ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

SOME ASPECTS OF THE LEXICAL PHONOLOGY AND MORPHOLOGY OF TIGRIGNA

BY
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List of Abbreviations, Acronyms and Symbols

Adj = adjective

Abs = abstract

Ani = animate

C = consonant/ coda

N = noun / nucleus

O = onset

Pl = plural

Sg = singular

1sg. = first person singular

2ms = second person masculine singular

2fs = second person feminine singular

3ms = third person masculine singular

3fs = third person feminine singular

1p = first person plural

2mp = second person masculine plural

2fp = second person feminine plural

3mp = third person masculine plural

3fp = third person feminine plural

BP = broken plural

F = feminine

Obj = object

Pro = pronominal

Pass = Passive

→ = becomes

[ ] = phonetic representation

/ / = phonemic representation

( ) = optional / loan words

α = alpha

The Phonetic Symbols used

Consonants

[y] =as in yes

[ŋ] = as in song

[l] = as in cattle

[v] = as in vine

[p'] = as in pasta

Vowels

[∂] = as in should

[u] = as in pool

[e] = as in set

[a] = as in part

Abstract

There are different theories of phonology with different arguments and claims. Among these, Lexical Phonology and Morphology (LMP) is one. And having its interesting innovations, the claims of the theory have not been applied on Tigrigna - an Ethio-Semitic language. This is the main objective that this study tries to deal with. To do so, it is found important first to briefly touch upon the phonological description of the language. Accordingly, first a brief presentation is made on the phoneme inventory of the language where 27 consonant and 7 vowel segments are identified. In the subsequent chapters, the phonological and morphological processes in the language are discussed. Accordingly, the phonological processes of deletion, insertion, and assimilation have been discussed with relevant examples. Next, different morphological processes: suffixation, prefixation, circumfixation, infixation, compounding, cliticization, and zero derivation have been outlined with relevant examples. These two chapters serve as the scene for the discussion of the major theoretical claims of LPM.

Subsequently, the following chapter deals with issues that the theory of LPM innovated. The discussion made on the morphological processes of the language shows that Tigrigna has rich morphology. Accordingly, the study assumes that a three strata lexicon for Tigrigna. Stratum I mainly host word formation processes come from 'root-and-pattern' type. In Stratum II, comprise different morphological processes of the language take place. The next lexical level, Stratum III hosts compounding. Besides, some of the basic theoretical assumptions that the theory of LPM introduced i.e. the Strict Cyclic Condition (SCC), Bracket Erasure Convention, (BEC) and Elsewhere Condition (EC) have been discussed in light of the Tigrigna language.

Chapter One

Introduction

1.1. The Language and the People

Tigrigna is one of the North Ethio-Semitic languages along with Ge'ez and Tigre and spoken in Northern part of Ethiopia in the region of Tigray and the high lands of Eritrea (Hetzon and Bender 1976).

According to the recent population census, the population of Tigray Region is 4,314,456; of which 2,124,853 are male and 2,189,603 female .The percentage of share of males is 49.25% while that of female is 50.75%. The urban residents of Tigray region number 842,723 while its rural residents number 3,471,733 (CSA, 2007).As to the economic activity, the people mainly rely on agriculture (farming). There is also trade activity with neighboring regions. With regard to religion, the people are predominantly followers of Orthodox Christianity (95.6%). In addition, there are some members who are adherent of Islam (4.0%), Catholic (0.4%) and Protestant (0.1%) religious.

Regarding the linguistic classification of the language, Tigrigna belongs to the North-Ethio-Semitic languages. The following language family tree, which is adopted from Hetzon and Bender (1976), shows this genetic classification of the language.

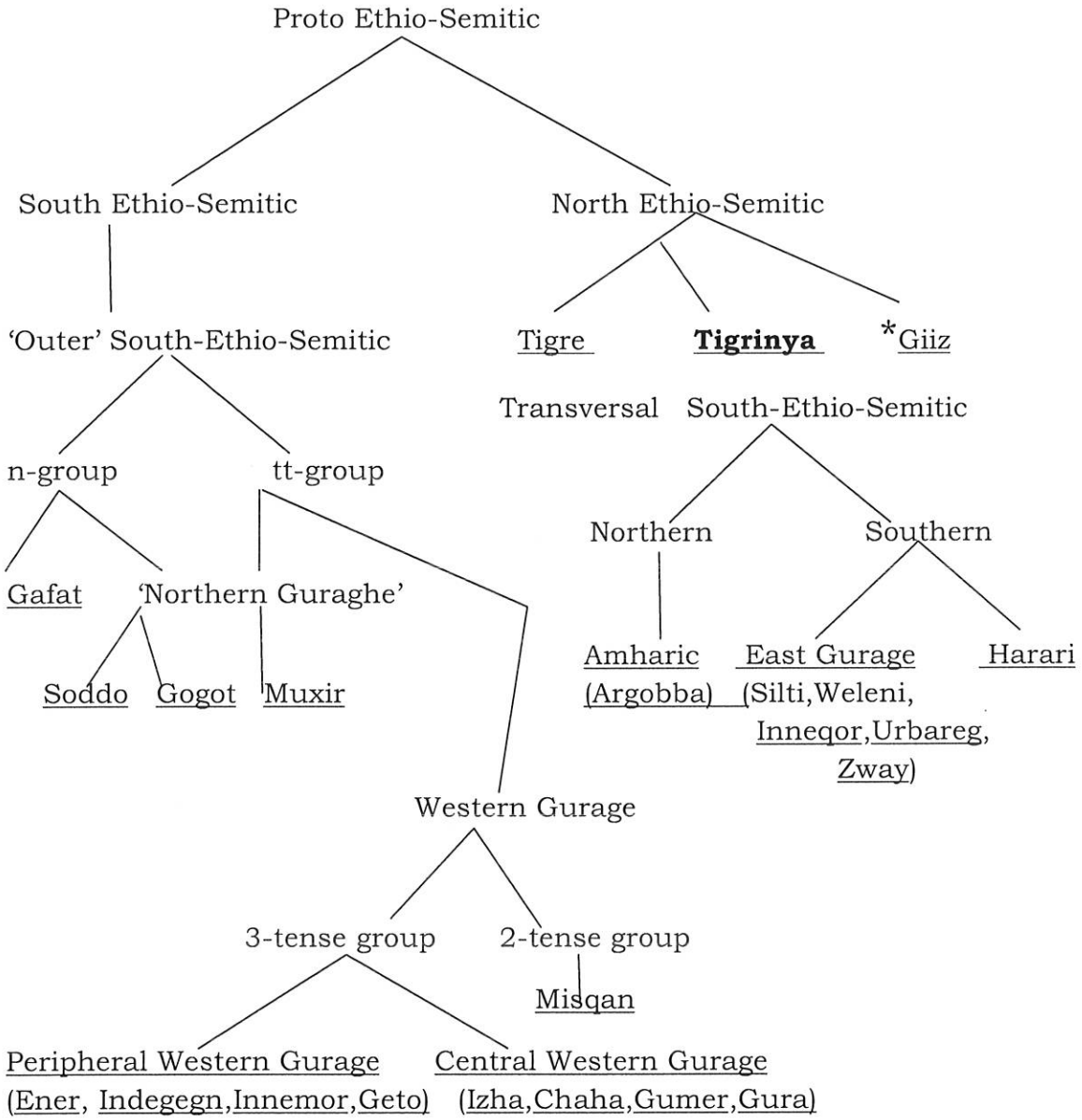

Chart 1. Language Family Tree of Ethio-Semitic Languages adopted from Hetzron and Bender (1976)

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* dead language

1.2. The Informants

In order to carry out the study, native informants were consulted. The first informant, Hassen Ahmed, is 47 years of age and a native speaker of the language. He is engaged in weaving for living. He can also speak Amharic in addition to his mother tongue. He has completed high school.

The other informant is Michael G/Sellasse who is working as instructor at Mekelle University. He is 29 years old and has a B.A degree in Political Science from Addis Ababa University. Both informants provided me with primary data required for the research.

1.3. Statement of the Problem

LPM claims that morphology and phonology interact in the processes of word formation. Accordingly, it has included the major ideas and innovations within both components. Furthermore, it claims that lexicons as opposed to SPE's view play a central role in the processes of word formation. The lexicon is also claimed to have internal hierarchical organization.

In addition, the theory, with introduction of constraint on rule application, successfully accounts for earlier problems posed by SPE. Thus, all the new innovations incorporation of former finding, and the solution it gives to earlier make LPM an interesting theory a worth applying on as many language as possible. However, given all its strong sides, LPM has not been applied to Tigrigna language.

1.4. Objective of the Study

The general objective of the study is contributing to the description of Tigrigna language. The specific objectives of the work are to:

1. Indicate some of the phonological processes in the language.
2. Indicate some of the morphological processes that are involved in the word formation processes of the language.
3. Propose the number of lexical strata available in the language.
4. Show some of the innovations of the LPM in terms of facts in Tigrigna language.

1.5. Scope of the Study

This study is delimited with the following facts. First, the study is limited mainly to the discussion of the theory of LPM. As will be indicated in the theory section, the theory has two major components: Lexical and Post-Lexical Phonology. The first deals with rules that apply word internally and Post Lexical rules are free to apply across words. Nevertheless, this study doesn't include the Post-Lexical component of the theory. In terms of dialectal variation, the present study elicits data from Tigrigna spoken in Mekelle town.

1.6. Significance of the Study

The results of this paper will be important in many ways:

1. It provides some description on the phonological and morphological process of the language.

2. The results of this study will widen our understanding of the structure of Tigrigna in light of the notion of Lexical Phonology and Morphology (LPM).

3. This work will also contribute in the preparation of pedagogical and teaching material in the language.

4. It also inspires other linguists to conduct further linguistic research.

1.7. Method of the Study

The different methods used in this study are the following. Primarily, issues related to the Theory of Lexical Phonology and Morphology (LPM) has been read thoroughly. To do that, all relevant and related works: books dissertations, articles, thesis has been read. In data elicitation and analysis, however, there are a number of techniques employed.

Secondly, the researcher has collected linguistic data for elicitation and the elicited linguistic data has been transcribing phonetically using IPA symbols. Afterwards, the collected data were analyzed in light of theory of Lexical Phonology and Morphology (LMP).

Chapter Two

Review of Related Literature

2.1. Previous Studies

Under this sub- heading, two important divisions occur normally. Since the topic of the study is some aspects of LPM of Tigrigna related to the study in terms of descriptive and theoretical works are made on.

Tigrinya has traditionally been a written language which uses the same writing system called Fidel (Geez script), as Amharic. Tigrinya has also quite extensive written literature. Several linguistic works have been done in Tigrinya in general, while there is little concerning in the sub-field of Phonology and none on the theory of LPM.

The following section will review some of the research works related to the study in terms of both descriptive and theoretical works.

Asmeret (1983) produced a B.A thesis entitled "The Morphophonemic Nouns and Verbs in Tigrinya" in which she discussed the various morphophonemic changes with nouns and verbs. The noun in Tigrinya is inflected for number, gender and case. The verb in Tigrigna consists of bi-radical, tri-radicals and quadric-radical verbs.

Another research was made by Girmay (1983) "The Phonology of Tigrinya" has presented a brief description of the phonemic system, consonants and vowels, supra-segmentals, consonant clusters, syllable and morpheme structures. In this study, he identified twenty nine (29) consonant and seven (7) vowel phonemes. With regard to consonant and vowel phoneme the present work in line with the work done by Girmay (1983).

The other contribution came from Tasfay (1993) "Word Formation in Tigrinya" in which he discussed that Tigrinya word formation involves derivation and compounding. In forming stems, a vowel gets inserted in the consonantal root. As the result various nominal and verbal stems are produced.

He further explained that Tigrinya compounds generally comply with properties of compounding in other languages. Tigrigna compounds are left- headed whereas complex words are right-headed. With regard to lexicalized compounds phrases and idioms, they can be taken as simple words. However, he hasn't discussed how compound words form their plural formation.

Another work on the language was by Tsegaye (1987), unpublished senior essay entitled "Derivation of Nouns in Tigrinya". He discussed that derived nouns in Tigrinya can be formed adjectives, other nouns and deverbatives (the derivation of noun from verbs).He further explained that the derivation of noun from verbs is more productive than from adjectives and nouns. He also discussed that out of several derivational processes the one with the vowel pattern change and affixation is the most common.

Another contribution came from Tsehaye (1979), in the grammar book "Reference Grammar of Tigrinya", and described about Tigrinya phonology, morphology and syntax.

In the phonology section, the phonemes of Tigrinya consist of consonant and vowel. He classifies and described according to their point and manner of articulation. With regard to the classification of vowel phonemes, the degree of the tongue height (high, mid, low) and the position of tongue movement (front, central, back) are taken into consideration. With regard to the number and type of phonemes there are differences with the current study. In the is description made by Tsehaye labiovelar [k^w g^w k'^w] are considered as distinct phonemes whereas in the present study labeled as secondary modifications.

In the morphology part, the author presented some of the general morphological principles of Tigrinya word structure. According to him, the most common word formation is that forming simple stems from roots.

One of the Semiticists Ullendorff (1955), who produced quite a lot on Tigrigna, is worth mentioning. His book 'The Semitic Language of Ethiopian" is a great importance. There are some points in which his work disagrees with that Girmay (1983) and present study. These are:

Ullendroff (1955:33) considers /n/ as a liquid excluding the other nasal. In Girmay (1983) and the present study observes the existence of /n/ and other nasal segments. There is also discrepancy as to the number of consonant phonemes. Leslau (1941), Ullendorff (1955) and Girmay (1983) identified 31, 32 and 29 consonant phoneme respectively. The present study agrees with Girmay (1983). Such discrepancy between various authors could possibly due to the time gap in which the researches have taken place and the dialectal variations. Leslau (1941) and Ullendorff (1955) have considered the labiovelar [k^w g^w k'^w] as distinct phonemes Girmay (1983) regarded them as secondary modification.

From the review of literature we have surveyed there was no study made on the theory of Lexical Phonology and Morphology in Tigrigna.

Thus far our above discussion is focused on the descriptive works on Tigrigna. In the following section we shall look at the literature on the application of the notions of LPM in the context of other Ethiopian languages as well.

Abiy (2008), in his unpublished M.A thesis "Some aspect of the Lexical Phonology and Morphology of Harari" has given a brief description of the Harari people and the language. He also discussed some of the phonological and morphological processes in word formation processes of Harari language.

His work argues that Harari should have a three Lexical Strata these are Stratum I, Stratum II, and Stratum III.

According to the same writer under Strata I, of the morphological component there are different words and stems derived from consonantal root which contain basic semantic notions. In the phonological counterpart, there exist various vocalic patterns which are abstract affixes that have different morphological and syntactic information.

In the Strata II, in the morphological component there are various derivational and inflectional processes. In parallel in the phonological part in same the stratum different phonological processes such as assimilation, insertion, and deletion are taken place. On the other hand, Strata III comprises words formed through compound. At the end, he discussed some of the constraints of LMP in light of Harari language.

Some of the findings of Harari are different from the findings of the present study. One of these is the status of clitic in Harari. According to Abiy (2008) clitic in Harari belong to Stratum II, Nevertheless, in Tigrigna clitic should be out of the lexicon. It is argued that clictic cannot be considered as an affix as they fail to produce new lexical items. The other significant difference with Harari is in relation to compounding. In Harari compound words formed from verbs are extremely productive whereas in Tigrigna compounds formed from noun are most productive.

With regard to the proposal of lexical strata, however, the present study is in line with Harari, which also assumes three lexical strata.

The other significant research carried out by Mullen's (1986), under the title "Issues in the Morphological and Phonological Amharic: The Lexical Generation of Pronominal Clitic", a PhD dissertation. She gave an extensive discussion on

Lexical and Post-Lexical component that put the theory of LPM into practice on Amharic. She proposed three lexical strata for Amharic. With regard to place of clitic unlike Harari and Tigrigna, Amharic places it in strata III.

In general, in terms of the descriptive aspect of the phonology and morphology the language has been well-studied. The present study, discusses some areas of discrepancies with the previous studies. The main objective of this thesis is however, to look at the fact of Tigrigna in light of the concept and principles of the theory of LMP, particularly to investigate the interface between the phonology and morphology of Tigrigna. This aspect of Tigrigna has never been addressed.

2.2. Conceptual Framework: Lexical Phonology and Morphology

Throughout its long history, the sub-field of phonology has passed different stages of development. Phonology has been seen from different perspectives by linguists of different times, place and orientations, the focus of this section, nevertheless, is not explaining theses different of stages of development, but shedding some light on the theory of Lexical Phonology.

To begin with, Lexical phonology was a programme of research developed during the 1980's by a number of phonologists, including Paul Kiparsky (Kiparsky 1982: Kiparsky 1985 :), Mohanan (Mohanan 1982) and Douglas Pulleyblank (Pulleyblalnk 1986).

According to Katamba (1989:257), in LPM "the lexicon is recognized as a central component of the grammar which contains not only idiosyncratic properties of words and morpheme, but also regular word formation and phonological rules. It is assumed that word formation-rules of morphology are directly paired with phonological rules grouped together at various levels".

He also further stated that "the output of each morphological rule is cycled through the phonology so that the relevant phonological rules of that level are applied to it".

"One of the main claims of LPM is that both inflectional and derivational word formation-processes can be displayed on a series of linked LEVELS (also called STRATA)" (Katamba,1989:257). The chart below adapted from Kiparsky's (1982), cited in Durand (1990), and illustrates how the lexicon is organized.

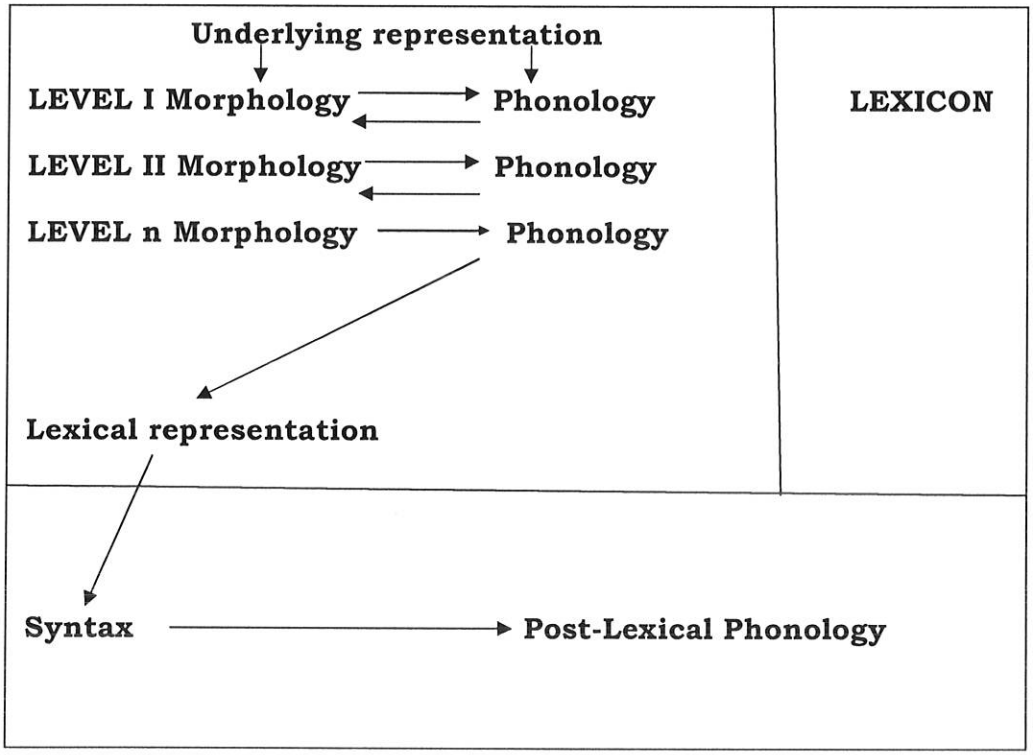


Chart 2: The Model of Lexical Phonology and Morphology adopted from (Durand, 1990:175).

The crucial assumption made by lexical phonology is that some of the generalizations of the language are stated in the lexicon, in the morphological module which incorporates the semantic, phonological and morphological information of the language morphemes, while others are stated outside it (Gussenhov and Jacobs, 1989:123).

That is a distinction is drawn between lexical phonological rules and post-lexical phonological rules, the latter applying after the words have been inserted into the sentence. There are a number of key differences between Lexical and Post-Lexical Rules (Gussenhov and Jacobs, 1989:123).

1. "Post-lexical rules can apply ***across-word boundaries*** whereas lexical rules only build words in the lexicon post-lexical rules apply to words they have been formed in the lexicon and processed through the syntax. While the

maximal domain of application of lexical rules is the word, post-lexical rules can apply, across word-boundaries to words after they have been grouped together into phrases. Hence, the post-lexical phonological rule system is also called Phrasal Phonology" (Katamba, 1993:106-107).

2. ***Creation of novel forms*** Lexical rules may be structure preserving. But, post lexical rules are not subject to any structure preserving constraint. Post-Lexical rules create structure that break the lexical template of the language which is allowed within the lexicon. As opposed to this, the lexical rules may not produce a form that could not be a phonologically well-formed in a language (Katamba, 1993:107).

3. ***Reference to morphological label.*** Since lexical rules apply inside the lexicon and post-lexical rules don't, the former, but not the latter, have access to category labels like nouns, verbs etc,.
(Gussenhov and Jacobs, 1989:124).

4. ***Lexical rules are cyclic*** whereas post-lexical ones are not. Hence, the former reapply after each step of word formation; but, this is not the case for the latter. (Booij ,1994: 469).

5. ***Lexical rules apply before post-lexical rules*** Words get inserted into post lexical structures in their lexical representation; i.e. after all lexical rules have applied (Gussenhov and Jacobs, 1989:123).

So far we looked at the distinction between lexical and post-lexical rules. Let us see some of the basic theoretical assumptions in LPM. These are:

1. Strict Cyclic Condition (SCC)
2. Bracket Erasure Convention (BEC)
3. The Elsewhere Condition (EC)

One of the first assumptions in LPM is that Strict Cyclic Condition (SCC) Kiparsky (1982: 154), cited in Kaisse and Shaw (1985: 395) in Kriedler, (2001) states the following:

A. Cyclic rules apply only to derived representations

B. A representation 'Φ' is derived with respect to rule R in cycle j iff 'Φ' meets the structural analysis of R by virtue of a combination of morphemes introduced in cycle j or the application of a phonological rule in cycle j.

Trisyllabic Laxing Rule is a good example that illustrates the principle of Strict Cyclic Condition (SCC). In derived words, this rule changes a tense vowel (i.e. a long vowel or diphthong) of a stem to a lax vowel (i.e. a short vowel) when ever suffixation creates a word of three or more syllables:

di-vi-ne ~ di-vi̱-ni-ty	va̲in ~va̲-ni-ty
(/ai/→/i/)	(/ei/ → /i/)
con-fi̱-de ~con-fi̱-dent	ath-le̲te ~ ath-le̲-tic
(/ai/→/i/)	(/i:/→/e/)

(Katamba, 1989:123)

Having in mind the *trisyllabic laxing* rule, use the principle of Strict Cyclicity to explain why the tense stem vowel in word like *nightingale* /na̲itingeil/ and *ivory* /a̲iv∂ry/, which appear to meet the requirements of the trisyllabic laxing, fail to undergo it. (If trisyllabic shorting applied, instead of [na̲itiŋgeil] and [a̲iv∂ry] we would say *[ni̱tiŋgeil] and *[i̱vory]) (Katamba, 1989:123)

The explanation is that, although these words contain the minimum of three syllables required by the trisyllabic laxing rule, this does not rise through suffixation. Both words contain just a root morpheme on its own. They are entered in the lexicon as fully-formed underived word.

The other significant principle is Bracket Erasure Convention (BEC). According to this principle, "at the end of each layer of derivation information considering bracketing and any morphological, phonological or other properties *internal* to the word is obliterated by the Bracket Erasure Convention. The output of each layer of derivation is a word-and it is only the fact that it is the word that matters. The existence of Bracket Erasure Convention means that all words are treated in the same way when they enter the next stratum. Besides, their internal structure is not taken into account" (Katamba, 1993:125).

Another basic concept of LPM is that the Elsewhere Condition (EC), which states, this principle can be stated formally thus "if two rules compete for the same territory, the more specific rule applies first, the blocking the more general rule" (Katamba, 1989:270).

Rules 'A' and 'B' in the same component apply disjunctively to a form 'Φ' if and only if:

(i) The structural description of A (the special rule) properly includes the structural description of B (the general rule)
(ii) The result of applying A to 'Φ' is distinct from the result of applying first, B to 'Φ'. In that case, A is applied first, and if it takes effect, then B is not applied. (Kiparsky, 1982b:8) cited in (McMahon, 2000:42).

Normally, a more specific rule applies first and later the general rule applies elsewhere. In inflectional morphology, for example, the formation of past tense forms of strong (irregular) verbs belong to level I while the more general rules

deriving the past tense forms weak (regular) verbs belong to level II. The following example from English illustrates how EC apply:

a) [sing + past] ⟶ sæŋ (level I)
(Pre-empts regular past tense formation).
b) [love + past]
(i) no access to level II morphology: miss any level I word-formation rule)

(ii) [l v + d] ⟶ [l vd] (level 2 regular past)
(love + ed ⟶ (loved) (Katamba,1989: 27).

As a model attempting to integrate phonology and morphology, LPM is informed by developments in both these areas. Hence, its major morphological inputs stems from the introduction of the lexiclalist hypothesis.

As Aronoff (1976:4), as cited in McMahon (2000:35), observes "within the generative framework, morphology was for longtime ignored. There was a good ideological reason for this: in its zeal, post-structuralist linguistics saw syntax and phonology everywhere, with the result that morphology was lost somewhere in between."

The inclusion of traditional substance of morphology within syntax meant that, in the Aspect model (Chomsky 1965), no distinction was drawn between word building and sentence building operation. All distributional regularities were necessarily captured using transformational rules, which derived related surface structure form a common Deep Structures McMahon (2000:35).

Chomsky focuses on derived nominals, such as *criticism, reduction, transformation* and *recital*, although it is clear that these should be regarded as test-case, and that Chomsky's proposal generalise to all derivational

morphology. Chomsky argues that these nominals are unsuited to transformational derivation while since, for example, the processes involved are characteristically unproductive the nominals themselves are semantically idiosyncratic McMahon (2000:36).

Chomsky concludes that T- rules should be used only to effect fully regular relationships; process like nominalization, which have lexical exceptions, should be instead handled in the lexicon McMahon (2000:36).

The removal of derivational morphology as a linguistics sub-discipline separated from Phonology and Syntax and the location of morphological processes in the lexicon also gave the rise to lexicalist syntax (Hokastra,Van der Hulst and Moortgt 1981)(Bresan 1982) and eventually to LPM McMahon (2000:36).

Consequently, most morphological work after 'Remarks' (Halle 1973,Siegel 1974, Aronoff 1976, Allen 1970) have proposed that word-formation rules perform morpheme concatenations rather than linking independent lexical entries McMahon (2000:36).

The extension of the lexicalist hypothesis since Chomsky (1970) has led to the inclusion of morphological processes other than derivational in the expanded lexicon McMahon (2000:39).

Halle had already argued that a generative model of morphology should not be limited to derivation, but that 'facts that traditionally have been treated under the separate heading of inflectional morphology must be handled in completely parallel fashion' Halle (1973:6) as cited in McMahon (2000: 40).

Liber (1981) cited in McMahon (2000:40) follows this lead and adds inflectional affixation to the inventory of lexical process, on the ground that inflectional

stem allomorphs may form that input to derivational and compounding, so that all these word-formation processes should take place in the same component. The assumption is that all morphology is lexical is one shared by most proponents of LPM, including Kiparsky (1982, 1985), Mohanan (1982, 1986) and (Halle and Mohanan (1985).

Phonology is also another significant input for the development of LPM. Morphology is not the sole inhabitant of the lexicon; rather, there is a considerable interaction with phonology McMahon (2000:42).

Siegel (1974), cited in McMahon (2000:42), did not motivate the division of derivational affixes into class I and class II solely by reference to morphological factors, but adduced additional evidence from their phonological behavior. In particular, Siegel notes that Class I affixes shift the stress of the stem, while Class II affixes are stress-neutral.

The primary input to LPM, is the abstractness within SPE, perhaps best introduced with reference to Kiparsky's (1982) account of Trisyllabic Laxing (TSL) in English. TSL laxes (shortens) any vowel followed by at least two vowels the first of which must be unstressed McMahon (2000:44).

According to this rule we can form *divinity* from *divine, sanity* from *sane, tabulate* from *table* and others can be formed in the same way. TSL was found to be problematic for words such as *nightingale, ivory, bravery, mightily*, etc. for instance, SPE assigned *nightingale* the underlying form /nixtVngæl/; further rules were then required to transform /ix/ into surface form [ai]. However, this stratagem promotes abstractness, and is adhoc, non-generalisable, and non-explanatory (McMahon, 2000:43).

On the other hand, LPM claims that, a single constraint can explain the non-application of TSL in the forms such as *ivory* and *nightgæle*, and prohibit the

derivation of words such as *camera, pelican and enemy* from remote underliers. LPM proposes to work on the Strict Cyclic Phonology where it is claimed that cyclic rules are only permitted to apply in derived environments. (McMahon, 2000:45).

2.2.1. Some Controversial issues in the Model of LPM

LPM is not a theory where all ideas and propositions are accepted by all its proponents warmly. There exist major and minor debate among the architectures and designers of the theory of LPM McMahon (2000:53).The following section discusses some of the major controversial issues in the model of LPM:

1. The distinction of lexical from post-lexical rules
2. The interaction of morphology and phonology
3. Stratification within the lexicon

(McMahon, 2000:36).

2.2.1.1. Lexical and Post-Lexical Rules

In Standard Generative Phonology (SGP), to derive the simplest possible phonology led to rejection of the classical phonemic level of representation or any equivalent to it. However, LPM has three linguistically significant levels of phonological representation. It shares the underlying representation of individual morphemes, and the phonetic representation with the SPE model. But, LPM also includes the lexical representation the output of the phonological derivation at the end of the lexicon, which involves neither morphemes nor phrases, but words (McMahon, 2000:54).

All this, however, rests on a clear distinction between lexical and post-lexical rules or rule applications; and that clear distinction seems in some respects to be breaking down. McMahon (2000:54).

As indicated above, in LPM it has been assumed that there is a clear distinction between lexical and post-lexical rules or rule applications. This however seems in some respect not true. Some post-lexical rules may show properties hitherto seen as lexical McMahon (2000:54). With this regard, Carr (1991) as cited in McMahon (2000) illustrates the post-lexical neutralization rule of Tyneside weakening, whereby /t/--->/ɾ/ in word final intervocalic position, as in *not a chance, put it down, delete it.*

Carr (1991) notes that weakening does not affect *feet* like *putty, fitter*, which are formed in the lexicon, but only those created post-lexical by cliticization, and concludes that we require a notion of post-lexical derived environment effects and lexical diffusion to the lexicon. Accordingly, there is a growing awareness in LPM that the lexical and post-lexica division may be gradient. In line with this , Kasse (1980:130) as cited in McMahon (2000:55) observes that ' the most lexical rules occur at stratum1, while less lexical characteristics emerge as one travels 'down' towards the word level and the post-lexical level(s)'.

Equally, we might expect those post-lexical rules nearer the lexicon to share some lexical properties. That is to say, lexical rules may become progressively less lexical in character as we approach the post-lexicon; and conversely, post lexical rules may exhibit some properties to the lexical syndrome (McMahon, 2000:55).

2.2.1.2. Integration of Phonology and Morphology

One of the main choices for LPM is whether or not the model should be interactionsit, with morphological and phonological operations interspersed. This interaction was one of the major motivations for the development of LPM, and remains for many phonologists an attractive feature of the model; but it is not without its problems Some of these difficulties seem relatively minor McMahon (2000:55), for instance, certain affixes appear to display properties of both Class I and Class II, other morphological concerns are less tractable thus the existence of so-called Bracketing paradoxes has led to Aronoff and Sridhar's (1983) cited in McMahon (2000) contention that other Affix Ordering Generalization is invalid and Morphological level-ordering untenable.

Halle and Vergnaud (1987:78) cited in McMahon (2000:56) for example, consequently adopt a non-integrationist model, with a separate morphological model which precedes all phonology, and contact between the two components limited to the fact that 'morphology ..... creates the object on which the rules of phonological operate'.

Further development came from Badecker (1991:131) as cited in McMahon (2000:56) said "there is substantial content to the role of morphology in LPM even when Level Ordering is subtracted out". Despite all these, the balance seems on in favor of integrationist view. McMahon (2000:56) in addition to supporting the interactionist view provides the argument of other scholars in favor of integrationist. He notes that "we might wish to maintain an integrationist approach, with level ordering retained and respected for both morphology and phonology; this stronger version of LPM more in keeping with the origin of the model, and is the approach I adopt here" (McMahon, 2000:56).

Supporting the view of integrationist Harguges (1993), cited in McMahon (2000:56), demonstrates that phonology must precede morphology in some case, since morphology may necessarily refer to a derived phonological property, often stress. Furthermore, the domain of phonological rules may exclude material reflecting a morphological process: thus, Spirantisation in Luiseno fails to apply to reduplicative structures, while nasal harmony in Sudanese must precede and follow plural infixation. McMahon (2000) provides other pro-interactionist arguments and conclude that retaining an integrated model is justifiable.

2.2.1.3. Stratification

The topic of stratification covers both the question:

How the domain of application is to be stated for a particular rule?

How many lexical levels are needed?

The first issue is the domain assignment, the facts of English phonology, where the majority of phonological rules apply on only one level, motivated Kiparsky's (1982) hypothesis that "the phonological rules at each level of the lexicon and the post-lexical component constitute essentially independent mini-phonologies" (Kiparsky (1985:86) cited in McMahon (2000:57).

Each rule is assigned to a particular level or component, and each level in turn is defined by the rules which are located there. Although this model is perhaps suitable for English phonology in the unmarked case, processes which must apply in more than one component, like palatalization, would have to appear twice or more in the grammar, in this approach McMahon (2000:56). With regard to the number of lexical levels, there is variation among different scholars of the adherents of the theory of LPM; McMahon (2000) discusses competing views by different scholars. For instance, Booij and Rubach (1987)

advocate a restrictive principle attempt to limit the English lexicon to two levels as:

LEVEL I: Class I derivation, irregular inflection

cyclic phonological rules

LEVEL II: Class II derivation, compounding, regular inflection

post cyclic Phonological rules

Booij and Rubach (1987:414)

This model of lexical organization is claimed to be readily generalisable to Dutch and Polish, and may even be universal, although further investigation is clearly required. On the other hand, Halle and Mohanan (1985) cited in McMahon (2000) have produced data which, they claim, necessitates the four-way division of the lexicon. The following is their model:

LEVEL I: Class I Derivation, Irregular Inflection,

Stress, Trisyllabic Shortening .....

LEVEL II: Class II Derivation,

Vowel Shift, and Velar Softening.....

LEVEL III: Compounding

Stem-final Lengthening and Tensing

LEVEL V: Regular Inflection

/l/- Resyllabifiction.

Halle and Mohanan (1985) cited in McMahon (2000:59)

The arguments presented by Halle and Mohanan (1985) cited in McMahon (2000:68) and their evidence came from exclusively phonological, already a tacit admission of defeat in supposedly integrational theory. Morphological evidence for a division of class I from class II derivational affixes is very strong (Siegel 1974), but similar evidence for a division of Class II derivation, compounding and regular inflection is at best tenuous and at worst non-existent.

Chapter Three

The Phonemic Inventory of Tigrigna

3.1. The consonants

The present study is in line with Girmay (1983) who identified that there are 29 consonants phonemes of Tigrigna. The place and manner of articulation are considered for the classification of consonant phonemes. The consonants are shown in the chart below.

		Place of Articulation							
		Bi-labial	Labio-dental	Dental	Alveolar	Palatal	Velars	Pharyngeal	Glottal
Stop	Voiceless	(p)		t			k	ʿ	ʾ
	Voiced	b		d			g		
	Ejectives	(p')		t'			k'		
Fricatives	Voiceless		f		s	(š)	x	ħ	h
	Voiced				z	(ž)			
	Ejective						x'		
Affricates	Voiceless					(č)			
	Voiced								
	Ejectives				s'	c'			
Nasals		m			n	(ň)			
Lateral				l					
Flap					r				
Glides		w				y			

Chart III. The consonant phonemes adapted from Girmay (1983:17).

The consonant phonemes of Tigrigna presented in the chart above show consistency with Girmay (1983) and, some modification to Tsehaye (1979). In the consonant phonemes chart of Tsehaye (1979), dentals and alveolar are under the same column. Alveolar flap [r] and dental lateral [l] are put under the column liquids but the present study placed under flap and lateral column respectively. The consonant phonemic chart of Tsehaye (1979), shows that secondary articulations are labeled under labiovelar column. He also put labiodental fricative [v] in the consonant phoneme chart but the present study in line with Girmay (1983) excluded from the chart this could be dialectal variation or borrowing. As shown in the chart above, some of the phonemes put in the bracket are found to be loan phoneme. For instance, native speakers say *[bolis] instead of [polis] 'police' and *[basta] instead of [pasɨta] 'spageti'.

"Simultaneous association one segment with two C or V slots. This is the case when consonants are geminated (i.e. the same consonantal articulation is held for the duration of two consonantal beats) or when a vowel is lengthened (i.e. the same vowel quality is maintained over two V slots)" Katamba, 1989:170).

Gemination is phonemic in Tigrigna i.e. it makes meaning difference geminated in words. Geminations arise when two homogranic consonants meet at morpheme or word boundaries. It is also raised when identical consonants juxtaposed across a morpheme boundary. In Tigrigna, sequence of vowels is not permissible. Gemination is phonemic in the language and with the exception of pharyngeal and laryngeal phonemes that may be geminated in only very limited environments as indicated in Girmay (1992).

In Tigrigna consonant gemination may bring meaning difference in words as in the following examples:

1a. /ħalifu/ 1b. [ħallifu]

'he passed' 'he surpassed'

2a. /kida/ 2b. [kidda]

'go' (2f.pl) 'go to her' (2ms)

3a. /ħabilu/ 3b.[ħabbilu]

'he tempt' 'he get a cataract'

4a. /tə̀harisa/ 4b.[tə̀harrisa]

'ploughed' (f.sg.) 'taken care of' (during birth)

As it can be seen above, the gemination of consonant word medially brought a meaning difference in each pair.

3.2. Vowels

The present study identifies the existence 7 vowel phonemes in Tigrigna which is consistent with the previous studies of Girmay (1983) and Tsehaye (1979). They are given in the following chart.

	Front	Central	Back
High	i	ɨ	u
Mid	e	ə	o
Low		a	

Chart IV. The Vowel Phonemes adapted from Girmay (1983:23)

In the phonemic chart presented in Girmay (1983), show that the feature matrix for the consonant and vowel phonemes is put in the same chart.

The present work, however, places the distinctive feature matrix in separate chart with some modifications. In the charts below illustrate the distinctive feature matrices for Tigrigna consonant and vowel phonemes.

	p	b	p'	t	t'	d	f	s	z	s'	š	ž	č'	k	g	k'	h	ʿ	ʾ	ħ
Voice	-	+	-	-	-	+	-	-	+	-	-	+	-	-	+	-	-	-	+	-
Continuant	-	-	-	-	-	-	+	+	+	+	+	+	-	-	-	-	-	-	-	+
Strident	-	-	-	-	-	-	+	+	+	+	+	+	-	-	-	-	-	-	-	-
Distributed	-	-	-	-	-	-	+	+	+	+	+	+	-	-	-	-	-	-	-	-
Anterior	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
Labial	+	+	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Coronal	-	-	-	+	+	+	-	+	+	+	+	+	+	-	-	-	-	-	-	-
High	-	-	-	-	-	-	-	-	-	-	-	-	+	+		+	-	-	-	-
Low	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+
Back	-	-	-	-	-	-	-	-	-	-	-	-	-	+		+	+	-	-	+
Constricted glottis	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	+	-	+	+	-
Spread	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Long	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-

Chart V. Distinctive Feature Matrix for Tigrigna Obstruent

	ň	m	n	l	r	w	y
Consonantal	+	+	+	+	+	-	-
Continuant	-	-	-	+	+	+	+
Nasal	+	+	+	-	-	-	-
Lateral	-	-	-	+	-	-	-
Labial	-	+	-	-	-	+	-
Anterior	-	+	+	+	+	-	-
Coronal	+	-	+	+	+	-	+
High	-	-	-	-	-	+	+
Back	-	-	-	-	-	+	-
Long	+	+	+	+	+	+	+

Chart VI. Distinctive Feature Matrix for Tigrigna Sonorant

	i	e	u	∂	ɨ	o	a
High	+	-	+	-	+	-	-
Low	-	-	-	-	-	-	+
Back	-	-	+	-	-	+	-
Round	-	-	+	-	-	+	-

Chart VII. Distinctive Feature Matrix for Tigrigna Vowels.

3.3. Phonotactics

"The rules or constraints which reflects speakers' knowledge of what combination of sounds are allowed in their languages are variously referred to as Phonotactic Rules" (Katamba 1989:165).

Tsehaye (1979:35) discussed that in Tigrigna its word phonotactic are based on its syllable phonotactic. At word initial position, the permissible consonant sequence of a syllable is similar to that of a word. Neither a syllable nor a word begins with a vowel. Word medially however, it is possible to find a sequence of two consonants that are not permissible in a syllable.

All languages have phonotactics although their phontactics are not necessarily the same. For instance, Amharic permits two consonant sequences word finally; however, it is not possible (permissible) in Tigrigna. The phonotactis of Tigrigna does not permit the sequence of two consonants such as *[bɨrk] in word final or syllable final position. Hence, an epenthetic [i]is added to make it [bɨrki], which is permissible and pronounceable to the native.

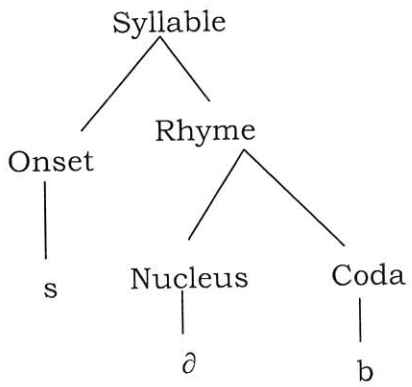
Tsehaye (1979:35) summarizes the phontactic rules of Tigrigna as follows:

1. There can be no vowel sequence in a word.
2. There can be no consonant sequences word finally or word initially.
3. A word never begins with a vowel.
4. There are only two types of a syllable /cv/ and /cvc/

3.3.1. Syllable Structure

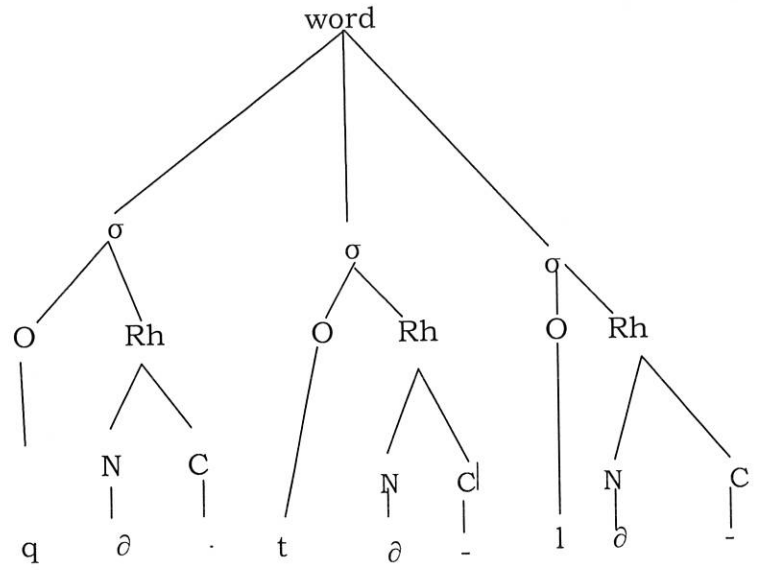
"The syllable is the unit in terms of which phonological systems are organized. It cannot be identified with a grammatical or semantic unit" (Katamba, 1989:153).

The syllable structure often plays an important role in conditioning the application of phonological rules internal to a language. Syllables in Tigringa consist of only /cv/ (a constant followed by a vowel) and /cvc/ (a consonant + a vowel+ a consonant). The vowel is a syllabic nucleus, while the first and last consonants of the syllable are onset and coda respectively. Observe the following examples.



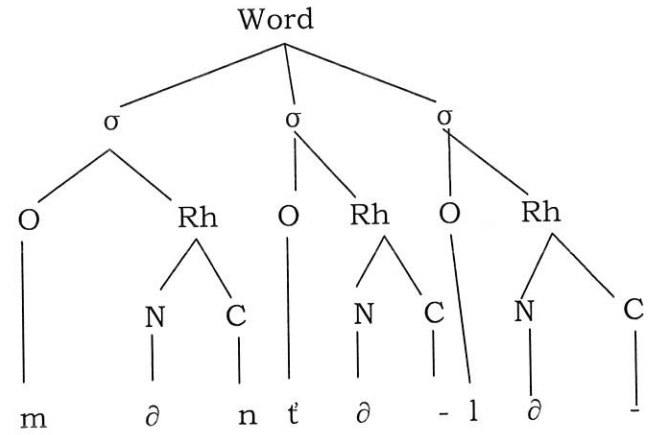
/səb/ 'human'

Figure1. The Syllable Structure of Tigrigna with One Syllable.



/qətələ/ 'he killed'

Figure 2. The Syllable Structure of Tigrigna with Three Syllables



/məntˈələ/ 'he snatched'

Figure 3. The Syllable Structure of Tigrigna with three syllables

As shown in above figures, one word may be one syllable or many syllables. [sɔb] 'human' (fig1.), is a word as well as syllable. In case of [qɔtɔlɔ] 'he killed' (fig 2.), is one word which has three syllables in it. [mɔnťɔlɔ] 'he has snatched' in (fig 3.), is a word which contains three syllables. The present study consistent with previous study of Teshay (1979) and Girmay (1983) indicated in the skeleton some syllables of Tigrigna have a nucleus or peak and an onset, while other syllables have a coda in addition to an onset and a peak. Moreover, each onset and coda position is occupied by a consonant whereas a nucleus position is occupied by a vowel.

Chapter Four

Phonological Processes

In this part, the different phonological processes observed in Tigrigna language are discussed. These processes include assimilation, deletion, and insertion; each of these are discussed with examples.

4.1. Assimilation

There are several assimilation processes that can be observed in Tigrigna language. Some of the processes are dealt with below.

4.1.1. Labialization

Labialization is one of the assimilation process whereby a sound with (labial) feature becomes a [+ labial] sound because it inherits this feature from the neighboring sounds (Katamba, 1989: 87). The following examples from Tigrigna below show this process.

1. /gɨnbar/ ⟶ [gɨmbar] 'front '
2. /mɔ̀nfas/ ⟶ [mɔ̀mfɔ̀s] 'sprit'

Rule I. $\begin{bmatrix} \text{-Labial} \\ \text{+ Nasal} \end{bmatrix} \longrightarrow \begin{bmatrix} \text{+ Labial} \\ \text{+ Nasal} \end{bmatrix} \longrightarrow / \begin{bmatrix} \text{+ labial} \end{bmatrix}$

Rule I Statement: A non-Labial nasal segment becomes Labial nasal when it precedes a Labial sound.

4.1.2. Sprintization

Spirantization can be considered as a kind of assimilation in Tigrigna. This happens when the phonemes [k]and [q] are preceded and followed by vowels as can be seen below.

3. /marəkə/ ⟶ [marixu]

'he surrender' 'he surrendered'

4. /barəkə/ ⟶ [barixu]

'he blessed' 'he has blessed'

5. /konə/ ⟶ [yɨxəwɨn]

'it happened 'it happens'

6. /qəbərə/ ⟶ [yɨx'əbir]

'he buried' 'he buries'

The following rule that govern the Sprintaization is given below.

Rule II. $\begin{bmatrix} -\text{cont} \\ +\text{high} \\ +\text{back} \end{bmatrix} \rightarrow \begin{bmatrix} +\text{cont} \\ +\text{high} \\ +\text{back} \end{bmatrix} / \text{V}\_\_\text{V}$

Rule II Statement: A stop becomes fricative when it appear intervocalically.

4.2. Deletion

This is one of the phonological processes where segments are reduced in the process of affixation. Let us consider the following examples.

7. /zɨ- / + /'amsʼɨʼə/ ⟶ [zəmsʼɨʼə]

causative marker. 'he brought 'one who causes to bring'

8. /zɨ -/ + /k'ətələ/ ⟶ [zək'tələ]

causative marker. 'he killed 'one who makes somebody kill someone else'

9. /səbiru/ ⟶ [səyru] 'he broke'

10. /gəbiru/⟶ [gəyru] 'he did'

As indicated in the above examples, in (7) and (8), as a result of the suffixation of the causative marker, /zɨ -/ bring the deletion of the segment ['']. This is also an instance of initial deletion. If the consonant position is filled by another segment, the epenthetic ['] can be deleted. Tesfay (1994) and Girmay (1991) discussed that the [a] following ['] is underlyingly /ə/ after the deletion of glottal segment ['']. In case of (9) and (10), are kinds of loss of segment word medially. It usually used for vowel loss. First [w] is deleted and then the [i] was latter changed to [y] (because when it was in consonant position an [i] becomes [y]).

This process is summarized in Rule III below.

Rule III. [α place]→ Φ /_____[α place]

Cons. Cons.

Vowel Vowel

Rule III. Statement: A sound is deleted when it is followed by another one of the same place of articulation.

4.3. Insertion

Insertion is one of the most frequent phonological processes in the Tigrigna language when the syllable structure of Tigrigna produced an impermissible sequence of segments at a morpheme boundary, then there must be some adjustment mechanism to avoid the impermissible sequences. One of these adjustment mechanisms is insertion which is the appearance of new segment in formerly unoccupied position. The inserted segment may appear word initially, medially or finally. The inserted segment could be a vowel or consonant in different positions. Consider the following cases.

The phonotactics of the Tigrigna language doesn't allow a sequence of vowels initially medially and finally then there are some adjustment mechanisms. According to (Tsehaye 1979:35), a glide is inserted between two vowels to make the vowel sequences permissible and pronounceable. Let us consider the following examples.

11. /sɨbə̀ri/ + /-o/ ⟶ [sɨbə̀riyo]

'you break ' 'it' ' you (sg.f.) break (it)'.

12. /'aytətəmɨhɨri/ + /-om/ ⟶ ['aytətəmɨhɨriyom]

'don't teach (sg.f.)' 'them' 'you (sg.f.) don't teach them (pl.m.)

13. /qətəlka/ + /-om/ ⟶ [qətəlkayom]

'you killed' 'them' 'you(sg.m) killed them (pl.m)'.

14. /qɨtəlu/ + /-om/ ⟶ [qɨtəluwom]

'you(pl.m) kill ' 'them' 'you(pl.m) kill them (pl.m)!'

As indicated in the above examples, the object suffix morphemes [-a] 'her' and [-om] 'them' are suffixed to the stem. However, these brought impermissible sequences of vowel, the glide [y]and [w] are added to avoid impermissible sequences of vowels. A glide insertion agrees in backness and highness with final vowel which it follows. For instance, in (11) the [i] in /sɨbəri/ is in nucleus position. But with the suffixation of morphemes with initial vowel [-o], it may become part of syllable where [o]is a nucleus. [i], which was peak in another syllable, may become an onset of the last syllable. Hence, it is possible that [i] in nucleus position becomes [y] in consonant position as in /sɨbəri/+ [o]→ /sɨbəryo]. By the same token, it can be observed that in the word final [u]in /qitəlu/ (16) is nucleus position. However, it may appear in consonant position as soon as [-om] is attached to the stem such as /qɨtəlu/ as for instance, /qɨtəlu/ +/-om/→ [qɨtəlwom]. The [u] which was in nucleus position can become an onset of the last that must be realized as [w]. The following rule can be formulated for [w] and [y] respectively.

Rule V. Ø → [+ son, -cons, +back, +round] / [+back, + round, +high, Vowels] — [- high, + round, + back, Vowels]

Rule V. A glide is inserted between two vowels where the first is high round vowel and the second is a non-high round vowel.

Rule VI. Ø → [+ son, -cons, -back, + high] / [α high, α low, -round, Vowels] — [-high, +round, + back, Vowels]

Rule VI. A high non-back round glide is inserted between vowels clusters where the first is a low non-back vowel.

On the other hand, the syllable structure of Tigrigna doesn't allow the sequence of two consonants word medially and word finally. So, the language makes use of the epenthetic vowel [ɨ]to make the sequence permissible and pronounceable (Girmay1991). The following are examples:

15a. /sɨ'ɨl/ 'pitcure' (sg)

15b. [sɨ'ɨlɨtat] 'pictures'

16a. /gɨnɨb/ 'wall' (sg)

16b. [gɨnɨbɨtat] 'walls'

As can be seen above the epenthetic vowel is inserted at the morpheme boundary in (19-20) to make permissible. In *[sɨ'ltat] and *[gɨnɨbtat] this is not permissible in the language since the plural morpheme marker [-tat] is suffixed to nouns that ends in vowel and [ɨ] is inserted to make it permissible. The following rule statement can be taken as vowel rule insertion.

Rule VII. $\emptyset \longrightarrow$ [ɨ] / cons_____ cons #

Rule VII: A high central vowel is inserted when a sequence of consonants clusters at word final position.

Chapter Five

Morphological Processes

Semitic languages, the bases or inputs word formation can be words, stems or roots and different morphemes, affixes, stems and words are added to them to form other words (Anderson 1985:35).

We will here discus the different morphemes, affixes, roots and stems that are used in word formation processes.

5.1. Affixes

Tigrigna can form words by prefixing, suffixing, circumfixing and infixing different derivational affixes to stems. Affixes can be distinguished in terms of their position to the stems they are attached to. (If the affixes precede the stems they are called prefixes. But if they follow the stems, they are known as suffixes.) Tigrigna is very rich in having affixes.

5.1.1. Suffixes

There are derivational affixes that we find suffixed to stems. If, for instance /x/ is a stem, and /y/ is a derivational suffix the output of the word formation is /x+y/. Let us discuss briefly below the various derivational suffixes in word formation processes.

5.1.1.1. -aj

This morpheme is suffixed to [-common] nouns such as /sudan/. The suffix [-ay] remain the same. When it is attached to the [-common] noun base which ends in a consonant.

If the [-common] noun ends in a vowel the suffix /-ay/ is changed to [-tay]. The following are some examples:

1. /sudan/ + /-ay/ ⟶ [sudanay]
   N Adj Adj

   'someone from sudan'

2. /saho/ + /-ay/ ⟶ [sahotay]
   N Adj Adj

   'someone from saho'

3. /'adwa/ + /-ay/ ⟶ ['adwatay]
   N Adj Adj

   'someone from adwa'

As can be seen above, the suffix /-ay/ is suffixed to /sudan/, /saho/ and /'adwa/ to from an adjective [sudanay], [shaotay] and ['adwatay] respectively. One can easily understand the meanings of the suffix /-ay/and [-tay] are consistent in the whole paradigms with the meaning 'someone from X country'. The segment [t] may be epenthetic segment.

5.1.1.2. -ɔjna

The base of /-ɔyna/ is a noun while its output is an adjective. Examine the following examples:

4. /bɔdɔl/ 'crime' + /-ɔyna/ ⟶ [bɔdɔlɔyna]
   N Adj Adj

   'one who commits crime'

5. /hayli/ 'strength' + /-ɔ̃yna/ ⟶ [hajlɔ̃yna]
N Adj Adj
'strong'

6. /fɔ̃rɔ̃s/ 'horse' + /-ɔ̃yna/ ⟶ [fɔ̃rɔ̃sɔ̃yna]
N Adj Adj
'horseman'

As shown above, the bases of /-ɔ̃yna/ are [+common] nouns and the output becomes an adjective. Therefore, the suffixed element can be taken as a category changing from a noun to an adjective. It is also possible to use /-ɔ̃ňňa/ especially people who have frequent contact with Amharic speakers.

5.1.1.3. -awi

The suffix /-awi/ which causes a change of its base word class into an adjective. The following examples illustrate this clearly.

7. /tɨgray/ + /-awi/ ⟶ [tɨgrawi]
N Adj 'a person belongs to Tigray'

8. /aksum/ +/-awi/ ⟶ [ksumawi]
N Adj 'a person belongs to Aksum'

9. /itɨyp'ɨya/ +/-awi/ ⟶ [itɨyop'ɨyawi]
N Adj 'a person belongs to Ethiopian'

As shown above, the word classes of the base are nouns while the addition of the suffix /-awi/ change the word class into an adjective. Therefore, the suffix /-awi/ function as deriving new word in Tigrigna.

5.1.1.4. -nna

/-nna/ is a category changing derivational suffix which changes the input which is an adjective into a noun. The following examples illustrate this:

10. /lɨʕul/ 'noble' + /-nna/ ⟶ [lɨʕlɨnna]
    Adj N N
    'nobility'

11. /tɨhut/ 'modest' + /-nna/ ⟶ [tɨhɨtɨnna]
    Adj N N
    'modesty'

12. /bɨʕlug/ 'ill-manner' + /-nna/ ⟶ [bɨʕlɨgɨnna]
    Adj N N
    'bad-manners'

In the above examples, the inputs are adjectives and they are changed to nouns. The change of the vowel could be due to assimilation or dissimilation processes.

5.1.1.5. -nnət

This morpheme changes nominals (nouns and adjectives) into nouns. The inputs could be either adjectives or [-abstract] nouns, but the output are [+ abstract nouns]. Consider the following examples:

13. /'arki/ + /-nnɔt/ ⟶ ['arkɨnnɔt] N

[-abs] N [+abs] N [+abs] N

'friend' 'friendship'

14. /mɔmhɨr/ N + /-nnat/ ⟶ [mɔmhɨrɨnnɔt]

[+abs] N [+abs] N [+abs] N

'teacher' 'teaching' (profession)

As can be seen from the above, the suffix /-nnɔt/ is a noun suffix which changes [-abs] and [+abs] nouns to [+abs] nouns. Semantically, the suffix element /-nnɔt/ expresses the notion of 'the fact of being X'.

5.1.1.6. -at -tat -an -ot -ti and -o

Singular	'gloss'	Sing +/-tat/-at/-an/-ot//ti/-o/	Plural
/gəza/	'house'	[gəzatat]	'houses'
/'ɨmba/	'mountain'	'ɨmbatat]	'mountains'
/waga/	'price'	[wagatat]	'prices'
/kɨbɨrti/(f.)	'dear'	[kɨburat]	'dear'
/hɨmmaq/	'bad'	[hɨmmaqat]	'bad'
/s'adɨq/	'blessed'	[s'adqan]	'blessed'
/məmhɨr/	'teacher'	[məmhɨran]	'teachers'
/šəqqali/ (m.)	'worker'	[šəqqalot] or /šəqqalo]	'workers'(m.)
/šəqqalit/ (f.)	worker	[šəqqəlti] or [šəqqalo]	'workers'(f.)
/gət'arit/(f)	'prostitute'	[gət'arot]	'prostitutes'

Table1.Tigrigna Plural formation through various inflectional affixes.

The above mentioned suffixes are plural morphemes externally suffixed to their singular nominal stems in the same way to the Amharic /-occ̆/, and English /-s/, /-iz/ and /-z/. According to Asmert (1983) the suffixed plural markers of the language are [-at], [-tat], [-ot],[-an] [ti] and [-o]. She also rightly suggests that [-ot], [-an], [ti] and [-o] are unproductive.

As shown in the above table, the morpheme [-at] and [-tat] are the only suffixes that found true plurals and more productive than [-ot], [-o], [-ti] and [-an] with regard to [-an] and [-ot], Moscati (1964:56) suggests that the suffix [-an] found only affixed to words borrowed from Geez, or connected to an affix typical to Geez. Moscati (1964) further suggests that the suffix element [-ot], [-ti] and [-o] are suffixed to agentives and to adjectives with the pattern /cəccac/or /cəccic/, it may be convincing to treat them as morphologically or lexically restricted plurals. The plural morpheme [-at] and [-tat] are suffixed to singular nominal stem that end in consonant and vowel respectively. Therefore, it is phonologically conditioned plurals.

5.1.2. Prefixes

Affixes of Tigrigna, with different purpose, can occur preceding the stem. If /x/ is a stem and /y/ is a derivational prefix, then the output becomes /y+x/. Consider the following examples:

5.1.2.1. 'a-

One of the derivational prefixes we find in Tigrigna is /'a-/. Its bases are perfective and gerundive pattern. Let us see the following examples:

15. /'a/ + /- səɾəħə/ ⟶ ['a-sɾəħə]

causative marker. 'he worked' 'he cause others to work'.

16. /'a/ + /-mɔs"/ ⟶ ['a-ms'ɨ'ɔ]

caustive marker 'he comes' 'he caused others to come'.

17. /'a/ + /- s'ɔlɔmɔ/ ⟶ ['a-s'ɔlɔmɔ]

causative marker 'it becomes dark' 'he caused others made dark'.

In the above examples, the inputs are /sɔrɔħɔ/ 'he worked' /mɔs'ɔ/ 'he comes' and /s'ɔllɔmɔ/ 'it becomes dark'. As the result of the prefixation of /'a-/ the forms bring the change of an agent (i.e. the transitive verb into intransitive). The transitive verb in /sɔrɔħɔ/ 'he worked', /mɔs'ɔ/ 'he comes' and /s'ɔllɔmɔ/ 'it become dark' are changed into ['asrɨħɔ] 'he caused others to work' (15), ['ams'ɨ'ɔ] 'he caused others to come' (16), and ['as'ɔllɔmɔ] 'it caused others made dark' (17), respectively as the result of the prefix /'a-/.

5.1.2.2. tɔ -

The other prefix we find in Tigrigna language is /tɔ-/. It is attached to the perfective and gerundive bases. Let us consider the following examples.

18. /tɔ/ + /-bɔlɔ'ɔ/ ⟶ [tɔ-bɔlɔ'ɔ]

passive marker 'he ate' 'it was eaten'

19. /-tə/ + /-barixu/ ⟶ [tə-barixu]

passive marker 'he blessed' 'he was blessed'

20. /-tə/ + /-ħarəmə/ ⟶ [təħarəmə]

passive marker 'he beat' 'it was beaten'

As the result of the presence of prefix /-tə/ the active voice /-bələ'ə/ 'he ate', /-barixu/ 'he blessed, and /-ħarəmə/ 'he beat' became passive voice [təbələ'ə] 'it was eaten', [təbarixu] 'he was blessed', and [təħarəmə] 'it was beaten' respectively.

5.1.3. Circumfixation

This is also a morphological process whereby a discontinuous morpheme is attached to a word or stem to form a new item in the lexicon (Katamba, 1993:45). Tigrigna has a negative morpheme /'ay-/. The morpheme /'ay-/ can occur before verbs. It is usually reinforced by /-n/.Thus, it can have the form of /'ay--n/ (Hetrzon, 1972; Payne, 1985) .The following are examples:

21a. /wəsəd-ə/

took-3ms

'he took'

21b. ['ay-wəsəd-ə-n]

not-took-3ms-n

'he did not take'

22a. /wəsid-u/

took-3ms

'he has taken'

22b. ['ay-wəsəd-ə-n]

not-took-3ms

'he did not take'

23a. /yɨ –wəssɨd/

3ms –take

'he takes'

23b. ['ay-wəssɨdɨ-n]

not-3ms –take-n

'he does not take'

In the above examples it can be observed that the form can work in perfective (21a), gerundive (22a), imperfective (23a).While (21a-23a) are the affirmative forms, (21b-23b) are the negative forms of the verbs. In (21b-23b) the form ('ay---n) can occur immediately surrounding the perfective, gerundive and imperfective forms.

But, it is not always the case that the negative form /'ay---n/ occurs only with verbs. In fact, it can be used with nominals (nouns and adjectives). Let us observe the following.

24. /'ay-səb'ay- ɨ -n/

not- man

'not a man'

25. /'ay-nɨssu- ɨ -n/

not - he

'he is not (the one)'

26. /'ay- dəffɨr- ɨ -n/

not- courage - he

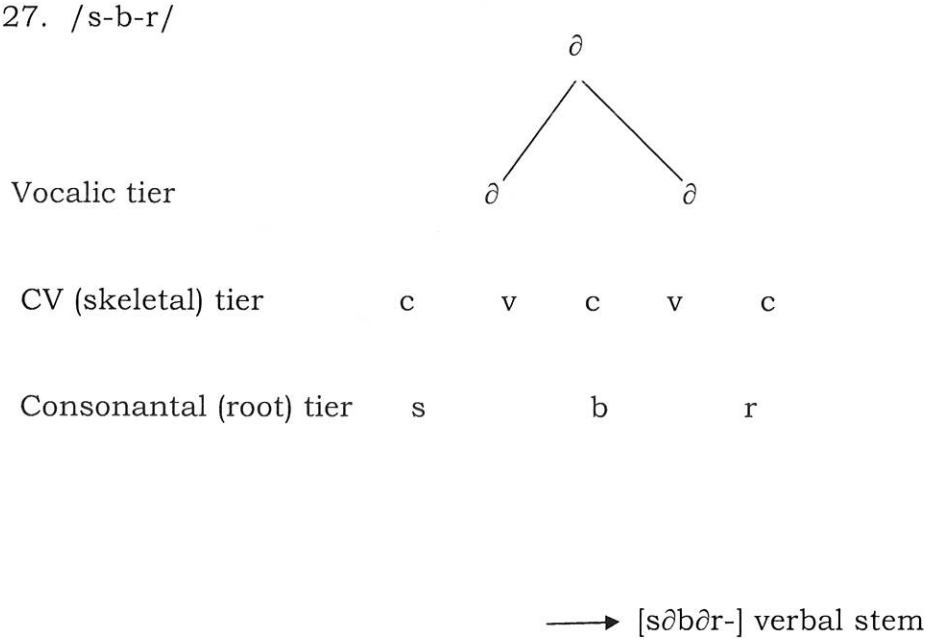
'he is not courageous'

As one can observe that the form/'ay...n/ can be found surrounding nominals.

5.1.4. 'Root-and-Pattern' (Infixation)

Tigrinya like other Semitic languages, make use of the root and pattern type of word formation process where the root is a set of consonants which contains the basic semantic meaning of the lexical item and the vocalic (vowels) melody bears morphological and syntactic category of the word or stem (Mullen 1986:123). Let us consider in the following example how simple stems are formed from roots.

27. /s-b-r/



As indicated above, in (27), the consonantal bear the basic meaning while the vowel pattern [ə-ə] is inserted to form the simple stem [səbər-]. If we change the vowel pattern [ə-ə] into [ə-i] or [ə-a] we can form different simple stems.

Besides, the basic meaning of the simple stem is similar because they are all derived from the same root [s-b-r] 'break'. The set of consonants [s-b-r] with the basic meaning is the root. Each of the consonants of the root is called a radical.

Thus, in the root [s-b-r] there are three radicals and hence it is named as a tri-radical or a trilateral root. On the other hand, a pattern consisting of a set of vowels is inserted among the consonants of the root. The vowel usually combined with affixes to form other words derived from the same root. Some examples with the roots /f-r-d/ and /q-t-l/ will illustrate.

28. /f-r-d/ 'root', basic meaning

[fɔrɔdɔ]
'he judged'

[fɔridu]
'he has judged'

[yɨfɔrd]
'let him judge'

[mɨfrad]
'to judge'

/fɔradi/
'judge'

29. /q-t-l/ 'root', basic meaning

[qətələ]
'he (has) killed' .

[yɨx'təl]
'let him kill'.

[qɨtəl]
'(you) kill'

[yɨqətɨl]
'he kills'

As can be seen above, in Tigrigna roots are tri-consonantal or quadric-consonantal. However, it can also observe that the latter are much less numerous than the former ones, while those less than three or more than four radicals may be regarded as non-existent (Girmay 1991).

As far as Tigrigna broken plurals are concerned, there are similarities with that of Arabic. According to McCarthy (1982), the prosodic template of Arabic plural is cvcvvcv(cv)c and some others forms derived from this. For instance:

singular	'gloss'	plural	'gloss'
mɨftaah	'key'	mafaatɨh	'keys'
nafs	'soul'	nufuus	'soul'
sahaabat	'clouds'	sahaa'ɨbat	'clouds'

Table2.The Prosodic Template of Arabic Plural.

McCarthy (1982:82) has further explained that Arabic tri-lateral frequently add an extra consonant to fill the extra c---slot in the plural prosodic template and others reduce or lose the super numeracy of consonants. Therefore, their forms could fit into a four consonant template. Tigrigna broken plurals have the pattern cvcvcvc e.g /'awalɨd/ 'girls' /mɔfatɨh/ 'keys', cvcvcvccv e.g /'at'aw ɨlti/'goats' cvccvc /'abqɨl/ 'mules', cvcvcv e.g /wɔxaru/ 'foxes', cvccvc e.g. /'a'man/ 'stones', cvccvcvc e.g /'axlabat/ 'dogs', cvcvc e.g /'abur/'oxen', cvcvccvc e.g. /dɔrawwɨh/ 'hens' (Tesfay, 1994:256).

Tigrigna broken plurals, in a way similar to Arabic, are formed not merely from their singular followed by affixes, but rather they have separate prosodic templates. Thus, in addition to the kind of broken plurals that templates of their singular forms serve as the bases, we can observe that there are different patterns of broken plural corresponding to different singulars (Tesfay, 1994:256).

There are different singulars with different numbers of consonants (e.g. two, three, four or even five) which have similar patterns in plurals. For instance, /'om/ 'tree' with two radicals, becomes /'a'wam/./sa'ni/ 'shoe' with three radicals becomes ['asa'ɨn], /mɔflɔs/ 'deer', with four consonants becomes

[mɔfalɬs]./'ns'ayti/ 'wood' with five consonants becomes ['a's'aw]. Thus, we can see that all have the pattern cvcvcvc within the plural (Tesfay, 1994:257).

5.2. Compounding

Tigrigna, in addition to the type of word formation mentioned earlier, has another way of forming words, i.e. compounding. Compounding is defined by Anderson (1985: 40) in the following way:

> *Word formation based on the combination of two or more members (potential) open lexical classes. But not every two words are combined together to form a compound, each language has its own definition or restricted combination system.*

Tigrigna compounds are two types: Exocentric and Endocentric.

5.2.1. Exocentric Compounds

"Headless compounds which do contain an element that functions as the semantic head which is modified by the non-head element." Such compounds are called exocentric compounds (Katamba, 1993:331). Semantically they are not compositional and their members cannot be identified as heads and non-heads. In the table below the compounds don't have heads. Semantically the components of each of the compounds are different from its constituents.

First member	gloss	second member	gloss	compound	gloss
/sɨnni/	'tooth'	/bitəy/	'calf'	[sɨnnibitəy]	'unrippened maize'
/ 'ayni/	'eye'	/mɨdri/	'earth'	['aynimɨdri]	'toilet'
/hawwi/	'fire'	/layto/	'night'	[hawwilayto]	'a kind of insect'
/ħamat/	'mother in law'	/təmən/	'snake'	[ħamattəmən]	' a kind of lizard'

Table 3.Exocentric Compounding of Tigrigna.

5.2.2. Endocentric Compounds

Most of Tigrigna compounds are endocentric, with the head normally on the right. Syntactically the head is the dominant constituent of the entire compound words. They are the kind of compounds that native speakers feel to be compound words. "In such compounds the head element (normally) appears as the right-hand most constituent of the word. The right hand constituent is the one whose syntactic category like (noun, verb, and adjective) percolates to the entire compound word. (in other word the head determines the category of the entire compound)" (Katamba, 1993:311). Let us see the following table.

head-position	'gloss'	non-head position	'gloss'	Compound	'gloss'
/mɔt'fi/	'extinguisher'	/hawwi/	'fire'	[mɔt'fihawwi]	'fire brigade'
/s'ɔhay/	'sun'	/bɨrhan/	'light'	[s'ɔhaybɨrhan]	'sunlight'
/ħalawi/	'keeper'	/kɔbti/	'cattle'	[ħalawikɔbti]	'shepherd'
/babur/	'train'	/mɨdri/	'way'	[baburmɨdri]	'tarain ways'
/zɔwwar/	'driver'	/makkina/	'car'	[zɔwwarimakkina]	'car driver'
/betɔ/	'house'	/tɨmhɨrti/	'School'	[betɔtɨmhɨrti]	'school'
/betɔ/	'house'	/mɔngɨsti/	'governer'	[betɔmɔngsɨti]	'palace'
/mɔraħ/	'leader'	/mɔngɨsti/	'governer'	[mɔraħɨmɔngɨsti]	'head of state'
/mɔs'ħaf/	'book'	/qɨddus/	'sacred'	[mɔs'ħafiqɨddus]	'bible'
/yeman/	'right'	/ 'ɨd/	'hand'	[yeman'ɨd]	right hand'
/s'ɔgam/	'left'	/ 'ɨd/	'hand'	[s'ɔgam'ɨd]	'left hand'

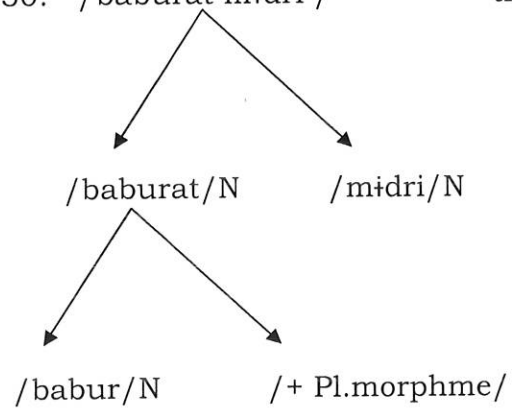
Table4. Endocentric Compounding of Tigrigna.

We can observe from Table 4 above that each of the compounds has a head and non-head and the syntactic category of the head percolates to that of the whole. In case of meaning, the head plays a dominate constituent of the entire compound words.

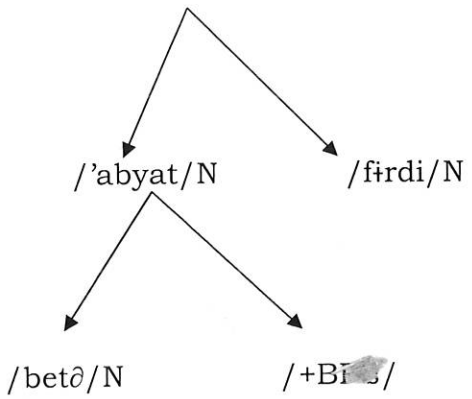
5.2.3. Compound Plurals

Tigrigna Compounds can have inflection referring to number attached to the head or broken plurals (BPs) percolated from head and Tigrigna compounds have their broken or suffixed member on the left as cited in Girmay (1983:43). Consider the following data:

30. /baburat mɨdri / 'trainways'



31. /'abyat fɨrdi/ 'courts'



As shown above, in (30) the plural suffix marker /-at/ has attached to the word /babur/ 'rail' which is the head word and the syntactic category of the head

word percolates to the suffix element /-at/. In case of the (31), the word /bðyt/ 'house' is the head word so that the infixed broken plural element percolates to the head word.

5.3. Conversion (Zero Derivation)

"Words may be formed without modifying the form of the input word that serves as the base. Thus, head can be a noun or verb. This is called Conversion or Zero Derivation" (Katamba, 1993:54).

As we can see from the following examples the inputs are nouns while the outputs are verbs.

32. /ħazðn/N 'sorrow ' ⟶ [ħazðn-ð]V ' he has felt sorry'

33. /sðfðr/ N 'place' ⟶ [sðfðr-ð]V 'he has settled'

34./sa'al/N 'cough' ⟶ [sa'al-ð]V 'he has coughed'

In the above examples, the nominals are free but the verbs are bound. The verb needs inflectional morphemes in order to be free and have full meaning of their own. The stems are also indicated as verb (V) to refer that they are bound. In (32-34), we can get [hazðn-ð] 'he has felt sorry' (32), [sðfðr-ð] 'he has settled' (33), [sa'al-ð] 'he has coughed' (34), derived from /hazðn/ (32), /sðfðr/ (33), /sa'al/ (34), respectively by zero derivation or conversion.

5.4. Clitic

"Most languages very possibly all except for most rigidly isolating type-have morphemes that present analytic difficulties because they are neither clearly independent words nor clearly affixes" (Katamba, 1993:337).

In Tigrigna we find the situation where clitic are suffixed to the verbal stem. In the following examples we shall see how clitic behave in Tigrigna language.

35. ħadə- səb nɨ-ħanti-dɨmmu-wəqqi-u-ww-a
one man to one (f.) cat (has) hit-3f.sg.-clt.
'a man hit a cat (f)'

36. goytom nɨ- ħanti -anbassa-yɨ-qətəl-o
goytom- to- the- lion -he-kill-him-clt.
'goytom will kill the lion'

37. nɨssu nɨ wədd-u 'ami wəsid-u-ww-o
he- for- son –his -clt. last year- took-he –him-clt.
'he took his soon last year'

38. nɨssa kəlbi qətil-a
she -dog (has)- killed -3f.sg.-clt.
'she has killed a dog'

As it can be seen above the clitic markers are /-o/ 'him' and /-a/ 'her'. The position of the clitic is attached to the right of words, usually to verbs. In

Tigrigna clitic cannot be considered as an affix. Affixes may change the syntactic category of the word but not clitic.

Chapter Six

Proposed Tigrigna Lexical Stratum

The proposal here is on the basis of the presentation and description of data presented from Tigrigna made so far. Before the presentation of proposed lexical strata for Tigrigna discussion should be done two aspects. Primarily, it should be considered that the issue of the number of lexical strata is usually debatable the theory of LPM. For instance, a well-studied language English, different theoreticians proposed different lexical strata Booij (1987) two, Kiparsky (1982) three (McMahon; 2000, in Kreidler (ed) 2000).

Secondly, even though there are different notions of number of strata, the proposed made for Tigrigna in the present study is not haphazard.

Thus, the criterion on the basis of which number of lexical strata for Tigrigna out lined below; thus, the number of strata proposed is basically, depend on the special characteristics feature of Stratum I and Stratum affixes. In LPM, it is assumed that the lexicon of any language has at least two strata and a post-lexical one McMahon (2000).

The primary reasons are based on the characteristics and behaviors of affixes found in stratum I and stratum II:

Most of the word formation processes carried out in Tigrigna is mainly from the consonantal roots which contain the basic semantic notion. The vocalic patterns are mainly affixes which bear morphological and syntactic information of the stem.

Most of the affixes that reside at stratum I are the ones which are semantically opaque and unpredictable (i.e. their meaning is difficult to pin down).

For instance, native speakers cannot easily identify or understand the meaning of the word [q-t-l] 'to kill' by mere looking at the consonantal sequence segment. Only with, the addition of the vocalic insertion as in [qəttəl-ə]' he killed', the form gives full meaning of the root. Besides, the affixes found in stratum I have a much more intimate relation with the root to which they are attached. As the language employs 'root- and- pattern' type of word formation, the sequences of vowels are inserted into the consonantal root. As the result various simple stems are produced.

Another important property of stratum I affixes is that they are less productive than stratum II affixes. The irregular plural formation process using [-an], [-ti], [-o] and [-ot] are the less productive plural formation in the language. On the other hand, the regular plural formation which employs the morphemes [-at] and [-tat], can produce a number of plural nouns, which are typically stratum II affixes.

Stratum II affixes would bring less drastic segmental change to the stem to which they are attached. Semantically, they are predictable and the meaning can be judged just by looking at the paradigm. Consider the English suffix /-er/, typical levels II affix, by suffixing /-er/ to verb base we can obtain an agentive nominal meaning, 'doer of the activity of X' designated by the verb' as in the following words: *reader, teacher, leader, speaker,* etc. Katamba (1993).

By the same token, in Tigrigna, we find the morpheme /-ay/ which is suffixed to nouns such as [sudan] 'a person from Sudan' [adwa] 'a person from Adawa' which yields [sudanay] and [adwattay] respectively.

The function of the suffix [-ay] is consistent with the whole pattern with the meaning 'someone from X country'.

It can be seen from the above discussion that stratum leveling reflects productivity. Thus, in the module, stratum I, which is at the top of the hierarchy contains less general rules, less productive and exception ridden whereas stratum II incorporates the more general rules and more productive rules. The upcoming section, brief presentations will be given on the various strata suggested for Tigrigna.

6.1. Stratum I

As indicated in the previous chapter, most of the word-formation processes are carried out by using 'root- and- pattern' morphological, rather than by the sequence of distinct morphemes. Stems are built from consonantal roots before other words are built from stem (Mullen 1986).

Tigrigna, like other Semitic languages, makes use of the 'root and pattern' type of word formation processes. A root is a set of consonants which contains the basic meaning of a lexical item. In stratum I of the morphological component, various nominal and verbal stems are derived from the consonantal roots. The counterpart of the phonological process at the same level is the merging of vocalic patterns in the consonantal roots.

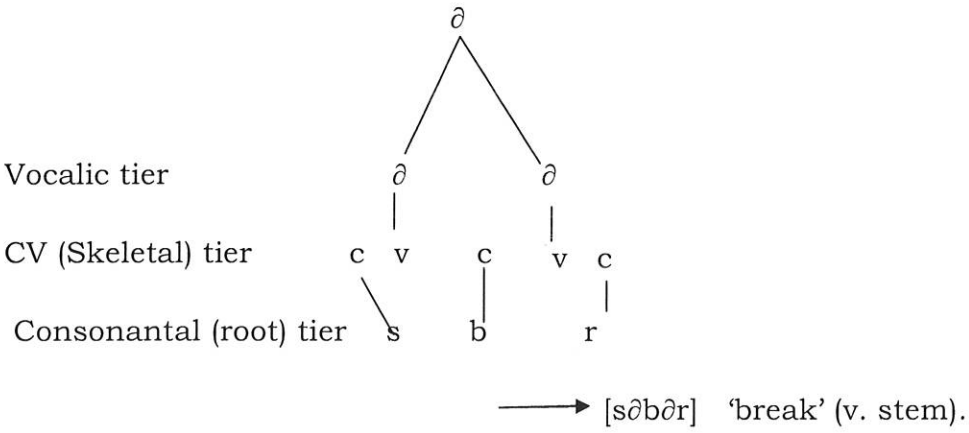
On the other hand, the meaning of the root is semantically difficult to predict. It is only when a set of vowel is inserted among the consonantal roots that the underlying consonantal roots surface as meaningful or partially meaningful lexica items. The various affixes (vowels) are found in the phonological component of the same level.

The processes of word formation that taken place at stratum I are forming of simple stem (a root modified by vowels) such as nominal stems and verbal stems.

The meaning of simple stems mainly rely on the type, number and position of vowels in the root and gemination of the second radical in the root.

The introduction of prosodic morphology which was initiated by McCarthy (1979) was a well-designed means of describing this kind of word formation processes.

Consider the following example, /s-b-r/ 'break'



As shown in the above example, the consonant bear the basic meaning while the vowel pattern [ə-ə] is inserted to form simple stem [səbər-]. We can obtain variant of [səbər-] by substituting the vowel pattern [ə-i], [ə-a] and [ə-u]. However, if we insert the same vowel sequence in a different consonant root, for instance, in [q-t-l] we produce a different form [s-b-r]. The meaning of lexeme is signaled at the root tier by the consonant segments. Usually the root has consonants in its underived lexical entry in the lexicon which contains unpredictable idiosyncratic phonological, grammatical semantic and lexical information about morphemes and lexical item.

The vocalic (vowel) melody tier, which is on the morphological component, result in formation of simple stems (nominals or verbal).

There are, however, some words (proper names, common nouns and underived adjectives) that are store in the repository as meaningful words; hence these items pass through Stratum I without any process applied to them and are submitted to the next level for further processes. For instance, the word [hagos] 'Hagos' is a name of person, [adwa] 'Adwa' is a name of region'. They are derived by submitting to the lexical phonological rule of the three strata. There is no word formation employed to produce such words. Besides, they appear in the lexicon with the phonological, grammatical and semantic properties with which they surface.

To finalize the discussion on Stratum I, it is should be noted that most of the affixes found in stratum I are less consistent and patterned as compared to stratum II affixes which are consistent in various paradigms. As we have seen in the preceding discussion, there are two ways of forming plurals: external affix (stratum II) and broken plurals (stratum I); the external involves the suffixation of plural/-at/ or /-tat/, the former is suffixed to the stem ending with a consonant phoneme and the latter is suffixed to the stem ending with a vowel phoneme. On the other hand, Tigrigna broken plurals are not formed from their singular followed by affixes, but instead they have separate prosodic template corresponding to different singulars.

Modern Tigrigna speaker are less likely to prefer the broken type of plural formation because of their irregularity. They are also making fewer mistakes when they use stratum II type than stratum I affixes. For instance, the plural suffix [-tat] and [-at] are the most productive forms in Tigrigna plural formation. These are also plural suffixes added to a new word (coming into a language). The loan word such as [biro] 'office', [polis]'police' [kompitər] can be pluralized as [birotat], [polisat] and [kompitərat] respectively.

It is also observed that affixes at stratum I characterized as a minor sub-system in the language and unproductive: the suffix [-ot], [-an], [-ti] and [-o] can be taken as the less frequent plural formation in the language. Moscati (1964) with regard to the suffix [-an] suggest that the suffix is found only attached to the words borrowed from Geez, or connected to an affix typical to Geez. He has also suggests that the suffix [-ot], [-ti], and [-o] are affixed to agentives and to adjectives with the pattern /cəccac/or/cəccic/ and treated them as morphological or lexically restricted plurals.

To wind up this section, various nominal and verbal stems are produced by employing 'root and-pattern' type of word formation processes. The consonants are the root which conveys basic semantic meaning and the vocalic pattern is the one that bears different morphological and syntactic information of the stems. We have also observed that the meaning of the stem is difficult to understand just by looking at the root, it mainly depends on the position, type, and number of the vowels and gemination of the second radical of the root of the consonants. It is also observed that affixes found in this stratum are less productive, exception ridden, cause drastic change to the root they attach, etc. After all these phonological and morphological processes have taken place various nominal and verbal simple stems that can be used as the bases for derivational affixes and inflectional processes proceed to the next stratum for further processes.

6.2. Stratum II

This is the level at which the various inflectional and derivational processes in the language takes place. The processes and affixes assigned at this level of lexical strata in Tigrigna qualify for the criteria listed above. The following behaviors are observed in Tigrigna most affixes have less intimate relation to the stem to which they are attached as opposed to stratum I affixes. As a result

they cause less segmental change to the stem. In addition, they are also more productive. For instance, we can produce several plural nouns by suffixing the morpheme [-at] and [-tat] to nouns that end in consonant and vowel respectively. Semantically words produced under stratum II are transparent in meaning. Besides, the patterns of the affixes in stratum II are consistent in the paradigm.

Most word formation processes, at this stratum encompass various regular inflectional and derivational affixes such as circumfixes, prefixes, suffixes, and conversion, etc. These various affixes can derive new words by changing the syntactic category of its base (i.e. Nouns change to Adjectives and vice versa), the subcategorizaion of its base (i.e. singular nouns becomes plural), and the feature (+/- count), (+/- animate), (+/-abstract) or (+/- common) of their bases.

In the phonological component, on the other hand, different phonological processes such as, insertion, deletion, gemination, metathesis and assimilation are common phenomena. Let us consider the following example from insertion and deletion.

1. /sɨbðri/ + /-o/ ⟶ [sɨbðriyo]

   'you break ' 'it' ' you (sg.f.) break (it)'.

2. /zɨ- / + /'amsʾɨʾð/ ⟶ [zðmsʾɨʾð]

   causative marker. 'he brought 'one who causes to bring'

The examples above are the phonological processes apply at this level.

6.3. Stratum III

This stratum belongs to words formed from compounds. In Tigrigna in addition to affixation and the 'root and pattern' word formation processes, there is also another way of forming words, i.e. compounding. The main reason for assigning compounding in stratum III is compound words show behaves differently word formation processes than those seen in stratum I and stratum II levels. The latter employs different affixal elements for its word formation process while the former mainly use words, not affixes as input for its word formation processes. In compounding, two or more words or stems combine to form one morphological unit. Semantically, the meaning of compounds may form the same or different from the compounds of each component. For these reasons compounding is processed at stratum III. For instance, [ħawwi] 'fire' is one lexical item and [layto] 'night' is another word. The amalgamation of the two produces with the meaning different from its constituents [ħawwilayto] 'a kind of insect' and in case of [babur] 'train' is a lexical item and [mɨdri] 'way' is another word .The composed meaning of the two is the same from its constituents [baburmɨdri] 'train way'.

The Lexical Strata Framework Proposed for Tigrigna.

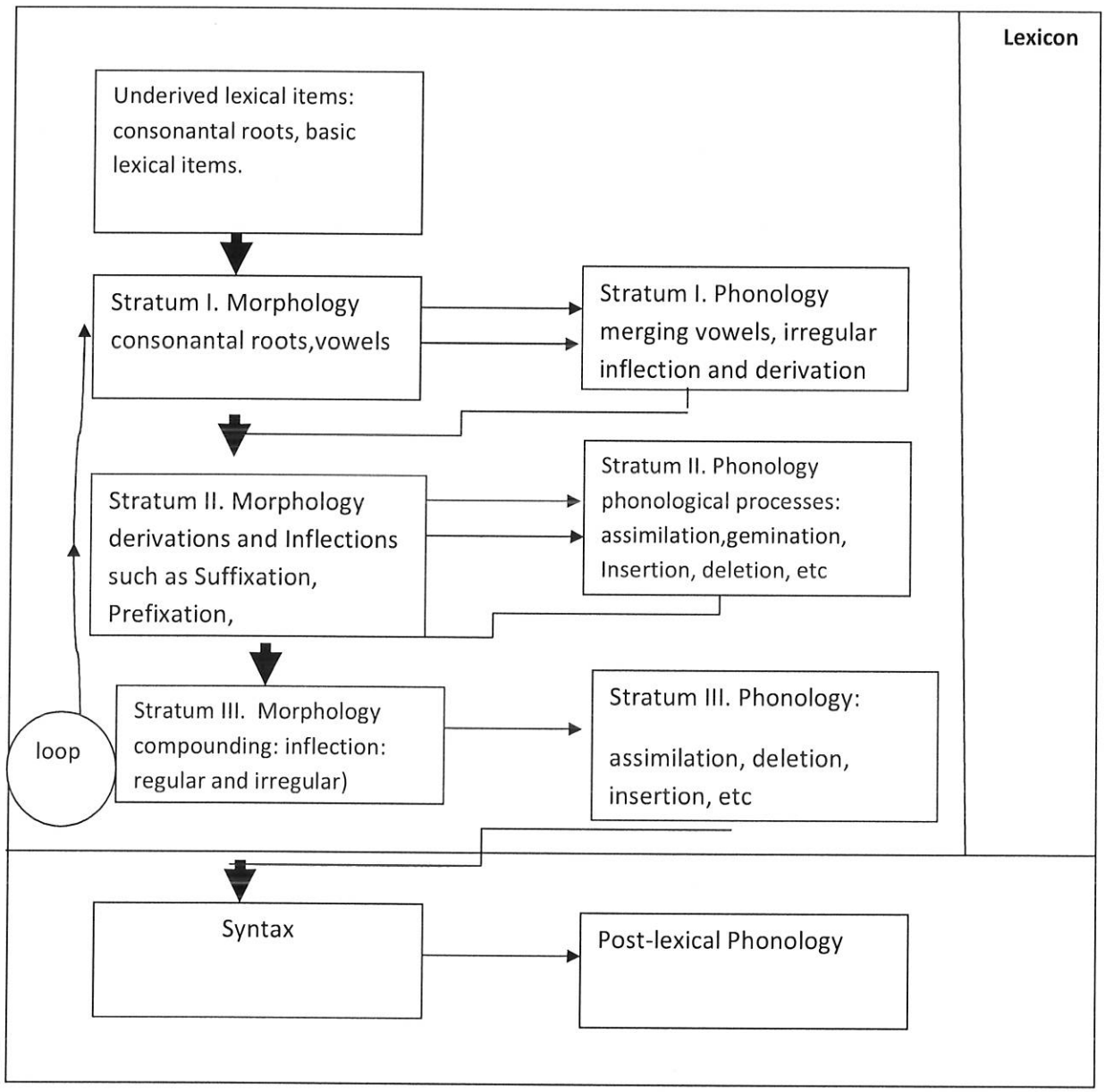


Chart VIII. The Lexical Strata Framework Proposed for Tigrigna

6.4. Some of the Basic Theoretical Constraints of LPM with facts of Tigrigna.

In the following section, we will examine the basic concepts and principles of LPM: Strict Cyclic Condition (SCC), Bracket Erasure Convention (BEC) and the Elsewhere Condition (E.C).some data from Tigrigna are presented below.

6.4.1. Strict Cyclic Condition (SCC)

One of the first assumptions in LPM is that Strict Cyclic Condition (SCC) in this model:

A. Cyclic rules apply only to derived representations.

B. A representation 'Φ' is derived with respect to rule R in cycle j if and only if 'Φ' meets the structural analysis of R by virtue of a combination of morphemes introduced in cycle j or the application of a phonological rule in cycle j.

Kiparsky (1982: 154) cited in Kaisse and Shaw (1985: 395).

This condition argues that lexical rules apply only to derived representation. LP rules like, Palatalization in Tigrigna apply only to derived representation. Palatalization fails to apply to forms that get their structural description underlyingly. As can be recalled, Palatalization is triggered by the presence of the front high vowel [-i]. But, Palatalization fails to apply even if they have the structural description of this rule. Consider the following examples.

3. a. /šəňňi/ 'accompany'

b. /sani/ 'shoe'

4. a.	/'ɬnka/	+	/-i/	['ɬŋki]
	'take' 2per. sg m.		fem marker	'take' 2per. sg f.
b.	/xun/	+	/-i/	[xuni]
	'become' 2per. sg m.		f.mrker	'become' 2per. sg m.

As can be seen from the above data, in 3(a-b) Palatalization fails to apply even if it its structural description is fulfilled. The condition responsible for restriction of this rule to 3 (a-b) is SCC. As the items in 3 get their structural description underlyingly but not because of rule application in Stratum II, Palatalization fails to apply. In 3 (a-b), however, it applies as these fulfill both structural description as well as the condition placed by this constraint.

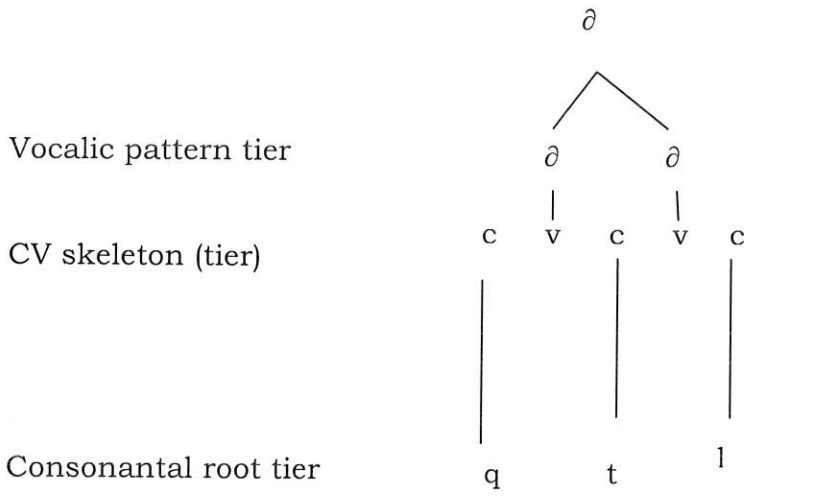
6.4.2. Bracket Erasure Convention

Another constraint of LPM is Bracket Erasure Convention (BEC). According to this principle, "at the end of each layer of derivation information considering bracketing and any morphological, phonological or other properties *internal* to the word is obliterated by the Bracket Erasure Convention. The output of each layer of derivation is a word-and it is only the fact that it is the word that matters. The existence of Bracket Erasure Convention means all words are treated in the same way when they enter the next stratum" Katamba (1993:125).

The following data from Tigrigna illustrate the principle of BEC:

/q-t-l-/ consonant root

5. Stratum I – insertion of vocalic pattern [-ə-ə-]



⟶ [qətəl-] verbal stem

6. Stratum II- . (Suffixation)

[[qətəl-] [-om]]

'kill' obj. Pronominal marker

[qətəlom]

'he killed them'.

7. Stratum II- negation (circumfixation)

[['ay [qətəlom] -n]]

Negative marker kill obj. pronominal marker.

['ayqətəlomɨn]

'he did not kill them'

As can be seen from the above examples, the application of Bracket Erasure Convention ensures that information concerning bracketing and any morphological, phonological or other properties related to the word is erased so that all words treated in the same way when they a certain lexical items arrives at a next Stratum. Rules cannot have access to information concerning the internal structure of a word that is provided at an earlier stratum. For instance, the negation process takes place at stratum II but cannot look back to the verbal stem which is found at stratum I.

6.4.3. The Elsewhere Condition

The other principle in LPM is the Elsewhere Condition (EC). According to EC, if two rules compete for the same territory, a more specific rule applies first and later the general rule applies elsewhere.

"The Elsewhere Condition guarantees the priority of the more restricted rule over the more general one. For example, consider the irregular Stratum I plural

formation in English. The latinate form *larv-a* has the plural form *larv-æ*. This is a very restricted pattern, even by the standards of latinate roots. So by the Elsewhere Condition, it must be assigned before other Stratum I plural affixes like [-a] in *strata* [-a] or [-i] in *cacti,* etc" (Katamba1993:125). In Tigrigna there are different ways of forming plural: broken plurals and regular formation of plural by external suffixes. Observe the following examples for illustration.

8. a.[šəqqali] 'worker' (m.sg.)

b.[šəqqalo] 'workers' (m.pl.)

c. [šəqqali] + [-tat] *[šəqqalitat]

pl. marker. 'workers' (f.)

9. a. [məftɨh] ' key' (sg.n.)

b. [məfatɨh] 'keys' (pl.n.)

c. [məftɨh] +[-at] *[maftɨhat]

pl. marker. 'keys'

As can be seen in 8, the EC is applied to prohibit the application of the more regular pluralization in favor of a less regular pluralization process. The application of the regular process in this example as in 8 (c), ends up in ill-formed structure. Similarly, the addition of more regular plural marker ends up in ill-formedness as in 9 (c).

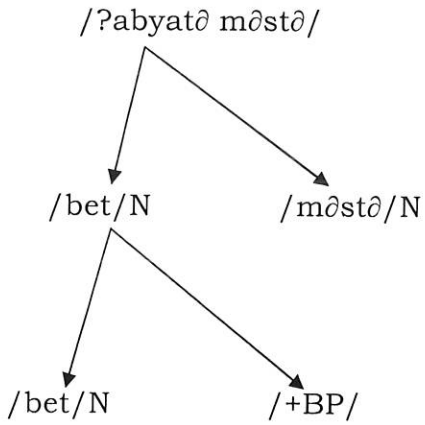
6.4.4. Loop Method

Lexical Phonology posits an asymmetry in the strata range of phonological as opposed to morphological rules. Whereas phonological rules are allowed to range over several strata as their assigned domains, morphological rules in contrast are strictly limited to an individual stratum.

Halle and Mohanan (1985:64) invoke a loop on the morphological side of the grammar which will cycle the output of level 3 back into level 2.

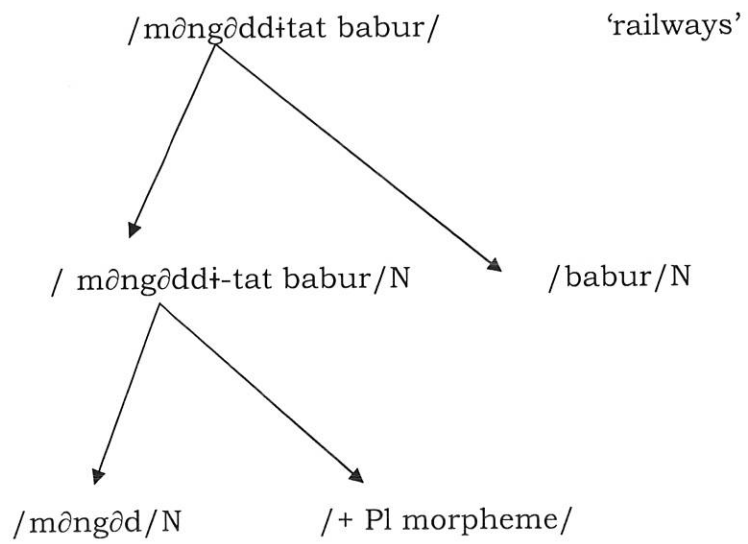
Tigrigna compounds can have inflection referring to number suffixed to head or broken plurals percolated from the head. Tigrigna compounds that belong to stratum III, by employing "Loop device", can cycle to stratum I and II. Consider the following examples:

10. Stratum I



'bars'

11. Stratum II



As shown above, in (10-11) are compound words which are under stratum III and their plural formatives belong to level I and level II strata. With the introduction of 'loop device' they can cycle back to stratum I and stratum II to inflect for number using broken plural (stratum I) and regular suffix morpheme (Stratum II).

Chapter Seven

Summary and Conclusions

7.1 Summary

In the present study the theory of Lexical Phonology and Morphology (LPM) has been discussed in light of the facts in Tigrigna. In the first chapter, a brief presentation concerning the people and the language of the study has been given. Besides, this chapter states the problem, the objectives, importance, scope and methodology of the study. In the second chapter, the theoretical frame-work of LPM has been dealt with against earlier theories. Then, survey of the existing literature has been made on the language under study. Afterwards, various phonological and morphological processes have been discussed with examples. The discussion and analysis made on phonological and morphological processes was considered as a base for employing the model of LPM. Accordingly, a discussion on the lexical strata in the language under study proceeded. At the end, some of the theoretical assumptions of LPM have been discussed with facts of Tigrigna.

7.2. Conclusions

On the basis of the above discussions and studies, Tigrigna should have three levels of strata: stratum I, stratum II and stratum III.

In stratum I, there are two components morphological and phonological. In the former there are various consonantal roots which bear basic semantic notions. In the latter, on the other hand, various vocalic (vowels) melodies get inserted into the consonantal root which convey different morphological and syntactic category of the stems and words.

In stratum II, in the morphological section various word formation processes such as suffixation, prefixation, circumfixation and conversion (zero derivation) were observed. In the corresponding phonological component different types of phonological processes such as assimilation, insertion, and deletion processes have been identified.

Compounding belongs to stratum III as it shows different characteristics in terms of word formation processes as opposed to stratum I and stratum II. Compound plurals can access to stratum I and II by a mechanism called "Loop device".

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