> -a 'to be caused to move'
(c)	<b>Reciprocal +Causative RECEX</b>	<b>-an- + -I-</b>	ukupat- <b>an-I</b> -a 'to cause to hate each other' ukulek- <b>an-I</b> -a 'to cause to leave each other'

(d)	<b>Reversive + passive</b> (REPEX)	<b>-ulul- + -w-</b>	ukufimb- <b>ulul-w-a</b> 'to be uncovered
(e)	<b>Reversive + Stative</b> (RESEX)	<b>-ulu- + -k-</b>	ukufimb- <b>ulu-k-a</b> 'to be in an uncovered state'
(f)	<b>Extensive + Passive</b> (EXPEX)	<b>-aul- + -w-</b>	ukutul- <b>aul-w-a</b> 'to be extensively pricked'
(g)	<b>Extensive + Causative</b> (EXCEX)	<b>-auk- + -I-</b>	ukutol- <b>auk-I-a</b> 'to cause to jump extensively'
(h)	<b>Causative + Reciprocal</b> CAREX	<b>-isi- + any-</b>	ukulw- <b>isi-any-a</b> 'to cause to fight each other' ukuly- <b>isi-any-I-a</b> 'to cause each other to eat)
(i)	<b>Extensive + Causative + Passive</b> (EXCAPEX)	<b>-auk- + -I- + -w-</b>	ukutol- <b>auk-I-w-a</b> 'to be caused to jump extensively'
(j)	<b>Extensive + Causative + Reciprocal</b> (EXCAREX)	<b>-auk- + -I- + -any-</b>	ukutol- <b>auk-I-any-a</b> 'to cause each other to jump extensively up and down

## 2.2 Overview of the Bemba Verbal Extensions

The endings of the verbs are often called the final vowels (f.v) and are said to generally indicate mood in sentences (Miti,2006:300). According to Abdulazziz, *Swahili and Nyamwezi*, regards final vowels or the ending vowels '-a' and '-e' as *Simple extensions* ([abdulaziz.lodhi@afro.uu.se](mailto:abdulaziz.lodhi@afro.uu.se)). In the present study we do not regard inflectional endings as extensions, rather we group the extensions into

two groups; the main extensions and the sequential or combine extensions. Main extensions include among others the Applied extensions, Causative extensions, Passive extensions, Reciprocal extensions, Stative extensions, Reversive extensions and others which are discussed in subsequent sections of this study.

### 2.2.1 Applied or Applicative Extension

This is the extension, added to a radical, where it indicates that the object of the verb has been worked for . It indicates *‘to do for or ‘to do on, to do on behalf of’, or to work with.* This extension has the underlying form of **-il-**, which in certain contexts is constrained by the rules of vowel harmony and nasal harmony to become **-el-**, **-in-** , and **-en-** (Chanda, 2007: 133). Its less frequently used variety is **-sh-** . See the examples in (2) below:

- (2) (a) u-ku-sung **-il-**a      ukusungila      ‘to keep for’  
 (b) u-ku-pemb **-el-**a      ukupembela      ‘to wait for’  
 (c) u-ku-sun **-in-**a      ukusunina      ‘to cut a piece for’  
 (d) u-ku-ton **-en-**a      ukutonena      ‘to drip on’  
 (e) Tu-le-bomb-**ela** u-lu-piya      Tulebombela ulupiya.  
     ‘We are working for the money.’  
 (f) A-menshi ya n-ton-**en-**a      Amenshi yantonena.  
     ‘Water has dripped on me.’

Although they look different from each other, all the extensions in (2) above represent one and the same extension, **-il-** and they all indicate that the action/s stated by the radical/s is/are performed **for, on, with** or **on behalf of** the object of the verb.

### 2.2.2 Stative Extension

This type of extension indicates the state in which the referent or the object of the verb to which it is attached is. Its main form is **'-ik-'**. Its variant shapes are **'-ek-'**, **'-uk-'**, **'-ok-'** and **'-am-'**. Consider the examples in (3) below:

- (3) (a) u-ku-tul-**ik**-a      ukutulika      'to be punctured and remain in that state'  
(c) u-ku-mon-**ek**-a      ukumoneka      'to be visible and remain in that state'  
(d) u-ku-pet-**am**-a      ukupetama      'to be bend and remain in that state'  
(e) u-ku-shiik-**am**-a      ukushiikama      'to be buried and remain in that state'  
(f) I-n'ganda na-i-tob-**eka**.      In'ganda naitobeka.  
    'The house is broken.'  
(g) I-laya na-ali-lep-**uk**-a.      Ilaya naalilepuka.  
    'The shirt is torn.'

The extensions in the above words indicate that the objects of the verbs are in the conditions stated by the radicals to which they are attached. Apparently, all of these stative extensions are not very productive, for all of them are not widely used, although **'-ik-'** is used more frequently than the others.

### 2.2.3 Passive Extension

This extension indicates that the subject of the verb has been acted upon by an agent, or that the action stated by the verb or root or radical has been experienced by the subject of the verb. The main form of the passive extension is **'-w-'**, which in some contexts appears as **'-iw-'** as in (4) below:

- (4) (a) u-ku-pat-**w**-a      ukupatwa      'to be hated'  
(b) u-ku-patikis-**iw**-a      ukupatikishiwa      'to be forced'  
(c) Ba-kafundisha ba-ali-temwik-**w**-a.      Bakafundisha baalitemwikwa.  
    'Teachers are loved.'

- (d) A-ma-loba na-ya-um-ik-w-a. Amaloba nayomikwa.  
 'The soil has been dried.'

The normal realization of (4b) is 'ukupatikishiwa'. We can see that **-si-** in (b) becomes **-shi-**. The alveolar fricative 's' is palatalised when followed by a high front vowel 'i' in Bemba (Chanda, 2007:28).

#### 2.2.4 Causative Extension

The causative Extension is a morpheme attached to a verbal radical where it indicates that the subject of the verb is caused to perform the action stated by the verb to which it is attached. This extension has many shapes. Remarkable though, is the Causative marked by the super high front vowel 'I' and the one caused by the 'ik'. These are exemplified in (5) below:

- (5) (a) u-ku-bomb-I-a      ukubomfya      'to cause to work'  
 (b) u-ku-lek-I-a      ukulesha      'to cause to stop'  
 (c) u-ku-leep-I-a      ukuleefya      'to cause to be long'  
 (d) u-ku-im-I-a      ukwimya      'to cause to rise'  
 (e) u-ku-pen-I-a      ukupenya      'to cause to be mad'  
 (f) u-ku-im-ik-a      ukwimika      'to cause to stand'  
 (g) U-le-bomb-I-a bwino i-mpiya. Ulebomfya bwino impiya.  
     'You should use the money properly.'  
 (h) Na-ba-n-lek-I-a u-ku-lanla. Nabandesha ukulanda.  
     'They have stopped me from talking.'

In these examples, when a plosive segment such as 'p' and 'b' is followed by the super high front vowel 'I' a fricative such as '-fy-' or '-sh-' is formed. This is called **spirantization** or fricativization (Chanda, 2007:49). Alveolar fricatives such as 's' tend to be palatalized and become '-sh-' when followed by the high front vowel. This is not a result of the super high vowel, but rather this is the

expected sound in Bemba when 's' is followed by 'i'. The causative extension has some less used, or *unproductive* forms. For instance the causative extension 'ik' for verbs like **uma** 'be dry', **ima** 'stand' and **suma** 'bite or suck' will result in the causative verbals **umika** 'cause to dry', **imika** 'cause to stand' and 'sumika' 'cause to bite or to suck' (of a blood-sucking horn - a traditional healing method). The causative '-ik-' here should not be confused with the stative '-ik' associated with stative extensions in (2.2.3) above.

### 2.2.5 Reciprocal Extensions

The reciprocal extension is an extension that indicates that the proposition of the verb affects both the object and the subject of the verb to which it is attached. It takes the form '-na-'. Consider the following verbals: **ukwikata** 'to touch', and **ukusuma** 'to bite'. The proposition stated by the verbal radical becomes a mutual experience between the subject and the object of the verb bearing the extension since both the subject and the object perform the action of the verb to each other. Hence, we have the following examples:

- (6) (a) u-ku-ikat-**an**-a              ukwikatana      'to touch each other'
- (b) u-kusum-**an**-a              ukusumana      'to bite each other'
- (c) Tu-ala-umfw-**an**-a bwino.    Twalaumfwana bwino.  
              'We shall reason with each other properly.'
- (d) A-ba-ana ba-ali-temw-**an**-a    Abaana baalitemwana.  
              'The children love each other.'

The action stated by the verb is experienced mutually by the two or more people or things involved in the action proposed by the verb to which it is attached.

### 2.2.6 Intensive Extension

This extension indicates intensity, that the proposition of the verb to which it is attached, is or has been intensified or applied with extra effort. It takes the form, ‘-esh’ or ‘-ish’. Consider the examples in (7) below:

- (7) (a) u-ku-bomb-**esh-a**      ukubomb**esha**      ‘to work hard’  
 (b) u-ku-lil-**ish-a**      ukulil**isha**      ‘cry more’  
 (c) u-ku-tolok-**esh-a**      ukutolok**esha**      ‘jump with more effort’  
 (d) u-ku-butuk-**ish-a**      ukubutuk**isha**      ‘run faster’  
 (e) Chama a-la-bomb-**esh-a**.      Chama alabomb**esha**.  
                 ‘Chama works very hard.’  
 (f) U-mu-ana a-le-lil-**ish-a** sana.      Umwana alelil**isha** sana.  
                 ‘The child is crying too much.’

In some cases, when the verb ends with ‘-si-’ or ‘-sh’ or [ʃ] sound, the intensive extension ‘-ish-’ or ‘-esh-’ mutates to ‘-ki’ or ‘-ke-’ in order to meet the well-formedness condition. Consider the examples below in (8):

- (8) (a) u-ku- ta-**ki**-sh-a      ukutak**isha**      ‘to praise too much’  
 (b) u-ku-ipu-**ki**-sh-a      ukwipuk**isha**      ‘to ask too much’  
 (c) u-ku-lole-**kesh**-a      ukulole**kesh**a      ‘to be engrossed in seeing’  
 (d) U-le-lole-**ke**-sh-a lyonse      Ulelole**kesh**a lyonse.  
     ‘You should always look carefully’  
 (e) Ine n-la-umfwi-**ki**-sh-a      Ine ndomfw**iki**sha.  
     ‘I listen very attentively’

The use of **‘-ik’** or **‘-ek’** instead of **‘-ish-’** or **‘-esh-’** in the examples in (8) above, results in optimally well-formed verbal structures, which otherwise should have been uttered as in (9) below:

- (9) (a) \*u-ku-ta-**shi**-sha ukutashisha ‘to praise too much’  
 (b) \*u-ku-ipu-**shi**-sha ukwipushisha ‘to ask too much’  
 (c) \*u-ku-lole-**she**-sha ukuloleshesha ‘to be engrossed in seeing’

Some verbs allow optional and additional insertions of ‘-**ki**-’ and ‘-**ke**-’ to the intensive extensions ‘-**ish**-’, and ‘-**esh**-’ as can be seen in (10) below:

- (10) (a) u-ku-umfw-**ish**-a, ukuumfw**isha** ‘to listen seriously’ or  
 u-ku-umfw-**ik-ish**-a ukuumfw**ikisha** ‘to listen seriously’  
 (b) u-ku-mu-eb-**esh**-a ukumweb**esha** ‘to tell him/her seriously’ or  
 u-ku-mu-eb-**ek-esh**-a ukumweb**ekesha** ‘to tell him/her seriously’

In (10) above, the extensions in italics are optional *insertions* or intrusions because the verbals to which they are infixed would maintain the same meaning without them. Still, both options in (a) and both options in (b) are acceptable.

### 2.2.7 Extensive or Frequentative Extension

An extensive extension, according to this study, is one that indicates that the proposition of the verb or the action of the verb to which it is attached is extended in space and time or that the action is widespread as it has been repeated extensively or over a large area or to a large extent. The extension exists both in transitive and intransitive forms. The transitive form is ‘-**aul**-’. Consider the use of the extension ‘-**aul**-’ in (11) below:

- (11) (a) u-ku-tul-**aul**-a ukutul**aula** ‘to prick extensively’ *transitive*  
 (b) u-ku-fun-**aul**-a ukufun**aula** ‘to break extensively’ *transitive*  
 (c) Kont-**aul**-a a-ka-muti. Kont**aula** akamuti.  
 ‘Break the twig extensively.’  
 (d) N-le-ku-eb-**aul**-a i-leelo. Ndekweb**aula** ileelo.  
 ‘I will scold you too much today.’



Some verbs take ‘-a**uk**’ as their extensive extension. When this happens, the resultant derivative verbal form may either be transitive or intransitive as can be seen in (12) below:

- (12) (a) u-ku-tol-**a**uk****-a ukutola**uka** ‘to jump extensively’ *transitive*  
 (b) u-ku-bil-**a**uk****-a ukubilau**ka** ‘to boil extensively’ *intransitive*  
 (c) A-ka-muti na-aka-kont-**a**uk****-a Akamuti naakakontau**ka**  
 ‘The twig is broken extensively’  
 (d) I-**laya** na-ali-lep-**a**uk****-a. Ilaya aalilepau**ka**.  
 ‘The shirt is extensively tone.’

### 2.2.8 Reversive Extension

Reversive Extension is the extension that indicates that the action or the proposition of the radical is being or has been undone or reversed. The reversive extension takes two major shapes; ‘-u**lul**-’, ‘-o**lol**-’ ‘-u**nun**-’ as well as ‘-o**non**-’. Consider the reverse for the following verbals ‘in (13) below:

- (13) (a) u-ku-kuul-**u**lul****-a ukukuul**ulula** ‘to reverse the building process’  
 (b) u-ku-pang-**u**lul****-a ukupang**ulula** ‘to unmake’  
 (f) u-ku-pomb-**o**lol****-a ukupomb**olola** ‘to unwrap’  
 (g) u-ku-pomp-**o**lol****-a ukupomp**olola** ‘to deflate’  
 (h) u-ku-lem-**u**nun****-a ukulem**ununa** ‘to undo the nesting process’  
 (i) u-ku-som-**o**non****-a ukusom**onona** ‘to remove from bundle’  
 (j) Tu-le-pang-**u**lul****-a i-nsaka Tulepang**ulula** insaka.  
 ‘We are unmaking the shelter’  
 (k) Som-**o**non****-a icani ci-mo- mu-mupo Somon**onona** icani cimo mumupo.  
 ‘Remove some grass from the bundle’

Shorter versions of this extensions include ‘-u**l**-’, ‘-o**l**-’, ‘-o**n**-’, and ‘-u**n**-’ in infinitives such as **ukukakula** ‘to untie’, **ukusokola** ‘to remove from the

handle', **ukusomona** 'to remove from the bundle' and **ukusamuna** 'to remove from some height'. Some reversive extensions tend to show that they have no true radicals giving rise to their reversed derivatives. Consider the following two examples in (14) below:

- (14) (a) u-ku-bong-**olol**-a ukubong**olola** 'to reverse the building process'  
(c) u-ku-pong-**olol**-a ukupong**olola** 'to pour out'

These two examples do not have roots in the manner we have seen in all other above. It would be meaningless for instance for us to assume that the radicals for (14) above could be as in (15) below:

- (15) (a) \*u-ku-*bong*-a ukubonga 'to mould or build'  
(b) \*u-ku-*pong*-a ukuponga 'to pour in'

Clearly, the two roots in (15) above could constitute potential Bemba words but not for the purpose being explained here. The true roots for verbals in (14) above are not identical in shapes, instead they are strange as follows:

- (16) (a) u-ku-*kuul*-a ukukuula 'to build'  
(b) uku-*tap*-a ukutapa 'to draw (of substances like water, sugar, etc)'

Although they look different from their derivatives, the roots in italics in (16) are the true radicals giving rise to the reversive derivative verbals in (14) above. The puzzling fact about some exceptional linguistic realities is that if we take (16b) for instance, both ukutapa and ukutapula mean exactly the same thing; 'to draw out an uncountable substance such as water or sugar'. Normally, 'ukutapula' should be the reverse of 'ukutapa', in the same way that 'ukushimpula' 'to drill out' is the reverse of 'ukushimpa' 'to drill in'. Yet this

case" is one of the exceptions to the reversive rule. However, 'ukutapa' usually refers to 'drawing liquid from a large man-made or natural reservoir' while 'ukutapula' refers to 'drawing liquid from some container'.

## 2.2.9 Persistive or Completive Extension

This extension indicates that the proposition of the verb to which it is attached, is, or has been performed for good or permanently. It is represented by the form '-ilil-' which varies as '-elel-', '-inin-', and '-enen-' owing to the various morphophonological constraints by the rules governing such phenomena as vowel harmony and nasal harmony (Chanda, 2007: 130, Miti, 2006: 331).

See the examples in (17) for 'ukuya' (to go), 'ukubwela', (to come back), 'ukushima' 'to be extinguished' and 'ukupena' 'to be mad' below:

- (17) (a) u-ku-yil-**ilil**-a      ukuyililila      'to go for good'  
 (b) u-ku-bwel-**elel**-a      ukubwelelela      'to come back for good'  
 (d) u-ku-shim-**inin**a      ukushiminina      'to be extinguished completely'  
 (e) u-ku-pen-**enen**a      ukupenenena      'to be mad for good'  
 (f) Chibwe a-ali bwel-**elel**-a      Chibwe aalibwelelela  
       'Chibwe has come back for good'  
 (g) I-mpoto na-i-onaik-**ilil**-a.      impoto nayonaikilila.  
       'The pot is damaged beyond repair'

## 2.2.10 Sequential or Combined Extensions

Sequential Extensions, according to this study, are extensions that consist of two or more different extensions forming one unit of meaning. There are about eleven types of combined extensions compiled in this study. These extensions are: Applied-Passive extension, Causative-Reciprocal extension, Causative-Passive extension, Reversive-Passive extension, Reversive-Statative extension, Extensive-Statative extension, Extensive-Passive extension, Extensive-Causative

extension, Causative-Reciprocal-Causative, Extensive-Causative-Passive extension, the Extensive-Causative-Passive and the Extensive-Causative-Reciprocal-Causative which are shortened stipulatively in this study to the following acronyms; APPEX, CAPEX, RECEX, REPEX, RESEX, EXSEX, , EXCEX, CAREX, EXCAPEX and the EXCAREX extensions respectively. Brief details of these extensions are given below:

### 2.2.10.1 Applied-Passive Extension (APPEX)

The *Applied-Passive* extension (APPEX), according to this study, consists of both the applied and the passive extensions which together form one combined extension. The APPEX extension takes the form from the addition of ‘-il-’ and ‘-w-’ or ‘-el-’ and ‘-w-’, as in the derivative nomino-verbal forms for the verbs, **ukusunga** ‘to keep’ and **ukubomba** ‘to work’ in (18) below:

(18) (a) u-ku-sung-*il-w*-a      ukusung*ilwa* ‘to be kept for’

↑  
Applied extension      Passive extension

(b) u-ku-bomb-*el-w*-a      ukubomb*elwa* ‘to be worked for by others’

↑  
Applied extension      Passive extension

(c) I-mpiya ta-shi-sung-*il-w*-a      Impiya tashi sung*ilwa*  
‘Money is not kept for’

(d) U-a-kota a-bomb-*el-w*-a na a-ba-ana      Uwakota abomb*elwa* na baana.  
‘He who becomes old is worked for by the children’

The applied extension is in italics, followed by the passive extension and they together produce a unit of meaning indicating the state of one getting something done for them by others.



(19)(a) u-ku-bomb-*I-w-a*      ukubomfiwa ‘to be caused to work’  
                                 ↑               ↓  
                  Causative extension    Passive extension

(b) u-ku-tolak-**I-w**-a      ukutolos**hiwa** ‘to be caused to jump’  
Causative extension                  Passive extension

(c) U-mu-ele u-le-bomb-**I-w**-a bwino. Umwele ulebom**fi**wa bwino.  
'The knife is being used properly.'

(d) I-ncinga na-i-tolok-**I-w-a** u-mu-mana Incinga naitoloshiwa umumana.  
'The bicycle has been made to cross the river'

Here, the causative and the passive together achieve the meaning which states that some one or something is caused to be used in the manner suggested by the proposition of the verb to which the extension is attached.

The **Reciprocal-Causative Extension (RECEX)** according to this study indicates that the proposition of the radical has been caused by a third person to be experienced by two people as a mutual experience. See the examples below:

(20) (a) U-<sup>•</sup>kupat-**an-I**-a ukupat<sup>•</sup>anya 'to cause to hate each other'  
 ↑                      ↙  
 Reciprocal Extension      Causative extension

(b) U-kulund-**an-I**-a ukulundanya 'to cause to be linked to each other'  
 ↑                      ↙  
 Reciprocal extension      Causative extension

(c) Mu-i-la-pat-**an-I**-a a-ba-ntu. Mwilapatanya abantu.  
 'Do not cause people to hate each other'

(d) Lund-**an-I**-a i-shi i-ntambo shi-bili Lundanya ishi intambo shibili.  
 'Join these two ropes together.'

In the examples given above, when the reciprocal extension '-an' is followed by the causative super-high vowel 'I', it produces a palato nasal '-ny-'. This is as a result of the adjunction of '-n-' from the reciprocal extension '-an-' to '-y-' from the high-front causative vowel 'I'.



#### 2.2.10.4 Reversive-Passive Extension (REPEX)

The *Reversive-Passive* extension (REPEX), according to this study, is an extension that indicates that the a reverse of the action proposed by the radical has been done by someone or something. The derivatives of the verbs in **ukupangululwa** 'to be unmade' and **ukufisulula** 'to remove from hiding' are given in (21) below:

(21) (a) u-ku-pang-**ulul-w**-a ukupangululwa 'to be unmade'  
 ↑                      ↙  
 Reversive Extension      Passive Extension

(b) u-ku-fis-**ulul-w**-a      ukufisululwa    'to be removed from hiding'  
 Reversive Extension      Passive Extension

(c) I-nsaka ya-la pang-**ulul-w**-a      Insaka yala pangululwa.  
 'The shelter will be unmade.'

(d) I-nkaama i-onse i-fis-**ulul-w**-e.      Inkaama yonse ifisululwe.  
 'All secrecy should be revealed.'

### 2.2.10.5 Reversive-Static Extension (RESEX)

The *Reversive –Static* Extension (RESEX), according to this study, is an extension that indicates the action proposed by the verb has been reversed and the object of the verb has remained in that state, as in (22) below:

(22) (a) u-ku-pomb-**plok**-a      ukupomboloka      'to be unwound'  
 Reversive Extension      Stative Extension

(b) u-ku-bil-**uluk**-a      ukubiluluka      'to be unknitted'  
 Reversive Extension      Stative Extension

(c) I-ntambo na-i-pomb-**olo-k**-a.      Intambo naipomboloka.  
 'The rope has been unwound.'

(d) I-toloshi na-ali bil-ulu-k-a      Itoloshi naali biluluka.  
 'The pair of trousers has been unknitted'

### 2.2.10.6 Extensive-Static Extension (EXSEX)

The *Extensive-Static* (EXSEX) extension, according to this study is an extension that results from a combination of the Extensive Extension ('-aul-') which changes when it is combined with the **stative** extension '-k-' resulting





(24) (a) u-ku-sum-**aul-w**-a      ukusum**aulwa**    'to be extensively bitten'

Extensive Extension      Passive Extension

(c) U-mu-aice na-a-sum-**aul-w-a** ku mbwa      Umwaice naasum**aulwa** ku mbwa  
 'The child has been bitten extensively by the dog'

(d) Ba-kafundisha ba-aci-tuk-**aul-w-a**      Bakafundisha baacituk**aulwa**.  
 'The teachers wire greatly insulted.'

Extensive-Causative extension (EXCEX), according to this study is one that is formed by the combination of the extensive extension ‘**-aul-**’ and the causative extension ‘**-I-**’ producing ‘**-auk-I-a**’ spoken as ‘**-aush-a**’. It means to cause the action stated by the verb to be experienced extensively by the subject, as in the following examples;

56

- (b) u-ku-fund-**a**uk-**ka** ukufunda**usha** 'to cause to be stirred up'
- Extensive extension
- Causative extension

- (c) I-mbwa i-le-but-**a**uk-**I**-a abaice      Imbwa ilebuta**u**sha abaice.  
'The dog is chasing the children extensively'

- (d) I-mfubu shi-a-fund-**a**uk-**I**-a a-menshi. Imfubu shafunda**usha** amenshi.  
'Hippos have stirred up the water'

#### 2.2.10.9 Causative-Reciprocal Extension (CAREX)

The Causative-Reciprocal extension (**CAREX**), according to this study is a combination of a Causative extension and the Reciprocal extension. The supper-high front causative vowel 'I' on the radical, progressively causes the alveolar nasal /n/ on the reciprocal extension '-an-' to be palatalized into a palato nasal 'ɲ' or -ny-. Hence we have '-I-' + '-any-' giving us '-Iany-a' resulting into surface forms as '-shany-a' or '-fyany-a' as shown in (26) below:

- (26)(a) u-ku-butuk-**I**-any-a      ukubutushanya    ‘to cause each other to run’  
  
    ↑                                  ↙  
 Causative extension                      Reciprocal extension

- (b) u-ku-tump-**I -any-a** ukutumfyanya 'to cause each other to be fooled'
- ↑  
Causative extension
- ↙  
Reciprocal extension

- (c) A-ba-ana ba-le-butuk-**I-any**-a.    Abaana balebutushanya.  
'Children are chasing each other.'

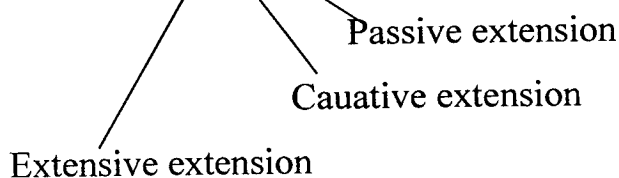
- (d) Ba-le-tump-**I-any-a**. Baletumfy**anya**.  
'They are fooling each other'

It is important to note that in (26) above the reciprocal extension which normally has the form ‘-an-’ has become ‘-any-’ because the alveolar nasal /n/ has become a palato nasal /ny/.

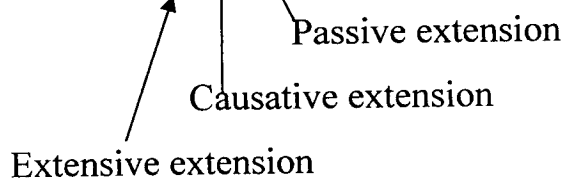
#### 2.2.10.10 Extensive-Causative-Passive Extension (EXCAPEX)

The Extensive-Causative-Passive (EXCAPEX) extension, according to this study is one that is formed by a combination of three different extensions in the order suggested by the title or as follows: ‘-auk-’+‘-I-’+‘-w-’. These three extensions together produce one form as shown in the derivatives of the verbals **ukutoloka** ‘to jump’, and **ukubutuka** ‘to run’ in (27) below:

(27) (a) u-ku-tol-**auk-I-w**-a ukutola**ushiwa** ‘to be caused to jump extensively’



(b) u-ku-but-**auk-I-w**-a ukubuta**ushiwa** ‘to be caused to run extensively’



(c) Tu-le-tol-**auk-I-w**-a ku ma-bampu. Tuletola**ushiwa** ku ma bampu.  
 ‘We are being made to jump up and down extensively by the bumps’

(d) Bwalya a-le-but-**auk-I-w**-a. Bwalya alebuta**ushiwa**.  
 Bwalya is being made to run extensively.

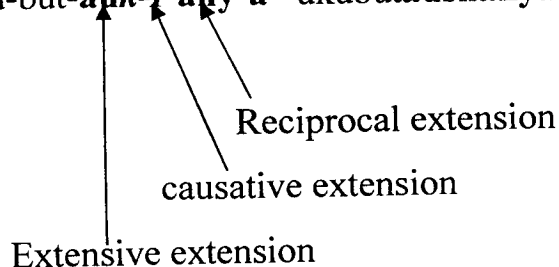
#### 2.2.10.11 Extensive-Causative-Reciprocal- Extension (EXCAREX)

The Extensive-Causative-Reciprocal- (EXCAREX) extension, according to this study is one that is formed by a combination of three extensions namely the

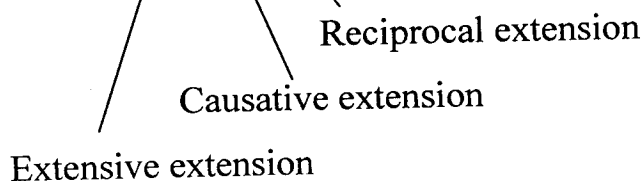
Extensive extension, the Causative extension and the Reciprocal extension. Hence we have ‘-a**uk**-’ + ‘-**I**-’ + ‘-**any**’ resulting in ‘-a**uk**-**I**-**any**-a’ as can be seen in (28) below:

(28)

(a) u-ku-but-a**uk**-**I**-**any**-a ukubuta**aushanya** ‘to chase each other extensively’



(b) u-ku-tol-a**uk**-**I**-**any**-a ukutola**aushanya** ‘to cause each other to jump extensively’



(c) I-mbwa shi-le-but-a**uk**-**I**-**any**-a. Imbwa shilebuta**aushanya**.  
‘The dog are chasing each other extensively’

(d) A-ba-lumendo ba-le-tol-a**uk**-**I**-**any**-a Abalumendo baletola**aushanya**.  
The boys are making each other jump extensively.

### 2.3 The Proposed Morpheme-Based Lexicon Model for Bemba

According to Radford (1997: 264) a lexicon is a dictionary, a list of all the words in a language and their idiosyncratic linguistic properties. The expression *lexical item* therefore, means *word*, and the expression *lexical entry* means the entry in the dictionary for a particular word. As such, the term *lexical property* means property associated with some individual word. This information applies very well to the English language; However, because of the reasons given in Chapter one, this study defines the Bemba lexicon as a mental list of all the

**morphemes that a native speaker has internalised**, *bound* and *free*, *content* and *functional*, as well as *inflectional* and *derivational*. According to this model, only **non-derived morphemes** are actually listed in the mental lexicon. Complex words are derived by means of morphological rules. They are not listed in the mental lexicon. A 'lexical item' in this study therefore, means a *morpheme*. Every morpheme is stored in the lexicon with its idiosyncratic linguistic properties (phonological, morphological, syntactic, semantic etc). These idiosyncratic properties are important for two main reasons among others; Firstly, *subcategorization*, by which lexical items, especially verbs, select their arguments, and by which certain structural configurations are allowed while others are blocked (or filtered) is dependent on these lexical properties. Secondly, the *projection* principle by which phrasal categories are projected from the lexical categories or from the lexicon and represented at all levels of syntactic representation, is also dependent on the idiosyncratic properties of the lexical entries. The term 'lexical entry' in this study, therefore, means the entry into the lexicon of a particular morpheme, and the term 'lexical property' means the property associated with a particular morpheme.

The fear by some phrase structural linguists that if the lexicon were to contain all affixes and all word forms there would be a lot of redundancy in the lexicon and that many generalizations (such as realising that word forms like 'kick', 'kicks', 'kicked' and 'kicking' are but forms of one word, (the root morpheme differentiated by the tense affixes), would be missed (Lynn, 2007:45); such fears should therefore not arise in this model of the lexicon. This is because this model will capture all and only morphemes from which various derived complex words and word forms will be generated by means of morphological rules. Besides, what is involved is not a passive and stable store or dictionary, but a *living and active mental lexicon*, which will, by *activation* and *priming* sort out and provide suitable inflections for the appropriate stem or radical

morphemes in order to produce various word forms corresponding to different tenses, number, honour and mood. Moreover, by the Projection principle and the subcategorization frames of the head words or head morphemes (of the phrases), the lexicon will select different suitable lexical items from among many candidates within itself and block others and then the X-bar principles will constrain and impose conditions on the hierarchical organization of categories in form of general schemata (Horrocks, 1987:101). The question of redundancy in the lexicon therefore, shall not arise in this lexicon model.

Sells (1985:13) says that different syntactic theories have different conceptions of what a lexical item is, and so it is not always safe to think of the lexicon as *just a stock of words*. Rather, he says, the lexicon of a generative grammar may contain a listing of various affixes. Schane (1973:41) said that the lexicon of a language is *a list of its morphemes*. For each morpheme, information is given about its meaning, syntactic properties, exceptional behaviour (if any) and pronunciation. This study is in agreement with Sells (1985) and Schane (1973) because in Bemba the concept of morpheme is more plausible, more flexible, more consistent and more inclusive than the concept of word, which is often rigid and misleading in agglutinative languages. Concerning the role and importance of a morpheme, Bloomfield has said:

*Since every complex form is made up entirely of morphemes, a complete list of morphemes would account for all the phonetic forms of a language. The total stock of morphemes in a language is its lexicon.* (Bloomfield, 1933: 162).

The above words clearly reflect and endorse the present study's underlying theoretical motivation for positing a grammar of Bemba verbal extensions that is based almost entirely on morphemes. According to the perspective that is

being developed here, the mechanics of a morpheme-based model include the following assumptions about the Bemba lexicon:

## 2.4 The Mechanics of the Proposed Morpheme-Based Bemba Lexicon

The lexicon facilitates the subcategorization frames of the head words. The lexicon model proposed in this study is a repository of all that has to do with one's knowledge of encoding and decoding a language. Hence the lexicon proposed in this study has the following features:

- (i) It is an *active* rather than *passive* repository of all Bemba *morphemes* which are related to each other in various ways.
- (ii) Besides the list of morphemes, the lexicon also contains, according to the present study, an *overall language outline or schema*, which is a *condensed general structure of the language* of Bemba. The present study posits that this schema is equivalent to *native-speaker internalised knowledge* of the entire (Bemba) language. This compressed outline provides filter on the outputs of the morphological rules, ensuring that they fulfil the well-formedness condition.
- (iii) The contents of this outline or schema, according to this study, vary according to the level of linguistic competence reached by the speaker or hearer. An adult native speaker, for instance has a richer overall outline than a young speaker or an adult non-native speaker of a language. Halle (1973), proposed a similar but slightly different view when he said that besides the list of morphemes and the word formation rules, the lexicon should also contain actual words which should function as *filter* on the output of the word formation rules. However, the lexicon, proposed in this study has the *condensed general structure* of the core aspects of the language, and it also contains three important features; a *generative* device, the *ad hoc blocking device* and the *parsing*

*algorithm*. The generative device provides the means for producing and comprehending infinite novel sentences using finite resources or means available in the lexicon. The ad hoc blocking device provides impediments or restrictions which function as filter (or a straining device) on the output of the morphological rules, ensuring that the various morpheme combinations allowed by morphology result in acceptable and wellformed strings. When confronted with exceptional strings of words, the ad hoc blocking device blocks or prevents the application of normal or regular morphological processes and imposes the required irregular lexical items, outside regular morphological rules. The use of the form '*ad hoc*' is an attempt to show that the process is set up solely in response to specific (or unique) linguistic situations, such as cases of irregular inflections. The parsing algorithm provides the required knowledge for analysing phrases and sentences, splitting them into segments, decomposing or deconstructing them into their underlying meaningful morphemes and slotting them on tree diagrams if need be. The word Algorithm refers to a systematic, step by step process of solving a given problem, in this case a systematic process of analysing or parsing Bemba sentences. It is some sort of formula for unraveling puzzling linguistic strings in Bemba. This study has borrowed this term from the disciplines of Computer and Mathematics. Other important information about the lexicon proposed in this study include the facts that:

(i) The lexicon is flexible and accommodative to the constraints of the assimilation rules of vowel, consonant and nasal harmony or the Meinhof's law as well as the mutating morphophonological processes of spirantization and imbrication and others which often alter the shapes of the consonants as well as vowels of the verbal extensions.

(ii) The lexicon embodies all principles of language generally and all parameters or options peculiar to a (Bemba) language. In other words it contains *all constraints* concerning the available combinations and the possible



or potential combinations of all the lexical items (in its store) into words, phrases and sentences. These include rules relating Bemba to its ancestor language, the Proto-Bantu language (diachronic rules), rules accounting for the Bemba language as it is used at a particular time (synchronic rules) and those accounting for the nativization of loan words, as well as the coinages, compare Chanda (2007, LIN 5032 Lecture notes). For this reason, morphology and certain aspects of syntax are dealt with in the lexicon. Compare this with Nkolola (1997:56).

(iii) This lexicon deals with the inputs at the d-structure level. It has little to do with the output and the S-structure. The S-structure is regulated by the Phonetic Form PF (monitoring phonic well-formedness) and the Logical Form LF (monitoring semantic well-formedness). The ad hoc blocking device, proposed in this study filters outputs of the S-structure (monitoring the general well-formedness of the whole sentence at surface level). The lexicon and the d-structure work together in projecting phrasal categories from lexical categories. Hence the *lexicon*, the *projection principle*, and the *X-bar theory* are inseparable because they work together in projecting phrasal categories from lexical categories using the central concept of 'head' (Horrocks, 1987:101, Webelhuth, 1995:18 and Sells, 1985:27).

(iv) In the lexicon model posited for Bemba verbal grammar, the categories that can achieve maximal projection should include following:

- (a) all verbs or radicals and all verbals
- (b) all nouns or stems or nominal-verbal forms
- (c) all prepositions
- (d) all adjectives
- (e) infinitives (headed by the particle 'to' )
- (f) all inflectional phrases (INFL) or IP or I'

that is, all double bar INFLs or clauses.

- (g) All determiner phrases are maximal Projections. All pronouns for different noun classes are also determiners.
- (h) All phrases beginning with negative markers like 'ta-' in Bemba strings are all maximal projections.

(v) Intermediate projections in this lexicon model, according to this study, include the following:

- (a) all inflections labelled **I'** instead of **I''** or **IP**
- (b) all verbal extensions
- (c) all phrases which are below full phrasal level
- (d) polarity is a constituent of the **I'** INFL, and all negative polarity is **overt** INFL while all positive polarity is **covert** INFL.

## 2.5 Chapter Summary

This chapter has listed and presented the inventory of all the verbal extensions collected by the researcher. There are nine main groups of verb extensions in this present study. The tenth group comprises combined or Sequential extensions. There are about ten main types of combined verbal extensions recorded. The chapter has presented the proposed morpheme-based lexicon model for Bemba and the proposed mechanics inherent in its operation. This chapter has laid the foundation for further discussion of the extensions. The next chapter provides an analysis and a detailed discussion of these verbal extensions.

# Chapter Three

## Discussion

### 3.0 General

In the previous chapter, an inventory of all Bemba verbal extensions was presented, and a lexicon model for Bemba verbal syntax was posited. The present chapter discusses the extensions in two parts: The first part focusses on the phonology and morphology aspects while the second part considers the syntax and semantics of the verbal extensions.

### 3.1 The Phonology and Morphology of the Extensions

Phonology refers to the phonetic representation of sounds and sound patterns in a speaker's mental grammar (Fromkin, 2002:273). The knowledge that the native speakers of Bemba have about the phonology (as well as morphology) of the Bemba verbal grammar and the manner in which they put that knowledge to effective use in concrete situations, is the primary concern of this chapter.

Morphology is the study of internal structures of words and the rules by which the words are formed (Fromkin, 2002:76). The smallest meaningful units that combine together to form words are called morphemes. A morpheme may be represented by a single sound such as the morpheme **a** meaning '*without*' in **amoral**, **s** meaning '*more than one*' in **books** or by a group of dependent affixes such as **dis-**, meaning '*not*' in **disconnect**, or **-able**, meaning '*capable of being*' in **movable** or by a group of independent segments such as verbs, nouns, adjectives and others. Since morphemes have their own meanings which they contribute to the strings in which they occur, and because they are the smallest units of meaning, coupled by the fact that a Bemba sentence is often a concatenation of morphemes rather than words, this study is centred on the morphemes, and it has accorded them headship for various local trees in Bemba

verbal grammar. The study has also subjected all Bemba strings to rigorous algorithmic parsing, a process by which literally all underlying meaningful Bemba morphemes are revealed.

### 3.1.1 The Phonology of the Extensions

The following tables presents the phonetic sounds and the phonemic sounds for the Bemba consonants:

**Table 2: Bemba Phonetic Chart for consonants**

	Bilabial - +	Labiodent - +	Alveolar - +	Postalveolar - +	Palatal - +	Velar - +
Nasal	m		n		ɲ	ŋ
Stop	p b		t d			k g
Frictive	β	f	s	ʃ		
Affricate				tʃ dʒ		
Lateral			l			
Approximant					j	w

**Table 3: Bemba Phonemic Chart for consonants**

	Bilabial - +	Labiodent - +	Alveolar - +	Postalveo - +	Palatal - +	Velar - +
Nasal	m		n		ɲ	ŋ
Stop	P		T			k g
Frictive	β	f	s			
Affricate				tʃ dʒ		
Flap/Roll			l			
Approximan					j	w

Two types of phonology that have significant influence on the nature and behaviour of the Bemba verbal extensions are Diachronic phonology and Synchronic phonology. Diachronic phonology is the study of the historical development of the way sounds are used in a language. It provides information about the relationship that exists between a language and its ancestor language/s (Chanda, 2007:45). Synchronic phonology, on the other hand, deals with the

study of a language as it is used at a particular period in time. What follows below is a detailed account of the aspects of these types of phonology that have profound bearing on the shapes and behaviour of the verbal extensions in Bemba.

### 3.1.1.1 Diachronic Phonology

Diachronic Phonology investigates the historical development or the way Phonology has changed over time. Bemba is one of the Bantu languages whose ancestor language is known as Proto- Bantu PB. According to Guthrie (1967), in the classification of Bantu languages, Bemba falls into a group labelled M.42. Bemba has its own reflexes that are based on the underlying traits inherited from the Proto-Bantu language PB. This Proto-Bantu language, though it has come to be believed in and it now occupies a very important role in the history of Bantu languages, is actually a construct, an approximation for it never really existed at any one time (Chanda, 2007). Remarkable Proto-Bantu related phenomena influencing Bemba include the *raised vowel system* and such morphophonological phenomena as *gliding*, *spirantization* and *lateralization/rolling*. These have a great bearing on the nature and shapes of the verbal extensions used synchronically in Bemba.

#### 3.1.1.1.1 The Vowel System

Proto-Bantu (PB) vowel system consisted of seven (7) vowels as follows:

i e ε a ɔ o u

The Bemba vowel system on the other hand consists of five (5) vowels as follows:

i e a o u

This shift from the seven to the five vowel system is called *vowel raising*. The process is called 'raising' because corresponding PB lower vowels are raised to higher vowels in Bemba as exemplified in the figure below:

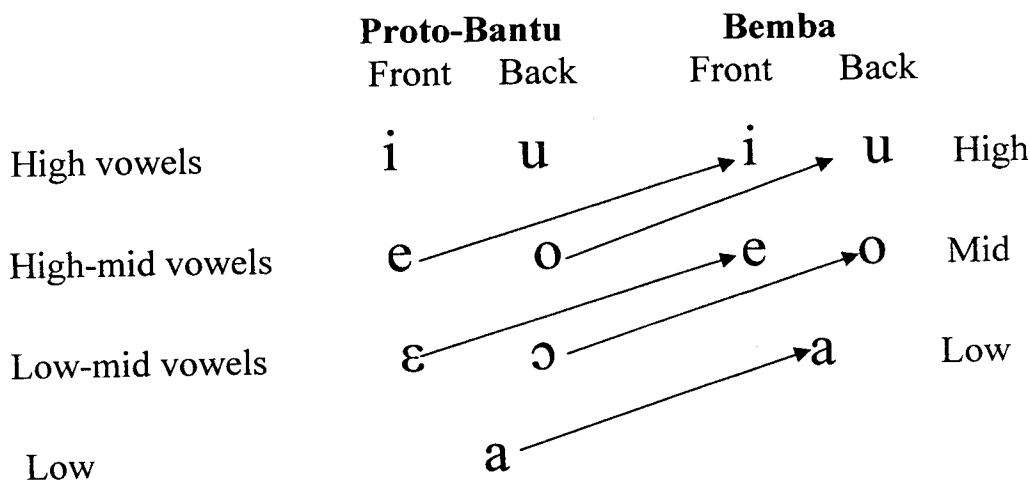


Figure 1      **Demonstration of Vowel Raising for Bemba**

The resultant vowel system for Bemba from the vowel raising shown above is one that has five vowels shown in the table below:

**Table 4: Bemba Vowel system**

	FRONT	BACK
HIGH	i	u
MID	e	o
LOW		a

As can be seen in figure 1 above, the mid-high vowels in Proto-Bantu are raised to high in Bemba. The low-mid vowels in Proto-Bantu are raised to mid in Bemba. And this raising of the vowels accounts for the reduced number of vowels from seven in Proto-Bantu to five in Bemba. Hence Bemba has five vowels in its vowel system. Consider the following correspondences between Proto-Bantu words and their Bemba reflexes from the examples in (1) below:

Proto-Bantu	Bemba	Meaning in English
(1) *-BɛD-	-bil-	knit
*-BɔKɔ	-boko-	arm
*-DɛD-	-lil-	cry
*-DOD-	-lul-	be bitter

It is evident from the behaviour of the vowels in the above examples which are taken from Guthrie’s provisional list for Proto-Bantu stems and radicals, that high-mid vowels and low-mid vowels in Proto-Bantu are raised to high and mid respectively in Bemba. Hence we have the following raisings:

PB	Bemba	
*I	→	(unchanged supper high front Vowel)
*e	→ i	(from high-mid to high)
(2) *ɛ	→ e	(from low-mid to high-mid)
*a	→ a	(from low to low-mid)
*ɔ	→ o	(from low-mid to mid)
*O	→ u	(from high-mid to high)
*U	→	(unchanged super high back Vowel)

The instances of vowel raisings shown above are very cmmon where Proto-Bantu stems and radicals correspond with their Bemba counterpart reflexes.

### 3.1.1.1.2 Spirantization From Proto-Bantu to Bemba

Spirantization or fricativization is a process by which a non spirant or a non fricative becomes a spirant or fricative (Chanda, 2007:50), or according to Matthews, (2005: 350), a historical process by which a stop consonant becomes a fricative. Usually, a stop or plosive sound is *softened* to a fricative. This is also

called *lenition* (Matthews, 2005: 202). The oppoiste of lenition or softening is *fortition* or hardening. The nasal complexes such as **mp**, **mb**, **nd** etc in Bemba are examples of *fortition*, where the stop **p**, or **b**, or **d** is strengthened or hardened by the presence of the nasal **m**, or **n**, while **-fy-** is an example of *lenition* or softening where a stop like **p** is softened from [+stop] to [-stop]. In all Bantu languages where spirantization induced by \*i/u occurs, it takes precedence over any other rule (Chanda, 2007:50). Although Guthrie never reconstructed any fricatives in his Comparative Bantu compilations, they are a core rather than a peripheral phenomenon in Bantu phonology. They are inherited from Proto-Bantu diachronic phonology which accounts for rules of spirantization. Spirantization is achieved mainly by the rule affecting the stops or plosives and the high front vowel \*i or the high back vowel \*u. It arises from two main situations as follows: Firstly, when bilabial plosives /p/ or /b/ occur before the high vowels /\*i/ or /\*u/. Secondly, when alveolar plosives /t/ or /d/ and velar plosives /k/ or /g/ come before the high back vowel /\*u/. These two situations are formalised in the following two rules:

(3)

*	p	→	[f]/	→	*	I
b						

PB	Bemba	English
eg *PIK-	fik-	‘arrive’
*BIMB-	fimb-	‘swell’
*PIK-	fik-	‘arrive’
*BIAD-	fyal-	‘bear child’

(4)

P	→	[f]/	→	*	/U/
b					
t					
*d					
k					
g					

eg *PUM	fum-	‘go out’
BUD-	ful-	‘undress’
*TUD-	ful-	‘undress’
*DUE	fwi-	‘arrow’
*KUKAM-	fukam-	‘kneel down’
*GUB-	fub -	‘hippo’



(5)	t		eg *TIKO-	shiku	'night'
	d		* DIIK-	shiik-a	'bury'
*	k	———— [ʃ] / ———— / *I /	* KIP-	ship-a	vein
	g		*GINA-	shina	name

## Rules

(i) Rule (3) states that a bilabial plosive becomes a voiceless labial dental fricative when it occurs before a high front vowel. Note that this rule means that /\*p/ or /\*b/ becomes /f/ when followed by /\*I/.

(ii) Rule (4) states that all stops or plosives, that is, bilabial stops, alveolar stops and velar stops become labial-dental fricatives when followed by the high back vowel /\*u/.

(iii) Rule (5) states that alveolar plosives and velar plosives become post alveolar or palatalized fricatives when followed by the high front vowel /\*I/.

### 3.1.1.1.3 Gliding or Semi-Vocalization

A glide or semi-vowel is said to be any audible transition from one sound to another (Matthews,2005:147). Gliding, therefore, is a process in which an apparently new sound is audibly detected in the process of changing from one sound to another in speech, and sometimes visibly seen in written as semi vowels. Hence we have such phonetic sounds as [y] and [w] in speech and such phonemes or phonological segments as /y/ or /w/. The only glide or semi-vowel that was present in Proto-Bantu was /y/ which often occurred word initially, as in \*γIPεK- for 'ipik-' (cook) and \*γεMBɔ for 'imbo' (song). Semi-vowels are produced when the high front vowel 'i' or the high back vowel 'u' is followed by other non-high vowels, or when any other higher vowel is followed by a lower vowel as in the following examples:

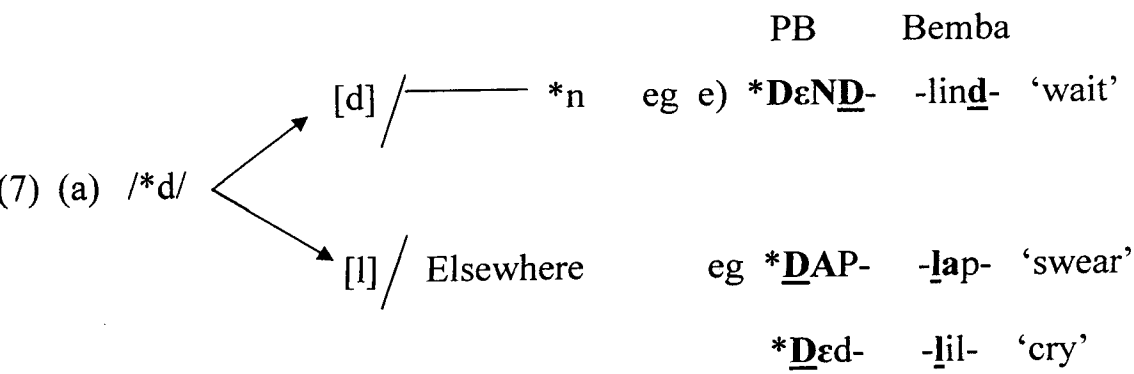
	PB	Bemba	English
(6) (a)	*-BIAD- (-y-)	fyal-	give birth to

(b) *-DOAD-	(-w-)	lwal-	fall'sick
(c) *-DUAD-	(-w-)	fwal-	put clothes on
(d) *-BOA	(-w-)	-bwa	dog

In (a) ‘\*I’ is higher than ‘\*a’ hence the higher vowel takes the shape of the glide ‘y’ shown in the Bemba reflex ‘-fyal. In (b) ‘\*o’ is higher than ‘\*a’ hence the the higher vowel ‘\*o’ takes the shape of the glide ‘w’, in (c) ‘\*u’ is higher than ‘\*a’ and it takes the shape of shape of the glide ‘w’. Similarly in (d) the vowel ‘\*o’ is higher than ‘\*a’ hence the higher vowel disappears in the glide ‘w’.

### 3.1.1.1.4 Lateralization and Rolling

**Lateralization** is a process whereby a segment other than a lateral **l** becomes **l**, and **Rolling** means that a segment other than **r** becomes **r** (Chanda, 2007:51). This study does not discuss rolling because Bemba does not have instances of this segment in its phonology, instead it has **l** which is lateralized PB **\*d**, because from a diachronic point of view, Proto-Bantu does not have the lateral segment **l**, but in some Bantu languages such as Bemba, PB **\*d** has been lateralised to **l**. Proto-Bantu **\*d** has reflected **l** in all phonological contexts where it occurs in Bemba except after **\*n**. Lateralization operates on the principle summarized in the following rule:



This rule states that the Proto-Bantu alveolar stop **\*d** remains the same when it is preceded by an alveolar nasal, but it is lateralized or it is realized as **[l]** in any

other environment. Lateralization, and other diachronic phonological processes are always preceded by spirantization, (Chanda, 2007: 52).

### 3.1.1.2 Synchronic Phonology

Synchronic phonology, as explained earlier is the study of the phonology of a language as it is used at a particular period time. In this case, it is the study of the phonology of the Bemba verbal extensions as it is used in modern or contemporary times. Bemba verbal extensions are synchronically associated with, and affected by rules governing phenomena such as Assimilation and the Meinhof's Law, fortition/lenition, vowel/nasal harmony, spirantization, and imbrication among others. What follows below is a brief account of these processes as they apply to Bemba verbal grammar.

#### 3.1.1.2.1 Spirantization of the Bemba Extensions

As defined under diachronic phonology above, spirantization or fricativization is a process by which a non spirant or a non fricative becomes a spirant or fricative, or a historical process by which a stop consonant becomes a fricative. Usually, a stop or plosive sound is *softened* to a fricative which is also called *lenition*. The oppoiste of lenition or softening is *fortition* or hardening. Note that, plosives like /P/ or /b/ when followed by the super-high vowels /\*I/ or /\*U/, are fricativized or become /f/. The behaviour of the super-high vowel in causing spirantization of the **causative extension** is demonstrated in (8) below:

- (8)
- |   |    |                      |             |
|---|----|----------------------|-------------|
| $\begin{array}{ c } \hline P \\ \hline b \\ \hline \end{array} \longrightarrow [f] / \text{ /I / } \longrightarrow$ | eg | ukubiipa             | 'to be bad' |
|   |    | ukubiip-I-a          | ukubiifya   |
|   |    | 'to cause to be bad' |             |
|   |    | ukubomba             | 'to work'   |
|   |    | ukubomb-I-a          | ukubomfya   |
|   |    | 'to cause to work'   |             |

9)

t	→ [ʃ] / /ɪ/ →
d	
k	
g	

eg ukufiita 'to be black'  
 ukufiit-**I**-a ukufiisha  
 'to be caused to be black'  
 ukubunda 'to drawn'  
 ukubund-**I**-a ukubunsha  
 'to cause to drawn'  
 ukuleka 'to stop'  
 ukulek-**I**-a ukulesha  
 'to cause to stop'  
 ukulunga 'to hunt'  
 ukulung-**I**-a ukulunsha  
 'to cause to hunt'

10)

/ɪ/	↗	[y] / /m/ →	eg
	↘	[ɲ] / /n/ →	

eg ukuima 'to rise up'  
 ukuim-**I**-a ukwimya  
 (to cause to rise up)  
 ukushima 'to be extinguished'  
 ukushim-**I**-a ukushimya  
 'to cause to be extinguished'

eg ukutiina 'to fear'  
 ukutiin-**I**-a ukutiinya  
 'to cause to fear'  
 ukupatana 'to hate each other'  
 ukupat-an-**I**-a ukupatanya  
 'to cause to hate each other'

The rule in (8) above produces the labio-dental fricative /f/ when plosives /p/ or /b/ are followed by the causative super-high front vowel /ɪ/, and the rule in (9) produces the palatalized fricative /ʃ/ when all plosives other than /p/ and /b/ are followed by the super-high vowel /ɪ/.

The rule in (10), on the other hand, shows the behaviour of the super-high front vowel /ɪ/ as a **causative extension** when it follows a nasal. When it follows a bilabial nasal /m/, it becomes [y], and when it follows the alveolar nasal /n/, it becomes [ɲ], also written as [ny].

These rules and examples may follow the following rough procedure in (11):

(11) (a) ukuipipa 'to be short' uku-ipip-**I**-a ukwipifya 'to cause to be short'  
 ('**p-I**a' becomes '**fi** a')

- (b) ukubomba 'to work' uku-bomb-I-a ukubomfya 'to cause to work'  
('b-I' becomes 'fi' a')
- (c) ukubiipa 'to be bad' uku-bii-p-I-a ukubiifya 'to cause to be bad'  
('b-I' becomes 'fi' a')
- (d) ukuima 'to rise up' uku-im-I-a ukwiimya 'to cause to rise up'  
('m-I' becomes 'm-y' a')
- (f) ukutintana 'to pull each other' uku-tint-an-I-a ukutintanya 'to cause to pull each other'  
('an-I' becomes 'any' a')

### 3.1.1.2.2 Gliding in Bemba

The extensions that are associated with glides or semi vowels include causative extensions and passive extensions. The glide /y/ is associated with causative extensions best demonstrated under spirantization. Examples of the extensions with the glide /w/ are in all passive extensions and as in (12) and (13) below:

#### (12) *Passive Extensions from the glide /w/*

(a) ukutuka 'to insult' u-ku-tuk-w-a ukutukwa 'to be insulted'

(b) ukusoka 'to warn' u-ku-sok-w-a ukusokwa 'to be w'arned'

(13) (a) Kwena twatukwa leelo!. 'Indeed we have been insulted today!'

(b) Kafundisha aalisokwa. 'The teacher was warned.'

#### (14) *Causative Extensions from the glide /y/*

(a) uku-shima 'to extinguish' ukushim-I-a ukushimya 'to cause to extinguish'

(b) uku-ima 'to rise up' im-I-a ukwimya 'to cause to rise up'

(15) (a) Mwilashimya mulilo. 'Never put out the fire.'

(b) Njimyako mune. Make me rise up my friend.

### 3.1.1.2.3 Assimilation in Bemba

Assimilation is the modification of a sound in order to make it more similar to some other sound in its neighbourhood (Katamba, 1989:80). The importance and advantage of having assimilation is that it results in smoother and more effortless transition from one sound to another. The changes in the forms or phonological realizations of any morpheme can be accounted for in terms of assimilation. In terms of directionality, if a sound becomes more like the sound that precedes it, the process is called *progressive Assimilation*. If a sound becomes more like the sound that follows it, the process is called *Regressive Assimilation*. Processes that are associated with assimilation include the *Meinhof's Law* whereby the plosive of the first syllable is lost when two successive syllables both begin with a nasal plus a following plosive (Chanda, 2007: 60), *Palatalization* whereby the velar consonant is made partly in the palatal region, *Labialization* whereby the speaker rounds the lips in anticipation of the next segment, *place of Articulation Assimilation* whereby the place of articulation of a nasal is predictable from the place of articulation of the consonant that follows, *Manner of Articulation Assimilation* whereby, whether or not a morpheme appears in one form or the other depends on the first consonant of the root to which it is prefixed and *Nasalization*, whereby an oral segment acquires nasality.

#### 3.1.1.2.3.1 Meinhof,s Law in Bemba

*Meinhof's Law* is a phonological rule accounting for nasal compound assimilation and dissimilation founded first in Ganda (as Ganda Law) by Carl Meinhof (Chanda, 2007:60). It was initially called Ganda Law because it was developed in Uganda by Meinhof who was working on Ganda language. At that time, the law was called Ganda Law because it was thought that the law was relevant only to the Ganda language. Later, when the phenomenon was observed

in other Bantu languages, the law was named after its founder as Meinhof's Law. This rule operates on the principle that '*when two successive syllables both begin with a nasal plus a following plosive, then the plosive of the first syllable is lost*'. Consider this operation in the adjunctions to the word 'bomb' 'work' in (16) below in strings from (step 1) to (step 6) showing steps in the analysis and appreciation of the *Meinhof's Law* in a Bemba sentence 'mmombela abantu' which means '*I work for people*':

(16) **Mmombela abantu** 'I work for people'

Step 1 **-bomb-** 'work' *radical*

Step 2 **n-bomb-** 'i work' *subject adjunction*

Step 3 **n- bomb-ila** 'i work for' *applicative extension*

Step 4 **n - bomb - ila** abantu **UR 1** 'I work for people'

subj rad ext. obj.

Step 5 **mbombela** abantu **UR 2** 'Iwork for people'

fortition → Retrogressive Assimilation of /b/ to /n/.

Step 6 **mmombela** abantu **SR** 'I work for people'

Meinhof's Law → Progressive Assimilation of /m/ to /b/.

In (step 5), *regressive assimilation* of the features of /b/ to /n/ changes /n/ to /m/ because the feature '*place of articulation*' (bilabial) assimilates to /n/ whose natural place of articulation is alveolar. Hence '**-nb-**' becomes **-mb-**. This is known as *fortition*, or *hardening* (achieved through regressive assimilation).

In (step 6) above, *progressive assimilation* of the features of /m/ to /b/ causes /b/ to change to /m/ because the feature; *place of articulation*, (bilabial) from

/b/ assimilate to /n/ changing it to /m/. Hence **mb** becomes **mm-** because **mb** loses **b** which changes to **-mm-**. In this final analysis, the first plosive /b/ is lost by assimilation which changes into /m/. We remain with the last /b/ because 'mbomba' becomes 'mmomba'. This final form represents the surface result of the underlying operation of the Ganda Law, or Meinhof's law, accomplished by progressive assimilation.

In (16) above, when the radical in (step 1) is adjoined to the first person singular subject 'n' in (step 2) a series of progressive and regressive assimilations occur resulting in 'mmombela' 'i work for'. These processes, are also shown in the steps in (17) below:

- (17) (a) **-bomb-** 'work' *radical*  
 (b) **n-bomb-** 'i work' *subject adjunction*  
 (c) **mbomb-** 'i work' *retrogressive assimilation and fortition*  
 (d) **mmomb-** 'i work' *progressive assimilation and Meinhof's Law*  
 (e) **mmomb-ila** 'i work for' *applicative extension adjunction*  
 (f) **mmomb-ela** 'i work for' *vowel harmony on the extension*  
 (g) **mmombela abantu** 'i work for people' *object joining*

In (17), the rules have followed each other as follows:

In (17 (c)) /n/ \_\_\_\_\_ [m] / \_\_\_\_\_ / {p,b}/

This rule states that the alveolar nasal becomes a bilabial nasal when it occurs before a voiced or voiceless bilabial stop, and this rule is responsible for the change of shape from nbomba to mbomba which is also called fortition or hardening and here it also represents retrogressive assimilation.

In (17 (d)) /b/ \_\_\_\_\_ [m] /m/ \_\_\_\_\_



The above rule states that the voiced bilabial plosive /b/ becomes a bilabial nasal [m] when it occurs after a bilabial nasal /m/. This rule is applicable only to some verbal strings that are adjoined to first person singular subjects represented by **n**, and this rule is responsible for the change of shape from **mbomba** to **mmomba** which is a product of *Meinhof's Law*. The rule also represents progressive assimilation. Compare the information in (17) above with (18) below:

- (18) (a) -lind- 'wait' *radical*  
 (b) **n**-lind- 'me wait' *subject adjunction*  
 (c) **nd**ind- 'me wait' *fortition*  
 (d) ndind-**ila** 'me wait **for**, or wait **for** me' *applicative extension*  
 (e) **nn**indila 'wait for me' *Meinhof's Law* and *progressive assimilation*

From this information we can extract two allophonic rules as follows:

$$(19) \quad /l/ \longrightarrow [d] \quad /n/ \longrightarrow$$

$$(20) \quad /l/ \longrightarrow [l] \quad / \text{Else where}$$

But rule (21) below shows why *ndindila* becomes *nnindila* 'wait for me'

$$(21) \quad /d/ \longrightarrow /n/ \quad / /n/ \longrightarrow$$

Rule (19) above states that the lateral /l/ is realised as a voiced alveolar stop /d/ when it occurs after the alveolar nasal /n/. Rule (20) states that the lateral /l/ remains unchanged in any other environment. Rule (21) states that the voiced alveolar stop /d/ is realised as the alveolar nasal /n/ when it occurs after the alveolar nasal /n/. This rule is restricted to special verbs especially those which are adjoined to the Bemba first person singular subject '**n**', 'I' and it is responsible for the change in shape from **ndindila** to **nnindila** 'wait for me'. It represents progressive assimilation. The applicative verbal extension '**-ila-**' will

normally change to ‘-ile-’ or ‘-ele-’ and ‘-ene-’ in subjunctive strings owing to constraints by the rules of assimilation as in (22) below:

(22)

- (a) u-n-lind-**ile**      unnindile      ‘you should wait for me’      *normal*
- (b) u-n-bomb-**ile**      ummombele      ‘you should work for me’      *vowel harmony*
- (c) u-n-mon-**ile**      ummwene      ‘you should see for me’      *nasal harmony*
- (d) u-n-bumb-**ile**      ummumbile      ‘you should mould for me’      *normal*

- (23) (a) **N-bomb-el**-a mu tauni. **Mmombela** mutauni. ‘I work in town’  
 (b) **U-n-land-ile-ko**      **Unnandileko** ‘You should speak for me.’

The examples above show not only the operation of the Meinhof’s Law, but also illustrate that processes such as the assimilation processes, vowel and nasal harmony, fortition and others are very closely related because in the realisation and analysis of one, the others are rendered too.

### 3.1.1.2.3.2 Palatalization in Bemba

Palatalization is a process of making a non-palatal sound palatal. It is an assimilation process whereby a speech sound is produced by raising the tongue towards the hard palate (Encarta Dictionary). When this happens the tongue is fronted in such a way that it makes contact with the roof of the mouth, as a result of which the *velar consonant* is produced partly in the *palatal* or post alveolar area. Verbal extensions that are directly affected by palatalization include *causatives* as in ukususha ‘to cause to be despised, ukufyusha ‘to cause to escape’ and *intensives* like ‘ukubombesha’ ‘to work harder’ and ukulalisha ‘to sleep too much’. Palatalization is indicated by a subscript ‘+’ below or under the consonant that has been palatalized [ɕ]. The palatalized or post alveolar fricative

[ʃ] is often realised in synchronic phonology when the alveolar fricative /s/ is followed by a high front vowel /i/. This is supposed to be formalised as follows:

$$(23) \text{ /s/} \longrightarrow [\text{ʃ}] \text{ / - /i/}$$

Some examples based on this rule are in (24) below:

UR	SR	
(24) (a) insita	inshita	‘time’
(b) ukusima	ukushima	‘to cultivate/ to extinguish’
(c) ukusipula	ukushipula	‘to be drowsy’
(d) ifisimu	ifishimu	‘caterpillars’

The palatalized or post alveolar fricative /ʃ/ is used in the formation of causative extensions and intensive extensions as in (25) below:

- (25)(a) ukulya ‘to eat’ u-ku-ly-isi-a ukuliisha ‘to cause to eat’ *causative*  
 (b) ukulya ‘to eat’ u-ku-ly-isi-a ukuliisha ‘to eat too much’ *intensive*  
 (c) ukubutuka ‘to run’ u-ku-butu-si-a ukubutusha ‘to cause to run’ *causative*  
 (d) ukulanda ‘to talk’ u-ku-land-isi-a ukulandisha ‘to talk loudly’ *intensive*

### 3.1.1.2.3.3 Labialization in Bemba

Labialization is a process by which a non-labial sound is made to audibly sound labial. It is an assimilation process by which the speaker starts rounding the lips, in anticipation of the next segment which is a rounded vowel, before the articulation of the present non-round consonant is completed. In Bemba, verbal extensions affected by labialisation are the *passives* as in ‘ukutukuwa’ ‘to be insulted’, ‘ukulembbwa’ ‘to be written’ and the *reversive* extensions as in ‘ukubongolola’ ‘to reverse the building process’ and ‘ukupangulula’ ‘to unmake’. The underlined segments are the consonants that have been labialised

owing to the anticipation of the following rounded vowels. Other instances include cases where consonants especially the plosives are followed by /u/ or /o/ in ‘-tu-’, ‘-lu-’, ‘-ku-’, ‘-to-’, ‘-lo-’ ‘ko-’ etc. In phonetic transcription, the subscript as in [b<sup>w</sup>] is used, which means that /b/ has been rounded or labialised.

### 3.1.1.2.3.4 place of Articulation Assimilation

This type of assimilation takes place when the place of articulation of a nasal is predictable from the place of articulation of the consonant which follows it. In Bemba, this is best exemplified in strings that consist of the first person singular subject ‘-n-’ as in the following examples:

- (26) (a) nlefwaya nlye ‘ndefwaya ndye’ ‘I want me to eat.’
- (b) u n pele n bike ‘u m pele mbike’ ‘You give me, so i may put it’
- /n/ becomes /m/ by assimilation.
- 

In (a), the alveolar nasal /n/ is followed by the alveolar lateral /l/, therefore the place of articulation (alveolar) is maintained. The lateral segment /l/ is however replaced by the alveolar plosive /d/ so that hardening may take place and hence bring about well formedness. In (b), the place of articulation for the first person singular subject nasal /n/ changes from alveolar to bilabial in conformity with the place of articulation of the following bilabial consonant /p/. This is an example of regressive assimilation. Hence /n/ changes to /m. These examples are cases of place of articulation assimilation.

### 3.1.1.2.3.5 Manner of Articulation Assimilation

Manner of articulation is a cover term for any factor in the production of a consonant other than its ‘place of articulation’ (Matthews, 2005:217). For

example both /p/ and /b/ are bilabials (by place of articulation), but by manner of articulation, one is *voiceless* while the other is *voiced*. Similarly, both /b/ and /m/ are bilabials (by place of articulation), but by manner of articulation, one is *oral* while the other is *nasal*, and both /tʃ/ and /ʃ/ are palato-alveolars (by place of articulation), but by manner of articulation, one is an affricate while the other is a fricative. Manner of Articulation Assimilation also takes place where there is an underlying form for a particular morpheme, yet it is realized differently in various contexts. Most of the verbal extensions have variants of the same verbal extension determined by the assimilation of the manner of articulation. For example, the underlying applicative extension ‘-ila-’ is realised differently in various contexts as in example (7) of chapter 2 and in (27) below.

- (27) (a) ukubumb**ila** ‘to mould for’      *normal and underlying*  
 (b) ukubomb**ela** ‘to work for’      *vowel harmony*  
 (c) ukwashim**ina** ‘to borrow for’      *nasal harmony*  
 (c) ukutem**ena** ‘to cut trees for’      *vowel and nasal harmony at once*

All these variants in (27) mean one and the same thing, yet in conformity with the manner of articulation assimilation, they seem to be different, ie ‘nasal/oral’.

### 3.1.1.2.3.6 Vowel, Nasal and the Consonant Harmony in Bemba

**Vowel Harmony** is defined as agreement among vowels in successive syllables in respect of one or more features (Matthews, 2005:400). It is a situation where qualities or features of a particular segment are assimilated or absorbed by another segment that precedes it (regressive) or follows it (progressive). **Nasal Harmony** or **Nasal Assimilation** on the other hand, is a process by which nasal consonants have the same place of articulation as adjacent oral consonants (Matthews, 2005: 237). Hence they are also said to be **homorganic**, (Mann, 1999:3). In Bemba, an **l** belonging to an extension is realized by the nasal **n** if it

immediately follows a radical ending in either **m** or **n** eg the phrase **-lim-il-** becomes **-lim-in-** ‘cultivate for’ because the nasal consonant **m** on the radical assimilates to the place of articulation of the following *alveolar* lateral consonant **l**, therefore, the *bilabial* nasal **m** becomes alveolar nasal **n** by assimilation. When this happens the two segments concerned will usually merge into a single segment, in this case **n**. See (Chanda, 2007:133). In Bemba, the *applied or applicative verbal extension* has the form **-ila-** which usually means ‘to do for’. The rules of vowel and nasal harmony dictate that in some instances the **-ila-** should be realised as **-ela-** or **-ina-** or **-ena-** as in (28) below:

- (28)(a) u-ku-shit-a ‘to buy’ kushit-**ila** ‘to buy for’ *normal*  
 (b) u-ku-tul-a ‘to prick’ kutul-**ila** ‘to prick for’ *normal*  
 (c) u-ku-send-a ‘to carry’ ku-se-nd-ela ‘to carry for’ *vowel harmony*  
 (d) u-ku-leet-a ‘to bring’ ku-lee-t-ela ‘to bring for’ *vowel harmony*  
 (e) u-ku-shim-a ‘to cultivate’ ku-shim-ina ‘to cultivate for’ *nasa harmony*  
 (f) u-ku-kaan-a ‘to deny’ kukaaan-ina ‘to deny for’ *nasal harmony*  
 (g) u-ku-pon-a ‘to fall’ kupon-ena ‘to fall on/ for’ *vowel and nasal harmony*  
 (h) kutem-a ‘to chop trees’ kutem-ena ‘to chop for’ *vowel and nasal harmony*

In (28) above, the vowel **-i-** on the verbal extension **-il-** is realised as **-e-** in (c) and (d) because the height feature of the vowel **-e-** in the radical assimilates progressively to the vowel **-i-** in the verbal extension, changing it to **-e-**. This shows both *Height* and *Vowel* Harmony. In (e) and (f) above, the nasal consonants **m** and **n** in the radicals assimilate progressively to the place of articulation of the consonant **l** in the verbal extension **-il-**. This is called nasal harmony. In (g) and (f) above, both the vowel and the nasal harmony are evident in one verbal extension. If we take (g) for instance, the phrase, ‘ukuponena’ ‘to fall on/for’, which includes both vowel and nasal harmony at once, it may be analyzed as follows:

(29) STEP 1    uku - **pon** -a            ukupona    'to fall'    *Radical*

STEP 2    uku-pon-**il**-a            ukuponela    'to fall on / for'

Replace i with e    (*This is vowel harmony*)

STEP 3    uku-pon-**el**-a            ukuponena    (to fall on / for)

Replace l with n    (*This is nasal harmony*)

STEP 4    u-ku-pon-**en**-a            ukuponena    'to fall on / for'    (*well formed*)

Vowel harmony            Nasal harmony

The above example in (29) is an example of a situation where the same radical experiences two types of assimilation, one, owing to Vowel Harmony and the other, owing to Nasal Harmony. Nasal harmony is also called *homorgarnic nasal assimilation*. As discussed above, it is a type of assimilation that involves a nasal and a consonant that goes after it. What happens here is that the nasal consonant shares the same place of articulation as the following or adjacent oral consonant (Katamba, 1989:90, Matthews, 2005:237). As in the above examples, homorgarnic nasal assimilations in Bemba are to be found mainly in strings that are preceded by the first person singular subjects as in (30) below:

- (30) (a) **n**-pang-ila            **mp**pang-ila            'make for me'  
       (b) **n**-kongol-ila        **ŋk**kongo-ela        'borrow for me'  
       (c) **n**-mon-ila            **mm**mw-ena        'see for me'

In (a), /n/ shares the place of articulation 'bilabial' of the following consonant /p/. Therefore, although /n/ is an alveolar nasal, it becomes /m/, a bilabial nasal

(29) STEP 1 uku - **pon** -a ukupona 'to fall' **Radical**

STEP 2 uku-pon -**il**- a ukuponela 'to fall on / for'

Replace **i** with **e** (*This is vowel harmony*)

STEP 3 uku-pon-**el**-a ukuponena (to fall on / for)

Replace **l** with **n** (*This is nasal harmony*)

STEP 4 u-ku- pon-**en**-a ukuponena 'to fall on / for' (*well formed*)

Vowel harmony

Nasal harmony

The above example in (29) is an example of a situation where the same radical experiences two types of assimilation, one, owing to Vowel Harmony and the other, owing to Nasal Harmony. Nasal harmony is also called *homorgarnic nasal assimilation*. As discussed above, it is a type of assimilation that involves a nasal and a consonant that goes after it. What happens here is that the nasal consonant shares the same place of articulation as the following or adjacent oral consonant (Katamba, 1989:90, Matthews, 2005:237). As in the above examples, homorgarnic nasal assimilations in Bemba are to be found mainly in strings that are preceded by the first person singular subjects as in (30) below:

- (30) (a) **n**-pang-ila                      **m**pang-ila                      'make for me'  
 (b) **n**-kongol-ila                      **ŋ**kongo-ela                      'borrow for me'  
 (c) **n**-mon-ila                      **m**mw-ena                      'see for me'

In (a), /n/ shares the place of articulation 'bilabial' of the following consonant /p/. Therefore, although /n/ is an alveolar nasal, it becomes /m/, a bilabial nasal



from the regressive influence of the bilabial consonant /p/. Similarly, in (b), the alveolar nasal /n/ becomes a velar nasal /ŋ/ before a velar plosive /k/ because of the regressive influence of /k/. In (c) the alveolar nasal /n/ becomes a bilabial nasal /m/ from the regressive influence of the bilabial nasal /m/ which is the initial segment of the radical 'mon-' 'see'.

### 3.1.1.2.3.7 Nasalization in Bemba

Nasalization is a process whereby an *oral segment* acquires nasality from a neighbouring *nasal segment* (Katamba, 1989:93), or a process by which vowels or consonants become phonetically nasal-like (Matthews, 2005:238). Although the two processes seem to be similar, *nasal harmony* and *nasalization* must not be confused, nor should they be thought of as representing the same concept. Nasal harmony involves the sharing by the nasal of the place of articulation of the oral consonant that follows it. Nasalization, on the other hand involves consonants and vowels becoming nasal-like phonetically when they are preceded by a nasal. In Bemba, nasalization can be seen in the following words:

#### (31) Bemba Nasalization

ṅgũlu	'demons'	m̃pumi	'fore head'
mõnõ	'castor oil'	m̃buto	'seeds'
nỹã	'pass bowel waist'	ñcito	'job'

The lighted segments with a bar-like sign on top, for nasalization indicate that the oral or consonantal segments concerned are or have been nasalised. It is true that in some cases nasalization and nasal harmony are associated with the same segments. The best distinction between these two is to generalise that *all cases of nasal harmony are also nasalization cases, but not all nasalization cases are cases of nasal harmony*. In other words, nasalization is general, but nasal harmony is particular.

### 3.1.1.2.3.8 Consonant Harmony in Bemba

This is the other type of harmony that is worth mentioning. This type of harmony ensures that there is harmony or agreement in respect of one or more features between consonants that are not adjacent to one another (Matthew, 2005:70). There are different types of consonant harmony for different languages, but for Bemba, *Sibilant harmony* is more common. A Sibilant is a fricative which is characterised by turbulence that produces noise at a high pitch, eg /s/, /z/, /ʃ/ and /ʒ/ (Matthews, 2005:340). Sibilant harmony in Bemba requires that all sibilants in a phrase or sentence should belong to either the **anterior class**, (produced somewhere in front of the palato-alveolar area, and belonging to the *s-like sounds*), or the **non anterior class**, (produced somewhere at the back of the palato-alveolar area and belonging to the *sh-like sounds*). These sibilant variants may not be mixed in the same phrase or sentence, otherwise the sentence will be ill-formed. Consider the following sentences from two different dialects of Bemba:

(32) (a) Abalya fuleshi fishi inshita shonse bali shi shita. *Standard Dialect*

‘Those who eat fresh fish all the time are dull.’

(b) Abalya flesi fisi insita sionse bali si sita. *Non-Standard Dialect*

‘Those who eat fresh fish all the time are dull.’

Clearly, the above sentences are both well formed according to the phonological constraints of each of the dialects. This is because they both observe the consonant harmony constraint, which in this case represents the Sibilant Harmony. It would be ill-formed for example to have the following string:

(33) (a) \*Abalya fuleshi fisi insita shonse bali shi sita. *No harmony*

‘Those who eat fresh fish all the time are dull.’

(b) \* Insita shino nasi shupa ku ba si bomba. *No harmony*

‘These times are hard for the unemployed.’

The sentences in (33) are ill-formed because they mix the rules governing consonant harmony which demands the need for sameness of the place of articulation. It is important to realise that the non-standard variety reveals the underlying pattern of morphemes from which the standard variety is derived. Hence, being standard is not the same thing as being the original or the oldest.

### 3.1.1.2.3.9 Imbrication in Bemba

Imbrication is the *reshuffling* of segments in a phrase or sentence by providing smooth means of phonetically uttering that phrase or sentence effortlessly and without strain on the part of the speaker. Consequently, this reshuffling results in achieving a perceivable well-formedness condition. Imbrication is also called *permutation* or *metathesis* (Chanda, 1993:14). This process, that changes the shape of the extension may be observed in the examples listed below :

(34)

- (a) u-ku-sompol-a ukusompola ‘to seize’ *without the extension*
- (b) u-ku-sompol-ila ukusompolila ‘to seize for’ *applicative extension*
- (c) u-ku-sompoi-lla ukusompoilla ‘to seize for’ *reshuffling of segments*
- (d) u-ku-sompoe-lla ukusompoella ‘to seize for’ *vowel harmony on extension*
- (e) u-ku-somp-w-ella ukusompwella ‘to seize for’ *gliding of /o/ and /e/ to /w/*
- (f) u-ku-sompw-ela ukusompwela ‘to seize for’ *deletion of the last segment /l/*

(35)

- (a) u-ku-mon-a ukumona ‘to see’ *without the extension*
- (b) u-ku-mon-ila ukumonila ‘to see for’ *applicative extension*
- (c) u-ku-moi-nla ukumoinla ‘to see for’ *reshuffling of segments*
- (d) u-ku-mo-enla ukumoenla ‘to see for’ *vowel and nasal harmony*
- (e) u-ku-m-w-enla ukumwenla ‘to see for’ *gliding of /o/ and /e/ to /w/*
- (f) u-ku-mw-ena ukumwena ‘to see for, *deletion of last consonant /l/*

The above examples are derived through the following steps:

(36)

**Step 1.** Joining of the applied extension ‘-ila-’ to the radical.

(The applicative extension morpheme is adjoined to the radical)

**Step 2.** The last consonant of the radical and the first vowel of the extension swap positions. The last consonant of the radical is moved to become the first consonant just before, and next to the applied extension.

**Step 3.** The appropriate harmony between the last vowel of the radical and the first vowel of the extension occurs.

**Step 4.** Gliding at juncture, between the radical and the extension occurs, where this is needful.

**Step 5.** Deletion of the last consonant from the extension, leaving a full Well-formed string.

The present study suggests that steps (1) to (4) should be regarded as showing underlying derivational representations (UR) while step (5) indicates the visible surface representation (SR). Imbrication is also evident in the application of the past tense marker **-ile-** as in the following steps in (37 (i) and (ii)):

(37)

- |         |                   |              |                      |                                |
|---------|-------------------|--------------|----------------------|--------------------------------|
| (i)(a)  | A-ali-tompw-eke   | Alitompweke  | ‘He was discouraged’ | <i>surface</i>                 |
| (b)     | A-ali-tompok-ile. | Alitompokile | ‘He was discouraged’ | <i>past tense added</i>        |
| (c)     | A-ali-tompoi-kle  | Alitompoikle | ‘He was discouraged’ | <i>reshuffling</i>             |
| (d)     | A-ali-tompoe-kle  | Alitompoeke  | ‘He was discouraged’ | <i>vowel harmony</i>           |
| (e)     | A-ali-tomp-we-kle | Alitompweke  | ‘He was discouraged’ | <i>gliding of /w/</i>          |
| (f)     | A-ali-tompw-eke   | Alitompweke  | ‘He was discouraged’ | <i>consonant deletion</i>      |
|         |                   |              |                      |                                |
| (ii)(a) | Ba-ali-mwene      | Baalimwene   | ‘They saw’           | <i>surface</i>                 |
| (b)     | Ba-ali-mon-ile    | Baalimonile  | ‘They saw’           | <i>past tense adjunction</i>   |
| (c)     | Ba-ali-moi-nle    | Baalimoinle  | ‘They saw’           | <i>Reshuffling of segments</i> |

- (d) Ba-ali-m<sup>o</sup>e-nle    Baalimoele    'They saw' *vowel and nasal harmony*
- (e) Ba-ali-m-w-enle    Baalimwenle    'They saw' *gliding of /w/*
- (f) Ba-ali-mw-ene    Baalimwene    'They saw' *consonant deletion*

The applicative extension '-ila-' and the past tense marker '-ile-' share the same stages in the unfolding of the phonological process of imbrication in Bemba as we have seen the examples above.

### 3.1.2 The Morphology of the Extensions

Morphology in this study is based on morphemes, the smallest meaningful units in any language. Morphology, therefore, shall be stipulatively defined as *the study of the characteristics and behaviour of different morphemes and the rules by which these morphemes combine together to form larger units below sentence level*. This definition deliberately falls short of including sentences for two reasons: Firstly, in order to distinguish morphology from syntax. Secondly, morphemes in this model of analysis can be joined together to form **any** larger unit from a word to a sentence. Rules accounting for morpheme combinations below sentence level constitute morphological rules. Rules accounting for morpheme combinations at clausal or sentence level constitute syntactic rules. It is important to remember that *morphology and syntax are no longer strictly separated (Lieber, 1992:121)*, and as such principles of GB that apply at syntactic level also do apply at morphological level. Since verbal extensions do not occur in isolation, they should be discussed with brief reference to aspects such as the parts of speech, typology of morphemes, noun class prefix morphemes, order of verb form morphemes in a Bemba verbal form and morphophonology.

#### 3.1.2.1 Parts of speech

The parts of speech that this study is based on are the ones that all languages of the world seem to have, which include among others nouns, verbs, adverbs,

adjectives, prepositions, personal pronouns, demonstratives, possessives, conjunctions, indefinite determiners (like 'some', 'each' and 'all') and various types of inflectional categories. These will form various phrasal nodes on tree diagrams in Bemba, both at maximal and intermediate levels of projection.

### 3.1.2.2 Typology of Morphemes

There are two main groups of morphemes, namely *free* and *bound* morphemes. Free morphemes can be content morphemes or functional morphemes. Content morphemes include verb roots or radicals and noun or adjective stems. Functional morphemes include demonstratives, pronouns and conjunctions. Articles also fall under the group of functional morphemes, but Bemba does not have articles. Bound morphemes can be bound radicals or stems or they may be affixes. Affixes can be derivational or inflectional, and these can be prefixes, suffixes, infixes or circumfixes. Derivational morphemes form new words while inflectional morphemes produce word forms, which respond to the various required tenses or number. A morpheme may be represented by a single segment like **n**, (first person singular subject), in '**ndetela**' 'bring for me', or a dependant affix or a dependent group of segments like **-ila-** meaning '**for**' in '**mbikila**' 'put for me', or an independent group of segments such as a radical or a stem like **muntu** 'person, **butuka** 'run' etc.

### 3.1.2.3 Noun Class Prefix Morphemes

There are two types of general morphological structure for the Bemba nominal structures as follows:

- (i) For the first and second person : PREPREFIX + PREFIX + STEM
- (ii) For the third person: PREFIX + STEM

Like other Bantu languages, Bemba has eighteen (18) third person noun class prefixes in the third person. Noun class prefixes, according to this study have

two important functions. Firstly, they indicate the *number* of the noun to which they are adjoined. Secondly, they act, in the present study, as *determiners* for the nouns or noun phrases they are connected to. The concept of ‘determiner’ and ‘determiner phrase’ is as crucial, in this study, as those dealing with other phrases, and it is supported by such linguists as Chomsky (1965), Abney (1987), Longobard (1994) and Radford (1997) among others. The following, according to Sambeek (1953), Chanda (2006:17, 2007:64 and Givon, 1969: 17) are the noun classes in Bemba, but this study has listed personal pronouns separately for clarity’s sake as in Table 5:

**Table 5: Personal Pronouns in Bemba**

Person	Number	Subject	Object	Symbol
First Person	Singular	n- ‘I’	-n- ‘I’	1p sig
	Plural	tu- ‘we’	-tu ‘we’	1p plu
Second Person	Singular	u- ‘you’	-ku- ‘you’	2p sig
	Plural	mu- ‘you’	-mu-‘you’	2p plu
Third Person	Singular	a- ‘he/she’	-mu-‘he/she’	3 sig
	Plural	ba- ‘they’	-ba- ‘they’	3p plu

It is important to note that, according to this study, both the *subject* and the *object* pronouns have the same symbol, provided they fall under the same *number* (singular or plural). This can be observed in Table 5 above. For example, the second person singular *subject pronoun* **u-** and the second person singular *object pronoun* **-ku-** are represented by the symbol **2p sig**. Similarly, the second person plural subject or object pronoun is **2p plu**. The third person pronouns are very special in this study because they appear partly in the above

table, and also fully among the eighteen (18) third person, general noun classes listed below. This study recommends use of the symbols in figure 3.1 above for class1 pronouns because, like other personal pronouns, it has different forms for subject and object positions, while the rest of the other classes have the same form both in the subject and object positions. It should, however, be listed among the following other third person pronouns, where it rightly belongs.

### Third Person Noun Classes in Bemba

Class 1/2 ... **mu/ba** These classes denote people like **muntu/bantu** ‘person/s’

Class 3/4 ... **mu/mi** These classes denote objects like **muti/miti** ‘tree/s’

Class 5/6 ....**i/ma** These classes denote plants such as **iluba/maluba** ‘flower/s’

Class7/8 .....**ci/fi** These classes denote things such as **cintu/fintu** ‘thing/s’

Class 9/10...**n/n** These classes denote no number in **nsoka/nsoka** ‘snake/s’

Class 11/10...**lu/n** These classes denote things like **lulimi/ndimi** ‘tongue/s’

Class12/13..**ka/tu** These classes denote small things like ‘**kantu/tuntu**’ ‘thing/s’

Class 14 .....**bu** This class denotes abstract nouns like **bufumu** ‘chiefdom’

Class 15....**ku** This class denotes infinitives/ gerunds in **kulya** ‘to eat/eating

Class 16... **pa** This class denotes place as in **pa musebo** ‘on the road’

Class 17...**ku** This class indicates direction in **ku mushi** ‘to / from the village’

Class 18...**mu** This class indicates enclosed place in **mu n’ganda** ‘in the house’

Note that in these classes the first in a pair is singular while the second is plural. Hence in a pair **a/b** class, **a** is singular while **b** is plural or honorific. This information is also shown in Table 6 below:

**Table 6: Nominal class prefixes for the standard Bemba dialect**

CLASS NUMBER	NOUN PREFIX	EXAMPLE
1	Mu	muntu 'person'



1a	Ø	kolwe 'monkey'
2	βa	βantu 'pesons'
3	Mu	Muti 'medicine'
4	Mi	miti 'medicines'
5	I	iluba 'flower'
6	Ma	maluba 'flowers'
7	Ci	cisote 'hat'
7a	Cii	ciikolwe 'ugly/ big monkey' (perjorative)
8	Fi	fisote 'hats'
8a	Fii	fiikolwe 'ugly/big monkeys'
9	N	nsoka 'snake'
9a	Ø	Pensulo 'pencil'
14	Bu	βukankala 'affluence'
15	Ku	kubombesha 'working hard'
16	Pa	Pamusebo 'on the road'
17	Ku	Ku n'ganda 'to/from the house'
18	Mu	Mumenshi 'inside the water'

These class prefixes may or may not occur with their augments. When a class prefix occurs with its augment, it means, according to the present study that the form to which the augment is connected is *lexical*. When a class occurs without its augment, it means the form to which it is connected is *clausal*. In that case, the missing augment appears inside the form to which the class is connected. This is called *compensatory lengthening* and it is also called *form stability* (Chanda, 2007:68). Consider the following forms:

(38) (a) <b>umuntu</b>	'person'	<i>lexical</i>
(b) <b>muuntu</b>	'it is a person'	<i>clausa</i>
(c) <b>icisuma</b>	'good thing'	<i>lexical / phrasal</i>
(d) <b>ciisuma</b>	'it is good'	<i>clausal</i>
(e) <b>ukubombela</b>	'to work for'	<i>phrasal</i>
(f) <b>kuubombela</b>	'it is to work for'	<i>clausal</i>
(g) <b>umutali</b>	'a tall one'	<i>phrasal</i>
(h) <b>muutali</b>	's/he is tall'	<i>clausal</i>

The augments in (a), (c), (e) and (g) are removed from their usual positions and placed between the class prefixes and the stems or radicals. In the case of (e) the augment has been placed between the infinitive particle 'ku' 'to' and the radical. When the augment shifts in this way, it assumes the role of inflection or INFL in its new position as can be seen in (b), (d), (f) and (h). In all the noun classes, from class four to class thirteen, clauses begin with the neutral pronoun 'it' and in all cases, the former augment is converted into the inflection understood to stand for the verb 'to be'. This verb is 'is' or 'are'. Hence the resultant clause is fully analyzable on the X-bar schematic template as we will see in the next chapter. In the case of (g) and (h), these two forms belong to the group of personal pronouns. This means that the subject pronoun in (h) is not 'it' as in classes four to thirteen, rather, that subject pronoun is **she/he** or '**s/he**' because the neutral pronoun 'it' can never be used to refer to adult human beings. However, the former augment of (h) in (g) still represents the inflection (in its new place) associated with the verb 'to be' as in the other noun classes earlier discussed. All classes are represented by symbols when analysed on tree diagrams. For example class four is represented by C4, class ten is represented by C10 and the list goes on.

#### 3.1.2.4. Order of Morphemes on Bemba Verbal Forms

The list of morphemes shown in the table below is found in Bantu languages generally, and in Bemba in particular. Some sentences require more of these

morphemes within the same verbal form than others. Other sentences require only very few of the morphemes. At the same time, some languages, especially poly-synthetic languages, tend to require more morphemes in their sentences than other languages. The order of morphemes in a Bemba verbal form or sentence is patterned as presented in figure 7 below:

**Table 7: Order of the Bemba Verbal Morphemes**

1	2	3	4	5	6	7	8	9	10	11
Pr. P	SP	Po.P	TM	AM	OM	RAD	EXT	PRE.E	END.P	END

(Chanda, 2006:89)

The meanings of the letters in this table are explained under the abbreviations section of this dissertation.

This is the order of the morphemes in any Bemba verbal form although not all of them may occur in every given verbal form in all contexts. As can be observed from the concatenation of these morphemes in Table 7, there are more pre radical morphemes than post radical morphemes. Pre radical morphemes are the morphemes that occur before the radical in a verbal form. Post radical morphemes are those that occur after the radical.Consider the examples of different sequences of morphemes that follow in (39) below:

(39) (a) **Aug +Inf +Rad**

**ukubomba**            ‘to work’  
u-ku -bomba  
|        |  
to      work

(c) **Aug. +Inf. +Obj. +Rad. +Ext.**

**ukubabombela**        ‘to work for them’  
u-ku -pa -bomb -ela  
|        |        |        |  
to    them work    for

(d) **Aug. + Inf. + Asp. + Obj. + Rad. + Ext.**

**ukulababombela** 'to be working for them'

u	-ku	-la	-ba	-bomb	-ela
to	be	them	working	for	

(e) **Aug. + Inf. + Neg. + Asp. + Obj. + Rad. + Ext.**

**ukukanalababomfya** 'not to be causing them to work'

u	-ku	-kana	-la	-ba	-bomb	-fya
to	not	be	them	work	cause	

(f) **Neg. + Subj. + T.m + Asp + Obj + Rad. + Ext.**

**Tatwakalebabombela** 'We will not be working for them'

Ta	-tu	-aka	-le	-ba	-bomb	-ela
not	we	will	be	them	working	for

The few examples presented above show roughly the order of morphemes in Bemba verbal forms. What is extremely remarkable about these forms is that they all tend to look like single words, having no spaces in between, even though they are clearly understood to be phrases and sentences. It is for this reason that in the analysis of Bemba forms according to this study, *segmentation* and *deconstruction* are indispensable processes, especially before slotting the morphemes on tree diagrams, as we will see later in this chapter.

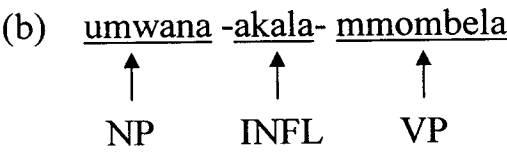
### 3.1.2.5 Segmentation and Deconstruction

**Segmentation** is a process, according to this study, of splitting a Bemba phrase or sentence into its main constituent parts without necessarily revealing the underlying meaningful forms of these parts, while **Deconstruction**, according to this study, refers to the detailed analysis of phrases and sentences into all their possible meaningful underlying morphemes. Deconstruction will reveal that some segments are not morphemes, but mere surface manifestations of underlying phonological processes such as gliding, coalescence or fusion,

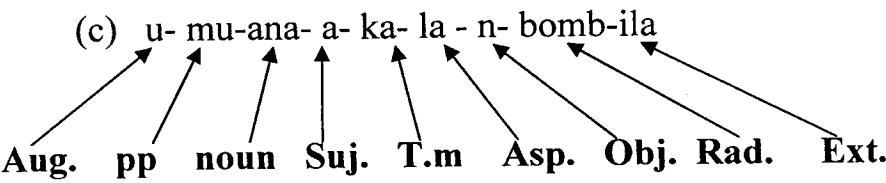
elision, truncation imbrications and different types of assimilation. Moreover, deconstruction is inevitable because Bemba is an agglutinative language, which has various morphemes glued together in succession, the appreciation of which requires deconstruction. Consider (40) below:

(40) (a) Umwana akalammombela. ‘The child will be working for me.’

This sentence may be **segmented** as follows:



This same sentence shall be **deconstructed** as follows:



Sentence (c) is clearly more revealing than (a) and (b). This study calls this kind of analysis as *deconstructon*. Deconstruction, according to this study, has little to do with output or phonetic or surface representations, rather it has a lot to do with all possible meaningful input or phonemic or underlying representations in a Bemba verbal (as well as nominal) form. All meaningful morphemes in a Bemba string are accorded independent recognition, analysis and description in in the process of deconstruction.

### 3.2 The Syntax and Semantics of the Extensions

*Syntax* is said to be the study of the way in which morphemes or words combine together to form phrases and sentences (Radford, 1997:273). According to Matthews (2005: 368), Syntax is the study of grammatical relations between words and other units within the sentence. For the reasons established earlier in this study, Syntax in the present work is defined as the

study of the grammatical relations between morphemes in a Bemba phrase or sentence. The relationship between morphemes in a *word* belongs to *morphology* while the relationship between morphemes in a *phrase* or *sentence* belongs to syntax according to this study. A phrase is any sequence of morphemes above word level but below sentence level. A phrase may have an intermediate or a maximal level of projection. All clauses are headed by at least one (overt or covert) auxiliary verb or inflection. In that sense, sentences are *inflectional phrases* or IPs. This description does not equate ordinary phrases to clauses or simple sentences nor does it reduce clauses to ordinary phrases. Rather, clauses, according to Radford (1997: 66) are *special phrases* only by virtue of being headed by auxiliary inflectional verbs. Syntax is concerned with the internal structures of phrases, clauses and sentences (Kuiper, et al, 2004: 307), while morphology is concerned with the internal structure of words. *Semantics*, on the other hand, is the study of meaning in language; it is the study of how meaning in language is created by the use and interrelationships of words, phrases and sentences (Encarta Dictionary). *Lexical semantics* is concerned with the meanings of words and the meaning relationships among words while *phrasal* or *sentential semantics* is concerned with the meaning of *syntactic units above word level*. This chapter will deal primarily with phrasal or sentential semantics. Phrasal meaning can be noun-centred or verb-centred. Both verb-centred and noun-centred phrases are very essential in this study.

### 3.2.1 The Syntax of the Extensions

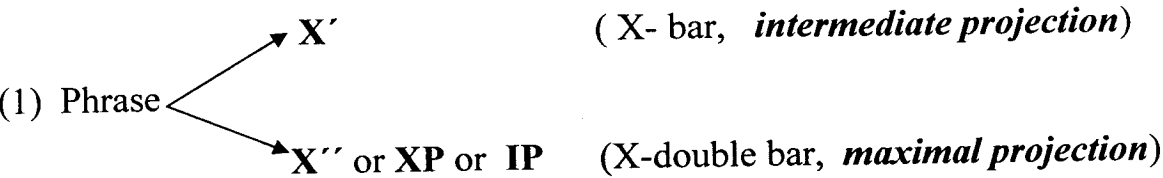
#### 3.2.1.1 Syntactic Categories

Syntactic categories may be initially classified into two main groups; lexical categories and functional categories. Lexical categories have descriptive content, while functional categories lack descriptive content, and since they lack descriptive content, they are *functors* (Radford, 1997:37). Functors are functional words, or words which serve to carry grammatical information but

have no specific descriptive content on their own. Lexical categories include verbs (V), nouns (N), adjectives (A) and adverbs (Adv). Functional categories include among others prepositions (P) and determiners (D) of various class prefixes. A class prefix may or may not be preceded by a pre-prefix called 'an augment'. Some functional categories tend to mark grammatical properties such as number, honour, person as well as tense. Determiners in this study include all demonstrative pronouns, all personal pronouns (pronominals) and all class prefixes. Class prefixes may precede a noun as in 'umu-ntu' 'person', an adjective as in 'ici-kulu' 'big thing' or a nominal phrase as in 'uwa-maka' 'powerful one'. Determiners in Bemba in this study, occur pre-nominally (they modify a following noun or adjective). These determiners, like other categories, are often *recursive* when they occur in phrases and sentences (that is, they have an indefinite self-repeating tendency on local trees. In a Bemba sentence, the same class prefix may be found adjoined to the external argument (subject), or to the internal arguments (objects), to the adjectival as well as adverbial modifiers, and to the relative complementizer within the same sentence. In the X-bar schematic template for Bemba according to the model being postulated in the present study, all the noun class prefixes will appear as determiner phrases. Auxiliary verbs (AUX) are functional counterparts of the main verbs. They belong to the category of inflection or INFL, and since they lack descriptive content, they are also *functors*. The fact that functors do not have descriptive content is neither a weakness nor a justification for ranking them least on the list of syntactic categories. Metaphorically, in the same way that the strength of any chain lies at its weakest link, so this study proposes that the strength and creativity of language in general, and Bemba in particular lie in the number of the categories that lack descriptive content. This is because such categories (having no descriptive content and hence no specific referents) can be utilised to encode or decode countless novel semantic information.

3.2.1.2 Structure of Bemba Phrases and Sentences

Structure is about the configurations of phrases and sentences. In the present work, it has to do with the way in which Bemba morphemes and / or words are combined together to form phrases and sentences. Based on the X-bar phrasal schema, the following is the general and the main configuration for all Bemba phrases and sentences.



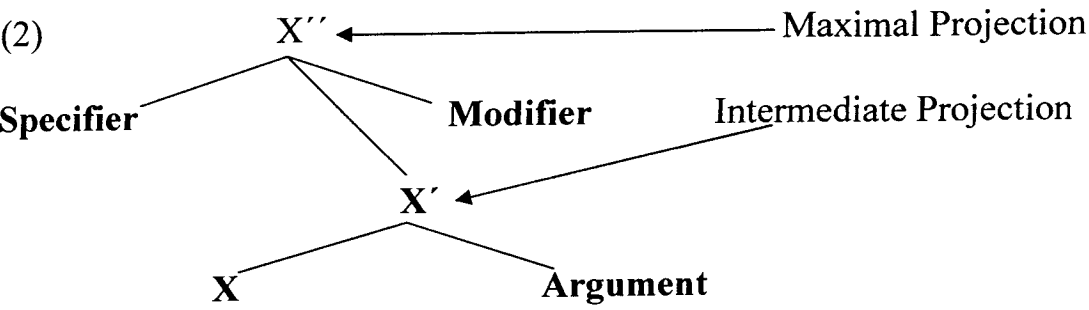
The information in (1) means that a phrase can be represented as an intermediate X-bar phrase, or a maximal or X- double bar phrase. A maximal phrase (including all Bemba clauses) may be represented as XP phrase where X may be any category such as the noun **N** , the verb **V**, the adjective **Adj**, a determiner **D**, a preposition **P**, or an inflection **INFL**. A clause is also a phrase headed by **INFL**, and is represented by **S'** or **I'' IP**. Hence a clause is said to be a projection of **INFL**. (Radford, 1997:66, Sells: 28-30). The X-bar equivalences are listed in Table 8 below:

Table 8: The X-bar Equivalences

Lexical	Intermediate	Maximal
X	X'	X'' or (XP)
N	N'	N'' " (NP)
V	V'	V'' " (VP)
A	A'	A'' " (AP)
P	P'	P'' " (PP)
INFL	S or (I')	S' or I'' or (IP)



The X-bar schema into which the categories in Table 8 above should be fitted is shown in (2) below. It should be mentioned that in this study, the clause is represented not by  $S'$  but by  $IP$  or  $I''$ . This is because the notion of  $I''$  (I-double bar) or  $IP$  (Inflection Phrase) better brings out the concept of a clause being headed by an inflection than does  $S'$  (simple sentence or clause). Intermediate inflections are represented as  $I'$  or I-bar. Below is the X-bar schema that informs these assumptions:



(Sells, 1985:28)

There are different versions of this scheme, the choice of which depends on the parametric options of individual languages. Moreover, the organization or arrangement of the elements of this X-bar template is not rigidly fixed. Rather, it is subject to appropriate movements (of these elements) by the rule *Move-Alpha*. In other words, the specifiers and the modifiers can appear anywhere on the scheme, and may undergo replication by the *recursive rule*, explained below.

### 3.2.1.3 Specifier

A specifier in this study is a morpheme that precedes the head of a containing phrase, or a morpheme that precedes the head of the phrase containing it. In GB all phrases are ‘endocentric’, that is, they are headed. In GB, generally, and in X-bar theory in particular, *specifiers*, *headwords*, *optional modifiers* and *complements* form phrases (Wikipedia the free encyclopedia). Many Maximal

projection phrases may require specifiers. Specifiers (Spec.) in this study can be determiners (D) of different types such as demonstratives, all subject or object personal pronouns, and all noun class prefixes. All nominals, all pronominals and all verbals may be specified. Since most determiners are also specifiers and subjects at the same time (Radford,1997:65), it is not uncommon to find determiners (D) in the place of specifiers (or Spec.) on the X-bar schema.

#### **3.2.1.4 Modifier**

Modifiers are words or morphemes that attribute some properties to the words they precede. Adjectival modifiers modify nouns while adverbial modifiers modify verbs or verbals.

#### **3.2.1.5 Arguments**

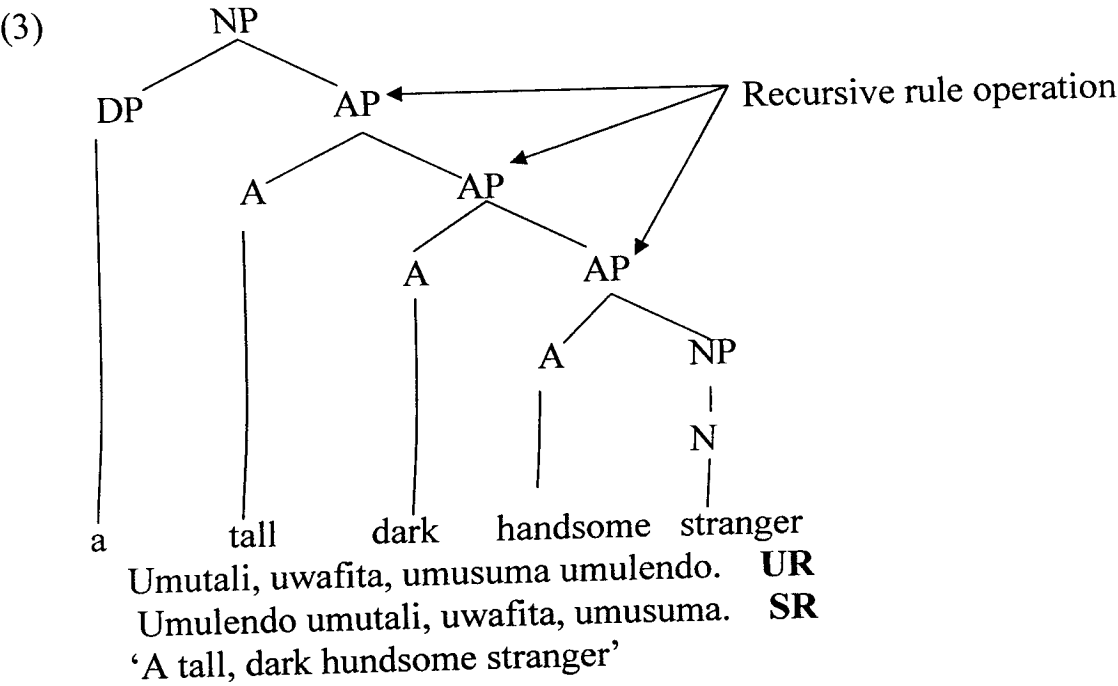
Arguments are the objects and subjects or nouns that a particular (head) verb can select or subcategorise for. Some verbal extensions such as the causative extensions increase valency or the number of arguments that a verb can select, while others such as the passive extensions block valency.

#### **3.2.1.6 Recursiveness**

A linguistic recursive operation is one which can be repeated any number of times. A phrase can accommodate many different stems. A complement can include a complement and a modifier can include another modifier (Katamba, 1995:84). For example, the process by which adjectives come to modify a noun might be said to be recursive in that (in English for instance) we can position any number of adjectives in front of a noun as in '*a tall, dark, handsome stranger*' (Radford, 1997:270). On a tree diagram there will be three local tree branches of adjectives before the branch of the noun being modified. This can be demonstrated on a tree diagram as follows:

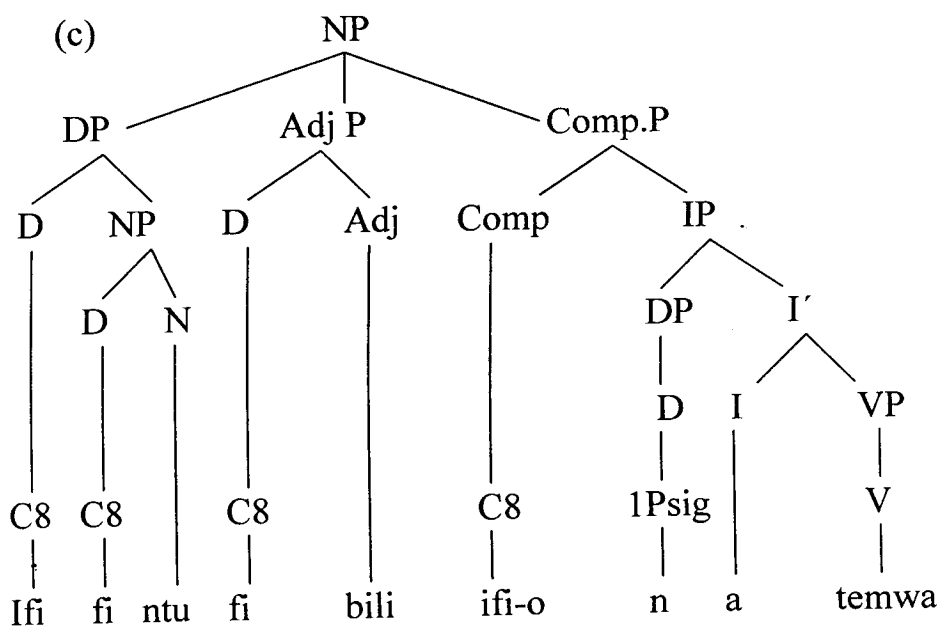
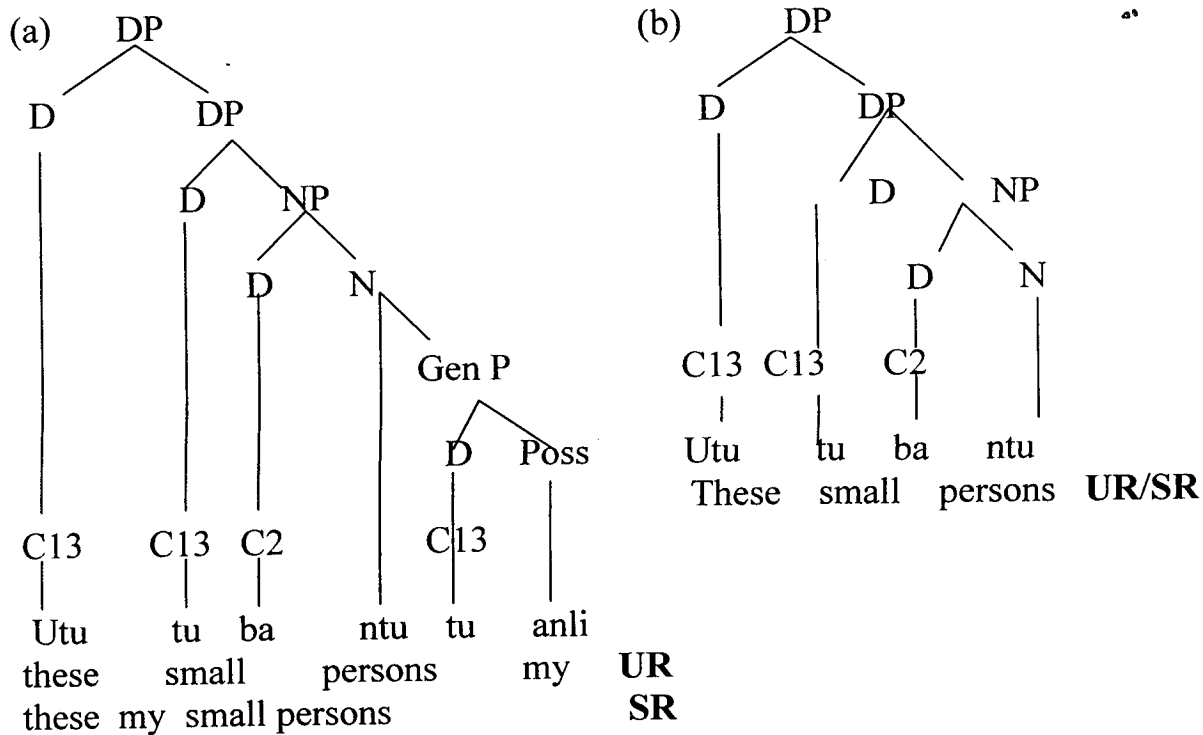
Sample Instanciation of the **Recursive Rule** of Replication

‘a tall, dark, handsome stranger’



Any phrasal category can be replicated any number of times by the recursive rule. Sometimes, only features of a category can, through *percolation*, be covertly replicated on local trees as empty categories, as explained below. In GB, X-bar syntax employs the Recursive Rule to permit an X-bar to reduplicate itself ([www.epistemic-forms.com/ps-xbar.html](http://www.epistemic-forms.com/ps-xbar.html)). Compare, the noun phrases ‘utu tubantu’ ‘these small persons’, ‘utu tu bantu twandi’ ‘these my small persons’, and ‘ifi ifintu fibili ifyo natemwa’ ‘these two things which i like’ represented in (4) below, where the determiners have undergone the recursive rule of reduplication in Bemba:

- (4) (a) Utu tu bantu twandi ‘these my small persons’  
(b) Utu tu bantu ‘these small persons’  
(c) Ifi fintu fibili ifyo natemwa ‘These two things which I like’



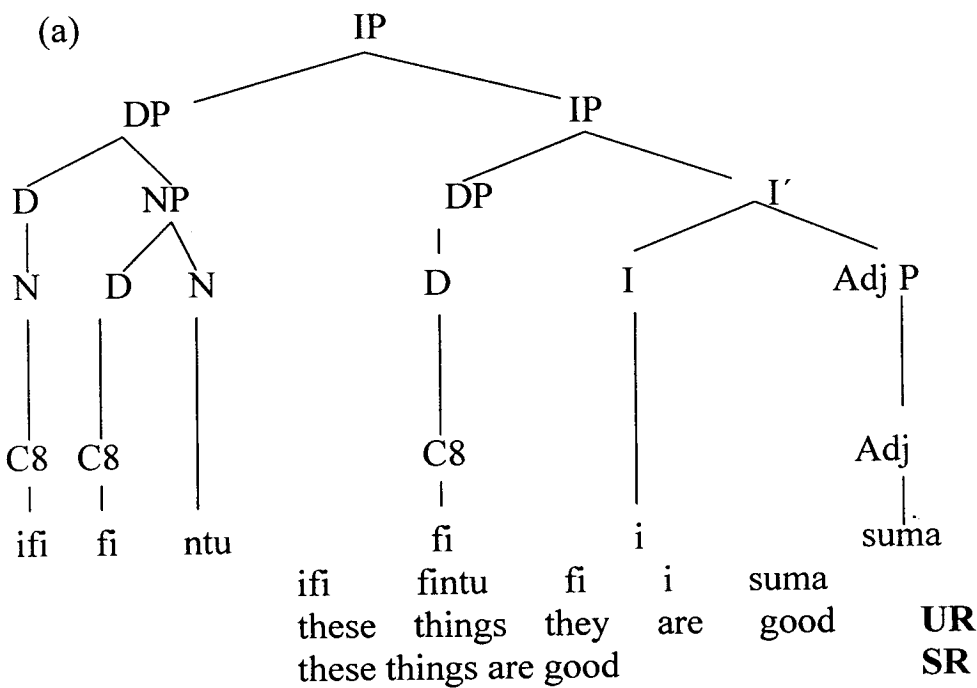
Ifi fintu fibili ifyo na temwa

These things two which i like UR

These two things which i like SR

In the two examples above, the augments are part of the same determiner phrase that has branched into two determiners (by the recursive rule) before the noun stem is adjoined. Consider also the application of the recursive rule on the determiners of *clauses* or *simple sentences* in (5) below:

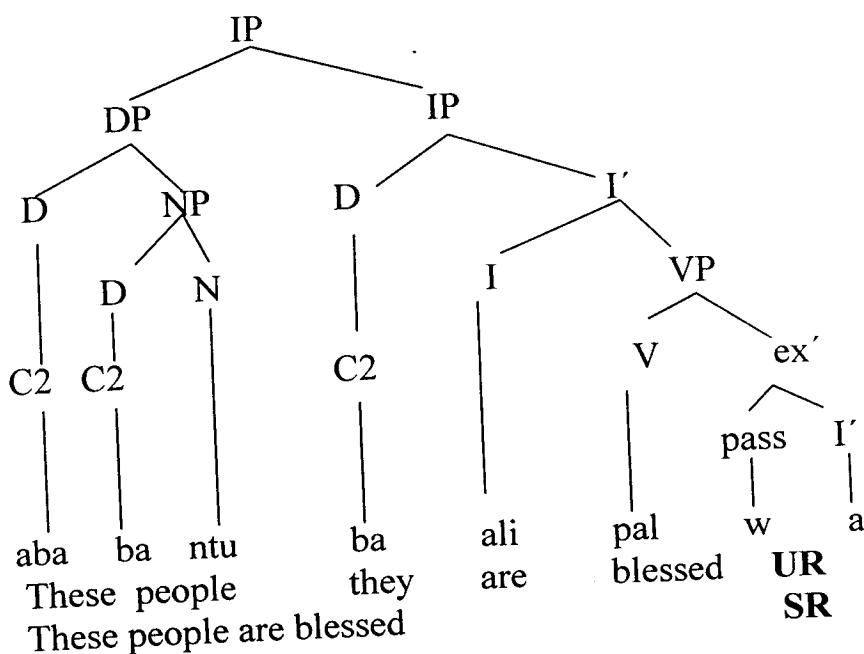
(5) Ifi fintu fiisuma. ‘These things are good’



The features of the noun class 8 of the same determiner are copied to all determiner phrases in the same clause as can be seen in (4) (a) and (b).

Aba bantu baalipalwa. ‘These people are blessed’

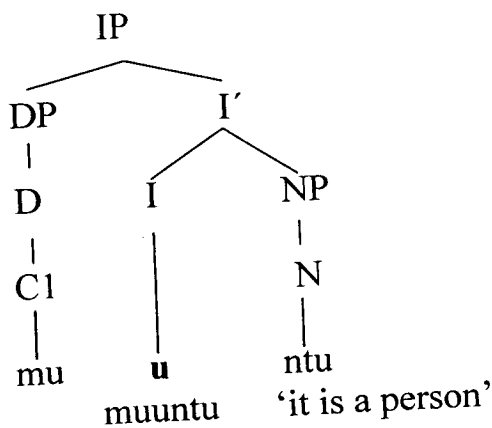
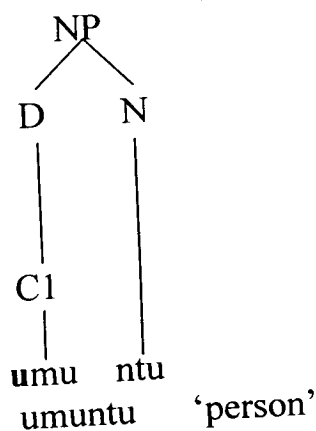
(b)



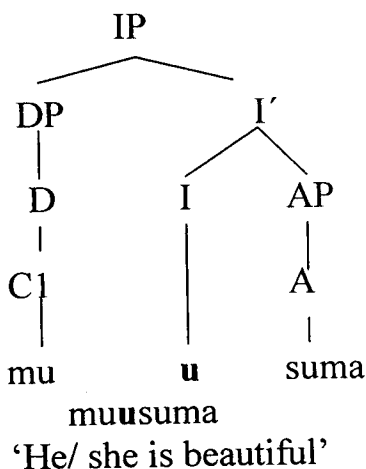
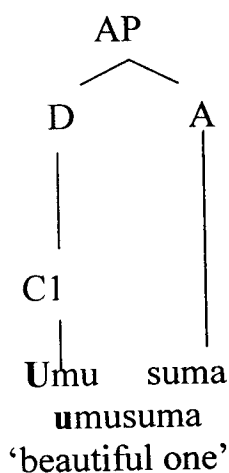
In both (5) (a) and (b) above, there is a reduplication of the determiner (D) and the clausal node (IP). It is important to mention that the second IP is a result of changing a lexical or phrasal form into a clausal form by removing the augment from the prefixal position where it is part of the prefix, to the medial position between the prefix and the stem or radical where it assumes the role of inflection in form of the verb to be ('is' or 'are') as in (6) below:

(6) (a) **umuntu** 'person' *lexical*

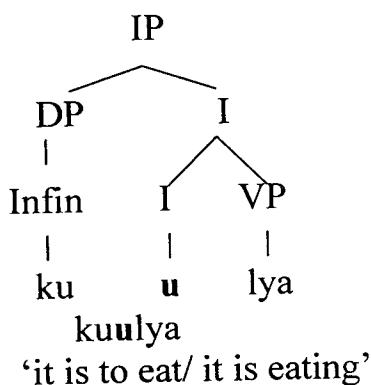
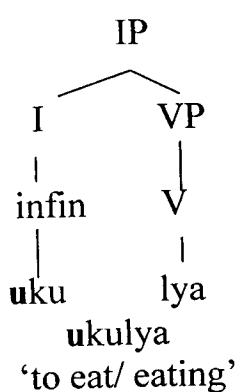
(b) **muuntu** 'it is a person' *clausal*



- (c) **u**musuma 'beautiful one' *phrasal*
- (d) mu**u**suma 'he/she is beautiful' *clausal*



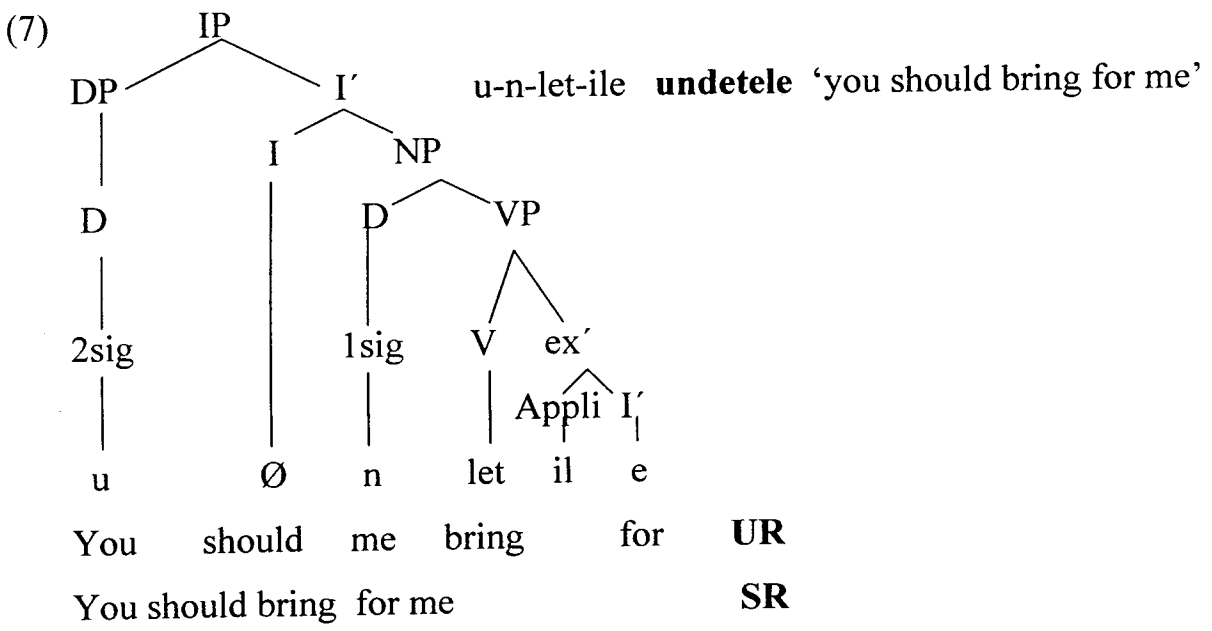
- (e) **u**kulya 'eating/ to eat' *phrasal*
- (f) ku**u**lya 'it is eating/ it is to eat' *clausal*



In the examples (a) to (f), the use of the highlighted augments is crucial to the *determination* and to the *projection* of the form to which they are attached. If the augment appears at the beginning of a form, the form is a word or phrase. If the augment is moved to the position between the determiner or class prefix and the stem or radical, then the string becomes a clause. This clausal condition is sometimes called **stabilization**, a situation where a word is made to stand as a complete sentence on its own (Chanda, 2007:67).

3.2.1.7 Empty Category Principle (ECP)

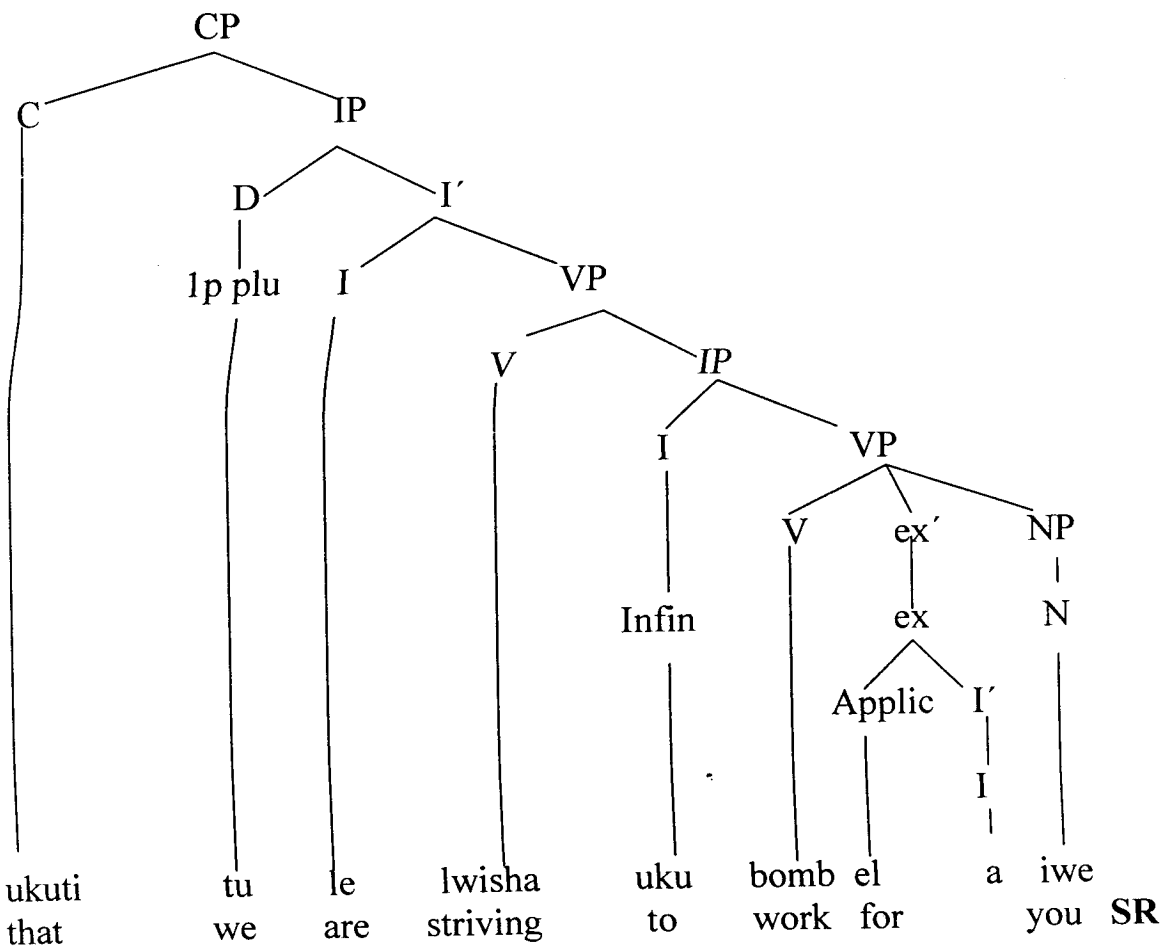
Since Bemba sentences and phrases are a concatenation of various morphemes, and given that in Bemba the concept of ‘word’ contains conflicting views, the X-bar schema in (2) above, are filled with the various morphemes instead of words, according to this present study as demonstrated in the tree diagrams presented above. It is also important to mention here that a phrase or sentence may satisfy *all* or *only some* of the designations on the X-bar schema. For instance, the *specifier* of a particular sentence may be an *overt* one or a *covert* one. In all instances where a particular designation or node has a covert element (one that is understood but is silent or null and hence has no overt phonetic form), that is an instance of an *empty category*. Empty categories in Bemba include among others, the null pronouns (that is, PRO and pro), and the null generic determiners standing for words like ‘bonse, fyonse’ (all), or the partitive determiners like ‘bamo, fimo’ ‘some’, (compare Radford, 1997:82-104, 259), and verbals like ‘Bombesha’ ‘you work harder’ where the subject ‘you’ is an empty category. Empty categories will be represented by ‘e’ or ‘Ø’ as does the INFL or **I’** in the subjunctive sentence; ‘**undetele**’ ‘you should bring for me’ in (7) Below:





The empty category in the above tree diagram is a designation or provision for the auxiliary inflection equivalent to 'should'. Although it is not visibly or phonetically present, it is fully understood. Bemba phrases, both intermediate and maximal, may be displayed on syntactic tree diagrams. The following complement phrase '*ukuti tule lwisha ukubombela iwe*' 'That we are struggling to work for you', parsed as proposed in this study gives us examples of the phrases of different projections in the X-bar schema:

(8) Ukuti tule lwisha ukubombela iwe. 'That we are striving to work for you.'



From the example in (8), one can see that a number of phrases have been represented on the various X-bar frames. Firstly, the whole string is headed by the complementizer 'ukuti' 'that', therefore the whole string is a

complementizer phrase (CP). Secondly, if we delete the complementizer ‘that’, we remain with a full clause, ‘Tulelwisha ukubombela iwe’, ‘we are struggling to work for you’. This string is a full clause or simple sentence. At the same time, the clause is an inflectional phrase IP, and as a phrase, it is specified by the first person plural determiner ‘tu’ ‘we’, and its predicate is headed by the auxiliary inflection ‘-le’ ‘are’. Thirdly, the intermediate inflectional phrase I’ or I-bar, is above lexical (morpheme / word) level, yet it is below full phrasal level, for it cannot logically stand on its own as a meaningful phrase. Fourthly, the first VP ‘-lwisha ukubombela iwe’ ‘struggling to work for you’ is clearly a full verb phrase. It is a phrase of maximal projection. Fifthly, the second inflectional phrase IP, ‘uku bombela iwe’ ‘to work for you’ is clearly a full phrase too. Phrases beginning with the infinitive particle ‘uku’ ‘to’, are full inflectional phrases or IP, for they clearly make full phrasal sense on their own (Radford, 1997: 63-65). The infinitive particle ‘uku’ ‘to’ is an inflection in contemporary scholarship. The second VP, ‘bombela iwe’ ‘work for you’ is a full phrase too. But, like the I’, the ex’, (extension phrase) proposed in the present study, is an intermediate phrase which cannot stand on its own as a full phrase since it is headed by an extension ‘-el-a’ ‘do for’, which must always be adjoined to a main verb to make sense. The last phrase, ‘iwe’ ‘you’, is clearly a full noun or determiner phrase with maximal projection. Hence we may segment the complementizer phrase in (8a) into other constituent phrases with respect to their projection levels as in (9) below:

(9) (i) ukuti tulelwisha ukubombela iwe	<b>CP</b>	<b>maximal</b>
(ii) tulelwisha ukubombela iwe	<b>IP</b>	<b>maximal</b>
(iii) -lelwisha ukubombela iwe	<b>I’</b>	<b>intermediate</b>
(iv) lwisha ukubombela iwe	<b>VP</b>	<b>maximal</b>
(v) ukubombela iwe	<b>IP</b>	<b>maximal</b>
(vi) bombela iwe	<b>VP</b>	<b>maximal</b>
(vii) -el-a iwe	<b>ex’</b>	<b>intermediate</b>
(viii) iwe	<b>NP / DP</b>	<b>maximal</b>

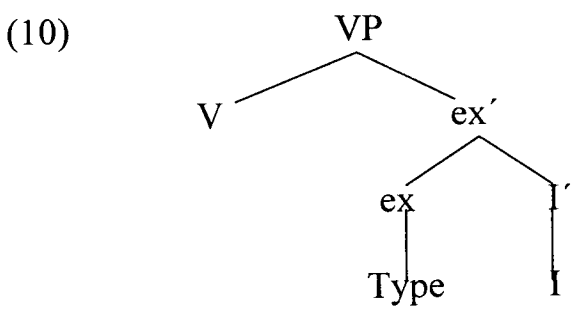
As can be seen in (9) above, there are two types of inflectional phrases **IPs**, namely the infinitive phrase (headed by the infinitive particle ‘uku’ ‘to’), and the clause or simple sentence (headed by a covert or overt auxiliary verb or INFL). These two are the only strings that deserve the status of maximal inflectional phrase or IP. Other inflections are either lexical (INFL) or intermediate ‘I’.

### 3.2.1.8 The Position or Node of Extensions in Bemba Syntax

Verbal extensions occupy a very important place in Bantu grammar generally and in Bemba verbal syntax particularly. Their place therefore, in the X-bar schematic template of the Bemba syntax must be clearly established. The present study has posited a hierarchical node for all extensions in Bemba syntax. All extensions, including inflectional morphemes in Bemba syntax are in the present study illustrated on syntactic tree diagrams for Bemba, basing the assumption on a fairly principled account as explained below:

#### 3.2.1.8.1 The Main Extensions

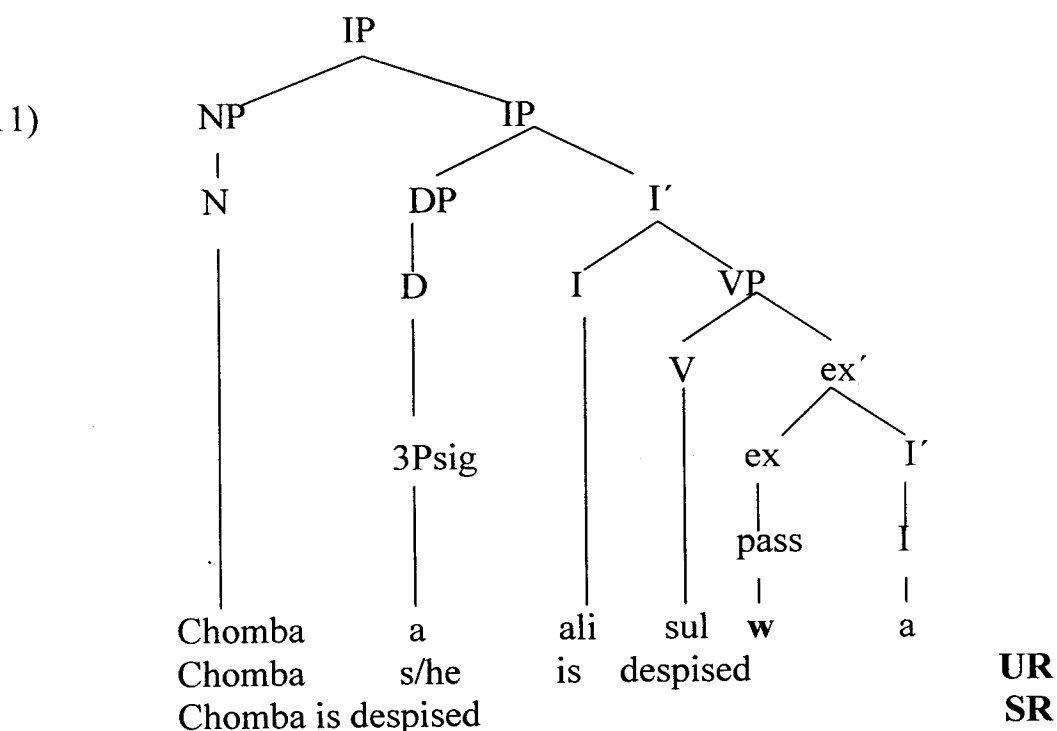
The main extensions, according to this study include, among others, the applied extensions, causative extensions, intensive extensions, extensive extensions stative extensions, passive extensions, reciprocal extensions, reversive extensions and the persistive extensions. All these extensions are adjoined to the main verb, and occupy the same node or level of projection. They always occupy an intermediate phrasal node as shown in (10) below:



the extension phrase, **ex'**, is always adjoined to the main verb as in (10) above, and may comprise one or more than one extension. The following tree diagrams show the place or node of the various verbal extensions in Bemba verbal strings as they ought to be slotted on tree diagrams as proposed in this study:

### 3.2.1.8.1.1 *Passive extension*

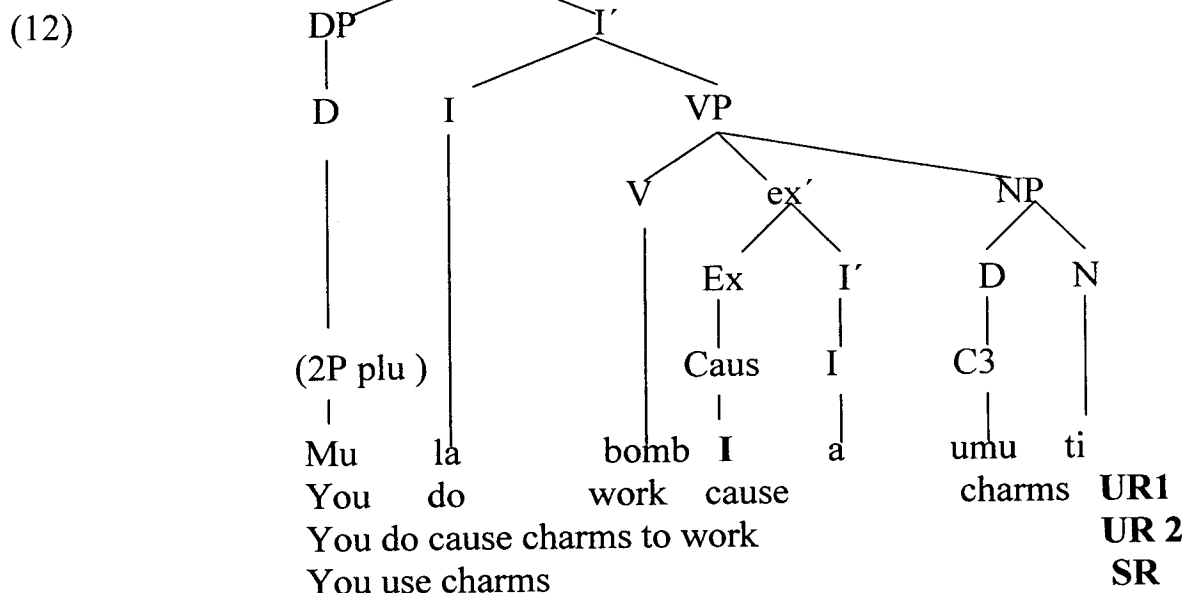
Chomba a-ali- sul-w-a Chomba alisulwa 'Chomba is despised'



As can be seen in (11) above, verbal extensions do have a node or level of intermediate projection. This node is a daughter node of VP. The radical '-sul-' 'despise' and the extension phrase, **ex'** are sisters and have the same mother node VP. Similarly, the passive extension **ex** and the ending inflection **I'** are sisters and have the same mother node **ex'**.

### 3.2.1.8.1.2 *Causative extension*

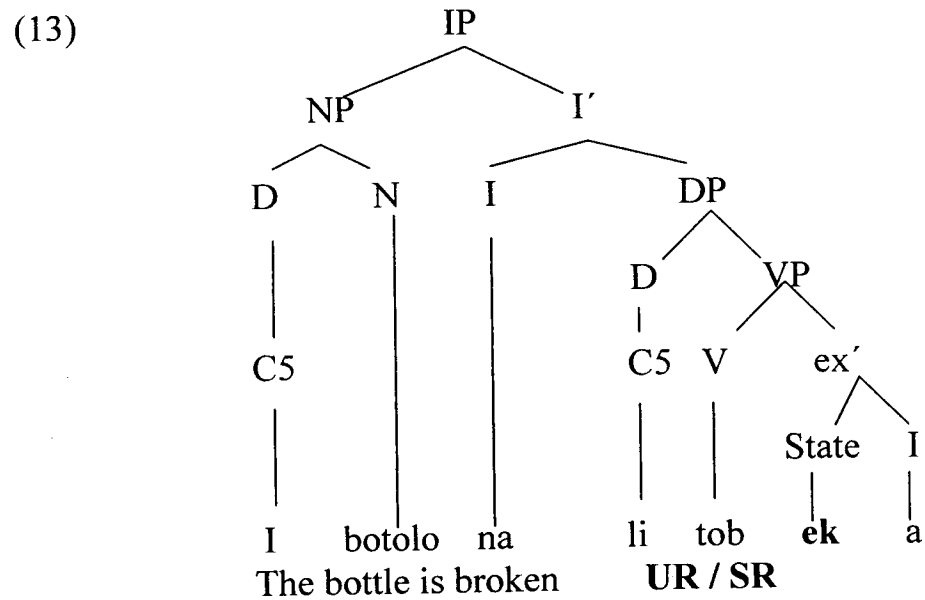
Mu-la-bomb-I-a umuti Mulabomfya umuti 'You do cause charms to work'



The verb phrase **VP** in (12) above has three daughters: the verb **V**, the extension phrase **ex'** and the noun phrase **NP**. The **ex'** is the daughter node that bears the causative extension.

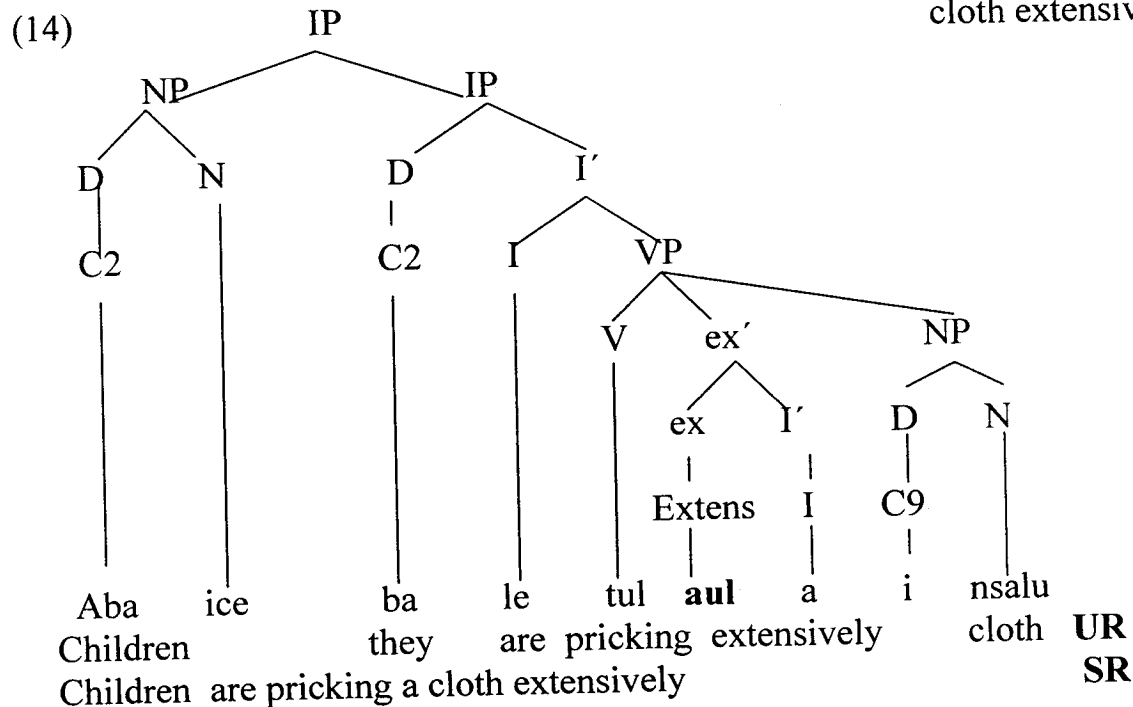
### 3.2.1.8.1.3 *Stative extension*

I-botolo na-ali tob-eka    Ibotolo naalitobeka 'The bottle is broken.'



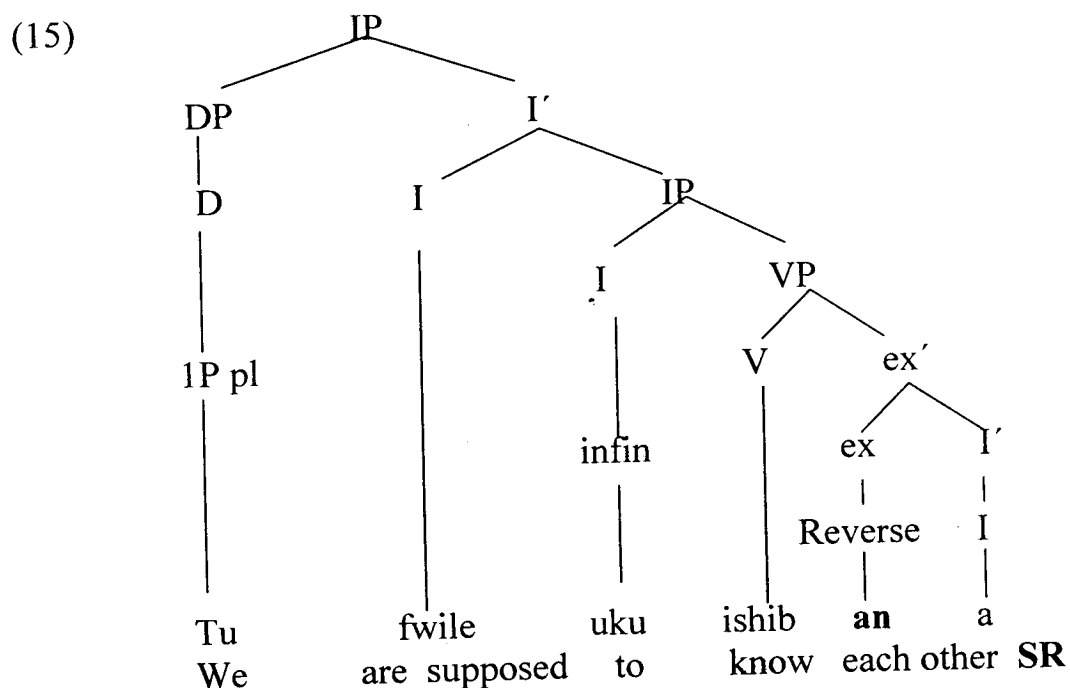
### 3.2.1.8.1.4 Extensive extension

A-baice ba-le-tul-**aul**-a i-nsalu. Abaice baletul**aula** insalu 'Children pricking the cloth extensively.'



### 3.2.1.8.1.5 Reciprocal extension

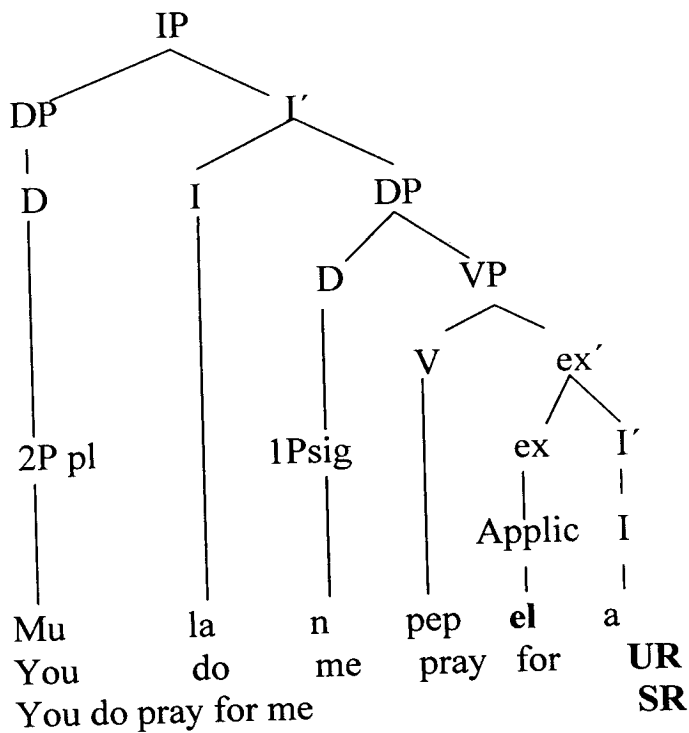
Tu-fwile u-ku-ishib-**an**-a Tufwile ukwishib**ana** 'We must know each other'



#### 3.2.1.8.1.6 *Applied / Applicative Extension*<sup>44</sup>

Mu-la-mpep-ela    Mulampepela    'You do pray for me'

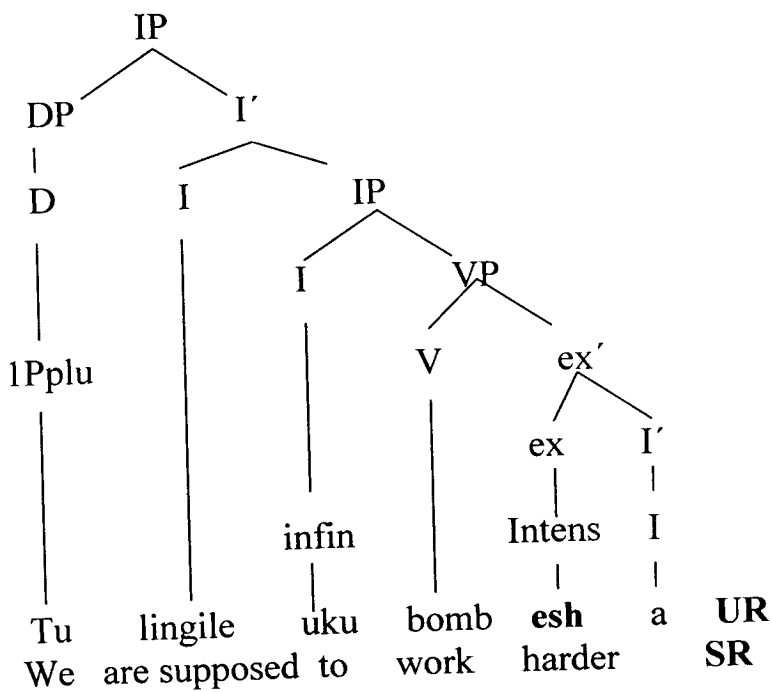
(16)



#### 3.2.1.8.1.7 *Intensive Extension*

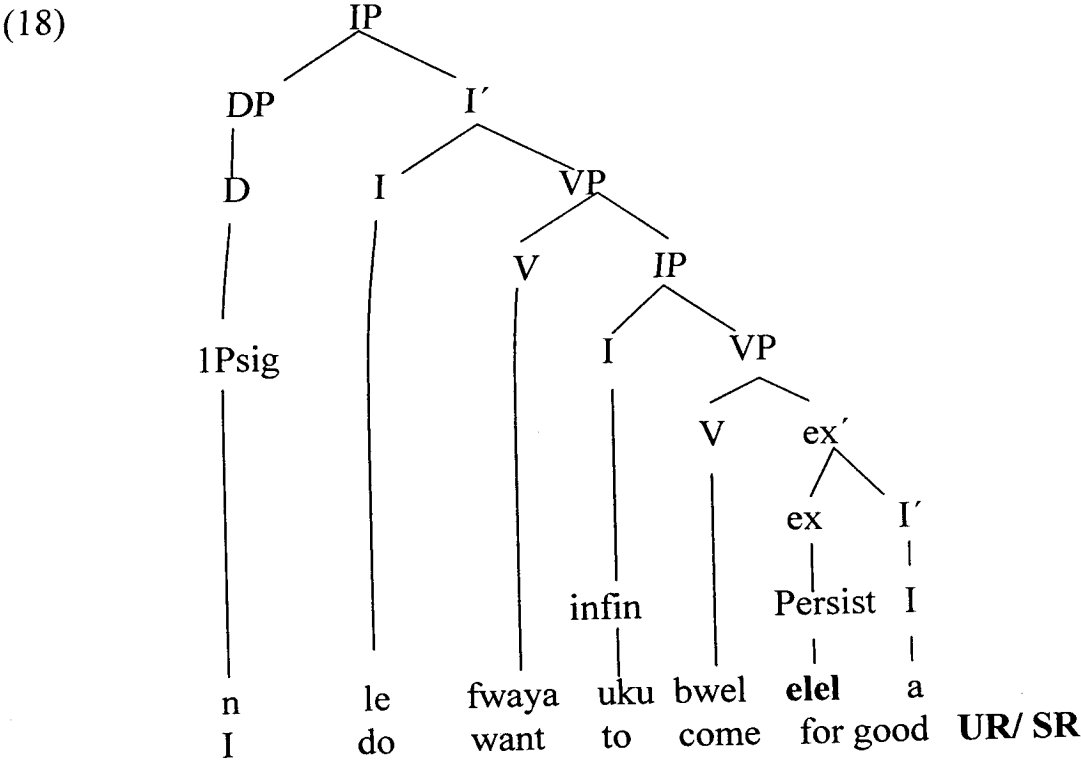
3.2.1.8.1./ *Intensive Extension*  
 Tu-lingile u-ku bomb-**esha** Tulingile ukubomb**esha** 'We are supposed  
 to work harder.'

(17)



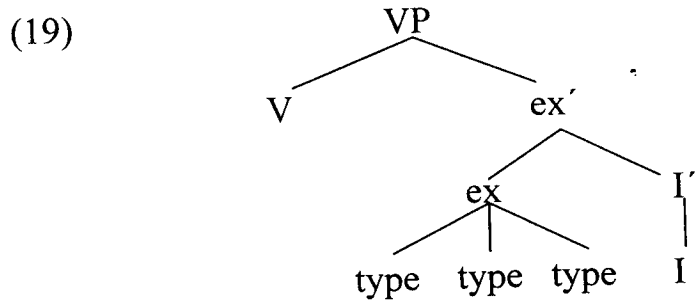
3.2.1.8.1.8 *Persisitive Extension*

N-le-fwaya u-ku-bwel-elel-a    Ndefwaya ukubwelelela    ‘I want to come back for good.’



3.2.1.8.2 *Sequential, Combined or Compound Extensions*

When the extension being analysed contains two or more other visible extensions, that should be identified, in this, study as a *sequential* or *combined extension*. The schema posited for this type of extension will look as in (19) below:



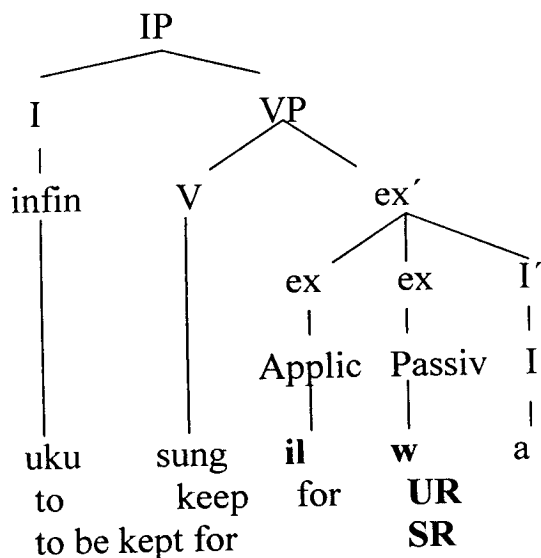
Examples that follow from this schematic template for combined extensions in Bemba, according to this study, include the following:



### 3.2.1.8.2.1 *Applied- Passive extension*

u-ku-sung-**il-w-a** ukusungilwa 'to be kept for'

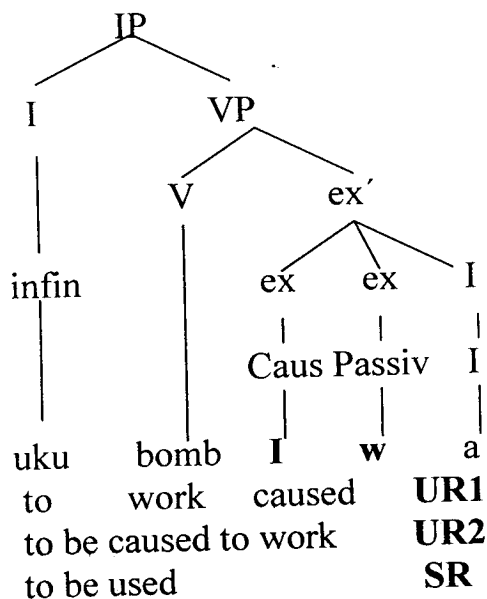
(20)



### 3.2.1.8.2.2 *Causative- Passive Extension*

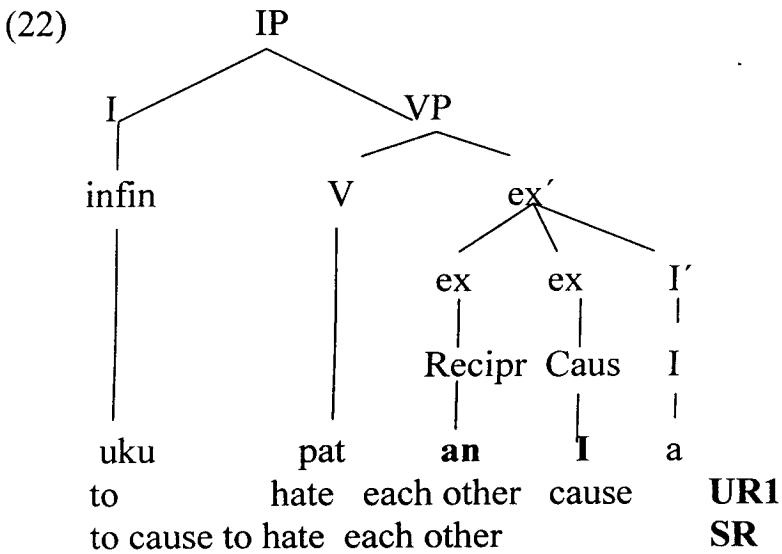
U-ku-bomb-**I-w-a** ukubomfiwa 'to be caused to work'

(21)



### 3.2.1.8.2.3 *Causative- Reciprocal Extension*

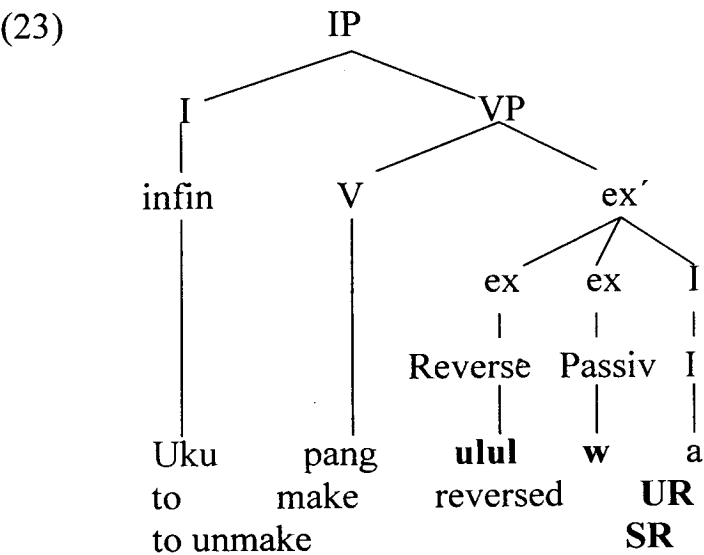
U-ku-pat-**an-I-a** ukupatanya 'to cause to hate each other'



It is important to mention that the shape of the reversive extension is ‘-an-’ and here, when it is followed by the causative extension ‘-I-’ it is realised as ‘-ny-’

3.2.1.8.2.4 *Reversive- Passive Extension*

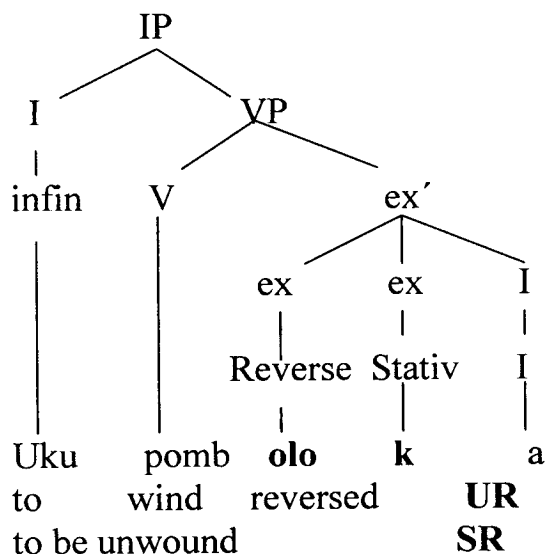
U-ku-pang-**ulul-w**-a    ukupangululwa    ‘to be unmade’



3.2.1.8.2.5 *Reversive- Stative Extension*

U-ku-pomb-**olo-k**-a    ukupomboloka    ‘to be unwound or to be uncoiled’

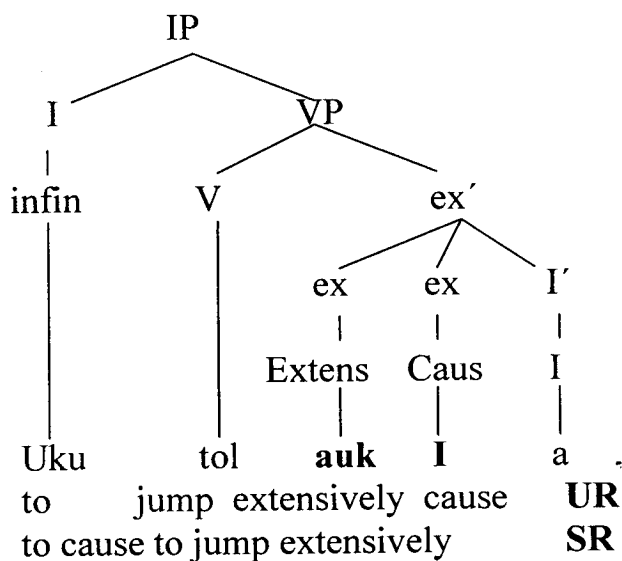
(24)



### 3.2.1.8.2.6 Extensive- Causative Extension

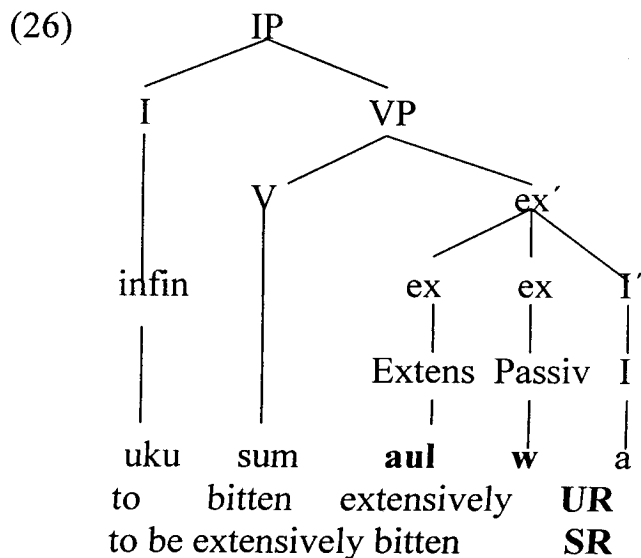
U-ku-tol-**auk**-I-a ukutolausha 'to cause to jump extensively'

(25)



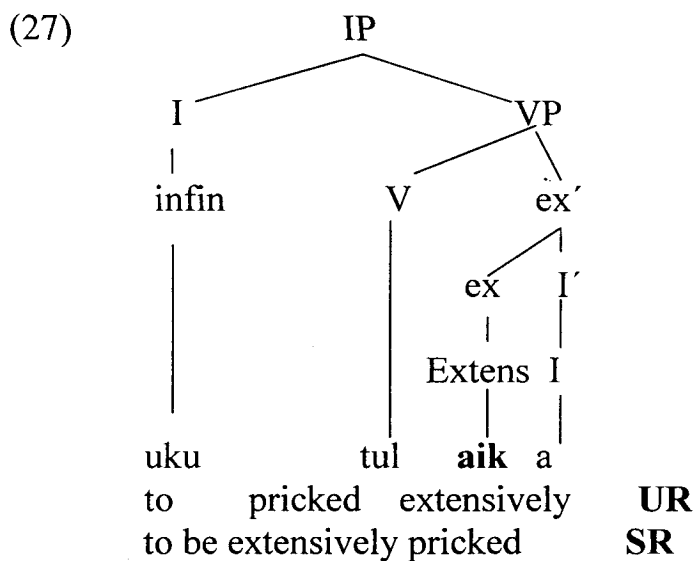
### 3.2.1.8.2.7 Extensive- Passive Extension

U-ku-sum-**aul**-w-a ukusumaulwa 'to be extensively bitten/stung'



### 3.2.1.8.2.8 Extensive- Stative Extension

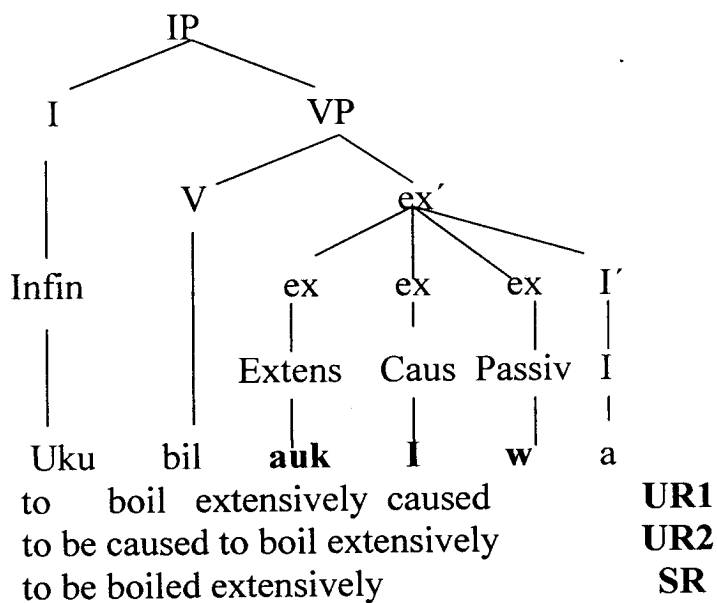
U-ku-tul-**aik**-a      ukutula**ika**      'to be extensively pricked'



### 3.2.1.8.2.9 Extensive- Causative- Passive Extension

U-ku-bil-**auk-I-w**-a      ukubilaushiwa      'to be caused to boil extensively'

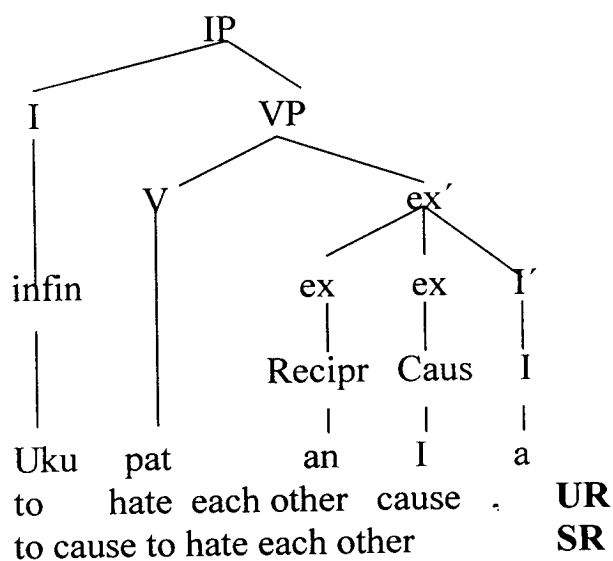
8)



#### 2.1.8.2.10 Reciprocal-Causative Extension

u-ku-pat-an-I-a ukupatanya 'to cause to hate each other'

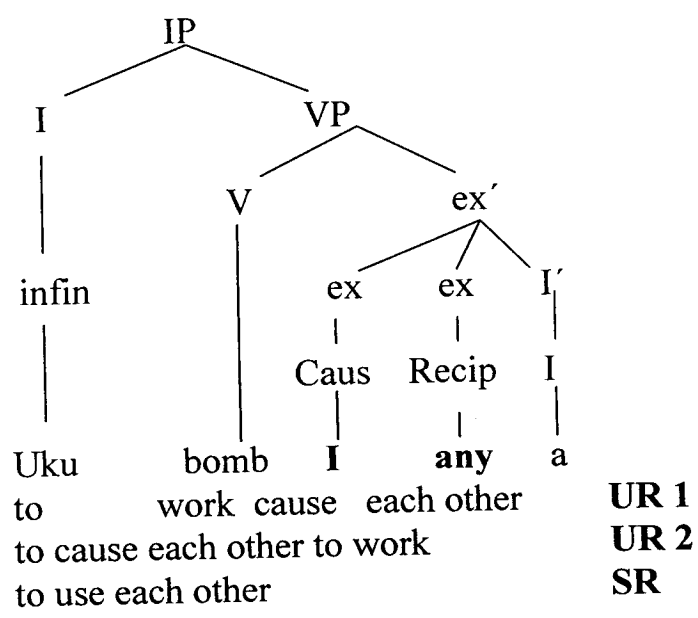
29)



#### 2.1.8.2.11 Causative-Reciprocal Extension

u-ku-bomb-I-any-a ukubomfyanya 'to use each other'

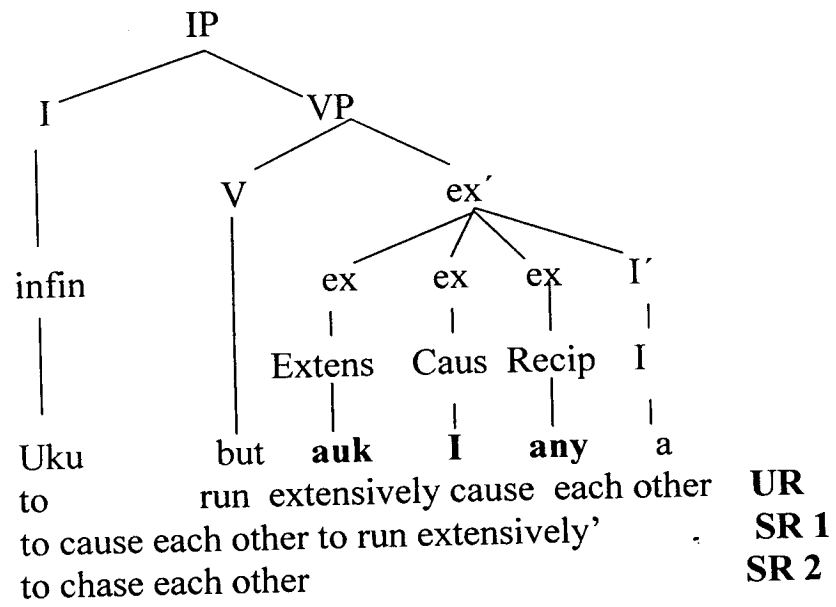
(30)



3.2.1.8.2.12 Extensive -Causative- Reciprocal Extension.

U-ku-but-**auk-I-any-a**      ukubuta**ushanya**      ‘to cause each other to run extensively’

(31)



From all the tree diagram illustrations above, the present study has endeavoured to show that a verbal extension has its own node, or level of projection in the X-bar schematic template of the Bemba Syntax. It has been shown that, like the verb V, the extension **ex'** is always immediately dominated by the mother node VP. This means that in a Bemba verbal, according to this study, the main verb and the extension node are always sisters, enjoying the same immediate

dorminance by their mother node VP. The linear precedence (or order) of the verb and the extension is always one way. It would therefore be truism, but necessary to mention that never can the extension precede the verb to which it is attached. It follows therefore, that extensions ought to be given a fairly detailed investigation to establish their influence not only on the syntax, but also on the semantics of the Bemba verbal grammar. The following pages are an attempt to discuss the semantics of the Bemba verbal extensions.

### 3.2.2 The Semantics of the Extensions

Semantics, according to Fromkin (2002:173) is the study of linguistic meaning of morphemes, words, phrases and sentences. Subfields of semantics are lexical semantics (concerned with the meanings of words and the relationships among words) and phrasal or sentential semantics (concerned with the meanings of syntactic units larger than the word. This study is concerned mainly with phrasal or sentential semantics generally and verb-centred meaning in particular. It is said that in all languages the verb plays a central role in the meaning and structure of sentences. This is because a verb determines for instance the number of objects and limits the semantic properties of both its subject and its objects. In Bemba, some verbal extensions increase the number of objects while others tend to block the objects. The range of syntactic elements especially the nouns such as subjects and objects which are permitted by a verb or other lexical unit is called *valency* (Matthews, 2005:394) or argument structure.

#### 3.2.2.1 Valency

The other term or phrase for valency is *argument structure*, (or the structure of nouns or noun phrases that a verb requires or permits). Different verbs or radicals select arguments differently. Arguments are the subjects and objects that a head verb or radical permits in the syntax of its subcategorisation frame. Arguments can be external or internal. All subjects are external, while all

objects are internal arguments. These arguments constitute the valency of a verb or radical. Each argument is a valent. Each valent or argument has a thematic role to play in the syntax. Thematic roles are explained by the Theta Theory within the Government Binding theory.

### 3.2.2.2 The Theta Theory

The Theta Theory is a sub-theory on GB that is concerned with the assignment of semantic roles to the arguments (Horrocks, 1987:101). The Theta Theory is guided by the principle of the *Theta Criterion*, which demands that *each argument must bear one and only one theta role*, and that *each theta role must be assigned to one and only one argument* (Sells, 1985:37). The theta criterion, according to Horrocks (1987:102), is made to apply at all levels of syntactic representation by the Projection Principle. This principle demands that syntactic representations must be projected from the lexicon because they observe the subcategorising properties of the lexical items (Radford, 1988:391).

### 3.2.2.3 Thematic Roles

Thematic roles are also shortened or abbreviated to *theta-roles*. Semantic roles placed by arguments, may be, among others, *theme, agent, patient, benefactive, goal* etc and they are what one refers to as thematic roles. Below are some of the thematic roles that are associated with syntactic argument structures for the English language according to Fromkin et al (2002:192-193), which are also true for Bemba. The highlighted words or morphemes in the example column below are showing the forms that are indicated by the thematic roles. For example in Table 9 below, the first thematic role '**Agent**' is fulfilled by the highlighted external argument or name '**Joyce**' in the sentence 'Joyce ran'.



Table 9: Some Theatic Roles in English (Fromkin, 2002: 192-193)

Thematic role	Description	Example
<i>Agent</i>	One who performs an action.	<i>Joyce</i> ran
<i>Theme</i>	The one thing that under goes an action.	Mary found <i>the puppy</i>
<i>Location</i>	The place where an action happens.	It rains <i>in spain</i>
<i>Goal</i>	The place to which an action is directed	Put the car <i>on the porch</i>
<i>Source</i>	The place from which an action originates.	He flew <i>from Iowa</i> to Idaho
<i>Instrument</i>	The means by which an action is performed.	Joe cuts hair <i>with a razor</i>
<i>Experiencer</i>	One who perceives something.	<i>Hellen</i> heard Robert playing a piano
<i>Causative</i>	A natural force that causes a change.	<i>The wind</i> damaged the roof
<i>Possessor</i>	One who has something.	The tail of <i>the dog</i> wagged furiousl

The highlighted words in column 3 in Table 9 above show the nouns or arguments indicated by the thematic roles in column 1. It is essential to mention that the theta-roles in the following table for Bemba theta roles are not the only ones. Rather, there are many more roles associated with different arguments depending on the type of sentence involved. The morphemes in bold in column two in the table below represent the *applied extension*, and the *argument* it allows whose theta-role is given in the first column.

Table 10: Some Thematic / Theta roles for Bemba

Thet-arole	Example
<i>Agent</i>	<i>Bwalya</i> alabombesha. 'Bwalya works very hard'
<i>Theme</i>	Chomba alebombela <i>impiya</i> 'Chomba is working for the money'
<i>Location</i>	Ubwinga bwacitikile <i>mumushi</i> 'The wedding took place in the village'
<i>Goal</i>	Bwalya na butukila <i>ku mushi</i> 'Bwalya has run to the village'
<i>Source</i>	Twafumine <i>ku mbala</i> 'We came from Mbala'
<i>Instrument</i>	Bepikila mu <i>mpoto iinono</i> 'They cook in a small pot'
<i>Experiencer</i>	<i>Mulenga</i> nalwalisha. 'Mulenga is very sick'
<i>Causative</i>	<i>Imfula</i> naiwisha amayanda 'The rain has caused houses to fall'
<i>Possessor</i>	Na ba <i>n</i> dufisha pensulo 'They have lost my pencil.'

As can be seen in Tables (9) and Table (10) above, part of the meaning of a verb or radical is in identifying the thematic roles of the subjects and objects it selects or permits in its argument structure. Similarly, when an extension is adjoined to a radical, part of the meaning of the extended verbal form includes not only the knowledge of its own syntactic category but also that of the thematic roles of its subjects and its objects if any, that it permits. This knowledge, as Fromkin (2002:193) says, is represented in the lexicon. And this process of assigning thematic roles is sometimes called *theta assignment*, which is the grammatical activity of spreading information from the verb to its noun phrase and the prepositional phrase satellites (Ibid: 193).

### 3.2.2.4 Theta-criterion

This is a principle of the Theta-theory of the Government-Binding theory, according to Chomsky (1981:36) which dictates that each argument in a sentence bears one and only one theta-role and each theta-role in a sentence is assigned to one and only one argument. This means that a particular thematic role may occur only once in a sentence. This principle renders the following sentence anomalous:

- (32) \*Chomba abutukile pa ncinga pa bwato.  
'Chomba fled by bicycle by the boat'

The above sentence is anomalous because the two internal arguments or noun phrases 'pa ncinga' 'by bicycle' and 'pa bwato' 'by boat' bear the same thematic role of *instrument*. Being a constraint on the assignment of theta roles, the theta criterion does not allow this type of theta assignment, rather it permits only one theta-role per argument. Here there are two arguments bearing the same theta-role, and that is not permissible. It is possible, however, to have many arguments in the same sentence performing different functions and each assigned with a different theta role as in the following example:

- (33) Bwalya ale twalila abafyashi impiya pa ncinga ku Chilanga icungulo.  
'Bwalya is taking money for parents on a bicycle to Chilanga in the evening.'

The arguments with their theta-roles in the above sentence are Bwalya *agent*, abafyashi 'parents' *benefactive*, pa ncinga 'on the bicycle' *instrument*, ku Chilanga 'to Chilanga' *goal*, icungulo 'in the evening' *time*. All these arguments are permitted or provided for in the X-bar scheme for Bemba by the radical 'twala' 'take' and its applicative verbal extension '-il-a'. Almost all the main verbal extensions apart from the Passive extension and the stative extension tend to permit the argument structure permitted by the simplex radical to which they

are linked. This is what Nkolola (1997:80 ) calls *Argument Increament Principle*. This principle, according to Nkolola, states that applied and causative extension verbs retain all the arguments and theta-roles associated with the simplex verb radicals. Nkolola has also posited a principle she calls the *Argument Inheritance Principle*, which is also about causative and applied extensions. This is a principle according to which the number of arguments of an applied and/or causative verb is equal to the number of arguments of the simplex radical plus one. *The passive extension*, on the other hand, blocks most of the arguments normally permitted by the simplex radical. It will however, permit some optional arguments, as in ‘*Chama nasumwa*’ ‘Chama has been bitten’. Here the passive extension has blocked all arguments or relegated them from being obligatory to being optional. Hence this same sentence can allow an optional argument, as in ‘*Chama nasumwa ku nsoka*’ ‘Chama has been bitten by a snake’. Here the internal argument has been relegated by the passive extension from being obligatory to being optional. So, the sentence may or may not carry the internal argument.

Similarly, the *stative extension* also blocks the internal arguments that the simplex radical to which it is attached do permit. For instance the infinitive verbal *ukutoba insupa* ‘to break the calabash’ clearly permits internal arguments, but when the simplex radical is joined to the stative extension ‘-ik-’ or ‘-ek-’, ‘-ka’ as in *ukutobeka* ‘to be broken’ or *ukutulika* ‘to be punctured’, all internal arguments are blocked. Consider the examples:

- (34) (a) *Ilaya lyalilepuka.* ‘The shirt is torn’ *Patient*  
 (b) *Ilyashi nalyumfwika* ‘The story has been heard’ *Theme*  
 (c) *Amani nayatobeka* ‘The eggs have been broken’ *Patient*  
 (d) *Kafundisha na tompoka* ‘The teacher is discouraged’ *Experiencer*

As can be seen in the above four examples, stative extensions **do not** allow internal arguments, but they always *obligatorily* require external arguments which assume various theta roles.

Other extensions, such as the applied or applicative extensions, permit several different arguments and hence they assign different theta-roles to these arguments. Some theta-roles made possible by the *applicative extension* include the following:

- 35) (a) Bwalya aci bafumisha impiya *ku banki*. *Source*  
 'Bwalya withdraw the money for them from the bank'
- (b) Mutinta anakila *icitendwe*. *Reason*  
 'Mutinta is tired owing to boredom'
- (c) Ndetwalila *bamayo*. *Benefactive*  
 'I am taking for my mother'
- (d) Balesambila *mu n'ganda*. *Location*  
 'They are bathing from the house'
- (e) Banda abutukila *mu mpanga*. *Goal*  
 'Banda has fled into the bush.'
- (f) ukulimina *impiya* *purpose*  
 'to cultivate for the money'
- (g) ukupitila *mumufoolo* *Passage*  
 'to go through the furrow'
- (h) Nabatulamfisha *ifyakufwala* *possessive*  
 'They have made clothes dirty for us'
- (i) Isembe nalituputwila ulukuni. *Instrument*  
 'The axe has cut a fire wood for us'

From the above examples, one can see that the applied extension has several theta roles, such as the source, reason, benefactive, location, goal, purpose, passage, possessive, instrument and several others.

The *causative extension* requires both the external arguments and the internal arguments obligatorily. External arguments are assigned with the theta-role of *Agent* while the internal arguments tend to receive the theta-role of *theme* in most instances of Bemba sentences and phrases, as in the following:

- (36) (a) ukubomfya *amano* 'to cause the brain to work' *theme*  
           *'to use the brain'*
- (b) ukulufya *impiya* 'to cause the money to be lost' *theme*  
           *'to lose the money'*
- (c) ukususha *abantu* 'to cause people to be despised' *theme*  
           *'to despise people'*
- (d) ukulefya *ilyashi* 'to cause the story to be long' *theme*  
           *'to lengthen the story'*
- (e) ukuwamya *ifintu* 'to cause things to be good' *theme*  
           *'to make things good'*

In all the examples in (36) above there are two meanings, the literal meaning and the target meaning. The literal meaning is very important in this case because it represents the underlying meaning in the mind of the speaker. It also represents the unadulterated, complex and original configuration of meaning before it is censored or edited to suit the simple surface interpretation and help the hearers decode or have access to the meaning without undue mental strain.

*Reciprocal Extensions* and *Intensive Extensions* do not provide for obligatory internal arguments (though optional internal arguments are possible in some cases). They tend to assign theta-roles mainly to external arguments which are always obligatory. Examples of these are given in (37) below:

- (37) (a) *Tu* alitemwana 'We love each other' *Agent*

- (b) **Bupe na Mulenga balitemwana** ‘Bupe and Mulenga love each other’ *Agent*
- (c) **Hangoma alabombesha**. ‘Hangoma works very hard’ *Agent*
- (d) **Chitalu nalwalisha**. ‘Chitalu is very sick’ *Experiencer*
- (e) **Kabwe nanakisha** ‘Kabwe is too tired’ *Experiencer*

In the above examples, (a) and (b) show the reciprocal extensions and their obligatory external arguments assigned with the theta-role of **Agent**.

*Extensive* and the *Reversive Extensions* do permit or provide for both external and internal arguments in their argument structure, to which different theta-roles are assigned. In most cases, the theta-role of **theme** is often associated with the extensive and reversive extensions. Some combinations too, such as the extensive and causative extension also tend to require ‘theme’ as their theta-role as in (38e) below. Some examples are in (38) below :

- (38) (a) **ukutobaula amayanda** ‘to extensively break houses’ *Theme*
- (b) **ukusunaula ubwali** ‘to extensively cut pieces from nshima’ *Theme*
- (c) **ukupangulula icikulwa** ‘to unmake the building’ *Theme*
- (d) **ukulongolola ifipe** ‘to unload the luggage’ *Theme*
- (e) **ukubilau-sha amenshi** ‘to cause water to boil extensively’ *Theme*

It is clear from examples in (38) as well as those mentioned by Nkolola (1997:80), many simplex verb radicals do retain all their arguments even when or after they have acquired extensions, especially those types of extensions that leave the derived verbs transitive after the simplex radicals have undergone derivation through extension adjunction. The meaning will change according to the inherent proposition of a particular extension, but the argument structure will remain the same. This principle holds true for extensions such as the applied, causative, extensive, and reversive extensions. Reciprocal extensions, passive

extensions, stative extensions and intensive extensions tend to stretch obligatoriness only to external arguments.

Persistive extensions are open, optionally, to internal arguments.

*Sequential or Combined extensions* behave in much the same way of behaving as the main extensions. *Extensive-Causative* however, is the only combined extension that obligatorily require both the external and the internal arguments, as in (39) below:

(39) (a) Chola aletola**usha** abaice.

‘Chola is causing children to jump extensively up and down’

(b) Kapasa alebuta**usha** imbwa.

‘kapasa is causing the dog to run extensively’

The examples in (39) show that both the underlined external and internal arguments are not just necessary but obligatory too, because in the absence of one of the arguments for each of the sentences, the sentence will be incomplete and therefore meaningless. If a particular combined extension is generally transitive, then it will permit both external and internal arguments, but if it is intransitive, it will not be expected to obligatorily permit internal arguments. Optional internal arguments are likely to be allowed in some of the other combined extensions, as in (40) below:

(40) (a) Musa alabombelwa (ku bantu). ‘Musa is worked for (by the people)’

(b) Umwana aletola**ushiwa** (ku bakulu). ‘The child is being made to jump extensively up and down (by adults)’

(c) Abantu balesambil**ishiwa** (imlilimo) ‘People are being taught (the Skills)’

The words in brackets in (40) above are internal arguments which may be optionally added to specify (where necessary) the agent or subject of the action



proposed by the verb. However, external arguments are indispensably obligatory in all of these sentences.

### 3.2.2.5 Chapter Summary

This chapter has analysed and discussed aspects of the morphology and phonology and the syntax and semantics of the verbal extensions in Bemba. It has shown that the form or shape of the verbal extension is influenced by a number of factors. The study has shown that underlying phonological processes give rise to various visible surface forms. This vindicates the efficacy and justification for supporting two levels of linguistic analysis. It has been mentioned that the concept of 'person' in Bemba is realised in a set of various noun class prefixes, especially the third person pronouns. The first and second person pronouns are rather fewer in number and more predictable, but the third person singular or plural depends on the various class prefixes. It has been mentioned that all pronouns of all classes belong to both the category of determiners and the category of nouns at the same time. The chapter has demonstrated the configuration of morphemes on tree diagrams, using the X-bar schema. Various Bemba phrases, clauses and sentences have been parsed on tree diagrams, and the node and projection level of all verbal extensions has been established. The semantics of the Bemba verbal extensions has helped us appreciate the role of the various extensions in the assignment of the Bemba theta-roles to different arguments. It has been discussed that some extensions increase the number of arguments permitted by a verb. Others block the potential arguments which otherwise a given verb or radical normally provides for. This discussion has led to the conclusive remarks that follow in the next chapter.

# Chapter Four

## Summary of the Findings and Recommendations

### 4.0 General

In chapter three we discussed and analysed the morphology and phonology as well as the syntax and semantics of the Bemba verbal extensions. It has been shown that verbal extensions occur within specific and predictable syntactic environments. They have their own nodes on syntactic tree diagrams and their own level of projection. Their highest projection is the intermediate projection, referred to as the X - Bar or X', where X may be any word or morpheme from any of the word classes. The semantics of the extensions including the argument structures and the thematic or theta-roles assigned to them were discussed.

The present chapter concludes this study. It briefly summarises the essential and salient findings of the study by selecting and briefly commenting on the main tenets of the dissertation that best resonate with the objectives of the study and which help to provide answers to the research questions. The chapter briefly discusses the implications of this study to the discipline of linguistic science broadly, to the tenets of Bantu linguistics in general and to aspects of Bemba as a language in particular. Finally, the chapter offers suggested topics for further research.

### 4.1 Summary of the Findings of the Study

The aim of this study has been to postulate a model for analyzing, parsing and describing Bemba verbal grammar that is based on morphemes (and not on the usual concept of 'word') within the Government-Binding Theory. This study has listed the categories of the extensions in Bemba; their typology, their phonology and morphology, their syntax and semantics and their rightful place in the X-bar configurations of morphemes for Bemba.

#### **4.1.1 Categories of the Verbal Extensions in Bemba**

This study has classified the Bemba verbal extensions into two main categories namely the Main extensions and the Combined or Sequential extensions as follows:

##### **4.1.1.1 Main Extensions**

Main extensions according to the present study are those extensions suffixed to the radicals but which are not inflectional and are not sequential or combined extensions. They include applied extensions, causative extensions, passive extensions, intensive extensions, extensive extensions, stative extensions, reversive extensions, persistive extensions and reciprocal extensions. Two or more of these main extensions may combine together to form sequential or combined extensions as explained below:

##### **4.1.1.2 Sequential or Combined Extensions**

Combined or Compound extensions are a combination or adjunction of two or more of the main extensions defined above. The present study has identified ten combined extensions and ten sequential extensions. So, in short, there are two main categories of the extensions for Bemba identified in this study, and these are the main extensions and Sequential extensions. The abbreviations provided for the sequential extensions are not conventional, but stipulative, and as such, they are purely meant to help one to remember these extensions easily without undue mental strain.

##### **4.1.2 Phonology and Morphology**

This study has shown that verbal grammar in general and verbal extensions in particular have a sound system and a structural form system that is remarkable. Here we shall briefly review only the salient concepts earlier discussed.

#### 4.1.2.1 Phonology

This study has mentioned that the sound system of the extensions in Bemba is affected by both diachronic and synchronic phonology. Phonological processes such as spirantization, imbrications, coalescence, truncations as well as mutations and other processes have a great influence in determining the sounds of applied, causative, intensive and other extensions. It has been mentioned that in analyzing these sounds, one must look not only at the surface structure but also at the underlying structure. This means that a given verbal must be *segmented* and *deconstructed* and then *reconstructed* in order to capture the underlying phonology to provide a satisfactory description of a given extension.

#### 4.1.2.2 Morphology

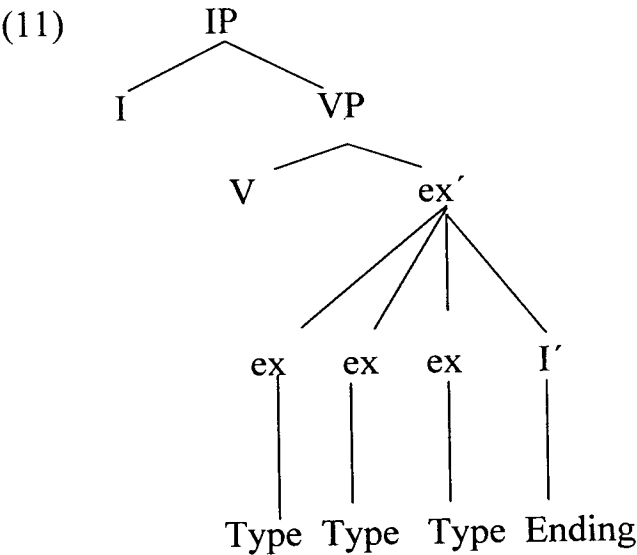
Verbal extensions are represented by the morphemes. Sometimes the same underlying extension morpheme may be represented by very different forms or shapes. These are called allomorphs of the same morpheme. These are classified in the same group by using the criteria of 'meaning' and/or 'function'. For instance, the causative extension may be **-sh-** as in 'ukufi-**sha**' (to cause to be black), **-fy-** as in 'ukubi-**fya**' (to cause to be bad), **-y-** as in ukwim-**y-a** (to cause to be lifted up or to cause to stand) and many other examples.

#### 4.1.3 Syntax and Semantics of the Extensions

##### 4.1.3.1 Syntax

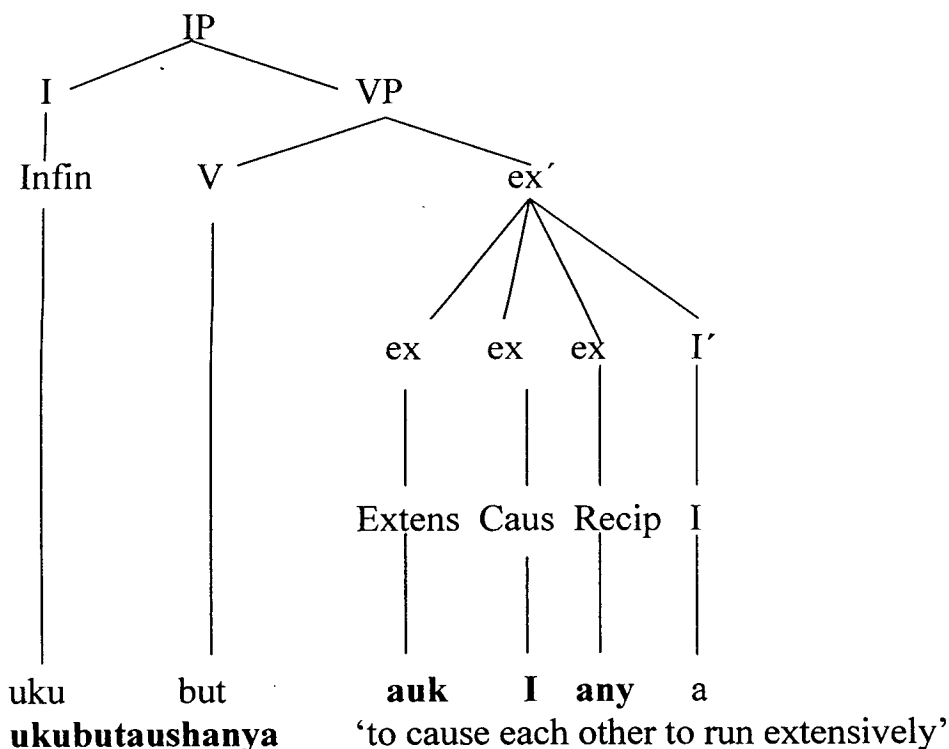
Syntax in the present work has been defined as the study of the grammatical relations between morphemes in a Bemba phrase or sentence. This definition is a derived form from Matthews (2005: 368) whereby according to him, Syntax is the study of grammatical relations between words and other units within the sentence. The same X-bar schema that applies to the syntax that is based on words will also apply to the syntax in the present study that is based on morphemes. Extension morphemes have their own specific nodes on syntactic

tree diagrams. They have an intermediate level of projection, and their place on a local tree in a Bemba sentence is as follows:



The verb phrase **VP** is a full phrase with maximal projection. It has two daughters; the verb **V**, which is also the head of the phrase, and the extension phrase **ex'**. Which is also the intermediate phrase. The schema in (11 ) above is suitable for those verbals that occur with three distinct, yet joined extensions, such as **uku-tol-auk-I-any-a' ukutolaushanya** ‘to cause each other to jump extensively up and down’, ‘uku-but-auk-I-any-a’ **ukubutaushanya** ‘to cause each other to run extensively’ and many more. Combined extensions of this nature may be slotted on tree diagrams as in (12) below

- (12)
- uku-but-**auk-I-any-a** ukubuta**ushanya** ‘to cause each other to run extensively’



As can be seen in (12) above, extensions have their own level of projection, the intermediate level. An extension is headed by a verbal radical within a verb phrase. In any verb phrase **VP** where an extension exists, the local tree / family metaphor relationship that exists is such that the mother node **VP** always immediately dominates her two daughters, the verb **V** and the extension phrase **ex'**, and the linear precedence **LP** that exists between the two sisters **V** and **ex'** is always such that **V** always takes precedence over (occurs earlier than) **ex'**. If this is flouted, then a given string will be ill-formed, because extensions shall never occur in front of or before the radical.

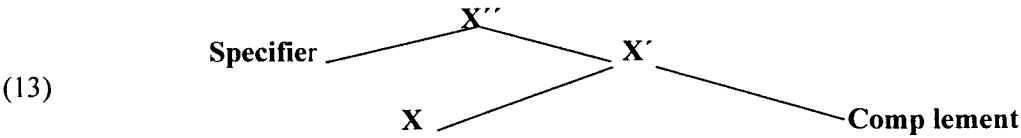
#### 4.1.3.2 Semantics

It has been mentioned in this study that some verbal extensions affect the argument structure of their simplex radicals. Some extensions preserve the argument structures and the theta role of their simplex radicals. This is what Nkolola (1997:80) calls Argument increment principle. Some extensions, such as the passive extension block the argument structures of their simplex radicals,

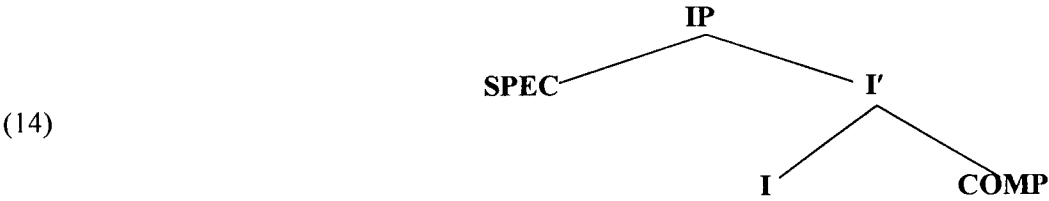
and hence the theta roles associated with those blocked arguments are blocked too. Other extensions such as the applied extension tend to permit arguments of various theta-roles obligatorily, both external and internal, while extensions such as the intensive and the persistive extensions tend to have limited theta-roles. The only obligatory theta-role which they seem to have is one associated with the external argument. Theta-roles associated with internal arguments tend to be optional though they are significant.

#### 4.1.4 Parsing of the Bemba Verbal Strings

It has been discussed in this study that parsing in Bemba shall be based on morphemes. The X-bar schema that is normally based on words is in this study based on morphemes. This is because as explained in earlier chapters, the concept of 'word' raises more problems than solutions in the Bemba language as far as the process of sentence analysis is concerned. To disentangle, unravel or separate the morphemes that have been fused or muddled together in sentences or phrases needs careful attention. The suggested parser for Bemba syntax in the present work begins with the X-bar schematic template followed by the processes of *segmentation* and *deconstruction*. Segmentation in the present work divides sequences of strings into major components of noun phrase **NP**, inflection phrase **IP**, verb phrase **VP** and so forth. Deconstruction, on the other hand, analyses these major components or segments further and more exhaustively into all meaningful morphemes present in a form or string of forms. The difference between segmentation and deconstruction may become explicit from the insight that the chopping up of a string of morphemes into chunks of related morphemes like **NP**, **INFL**, **VP** e.t.c. is a product of segmentation, while the analysis and configuration of morphemes on a syntactic tree diagram is a product of deconstruction. Therefore, true parsing in the present study is often nothing but deconstruction. The schema in (13) and (14) below are the general phrase or sentence parser for Bemba in the present study:



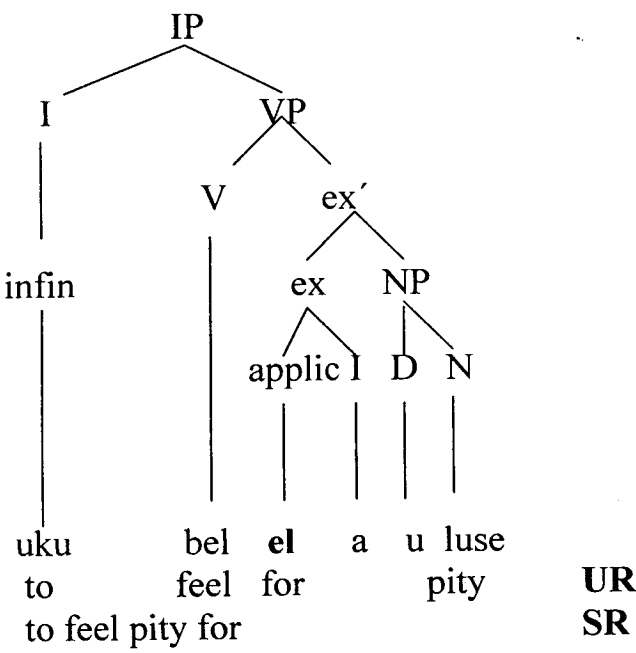
(Asher, 1994: 5065)



( Radford ,1997:63,152 )

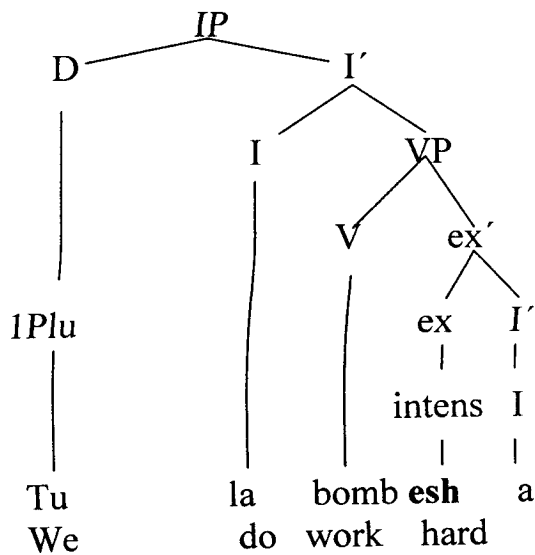
Examples of phrases and sentences that may be parsed on these schema include the examples in (15) below:

(15) (a) ukubelelela uluse ‘to feel pity for’ *infinitive phrase*

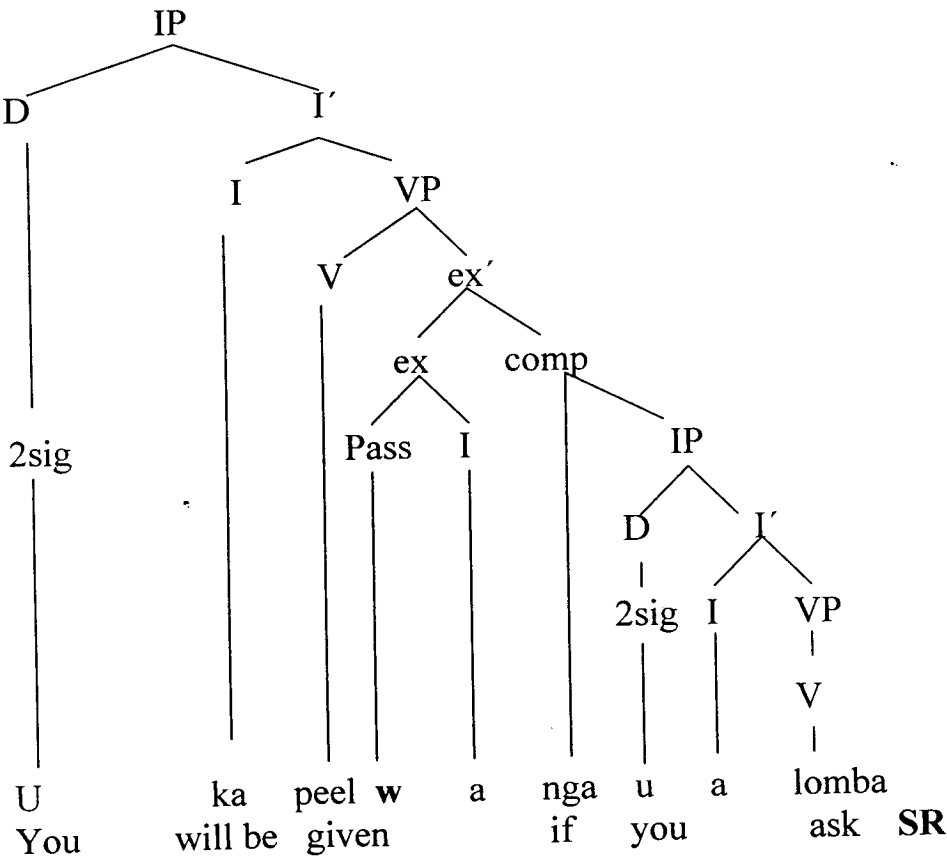




(b) Tulabombesha ‘We do work very hard’ *clause / simple sentence*



(c) Ukapeelwa ngawalomba ‘you will be given if you ask’ *complex sentence*



The above sentences or phrases are examples of how Bemba strings may be parsed on tree diagrams in order to reveal all the morphemes and show their levels of projection.

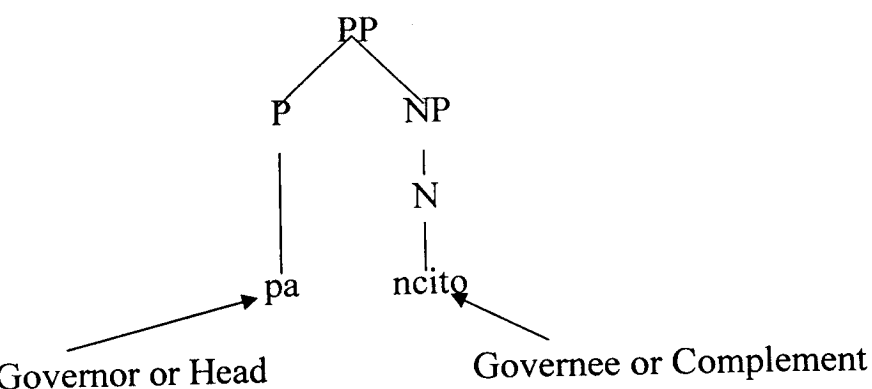
#### 4.1.5 The relevance of the Government-Binding Theory to Bemba Verbal Grammar?

In order to appreciate the necessity of the Government-Binding theory to the comprehensive analysis of Bemba in general and Bemba verbal grammar in particular, it is essential that we appreciate the two parts of this theory separately because their separate roles shed light on what the theory is all about generally.

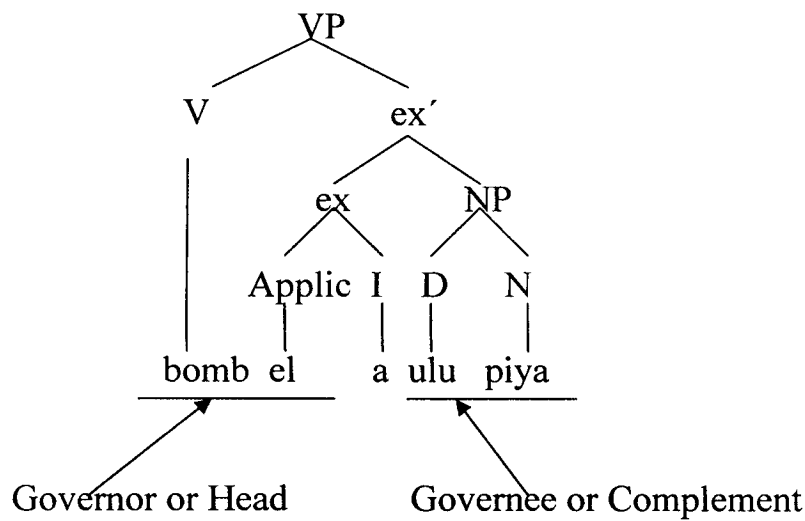
##### 4.1.5.1 Government Theory

This is a theory that emphasises that in a full phrase with maximal projection, there must be the governor and the governee. The governor is the head of a phrase, while the governee is the complement of that phrase. This theory is important because according to Radford (1997:60-61) all phrases are headed. For instance in the phrases ‘pa ncito’ ‘at work’, ‘bombela ulupiya’ ‘work for the money’, and ‘leefya ilyashi’ ‘lengthen the story’ the following are heads: ‘pa’ ‘at’, ‘bomba’ ‘work’ and ‘leepa’ ‘be long’ respectively. These three may be diagrammed as in (16) below:

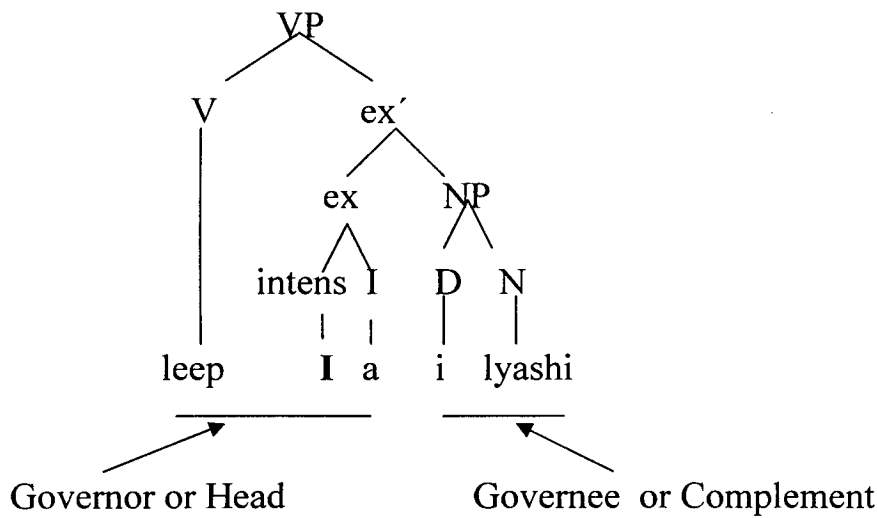
(16) (a) pa ncito ‘at work’ *Prepositional or locative phrase*



(b) bombela ulupiya ‘work for the money’ *Verb phrase*



(c) leefya ilyashi ‘lengthen the story’ *Verb Phrase*



### 4.1.5.2 Binding Theory

Binding theory is a theory that is primarily concerned with the conditions under which noun phrases NPs are interpreted to be coreferential with other noun phrases in the same sentence (Horrocks, 1987:108). There are three types of noun phrases that this theory deals with: anaphors, pronominals and referential expressions.

- a) anaphors: These are *reciprocal pronouns* like 'each other' or 'one another' and *reflexive pronouns* like 'myself', 'yourself', 'herself' etc.
- b) pronominals: These are pronouns that lack lexical content like 'he', 'him', 'it', 'they' 'them' etc.
- c) referential expressions: These are noun phrases with lexical heads or lexical content which potentially refer to something, such as John, desk, school, dog etc.

So, the conditions under which any of these noun phrases become coreferential in the same sentence are the concerns of the Binding theory. For example, in a Bemba sentence, all noun class prefixes bearing the same class number may be said to be coreferential as in (17) below:

(17)

(a) **Icintu cimo icilefwaikwa ciishinka.** 'One thing that is needed is the truth.'

(b) **Aba bantu baisesa, bantu beesu.** 'These people are our people.'

In (17 (a)) above, all the high lighted class prefixes are all *class 8 prefixes* and they all have the same referent (in this case, it is the *truth*). So, they are coreferential. Similarly, in (b) all high lighted prefixes are all class 2 prefixes and they all refer to the same referent, (*people*). So they are coreferential.

The two theories above explained constitute the *Government-Binding theory* or *GB*, and clearly, this theory is indispensable to the successful parsing of the Bemba strings. These strings are deconstructed and their resultant morphemes are accurately configured on different schema owing to the principles and parameters provided and permitted by the Government-Binding theory. It follows, therefore, that a revealing and comprehensive analysis of Bemba verbal grammar would be difficult if not impossible to achieve without the means provided by the GB theory.

## 2 Conclusion

It is hoped that this study has fairly successfully posited and presented a morpheme-based approach to the analysis of Bemba verbal grammar. The central arguments of the study have resonated an inherent urge for the need to modify certain of the theoretical models in the analysis of Bantu languages generally and Bemba in particular, without necessarily shaking the foundations of the existing cornerstone theories and principles of language. The major modification echoed throughout the study is in stressing that since Bemba is an agglutinative language, and since phrasal and sentential strings in Bemba are mainly sequences of contiguous morphemes and not words, the concept of morpheme should be made to play a central role in the analysis of Bemba verbal grammar, just as the concept of 'word' is crucial in the analysis of isolating languages like English. When the efficacy of this position is appreciated and adopted, it will lead to other minor but essential modifications which in turn will also eventually lead to important developments such as a realization that:

- (i) Attempting to analyze all languages of the world by the same means is failure to accept that languages differ greatly. As such, in this case it would be tantamount to attempting to force Bemba to fit into the English mould. This would compromise the quality and credibility of description.
- (ii) While all languages of the world may apply the same universal linguistic principles, care has to be taken to identify which parametric choices or options are naturally permitted by a particular language.
- (iii) Like other morphemes, extensions have their own node and level of projection on syntactic tree diagrams in agglutinative languages such as Bemba.

- (iv) All meaningful morphemes may appear on syntactic tree diagrams, but segments that result from morphophonological processes such as coalescence, gliding, imbrications and others may be ignored.
- (v) Morphemes are for agglutinative languages what *words* are for isolating languages. Exceptions to this rule should still not be allowed to bend it.
- (vi) The projection level for all extensions is always intermediate.
- (vii) Different extensions affect the argument structures differently.
- (viii) Inflections (INFL or I' ) become maximal projections ( IP or I'' ) only when *specified* by some determiner (in a clause) or when an infinitive particle 'to' heads a phrase (Radford, 1997: 63, 65).
- (1x) The shape of an extension does not determine its category because the same shape can represent two or more different extensions, and conversely, the same extension can appear in two or more distinct shapes. What determines the category of an extension is the meaning and the function. A Bemba morpheme and its allomorphs or variants may be used interchangeably on tree diagrams. This choice is open to the linguist.
- (x) Bemba verbal grammar should be parsed by means of the GB theory and the X-bar theory for it to effectively and adequately produce the desired descriptive and explanatory results.

### 4.3 Recommended Topics for Further Investigation

From the discoveries made in the course of this study, it would be good in future to investigate among others the following topics:

- (1) Verbal extensions, noun class prefixes and cohesion in Bemba
- (2) Verbal extensions and the argument structure in Bemba
- (3) Forming Bemba phrases and sentences from the morphemes by Computer
- (4) The role of empty categories and covert constituents in Bemba

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- [www.collins.co.uk/cobuild](http://www.collins.co.uk/cobuild)
- [www.epistemic-forms.com/ps-xbar.html](http://www.epistemic-forms.com/ps-xbar.html)
- [www.en.wikipedia.org/wiki/x-bar-theory](http://www.en.wikipedia.org/wiki/x-bar-theory)

## APPENDIX: DATA

The information that is appended here is presented in form of phrases and sentences. The sentences and phrases selected are those bearing one or more verb extensions. Data shall be presented in groups as (A) main extensions and (B) Sequential or combined extensions.

### (A) THE MAIN EXTENSIONS

#### (i) Applied extension

Mwilaibila abanenu	'Do not steal from your friends'
Nabansendela ifipe	'They have carried luggage for me'
Nsunina	'Cut for me'

#### (ii) Causative Extension

Nabatulesha ukwangala	'They have made us stop playing'
Bambusha mutulo	'They caused me to wake up from slumber'
Ubwafya bwampibisha	'The problem has caused me to sweat'

#### (iii) Passive Extension

Abengi nabasendwa bunkole	'Many have been taken captive'
Ukusekwa takwawama	'To be laughed at is not good'
Walitemwikwa	'You are loved'

#### (iv) Stative Extension

Ibotolo nalitobeka	'The bottle is broken'
Ifilembo natilembeka bwino	'The letters have been written properly'
Imbale yalitulika	'The plate has been pricked'

### **(v) Intensive Extension**

Ukubutukisha

‘to run fast’

Ukubipisha

‘to be too bad’

Ukufitisha

‘to be too dark’

### **(vi) Extensive Extension**

Ukubilauka

‘to boil extensively’

Ukulepaula

‘to cut extensively’

Ukutulaula

‘to prick extensively’

### **(vii) Reversive Extension**

Ukupangulula

‘to unmake’

Ukulandulula

‘to reverse what has been spoken’

Ukulembulula

‘to undo the writing’

### **(viii) Reciprocal Extension**

Ukumfwana

‘to reason with each other’

Ukusumana

‘to bite each other’

Ukubepana

‘to cheat each other’

### **(ix) Persistent Extension**

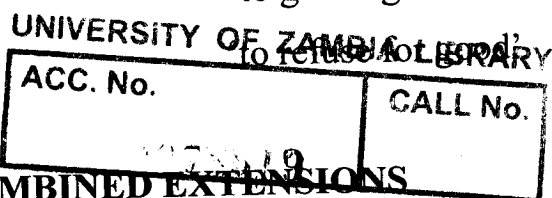
Ukubwelelela

‘to come back for good’

Ukuyililila

‘to go for good’

Ukukaninina



### **(B) SEQUENTIAL OR COMBINED EXTENSIONS**

#### **(i) Applied-Passive Extension (APPEX)**

Ukutolelwa

‘to be picked for’

Ukulembelwa

‘to be written for’

Ukupangilwa 'to be made for'

**(ii) Causative-Passive Extension (CAPEX)**

Ukutamfyiwa 'to be caused to be chased'

Ukulufyiwa 'to be caused to be lost'

Ukuleshyiwa 'to be caused to stop'

**(iii) Reversive-Passive Extension (REPEX)**

Ukulongololwa 'to be offloaded'

Ukupombololwa 'to be unwound'

Ukupangululwa 'to be unmade'

**(iv) Reversive-Stativ Extension (RESEX)**

Ukulongoloka 'to remain unloaded'

Ukupomboloka 'to remain unwound'

Ukupanguluka 'to remain unmade'

**(v) Extensive-Stativ Extension (EXSEX)**

Ukusunaika 'to remain extensively cut into pieces'

Ukutobauka 'to remain extensively broken'

Ukulepauka 'to remain extensively torn'

**(vi) Extensive-Causative Extension (EXCEX)**

Ukubilausha 'to cause to boil extensively'

Ukutolausha 'to cause to jump extensively'

Ukubutausha 'to cause to run extensively'

**(vii) Extensive-Passive Extension (EXPEX)**

Ukulimaulwa 'to be cultivated extensively'

Ukuputaulwa 'to be cut extensively into pieces'

Ukushetaulwa

'to be ground with teeth extensively'

**(viii) Extensive-Causative-Passive Extension (EXCAPEX)**

Ukutolaushiwa

'to be caused to jump extensively'

Ukubutaushiwa

'to be caused to run extensively'

kubilaushiwa

'to be caused to boil extensively'

**(ix) Causative-Reciprocal Extension (CAREX)**

Ukulanshanya

'to cause each other to reason together'

Ukubutushanya

'to cause each other to run'

Ukutamfyanya

'to cause each other to be chased'

**(X) Extensive Causative Reciprocal (EXCAREX)**

Ukutolaushanya

'to cause each other to jump extensively up and down'

Ukucilaushanya

'to cause each other to jump cross things extensively'

Ukubutaushanya

'to cause each other to run extensively up and down'