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CHAPTER ONE
INTRODUCTION

1.1 BACKGROUND

Tonga is a language that is spoken by a group of Bantu people called the Tonga who are found in Zimbabwe, Mozambique and Zambia. They live mainly in the Southern and Western provinces of Zambia. According to Shilington (1995:49), 'Bantu' is a term used by modern linguists to refer to "a particular family of African languages belonging to the wider Niger-Congo group" This group stretches across sub-Saharan Africa. This language group is identified by its own language values. According to Bloomfield (1933:151-7), languages have what are called unique values. The voiceless nasal stem '-ntu', the singular prefix 'mu-' and the bilabial plural prefix 'ba-' which is sometimes realized as labio-velar 'va-' are common values to the languages that belong to this family, hence, 'Bantu'. This literarily means people, though it is sometimes realized as 'muntu' denoting a singular human being or 'person'.

Tonga is one of the 450 languages belonging to this language group (Shilington 1995:51). Bantu is therefore the parent name of all the languages belonging to the proto-Bantu. The language evolved from present day Cameroun, though there are speculations that it was a language that was being spoken in the Niger-Congo area. From there, two Bantu streams emerged, one stretching west then southwards while the other one stretched East and then South as well. Tonga belongs to the eastern stream. This stream included areas in the present day Malawi, Mozambique, Zambia, South Africa, Swaziland, Botswana and Zimbabwe. According to Shilington (1995:57), early Tonga occupation of the Zambezi valley seems to have started in the second century AD. It is thought to belong to the eastern stream from Transvaal (Shilington 1995:57).

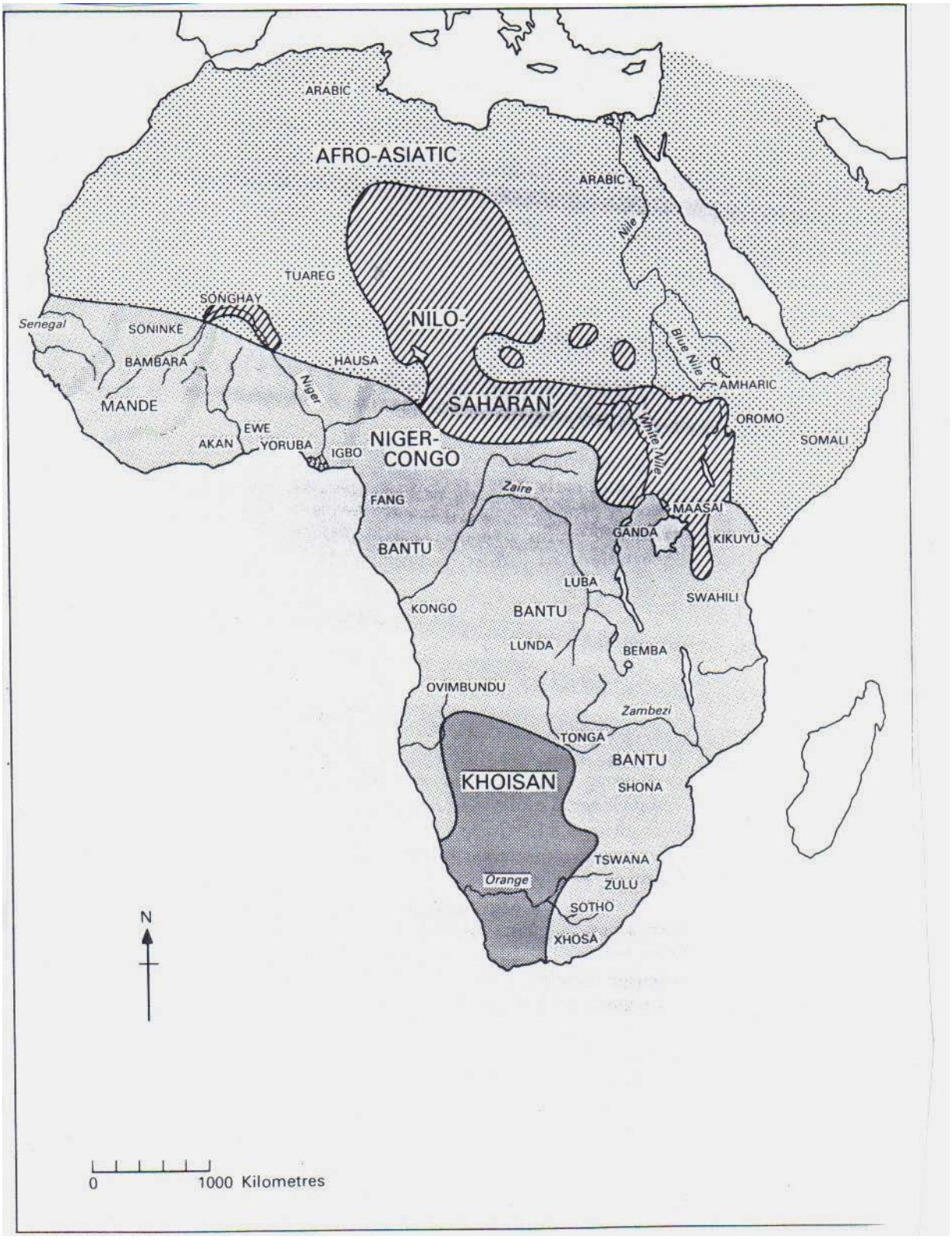
In Zimbabwe, it is prominent in areas such as Hwange, Binga and Kariba, which are northern parts of Zimbabwe (Raymond 2005:1). In terms of demography, it constitutes 6 percent of the total population of Zimbabwe, together with other minority language groups namely, Nambya, Venda and Kalanga (Mheta 2005: 287). Tonga is one of the

minority languages, spoken in Zimbabwe (Minorities Language Commitee 1984:45). A minority language is defined by Zivenge (2005:1), as “a language which is spoken by a very small population and is not very influential”. John (1984:33) defines it as a language spoken by a small and unrecognized community such that the language becomes a tool for domestic communication only. Zimbabwean Tonga has four main dialects, namely, Lla, Lwe, Toka and Leya. Tonga, by virtue of being a minority language, is less influential in Zimbabwe and it therefore, borrows from languages of wider communication that are more influential. There are a number of influential languages from which Tonga borrows but the most evident influence is English. This is because of its linguistic status in Zimbabwe resulting from a colonial history.

The British invasion of Zimbabwe, in the 1880s, and subsequent colonization resulted in cultural and political domination of the Tonga and other indigenous groups. Education, technology, media and new institutions of administration were also introduced to the Tonga people, among other locals. Tonga therefore, adopted vocabulary used in these new institutions. According to Chikanza (1986:1), media, new administration and formal education constitute foreign phenomena that further promoted the introduction of English concepts in Zimbabwe.

The political and linguistic contact between the Tonga and the British during this period resulted in the natural interaction of languages in a diaglossic scenario, where English was a high variety and Tonga a low variety (Mheta 2005: 287).

Figure 1: Language Map of Africa (Adopted from Shilington 1995:50)



In a bid to try and 'civilize' the indigenous African people in Zimbabwe, the British then introduced new concepts through institutions of education, technology, public administration, urbanization, social work and so on (Chikanza 1986: 8). The Tonga had to respond by attending formal education in schools. Some were converted to Christianity and were also compelled to conform to the demands of the new forms of governance, technology and to adopt new values of life. They were also compelled to speak English since it was the medium of instruction in schools and other public gatherings. To this Mazrui, (1966:295-311) says:

> an African in British Africa was regarded as an intellectual if he had acquired some fluency in the English language. Nor was this a simple case of using literacy as the ultimate test of intellectuality. An African who was widely read in Swahili but whocould not speak English was likely to be considered further from intellectual than a poorly read African who had acquired fluency in spoken English.

Tonga was in direct contact with English and borrowing was even expected, since English was a high variety language whilst Tonga was a low variety.

1.2 AREA OF INVESTIGATION

The purpose of this study is to examine the phonological and morphological processes that are involved during the nativization of words borrowed from English into Tonga. Haugen (1970:432) defines borrowing as "the attempted reproduction in one language, of patterns previously found in another". Nativisation is also defined as the integration of foreign words into one's native structure (Hock 1991:390). It (nativisation) is synonymous to what Chimhundu (2002: iii) refers to as adaptation.

The main aim of this research is to analyse the phonological and morphological changes that occur to those English words that are being incorporated into Tonga, as a result of

borrowing. English has phonological and morphological inventories that are different from those of the Tonga language. Since these two languages are different, the research accounts for how English words are then incorporated into Tonga, so that they become recognized in the Tonga linguistic environment (grammatically acceptable).

This entails studying the phonological and morphological changes that occur to English words as they find their way into Tonga. In this respect, the study on one hand, analyses phonological nativisation and on the other morphological nativisation. Phonological nativisation involves examining how English sounds that do not exist in the Tonga language are handled. It also examines how English words characterized by a unique syllable typology, are dealt with so as to conform to Tonga syllable configurations. Laver (1994:114), defines the phonological syllable as "a complex unit made up of nuclear and marginal elements". According to this definition, a syllable consists of a nuclears, which is a vowel and non-syllabic elements, which are regarded as marginal.

The study explores how the arrangement of nucleus and marginal elements of a syllable are handled during adoption of words from English into Tonga. The research is based on the auditory judgements by the native Tonga speakers. Emphasis is on where the English speakers place 'peaks of prominence' and marginal elements and how such sequencing is altered by the Tonga speakers. At this level, the research accounts for the handling of the English phonological system in the light of Tonga phonotactic constraints. According to Crystal (1997:392), phonotactics refers to the sequential arrangement of phonological units which occur in a language. It is also the framework of this study to investigate resyllabification (minimum prosodic constraints) that characterizes nativisation of English loans that exist in the Tonga language. Crystal (1997:375), defines syllabification as rearrangement of CV segments in a word or reordering of syllable boundaries in a

word. This entails analyzing how CVC syllabic words (English) are converted to CV (Tonga), during nativization.

In addition, the research discusses the morphological behaviour of English loans in the Tonga language. This section accounts for how English morphological patterns are handled to come up with morpheme structures recognized in the Tonga language. This entails examining processes such as prefixing, pluralization and tense inflections on lexemes. Prefixing is defined by Rodgers (1995: 65) as "the insertion of class prefixes onto words to make them explicit on noun word class reference" while tense affix is defined as "a morphological component that denotes time on verbal lexemes". Such processes are considered in this research because languages do not adopt incoming vocabulary in disordered fashions but appropriate linguistic rules are followed and respected. According to Rodgers (1995:80):

> During nativisation of terminology, the most important thing to consider is that words borrowed are always crafted in a totally different or somehow different linguistic environment. This thenfollows that the phonological and morphological structure of a foreign word, instead of being carried over as a unit into the recipient language, is adopted and then remodeled to take-up the phonological and morphological structure of the receiving language.

This means that while English has its own phonological and morphological patterns, nativisation processes such epenthesis, substitution and affixation enable the adopted words to be linguistically acceptable in Tonga. While the choice of consonant-vowel association patterns, in English words, is determined by CV-tiers permissible in English phonology, the changes to suit CV-tiers of the Tonga language are primarily the operation of the Tonga phonological rules. This means that the phonological and morphological structure of English words, instead of being carried over into Tonga, is phonologically and morphologically adapted through native creations, in accordance with the phonological and morphological demands of Tonga, considering rules governing the Tonga linguistic structure.

The research investigates how English words with closed syllables (coda) are handled to suit the Tonga phonological system that only accepts open syllables. This entails looking at vowel epenthesis on closed syllables with codas, found on English loans. The researcher attempts to account for the CV structure changes, for instance, from some monosyllabic English structures to polysyllabic Tonga typology.

Phonological nativisation in Tonga is more in foreign subject matter and as a result, key terms of technology, administration, health, music, religion and education are analysed.

1. 3 OBJECTIVES

This study seeks to explore how words borrowed from English are adapted into Tonga, hence the major objectives are:

a) to explore the phonological and morphological processes adopted by native Tonga speakers to nativise English loans.

b) to account for the nativisation processes from a Generative paradigm.

1.4 JUSTIFICATION

1.4.1 Introduction

1.4.1 Empirical justification

To the best of my knowledge, not much research has been done on the Tonga language, in particular on phonological and morphological nativization of loan words. Researches have been done in other African languages such as Shona, Bemba, Chewa, Tswana, Sotho, Swahili, Zulu and Ndebele.

First, this research therefore, is a starting point, to develop languages that are not developed. Tonga is just a spoken language in Zimbabwe that does not have written records. A phonological and morphological study is necessary to understand its behavior and to facilitate more studies and documentation so that it will become a written language

like other Bantu languages. According to Rodgers (1995: 112), languages that are not studied are regarded as unimportant and will consequently die a natural death. If they do, then speakers of these languages might shun them and automatically they become vernacular and they also remain underdeveloped. Following Rodgers' assertion, this study will open research in the subject, paving the way for its development.

Tonga is one of the 'minority' or 'community' languages of Zimbabwe that has not been given considerable attention by scholars in the past. This research discusses pertinent phonological processes such as epenthesis, substitution and resyllabification as these are important processes to any historical linguist. Valuable phonotactic constraints and morphological systems are also discussed enhancing more understanding of Tonga lexemes. The scope of this study therefore, is important to those who are interested in studying language change, development or furthering studies on phonological and morphological nativization of foreign words entering into the Tonga language and or how generative principles are useful in understanding language behaviour over time. It is hoped that the study is going to be a springboard for further studies on Tonga phonology and morphology, segmental phonology and prosodic morphology in particular.

Secondly, the government of Zimbabwe is insisting on the promotion of 'minority' languages, to make them recognized and used in the curriculum, communication, technology and research. The study of the Tonga phonology and morphology go a long way, to posit the language as complete and integral since it can handle loans successfully. This study might insightful to language policy makers and consider Tonga language to be used as a medium of instruction in primary or secondary schools. This therefore, means that this study is useful for law makers in Zimbabwe, Africa and the world at large. The study will also assist language policy makers to consider the Tonga language for corpus and status planning. The study can also attract language sponsors such as Culture Fund (CF), National Arts Council of Zimbabwe (NACZ), Culture Association of Zimbabwe (CAZ) and other such organizations to sponsor more researches in the language, enhancing its development and this subsequently enhances more literature in the language, which is a positive development for language building .

If the language is considered for nation building, then the participation of the native Tonga speakers in national and regional development issues will be enhanced. Researching and document ting data about the language will make people understand the language more and may relate its behaviour to other languages which fall into the same family or genealogy, enhancing understanding of all similar minority languages in the world.

Thirdly, for a language to be incorporated in the education curriculum, it should have been well studied, documented and should have well developed and established orthographies and grammars (Zivenge 2005:6). Not much research and documentation of this nature has been done on Tonga and this study, with a bias on phonology and morphology, can be insightful to those who would want to develop Tonga grammars and orthographies. Phonology and morphology are units from which grammars and orthographies are developed.

Fourthly, with advanced interaction and contact amongst languages, change is inevitable. Some languages develop and others die as a result of contact and subsequent borrowing. A language that borrows and adopts phonological and morphological elements of other languages that are characteristically different dies and those that borrow and nativize, maintain their status. According to Crystal (2000: i):

> the rapid endangerment and death of many minority languages across the world is a matter of wide spread concern, not only among linguists but among all concerned with issues of cultural identity in an increasingly globalized culture.

It is important to safeguard a language that is exposed to an influx of loans. An analysis of nativisation of English loans in Tonga is therefore, very significant as it focuses on how the recipient language, in this context Tonga, copes with these English loans to maintain or retain its phonological and morphological system and status in a global linguistic enclave. Nativization is thus a way of protecting the language from death, in situations of excessive borrowing. This study is thus insightful into the ways in which the

Tonga speakers handle loans which threaten the phonological and morphological structure of their language.

Though Tonga borrows from many languages such as Shona, Ndebele, Afrikaans and others, this study mainly focuses on the English loans, because English is one of the biggest contributors of loans in Tonga. English has phonological and morphological features that are different from Tonga and the infusion of English features into Tonga will in the long run be mistaken for Tonga features, if Tonga phonological and morphological behavior is not documented. In line with this assertion, Crystal (2000:6) says that languages that are not studied and preserved are likely to face the danger of incorporating elements from adoptives that may be difficult to identify, synchronically, after a long period in history. This study hopes to preserve how Tonga deals with incoming vocabulary for future references. This study is also valuable in that it intends to fill knowledge gaps but at the same time be a reservoir of Tonga phonology and morphology. In this line of thought, the research becomes a new reference work for students of linguistics, enhancing their understanding of the Tonga language.

Finally, the invasion and subsequent colonization of African states resulted in inevitable diaglossic situations that prompted the transfer of lexical items from one language into the other. Most of these are nativized in order to be acceptable in the receiving language. Nativization has become an important aspect in contemporary studies because language contact has been greatly facilitated by globalization. This nativization has become the major concern of contemporary linguists, for the manner in which languages handle incoming vocabulary determines their development and ability to cope with globalization. For this reason, the aspect of nativization is crucial in the Tonga language, in this contemporary era. It is also hoped that the information discussed will be valuable to those who would want to develop orthographies and grammars for Bantu languages. This is because for any orthographer to be successful, there is need to explore first the grammar of the language so as to understand the sounds inventory of the language and the phonotactic constraints attached; an important requirement for any serious orthographer (John 2000:122). This research is therefore intended to be an important

reference work for orthography design since Tonga does not have an independent orthography in Zimbabwe. They rely on the Shona and Ndebele orthographies which are not at all tramitors of Tonga culture and identity.

1.4.2 Theoretical Justification

Contemporary linguistic studies have since adopted a theoretical approach to the conceptualization of linguistic features. According to Plag (2003:165), a theory is "a coherent set of hypothetical, conceptual and pragmatic principles forming the general frame of reference for inquiry…" The study gets insights from generative phonology, in particular the Distinctive Feature (DF) theory, CV-Phonology (CV) and Lexical Phonology and Morphology (LPM) paradigms. This theoretical blend places this study in the contemporary setting, where theories have been formalized as basis of arguments and decision making. Apart from that, theories enable linguists to study any language, since a theory guides procedure, assessments, analysis and notation during documentation. Following this 'theory dox', there is therefore need for theoretical grounding in this study, to justify the phonological and morphological principles adopted for data analysis, since the researcher is not a Tonga native speaker. The researcher also believes that it is more insightful, empirical and logical to be guided by theoretical tenets and reach for some optimal conclusion rather than mere descriptions or through trial and era. Phonological nativization is a process that can be best analysed to some logical conclusion by employing some theoretical grounding or basis that accounts for procedure.

There are a number of phonological theories that could have been employed in this study such as Optimality Theory, Feature Geometry, Prosodic Morphology and other phonological and morphological theories. The researcher opted for the generative phonology (Distinctive Feature and CV phonology) and morphology (Lexical Phonology and Morphology), because they account for the phonological and morphological structures in a language, which is the scope of this research. The CV-tier, an aspect of CV phonology, defines the syllabicity of the onset and marginal elements; hence it captures insightfully the complexities of distinctive features and syllable patterns of words; an

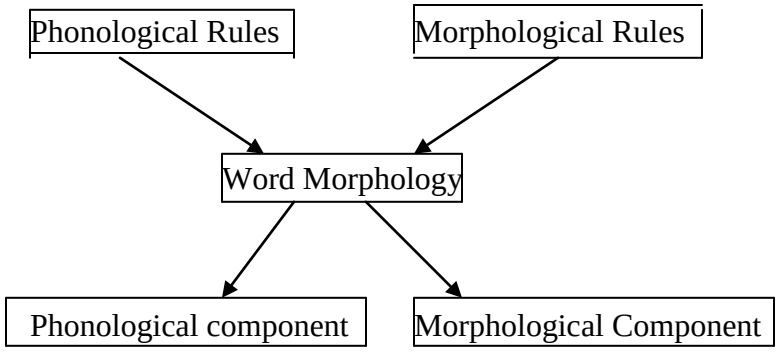
important component of this study. Apart from that, CV Phonology provides a structural interpretation of phonological changes between the English and Tonga environments, as it regulates the combination of segments, considering 'prominence factor'. It is enlightening and useful for describing syllable behavior; the major concern of this study. Data presentation is also easy when using the CV rule notation, showing inputs and outputs. It examines various patterns of consonant-vowel combinations, universal principles governing syllable structure or the syllable structure typology. The current researcher focuses on nativisation of English loans in Tonga, mainly at the level of sound, syllable and morpheme, thus the Distinctive Feature, CV-Phonology models are chosen to be the guiding principles in this study.

The problem with the CV-Phonology theory is that it does not cater for the various substitutions that occur between English and Tonga syllables as well as morphemes. Thus knowledge of distinctive features associated with the various segments is crucial and the Distinctive Feature Generative Phonology model is adopted to deal with the problem. This is because its major tenets are 'features matrices' and 'sound distinction' rules. This theoretical framework is therefore, a blend of the two phonological theories (Distinctive Feature and CV). The distinctive feature principle for instance, allows an insightful substitution of sounds, where sounds are substituted on the basis of similar feature matrix. Distinctive Feature paradigm makes it possible to capture generalizations of segment substitution during nativisation of English loans in Tonga since it is only practical when such sounds share similar feature configurations. Distinctive features define feature values that classify sounds together, which is important for substitution processes. Katamba (1989:35) says that it is more insightful to observe and analyse sounds in terms of individual parameters such as distinctive features. This enables a systematic analysis of assimilation processes. Distinctive feature approach makes it possible to treat assimilation insightfully. It is because of its insightfulness to the nature of the study that the researcher chose to employ it for theoretical reference.

At the Morphological level, the Lexical Phonology and Morphology (LPM) Theory is adopted. This is a universal theory that guides word formation. Since the study examines

English words in Tonga, it follows that word formation principles are insightful to account for the various word patterns. However, there are numerous word-formation theories that could have been adopted to guide this research but the LPM was chosen because of its explicitness on handling phonological and morphological word-building processes. Such a theory can blend very well with the DF and CV theories since they are all generative in approach, hence are empirically adequate for this study. It is also important to note that during lexical nativisation, involving any languages, phonological and morphological processes interact, especially derivatives (Plag 2003:165). The phonology and morphology interaction is partly responsible for the deletion and insertion of certain segments on derived words. During nativisation, such behaviours should be accounted for. Morphological nativisation can be best conceptualized in an overall phonology-morphology interaction paradigm (Plag 2003: 165). This is because word structures are interpreted according to rules of phonology and morphology; hence LPM is insightful in accounting for how word structures in English are changed in the Tonga linguistic environment. This means that phonological rules are triggered only by affixation of particular base words, which applies in a cyclic fashion as shown below:

Figure 2: Lexical Phonology and Morphology Model



The theory suggests that words are formed following a hierarchical structure and each of these structures is understood by analysing its phonological and morphological

constituents. This makes this theory very much relevant in accounting for the morphological changes of English loans in Tonga.

1.4.3 Justification of Geographical Target Area of Study

The research is confined to Hwange, Binga, Kariba and Gokwe areas in Zimbabwe. This is because the Tonga spoken in this area is not polarized, which is the case with the Tonga spoken in Zaka, Bikita and Figtree. Zimbabwe has since been involved in large scale resettlement as a result of massive seizure of white owned farms by the government. This has accounted for the relocation of a tenth of the native Tonga speakers, since 1985, when the first resettlement programmes were embarked on. The predicament of these resettled Tonga people was that they got into contact with the Karanga people in Zaka, Ndau people in Chipinge, Korekore speakers in Mount Darwin and the Ndebeles in Figtree. A period of a decade was enough for these native Tonga speakers to acquire the languages dominating their new areas. This was even worse in the second and third generations. Today it is virtually impossible to use these people as informants on issues pertaining to the Tonga language. Preliminary research on the feasibility of carrying out the research in the resettled areas has shown that these people rarely speak Tonga and have few nativised English words. As a result, delimitation of the geographical area of study is restricted to Kariba, Gokwe, Binga and Hwange. In these areas, Tonga is used on daily basis orally although it is not written.

There are also Tonga speaking communities across the Zambezi valley, in Zambia. These again have not been considered for this research because the area is in another country, Zambia, which demanded passports and a sophisticated logistical approach that was going to jeopardize the research. One of the major problems was the current political situation in Zimbabwe. A preliminary survey in Zambia has shown that both the government and the citizens were very suspicious of movements into and out of Zambia by Zimbabweans, especially those who were claiming to be carrying out or considering

Zambia for any form of research. As a result of these and other factors, this research was restricted to the areas in question.

1.5 LITERATURE REVIEW

Hock (1991) discusses the issue of phonological nativisation of borrowed words in general. His main goal is to describe the phonological changes that characterize nativisation, thus the substitutions that take place between segments of the loaner language and those of the receiving language. In his findings, borrowed words have to change, phonologically, to suit the phonological characteristics of the receiving language. Emphasis in this particular study is on substitution of the various corresponding sounds from the loaner language into the receiving language. The current study is similar to Hock's study in that he focuses on phonological processes of nativisation, the pre-occupation of the current study. However, Hock differs in that he merely describes the phonological processes without making reference to a theory, which is one point of departure by the current researcher. This current study is grounded on Generative phonology theory, complemented by CV, an offshoot of the Generative phonology. Another difference is that Hock focuses only on the sound inventory, whilst this current study includes the syllable and phonotactic constraints as major components of the scope. However, the phonological processes he discusses gives insight into the substitution of English segments for those of Tonga, the pre-occupation of Chapter Four of the current research.

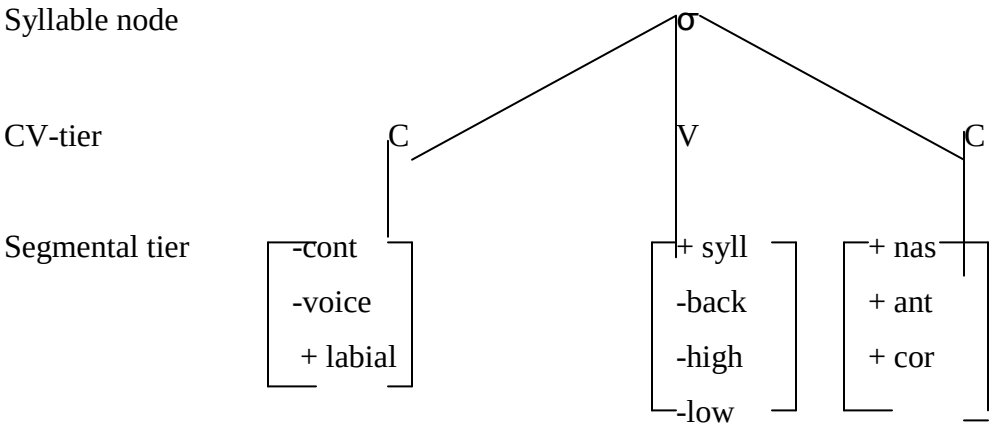
Chimhundu (2002) writes on the adoption and adaptation of English words into the Shona language. He looks at consonant and vowel nativisation that he prefers to refer to as adaptation. In his discussion, some sounds and consonant clusters that are found in the English language are not recognized in Shona and as a result they are rephonologized so that they become agreeable with Shona linguistic rules, the receiving language. This notion of adaptation in the context of Shona, has given the current researcher insight into some of the processes of nativization such as substitution. Chimhundu's account of adaptation is also insightful in that he establishes that usually monolinguals completely adapt foreign words, whilst bilinguals sometimes choose to incorporate some aspects of

phonology of the foreign language into the native form. Chimhundu (2002) adopts the distinctive feature approach, to analyse substitution of English sounds with Shona equivalents, which is also insightful for Tonga, the pre-occupation of this particular study. He adopts a unitary treatment of segments, rather than taking them as clusters according to descriptivism. Unitary treatment of segments is insightful in that it helps the current researcher to distinguish between cluster (English) and complex consonants (Tonga), for example /gr/ on the word /grin/ and [ʧ] on the word [ʧikolo] respectively.

The current study's point of departure from that of Chimhundu (2002) is that, the current researcher employs a theoretical approach (GP and CV) for data analysis, whilst Chimhundu merely describes the phonological changes. This study also differs in scope, for Chimhundu focuses on the inventory and substitution, whilst this study also includes phonotactic constraints and resyllabification processes. Chimhundu does not account for the various phonological changes that occur to the English adoptives, which is the pre-occupation of this particular study. His subject of reference is Shona whilst this study focuses on Tonga. However, insights from the distinctive feature approach and unitary treatment of segments, he adopted, help to describe the various substitution and epenthetic processes in this current study. Tonga like Shona, he discusses, is a Bantu language such that the behavior of English loans in Shona is insightful in predicting the behavior of English loans in Tonga.

Katamba (1989) discusses the major tenets of CV-Phonology as developed by Clements and Keyser (1983). In his discussions, he says that Clements and Keyser assert that a syllable has three tiers, namely the syllable node (σ), CV-tier and segmental tier. These structures are represented as follows:

Figure 3: Default Syllable Structure



Translating this diagram into the terms of the theory, shows that the V-element of the CV-tier represents the syllable nucleus and the C-element is at the margin. A syllable, according to Katamba, is made up of the three constituents. He asserts that these tiers are linked differently from one language to the other. Described in this theory are simple to complex syllable structures. The theory defines syllabicity in all languages as a function of segments. The theory thus provides principles governing syllable typology. From Katamba's discussion, it is realized that CV is the core-syllable, whilst all the other CV patterns are derived from the core (CV).

This current study is similar to Katamba's (1989) study in that it describes the theoretical tenets of the CV and uses them to analyse syllables in the respective Tonga language. However, the point of departure is that Katamba merely describes the theoretical tenets of CV phonology, whilst this current researcher uses the CV tenets, in particular syllable structure, to analyse how Tonga handles English loans. Katamba's arguments are insightful in three ways; firstly, the tenets discussed, help to establish the principles governing syllable structure; secondly, they help to define the range within which the

syllable structure may vary and finally, they establish the specific rules governing syllable structure. Katamba's study is therefore, relevant to this current study.

Kadenge (2003) discusses the CV phonology model and uses it to account for syllable building processes or resyllabifications. Some of the processes described are glide and vowel epenthesis. He uses the theory to make clear visual representations of the various phonological processes. He uses the CV theory to describe the various interferences and transferences of linguistic features between English and Shona speakers. In his discussion of the findings, he establishes that English has twenty vowels that were reduced to five in the Shona language. This was accounted for by the fact that English has diphthongs whilst Shona has only five pure vowels. This study is similar to Kadenge's in that it also focuses on substitution and epenthesis. Apart from that, the current study also employs CV phonology for data analysis and presentation. The only difference is that Kadenge applies the CV to analyse the influence of the first language (Shona) on the second language (English), whilst the current study looks at the influence of the second language (English) on the first language (Tonga). However, his study is very insightful in understanding CV notation.

Hooper (1976) also discusses Generative phonology by Chomsky and Halle (1968). In his discussion, he says that the theory assigns the correct phonetic representations to utterances in a way that reflects the native speaker's internalization of grammar. The dominant view is that the native speakers of a language unconsciously know the nature of the phonological structure of their language. Hooper (1976) quotes Chomsky and Halle who say that native speakers of a language have a tacit knowledge of the systematic relationship of the phonological structures of their language.

According to Hooper (1976), the major concepts in GP are phonological processes and levels of phonological representation. At the surface, there are distinctive features, conventions that make it possible to capture generalizations of phonological rules. Hooper (1976) merely describes the theoretical tenets of the GP, theoretical description. This current study describes and goes further in using its tenets, in particular distinctive

feature, to complement CV in analyzing the nativization of English loans in Tonga. The current researcher uses some of the conventions of this theory to account for phonotactic constraints in the Tonga language. It is in light of the distinctive features approach, that the current researcher makes use of conventions, which allow an insightful account of assimilatory processes in the Tonga language. It also helps to distinguish between English features (consonants and vowels) and those of Tonga, since the theory insightfully highlights the internal structure of sounds.

Mathangwane (1999) discusses lexical borrowing at the level of phonology and morphology for the IKalanga language. She identifies various phonological changes that occur when foreign words are incorporated into IKalanga. Some of the phonological processes discussed are phonotactics, in particular pre-nasalization of voiceless and voiced sounds. In her discussion, IKalanga does not accept pre-nasalization of voiceless sounds. This is very insightful in investigating why English words with voiceless sounds that are pre-nasalized, for instance /rent/ and /kəmpjutə/ change to become [lendi] and [kombijuta] respectively. Information on phonotactics discussed by Mathangwane helps in understanding phonotactic constraints in Tonga because IKalanga and Tonga are phonologically related, for they are both Bantu languages.

She also discusses the phonology inventory of the IKalanga language. According to her, IKalanga has a five vowel system, /a, e, i o, u/. This vowel system is made up of two front vowels, /i, e/, two back vowels, /o, u/ and one central vowel, /a/. It also has a diversified consonant inventory with plosives, labials, dental, velars, glottals, palatals and alveolar. This current research is similar to Mathangwane's in one respect. She investigates phonological processes such as substitution and phonotactics, which is also the pre-occupation of the current study. However, the point of departure is that she merely describes the IKalanga inventory and phonotactic constraints, without making reference to a theory. This is a descriptive approach as opposed to the theoretical approach adopted by the current researcher. The current study uses the Tonga inventory and phonotactic rules as the 'norm' in assessing the behaviour of English loans in Tonga and Mathangwane uses surface phonetic forms and articulatory-based distinctive features

and phonotactic constraints. Her approach is insightful to the understanding of Tonga phonotactic behavior and distinctive features, since both Tonga and IKalanga are Bantu languages. That being the case, the study enables the current researcher to distinguish between English and Tonga sounds. The feature approach adopted from Mathangwane gives a much better chance of making informed comparisons between the systems of English and those of Tonga.

Uffmann (1993) discusses vowel epenthesis in Shona loan words. According to him, vowel epenthesis is the commonest process in loan word adaptation. In his discussion, vowels are epenthesized on unacceptable consonant sequencies to generate acceptable sequencies. In his assertion, languages with strict CV syllable structure often epenthesize vowels in positions where they serve to break up consonant clusters or resyllabify coda consonants. Examples given by Uffmann are:

Coronal +/i/	[bazi]	‘bus’
Labial + /u/	[temu]	‘term’

From the above schema, (cor + /i/), is a labial obstruent preceded by /i/. It follows that the epenthetic vowel should be /i/ and not */u/. This investigation by Uffmann is very insightful in as far as vowel epenthesis is concerned. It helps in inferring complicated patterns of obstruents. It gives an insight into why vowel epenthesis takes the form it has in Tonga during nativisation of English loans. Uffmann’s research, on vowel epenthesis, gives the current researcher an insight into how paragogic vowels are introduced to a word for instance, how the paragogic vowel /u/ is introduced to /stul/ (stool) to become /ʧitulu/, instead of any other vowel /a, e, i, o/. This current study is similar to that of Uffmann in that the focus is on vowel epenthesis, which is part of the scope of this current study. Another similarity is that Uffmann tries to account for the various epenthetic processes during adaptation of English loans in Shona, which is also the scope of the current research. The difference is on theoretical framework, Uffmann uses the Optimality Theory because he is only interested in the optimal output of epenthesis at the level of segment. The current researcher uses the CV and GP because his focus is the

syllable and distinctive features. Insights on strategies used for selecting vowels to be epenthesized, discussed by Uffmann, are used by the current researcher in Chapter Four to analyse vowel epenthesis in Tonga. These strategies are used as guidelines in accounting for various vowel epenthetic processes in Tonga.

Lodhi (2000) discusses the adaptation of borrowed words in Swahili, a Bantu language. Swahili borrows lexical items from non-Bantu languages such as Persian and Arabic. Emphasis in this study has been put on aspects of grammar rather than lexicon. Lodhi pays more attention to Arabic structure loans and grammatical intrusion. The development of hypotactic structures, adverbs, conjunctions and prepositions in Swahili are described by Lodhi as a mixture of Arabic and Bantu languages. Oriental loans in Swahili are also discussed in this research. The current research is similar to Lodhi's research on Swahili. He focuses on rephonologization which is similar to phonological nativisation, the focus of this new study but aspects such as the verb and grammar, he discusses, are not important to this new study. However, anticipations from Lodhi's rephonologization process help the current researcher to predict and speculate the behaviour of English loans in Tonga. English loans are likely to behave in the same manner as Arabic words in Swahili because Tonga and Swahili are both Bantu languages. Lodhi's (2000) study therefore, provides valuable guidelines for this particular study.

1.6 ORGANIZATION OF THE STUDY

Chapter one is the introduction of the study. Chapter Two handles the methodology and tools that were adopted in this particular study. It also justifies the method used for data collection and analysis since there are a diversity of these methods and tools to be used in language study. Chapter three gives an overview of the Theoretical framework that guides this research. It discusses the Distinctive Feature, CV-phonology and the Lexical Phonology and Morphology theoretical framework and its suitability for this study. The major focuses, of this chapter, are the general principles that are useful for this particular study. Chapter four gives an overview of the Tonga phonology and morphology, with emphasis on only those processes that are insightful to nativisation processes. Chapter

five looks at how English loans are handled in the Tonga environment at the level of phonology and morphology, which are the findings and discussions of this study. Chapter six is the overall conclusion of the whole study. It discusses the findings and recommendations pertaining to the research questions underpinning this study.

CHAPTER TWO
METHODOLOGY

2.1 INTRODUCTION

The data used for this thesis was collected through observations as first language speakers engaged in live conversations. The researcher had a chance to observe the language in use by native speakers, in its natural usage and settings. The researcher adopts a qualitative approach rather than a quantitative one because quantitative study is more of a laboratory-proved research that best works for researching natural matter (science), with behaviour which is predictable. Such an approach put results of the research process under predictable constraints. Morrison (1989: 24), defines qualitative approach as a descriptive research tradition for things that cannot be instrumentally measured, such as feelings, behaviour, speech, thoughts and culture.

The qualitative approach is handy for this language-based research, since language as noted by Morrison is humanistic and cannot be measured, in a controlled environment, by stringent mechanisms, hence it is unpredictable. The researcher therefore, adopts a qualitative research design, which entails an intricate and tabul rasa approach that works without any presumed outcomes. Language is always elusive; hence research tools adopted have been tested in other similar elusive and intricate preceding researches in African Languages and have since proved to be relevant for language research. The research tools used include structured, semi-structured and unstructured interviews; participant, non-participant observation and questionnaires. This approach provided the greatest chance to investigate epenthesis, phonotactics, resyllabification and remorphologization processes in Tonga, by native speakers. The choice of methodology was largely determined by the nature of the research questions investigated.

Collecting oral material requires interviews that are both structured and unstructured as well as observation and participation, in conversations, with native speakers. This is because language (oral) research is a human construction that is conducted in social contexts, where a number of social factors cannot be adequately addressed without intensive use of qualitative tools.

The methodology is described in two stages. The first description is centered on how the data was collected and gathered from the Tonga speaking areas. The second discussion presents the theoretical framework that was used to analyze the data that was collected. It also entails discussions on how collected data is presented when discussing findings. This involves looking at how the findings and discussions of this particular research are organized and presented to a logical conclusion.

2.2 DATA GATHERING

Data gathering is defined by Chevalky (2001:14), as the different ways through which research data is derived from society, the people. That is the method by which data is solicited and recorded for processing and analysis. This study was primarily observational and involved tape recordings, structured and unstructured interviews, with native Tonga speakers. The methodology, though expensive and demanding, yielded valuable data.

2.2.1 Research Assistants

The researcher does not have Tonga as a mother tongue nor is he a first language speaker, hence the need to hire Research Assistants (RAs), who are Tonga first language speakers, to help during data collection and gathering. This is mainly because:

> Any serious study of a language by someone who is not a mother tongue speaker of that particular language needs not only an appropriate theoretical approach but also to make use of knowledgeable and well-informed mother tongue speakers to assist in the process of data collection.
> (Zivenge 2005: 22)

Fifteen RAs were identified on the basis of specified criteria but the number of the RAs was reduced to three because of financial constraints. These were finally tasked to collect English loans that exist in the Tonga language and also to investigate the factors that have prompted borrowing from English into Tonga.

These RAs were finally deployed in Binga, Hwange, Gokwe and Kariba, where Tonga is prominently spoken. They were also given exercise books to use as diaries and notebooks, during data collection. According to John (2000:30):

> Note books are an important necessity in a research process, since documentation is a pre-occupation of any serious researcher for no human mind can effectively remember all field experiences, a whole body of unprocessed gross data at the researcher's disposal.

In line with the above-mentioned assertion, RAs were given four, 64 paged A4 ruled notebooks, for the purposes of documentation of any relevant data at their disposal. They documented observations and data solicited from informants.

RAs also drew up plans on how they were going to conduct the researches. They noted down all potential informants and then made follow-ups, as they were conducting interviews. Plans were a workable guide during the research rather than a haphazard pattern of research. These plans were sometimes amended, depending on situations arising and also after gaining new insights or facing problems that resulted in slight or total adjustment of the working plan. Some of the factors that contributed to adjustments were beyond the control of both the RAs and the researcher himself such that some appointments had to be rescheduled. These are appointments to attend court proceedings, some lessons in schools, public meetings and so on. Court sessions, some lessons and, rallies were sometimes postponed.

The worst situations were those where the RAs and the researcher were prohibited from attending some of the court proceedings or rallies, which we thought could provide valuable data. Working plans were also an important record, which the researcher was going to use to ensure that RAs did their work promptly, rather than manufacturing data. They were also important to ensure that the whole Tonga speaking community, in Zimbabwe, was represented during data collection or gathering.

The RAs comprised postgraduate candidates, who at least have done courses in phonology and morphology. They were also supposed to have done a course in language research or to have been attached to African Languages Research Institute (ALRI) of the University of Zimbabwe, where research induction is always conducted for attachees.

Candidates for RAship could also have been engaged with any other organization, where they could have been oriented to qualitative data collection or that they should have been oriented towards data gathering. These were important requirements since language research at the level of phonology and morphology requires basic pure linguistic knowledge (grammar) and relevant skills, important for language study. This is because of the intricate nature of qualitative research in particular applied and theoretical linguistics.

The most important criterion was that RAs were to be Tonga native speakers. This was intended to ensure that identification of loanwords was easy, since mother tongue speakers of Tonga know very well the Tonga lexicon and inventory. It also enabled the RAs to observe appropriate conversational taboos during interviews. Non-native speakers had high chances of defying these taboos and this could have infuriated informants. Financial constraints forced the researcher to draw RAs from Binga and Kariba where the research was to be conducted. Another advantage of choosing Tonga first language speakers was that they are known to their respective communities and are easily accepted by informants rather than RAs who are complete strangers to the informants. In such a situation, informants were bound to be free and open during interviews. The other advantage was that these RAs, by virtue of being locals had the advantage of conducting research in areas where they were well versed in protocol and procedure, thus working with familiar people. It also enabled the RAs to observe the necessary and appropriate conversational taboos during interviews better than non-native speakers.

The general observation was that there were high chances of defying these taboos if RAs were strangers because the Tonga people like to observe their culture such that villains who violate it are castigated. Under normal circumstances, informants are easily infuriated if their cultural and conversational taboos are violated. The use of RAs, to conduct research, in their native areas reduced expenses since RAs were working from their homes, hence it was cost effective.

Thorough knowledge of the people, language, taboos, protocol and observances, where the RAs were working was of great advantage in that they (RAs) could easily alter

structured questions and sometimes formulate completely new questions, guided by their interpretation of circumstances, thus they could adapt according to informant variables. These informant variables include social class, sex, age, profession, religion and personal interests. To this, Coupland and Jaworsky (1997:103) say:

> Flexibility in this regard is important for any successful interviewer. The use of questions to which informants can easily relate assumes That we have a certain pre-knowledge of the community in which we are interviewing.

The current researcher was a stranger (new) to the Tonga people in Binga, Hwange, Kariba and Siyabuwa. He had little knowledge about the community's protocol, conversational and gesture taboos, religious affiliations and interests. The use of familiar RAs was very helpful in closing the gap between the researcher and the informants. The timing of the research was appropriate because November to May was a time of working in the agriculture fields. It was the peak of the agriculture season, most people could be found in the fields. This made it possible for RAs to interact with as many people as possible. They could ask questions whilst helping with the harvest and this was easy since the RAs were local and harvesting was not a new activity to them.

To minimize the influence of other local languages, such as Shona, Ndebele, Nambya and other indigenous languages on the research findings, the RAs were deployed only in those areas in which Tonga is dominant as follows:

Table 1: Tonga Speech Communities in Zimbabwe

AREA	**MAJOR LANGUAGE**	**MINOR LANGUAGE**	**DECISION**
Hwange	Tonga	Ndebele/Shona/Nambya	Tonga is used often.
Kariba	Tonga	Shona/Ndebele/Nambya	Tonga is used all the time.
Gokwe	Tonga	Shona/Shangwe	Tonga is used only for domestic conversations.
Zaka	Shona	Tonga	Use of Tonga is not significant for any serious study
Siyabuwa	Tonga	Shona/Ndebele/Nambya	Tonga speakers are bilinguals, they code switch.
Bikita	Shona	Tonga/Budya	Tonga is not significantly used
Chipinge	Shona	Tonga/Budya	Tonga is not significantly used

The Tonga language that is spoken in areas other than Binga and Kariba was not considered (using this criterion) for this particular research. Dominant languages that exist in diaglossic scenarios with them have corrupted them and using data collected in

such areas for this research might have been misleading. The reason for this decision was that the Tonga spoken in areas other than Hwange, Binga and Kariba has been influenced phonologically and morphologically by either Shona or Ndebele. The following research tools were then adopted to complement the qualitative research approach adopted by the researcher.

2.2.2 Questionnaire

The first research instrument administered was the questionnaire, which was targeted at the literate mother tongue Tonga speakers. This is because respondents respond by reading and writing, which are two important literacy skills. The target groups were therefore, the teachers, administrators, social workers, Police Officers, nurses and others who by virtue of being professionals have gone through formal education that entails reading and writing, hence these are appropriate respondents.

According to Durkeim (1995:126), a questionnaire consists of simply pre-set questions, usually given to respondents in an orderly (from lower order to higher order) manner so that information can be solicited chronologically. Mhloyi (1995:14) says that a questionnaire is a document appropriate for analysis as it contains questions that solicit information. In line with the above-stated scholars, the questionnaire adopted, contained a list of questions and was administered to literate Tonga speakers, to elicit phonological and morphological data.

The questionnaire adopted took a wholly structured form. Questions were in three formats, namely, three answer formats, contingency questions and matrix questions. The three answer format involved questions that required entering responses by ticking. Respondents were expected to tick YES or NO where appropriate. The second set of questions was of the contingency type. Contingency questions were asked only to those respondents who were academically competent. These are generally questions that are technical and are normally reserved for informants who are technically competent, hence relevant. Such questions were not appropriate to speakers who did not have

knowledge of phonology and or morphology. To all those that were not competent in grammar, contingency questions were irrelevant. The third category consisted of matrix questions. Babie (1999:14) posits that when using the matrix technique, the respondents choose the following options:

Agree,
Strongly Agree,
Disagree and
Strongly Disagree.

For the above dimensions (AGREE, STRONGLY AGREE and so on), the researcher used the concept of degree as a measure to evaluate or determine acceptance of a given concept solicited. Questions on the questionnaire had generally two forms, especially contingency ones; these were closed or open-ended questions. Open-ended questions gave room for elaboration and exemplification, whilst closed ones required short and precise answers. The major advantage of the questionnaire was that it reduced travelling costs, since most of the questionnaires were posted to respondents and returned after responding. Even those informants who seemed to be very busy took their time to respond because there was ample time to respond without rushing. Most of the questionnaires were sent in November 2006 only to be collected in January 2007. However, some of the respondents relocated during this period because the research coincided with the last phase of the government's land redistribution programme. As a result, a number of questionnaires could not be recovered but the number was so insignificant that the research was not affected dismally, though it remained an observation.

The greatest disadvantage was that most targeted informants were illiterate, such that they could not read and write. Questionnaire distribution was greatly hampered by high illiteracy levels in all Tonga speaking areas. In order to circumnavigate the problem of illiteracy, face-to-face interviews were then conducted.

2.2.3 Structured and Unstructured Interviews

Most of the English loans were collected using structured and unstructured interviews, compensating for weaknesses of the questionnaire. According to O'Leary (2005:162), an interview is defined as a method of data collection that involves researchers asking respondents basically open ended questions. Miller (2003:11) also defines interviews as processes where researchers collect data through asking questions related to the field of study, in this case phonological and morphological adaptation of English words by the Tonga people. The RAs were given the discretion to adopt either the structured, semi-structured or unstructured interviews but they were given guidelines.

Maxwell (2004:161) says that structured interviews are the ones that use pre-established questions, asked in a predetermined order, using a standard mode of delivery. The researcher adopted this technique and it followed that means of probing the interviewees were predetermined and were also used in defined circumstances. The technique was very suitable in interviews where respondents were always busy. According to Haralambos and Horlborn (2004:867), the structured interview does not allow the interviewer to deviate from the structured questions. The unstructured interview was open, it did not have any predetermined questions but RAs were just pursuing more conversational styles and attempts to probe and develop questions on the spot were adopted as was seen appropriate by each of the RAs.

Topics for interviews were drawn from disciplines such as technology, invention, careers, business transactions, law and courts, Christianity, politics and others where English is the medium of instruction. The RAs also used semi-structured techniques that were neither fixed nor fully free. Interviews normally started with defined question plans but RAs later on pursued much more conversational styles as interviews progressed.

The general trend was that each RA logically started by using structured questions and then slowly adopted informal discussions as they progressed, so as to probe and elicit more loans (semi-structured). While both the structured and unstructured interviews

proved helpful, responses from Tonga bilinguals were cross-checked with those of monolinguals since it was discovered that data solicited from the two groups differed, in terms of articulation and pronunciation. According to John (2000:40), "bilinguals are quick to code-switch and sometimes they do not reflect as clear a picture of language nativisation which is the case with monolinguals". In view of this, identifying nativisaton processes was targeted at both monolingual and bilingual informants.

The problem with structured interviews was that it was inhibitive in that interviewees could only give appropriate loans in response to particular questions and there was no room for elaboration, a problem that was envisaged early and unstructured questions had to be incorporated, to help in eliciting all possible loans unveiled during the interview; a major strength which was manipulated by the RAs. This led to the collection of a wide range of useful loans.

The major advantage of the free conversation was that the informants were at a reasonable approximation of how language is used in natural contexts. To this, Coupland and Jaworsky (1997:36) say that to obtain the data useful in any linguistic study, we have to observe how people speak when they are not aware that they are observed. The use of unstructured interviews in Binga and Kariba during this research helped to neutralize this natural obstacle that was inherent when using structured interviews. This is because the very fact that a person is aware that he or she is being interviewed and observed becomes a formidable obstacle to obtaining casual speech. Labov (1972: 15) refers to this problem as the 'observer's paradox'. The goal behind using free conversations was that the researcher wanted the informants to focus on the topic and theme of conversation so that they would pay minimum attention to the way they speak. Coupland and Jarwosky (1997:101) say "…the less attention paid to the way informant speaks the more informal and natural we can expect his speech to be. In most cases, this means that how informants talk is less important than what they talk about".

The RAs were therefore encouraged to use informal discussions. The research advocated interviews as they assure a researcher of responses and where necessary the researcher

can further probe to solicit more information than anticipated. From the disposition and responses given, the interviewers, RAs, could easily evaluate whether or not to keep on probing until an informed conclusion was reached. Hawkins and Allen (1982:15) define an interview as a formal meeting or conversation with a person held in dialogue to obtain comments or information. The problem with this method was that most interviews were going tangential to the aim of the research, with informants sometimes pursuing their own interests, most of which were on politics, poverty, prices of commodities and elections. The other problem posed by the technique, interview, in particular probing, is that it is time consuming and its effectiveness greatly depends upon the individual skills of soliciting and persuading.

Apart from using structured and unstructured interviews with individual informants, they were also used among selected groups. The greatest advantage of the group interview was that informants encouraged each other to speak with confidence, such that the presence of the interviewer, as the only outsider, was easily overcome. It created the most natural setting possible for the elicitation of valuable data. English loans used in the political sphere, a highly sensitive area, were easily elicited using group interviews rather than individual interviews. This is a highly sensitive area in Binga, such that a number of informants were very unwilling to participate in talks that had a political tone. A number of words such as /dɪkteɪtə/ 'dictator', /kərʌpʃən/ 'corruption' and such other political words were elicited using group interviews. A cumulative approach was used, where RAs known to the informants conducted the group interviews to minimize suspicion by informants.

On the other hand, group interviews were problematic in that there tended to be natural leaders in most groups, who were dominating the conversations (in free talk), shifting discussions in the direction of their interest. These are people like Chiefs, Councilors and Kraal Heads, who are community leaders who usually speak to strangers on behalf of the government and the people. Other group members were always expecting leaders to answer and talk on their behalf. The problem was overcome by asking questions directly to specific informants in the groups.

2.2.4 Participant- Observation

In trying to circumnavigate the shortcomings posed by interviews, especially the very fact that when a person is aware that he or she is being interviewed and observed it becomes a formidable obstacle to obtaining casual speech, participant observation technique was incorporated. The goal was to create a natural setting in order to gain cultural and linguistic empathy by users of the Tonga language. The RAs were active participants, experiencing the phenomena of language rephonologisation and remorphologisation in the same way as Tonga speakers, in live conversations. This is what John (2000:36) refer to as "data collection technique from the perspective of the observed". The researcher also engaged in conversations with his maternal grand parents (who live in Binga) and other locals (Tonga speakers) during occasional visits, in the course of this research. He observed their use of English loans, noting down those loans that were regularly used in conversations.

According to Robert (2004:75), observation refers to day-to-day activity of studying the behaviour and trends of human beings in real life contexts. This is a systematic method of data collection that relies on the researcher's ability to use his or her senses. This way, a number of nativised loans were gathered. The RAs used both overt and covert observation. 'Covert' simply means that the RAs were not disclosing themselves to the society they were observing, whilst the 'overt' approach does specify the nature of study and how data is to be used. Research Assistants, being Tonga speakers, participated in many live conversations with some Tonga monolingual speakers in their day-to-day conversations. During participation in conversations that covered a wide spectrum of social, political and economic issues, a wide range of English loans that are regularly used in these contexts was captured. The problem realized was that some discussions could not reflect the frequent use of some of the loans. The researcher and RAs sometimes could not remember the entire number of loan words used during an activity in which they participated. In this regard, unstructured questions were then incorporated, so as to elicit the frequent use of such loans and also to be reminded of other loans that

could have been used without really making notes. This shows that both qualitative and quantitative design for data analysis methods and respective techniques were adopted to solicit data.

The RAs and the researcher also observed class lessons, church services, political rallies, music galas and daily conversations, where Tonga was used as the language of communication. The problem that arose was that it was difficult to come up with loans as most of the subjects were taught in English for most secondary schools. However, valuable lists were compiled in most primary schools, churches, rallies, galas and public meetings where Tonga was naturally used.

Besides observing lessons in schools, both the researcher and RAs attended court sessions in which they documented English loans that were identified during the sessions. RAs could not tape record the sessions because the law of Zimbabwe does not allow tape recordings or covering court sessions (Hadebe, 2002). From these court sessions, though restrictive, valuable loans on the legal language were obtained. The major advantage of this method was that words were identified in live contexts, as they were used vividly in conversations. The problem with the method was that it was not possible to seek clarification on certain ambiguities, since there was no room for questions. Despite that, valuable lists of loans were compiled.

The observation method, however, had its own limitations, the major one being that it required a longer research period, in order to gather data useful for this area of study. This required the researcher to spend much time amongst first language speakers in order to come up with a reasonably meaningful collection of data.
The researcher, though not a proficient speaker, has some idea of the language and this made the data collection exercise easier.

2.2.5 Non-Participant Observation

Apart from the Participant-Observation, the researcher and the RAs also adopted the Non-Participant Observation. The research team did not intend to be integral members of the society or system they were observing. They were observing from the neutral point of view. The advantage of this technique is that the researchers minimized activism. Activism is defined as researching from the point of view of self, when the researcher is part of the researched, in feeling and cause, thus becoming an activist rather than collecting data from the 'on looker' position, which warrants research with objectivity. This was in a bid to cross check the relevance and viability of the data that was collected through Participant-Observation. The RAs then triangulate observational data with other data types, thus combining with other instruments. This is because observation can hardly be separated from interviews. In other words, a cumulative-technique approach was used rather than using techniques in isolation.

2.2.6 Tape Recordings

Whilst interviews were mostly effective for data collection, tape recordings were also employed to capture data or conversations in situations where interviews were not allowed during sessions. This includes tape recording court proceedings, class lessons, and social functions such as weddings, songs, church services, normal conversations at work places and such other contexts, where an interruption could disrupt proceedings. These tape recordings captured vivid and real life contexts that were not possible with interviews. This is the major strength of this method. However, the major problem was on identifying age, occupation and the native language, which was not easy during data analysis, since only voices were recorded.

Tape recording was easy for individuals but there were actually technical problems in group situations. Each speaker was supposed to be recorded on a separate track. To this, Coupland and Jaworsky (1997:107) say, " a single recording for group interview will often result in data that is unusable for the detailed analysis that is necessary". In

situations where natural conversations were recorded, especially in group conversations such as those recorded at beer parties, music galas, and church conferences, single track recordings resulted in data that was unsuitable for detailed analysis. The first data, collected, through tape recordings, was distorted and unusable, since the speakers were not giving each other turns to speak. According to Coupland and Jaworsky (1997: 20), phonological details, in particular, are almost impossible to transcribe when the entire group is being recorded on one track.

Apart from the problem of distortion, it was extremely difficult to identify speakers' native language from the tape. However, the instrument made the research process faster, since it is fast to record and preserve data in its natural state.

2.2.7 **Focus Groups**

Focus research groups refer to a research reference group, comprising people who are professionally proficient in the subject under investigation. These groups are mostly important for researchers to verify data collected so that only relevant data is preserved. It is also important for the researcher to find out whether or not he or she has collected enough data. For this particular thesis, the researcher had established four focus groups (one in Binga, another in Hwange, Gokwe and the last in Kariba). These areas were targeted since these are the main Tonga speaking areas. Participants were drawn from mother tongue Tonga speakers who at least have done a course in Phonology. As a result the groups comprised mostly of high school teachers and a few from local government, police, university students and vocational and training centers. As a result meetings were scheduled on weekends to allow full participation by members because most of them were civil servants who do not work during weekends. The major task of these groups was to discuss and document English loans existing in the Tonga language. This entailed verifying already collected data, by RAs and the researcher during data collection.

The advantage of the method was that all the members of the reference groups were mother tongue speakers of Tonga and also that they were proficient in the subject matter

such that data was verified and semi-processed in the field rather than waiting to do it at the end. Since data was semi-processed in the field not much unusable data was preserved. The major disadvantage was that it was an expensive method since these people were collected from different places and they were also given financial assistance for food and stationery to use during focus group sessions. The major set back was poor communication and road infrastructure. Most of the roads were not accessible such that travelling to meeting places was not easy and most of the time focus group discussions were abandoned because of poor attendance. It was again difficult to communicate using mobile phones since network was poor and bringing the focus group members together was difficult, however the method was very useful since data was processed in the field.

2.3 METHODS OF DATA ANALYSIS

This section under methodology, discusses the theoretical framework that was employed by the researcher to analyse collected data. According to Abdul (1999:10), “data cannot just be analysed randomly but certain guidelines and patterns have to be framed to inform decisions”. The researcher therefore adopts a Generative Phonology model approach, which entails blending tenets from Distinctive Feature theory, CV-Phonology model and Lexical Morphology and Phonology paradigms. This was possible since all these are generative theories explain the phonological and morphological processes underpinning nativisation of words.

2.3.1 Generative Paradigm

The Distinctive Features (DF) argument owes its development and inception to Chomsky and Halle (1968). The major concerns of this theory are the phonological processes underlying surface phonetic forms. The theory provides distinctive features underlying phonetic forms that are primarily articulator-based. These distinctive features are helpful in describing and accounting for phonological processes such as substitution and vowel epenthesis.

The DF asserts that the speaker and the hearer mentally construct phonological representations. It assigns correct phonetic representation to utterances in ways that reflect native speaker's internalized grammar. These ideas help the researcher in understanding the consonants and vowels that exist in Tonga and English and the rules that make it possible to capture generalizations of phonology that relate to nativisation. Phonological Nativisation becomes more understandable when accounting for the different distinctive features that exist in the two languages by employing the DF approach to data analysis. According to Hooper (1976), sounds vary from one language to the other and specific rules govern their use in a language. The goals of this study concur with those of DF, since it gives insight into the conception of sound differences in different languages, the pre-occupation of this research.

Phonological processes that nativise borrowed words from English to Tonga are understood when considering the atomic properties of each of the sound which function as a segment in syllables (at segmental level).

On the other hand, the CV-Phonology (CVP) model, by Clements and Keyser (1983) discusses the phonological processes that account for consonant and vowel associations in as far as the syllable is concerned. As an approach to data analysis, the researcher blends the DF to CV-Phonology to account for the various phonological processes that occur to English sounds and syllables, when they enter into the Tonga linguistic environment.

The researcher adopts the hierarchical structure of syllables advocated by Clements and Keyser (1983), to demonstrate syllable changes from English to acceptable Tonga syllable, especially the various tiers, which are the immediate constituents of the syllable. These tiers are the syllable node, the CV-tier and the segmental tier. This is in a bid to distinguish between syllable 'peaks' and 'non-peaks'. This information helps the researcher to account for changes in CV patterns from English words to Tonga.

The theoretical framework is also insightful in that it qualifies segments that are dominated by V and those that are dominated by C, in trying to define syllable peaks in English and establish how these peaks are affected by the nativisation processes. Linking association lines also helps to show the changes that occur to consonant and vowel associations in the process of adapting words into the Tonga environment. CV-Phonology deals with phonological elements in languages and it defines the syllabicity of segments. Hence, the theory provides universal principles governing consonant and vowel association in syllables. The current researcher adopts principles of this theory in investigating both the English and Tonga syllable structures and accounts for changes that take place during nativisation. Clements and Keyser's (1983) treatment of the syllable guides the researcher in describing and accounting for the processes of phonological nativisation in Tonga, at the level of syllable. Native speakers nativise adoptives by changing phonological patterns following rules that reflect the speakers' internalized grammar. In other words, these finite syllable rules enable the researcher to account for CV structures within the Tonga language and how these structures may be operated to nativise English loans. The main focus of the theory is the syllable, which is also a unit of focus of the current research, hence insightful. The CV Phonology guides the current researcher in describing and accounting for phonological behaviour of loans that enter into Tonga as loans.

The theory guides the researcher to provide a valuable account of phonological transformations such as in syllables, segments and phonotactic constraints. Clements and Keyser's treatment of the syllable structures provides a valuable syllable typology, which informs the current research in the process of analysing how English 'closed' syllables are transformed to become 'open' Tonga Syllables.

Apart from adopting tenets from DF and CV theories, the researcher also adopts arguments from Kiparsky and Mohanan's (1982), Lexical Phonology and Morphology, one of the generative theories of the same generation with CV-Phonology. The major concern of the theory is the interface between phonology and morphology in a lexicon. According to Kiparsky (1982), a morphological construction is a higher-level unit, which

is linked to a lower level phonological unit. In this regard, any language has a word root at the first level and all the other processes that occur on a word are at other levels. It is at such level that processes like inflection, affixation, preffixation and suffixation take place. Such processes are regarded as phonological but yielding morphological constructions. This theory helps the researcher to account for the various processes that influence nativisation of words across languages, in particular English loans in the Tonga environment.

Thus the theoretical framework provides guiding principles for data analysis in Chapter Four and Five.

2.4 METHOD OF DATA PRESENTATION

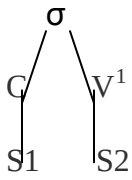
Data presentation for this thesis is greatly influenced by the theoretical framework adopted. This means that Distinctive Features notation is used to arrange information during discussions. What it therefore means is that any phonological unit is broken into phonetic properties to distinguish it from the rest. In this regard atomic properties are either 'switched' on or off. Where these are switched on they are denoted by [+] before the feature and where they are switched off they are also denoted by [-] before the feature in question. Phonological Properties are also indicated by simple bracketing as follows []. Each of the units that is bracketed is also accorded distinctive features, showing whether the feature is switched on or off as stated above. Phonological properties that are put in the bracket ( ) are segments and distinctive features, at the level of DF, though they also include other features at other levels covered in this research. The data notation schema for DF is as follows:

Phoneme = [± feature 1] [± feature 2]

The CV notation is also used to indicate syllables. In this regard, a hierarchical structure is adopted when discussing constructions at the level above simple sounds. Sounds at this

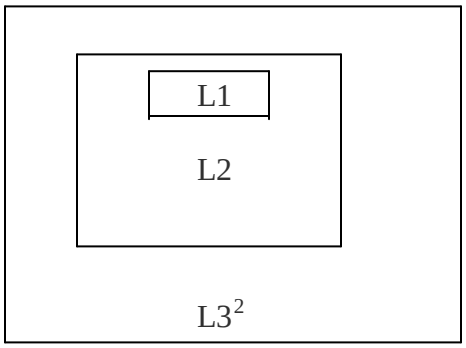
level are considered segments, which are at the lowest level of a syllable, above that is a CV-tier, dominated by syllable node at the apex. At this level, various CV structures are used.

Figure 4: Core Default Syllable Structure



This schema is only used for the base syllable otherwise other syllables are derived from this CV pattern, which exist in all the languages.

The other presentation method adopted is the lexicon Phonology and Morphology notation. This notation shows that a morphological construction is made up of strata as follows:



Such levels in a word highlights interface between phonology and morphology. This can further be elaborated by adopting the following notation:

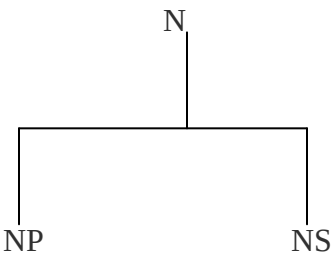
[1]CV notation, where C is consonant and V is vowel at CV-tier, σ is a syllable node and S1 is segment 1 and S2 is syllable 2 at a segmental tier.

[2] L1 is level 1 comprising a base word, L2 is level 2, an outer layer for vowel changes and then L3 for the most outer layer which denotes higher order processes like inflections, suffixation and prefixation.

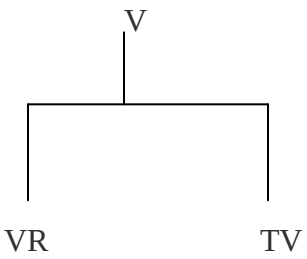
LMP Notation

Figure 5: Baseword Morphology

a) Noun Morphology



b) Verb Morphology



The abbreviations NP, NS stands for noun prefix and noun stem respectively, whilst VR, TV denotes verb radical and terminal vowel respectively.

2.5 CONCLUSION

The methodology was rather a triangulation. This means that not one methodology was used. The research was largely qualitative but however quantification of data was inevitable since responses were counted and that numeric approach brought in the concept of quantitative research method. Various tools were also used to solicit data such as questionnaire, structured and unstructured interviews, participant observation, focus groups and experimental groups. Distinctive Features, CV-Phonology and Lexical Phonology and morphology tenets were also used to verify data and to guide discussions during experimental and focus group discussions and will become more useful during data analysis and notation in Chapter Four and Five.

CHAPTER THREE

THEORETICAL FRAMEWORK

3.1 INTRODUCTION

This chapter discusses the theoretical framework that guides the researcher in the discussion of findings for this particular thesis, which is the pre-occupation of the proceeding chapters (Chapter Four and Five). To this, Brown (2004:13) says that linguistics data can only be analysed logically and orderly by employing a guiding theoretical framework. This means that theoretical framework informs decisions during interrogation of data and above that, it provides with a notation, which guides data presentation. In addition, John (2000:06) says:

> data can be analysed and presented using theories, so as to account for certain language behaviour, using particular notations depending on the nature of the research, since not every theory applies to particular research questions. Sometimes this is determined by what the researcher wants to achieve.

Following these assertions, the theoretical framework designed for this study is a blend, which involves arguments taken from Clements and Keyser (1983), Chomsky and Halle (1968) and Kiparsky (1982).

It is important at this point to discuss the term “theory”, for there is no one agreed definition of the term (theory) in the field of linguistics. According to Hadebe (2002:17); a theory in general can be defined or described as a “body” of fundamental principles underlying a science or the application of scientific ideas that guide processes during data interrogation, allowing repetition in exactly the same way, yielding similar results.

This implies that principles explaining the fundamentals of a phenomenon can be regarded as tenets of a theory or theories themselves. In analyzing the findings of this study, Phonological and Morphological Nativisation of English Loans in Tonga, the current research blends together tenets from Generative Phonology namely Distinctive Feature, CV Phonology and Lexical Morphology and Phonology. The framework accounts for consonant and vowel associations in syllabic structures and 'well-formed' conditions for words. These constitute a model framework, which describes how speech is processed to yield discrete representations in terms of sequence of segments, each described by a set (bundle) of binary features in a syllable and morpheme.

3.2 DISTINCTIVE FEATURES

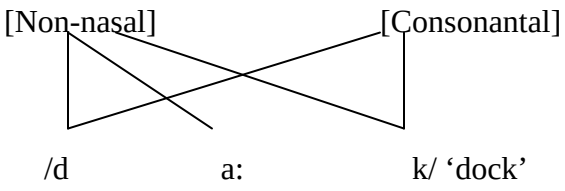
This distinctive feature argument owes its inception and development to Chomsky and Halle (1968). The major concerns of this idea are the phonological features underlying surface phonetic forms which are called distinctive features. According to Katamba (1989:34), distinctive features are phonological ingredients beyond a phoneme. Each language has a unique inventory of phonetic features, from which different combinations are selected so as to construct a phoneme system.

All speech communities the world over, are endowed with similar articulatory and auditory capabilities such that they are expected to produce and utilize speech sounds built up from a pre-determined set of binary features, according to their biological endowment. This is the basis of all the distinctive features.

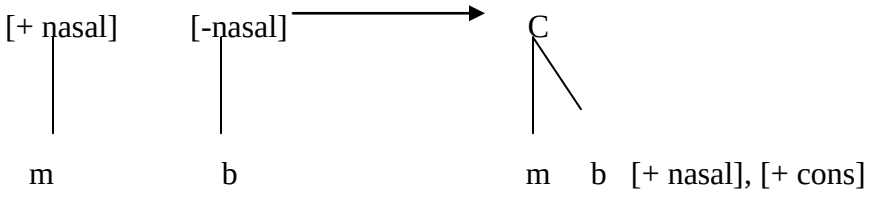
This theoretical framework adopts Bloomfield's (1933), claim that the phoneme is not the most basic phonological unit but rather can be decomposed into phonetic features (atomic). This is because phonological behavior of sounds in any language is largely dependant upon the phonetic features of which they are made. These are mostly

distinctive articulator gestures. This implies that phonological segments or phones have internal structures, hence bundles of ordered phonetic properties called features which are very distinct, as shown by the following example:

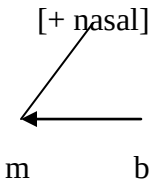
Figure 6: Distinctive feature Matrix



The example above, shows that /d/ and /k/ have [-nasal] and [+ consonantal] features, whilst vowel /a:/ satisfies [-nasal] and [-cons]. These are feature values attached to each of the phonemes /d/, /a:/ and /k/ of the word /da:k/ ‘dock’. The same structure exists for any sound in any language. Composite consonants (complex consonants) may have contradicting features as follows:



In the above example, [m] has [+nasal], whilst [b] has [-nasal]. However, assimilation [m b] makes [b] assume a nasal feature as shown below:



It also follows that any sound that is pre-nasalised (ng, mp, nk etc), pre-dentalised (pf, bv etc), assimilates a [+ nasal] and [+ dental] feature matrix, respectively.

Chomsky and Halle (1968) provide distinctive features for each of the phonetic features on the International Phonetic Alphabet. The general observation is that all phonetic features are articulator-based. These features are helpful in describing and distinguishing consonants and vowels that exist in different languages. Phonological processes such as assimilation and dissimilation can best be understood by employing knowledge of distinctive features.

Distinctive features can be defined as sets of phonetic characteristics that when variously grouped together distinguish one sound from another, for instance, the bundle of distinctive features for the phoneme [m] includes [+cons] and [+ nas] while those of [p] are [+ cons] and [-nas]. In other words, distinctive features refer to the phonological pattering of phonetic properties of sounds. These features help to differentiate phones and phonological processes such as vowel coalescence, vowel harmony, elision, epenthesis, metathesis and many others that require knowledge of distinctive features (John 1984: 48).

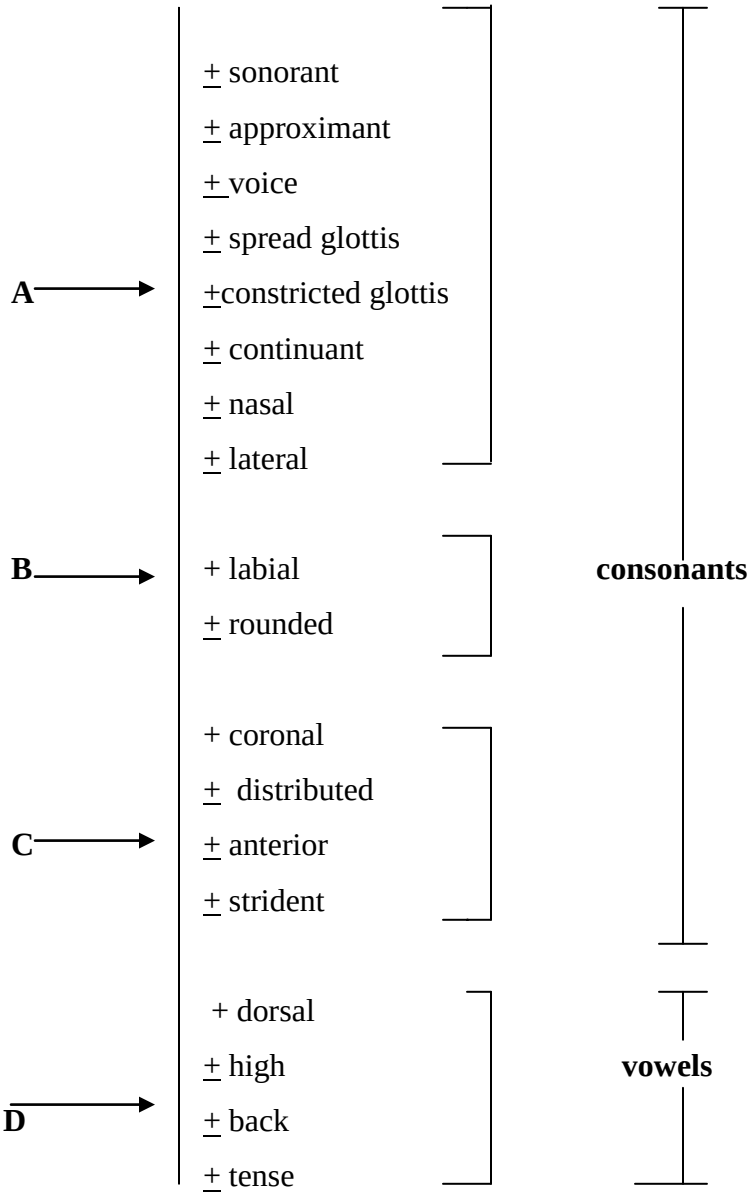
For the native speakers of a language, phonological features are mentally constructed and then assigned to correct representations, for example, Tonga has only one realization of the vowel [i] which is simply [+ high], [+front], whilst English vowels are elastic. The distinctions are made possible by attaching different features such as height and rounding.

According to Chomsky and Halle (1968), phonemes that exist in a language are unique to it. What makes phonemes of different languages differ are underlying distinctive features, mentally constructed by the speakers of the language in question. The speakers are responsible for assigning correct phonetic representations to utterances in ways that reflect the native speakers' internalized grammar. The concept of distinctive features helps the speakers to use consonants and vowels correctly as required by their phonetic inventory.

In general terms, sounds that are similar display similar features making it possible for class categories (of features). However, if these classes are penetrated further, beyond common binary features, scrutinizing, differences are bound to be established, thereby making each of the features distinct.

According to John (1984:78), distinctive features are categorized as follows:

Figure 7: Categorization of Distinctive Features



These sub-sets are referred to as natural classes. Those features that define natural classes from A-D are the so-called distinctive features. Each of the natural classes is composed of sounds that share a certain feature or group of features. Different sounds should not share all the same features as exemplified below;

[m]: | +nasal, + voiced, + alveolar
+nasal, + voiced, + bilabial |

[p]: | + bilabial, +cons, +oral stop, - voice
[b]: + bilabial, +cons, +oral stop, + voice |

[k]: | + velar, +cons, -voice
[g]: + velar, +cons, +voice |

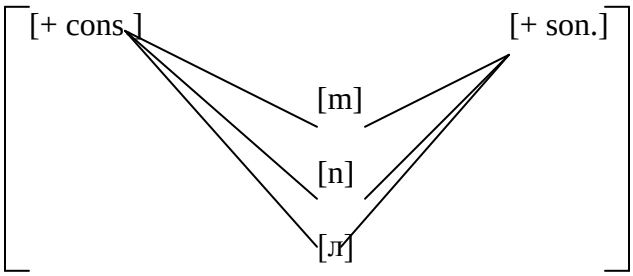
In so doing, phones are identified by features associated with their articulations. For this reason, consonants are classified according to place and manner of articulation as well as voicing, as shown below:

Table 2: Distinctive Feature Matrix for Consonants in Tonga

	m	n	ŋ	л	l	j	w
cons.	+	+	+	+	+	-	-
cont.	-	-	-	-	+	+	+
nas.	+.	+	+	+	-	-	-
lat.	-	-	-	-	+	-	-
lab.	+.	-	-	-	-	-	-
ant.	+	+	-	-	+	-	-
cor.	-	+	-	-	+	+	-

As according to the above tabulation, sonorant is a class of consonants that have the following binary features:

Figure 8: Binary Features



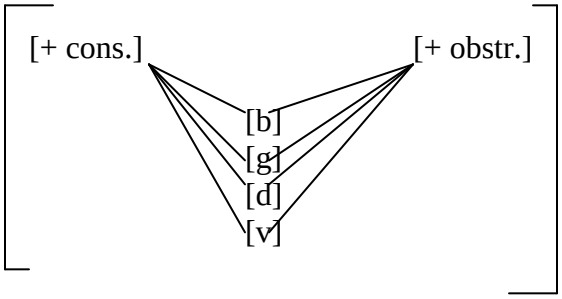
This means that [m], [n] and [л] are [+ son] but have unique features as shown on table 1.

Table 3. Distinctive Feature Matrix for Voiced Obstruents in Tonga

	b	б	d	ɗ	g	v	z	z̬		ʤ
cont.	-	-	-	-	-	+	+	+	+	-
strid.	-	-	-	-	-	+	+	+	+	+
distr.	-	-	-	-	-	-	+	-	+	-
ant.	+	+	+	+	-	+	+	-	-	-
lab.	+	+	-	-	-	+	-	+	-	-
cor.	-	-	+	+	-	-	+	+	+	+
constr.	-	+	-	+	-	-	-	+	-	-

This is another class of consonants which has the following binary features:

Figure 9: Binary Features for Obstruents



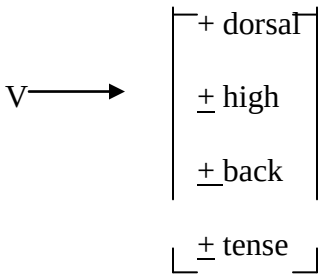
Different features of the above consonants are realized after penetrating deep into the atomic nature of the phones.

Table 4: Distinctive Feature Matrix for Voiceless Obstruents in Tonga

	P	t	k	f	s	ş	ʃ	pf	ts	tʃ
cont.	-	-	+	+	+	+	-	-	-	
strid.	-	-	-	+	+	+	+	+	+	+
distr -	-	-	-	+	-	+	-	-	-	
ant.	+	+	-	+	+	-	-	+	+	-
lab.	+	-	-	+	-	-	-	+	-	-
cor.	-	+	-	-	+	+	+	-	+	+
constr.	-	-	-	-	-	-	-	-	-	-
spread	-	-	-	-	-	-	-	-	-	-

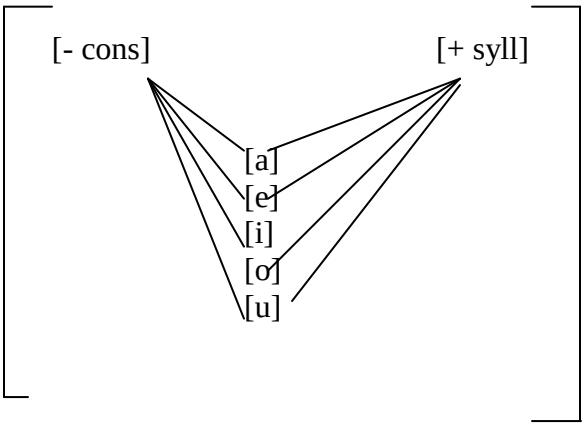
Each of the consonant in a language is attached to a unique combination of features denoted by articulation (place and manner of articulation as well as voicing). Vowels also

have features denoted by height, lateral position of the tongue and rounding of the lips as follows;



What categorize vowels into a class are binary features namely, [-cons] and [+syll.] as follows:

Figure10: Binary Features for Vowels



Vowels are differentiated by further scrutinizing the two phonetic features [-cons] and [+ syll] and the following distinctive features are established:

Table 5: 1. Distinctive Feature Matrix for Vowels in Tonga

	a	e	i	o	u
high	-	-	+	-	+
low	+	-	-	-	-
back	-	-	-	+	+
tense	-	+	+	+	+
front	-	+	+	-	-

The vowels do not appear in the same contexts with consonants, though the two sets (vowel and consonants) are tiers in CV structures. Thus vowels come before (VC) or after (CV) and because of that they are environmentally bound. Distinctive features can therefore, be viewed as binary "switches" with each sound, consonant or vowel having a unique configuration of these switches. For each of the sound, some of these switches may be turned on, while others turned off. The switches that are turned on and off determine the kind of sound produced. To represent each of these switches, each sound is given code names such as [±voice], [±distributed] and so on, to show whether the switch is turned on or off, either [+] code or [-] is placed before the name of the switch, for instance, [n] is [+ cons] and [-syll].

The distinctive features specify the phonemic contrast that exists in languages. A change in the value of features can potentially generate new speech. This idea is part of a more general concept that drives a word sequence from feature representation. This means that a word is represented in a lexicon by a sequence of features, for each of the segments existing, (intra-language or inter-language). It is hypothesized that speakers substituting

one phonetic segment for another would change only those features necessary, to obtain the target segment rather than substituting the entire phonemesised segment for instance [graund] ‘ground’ to [girawundi] (from English to Tonga). The target segment differs from the original by varying numbers of distinctive features. This means that speakers manipulate feature seized units during speech production. From the English version /graund/ ‘ground’ is with [-approximant), whilst the Tonga version epenthesises the approximant [w]. The substitution of consonants and vowels is governed by distinctive feature matrices, to successfully generate equivalent phonemes in the target language. Different target segments are generated manipulating the distinctive features.

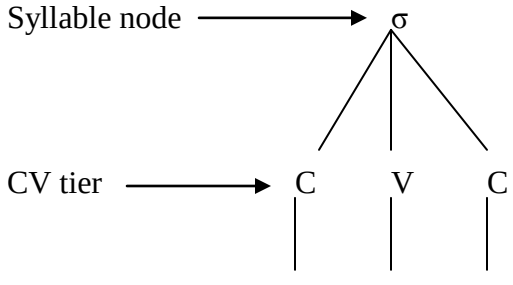
It also follows that establishing the phonemic inventory of specific languages means creating a phonemic grid of possible distinctions. The distinctive feature theory predicts that a small set of features can describe most if not all natural classes. The theory also suggests that these features are innate rather than learnt, hence sounds of a language are grouped together as a result of phonetically based generalization and distinctive features emerge as generalization, based on the phonetic properties of sounds.

3.3 CV-PHONOLOGY

This theory was propounded by Clements and Keyser (1983) and the major concern is to demonstrate a syllable structure. According to Clements and Keyser (1983), a syllable is a hierarchical unit, which has tiers as immediate constituents. Clements and Keyser, demonstrate that the syllable has three tiers, namely, the syllable node, the CV-tier and the tier for the bundles to differentiate the segments, as shown below:

3.3.1 The syllable

Figure 11: The English Syllable

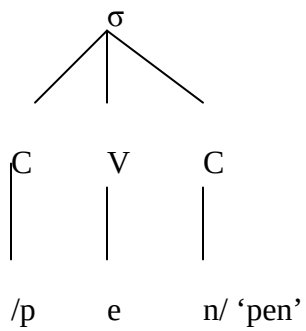


Segmental tier ⟶ /p e n/ ‘pen’

-cont	-back	+ nas
-voice	-high	+ant
-labial	-low	+cor

From the model above, it is the CV-tier that dominates the segments and the syllable node that dominates the CV-tier. The purpose of the CV-tier is to distinguish between syllable ‘peaks’ and ‘non-peaks’. In this view, the V-element of the CV-tier represents a syllable nuclears, thus the peak of Sonority as exemplified below:

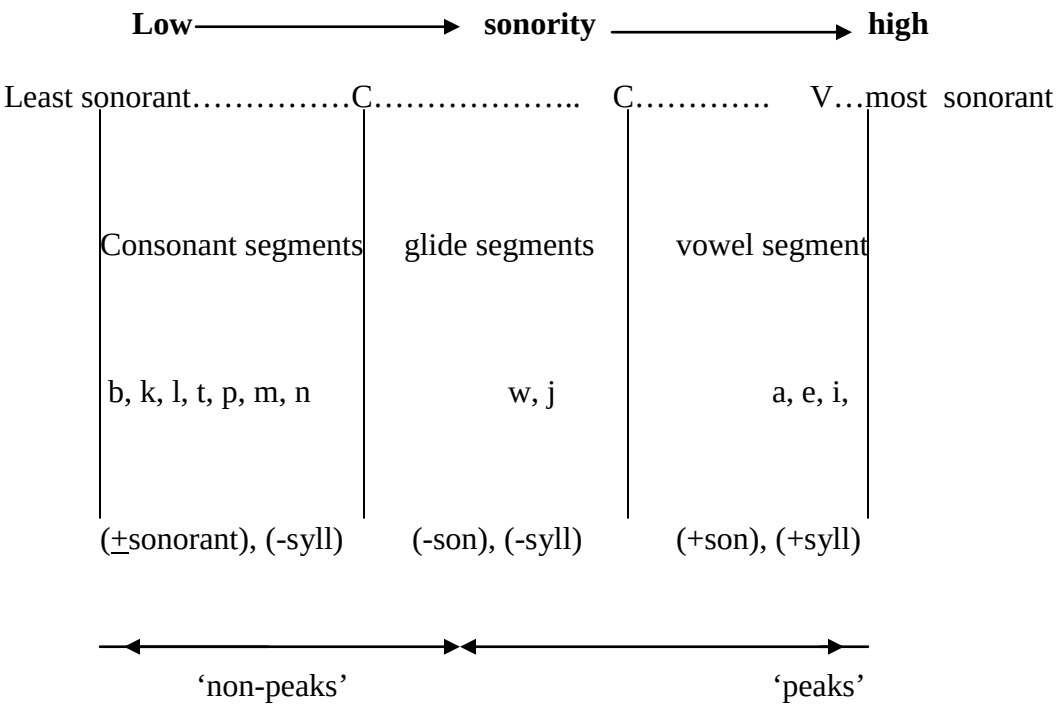
Figure 12: The Syllable Peak



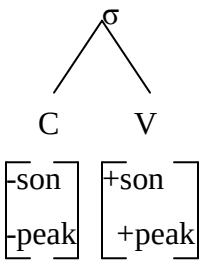
From the illustration above, [e] is the nucleus of the syllable [pen] (CVC), by virtue of being a more sonorant segment. In this regards, it becomes the syllable ‘peak’, whilst /p/ which is [-sonorous] and /n/ is [+ son] but [- syll], hence ‘non-peak’, therefore, the two are [-nuclears].

Clements and Keyser came up with a phological sonority chart, which places different segments at different sonority positions as follows:

Figure 13: Sonority Hierarchy Chart



The sonority hierarchy chart demonstrates that all the segments that fall into the vowel category are always the 'peak' in any syllabic construction, since they are highly sonorant:

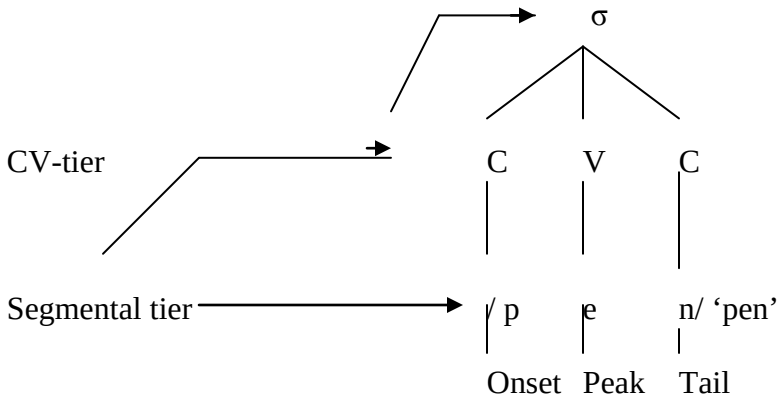


The above diagram is therefore translated to mean that all consonants, including glides, are 'non-peaks', hence marginal in the syllable. The glides are more sonorant than the rest of the consonants (obstruents, liquids etc) but however cannot function as syllable

‘peaks’ because in distinctive features line of the thought, they are accorded place and manner articulator features, which implies that during articulation, air is tempered with at particular distinct points in the oral cavity. This makes them fall in the category of consonants [-sonorant]. Vowels, which are articulated without interfering with airstreams (without place and manner articulator features), are distinctively [+ sonorant], which make them syllable ‘peaks’.

According to the CV-Phonology theory, consonants and vowels are dominated by the CV-tier, as segments, regardless of their position on the sonority hierarchy chart. Thus, consonants and vowels are CV units that make up a syllable in a CV tier and but are at different positions on the sonority strength chart. The general phonological principle of this is that consonants and vowels are constituencies of the syllable at segmental tier but with different functions as shown by the following illustration:

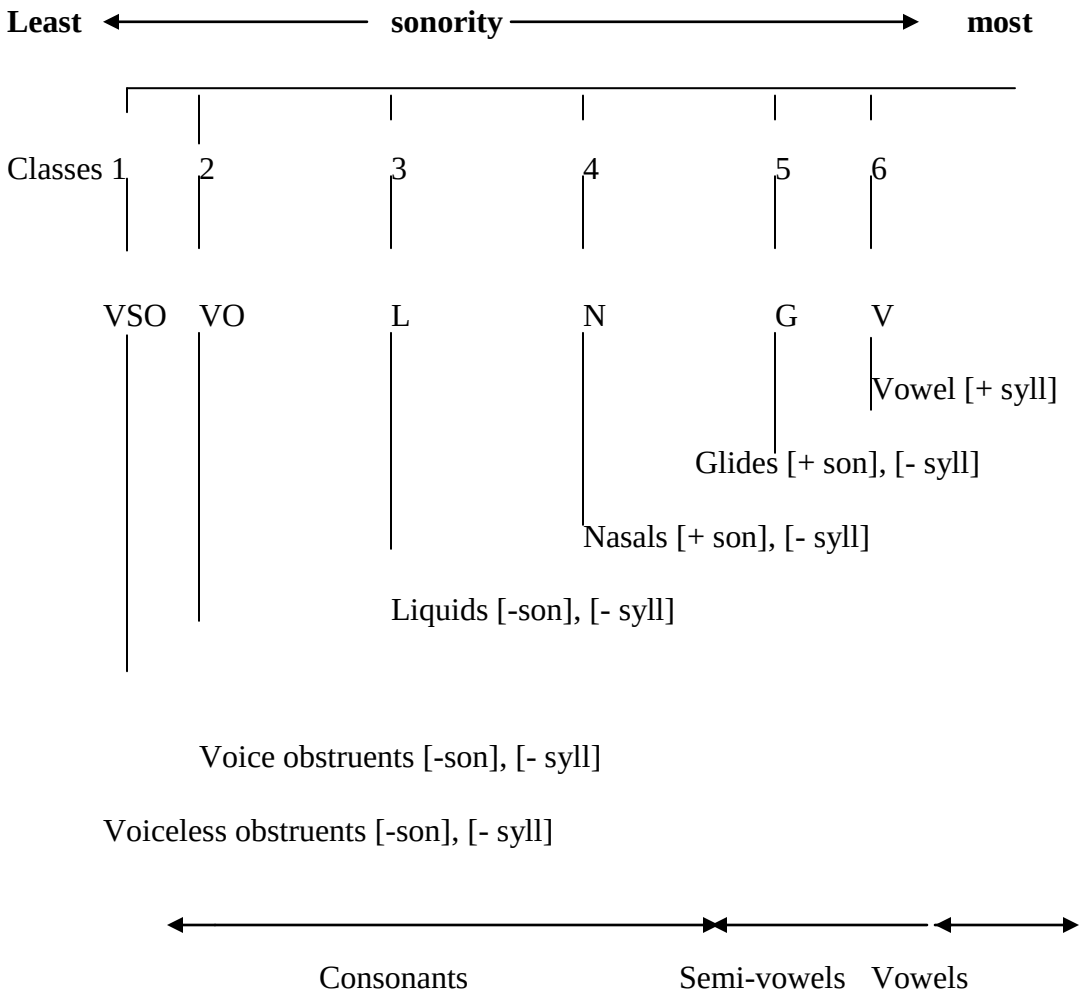
Figure 14: Constituencies of a Syllable



Translating the information above into the theoretical terms, it follows that any segment which is dominated by V, in a segmental tier, is defined as the syllable ‘peak’ [+ sonorant], for example, [e] in the English word [pen] while that which is dominated by C is ‘non-peak’, thus. [p] is [+son] and [-syll] whilst [n] is [-son] and [-syll].

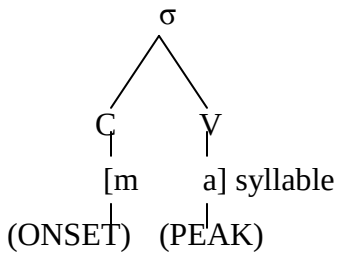
In dealing with segments in the CV-hypothesis, Clements and Keyser (1983) define syllabicity of C and V-elements as their ability to function as 'peak' syllable typologies. Thus the two theorists provide universal principles governing consonant and vowel tiers in 'well-formed' syllable structure (default). This takes us to one of the main tenets of this theory, which stipulates that any segment dominated by the C-element of the CV-tier is non-syllabic and that which is dominated by the V-element is syllabic. According to Clements and Keyser (1983), the syllable (CV), which contains sonority peak, is not arbitrary since there are classes of segments that are capable of functioning as 'peaks' by considering sonority strength hierarchy as shown below:

Figure 15: Sonority Strength Hierarchy



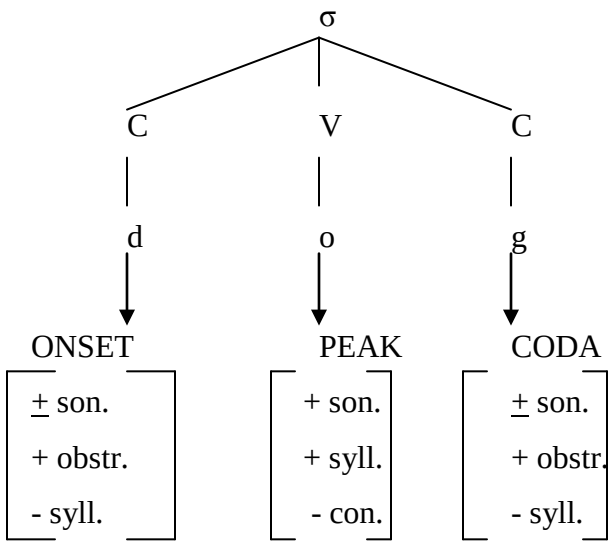
The sonority hierarchy shows phonetic correlation between openness and propensity for voicing, from 1-6, in class categories. The interpretation is that the more sonorant the sound is, the more audible it is likely to be. According to Hooper (1976:124), sonority is the loudness of a sound in a CV-tier. In this view, vowels are generally more sonorant than consonants. This follows that obstruents, nasals and liquids are less sonorant than glides and vowels. In line with the same argument obstruents are the least likely to be dominated by V, whilst the nasals, liquids and glides occupy the intermediate positions on the hierarchy. The general procedure of identifying syllabicity on segments, on a CV-tier, is by ranking them (segments) on the sonority hierarchy. The relatively most sonorant take the V-function, thus becomes the nuclears in a syllable. Whilst the less sonorant preceding the nuclears is assigned the initial C-element which in algorithm becomes an onset:

Figure 16: Peak and Onset Algorithm



From the above diagram, [a] is dominated by the V-element of the CV-tier since it is sonorant and syllabic, while[m], dominated by a C-element is sonorant but non-syllabic, which is class four, on the sonority strength. From this argument, it follows that [a], which is [+ son], [+ syll], is the nuclears of the syllable [ma], which is the 'peak' and [m] is the onset, since it is [-syll] and is preceding the nucleus element [a], [+ syll]. According to Clements and Keyser (1983), there are other distinct languages, with syllable structure where other less sonorant, C-dominated elements precedes the nuclears and these are called TAILS or CODAs. The following diagram exemplifies both Onset and Coda:

Figure 17: Onset and Coda Algorithm



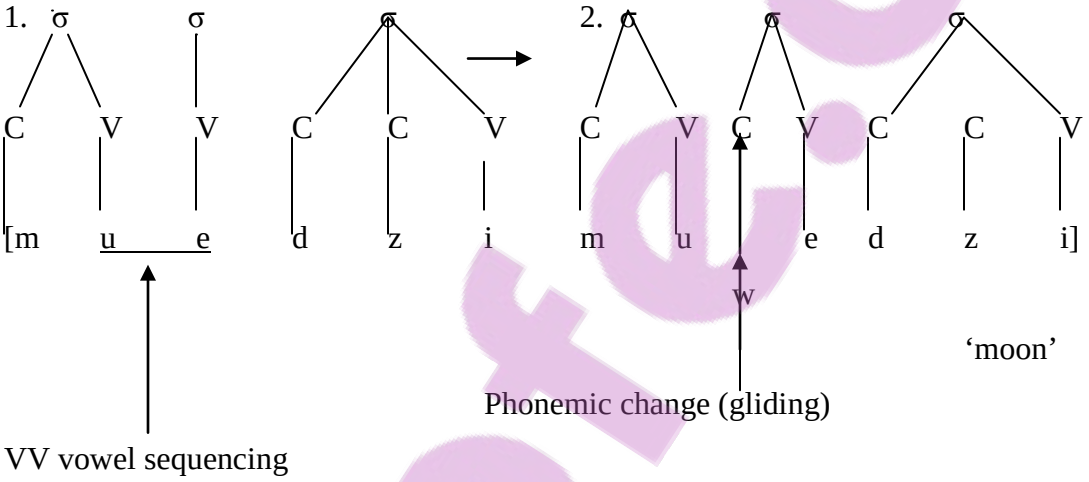
The diagram above illustrates three segments in CV-tier, which function in the categories of onset, nuclears and coda. [d] is the Onset since it is the initial C-dominated element that comes before the peak. The onset [o] is dominated by the V-element [+ son], the peak, and [g], being less sonorant than [o], in the same way as [d] is also [-syll] but because it comes after the most sonorant [o], is accorded the Coda or Tail matrix.

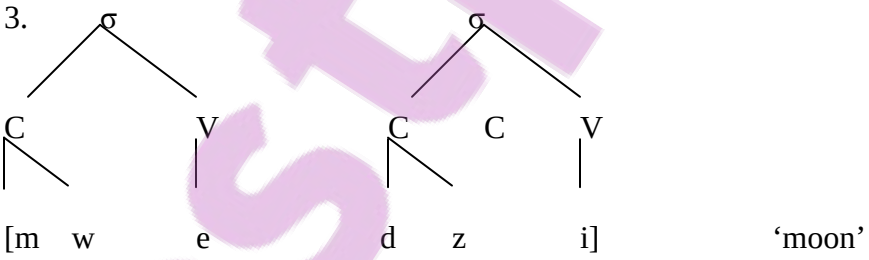
3.3.2 Glide Epenthesis

Glides are generally semi-vowels in terms of sonority, implying that they are more sonorant than obstruents, nasals and liquids but however, are less sonorant than vowels. They are dominated by a C-element and not a V-element. This therefore means that sonority strength does not allow them to function as nuclears in CV-tier but since they are dominated by a C-element, they function as Onsets or Codas in syllabic algorithm (John 1984:56). In languages that have ±C+V syllable pattern, vowel sequencing can be realized as VV (-C+V-C+V), where each V element is a nuclears of a syllable. An example can be drawn from the Tonga word [m***ue***nzi] ‘visitor’, where [ue] is a VV vowel

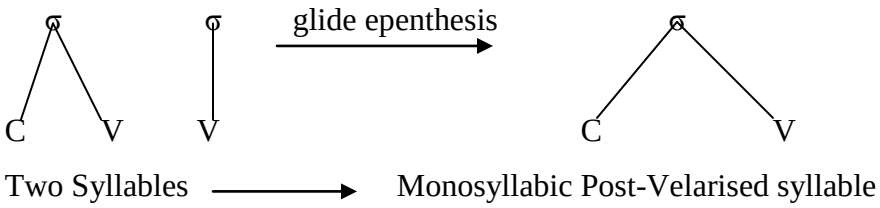
sequence. In other words, these are two syllables [–C+V-C+V] and not diphthongs, since Tonga does not allow diphthongization of vowels. This VV sequencing is permissible in Tonga, however, glides may be epenthesised to have +C+V+C+V sequencing. In Tonga, only glides may be epenthesised to function as onsets in VV vowel sequencing but can not function as codas, since Tonga does not have codas on its syllables. There are two glides in Tonga, namely, [w] and [j]. The process of epenthesising glides on VV vowel sequencing is called glide epenthesis (Zivenge 2005:55), demonstrated diagrammatically as below:

Figure 18: Glide Formation





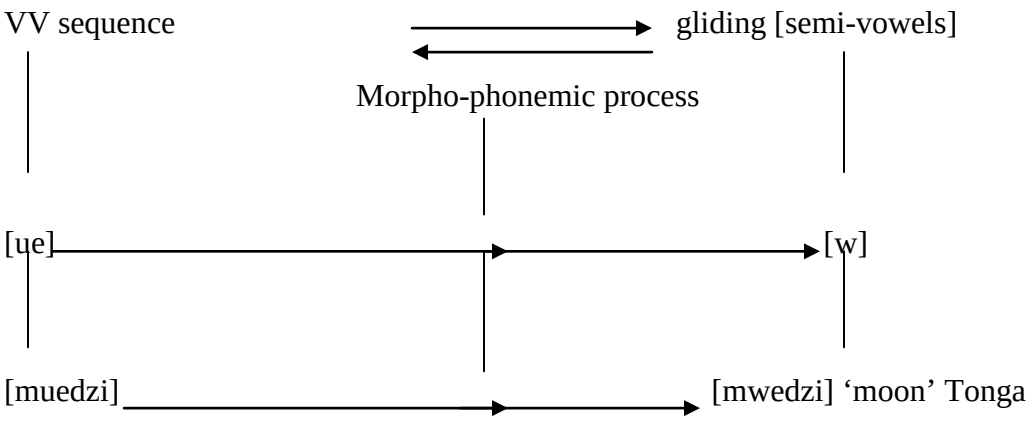
Phonemic change (process) on vowels [u] and [e] result in the following change:



Since the change is experienced on segments that are both dominated by V-elements, thus with greater sonority, it follows that the outcome should have vowel characteristics. The only class of segments with vowel characteristics is that of glides (semi-vowels). On the sonority hierarchy, they are in class 5, which means that they are closer to the vowels (class 6), as compared to obstruents, nasals and liquids, hence semi-vowels. However, since these fall into the category of consonants (- syllabic) rather than vowels (+ syllabic), the syllable pattern changes from the CVV structure to CV, since post-velarised syllables are monosyllabic. Phonemic changes on VV vowel sequencing (gliding), result in the introduction of glides (Kaisee 1985: 69).

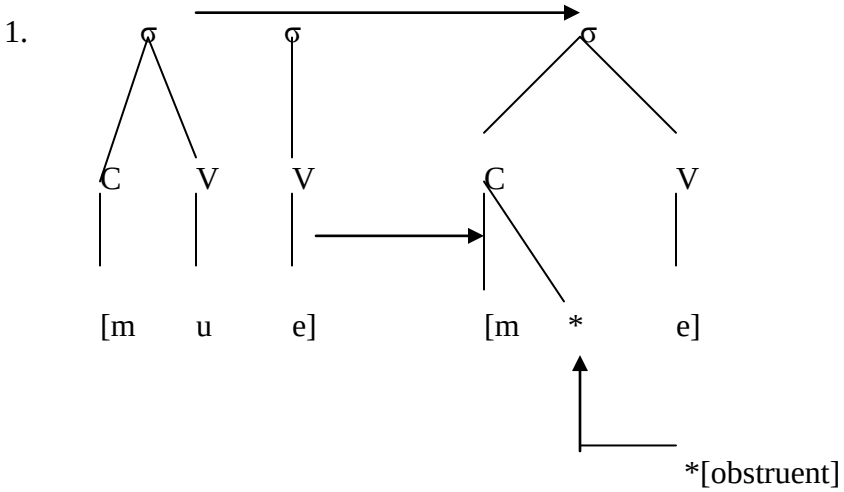
Phonemic change on VV vowel sequencing, in the nasal environment [m], results in a post-velarised monosyllabic syllable, for example [mue], comprising two syllables, [mu] and [e] changes to [mwe]. One thing to note is that glide epenthesis is a reversible process as shown below:

Figure 19: Morpho-Phonemic Process

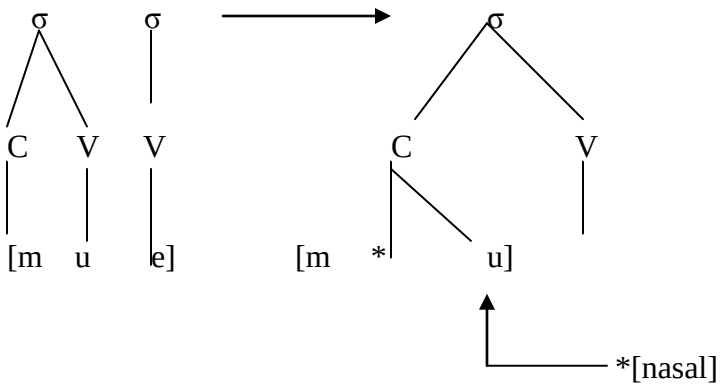


Phonemic change on a sequence of vowels does not result in the formation of obstruents, nasals, or liquids; since they do not have vowel (- syllabic) characteristics, thus they are too far less sonorant than vowels. The following illustrations demonstrate this argument:

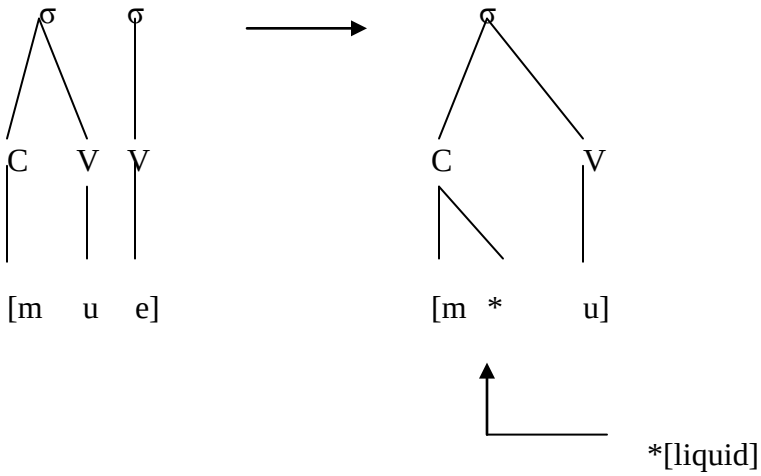
Figure 20: Handling Vowel Sequence in Tonga



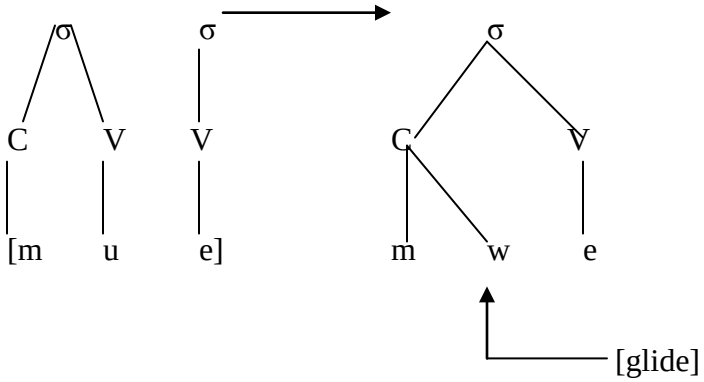
2.



3.



Phonemic changes on a VV sequence of vowels result in the following post-velarised monosyllabic syllable:



The diagram shows that phonemic change on vowels [ue], of class six (6) on the sonority chart, results in a sound with a slightly lower sonorant which is a glide [w], of class 5.

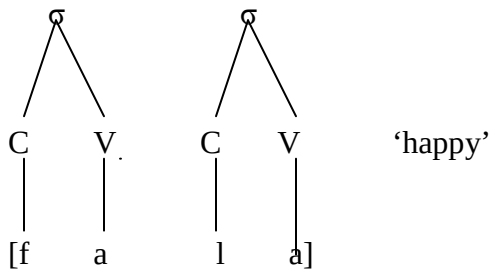
Glide formation changes the two syllables, CVV, to one, CV, since it is a post-velarised syllabic syllable, hence, monosyllabic. According to Kadenge (2007), post-velarised syllables are monosyllabic in nature. The CVV-structure has only a single onset, on the first syllable and [-C] on the second.

The CVCV structure has C-elements, which are consonant Onsets and V-elements, which are the syllable nuclears. The glide [w] changes the two CVV ([mue]) syllables to one, ([mwe]).

3.3.3 Syllable Typology

Clements and Keyser's (1983) model performs another task of describing syllable typology. This entails describing the default syllables and segmental elements, which are part of the core grammar, present in words of languages. Generally, the CV type syllable is the core syllable, having characteristic features that exist in any language as shown by the schema, as follows:

Core Syllable

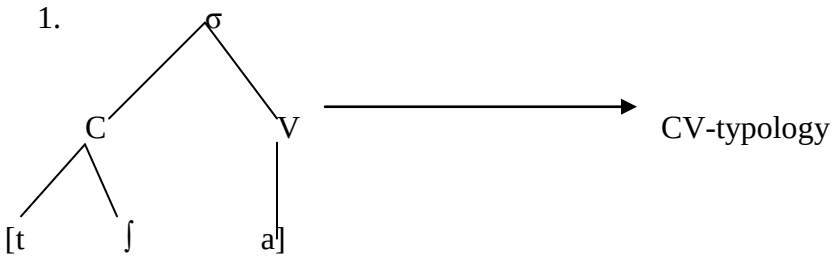


The above syllable structure meets the CV syllable requirement. According to Katamba (1989:160), "no languages have been reported to lack the CV type syllables". Other syllables that exist in other languages are just modifications of the CV, most of which

containing V-element. All languages have an applicable rule that govern any phonological component. In V-syllable, speakers delete the syllable initial C, allowing canonical syllables with V only. The following are notable examples of CV and V syllable structures.

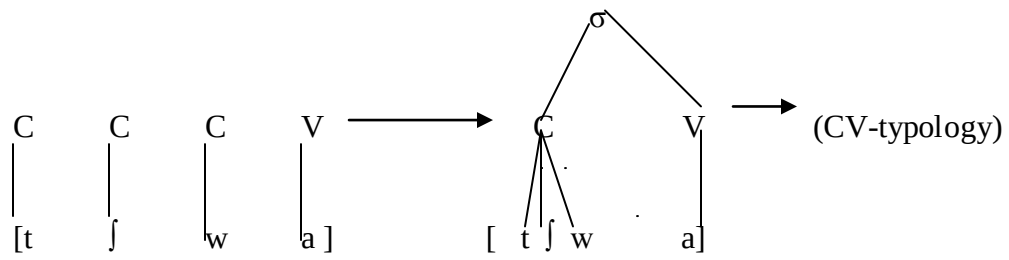
Figure 21: CV Typology

1.

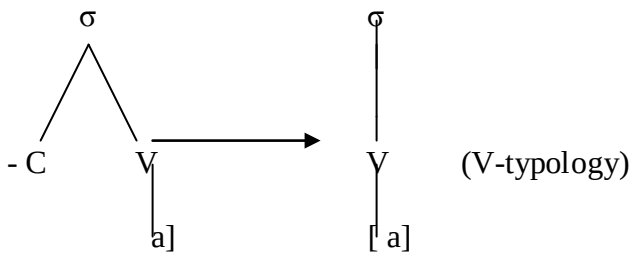


From the diagram, the syllable has an affricate which is monosegmental. (John 1984:60). A post-velarised affricate is also monosegmental, as demonstrated by the diagram below:

2.



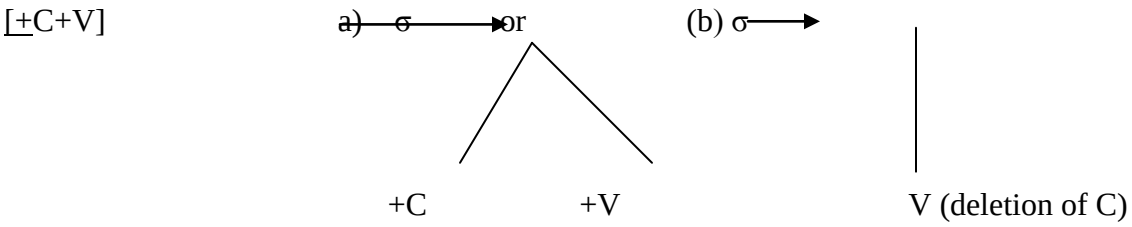
3.



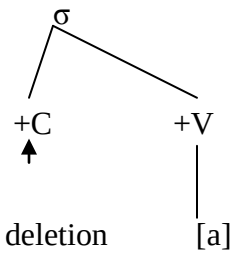
This is another type of syllable in which the C -element has been deleted and only the

V-element remains as nuclears, [-C+V].

The above diagram (3), takes us to Katamba's (1989) argument that the consonant segment is optional in a syllable, whilst the nuclears or peak is compulsory as in the following schema, ± C+V syllable typology, as follows:



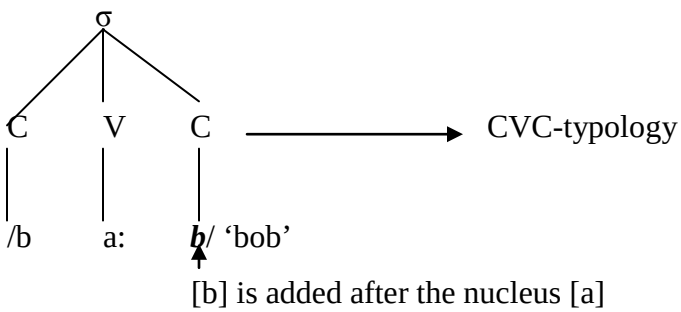
In this schema, both the C and V- element exist, in (a), whilst (b) has only the V-element, hence, optional deletion of the C- initial element as shown below:



In this schema, the C element is deleted only to remain with the V- element, as the nuclears of the syllable.

Some languages, for instance English, have syllables obtained by a rule which adds the C element after the nuclears, which basically results in the formation of canonical VC syllables as follows:

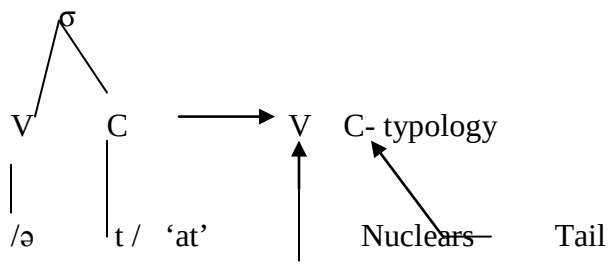
1.



This syllable structure has a C- element initial, which function, on the Onset and also the

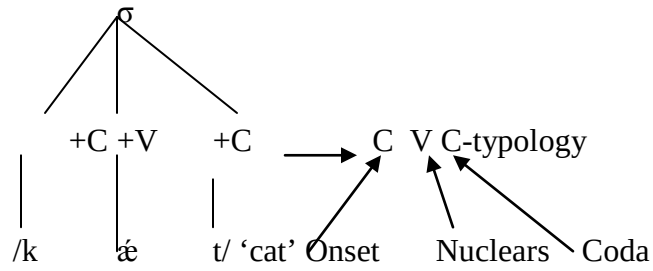
V-element which is the nuclears and then a final C-element, dominated by the consonant, functioning as the Tail of the syllable:

1.



This syllable structure has no C- element initial, which should normally function as the onset but has only the nuclears, dominated by the V-element and then the final [t] segment, dominated by the C-element which function as the Coda or Tail.

3.

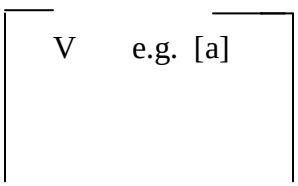


This syllable structure has initial C-element, Onset, V-element, Peak and C-final, Coda..

Based on Clements and Keyser (1983:29), syllables are of two types, namely those characterized by a rule which deletes C before the V-element (CV) and that, which adds C after the V

The element VC is summarized as follows:

Type 1



VC e.g. [at] ⟶ CV (rule adds C-final)

VCC e.g. [add]

Type II

CV e.g. [be]

CCV e.g. [kwi] ⟶ VC (rule adds C-initial)

CCCV e.g. [mbwi]

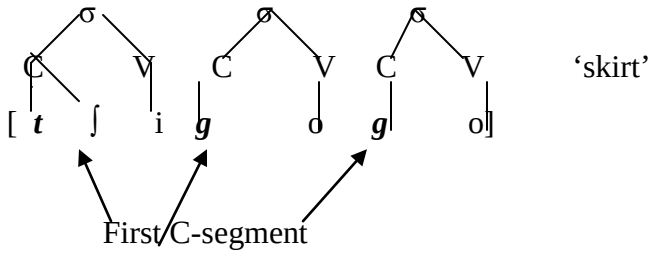
Such syllables typologies are found in different languages. To fulfill these typologies, mechanisms are needed to deal with languages specific rules, which can be termed syllable structure principles. Such principles, in different languages, state for instance, that a language allows core syllables to have CV or VC with sequences of C and V-elements, so that well formed core syllables are formed with either Onsets or Codas. Whilst other languages show a sequence of single C-initial or final and V-element, others allow syllables with composite C-initial and final combining with V-element (CCCVCC sequences or CCVVC). This principle provides a mechanism for setting language specific facts, explored in syllables of different patterns. Tonga allows C sequencing before the nuclears (CV) and not after the nuclears (*VC).

3.3.4 Syllable Well-Formed Conditions

The CV theory provides various arrays of CV combinations into syllables. From the syllable principle, it has been established that the V-element in any CV or VC pattern is dominated by the vowel and therefore, becomes the peak or the nuclears in a syllable typology. In the same way, the C-element before or after the V element becomes the initial consonant and the final consonant, Onset and Coda respectively. What is yet to be established is the syllable node to which the C-elements are assigned, since the syllable theory has shown that the C-element takes the Onset or Coda position. Also to establish is the syllable node to which the 'Middle Consonant of Panic' is organized. These conditions are what are termed 'well formed' conditions. Syllabicity of any CV combination is determined by how the syllable nodes are accorded to the different C-elements (Onset, Middle Consonant of Panic or Coda). One of these principles, as according to Clements

and Keyser (1983), is the ONSET-FIRST PRINCIPLE. The principle assumes that the syllable initial consonant is always the first segment on a CV-tier. This means that any C-segment before the nucleus is regarded as the Onset. The Onset is determined by its position in relation to the nuclears of the same syllable, for instance:

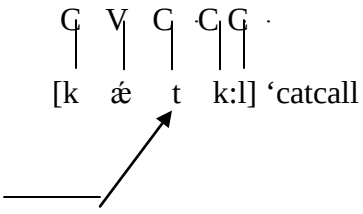
Figure 22.1: Onset-First Principle



‘skirt’

Using the Onset-First Principle, then [t], [g] and [g] by being the first C-elements in syllables of the above-mentioned word are called onsets of the respective syllables.

The MIDDLE CONSONANT OF PANIC PRINCIPLE is another important argument which states that the C-element that occupies the middle part is regarded as the Middle Consonant of Panic, as shown below:

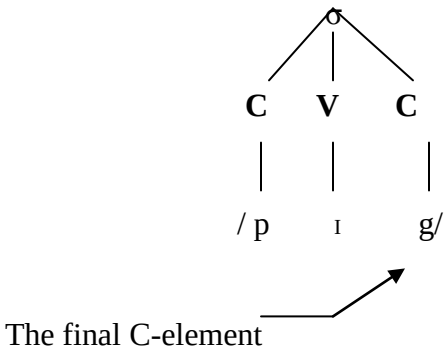


‘catcall

Using the above principle, it follows that [t] by virtue of its intermediate position in that particular syllable it assumes the role of a Middle Consonant of Panic.

The last principle is THE TAIL CONSONANT PRINCIPLE, which states that the final C-element in a VC syllable is called the Tail or Coda. This is exemplified as follows:

Figure 22.2: Tail-Consonant Principle



From the diagram above, /g/ is the final C-element in the word /pɪg/, hence the Tail.

The extent to which a language in question allows any syllable structure condition depends on how speakers attach the C-element to the node as shown by the schema below:

Well-formedness schema

Syllabicity =**f** (syllable node)(C-initial)(C-middle)(C-final)[1]

This syllabicity principle applies in potentially ambiguous cases characterized by C-initial, C-middle of panic and C-final. According to Clements and Keyser (1983), syllable 'well-formed' condition is a means of coming up with over riding language specific reasons for C and V arrangement in syllables. The principle requires 'well-formed' conditions to exist when the strings attaching syllable node are divided as follows,

1. – C + V e.g. syllable [a] as in the word [afala] 'was happy'
2. +C + V e.g. syllable [fa] as in the word [fala] 'happy'
3. + C +V+**C**+C e.g. syllable /kǽtʃ/ as in the word /kǽtʃ/ 'catch'
4. +C+V+C e.g. syllable /kǽt/ as in the word /kǽt/ 'cat'

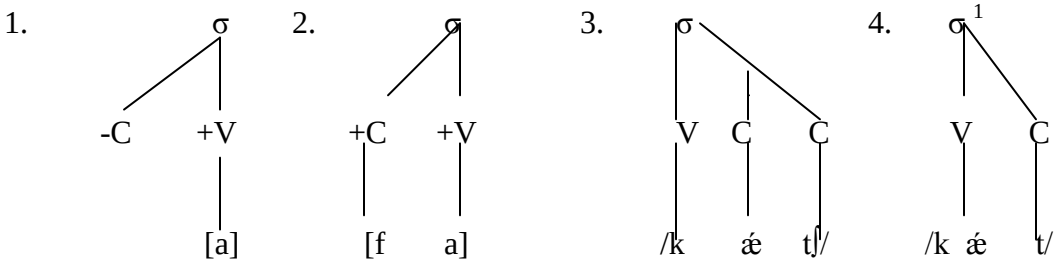
From the four examples above, 1 and 2 show a CV pattern, where 1 exemplifies a syllable without an Onset but only has a peak [a], whilst 2, shows a syllable with an

[3] Where **f** is the correct assigning of syllable node on C-initial, C-middle and C-final.

Onset and a 'Peak' [fa]. Example 4 exemplifies a coda, in a VC pattern, where 3 shows a affricate, monosegmental Coda [tʃ].

Syllable nodes are therefore, assigned as follows:

Figure 23: Assigning Syllable Nodes



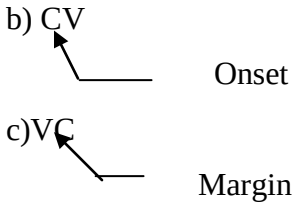
The Onset-first, Middle-Consonant of Panic and the Tail consonant principles determine how C and V combinations can be syllabified using the syllable nodes, therefore, it gives the syllable 'well formed' conditions. The principles give the following step-by-step algorithm (procedure),

a) Every V-element of the CV tier should be limited to the syllable node [σ]. This assumes that every syllable is denoted by the existence of a sonorous element [V], which in the nucleus, or node definer [V→ σ d[1]].
b) Link each of the C-elements, of the CV-tier, to the left of the nearest V- element or the most sonorous element. (this linking [a-b], result in the establishment of the peak and the onset).
c) Repeat the procedure (b), linking the C-element to the right of the nearest V-element (syllable margins or tails are created).

The result of this algorithm can be summarized in the example below:

a) V⟶ Ó

[4] Nodes assigned to C-elements from 1 to 4, shown by strings.
[5] [V] is the nucleus and [Ó] is the node, while [d] is abbreviation of definer.



Linking of C-elements to the V on their right, and at a time, gives the 'well-formed' conditions of a Coda or margin and to the left it gives an Onset.

However, Clements and Keyser (1983), comments that the universal principles give the default 'well-formed' condition, which when all factors are constant, applies under specific rules. They point out that syllabicity regulates the ways in which lower level units namely C and V of any phonological hierarchy can be combined. This knowledge of the CV- phonological system, by speakers of a language, is consistent with the syllable of that language and their allophones. This knowledge has to go beyond that of phonemes during the creation of 'well formed' phonological constructions. In other words, not all combinations of C and V are permissible in linguistics.

3.3.5 Syllable Description

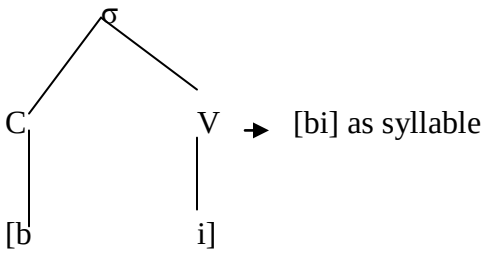
There are generally two types of syllables found in languages, when making reference to what is called syllable typology (Kaisee 1985:43). These are of two types, namely, open and the closed syllables.

3.3.5.1 Open Syllable

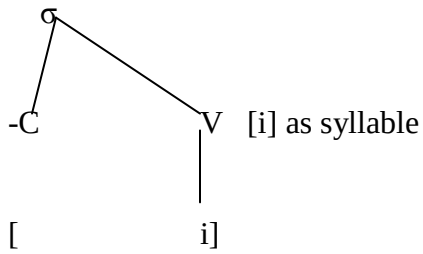
This is usually a syllable that has $\pm$ C +V, thus has the V-element as the rightmost segment in each syllable.

Figure 24: Open Syllables

(1).-/ +C+V Open Syllable



(2).-C+V Open Syllable



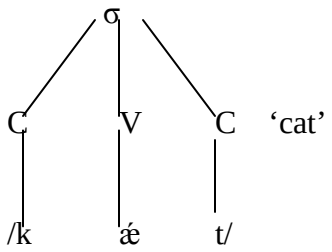
Such a syllable has a C-element, which is an Onset [b] (+consonant), as in diagram (1). Normally, this C-element is at the initial position in a CV pattern such that it becomes the leftmost constituent in the CV-tier. In this regards, it takes the position of the onset. On the other hand, the V-element, which is a syllabic element, takes the rightmost position, to make it the last constituent of a CV-tier. This implies that the node is assigned to the peak. On diagram 2, there is deletion of the C-element, since it is optional and only the V-element constitutes the syllable and the node is attached to that only element. These syllables (1 and 2) are referred to as open because the rightmost constituent has the following characteristics [+ peak], [+ syllabic].

3.3.5.2 Closed Syllable

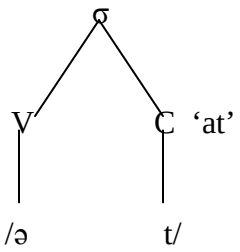
This is typical syllable structure that has the pattern [+V+C]. This means that it has an additional C-element to the right of the V-element, as shown below:

Figure 25: Closed Syllable

1. +C+V+C Closed Syllable



2. –C+V+C Closed Syllable



Contrary to the open syllable, which has the peak as the last most constituent of the CV tier, the closed syllable has C as the right most elements. This is referred to as the Margin Coda or the Tail. This (Margin) is characterized by [-syllabic]. The node of that particular syllable precedes that particular C-element of the CV tier, thus to the left of the coda.

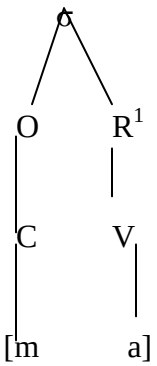
3.3.5.3 Light Syllable

A syllable is regarded as being light if it does not contain branching rhymes. Thus characteristics such as Onset or Margin do not play any significant role in the computation of the syllable weight. Below are representations of light syllables:

Figure 26: Light Syllables**:** without Branching Rhyme. (Zivenge 2005:56)

1.

2.



There are no branching rhymes in the syllables computed above. This means that the node does not consist of diphthongs and triphthongs. This is because long vowels have

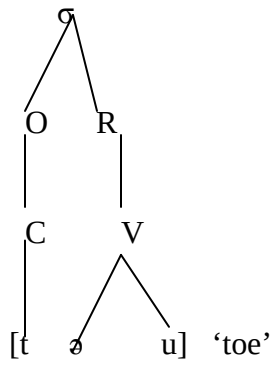
[6] R-representing articulation jerks and O-non-rhymes

branching rhymes on the V-element. It therefore, follows that such a syllable consists of pure vowels [a, e, i, o, u].

3.3.5.4 Heavy Syllable

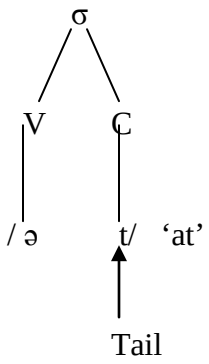
A heavy syllable is that which is characterized by a branching rhyme. As is the case with light syllables, the Onset or Margin characteristics have no influence in the computation of the syllable weight. However, this does not mean that the C-element is not an important factor for syllable weight. The following are examples of heavy syllables, according to Zivenge (2005:56).

Figure 27: Heavy Syllable with a Vowel Branching Rhyme



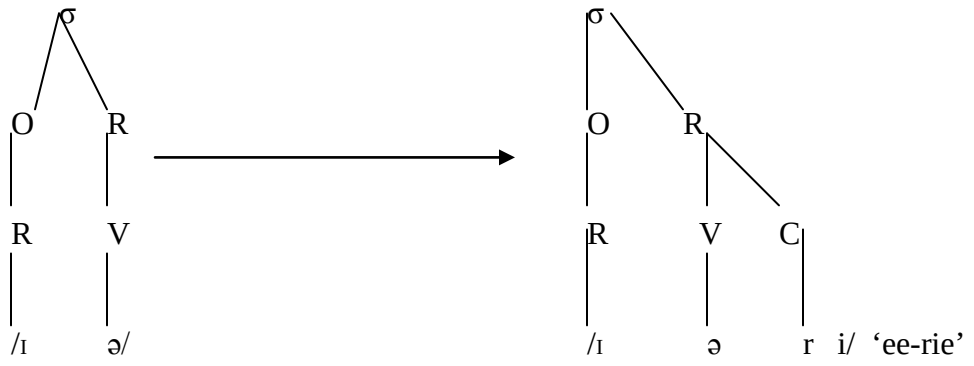
From the diagram above, the syllable /təu/ is characterized by a branching rhyme on the nuclears, hence a diphthong.

Figure 28**:** Heavy Syllable**:** with short vowel [e], followed by a Tail.



The diagram above is characterized by a short vowel followed by a Margin, hence fulfills the ‘well-formed’ condition of a heavy syllable.

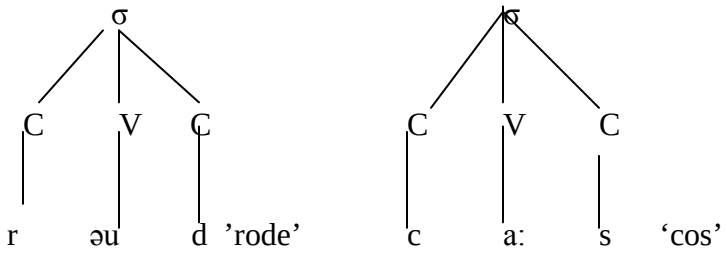
Figure 29: Heavy syllable with Rhyme



Some languages normally have both characteristics thus having both light and heavy syllables. Others may only have light syllables as is the case with many Bantu languages. The issue of syllable weights determines the applicability of stress rule. In order to do this effectively, it is paramount to know the constituent structures of the rhyme. This is what is referred to as the Branching Rhyme Hypothesis (Katamba 1989:179). The general branching in languages show that rhyme is at the nuclears and margin or within the nuclears it self, hence stress is either projected by nuclears and margins or nuclears alone. It is longer in a nuclears as shown below:

Longer **Shorter**

1.

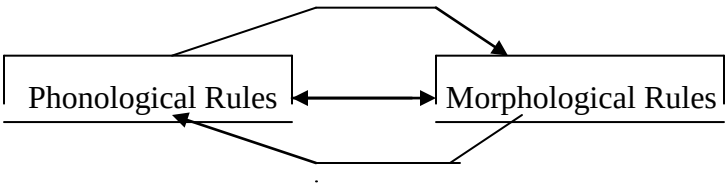


The CV-phonology takes us to the understanding that syllables are of two categories, namely the CV and the CVC pattern.

3.4 **LEXICAL MORPHOLOGY AND PHONOLOGY PARADIGM**

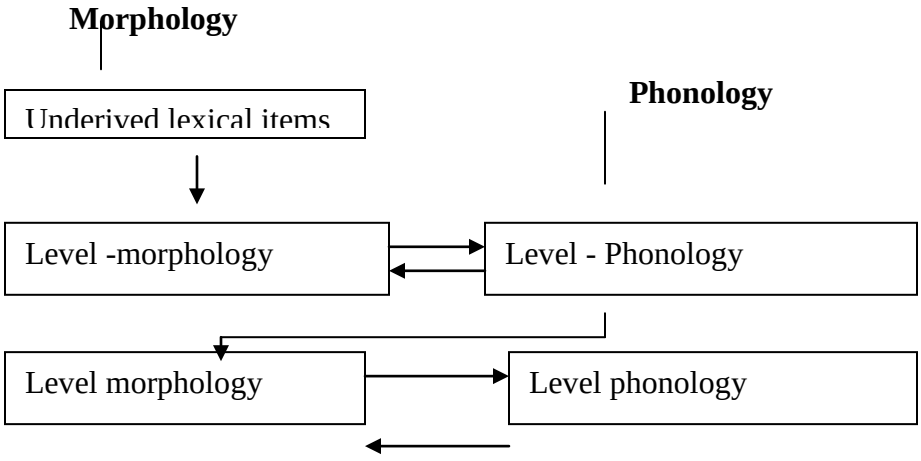
According to Booji and Rubach (1984:1), the lexical morphology and phonology theory was developed by Kiparsky and Mohanan (1982). The theory was developed from Chomsky's generative theory of 1970. In so doing, it is also generative in approach. Kaisee and Show (1985:1) claim that the theory is grounded on arguments propounded by Chomsky (1970) and the proceeding generative scholars. Aronoff (1976:13) says that the theory was developed to address the problem of the interaction between phonology and morphology. Their main argument is that morphological and phonological rules are interwoven.

The lexicon theory is regarded as nothing but rather an appendix of generative phonology but it idiosyncrasies properties of lexical items and morphemes. In this regard, a lexicon is recognized as the main component of grammar, which contains properties of words and morphemes. The theory accounts for word formation using both phonological and morphological rules in a cyclic fashion:



The underlying principles in this theory are that not all sequences of morphemes and phonemes in a language produce 'well-formed' words. Hence, there are morpho-phonemic rules generated from grammar of a language that govern lexicon formation to be permissible. Constraints on word structure serve as a filter allowing only certain morph-phonemic sequences to occur. In this theory, it is assumed that word formation rule or the morphology of word is directly interwoven with phonological rules at various levels (John 1984:67). This can be demonstrated as shown below:

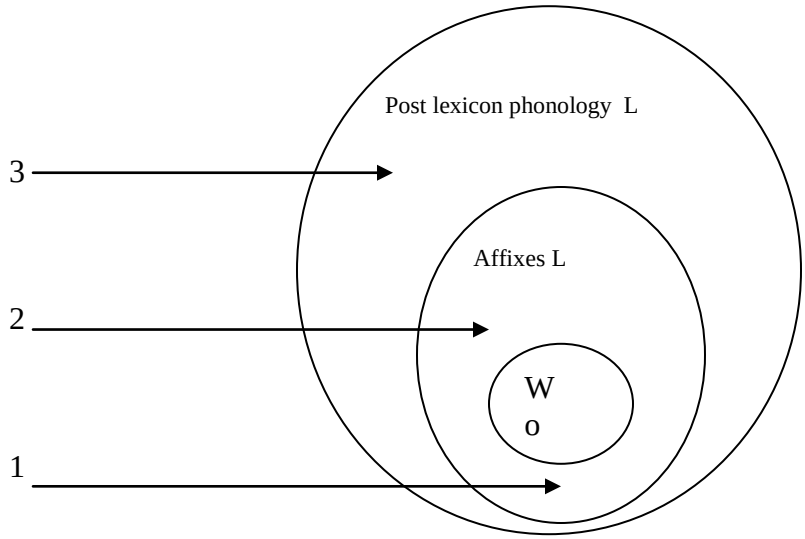
Figure 30: Lexicon Rules



From the diagram, it is established that the morphological rules are cycled through their phonological counter parts at the same level and above. This follows that both inflectional and derivational word formation processes can be computed and analysed on a series of linked levels, which Katamba (1989:257) refers to as same strata.

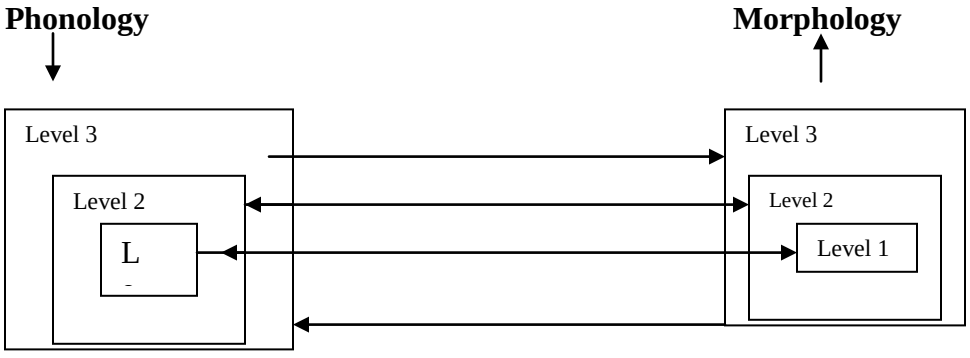
The main concern of the theory is to show how morphological and phonological rules that govern lexicon formation apply to the word root first and then outwards to the affixes. Katamba (1989:258) likens a word to an onion, which has the word root at the core (level) and the affixes in the inner layer (level) and other post lexicon phonology in the outer layer as the skin of the outside of the onion:

Figure 31: Word Structure

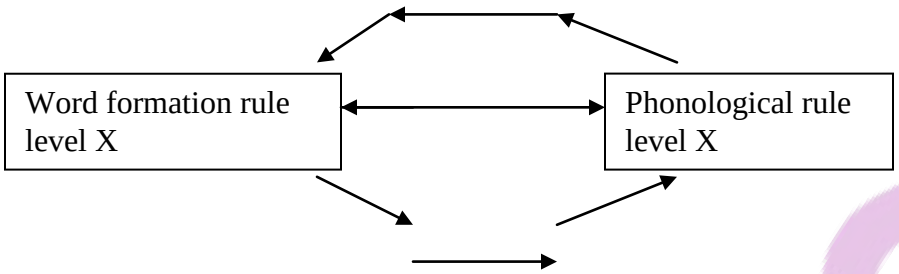


L= levels

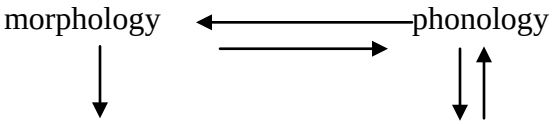
During the major morphological processes like derivation and inflection, there is always a constant cycling of data through the interlocking phonological and morphological rules at each level as shown below:



According to Kiparsky and Mohanan (1982:120), this can be summarized as follows:



Where:



Insert A/(Y_____ Z) apply relevant phonological rules

e.g. insert (past) /fi:d/_____/V → /fɪd +past/V → (fed)

"feed + past" → "fed"

(John 1984:100)

From the illustration, it shows that the lexicon has an internal structure and also that it is hierarchical. The number of layers is not very important but what is important is the understanding that morphological data is stratified and that is sufficient to account for the wrinkles in the data found in languages. The onion metaphor discussed earlier on captures only the essential processes. According to the Lexicon Phonology Theory, the center of the word is the underived lexicon item (single morpheme), whilst the outside indicates other processes like inflections and prefixations. Generally, there is no lexicon information rule that effectively account for such items. These appear in the word with the phonological grammatical and semantic properties with which they surface (Katamba 1989:259).

The level, above this, contains bound morphemes like /ʌn/ 'un' as in the word /ʌngreItfəl/ 'ungrateful'. Such morphemes as /ʌn/ 'un' cannot occur independent of the root word. The word root is regarded as the base morpheme and none of the bound morphemes can

occur in isolation but rather together with the base. Affixes attached to this level have a much more intimate relation with the root to which they are attached as compared to those on level 2. The theory has a number of tenets, which include the following:

3.4.1 Lexicon Morphology

Inflectional morphology can be described as grammatically determined alternation in the shape of the root word, involving categories such as number and tense.

Level 1: Vowel Changes

e.g. r***i***ng (present) → r***a***ng (past) → r***u***ng (perfective)

These changes in tense show the sub-regulatives which a grammar of English needs to capture and its clear that level 1 would be used to state vowel changes and this opens way for level 2, where higher affixations occur in a language.

Level 2: Affixation

e.g. walk (present) → walk***ed*** (past)

The theory stipulates that level 2, affixes precedes those of level 1. Thus if a rule applies at level 2, then it takes precedence over that of level 1.

In this account, the ordering of levels has serious implications for the way in which rules interact for instance derived words as shown below:

Base word	**Derivative**	
Bl***ee***d	bl***oo***d	English
pfamb***i***	famb***a***	Shona
isihamb***i***	hamb***a***	Ndebele

To derive verbs from nouns, as according to this theory, two level rules are applied. One rule, which is applicable to all examples, is the change of the vowel famb***i*** (walker) to famb***a*** (walk), bl***oo***d to bl***ee***d and isihamb***i*** (walker) to hamb***a*** (walk).

The second level will be that of inflections e.g.

NOUN	**VERB**	**LANGUAGE**
Walker	walk***ed***	English
Fambi	***ka***famba	Shona
Isihambi	***sa***hamba	Ndebele

The inflections ***–ed***, ***-ka*** and ***-sa*** are used at a level higher than just changing a vowel, which is level 2, for English, Shona and Ndebele.

At this level, number can as well be included as follows:

NOUNS	**SINGULAR**	**PLURAL**	**VERB**	**LANGUAGE**
Fambi	***-a-***	***va-***	***-ka-***famba	Shona
Isihambi	**-u-**	***ba***	***-a***-hamba	Ndebele

Level 3 include higher order suffixation, and prefixation e.g.

e.g. ***mu*** + fambi ***a-ka-***famb-a ‘the walker walked’ Shona

mu-fambi ***a-ka***-famb - ***is***- a (caus)

Where; prefix (L3) + root word (L1) = number (L2) + tense (L2) + suffix (l3).

The morphological process involved is the derivation, which changes nouns to verbs. In addition to that the suffix is added to come up with higher order verbs. At level 1, the

change of the vowel phoneme affects segmental phonology of the lexicon to a verb as well as the insertion of affixes and suffixes. The affixes and suffixes also affect stress (word bound) depending on whether the affix or suffix takes the form of light or heavy syllable.

3.4.2 Stress

Suffixes according to the Lexicon Phonology Theory can be described as either weak or strong modes. This description of suffixes is determined by the stress they affect. Suffixation attracts stress to the immediately preceding syllable, only if it is heavy. If the syllable preceding is light, stress is placed on the second syllable. This means that strong suffixes place stress on any syllable preceding them, while those that are weak place stress on the second syllable to the left.

e.g.1**. Strong Mode Suffix**

.[electric] = elec***tri***city =stress is on (tri)

[account] =accou***nta***ble= stress is on (nta)

2. Weak Mode Suffix

[me***di***cine] =medicinal = stress is on (di)

[co***ngre***ss]= congressional= stress is on (ngre)

In light of what has been discussed, suffixation does not only have influence on segmental change but also supra-segmental change on the lexicon in question.

The theory also stipulates that not only does the presence of the strong mode suffix make stress move to the immediate preceding syllable, as is the case with the lexicon [electricity] or [accountability] but it also causes the shortening of the dipthong or long vowel of the root (tense), which as a result is the realized on the corresponding short (lax) vowel. This motion of vowel shortening (laxing) as a result of suffixation is called

trisyllabic laxing or vowel shortening but only applies to forms with at least three syllables (Kiparsky and Mohanan (1982: 102).

3.5 CONCLUSION

The theoretical framework is a blend of Distinctive Features, CV-Phonology and Lexicon Morphology and Phonology assumed to be in the domain of universal grammar or Generative Phonology. This is an area in which primary rules of a language are established by way of basic phonetic forms. In this regard, the framework has established that changes of some words from one language to the other or within a language are really the function of generative rules (distinctive features, syllable typology and the phonological processes) accompanying a lexicon. Substitution, epenthesis, assimilation, dissimilation, phonotatic constraints, prefixation and inflection depend on the pattern of the existing phonological features; the CV-pattern and the morpho-phonemic attributes of the language in context. This framework guides data analysis and annotation during discussion of the findings in chapters four and five (Nativisation of Loan Words from the English environment into Tonga). Thus the Distinctive Feature, CV-Phonology and Lexicon Phonology tenets form the framework, which guides the researcher in analysing, describing and accounting for the processes that underpin phonological and morphological motivisation of words from English into Tonga.

CHAPTER FOUR

AN OVERVIEW OF TONGA PHONOLOGY AND MORPHOLOGY

4.1 Introduction

The major aim of this chapter is to give an overview of the phonological and morphological structure of the Tonga language. This entails giving a background discussion of the phonemes and morphemes that exist in the Tonga language. The phonological and morphological systems give insight into the succeeding chapter (Chapter Five), the major discussion of this whole study. All the words that enter into the Tonga language as borrowings or loans are subjected to the phonological and morphological constraints discussed in this current chapter.

This chapter provides an overview of the language's inventory in as far as phones, syllables, phonological process, phonotactic constraints, word forms, affixations and morpho-phonemic constraints are concerned. Only those phonological and morphological systems that directly affect nativisation processes are discussed. This is because it is not possible to give a detailed account of the Tonga phonological and morphological inventories, considering the scope (nativisation processes) of this study. Paying attention only to relevant phonological and morphological processes gives the researcher time and space to focus on concepts that give insight into nativisation processes, for purposes of detail and precision.

The information provided in this chapter was collected from the Tonga first language speakers, since there is not much literature yet on Tonga phonology and morphology, with reference to Zimbabwe. Much of the literature available concerns Zambian Tonga which is not part of the scope of this study. It is hoped that this current chapter gives insight into the Tonga phonological and morphological systems, useful to account for the various changes that occur to English loans entering into the Tonga linguistic environment.

It should also be noted that the systems discussed are regarded as the 'norm' in this whole study, since they are an overview of Tonga linguistic system. In an attempt to do this precisely, a simplified description is made, adopting the Distinctive Feature, CV-Phonology and Lexical Phonology and Morphology paradigms, as already been highlighted in Chapter Three (Theoretical Framework). Overviews, provided by this framework guide decisions and account for the various changes that occur to English words in the Tonga environment. This 'norm' becomes the parameter with which word changes are assessed logically to understand nativisation processes.

The chapter is therefore, divided into two main sections. The first section entails discussing the Tonga phonological inventory, whilst the second section demonstrates Tonga morphological processes. These two sections are then sub-divided into respective sub-sections. However, the two are not treated as separate and disjoined sections, the idea is to handle them comprehensively as separate but interwoven systems for the sake of organization, otherwise the theoretical framework adopted, (Chapter Three), treats them as independent but interwoven processes.

4.2 THE TONGA PHONOLOGY

Canworth (1991:34) defines phonology as "the branch of linguistics which is concerned with the description of speech and sounds in a language". April (2002:14), describes phonology as the study of sounds and sounds patterns in a language. In other words, the word phonology is a two-tier word, made up of *phone* and then *logy*. A *phone* is the simplest and indivisible unit sound that exists in a language, while *logy* is Latin to mean study. Phonology, therefore, refers to all systems that fall within the domain of phonemes and how sounds of a language are patterned. This discipline handles the smallest meaningful elements of a language and the rules associated. In other words, it describes the whole body of sounds in a given language, in particular their behaviour and characteristics. Tonga has a large inventory of sounds and sound patterns but of interest

for this particular study are the vowels, consonants, syllables, phonological processes and phonotactic constrains. Odeingo (2004:9) says "consonants and vowels are the basic units in any phonological analysis, whilst phonological processes define their behavior in a language".

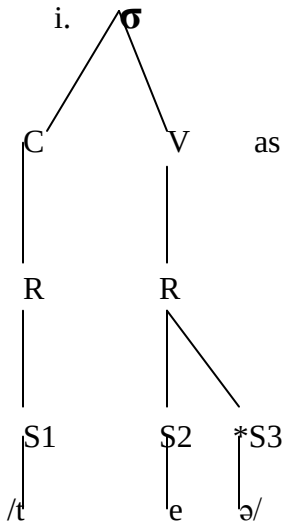
The overview of the Tonga phonological systems adopts a unitary treatment of segments. According to Chimhundu (2002:109), unitary treatment of segments is described as the analysis of segments, considering them to be single units, especially composite consonants. This implies that the Tonga inventory is exclusive of cluster consonants. Tonga has complex consonants. This is because instead of looking at each individual consonant in a cluster, as done by Pongweri (1990:12-25), this study looks at individual articulator gestures in a composite consonant.

4.2.1 The Vowel

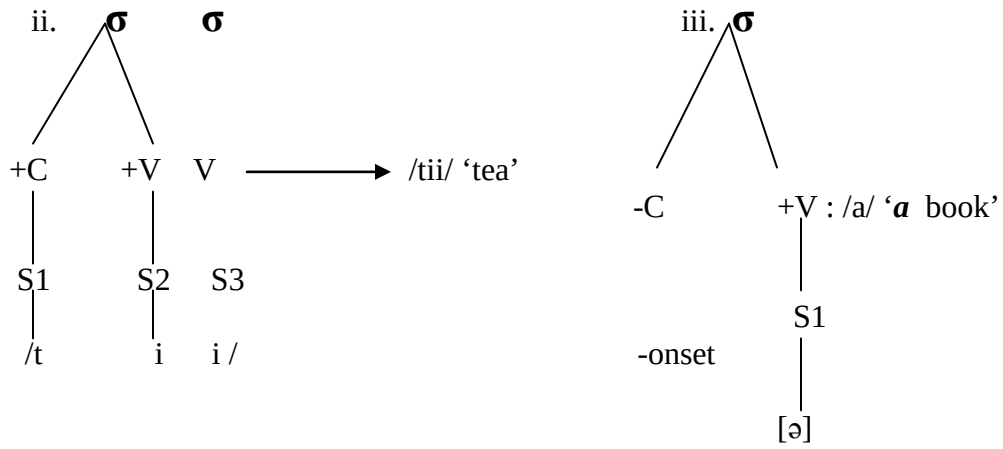
The term vowel is defined by John (1984:20), as "a speech sound made with the vocal tract open or a speech sound created by the relatively free passage of breath through the larynx and oral cavity". This means that a vowel is a sound in a spoken language that is characterized by an open configuration of the vocal tract so that there is no build up of air above the glottis.

Tonga has a simple five-vowel system and these are [a, e, i, o, u]. Generally these vowels are distinctively short, in the range of [± front], [± high] with only [a] as [+ central]. The five vowels occur as 'peaks' in CV-syllable pattern and the underlying rule being that there is no branching rhyme of vowels in Tonga. However, the vowels can also occur in V-syllables as the only segment. Thus the V-syllable typology is permissible in Tonga, whilst diphthongization and triphthongization are not recognized, as shown below:

Figure 32: Diphthong



The pattern above, long vowel, is constrained, since Tonga has no diphthongs and triphthongs. However the following scenario is permissible:



Branching of rhymes, demonstrated in diagram (i), shown by the (*) asterisk, is constrained in Tonga, since the language does not have diphthongs and triphthongs. This means that Tonga only allows short vowels.

4.2.1.1 Vowel [a]

Vowel [a] is a low, central vowel, which is in total contrast with any of the four [e, i, o, u]. It usually occurs with onsets in CV-patterns. However, it sometimes occurs without onsets in V-syllable typology, as exemplified below, especially in demonstratives, for example [aje] 'these'. The following are situations where [a] exist as 'peak' in CV and V-syllable typologies.

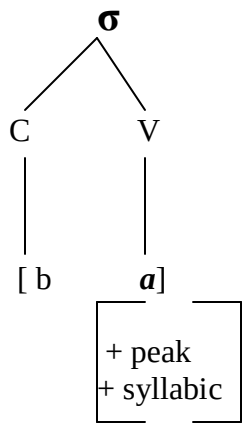
[bama]	'mother'
[tala]	'tar'
[aya]	'these'
[tumbwambwati]	'we say'

The central vowel [a] has the following distinctive feature matrices;

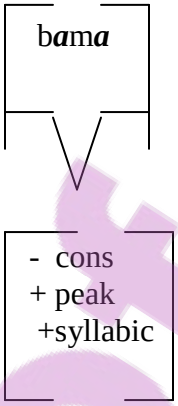
[a]:

+ open
+ low
+ central
+ voiced
+ neutral

The vowel [a] is also [+ sonorant], [- consonant] and [+ low] as shown below:



It also follows that [a] has a nuclears function [+ peak], [+ syllabic], [+sonorant] and [- consonant], as shown below:



4.2.1.2 Vowel [e]

This is a mid, front vowel. It is also in contrast with the other four vowels [a, i, o, u]. It is an unrounded and voiced vowel, which occurs with or without onsets as follows;

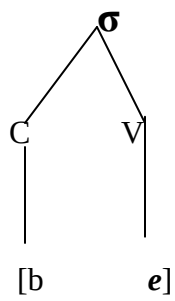
[tʃitendeleli]	'bicycle'
[peka]	'cook'
[leka]	'beat'
[mulende]	'margarine'
[tʃiteʃe]	'bus stop'

[e] is characterized by the following distinctive feature matrices;

[e]:

+ mid
+ front
- round
+ voice
+ neutral

It is also sonorant and it functions as the peak in syllable-typology.



In the above diagram, the syllable [be], has [e], as the peak, thus [e] is sonorant than the consonant [b] which is associated with it, hence [e], is [-cons], [+ peak] and [+ syllabic]. The fact that [e], is a segment that defines the node, meaning that it is the nuclears of the syllable [be].

4.2.1.3 Vowel [i]

This vowel, like any other, is in contrast with the other four [a, e, o, u]. It is phonetically described as a front, high and unrounded vowel. It occurs after any consonant onset in any CV structure. It also becomes a consistent segment in a V-syllable structure. Examples of syllables where [i] exist are as follows:

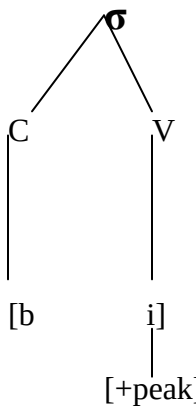
[tʃiketi]	‘skirt’
[tʃigogo]	‘blouse’
[ibwa]	‘dog’
[tʃikiweni]	‘English’
[manzi]	‘water’

This vowel has the following characteristic features, as its atomic elements;

[i]:

+ closed
+ front
+ high
+ voice
- round
- neutral

It ([i]) is an unrounded, primary vowel. It is also [+ voice] and like any other vowel, it is [+ sonorant] as follows:



In the above example, [i] is [+ peak], [+ syllabic] and [- consonantal]. This implies that it functions as a compulsory element in a syllable structure (CV and V-typologies).

4.2.1.4 Vowel [o].

This is a mid and rounded vowel, which is in contrast with the other four. In CV syllable constructions, it occurs after the onset or as the only segment in a V-syllable typology. Positions of [o] in syllables are as shown below;

[ngolo]	'cart'
[mbovovo]	'like that'
[t ilombo]	'amen'
[mukelo]	'pay'
[ona]	'all'

It is characterized by the following distinctive feature matrices;

[o]:

+ open
+ mid
+ back
+ voice
+ round

Like any of the five vowels, it is sonorant in all CV and V-syllable environments, hence, it functions as the nucleus in CV and V-syllabic constructions, hence [+ syllabic] and [- cons].

4.2.1.5 Vowel [u]

This is the only high, rounded and back vowel. It is also found in the CV positions as follows:

[tʃanu]	'belongs to you'
[musirisi]	'nurse'
[fulumende]	'government'
[tʃunu]	'chair'
[ngukapovola]	'policeman'

The vowel [u], is characterized by the following distinctive features:

[u]: [+ closed, + high, + back, + voice, + round]

The vowel [u] therefore, functions as the nucleus of CV and V-syllables, hence [+ peak] or [+syllabic].

Figure 5:2 Distinctive Feature Matrix for Tonga Vowels.

	A	e	i	o	u
high	-	-	+	-	+
low	+	-	-	-	-
back	+	-	-	+	+

4.3 THE CONSONANT

In this section, the researcher demonstrates the Tonga consonant. According to John (2000:36), a consonant is a sound in a language, which is characterized by a constriction or closure at one or more points along the vocal tract.

Tonga has a large inventory of consonants and the researcher characterizes and describes them according to distinctive feature matrices. The language has basically two kinds of consonants namely, simple and complex consonants. A simple consonant can be defined as "a peripheral segment that consists of a root node characterized by at most one oral articulator feature" (Ibdoil 1992:10).

A complex consonant therefore, is a root node that is characterized by two or more simultaneous oral tract constrictions or articulator features, though this categorization is in the domain of Feature Geometry terms rather than Distinctive Feature.

4.3.1 Simple Consonant

The following table summarizes distinctive feature matrices for simple consonants in Tonga. The researcher uses articulator features to classify these simple speech sounds.

Table 6: Simple Consonants in Tonga

FEATURE NAME	DEFINING PROPERTIES	[+FEATURE]	[- FEATURE]
[nasals]	Velum position	Velum down m, n,ɳ, ɲ, m, n	Velum up b, ɓ , d, ɗ, g, j
[voice]	Vocal chord vibrating	Yes b, d, g, v, z, ʒ , v, ɓ, ɗ, nasals, glides	No p, t, k, s, ʃ , f.
[aspirated] spread glottis]	Glottis held wide open	Yes P^h ,t^h, k^h, h	No All the others
[coronal]	Tip or blade of the tongue involved in articulation	Tip/blade involved t, s, ʃ, l, n, d,	No p, k, h, w, j
[anterior]	Construction site relative to alveolar ridge	At or in front of the ridge. p, f, t, s, d, l, m, n	Behind the ridge k, ʧ, j, ɳ , ɲ
[lateral]	Side of tongue position	Lowered	Not lowered all others
Consonantal	Contact between articulators or significant narrowing of vocal tract	Yes Stops, fricatives, laterals, glides, affricates, nasals	No Nasals
Continuant	Air flow through the mouth	Fricatives, laterals, glides, glottal	No Nasals
Sonorant	Continuity of spectrum amplitude in F1 – F2 region	Continuity nasals, laterals, glides	Discontinuity stops, fricatives, affricates, glottal

(Zivenge 2005:70)

In classifying sounds as simple consonants, articulator gestures are used. Those consonants on the table above are characterized by a maximum of one articulator feature. However, simple

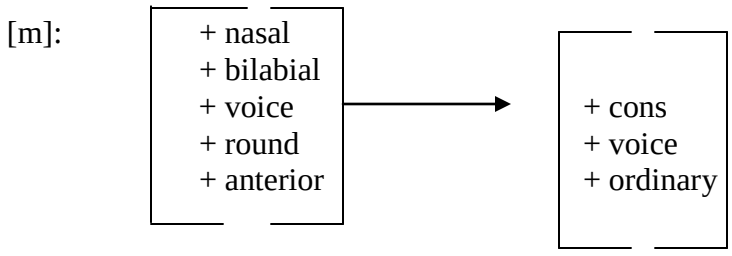
consonants themselves are classified according to manner of articulation. Using this classification, Tonga has the following sub-categories of simple consonants:

4.3.1.1 Stops

This study identifies both nasal and oral stops. Tonga has numerous stops in its inventory. This is because for air stream to escape through either the nasal cavity or oral cavity, it has to be temporarily stopped somewhere in the oral cavity and then allowed to escape, altering velum position up or down. This means that there are two types of stops.

4.3.1.2 Nasal Stops

These are consonant sounds [+ simple], [-rhyme] that are a result of an air stream, which is temporarily stopped in the mouth, causing the velum to go down, allowing air to escape through the nasal cavity. These sounds have either [+ nasal] and [+ voice] or [+ nasal], [+ voice] and [+ breathy]. Those that are voiced are either ordinarily voiced or breathy voiced. This means that nasal stops are of two categories in Tonga, namely, the ordinarily voiced and the breathy or fully voiced nasals. The following are examples of ordinarily voiced nasal consonants [+ simple]:

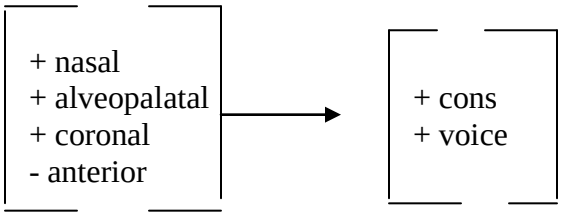


The [m], simple ordinarily voiced nasal, exist in syllables of the CV-nature in words like; [kuzima] ‘to rub’, [muzila] ‘line’. It appears as a nasal onset for the syllables [ma] and [mu] respectively.

[n]: + nasal
+ alveolar
+ voice
- round

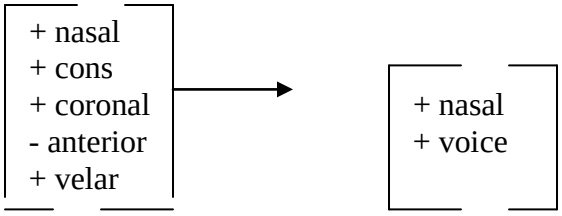
It exist as an initial consonant in a CV-syllable typology in words such as a [tʃuwuno] ‘chair’, [tʃipunu] ‘spoon’. Again it is a nasal onset in Tonga syllables (CV).

[ɲ]:



It exists in words like [ɲanda] ‘toilets’. In that onset position, it is simple and voiced. During its phonation, the velum goes down, hence nasalization occurs.

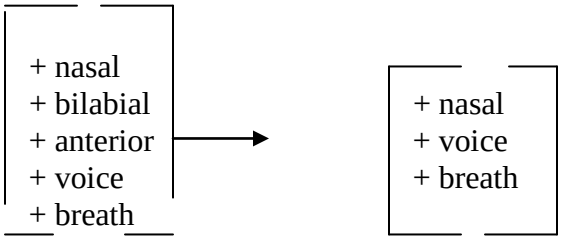
[ŋ]:



It exist in words like [ŋiso] ‘stabbing instrument’. It is the only velar nasal in Tonga.

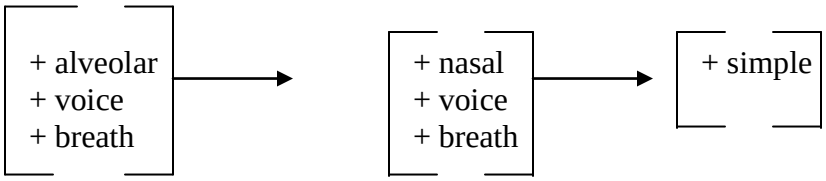
The four consonants discussed so far are simple consonants, which during articulation cause the velum to go down, causing air to escape through the nose but the vibration of the vocal chord is general or ordinary such that they are all [+ nasal], [+ voice], [+ ordinary]. However, Tonga has two other simple nasal sounds. These are as follows:

[m̲]:



This [m̲] is like the ordinarily voiced [m] in that it exist as a consonant initial in CV-syllables as in words like [m̲a] ‘to land’.

[n̪]:

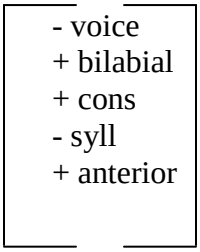


[n̪] is characterized by one articulator feature [+ alveolar] and in terms of manner it has a nasality characteristic. However, it is different from [n] because of voicing configurations, thus its not ordinarily voiced but during articulation, the vocal chords are fully vibrating, hence breathy voiced.

4.3.1.3 Oral Stops

Tonga has basically a wide spectrum of oral stops. Like the nasal counterparts, airflow is stopped in the mouth. In this case, articulators in question come together, temporarily stopping airstreams passing and then eject it accordingly through the mouth, resulting in the following sounds:

[p]:



It is found in words such as [impongo] ‘goat’, [kaponkola] ‘police officer’, [impondo] ‘two dollar’.

[P] is a simple, oral stop, which is [- voice]. Thus the vocal chords do not in any way vibrate.

[b]:
+ oral
+ voice
+ breathy
+ cons
+ anterior

The [b] is distinct from the [p] in that it is voiced but shares the following configurations, [+ oral], [+ plosive]. It exists in words such as [bowoma] ‘district’, [tʃibula] ‘chair’. Both [p] and [b] are bilabial sounds that are [+ anterior] and [- syllabic].

[t]:

- voice
+ cons
- son
+ coronal
+ anterior

It is a voiceless oral stop that can function as a simple onset in CV-syllable constructions, such as in the following words [kutanta] ‘guard’, [tunisiyansiya] ‘history’, [mutuli] ‘professor’. The articulator feature for the anterior and coronal [t] is [+ alveolar].

[d]:

+ voice
+ breathy
+ coronal
+ anterior

[d] is also [- syll], [+ cons] and its articulator configuration is [+ alveolar]. It is also an initial consonant in CV-patterns as in words like [dade] ‘father’. The two alveolar oral stops [t] and [d] are both [+ anterior] and [+ coronal]. However, [t] is voiceless whilst [d] is voiced.

So far, what has been discussed are simple plosive oral stops. In other words, one common characteristic feature for [p], [b], [t] and [d] is that they are plosives.

Tonga is also characterized by simple oral implosive stops. Basically, there are only two namely, the bilabial oral stop [ɓ] and the alveolar oral stop [ɗ]. These two simple consonants have the following distinctive feature matrices;

[ɓ]:

+ oral

+ voice
+ cons
+ anterior
- coronal

This bilabial implosive [ɓ] exists in CV-syllables as the onset or initial consonant as in the following words; [ɓufuɓafuɓa] 'foolish', [tʃiboniɓoni] 'mirror', [tʃiɓunge] 'bread/bun', [ɓuluɓa] 'cotton' and [ɓulo] 'bed'. According to the Onset-First Principle hypothesis, the oral bilabial implosive [ɓ] functions as an onset, in the syllables given above. It exists in the syllables [ɓu], [ɓa], [ɓu]. The implosive [ɓ], from the examples given, is the initial consonant in these CV structure, hence satisfies, Clements and Keyser's (1983) definition of an onset (Onset-First Principle).

[ɗ]:

+ oral
+ voice
+ cons
+ coronal

The implosive [ɗ] has an articulator configuration [+ alveolar] and the manner is [+ stop] and [+ implosive]. It is found in syllabic environments such as [muzwiliɗi] 'president', [sabwaɗi] 'cooking oil'.

The two implosives [ɓ] and [ɗ] are in the class of oral stops that are ordinarily voiced. From the discussion most oral stops in Tonga are [+ anterior], [+/_ voice].

4.3.1.4 Fricatives

Tonga has the following plain fricatives [f], [v], and [h]. According to Kadenge (2003:70), fricatives are "those sounds that are made when articulators come close to each other, to cause turbulence of friction on the air stream". These are as follows:

[f]:

- syll
+ cons
+ stride
-syll

The voiceless fricative [f] shares a number of characteristic features with the voiced labio-dental fricative [v]. They share common configurations in terms of place and manner of articulation. Both sounds have [+ alveo-dental] and [+ fricative]. The major difference is that [f] is [- voice] whilst [v] is [+ voice] and [+ breathy]. Tonga has a breathy voiced [v̲] and an ordinarily voiced [v], as in v̲ala 'close' and vala 'colour' respectively. Both of them have single articulator feature, alveo-dental. The sound [v̲] exists in words such as v̲ili 'wheel', v̲ala 'close', v̲oili] ' veil and so on.

[h]:

+ oral
+ glottal
+ voice
+ breathy

The consonant [h] is the only simple glottal sound in Tonga. Its main articulator feature is the glottis, hence, [+ voice], [+ breathy]. However, it is a fricative. It involves the glottis and when articulating it, turbulence or friction of air stream is realized, without any articulator features coming in contact. The oral glottal fricative [h] exists in words

such as [hebwe] ‘blanket’. Unlike other consonants, the chords are the articulators, during the articulation of the consonant [h].

4.3.1.5 Glides

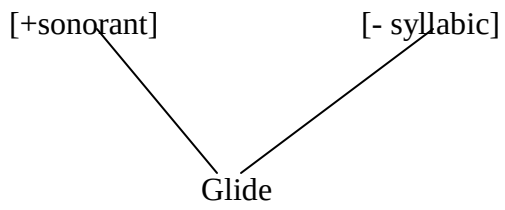
This is a semi-vowel at the phonetic level but a consonant at phonological level (Kadenge 2003:17).

The distinctive feature matrices of a glide are as follows:

Table 7: Distinctive Feature Matrices for Glide [w].

Glide	+ FEATURE	- FEATURE
[w]	Phonetic features [semi-vowels] Phonological features [velar, labial, approximant, sonorant, continuant consonant]	Phonetic features [vowel] Phonological features [syllable, peak, nucleus]

Besides being a glide, [+sonorant] and consonant [- syllabic], the labio-velar approximant [w] has the following phonological characteristics, [+ sonorant], [+ continuant] and [+ periphery]. Kadenge (2003:71) postulates, “glides are made when the two articulators approximate each other so that no friction is produced”. In Tonga, there is an open approximation of the labials and velar, producing a labio-velar approximant [w]. Apart from being labial and velar, the glide [w] is a semi-vowel. One thing to note is that the glide, labio-velar approximant [w], has conflicting characteristics at the phonological level as shown below:



In phonological terms, a sound that is [+ sonorant], assumes the following characteristics [± syllabic] and [±cons]. The glide approximant [w] is [+ sonorant] but is also characterized by [+ cons], [- syll], [- peak], hence semi-vowel. The sonorant is at the level of phonetics whilst at the level of phonology it is peripheral [- peak], [- nucleus], hence a consonant. The approximant [w] exists in words such as [sumukwa] 'small pox'.

Besides the labio-velar approximant [w], Tonga also has a palatal approximant [j]. This has the following characteristics:

Table 8: Distinctive Feature Matrices for Glide [j].

Glide	+ FEATURE	- FEATURE
[j]	Phonetic level [semi-vowel] Phonological level [consonant, sonorant].	Phonetic level [vowel] Phonological level [peak, nucleus, syllabic]

The alveo-palatal glide [j] exists as an onset, in syllabic structures such the following (where it is [+ periphery], [+ sonorant], [-syllabic]):

[kujila] 'sweep'

[tʃisija] 'black'

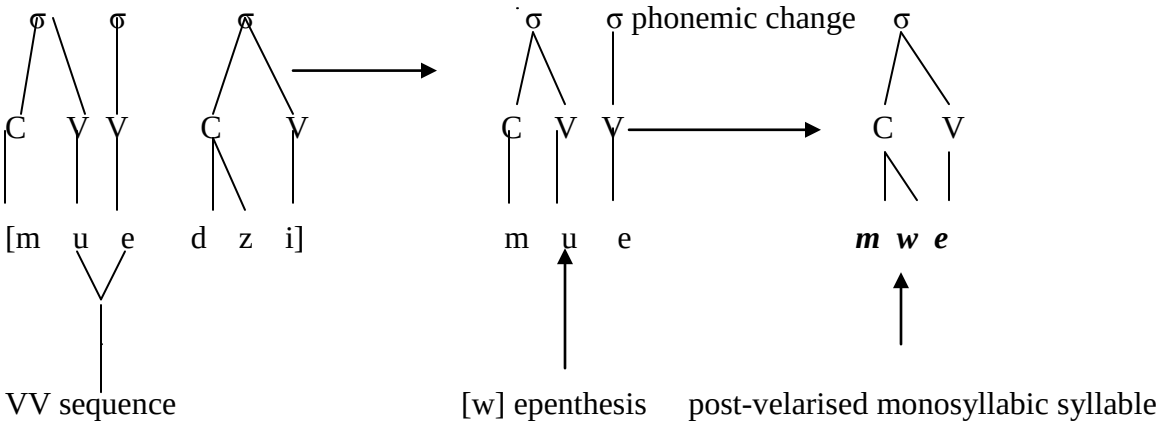
4.3.1.6 VV Sequence and Gliding

Glides are consonant sounds that are formed as a result of a morpho-phonemic change of segments before the vowels commencing stems, in nouns. In the process, glide formation breaks VV sequencies in [+C+V-C+V] word structures such as [m***ue***nzi] 'visitor', thus in languages where V element can be a syllable on its own.

4.3.1.7 The Glide [w]

Tonga is a language that sometimes allows the use of the V element as a complete syllable, which Clements and Keyser (1983:30) call the 'peak'. John (1984: 38) refer to VV sequence as 'double peak sequence'. Tonga only allows one peak in a syllable. This, in other words means that Tonga does not allow branching rhyme on vowels that make up nucleus of syllables. This is because branching rhyme, on the V element (vowels), results in the creation of diphthongs and triphthongs. Tonga only recognizes short vowels which are called 'short vowels' (John 1984:79). Goldsmith (1995:20) names them 'pure vowels' and he describes them as simple stressed V-sounds that do not show distinction between nucleus and rhyme. Chimhundu (2002:210) describes them as single stressed peaks. This means that languages like Tonga does not allow branching rhyme on V elements, in a CV-tier. In situations of polysyllabic syllables with VV sequence, preceded by a bilabial nasal stop [m], [+obstruent], a phonemic process takes place, which introduces [+ sonorant] and [- syllabic] segment, in an effort to break VV sequence. This process is described by Kadenge (2002:30) as glide formation. This phonemic change occurs when there is a VV sequence in the environment of a bilabial-nasal onset ([m]) and vowel nucleus ([u]) characterized by features, [+ round] or [+ back], since they share a similar distinctive feature [+ round] as follows:

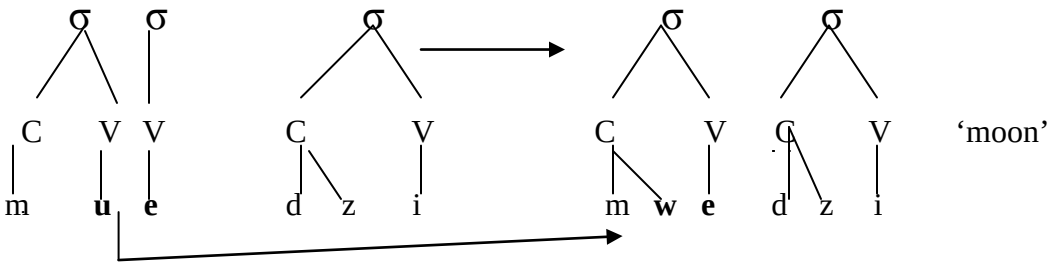
Figure33: Phonemic Change



The epenthesis of the glide [w] to introduce an onset consonant on the VV sequence, [+ round], in the environment of the nasal [m], [+ round], results in a post-velaised syllabic syllable.

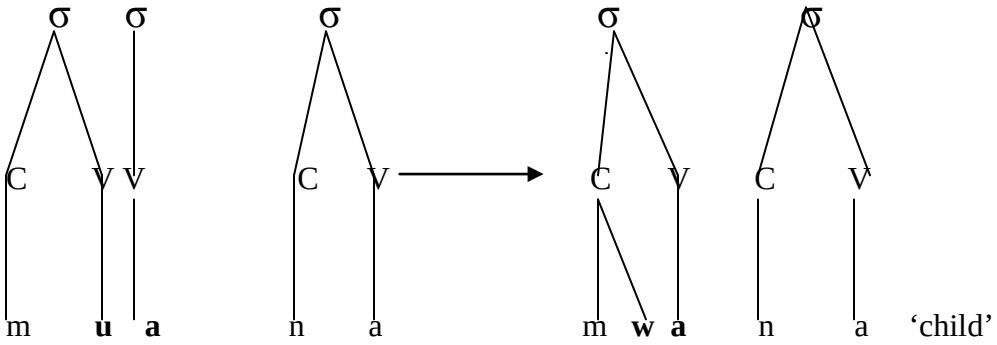
Epenthesis of [w] to a VV sequence changes a diasyllabic syllable, [mue], to a post-velarised monosyllabic syllable, [mwe]. However, both syllables are permissible in Tonga, though monolingual speakers would prefer syllables with onsets, hence epenthesis of [w] on the V syllable. The segments that result are a complex consonant, [mw], and a short vowel, [e]. Double vowel sequence is also destroyed, resulting in glide formation and single vowel stress (Chimhundu 2002:210). The following are examples of how the glide [w] is introduced to the VV sequence in a nasal, [m] environment:

i. [mue] Environment



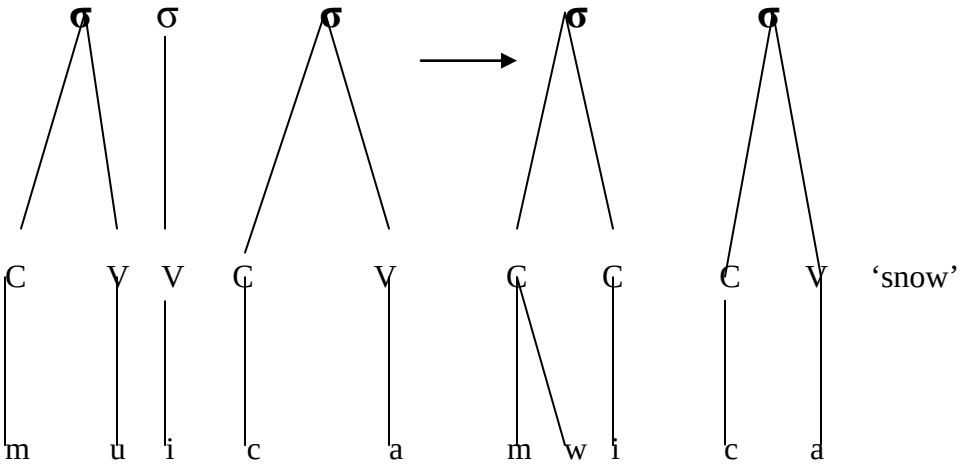
‘moon’

ii. [mua] Environment



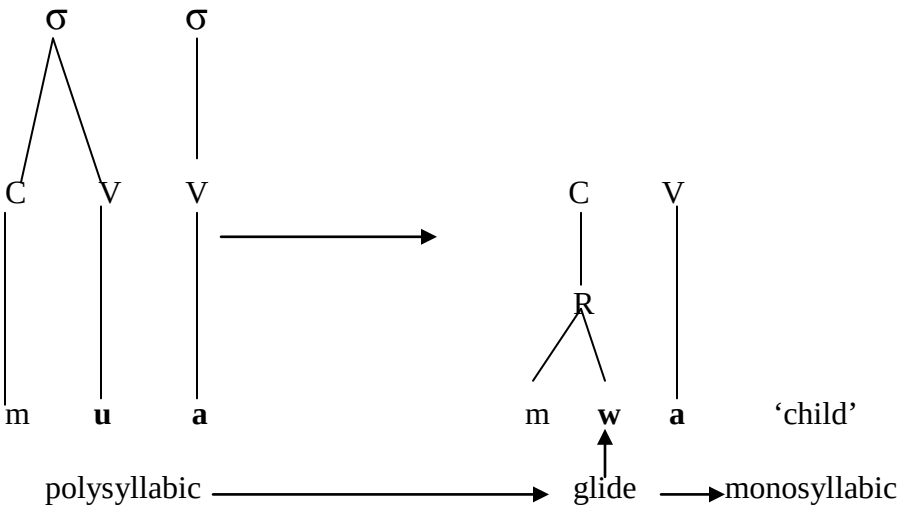
‘child’

iii. [mui] Environment

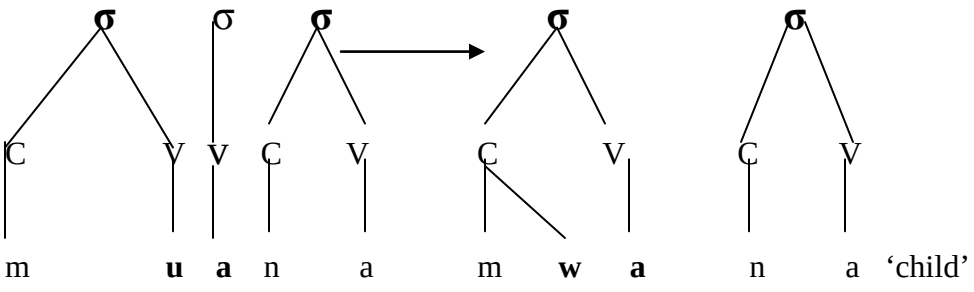


‘snow’

The insertion of [w] is done in three environments, namely, [mua], mue] and [mui]. Gliding results in post-velarised monosyllabic syllables, [mwa], [mwe] and [mwi].



Phonemic change between the vowel sequence [u a] in the presence of the nasal [m], creates a branching rhyme on the consonant, thereby creating a post-velarised monosegment and monosyllabic syllable. The result is as follows:

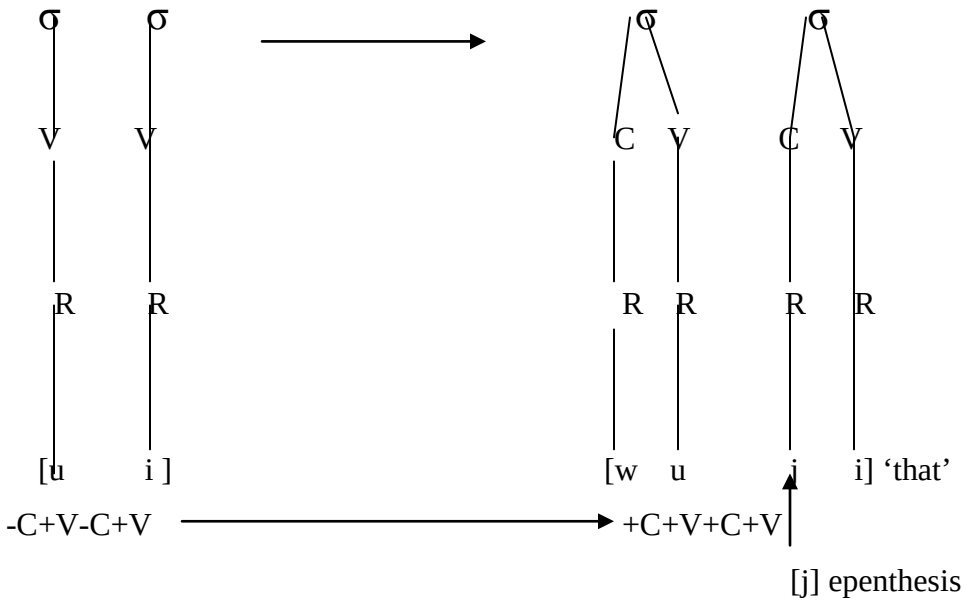


4.3.1.8 The Glide [j]

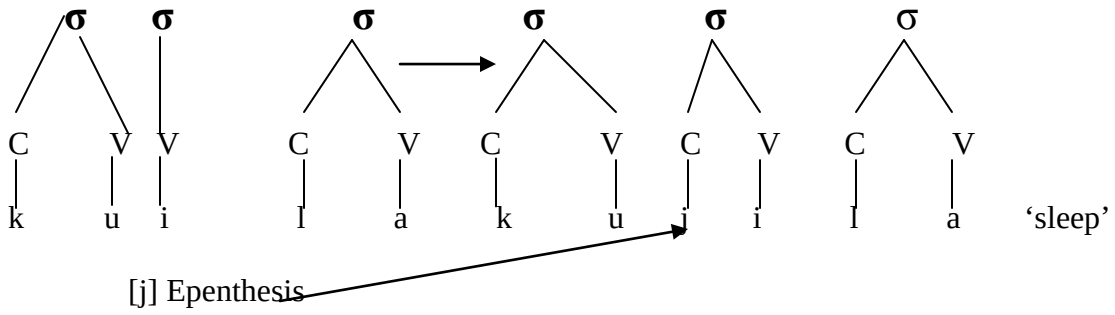
The alveo-palatal occurs again in the process of creating an onset to the VV vowel sequence and it occurs in the same way as [w]. However, no branching rhyme is created.

There is no change to the syllables, ([CV V] to [CVCV]), except that after insertion of [j], an onset is introduced, which was not there before. This can be demonstrated as follows:

Figure 34: Glide [j] Epenthesis



The alveo-palatal [j] is introduced to create an onset on the vowel [i], resulting in [u j i] as in the word [kuila], which becomes [kujila] ‘sleep’. The following processes summarize the phonemic change which occurs on the VV vowel sequence:



4.3.2 Complex Consonants

These sounds involve at least two articulator gestures. There are a number of such complex consonants in the Tonga language. These range from homorganic to contiguous complex consonants. The articulator gestures involved are at the same place or adjacent each other during articulation of composite consonants. This accounts for a wide range of complex consonants that involve either two or more articulator features. The following table summarizes complex consonants in the Tonga language:

Table: 9. Complex Consonants

	BILABIAL	LABIO-DENTAL	ALVEOLAR	ALVEO-PALATAL	VELAR
Pre-nasalised plosives	Mb		nd		
Pre-nasalised fricatives	pw, bw	tw, dw			kw, gw
Post-veralised nasals	Mw		nw		
Post-velarised fricatives		Fw	sw, zw		
Post-velarised laterals			lw		
Post-velarised prenasalised plosives	Mbw		ndw		
Affricatives		pf, bv	ts, dz, ts, dz	tʃ, ʤ	

The examples above demonstrate a scenario of more than one articulator feature, simultaneously involved in the articulation of each of the sounds.

4.3.2.1 Homorganic Complex Consonants

According to Kadenge (2003:14), complex consonants are consonant sounds that are characterized by at least two articulator features, produced simultaneously, at the same place. Examples of homorganic complex consonants are [mb], [nd] and [nz].

a) **Bilabial complex consonants.**

i. [mb]: [m] → [+ bilabial, + stop, + nasal]

[b] → [+ bilabial, + stop, -nasal]

[m] and [b] are double articulations in the consonant [mb]. They share a number of similar configurations such as voicing [+ voice], consonantal [+ cons], syllabic [- syll]. Articulation of the two is at the lips and it is the determining factor for homorganic characteristic.

ii. [mp]: [m] → [+ bilabial, + stop, + nasal]

[p] → [+ bilabial, + stop, - nasal]

Articulation of the two consonants [m] and [p] is on both lips, assuming simultaneous (double) articulation at the same articulator gesture. Like [m] and [b], as in the complex (homorganic) consonant [mb], [m] and [p] are both stops. Tonga uses both the prenasalised bilabial complex consonant [mb] (prenazalized voiced sound) and [mp] (prenazalized voiceless sound), in words like [tʃilombo] 'omen' and [impongo] 'goat'.

b) **Alveolar complex consonants**

These are complex consonants, characterized by double articulation at the alveolar ridge, as demonstrated below:

[nd]: [n]: → + alveolar
+ voice
+ stop
+ nasal

[d] → + alveolar
+ voice
+ stop
- nasal

Co-articulation of [n] and [d] in [nd] is homorganic at the alveolar ridge.

[nz]: [n] →
+ voice
+ nasal

[z] → + alveolar
+ voice
- nasal

4.3.2.2 Adjacent Complex Consonants

These are co-articulations that are simultaneous, taking place at adjacent articulator features. The first one (i) comprises labio-dental (contiguous) complex consonants [m] and [v]. These are simultaneous co-articulations at the lips, alveolar and dentals.

The consonant [nz] is a labio-dental characterised by [n], which is an alveolar with the following feature configurations, [+ voice] and [+ nasal] and [z], a labio-dental which has the characteristics [- nasal] and [+ voice]:

i. [mv]: [m] → + bilabial, + voice, + nasal

[v] → + labiodental, + voice, - nasal

ii. [tw]: [t] → + alveolar, + oral, + stop, - voice, - nasal

[w] → + labial, + velar, + voice, + oral

One observation to note is that [t] is voiceless whilst [w] is voiced but [w] assimilates a voiceless feature, when combined with the voiceless [t], in words such as [twi] 'long'.

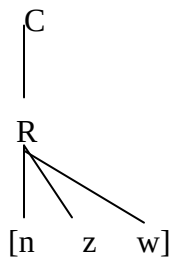
4.3.2.3 Triple Articulation

So far, the discussion has shown homorganic and contiguous complex consonants where there are only two articulator features, double articulation. Tonga has also consonants with three articulator features. Examples are [mbw], [ndw], [nzw], [ʤw].

The complex consonant [mbw] is characterised by three articulator features namely, bilabial [m], bilabial [b] and labio-vela [w]. It is also [+ round] and [+ cons]

The consonant [ndw] comprises [n], which is a nasal, voiced stop, [d], an alveolar, voiced stop and [w] a labio-velar. The consonant [n] and [d] are homorganic elements (alveolar), whilst [w] is a labio-velar, which is has a feature matrix [+ labia]).

The consonant [nzw] is a complex consonant made up of a [+ nasal], [+ alveolar] and [labio-velar]. It is an example of a consonant with three branching rhymes:



This exists in words such as [nzwala] ‘nail’, [senzwa] ‘voice’ and [inzwi] ‘name’.

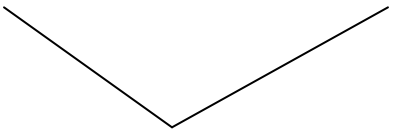
All these complex consonants (tripple articulations) have root nodes characterized by at least three simultaneous oral tract constrictions. This study considers these to be single consonants, which is what Chimhundu (2002:210), refers to, as unitary treatment of multi-segmental consonants. This follows that Tonga has no cluster consonants.

4.3.2.4 Conflicting Characteristics

The research has also established that Tonga has complex consonants that have conflicting characteristics, in terms of distinctive feature matrices, as exemplified below:

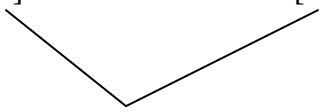
Figure 35: Conflicting Characteristics

i. [mb]: [+ nasal] [- nasal]



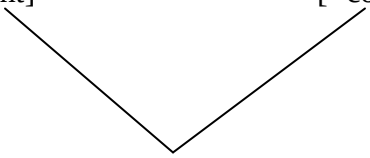
Prenasalized Bilabial Stop

ii. [nd]: [+ nasal] [- nasal]



Prenasalised alveolar stop.

iii. [**tʃ**] [+ cont] [- cont]



Conflicting configurations

The examples (i, ii, iii) given show that [mb] is [+ nasal] and [- nasal], [nd] is also [+ nasal] and [-nasal], whilst [**tʃ**] is [+ cont] and [- cont]. This implies that complex consonants in the Tonga language have conflicting characteristics.

4.3.2.5 Prenasalisation

Ladefoged (1975:35) defines nasality as:

> The duration of the velopharyngeal opening, which occurs before another articulation, such as oral stop or fricative in circumstances which require the whole complex to be considered as a single unit.

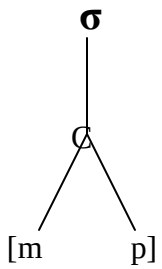
The Tonga inventory has only prenasalised stops and affricates.

4.3.2.5.1 Prenasalisation of stops

Prenasalisation of stops fall into two categories namely, prenasalisation of voiceless and voiced stops.

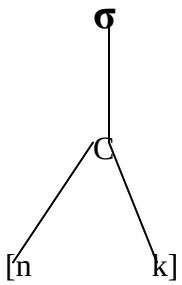
4.3.2.6 Prenasalisation of voiceless stops

Tonga phonotactic rules allow prenasalization of voiceless stops. The following are examples of voiceless stops that are prenasalized:

i. 

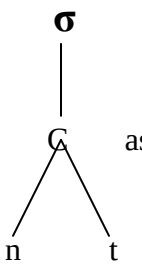
as in the word [impongo] ‘goat’, where [m] is [+ nasal] and [p] is [- voice], [+ stop]

Apart from just being a stop [p] is [- voice]. Since [p] proceeds [m] with the feature configuration [+ nasal], means that prenalisation of p] is permissible.

ii. 

as in [**tʃ**ibonko] ‘surname’

In this example (ii), [n] has the following binary features; [+ nasal] and [+ stop], whilst [k] is [- nasal], [+ stop], [- voice], and prenasalisation is also permissible (double articulation).

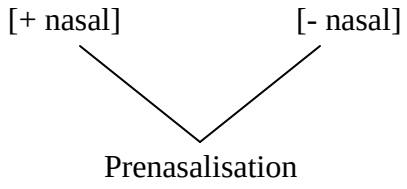
iii. 

as in the word [kutanta] ‘ride’

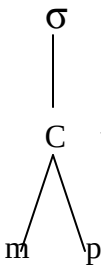
In example (ii), [n] is the nasal sound [+ nasal], whilst [t] is an oral stop, which is [- voice]. In that regard, [t] is prenasalised by an alveolar nasal [n].

As already been established, (examples (i, ii and iii)), Tonga allows prenasalisation of voiceless stops. This means that [m] and [n] have a common distinctive feature [+ nasal] while on the other hand [p], [k] and [t] have common binary features, [+ stop] and [- voice].

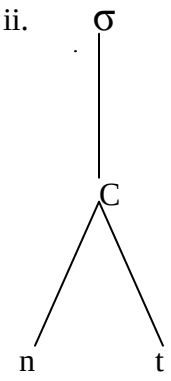
Another thing to note is that the three complex consonants [mp], [nk] and [nt] have contrasting feature matrices, as follows:



A phonological constrain which should be observed here is that prenasalisation requires homorganic elements, even if feature configurations are conflicting as shown below;

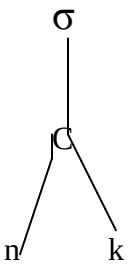
i. 

where [m] and [p] are both bilabial stops but have [+ nasal} and [- nasal] respectively.

ii. 

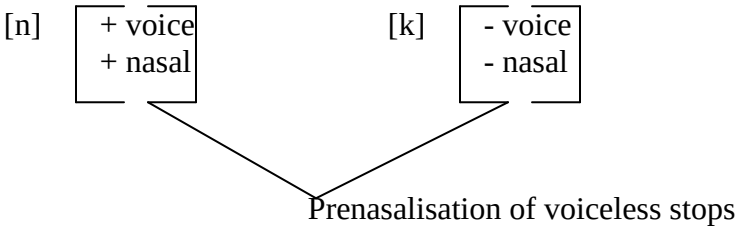
where [n] and [t] are both alveolar sounds.

Prenasalisation of voiceless stops is also permissible on co-articulation as shown below:

iii) 

The above illustration demonstrates that [n] is an alveolar and [k] is a velar. The two sounds are articulated at adjacent oral articulators (alveolar and velar).

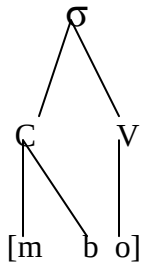
Another important phonological constraint applicable on prenasalisation of voiceless stops is that there is always conflicting voicing configurations, that is to say that one sound is [+ nasal], [+ voice] and the other one is [- nasal], [- voice]; as shown below:



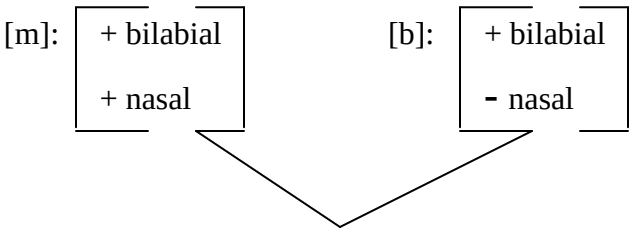
4.3.2.5.2 Prenasalisation of voiced stops

The major phonological constrain for prenasalization of voiced stop is that the consonant which is supposed to proceed a nasal sound has the following binary features; [+ stop] and [+ voice]. The following are examples of prenasalised voiced stops:

i.

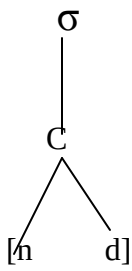


On the above example [m] is the nasal sound, whilst [b] is the voiced oral stop. It also follows that [m] and [b] are homorganic elements as demonstrated below:



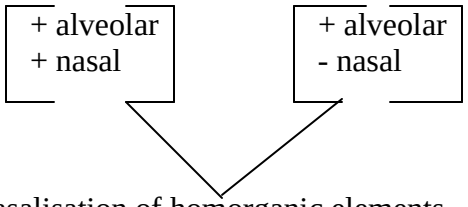
Prenasalisation of homorganic elements

ii.



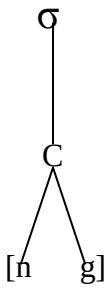
as in the syllables [nda], [nde], [ndi], [ndo], [ndu]

In this particular example, [n] is the nasal element [+ nasal], [+ voice], whilst [d] is the oral stop [- nasal], [+ voice]. Both [n] and [d] are [+ alveolar], hence homorganic elements as illustrated below:



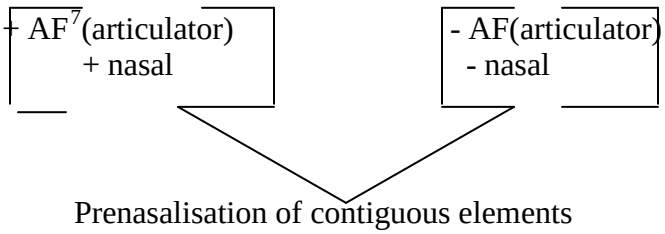
Prenasalisation of homorganic elements.

iii.



as in the syllables [nga], [nge], [ngi], [ngo], [ngu]

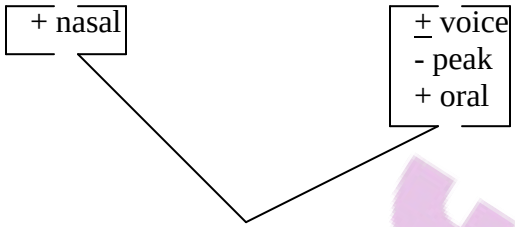
In this example [n] is the nasal sound, whilst [g] is the voiced oral stop. The two have feature matrices that are as follows: [n]: [+ nasal] and [g]: [+ voice]. These are basically contiguous elements, hence the following schema;



Prenasalisation of contiguous elements

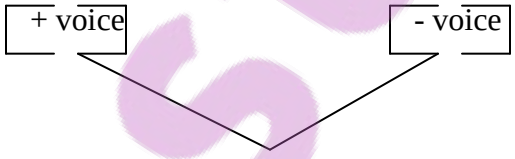
The above schema makes it possible for [-nasal] and [+ nasal] features to combine (Adjacent Articulator Feature), hence [n] and [g] combinations acceptable.

One important observation is that Tonga is a language which allows prenasalisation of both voiced and voiceless stops. This can be demonstrated as done below:



Prenasalisation of voiced/voiceless Stops

The above scenario shows that [mp] and [mb] are both acceptable complex consonants and the same applies for [nt] and [nd], [nk] and [ng]. [p,t and k]. Whilst this is a characteristic of the Tonga language, it follows that prenasalisation of voiceless stops is necessitated by conflicting voicing configurations:



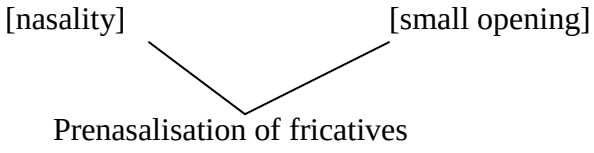
Prenasalisation of voiceless stops

[7] AF this implies Adjacent Articulator Feature.

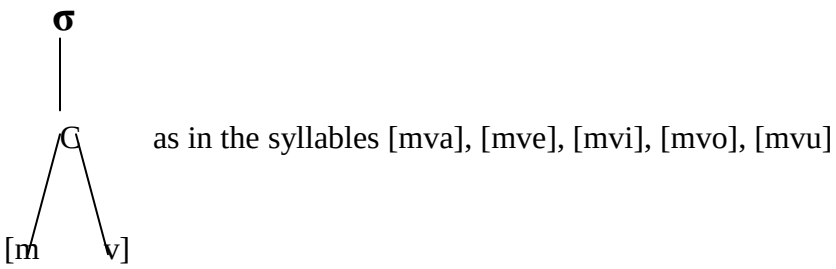
In general, prenasalisation of voiced stops is a combination of nasal stops [+voice] and plosives [+voice].

4.3.2.5.3 Prenasalisation of fricatives

Tonga is a language that has phonotactic principle that allow prenasalisation of fricatives and this is demonstrated below:



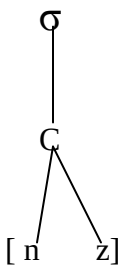
Prenasalisation of fricatives is either homorganic or semi-homorganic. However both share the same voicing configurations [+voice].

i. 

as in the syllables [mva], [mve], [mvi], [mvo], [mvu]

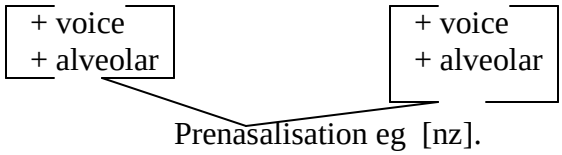
The example, above, illustrates semi-homorganic elements, where [m] is [+ bilabial], whilst [v] is [+ labio-dental]. In terms of voicing, they share similar configurations [+ voice]. The consonant [mv] is therefore a breathy labio-dental prenasalised fricative.

[mv]: $\begin{bmatrix} \overline{+\text{nasal}} \\ +\text{voice} \\ +\text{fricative} \\ +\text{cons} \end{bmatrix}$ where there is regressive assimilation [m ← v] [+nasal]

ii. 

as in the syllable [nzu]

The complex consonant [nz] is made up of [n], which is [+ nasal], [+ alveolar] and [z], which is [+ cor], [+ voice]. The underlying phonotactic principle is that the two elements should share the same articulator gestures and voicing configurations, as illustrated by the following schema:

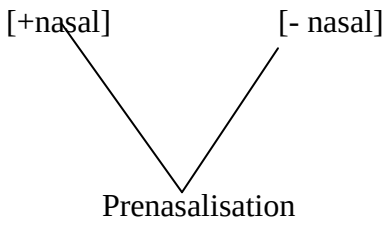


4.3.2.5.4 Prenasalisation of Affricatives

Kadenge (2007:80) defines an affricate as a sound produced when;

> There is closure along the sides of the mouth between the left and right alveolar zones on the one hand, and the sides of the tongue on the other. This closure begins at the back of the mouth and extends as far forward on the canine lime.

In the Tonga language inventory, there is only one prenasalised affricate, namely [nʤ]. This is made up of [n], alveolar nasal, [d] an alveolar stop and [ʒ], an alveo-palatal. Two of these three elements [n] and [d] are homorganic and [ʒ], is semi-homorganic. The position of the alveo-palatal is semi-homorganic to the alveolar. However, the three share the same voicing configuration [+ voice]. Prenasalisation of the affricate [ʤ] is necessitated by conflicting values of nasality as illustrated below:



From the demonstration above, [n] is [+ nasal] whilst the affricative [ʤ] is [- nasal], which is a conflicting scenario, phonologically.

4.3.2.5.5 Prenasalisation of labialised fricatives

The simple consonant [z] is an oral fricative sound such that when labialised it includes more than one articulator gesture, making it a complex consonant. Apart from that, it adopts an additional rounding of lips during articulation. This means that [z] becomes [zʲ], which is [+ round] in all labialised environments but becomes [z], [-round] when independent. Doke (1931:67) describes labialised fricatives as 'whistling'.

The labialised 'whistling' fricative [zʲ] can be prenasalised by a voiced alveolar nasal stop [n]. The resulting consonant is [nzʲ], which is [+ nasal], [+ round], [+ labial], [+ alveolar].

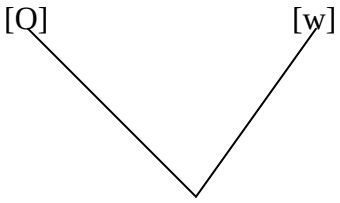
4.3.2.5.5 Prenasalisation of the velar approximant [w]

Prenasalisation of velar approximants can be described as post-velarisation of nasal sounds. There are only two sounds that satisfy this rule, thus [m] and [n] can combine with a velar approximant [w]. Since [w] is a glide, it therefore follows that it can combine with any of the nasal sounds [m] and [n]. The underlying principle is that the labio-velar approximant is a semi-vowel. This means that Tonga vowels and semi-vowels come after any onset consonant, including nasals. The glides [w] can preceed the nasal onset [m] in the following nasal environments:

[mwanana], ‘cousin’
[kamwemwe] ‘green’
[mwengo] ‘lime’
[nweka] ‘broken’
[nweita] ‘alone’
[kanweto] ‘thing’

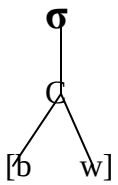
4.4 Post-velarised consonants

As already been established, the labio-velar approximant [w]: [+ bilabial] or [+ alveolar], can be prenasalised in any environment and it therefore follow that it can be combined with any consonant, as long as it proceed that consonant in [Cw], [CCw] or [CCCw] pattern. This is because glides in Tonga are not constrained to combine with any onset consonant (OC). Post-velarisation is represented by the following schema:



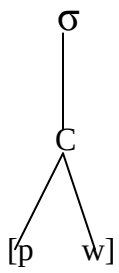
Post-velarisation

4.4.2 Post velarised stops

i. 

as in the syllable [bwa]

In this example, the labio-velar approximant [w], share the same voice configurations [+voice] with [b], an oral stop, which is [+O] (onset). In the example above, [w] comes after [b], which is the onset consonant (O) in the syllable [bwa].

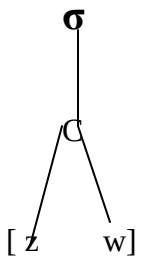
ii. 

as in the syllable [pwa].

In the example above, [w]: [+ labial], [+ velar], [+ voice], combines with [p], which is the onset consonant, [- voice]. The underlying principle being that [w] can combine with any stop (nasal/oral) regardless of its voicing configuration [± voice]

4.4.1 Post-velarised fricatives

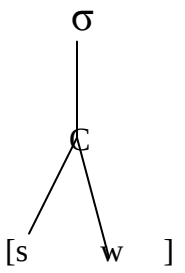
The study establishes that [w] can be combined with any fricative, in the same way it does with stops. This is regardless of the voicing configuration, as long as the fricative in question takes the onset (O) position, as exemplified below:

i. 

as in the syllable [zwe] or [zwu]

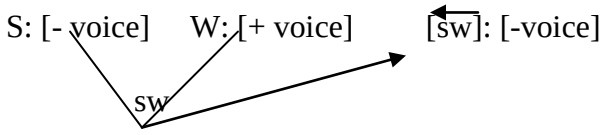
The above schema illustrates that [w] and the fricative [z] share the same voicing configuration [+voice] but have different articulator features. The labio-velar approximant [w] is [+ labial] and [+ velar] whilst the alveolar fricative [z] is [+ alveolar] and [+ fricative].

ii.



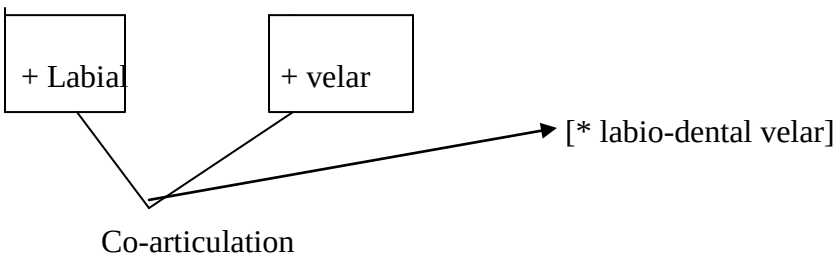
as in the syllable [swa]

The interpretation above is that [s] becomes the onset consonant, preceding the velar approximant [w]. The segment [s] is voiceless and [w] is voiced, meaning to say that they have conflicting voicing feature matrices, as follows:



From the schema, the position of the labio-velar approximant [w], in relation to the alveolar fricative [s] is that of [Cw], where [s] is the onset consonant (O). One of the post-velarisation conditions is that in [Cw] environment, [w] assimilates the voicing configurations of [O]. Since [s] is voiceless, using this principle [sw] is therefore voiceless, hence [sw] is [- voice]. However Tonga does not have syllables that show post velarisation of the labio-dental [v], though it is a fricative.

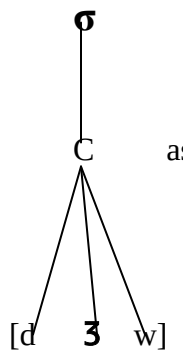
This is because it is not phonologically possible to articulate a labio-velar and a labio-dental sound simultaneously [*vw]. This is because the alveolar, [v], and the velar, [w] are heterorganic elements, hence can not combine. The following feature configurations are restricted phonologically:



It is not just ungrammatical [*] to articulate sounds in the sequence above [* labio-dental velar], but phonologically impossible.

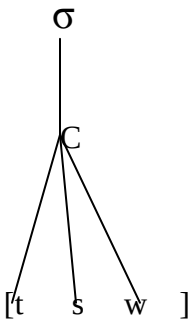
4.4.2 Post-velarised affricates

The labialised affricative [ʤ] can be post-velarised in the same way as stops and affricatives, as follows:

i. 

as in the syllable [ʤwe]

The labialised alveolar affricate [ʤ] has the characteristic [+ round], but when it is post – velarised, it ascertain a full round configuration, since [w] is a rounded.

ii. 

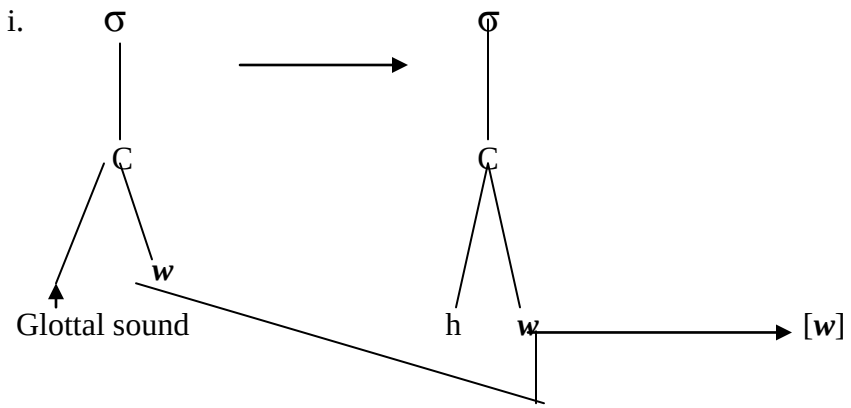
as in the syllable [ts]

The labialised affricative [ts] is [+ round] but when it is post-velarised by [w] which is [+ round], it becomes a rounded complex consonant. Post-velarisation is possible for both simple affricates and labialised complex consonants. The rule that applies is that the labio-velar [w] occurs as the final consonant in the Cw, CCw or CCCw scenario.

4.5 THE ALLOPHONES OF [w]

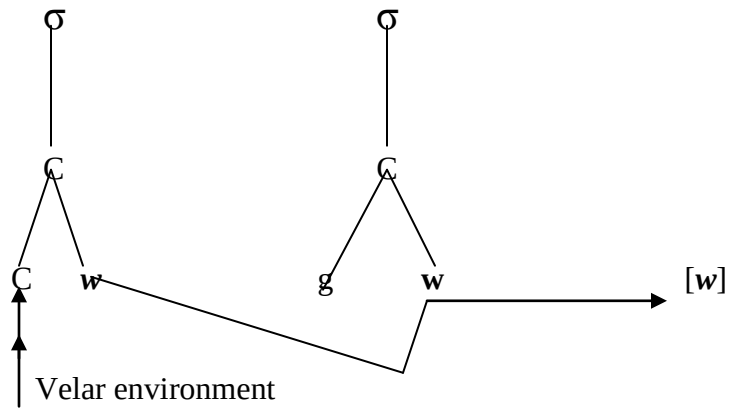
The labio-velar approximant [w] takes various forms in different phonological environments. The different forms of the same consonant are determined by phonetic systems associated, which this research refers to as allophones. The labio-velar approximant [w] has basically three different allophones in Tonga. These can be illustrated as below:

Figure 36: [w] in a Glottal Environment



The labio-velar [w] is realized as [w] in the phonetic environment characterised by a glottal sound. Tonga has only one glottal sound [h]. This means that in the environment of the glottal [h], [w] is realized as [w], characterized by [+ sonorant], [+ voice], [+ approximant] and it remains a labio-velar. Since the glottal [h] is [+ voice], the labio-velar [w], also adopts the [+ voice] configuration, in the [hwe] syllable, as in the word [hwetu] 'broom'. The rule is that the labio-velar [w] assimilates the voicing configurations of sounds that precede it in a Cw sequence.

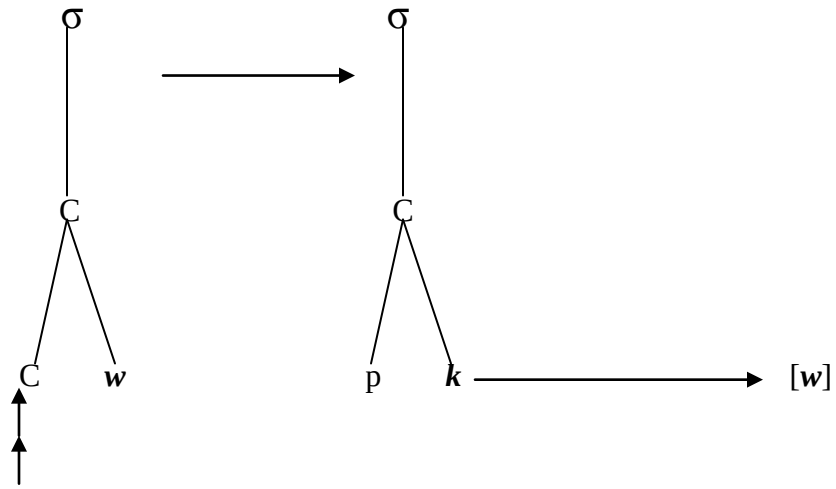
Figure 37: [w] in a velar environment



In this example, above, the labio-velar is in the phonetic environment [+ velar]. The allophone of [w] in this situation is a labio-velar. The velar [g] is [+ voice], [+velar], which means that it is a homorganic associate of [w] which has the same phonetic features. The consonant [w] takes labio-velar configuration in the syllable [gwa], as in the word [igwala] 'ill'.

Figure 38: [w] in a labial environment

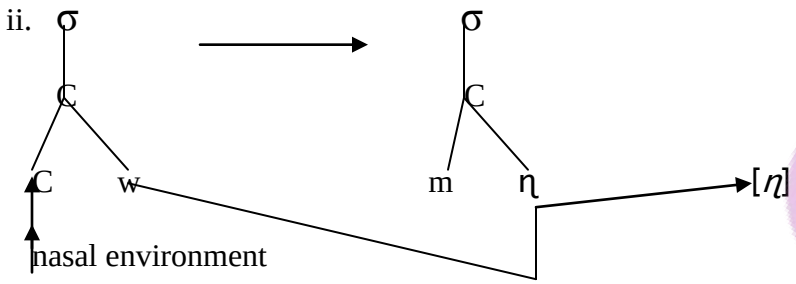
ii.



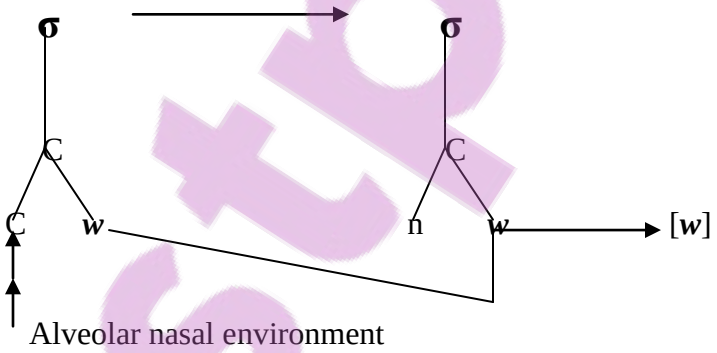
Bilabial environment

In this example (iii.), above, the labio-velar approximant [w] is in a phonetic environment characterised by the Cw, which is bilabial. In a bilabial environment, the labio-velar approximant [w] is realized as a velar-fricative [k], as shown in the allophone algorithm, above. The complex consonant /pw/ is realized as [pk].

Figure 39: [w] in a nasal environment



The labio-velar approximant [w], if it proceds a bilabial nasal stop [m] it assimilates nasality configuration of [m], thereby becoming a nasal [ŋ], as shown by the above algorithm. This exists in syllables such as [mŋe] as in words such as [mŋena] 'whole' [mŋengo] 'gully'. In this example /mw/ becomes [**mŋ**]. However, [w] in the environment of a nasal alveolar stop [n], remains labio-velar approximant, as follows:



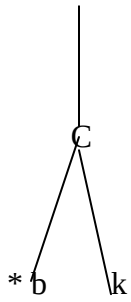
The allophones of [w] are therefore summarized by the following examples:

Table 10: Allophones of [w]

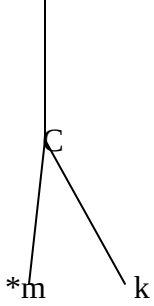
APPROXIMANT [w] (Phonetic Environment)	ALLOPHONE	
mwanana	mŋanana	‘cousin’
kamwemwe	kamŋemŋe	‘green’
mwengo	mŋengo	‘gully’
nweka	nweka	‘broken’
nwela	nwela	‘beat’
gwala	gwala	‘ill’
gwefa	gwefa	‘die’
hwetu	hwetu	‘broom’
pwele	pkele	‘young’
ipwa	ipka	‘sweet cane’
ibwa	ibga	‘dog’

Tonga does not allow a complex combination or co-articulation of heterorganic elements simultaneously, to be treated as a single consonant. The rule is that co-articulation of sounds is permissible only for homorganic and contiguous elements. The underlying principle being that the articulator feature is important in determining complex consonants (co-articulation). This means that it is virtually impossible for articulators to be used simultaneously when they are far apart. This can be exemplified by the following conditions:

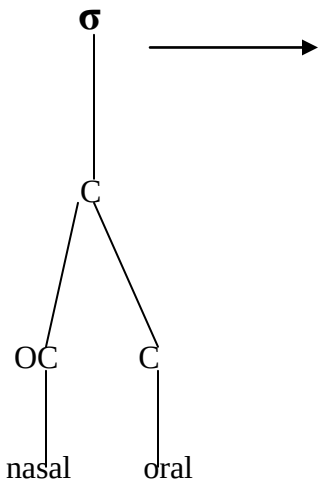
i.



ii.



Combining the bilabial [b] and the velar [k] and also the bilabial [m] and the velar [k] is not phonological permissible. These are heterorganic elements and simultaneous double articulation is impossible. The other constraint is that, whenever stops and nasals combine, in a complex consonant pattern, then the nasal consonant, should take the onset consonant (OC) position, thus;



[mb] and * [bm]
[nd] * [dn]
[ng] * [gn]
[nt] * [tn]
[nk] * [kn]

The same rule applies for fricatives and affricatives, as illustrated below:

[mv] *[vm]
[nʐ] *[ʐn]
[ndʒ] *[dʒn]
[ns] *[sn]

Tonga does not allow prenasalisation of alveo-palatal and velar consonants by a [+ nasal], [+ bilabial] consonant. This means that [m], does not precede alveo-palatal and velar sounds. This means that the following combinations are constrained in Tonga:

* [mk]
* [mg]
* [mdʒ]

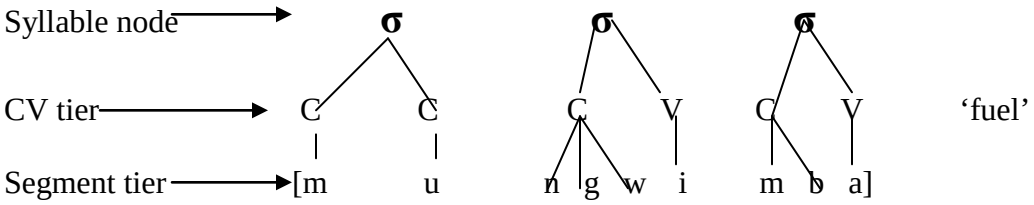
It is only possible for the alveolar nasal [n] to combine with these consonants ([k], [g] and [ʤ] because its neither an alveo-palatal nor velar but rather an alveolar sound, hence permissible.

4.6 THE SYLLABLE

The preceding sub-section describes the Tonga vowels and consonants. In this particular section, the researcher discusses the characteristics of the Tonga Syllable (consonant-vowel associations). This entails describing ways of grouping arrays of CV elements into syllables. Thus presenting constraints on syllable structure that serve as filter, allowing particular consonant-vowel sounds sequence to occur. According to Clements and Keyser (1983:159), "one of the functions of the syllable in all languages is defining syllabicity of segments". In other words, it regulates the combination of C and V segments, hence controls features that make up CV structures.

Generally, Tonga has a CV-syllable structure. The diagram given below demonstrates the structure of the Tonga syllable:

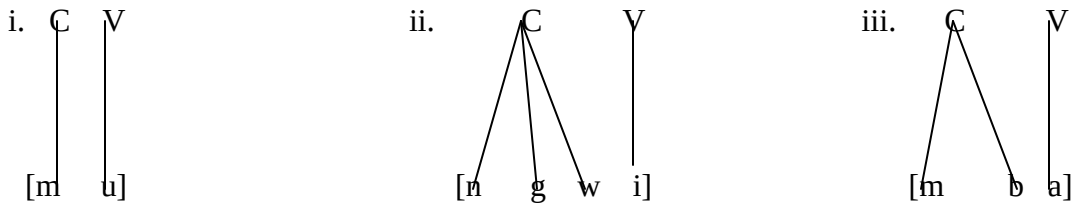
Figure 40: Tonga Syllable



The diagram above shows that a Tonga syllable, like any other language, has a three tier system, namely, the node (**σ**), CV-tier (CV) and the segmental tier [mu]. The syllables [mu], [ngwi] and [mba] in the word [mungwimba] are a clear demonstration that

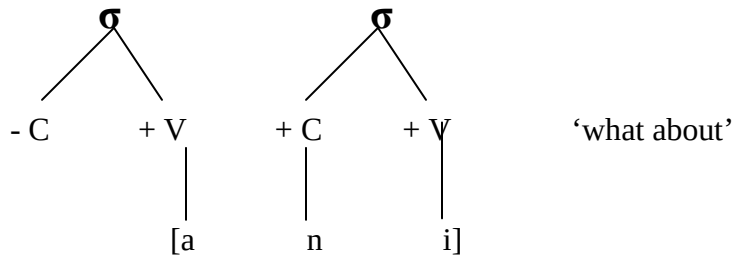
sequentially, a consonant is followed by a vowel in well-formed syllable in Tonga. This assertion is demonstrated as follows:

Figure 41: A Wellformed Syllable in Tonga



Syllable 1. [CV] Syllable 2. [CV] Syllable 3. [CV]

All the three syllables [mu], [ngwi] and [mba] are of the pattern [+C+V]. However, there are situations when the vowel stands on its own as a full and complete syllable. The example below demonstrates V syllable in Tonga, [-C + V]:



'what about'

The diagram above captures the notion that Tonga has some syllables that are made up of vowels only, without onset consonants. From the demonstration given above, the first syllable on the word [ani] is [a], which is a vowel [-C+V] but a well-formed syllable. This syllable has the exclusion of the onset consonant (OC). Though that is sometimes the case, it should be noted that most of the syllables in Tonga consist of an onset and a nucleus, which is [+ C+ V]. Those syllables that are made up of a nuclears only [-C+ V] are just limited in number.

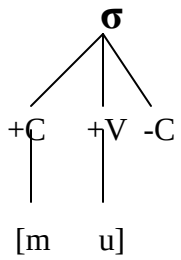
4.6.1 The CV-tier

The syllable consists of a nuclears and an onset. The onset is determined by the C-element, whilst the nucleus is dominated by the V- element. The two exist at the CV-tier

level, with C and V bonds being the dominating feature. The V-element of the CV-tier is the syllable nuclears in Tonga. This is because it is more sonorant that the C-element. In that scenario, the C-element, by virtue of being non-sonorant, assumes the peripheral position, which is known as the onset (Clements and Keyser 1983:170). This, in other words, means that it's a marginal element, in a CV-tier. Thus a consonant is never the peak of the syllable in Tonga.

In the word [mungwimbwa] 'fuel', the CV elements are all immediately dominated by the node [σ], while the elements of the segmental tier [b, m, u, g, n, m, a, w, i] are also immediately and directly dominated by the CV-tier. The C and V association in the syllables [mu], [ngwi] and [mba] have correlations of openness, which is a significant propensity for voicing [+ voice]. Thus the [u] is more audible in the syllable [mu] that the [m].

The same is the case with [i] with the complex consonant [ngw], as in the syllable [ngwi] and the vowel [a] with the prenasalised bilabial [mb], hence [u], [i] and [a] are nuclears [+ peak], [+ sonorant], since they are dominated by [V]. In the same way, [m], [ngw] and [mb] are onsets that are peripheral to the peaks that accompany the vowels in the CV-tier. These (consonants) exist in CV-typology, with the vowel as the rightmost [+open] element, hence Tonga syllable is open. This means that the Tonga syllable is characterised by [+ onset], [+ nuclears] and [- coda], [- tail] as shown below:



Tonga syllables have no tail, [±C+V-C]

The onset consonant in the CV-tier can be a simple consonant, as shown by a list of words below:

Table 11: Simple Consonant Onset

Word	English gloss	(onsets) simple consonants
[lepule]	Spoon	[l], [p]
[kuzima]	Rub	[k], [z], [m]
[muyisi]	Teacher	[m], [y], [s]
[mulimu]	Duty	[m], [i]
[kaleke]	Tin	[k], [l]
[kudʒika]	Cook	[k]
[basikale]	Forefathers	[b], [k], [l]
[kabulo]	Metal	[k], [b], [l]
[musilisi]	Doctor	[m], [l], [s]
[banene]	Aunt	[b], [n]
[kamala]	Musical instrument (mbira)	[k], [m], [l]
[wajilesi]	Radio	[w], [j], [l], [s]

All the words, above, are made up of syllables consisting of short vowels [a, e, i, o, u] and simple onset consonant.

Onsets can be complex consonants that are homorganic, semi-homorganic or contigious (double or tripple articulation), as follows:

Table 12: Complex Consonant Onset

Word	English gloss	Complex onsets
[**tʃ**imbuzi]	Toilet	[**tʃ**], [mb]
[alimba]	Radio	[mb]
[kankobela]	Musical instrument	[nk]
[muzwilidi]	President	[zw]
[mukambawusi]	Reverend	[mb]
[kamweniwe]	Green	[mw]
[siyamuntando]	Orange	[nt], [nd]
[nzangu]	Shoes	[nz],[ng]
[buntususu]	Humanity	[nt]

The examples given are onset complex consonants made up of complex consonants. All the examples given above demonstrate [+C+V] syllable typology, regardless of having simple or complex onsets. Tonga, as already established is also characterised by a [-C+V] syllable typology. This means that the element (segmental) dominated by V, can on its own function as a complete and proper syllable in Tonga. The following are examples of the [-C+V] syllable typology:

Table 13: V- Syllable Typology

Word	Gloss	v-syllable
[ili]	This (near)	[i]
[iŋangu]	Beans	[i]
[ikondo]	Road	[i]
[iteme]	Blue	[i]
[imbeli]	Razor	[i]
[inzinga]	Bicycle	[i]
[ikibili]	Cent	[i]
[inpondo]	Pound	[i]
[ilo]	That (for)	[i]

Tonga has demonstrated that [-C+V] exist on word initial syllables, which are mostly prefixes of nouns and stabilizers for demonstratives (both near and far), as shown on the above table.

Tonga syllables characterised by simple consonant onsets are the core syllables [CV], whilst those with complex onsets are prototypical CV-typologies, in the following manner:

Figure 42: Core syllable in Tonga

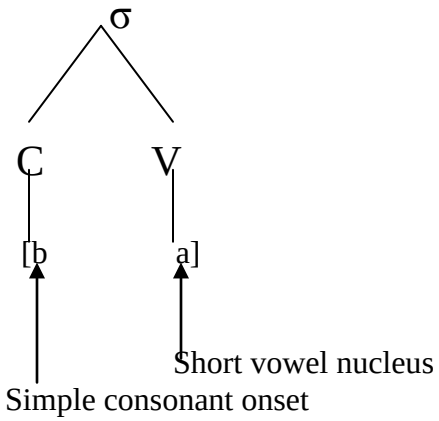
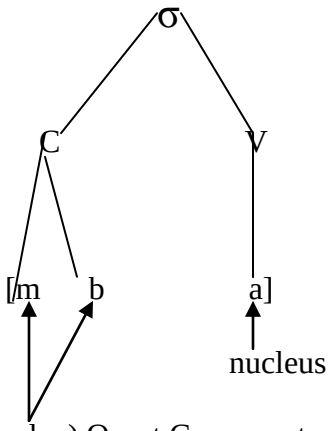


Figure 43: Prototype Syllable

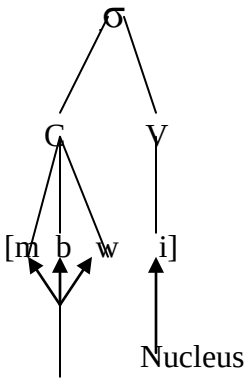
a)



Prenasalised Monosegmental (complex) Onset Consonant

Adopting Chimhundu's (2002:210) unitary treatment of segments, the above example demonstrates complex onsets and short vowel nucleus. [mb] is characterised by simultaneous articulation of the bilabial nasal [m] and the bilabial oral stop [b].

b)



Post-velarised monosegmental Onset Consonant (triple articulation)

The above syllable, [mbwi] has a complex onset [mbw], characterised by three articulator configurations, with two homorganic elements [m], [b] and one semi-homorganic [w].

4.6.2 Canonical syllables

The CV syllable structure meets the core-grammar requirement, hence the syllable 'norm' in Tonga. Other syllable types are modifications of the [CV] type and this is what Clements and Keyser (1983:160) refer to as the 'prototypical' CV- syllables. On the other hand Tonga sometimes deletes the syllable onset (initial consonant), allowing syllables with V-typology, as already demonstrated. These are what Steven (1990:55) refers to as canonical syllables. Tonga therefore, has the following core and canonical syllables. These are demonstrated on the diagrams below:

Table 14: Canonical Syllables

SYLLABLE TYPOLOGY	DESCRIPTION	EXAMPLES
CV	Core syllable [+C+V] 'norm' core-grammar, simple onset, [-tail]	[ba], [ge], [j], [ko], [nu], [sa], [te], [fi], [mo], zu], [la], [pe], [di], [co], [hu], [va], [we].
V	Prototype [-C+V], canonical, without both simple and complex onset.	[a], [e], [i], [o], [u].
CCV	Prototype [+CC+V], [-tail].	[mba], [nde], [mvi], [nzo], [twu], [dwa], [kwe], [gwi], [mwi], [new], [fwi], [swo],[zwu], [lwa].
CCCV	Prototype, canonical [+CCC+V].	[ndwa], [mbwe], [nzwi], [ngwo], [tʃwu], [dʒwa]
CCCCV	Prototype, canonical [+CCCC+V]	[ndʒw]

The table above, demonstrates that the core Tonga syllables have CV patterns. In these examples, it's demonstrated also, that well-formed core syllables are characterised by simple consonant onsets and short vowel nuclears. From the 'norm' or core syllable, prototypical syllables are derived [CCV], [CCCV] and [CCCCV]. Clements and Keyser (1983:170) call them canonical syllables. This implies that Tonga has only initial consonant (onsets) syllable and does not allow coda and tail.

The following schema denotes well-formed syllable onsets:

i. [-sonorant] ⟶ [±voice]____ initial/S____ [C]

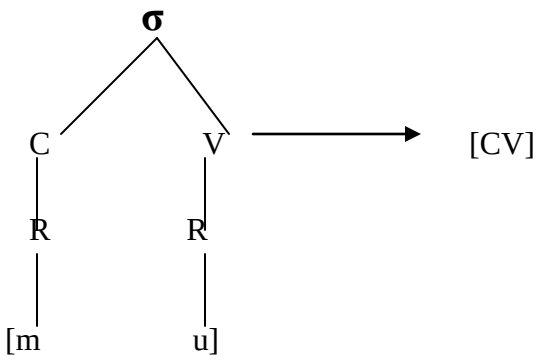
Proper Consonants
e.g. [m]

ii. [-sonorant]⟶ [+voice]_____ initial/SV – [G]

Semi-vowel
e.g. [w]

Demonstrations i) and ii) accounts for the two categories of consonants that function as onsets and these are proper consonants [-sonorant], [-peak] and semi-vowels [+sonorant], [-peak]. On the schema, a proper consonant onset is non-sonorant; it can be either voiced or voiceless, taking the initial segment position in the syllable, either as complex or simple consonant. The glide [w] can also be an onset of a Tonga syllable, though it is characterised by [+sonorant], like a proper vowel.

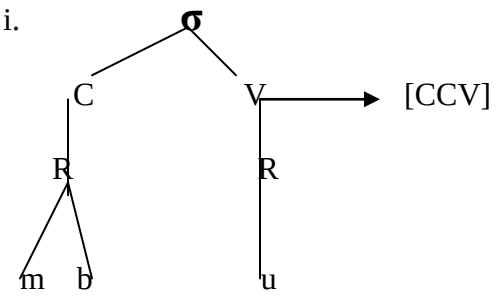
The schema demonstrates that where there is or no branching rhyme at onset, there is core or prototypical syllable as exemplified below:



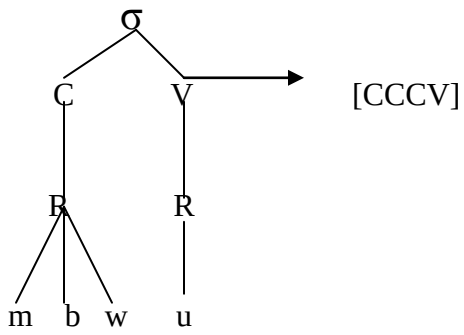
On the above demonstration, there is no branching rhyme of the element [-sonorant], [+ voice], [m], hence a 'simple-onset' consonant. This therefore is regarded as the core syllable.

Where there is branching rhyme of the [-sonorant], a prototypical syllable result, as follows:

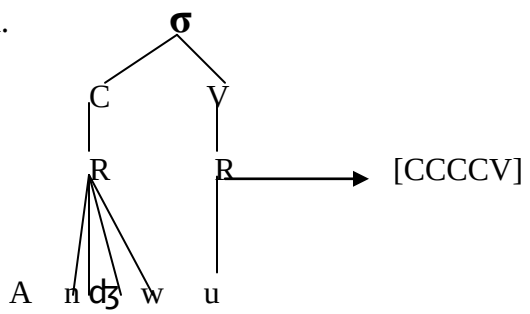
i.



ii.

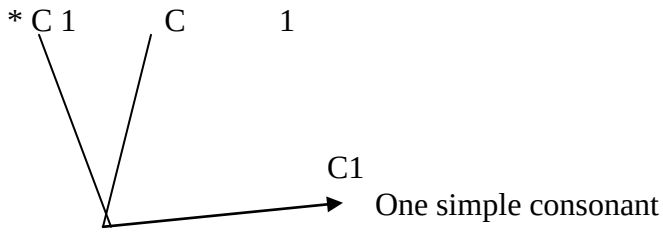


iii.



4.6.3 Syllabification Constraints

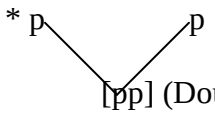
Tonga does not allow 'germinated' consonant onsets. According to Clements and Keyser (1983:170), germinated consonants refer to "the same consonantal articulation, held for the duration of two consonantal beats, as shown below:



The following schema can further demonstrate this:

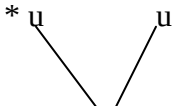
*O = [C1] [C1], where O denotes onset consonant, while [C1] [C1]
Denotes germinated C segment.

This is constrained in Tonga, for example:

1. 

[pp] (Double Consonant [pp])

Germinated elements are constrained for both consonants and vowels, hence,

2. 

[uu] (Double Vowel [uu]), as one nucleus

This means that Tonga disallows germinated onsets and nucleus on syllables.

4.7 PHONOLOGICAL PROCESS

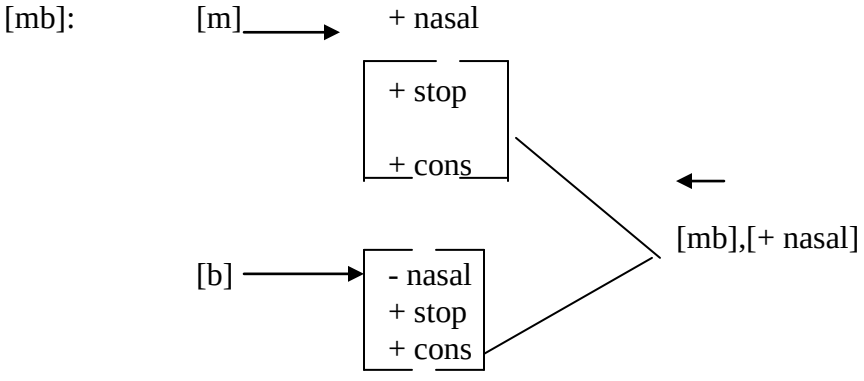
There are a number of processes that are within the phonological domain but this research is only interested in assimilation and dissimilation, since these two phonological processes have a bearing on nativisation of loanwords, the pre-occupation of this study.

4.7.1 Assimilation

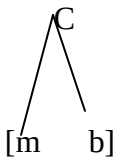
John (2000:14) defines assimilation as a phonological process with which "sounds become more like others in terms of feature matrix configurations". This means that assimilation is a process whereby sounds in a sequence become more like others that serve as complementary segments preceeding or succeeding them. There are a number of assimilation processes; important are nasalization, dentalization, voicing and velarisation.

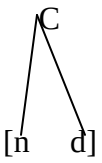
4.7.1.1 Nasalisation

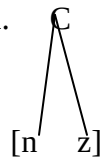
Prenasalised consonants in Tonga assimilate the nasality configuration of the nasal consonant. This means that the oral stops and fricatives, in the environment of nasal sounds, assumes nasality as follows:

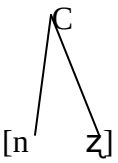


This example above, illustrates that [b] which is [-nasal], becomes [+ nasal] as a result of progressive assimilation as follows; [mb]. The same applies to [nd] and [ng]. The phonological rule is that both the nasal and non-nasal sounds must share the same voicing configurations. From all the examples given, the following voicing configurations are identified:

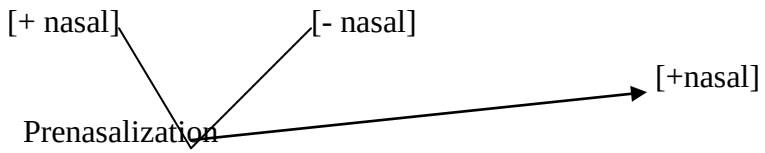
i. 

ii. 

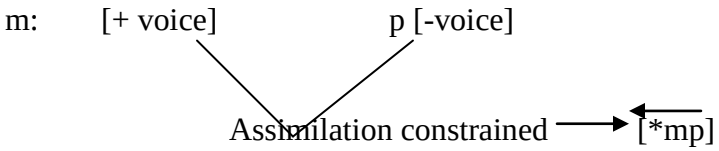
iii. 

iv. 

All the nasals, stops, fricative and affricate given above, have [+voice] and [± nasal], which means that in prenasalised environment, assimilation takes place, hence nasality is transferred to non-nasal sounds as follows:



However, assimilation is constrained between nasal sounds and voiceless plosives. Tonga has only one voiceless plosive [p]. Since [p] does not share the same voicing configurations with bilabial nasal [m], assimilation is constrained, hence * [mp], in words like [*mpongo] 'goat'. That does not apply to combinations such as [nt], and [nk]. This means that nasal assimilation cannot take place on voiceless sounds, as demonstrated below:

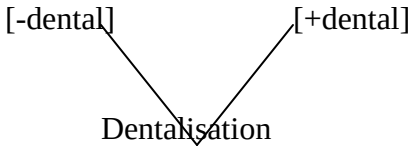


The above diagram shows that voicing configurations for [m] and [p] are conflicting [+voice] and [- voice] respectively, hence [mp] is grammatical. This scenario exists in

words such as [i****mp***ongo] ‘goat’, where assimilation is allowed on the syllable [ngo] but constrained on the syllable *[***mp***o]. Unlike on [kutanta], where nasal assimilation is allowed on the syllable [nta], however, [n] and [t] have conflicting distinctive features, [+voice] and [- voice] respectively. Nasal assimilation is an example of manner assimilation on complex consonants.

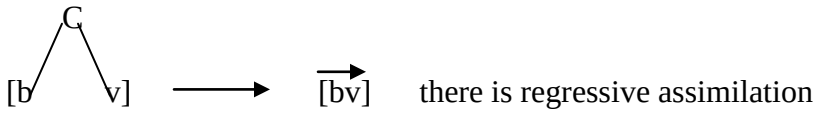
4.7.3 Dentalization

One point to note is that nasalization is manner assimilation whilst dentalisation is articulator feature assimilation. Instead of sounds becoming more like others, with respect to manner of articulation, they do in respect to place of articulation. Dentalisation entails that sounds that are articulated at points other than dentals become dentalised in the dental phonetic environment, as shown below:

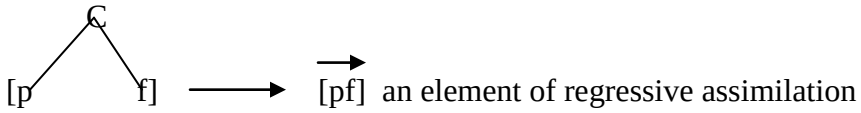


Examples of such assimilation exist on the labio-dental sounds [bv] and [mv], where a scenario of non-dental and dental sequencing occurs as follows:

i.



ii.

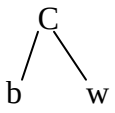


Whilst nasalisation is characterised by progressive assimilation [←], dentalisation is associated with regressive assimilation [→]. All the sounds [m], [p] and [b] are bilabial sounds characterised by feature matrix [-dent]. When exposed to the dental environment,

[v] and [f], they change to become dentalised [+dent]. The phonotactic constraint here is that only bilabial sounds can be dentalised, because they are the contiguous elements.

4.7.3.1 Velarisation

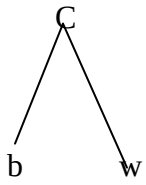
Like dentalisation, velarisation entails assimilation of articulator features. Thus non-velarised sounds simultaneously articulate velar feature gestures during co-articulation. In other words such co-articulation comprises conflicting distinctive features follows:

i. 

as in the word [ibwa] 'dog'

[-velar] [+velar]

The bilabial [b] in the environment of a velar sound assimilates velar configurations. In this regards [b] assumes the velar articulator gestures when post-velarised by the labio-velar [w]. This assimilation is regressive as follows; [bw]. Under normal circumstances [b] is not a velar but after assimilation then [bw] is a labio-velar. The phonotactic constraint applicable to this assimilation process is that velar should proced a velarised sound. Tonga is a language that does not allow the labio-velar [w] to be the first C element in a CC scenario but rather to be the last C in the CC structure, as demonstrated below:



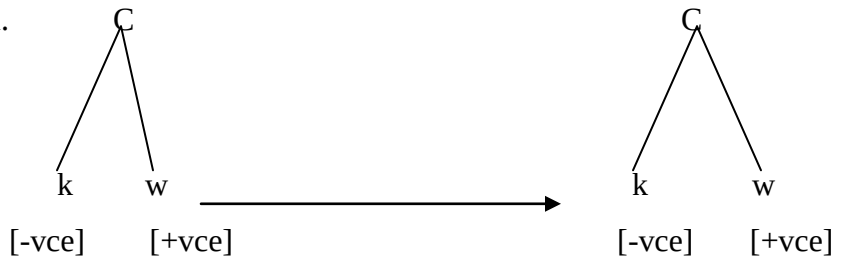
Other examples are [dw], [fw] and [tw].

Assimilation process in the velar environment is two tier. On one hand assimilation is simply a velarisation process, [hw], [sw], [zw]. On the other hand, the velar sounds assimilate the voicing configurations of the sounds they velarise, as follows:

i.

In this particular example, [b] is a voiced sound and is just the same with the labio-velar [w]. In the environment of a voiced sound [w] becomes a voiced velar allophone [g], as above.

ii.



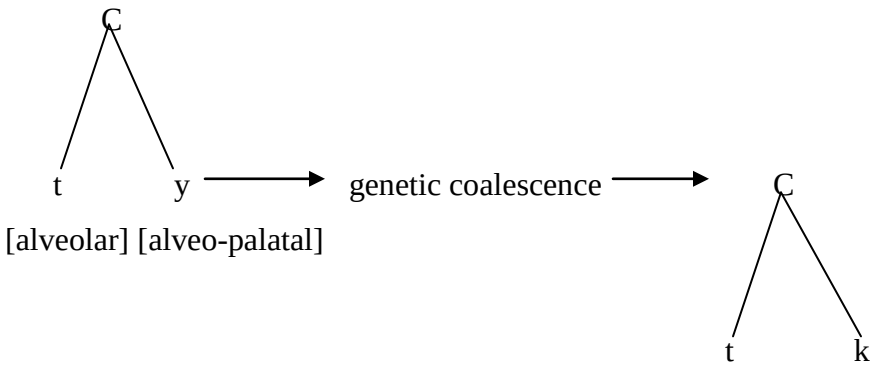
In the second example, [k] is a voiceless bilabial plosive [-vce] and the labio-velar [w] is a voiced approximant [+vce]. Since it [w] is in the phonetic environment, [k], which is voiceless it [w] then assimilate the voicing configurations of [k], thus [-vce] and then becomes a voiceless approximant, hence [k͡w] The [w] is realized as the voiceless allophone [w], which is [-vce]. In the environment of [p], a voiceless sound, it becomes [k], which is voiceless too.

4.8 Genetic Transformation of Feature Values

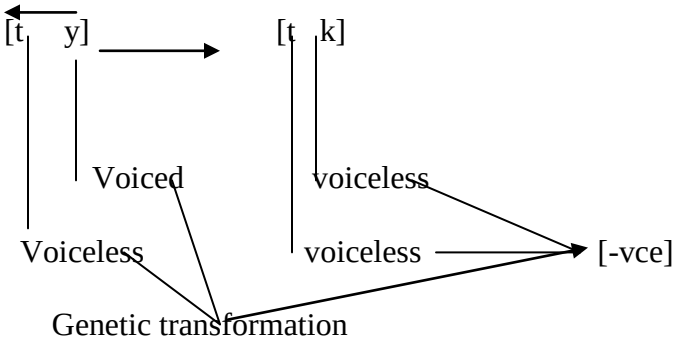
Genetic Transformation of feature matrix can be described as the process with which feature matrices of two consonants merge and create a completely new characteristic feature. This process is what John (1984:14) refer to as feature matrix coalescence. Thus the change of feature matrix of one of the sounds or both in a sequence. The diagrams below demonstrate this:

Figure 44: Genetic Coalescence

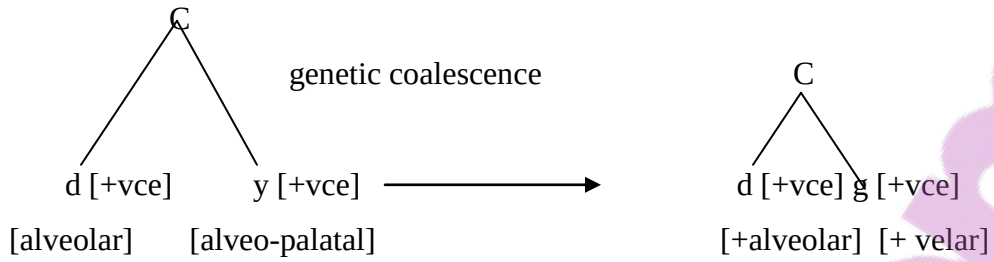
i.



The genetic articulator feature for [t] is alveolar and if it is co-articulated simultaneously with the alveo-palatal [y], then [y] changes to velar [k]. This is a genetic outcome when co-articulation occurs between alveolar and alveo-palatal consonants. Since [t] is voiceless [-vce], while the alveo-palatal [y] is voiced [+vce], it follows that [y] assimilates the voicing configuration of [t], which is [-vce], hence why [y] changes to [k], which is voiceless, as shown below:



ii.



In the same way, [d] an alveolar sound combines with the alveo-palatal [y] and the outcome is a velar [g]. Similarily, since the alveolar [d] has the [+vce] configuration, it follows that the velar outcome [g] is also a voiced velar consonant.

The scenario above is a result of the assimilation process [dy]. The rule is that, the voicing feature matrix of the consonants determines the outcome of the genetic transformation of consonants in Tonga, in CC coalescence, hence why the voiced [y] changes to voiceless [k] in example (i) where the alveo-palatal [y] combines with the voiceless alveolar [t].

4.9 MORPHOLOGICAL PROCESSES

The previous section discusses the phonological processes that account for the behaviour of phonemes in the Tonga linguistic environment. This current section (Morphological Processes) is a chronological development of the previous section. The current section, introduces higher order processes, developed from phonology (the previous section). The current section seeks to handle morphological processes that explain word building in Tonga. It is important to note that it is not possible for the researcher to attend to all the morphological processes in Tonga. This is because the scope of the research requires the researcher to discuss precisely nativisation processes that adapts English words into the Tonga language. This therefore, compels the researcher to discuss only the morphological processes that give insight into morphological nativisation of loanwords borrowed into Tonga. The scope delimitation does not give the researcher much room to discuss morphological processes other than those that account for morphological changes of English words in the Tonga linguistic environment. Morphology is defined by Smith

(1999:1) as the study of meaningful units of a language and how they are combined to form words. The researcher analyses lexical items, morphologically, at three levels, namely, the base word level, vowel alteration level and the affixation level. These are the three major morphological levels identifiable in the Tonga language. There are however, other higher order levels like the post lexicon level, which are not very relevant to the way the Tonga native speakers adapt foreign words into their system, hence excluded from this discussion.

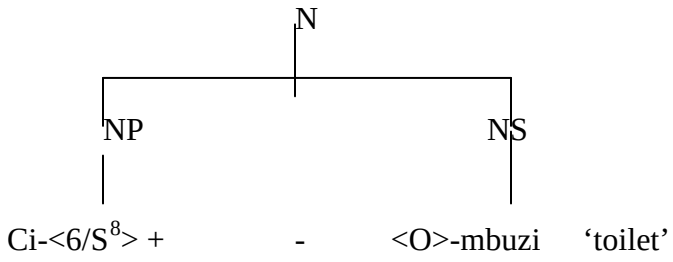
4.9.1 Base Word Morphology

This is the lowest indivisible level of a morphological construction, as according to the Lexical Phonology and Morphology Theory (Kiparsky and Mohanan 1982:2). At this level, base words are the product of combining the smallest meaningful morphological units. In other words, base word morphology entails analysing words into their immediate constituencies. This is a level where words are analysed into basic structures, which cannot be decomposed further at the morphological level. In demonstrating these morphological systems, the Lexical Morphology and Phonology paradigm is adopted (as already indicated in the theoretical framework, Chapter Three).

4.9.1.1 **Noun Base Word Morphology**

A noun can be defined as the smallest meaningful morphological unit that signifies an object as its name. In other words, a noun can be seen as a name accorded to an object. In the Tonga language, like any other linguistic system, a typical noun comprises a Noun Prefix (NP) and a stem (NS) as immediate constituencies. This decomposition of the noun is illustrated below:

Figure 45: Noun Baseword Morphology



From the diagram above, ***Ci-*** is the prefix of the base word in class 6, whilst ***–mbuzi***, is the noun stem of the word ***cimbuzi*** (toilet). Above all that, the prefix ***ci-*** is singular in address. Thus in Tonga, the singular (SPR) or plural prefix reference (PPR) is either monosyllabic (MNS) or multi-syllabic (MTS), as shown below:

Figure 46: Monosyllabic Singular Prefix.

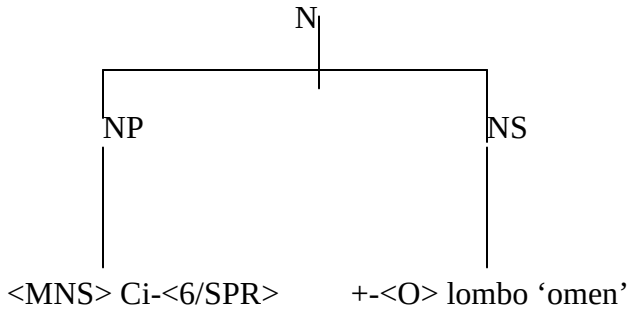
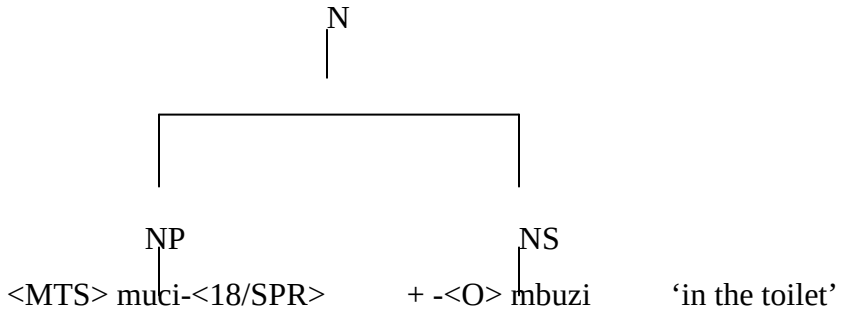
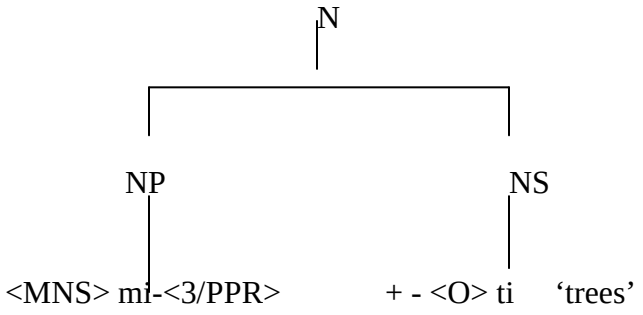


Figure 47: Polysyllabic Singular Prefix



[8] Abbreviations, where <S>=singular form, < 6>= noun class, <O>=object, <-> =information omitted on the left or right.

Figure 48: Monosyllabic Plural Prefix



1. Monosyllabic Honorific Plural (HP) Prefix

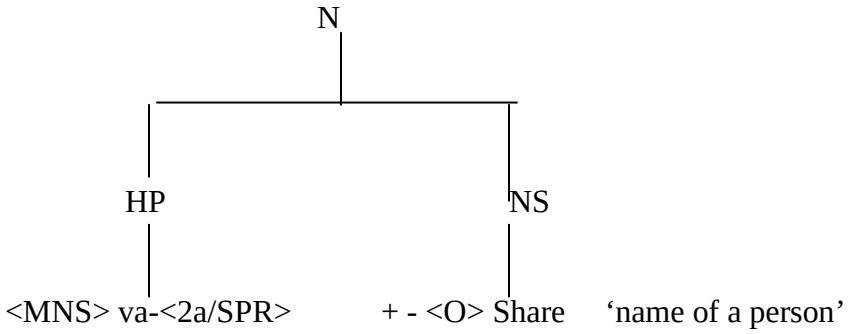
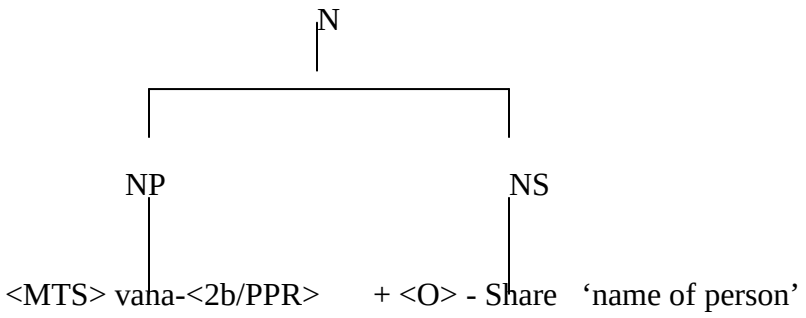


Figure 49: Polysyllabic Plural Prefix

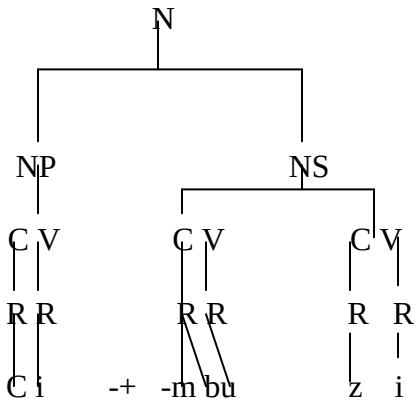


Discussed above are the five categories of monosyllabic and posyllabic prefixes in Tonga. The interpretation is that Tonga has monosyllabic and polysyllabic prefixes for both singular and plural prefixes. It is also important to note that only polysyllabic prefix reference is the only one applicable to Honorific Plural Prefixes. Unlike ***Ci-*** in example 1, which is monosyllabic, the plural prefix ***vana-*** in example 5, is polysyllabic. Another

prefix, which is monosyllabic is the honorific plural prefix ***va-***, in example 4. The plural prefix ***Va-,*** in the word VaShare is not just plural but rather honorific Plural.

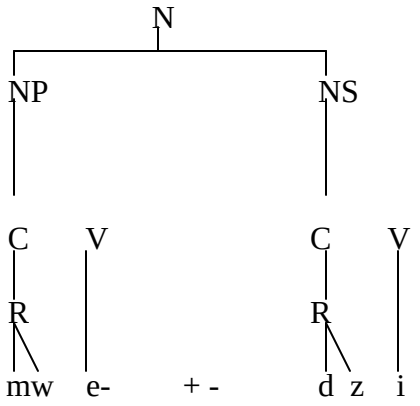
Apart from that, Tonga prefixes are characterized by both simple and complex onsets for prefix syllables. The following diagram illustrates this notion:

Figure 50: Simple Onset Syllable Prefix



The prefix Ci-, has no branching rhyme for the onset segment. This implies that it is a simple consonant, hence simple Onset Syllabic Prefix.

Figure 51: Complex Onset Syllable Prefix

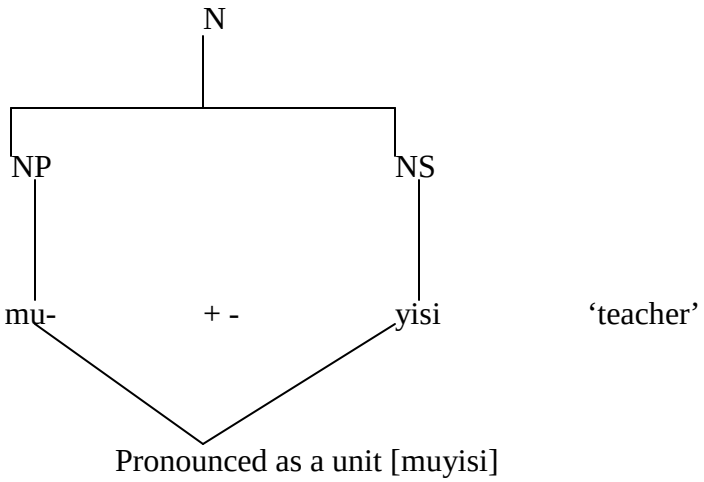


The onset consonant for the syllable ***mwe-,*** the prefix, is characterized by rhyme, hence two articulator features are involved. This implies that, mw- is a complex onset for the syllable ***mwe-.*** The noun stem ***–dzi,*** is also characterized by by a complex onset syllabic prefix, though monosyllabic. However most noun stems in Tonga are

polysyllabic. Tonga has generally three main categories prefixes namely, visible, non-visible and zero prefixes

4.2.1.1.1 **Visible Prefixes**

According to Ibrahim (1998: 26), visible prefixes are prefixes that are attached to a stem of the same word during pronunciation. Thus the prefix and the stem are articulated together. Such prefixes are acoustically invisible but grammatically visible. The following example demonstrates this scenario:



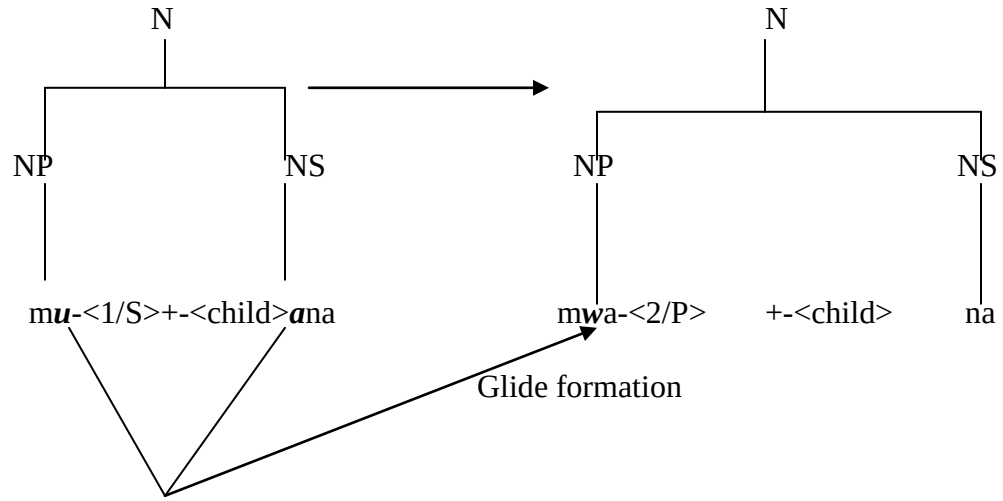
From the example given, ***mu-*** is a monosyllabic visible prefix, for human objects in class 1. The two (NP) and (NS) are articulated as a single unit, where mu- is a grammatically visible prefix constituent. Visible prefixes exist on nouns in class 1 and 2 as follows:

Table 15: Visible prefixes for noun classes 1 and 2 in Tonga

WORD	GLOSS	NUMBER	NP	NS
Clss 1. Mwana	Child	S	Mu-	-ana
Clss 2. vana	children	P	Va-	-na
				-yisi
Clss 1. muyisi	teacher	S	Mu-	-yisi
				-cikana
Clss 2. vayisi	teachers	P	Va-	
				-cikana
Clss 1. mucikana	girl	S	Mu-	-silisi
				-silisi
				-luti
Clss2. vacikana				-luti
	girls	P	Va-	-zwilidi
Clss 1.musilisi				
	doctor	S	Mu-	-zwilidi
Clss 2. vasilisi				
	doctors	P	Va-	-anaa
Clss 1. muluti				
	professor	S	Mu-	-nama
Clss 2. valuti				-kambausi
	professors	P	Va-	
Clss1. muzwilidi	president	S	Mu-	-kambausi
Clss 2. vazwilidi	presidents	P	Va-	
Clss 1. mwanama				
	cousin	S	Mu-	
Clss 2. vanama				
	cousins	P	Va-	
Clss 1. mukambausi	pastor	S	Mu-	
Clss 2. vakambausi				
	pastors	P	Va-	

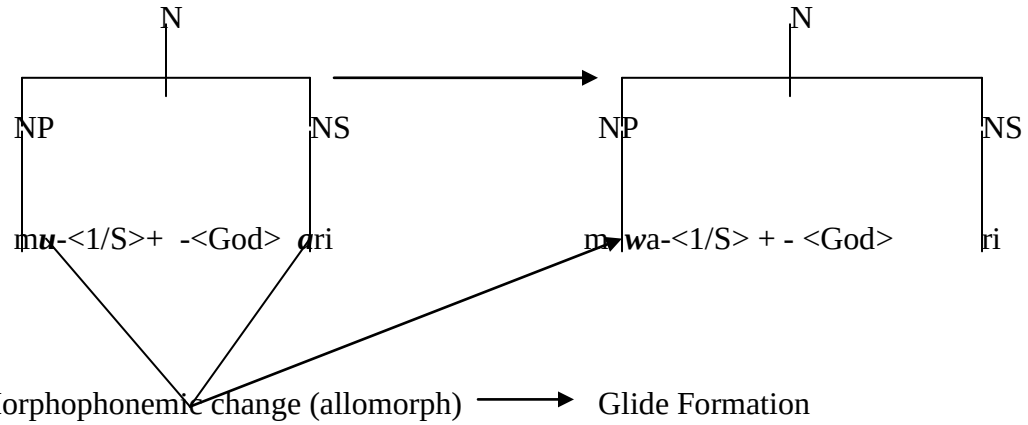
The prefix of class 1 nouns is ***mu-,*** in Tonga with the allomorph ***mwa-***, which is monosyllabic and singular in reference. The prefix ***mu-,*** becomes ***mwa-*** due to morpho-phonemic changes on the vowel /u/, commencing stem, *-ana* on the word *muana* (child). This can be illustrated as follows:

1.



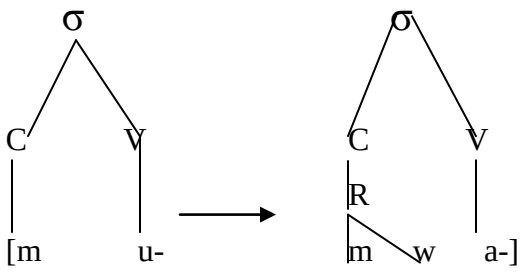
Morphophonemic change (allomorph)

2.

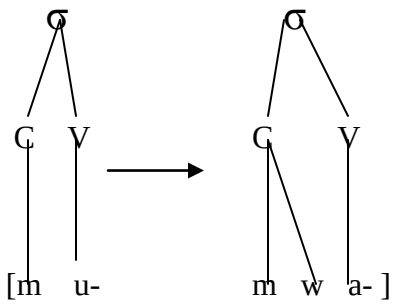


Morphophonemic change (allomorph) ⟶ Glide Formation

The noun prefix ***mu-*** of class 1, changes to ***mwa-*** <1/S>, an allomorph, which result from a morphophonemic changes, vowel commencing stem. This process results in glide formation (allomorph). Thus the labio-velar [w] is created, resulting in a branching rhyme of the onset of the syllable as follows:

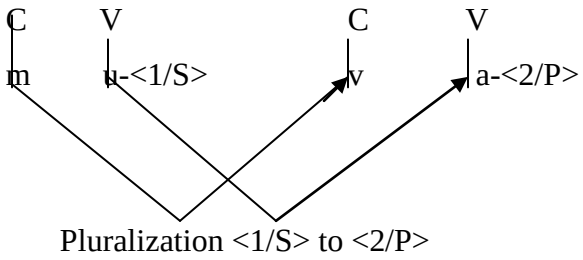


Thus the glide [w] becomes prenasalized by the bilabial nasal [m]. The other change at phonological level is from the core-syllable [CV] to a prototypical syllable prefix [CCV], hence the following scenario:

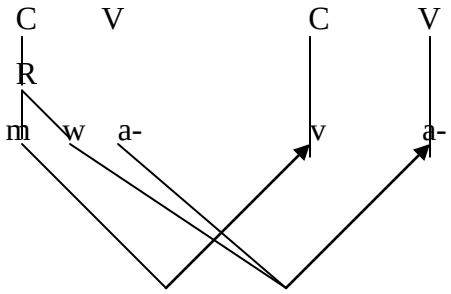


However, both ***mu-*** and ***mwa-*** remain monosyllabic, singular prefixes. When changed to its plural va-, the rounded, nasal [m] is replaced by the unrounded, labio-dental [v] and the rounded back vowel [u] is substituted by the unrounded central vowel [a]. This can be illustrated as follows:

1.



2.



Pluralization <1/S> to <2/P>

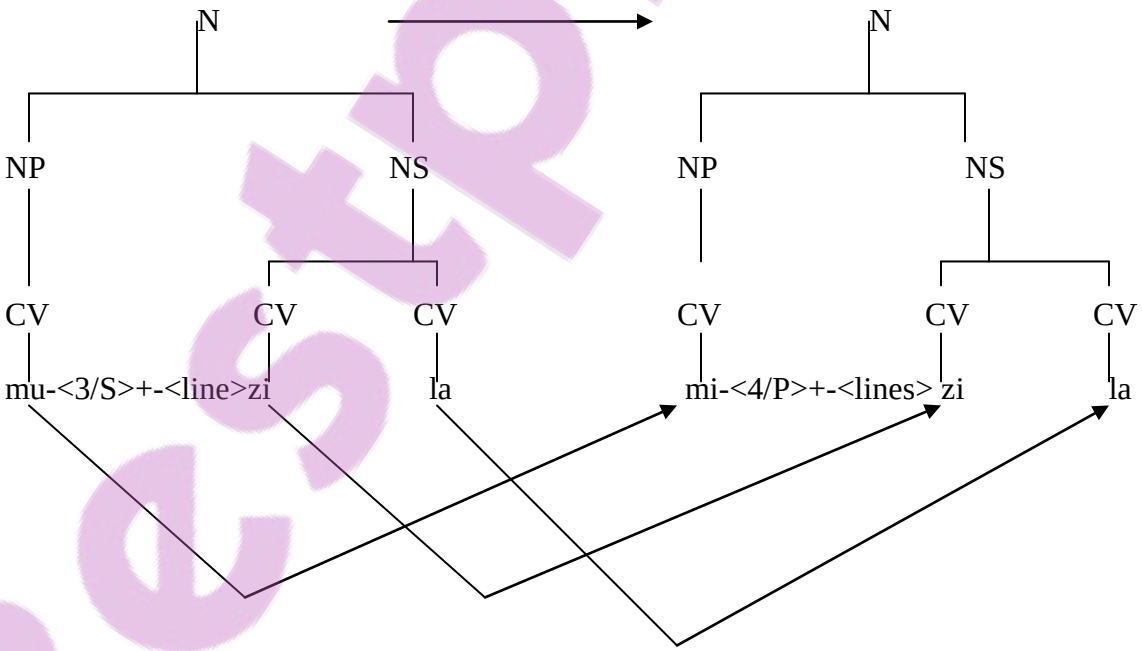
From the table given earlier on, ***mu-*** <1/S> for the word mucikana, changes to ***va-,*** <2/P> respectively, for the word vacikana when pluralized. This means that Tonga has a singular and plural sequence for prefixes. However, ***va-*** does not have allomorphs, as is the case with ***mu-.***

The visible noun prefix ***mu-*** also exists for noun prefix of class 3 but denoting objects other than human beings. The plural reference for ***mu-*** <3/S> is ***mi-*** <4/P>. Both mu- and mi- are visible prefixes, since they are articulated together with the stem, hence grammatically visible. This is demonstrated by the examples below:

Table 16: Visible Prefixes for noun classes 3 and 4

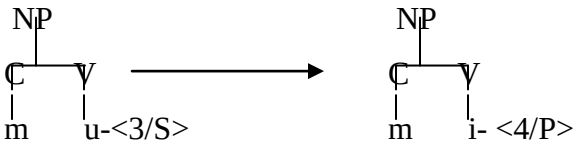
WORD	GLOSS	NUMBER	NP	NS
Clss 3. muzila	Line	S	Mu-	-zila
Clss 4. mizila	lines	P	mi-	-zila
Clss 3. mulimu	duty	S	mu-	-limu
Clss 4. milimu	duties	P	mi-	-limu
Clss 3. mulonga	river	S	mu-	-longa
Clss 4. milonga	rivers	P	mi-	-longa
Clss 3. muceka	cloth	S	mu-	-ceka
Clss 4. miceka	cloths	P	mi-	-ceka
Clss 3. muti	tree	S	mu-	-ti
Clss 4. miti	trees	P	mi-	-ti

The prefix ***mu-,*** of class 3, like that of class 1, is monosyllabic. This ***mu-*** <3/S> is singular in number and is substituted by ***mi-*** when pluralized, as shown by the illustration below:



Pluralization <3/S> to <4/P>

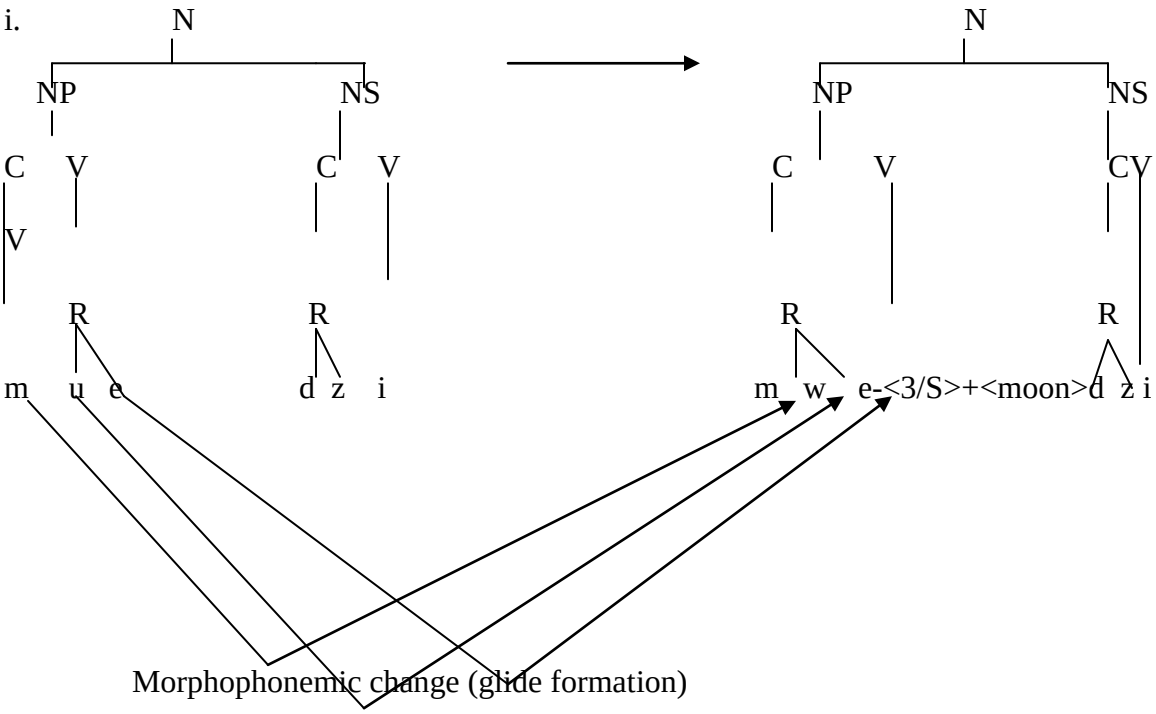
Unlike class 1 ***mu-,*** where [m] is replaced by the labio-velar [v] and the short vowel [u], [+ round] is replaced by the unrounded central vowel [a], ***mu-*** of class 3 is replaced by mi-, as illustrated above. In Tonga, the stem is not altered in any way as shown by the above stem, ***-zila***, which does not change during pluralization of ***muzila*** (line) to ***mizila*** (lines). It is only the prefix, which changes a word from singular to plural as shown below:



Pluralization achieved by altering the vowels, [u] to [i] respectively and not the accompanying onset consonant, [m], which is the case with with class 1 ***mu-***.

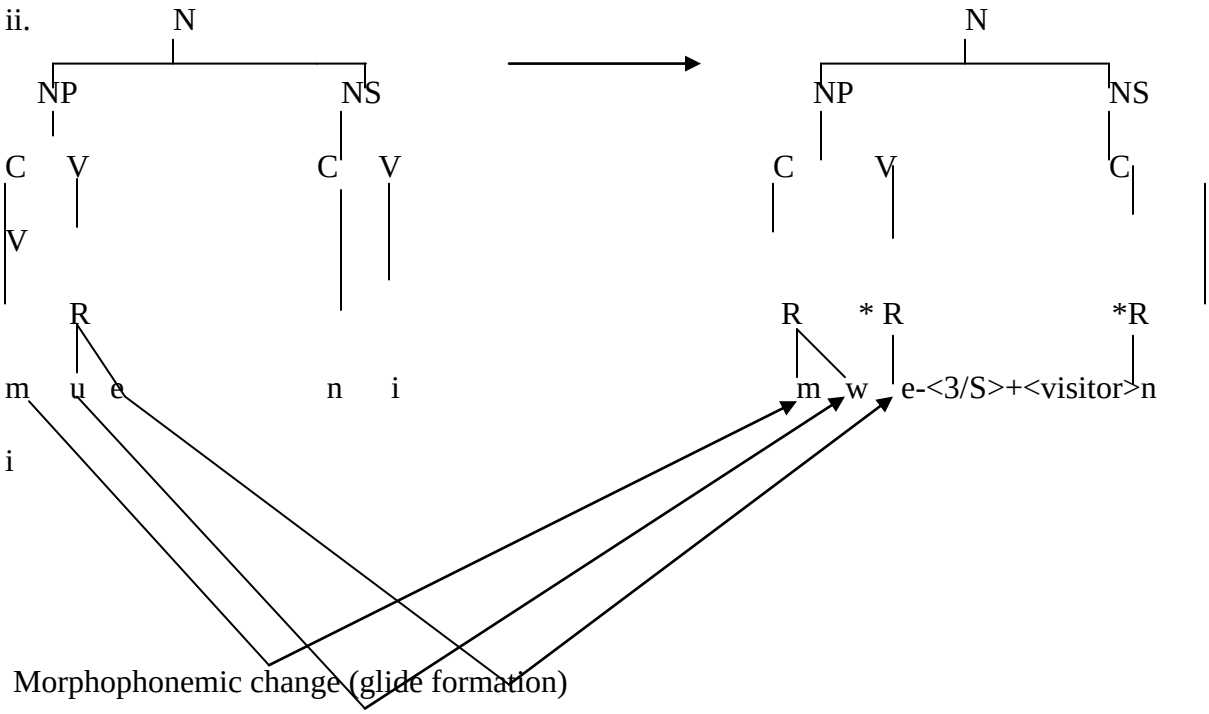
Similarities between class 1 [mu-<1/S>] and that of class 3,[<mu-3/S>] is that both prefixes have allomorph mw-, realized as ***mwa-*** for class1 and as **mwe-** for class 3. The following illustrations demonstrate the allomorphs of mu-<3/S>:

Figure 52: Allomorphs of [mu]



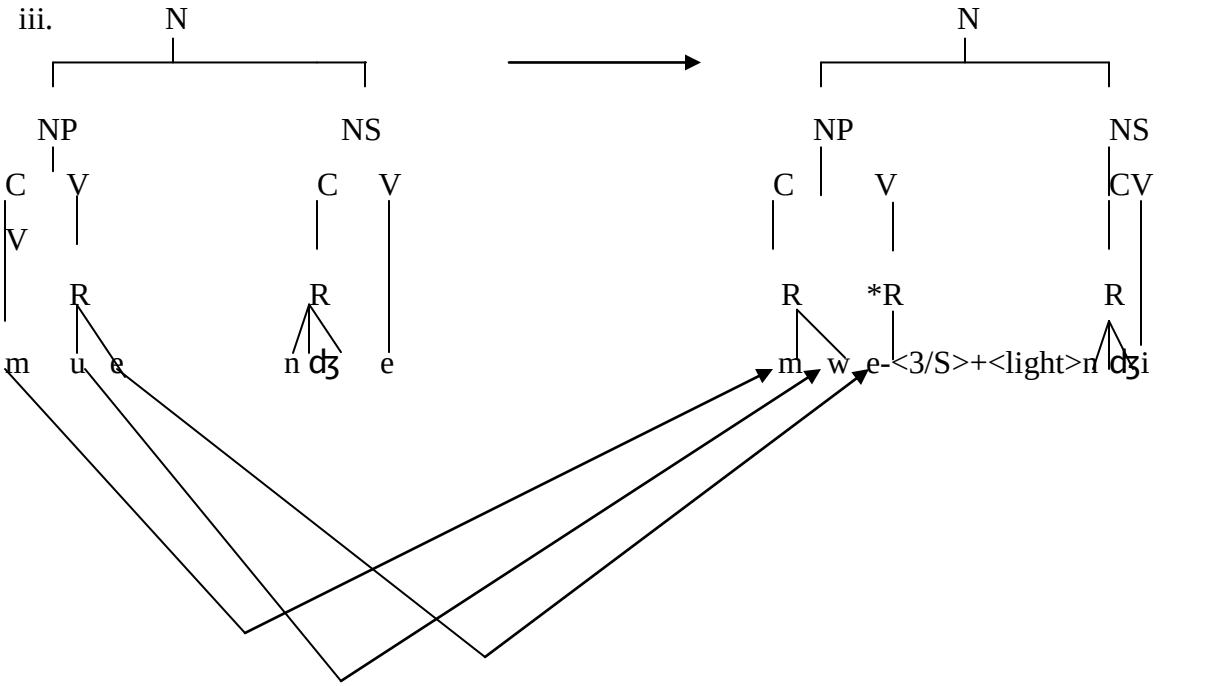
Rhyme changes from vowel to consonant due to morpho-phonemic change, resulting in glide formation, in particular the labio-velar approximant [w].

ii.



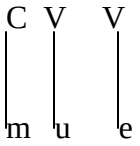
Morphophonemic change (glide formation)

iii.



Morphophonemic change (glide formation) "light"

Morphophonemic changes that occur on the vowel-commencing stem [*ue], which is:



creates a labio-velar approximant [w] and the resulting prefix is ***mwe-,*** an allomorph of ***mu-*** <3/S>. Pluralization of the ***mu-*** <3/S> and its allomorphs creates the prefix ***mi-*** <4/P>. All these prefixes and allomorphs are grammatically visible in a noun construction.

The other noun class with a visible ***mu-*** prefix is class 18, signifying place objects, as shown by the following illustrations:

1. mu-+-cikolo ‘in school’
NP-+-NS
mu-<18/S> + -<place object> cikolo

2. mu-+-booma ‘in the district’
NP+NS
mu-<18/S> + -<place object> booma

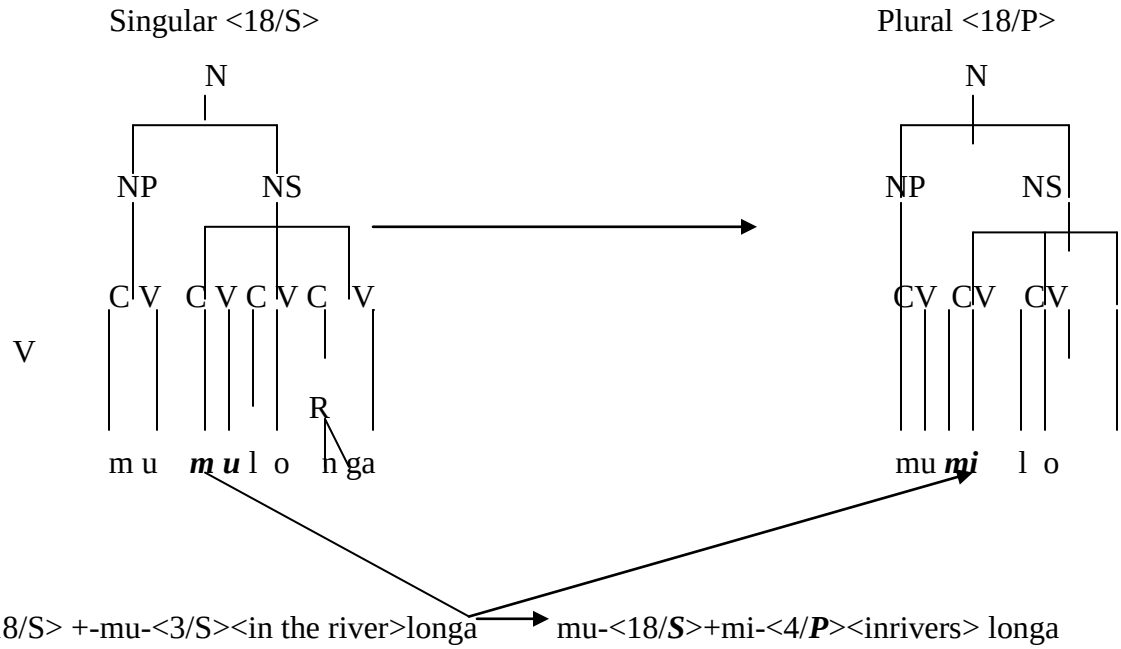
3. mu-+-mu-longa ‘in the river’
NP+NP+NS
mu-<18/S> +-mu-<mu-<3/S> <place object> longa

4. mu-+-ma-booma ‘ in districts’
NP+NP+NS
mu-<18/S> +-ma-<6/P> <place object> booma

5. mu-+ mi-longa ‘ in rivers’
NP+NP+NS
mu-<18/S> +mi-<3/P><place object> longa

The prefix ***mu-*** of noun class 18, refers to place objects. It is both singular and plural in reference. Pluralization is achieved by changing the prefix number of the noun pre-prefixed as shown by the illustration below:

Figure 53: Pluralisation



Pluralization of class 18 nouns in Tonga entails pre-prefixing a plural noun as shown by the above illustration, where the singular form has mu-***mu***-longa and plural form has mu-***mi***-longa. The alteration of the vowel from the back, high, rounded [u] to the high, front, unrounded [i] result in the change in number reference (singular to plural). The word *mu-mi-longa* is therefore the plural form of *mu-mu-longa*. One thing to note is that the real prefix mu- of class 18 does not change but what changes is the word associated, for example *mu-longa* (river), which changes to *mi-longa* (rivers). Pre-prefixing of a singular word follow that ***mu-*** of class 18 remain singular and pre-prefixing a plural word also makes ***mu-*** of class 18 plural, hence *mu-mu-longa* (in the river*)* is singular and *mu-mi-longa* (in the rivers*)* is plural.

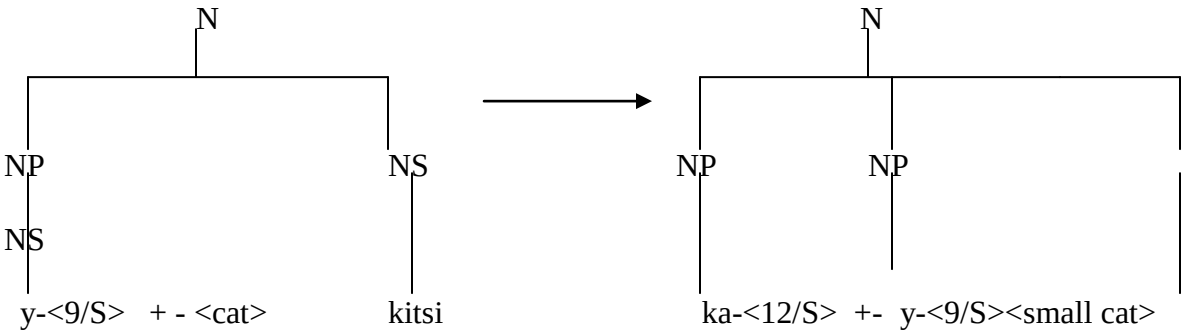
Other grammatically visible prefixes in Tonga are as illustrated below:

1. ka-+ -kiti ‘ small cat’

NP-+-NP-+-NS

Ka-<12/S>+-y-<9/S>-kiti

The prefix ka-<12/S> is pre-prefixed to another noun, singular in reference, as follows:



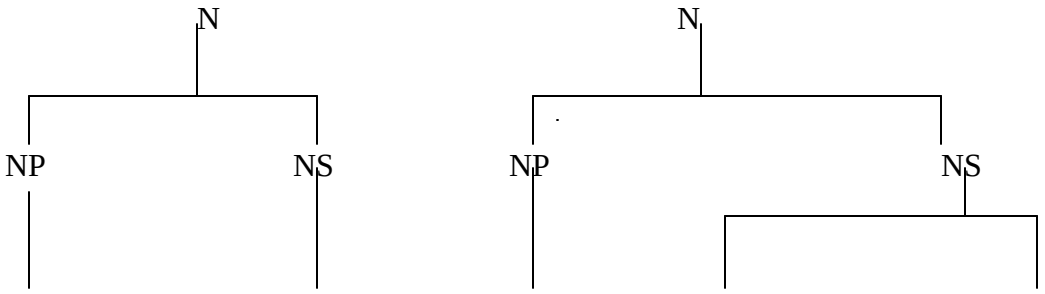
kitsi

2. tu-gilumamba

NP-+-NP-NS

Tu-<13/S> +-ri-<5/S>-<people> gilumamba

On illustration 2, there is an element of pre-prefixing of another word (gilumamba) from class 5. This process can be illustrated as follows:



The above illustration demonstrates pre-prefixing of nouns changing class from class 5 to 13. The prefix is grammatically visible as compared to that of class 5, which is grammatically invisible.

3. ku-+ -tanta ‘ride’

NP+NS

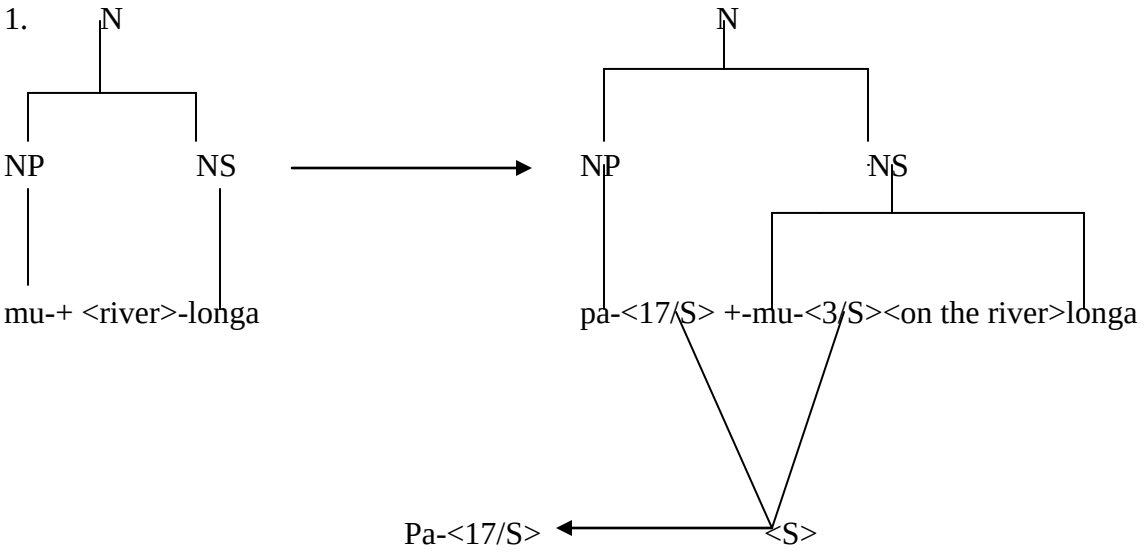
ku-<15/S>+-<ride>tanta

4. pa-+-mulonga ‘on the ride’

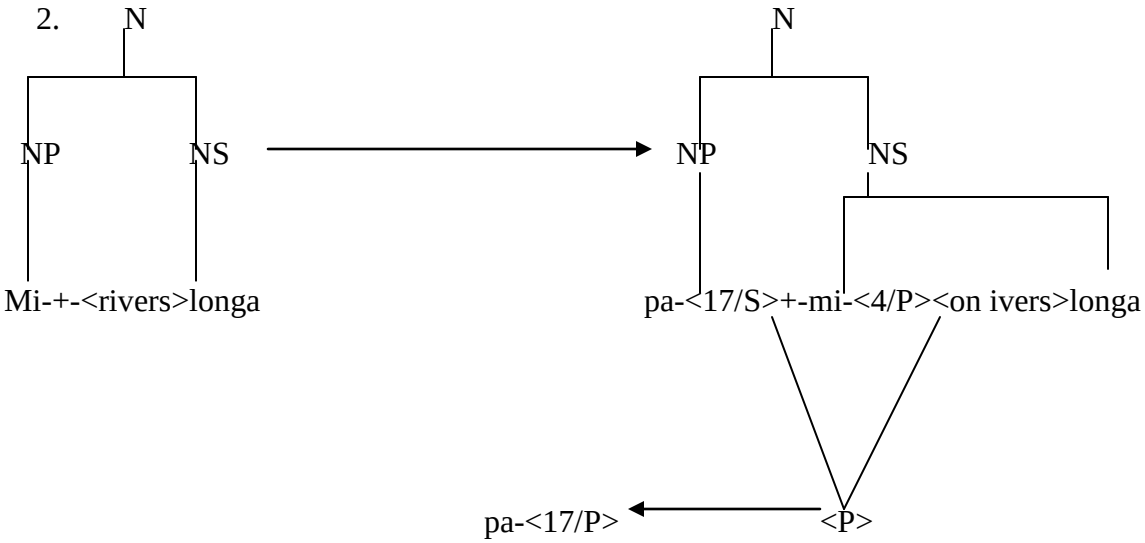
NP-+-NP-+-NS

pa-+-<17/S>+-mu-<3/S><on the river> longa

The prefix pa-, of class 17 is both singular and plural. Like ***mu***-, of class 18, it becomes plural when it pre-prefixes a plural noun, for example:



Since the pre-prefixed noun has a singular reference it also follow that the prefix ***pa-*** of class 17 is singular. In the same way if the pre-prefixed noun is plural then the prefix ***pa-*** of class 17 becomes plural, as shown by the illustration below:



The grammatically visible class 17-prefix ***pa-*** is both singular and plural as demonstrated above. Illustration 1 shows the prefix ***pa-,*** is being pre-prefixed to a singular noun prefix ***mu-***, on the word mu-longa and the resulting word is singular, *pa-**mu**-longa*. On illustration 2, the same prefix ***pa-*** of class 17 is pre-prefixed to a plural prefix ***mi-,*** on the word mi-longa to become *pa-**mi**-longa*, which is plural.

4.9.1.3 Invisible Prefixes

Invisible prefixes are identified grammatically but being omitted during pronunciation (Ibrahim 1998:39). During articulation, they are morphologically there but acoustically invisible. Such prefixes are not felt during articulation of a word but only the stem is visible. This means that some sounds constituting the word cannot be articulated when pronouncing the word. Tonga has basically three invisible prefixes of this nature. These can be illustrated as follows:

1. y-+-imbeli ‘razor’
   NP-+-NS
   y-<9/S>+-<O>imbeli

This illustration shows that ***y-*** cannot be articulated during the pronunciation of the word *–imbel ‘razor’*. This implies that the noun prefix y- is invisible but grammatically existing on the word.

2. dzi-+-imbeli ‘razors’
   NP-+-NS
   Dzi-<10/P>+<O> imbeli

In this current example the prefix ***dzi-*** is plural. However, it cannot be uttered together with the stem, implying that it is grammatically present but acoustically omitted.

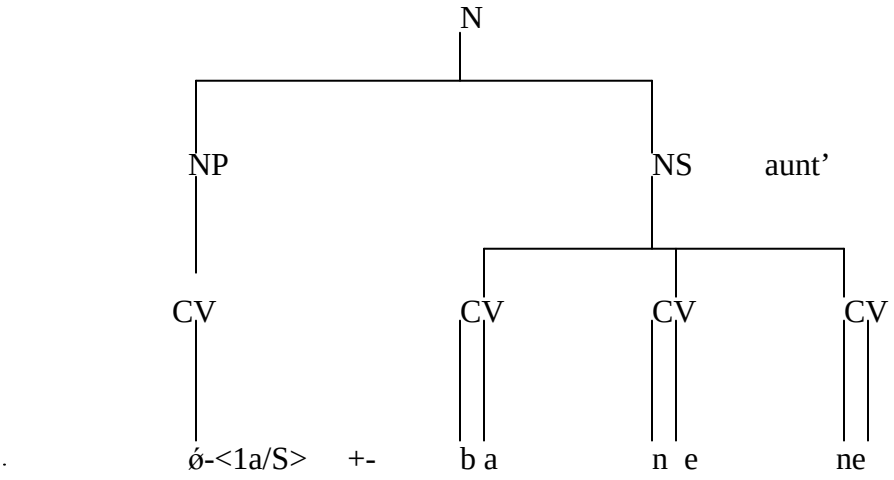
3. ri-+-kobili ‘cent’
   NP+NS
   ri-<5/S>+-<cent> kobili

Nouns of classes9, ***y-,*** 10, ***dzi***- and 5, ***ri-*** are the only invisible prefixes in the Tonga language, thus they are acoustically silent during pronunciation of the word and only the stem is acoustically visible. However, they are grammatically visible. The noun prefix ***y***-<9/S> is singular and ***dzi***-<10/P> is its plural form. The prefix ***ri***-<5/S> is singular and

its plural form is ***ma-***<6/P>. These prefixes are just omitted during pronunciation such that only native speakers can realize their existence.

4.9.1.4 Zero Prefix

Ibrahim (1998:13) says that words with zero prefix are those that show only number and not prefixes, during articulation. Such prefixes are both acoustically and grammatically silent. Such prefixes are not omitted but completely silent grammatically and acoustically. Only the stem is realized during articulation, as shown below:



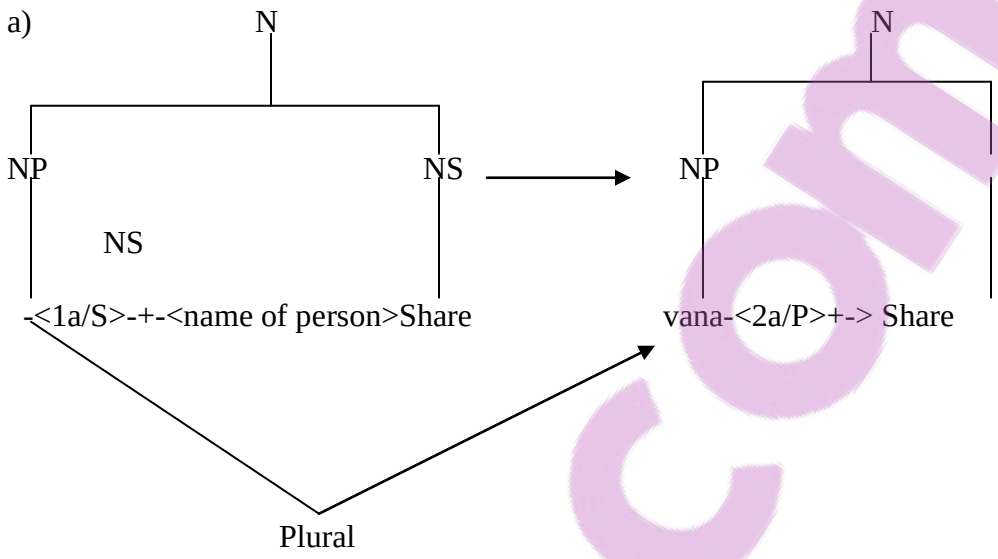
In the illustration given, only the stem is pronounced, whilst the prefix is silent, hence zero (ǿ). Other examples are as follows:

1. ǿ -+- siyanene
   NP-+-NS
   ǿ -<1a/S> +-<grandmother> siyanene

2. ǿ -+-sininsesu
   NP-+-NS
   ǿ -<1a/S> +-<uncle> sinisesu

Pluralization of nouns in class 1a entails adding a visible prefix ***va-***<2a/P>, hence falls into class category 2a. Examples of words in this class are as follows:

a)



b)

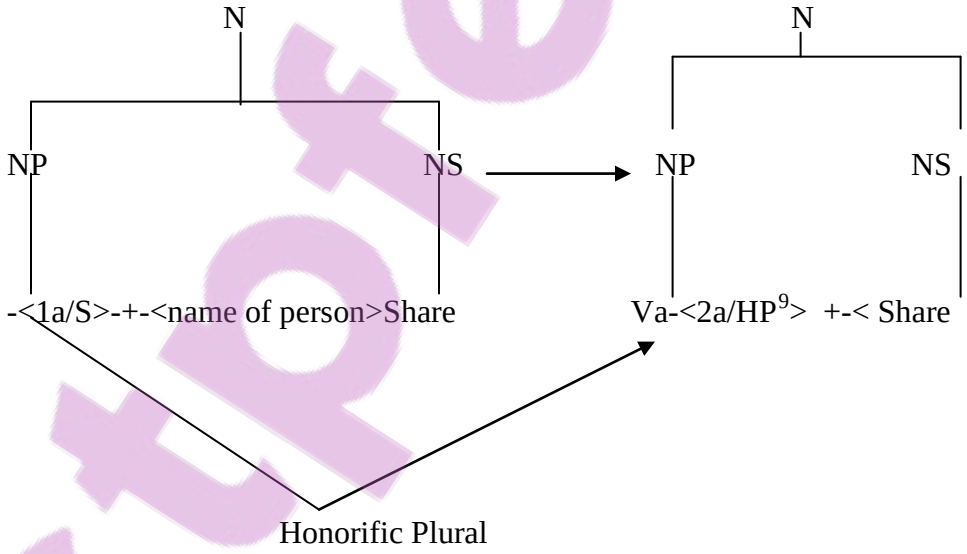


Illustration1, shows ordinary pluralization of the name Share, *vana-Share* (those called Share), denoting number, whilst the second (b), illustration demonstrates honorific plural but in terms of number it signifies a single person called Share. The first (a) pluralization indicates number while the second one indicates respect. The plural prefix vana-<2a/P>

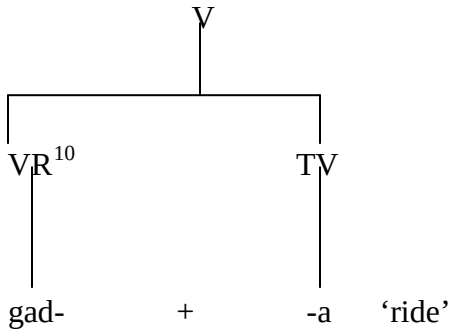
[9] <HP> is abbreviation for Honorific Plural

and Va-<2a/S> are both visible. Thus they are articulated together with the stem during pronunciation.

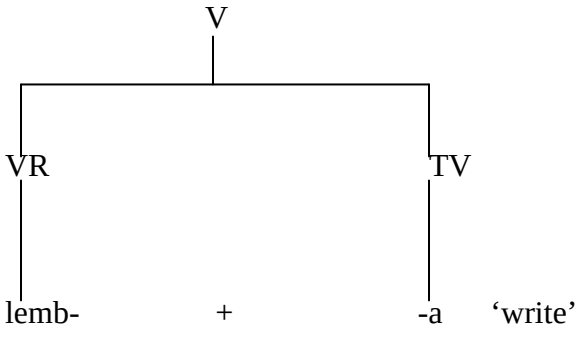
4.9.2 Verb Morphology

Ibrahim (1998:20) defines a verb as a base word that denotes action. In other words, a verb is a doing word, implying that a verb is a word that caries action in an utterance. The following normally carries out this action: <agent, beneficiary, maleficiary, causee, causer and so on>. Verbs have the base pattern realized as VR-+-TV. This can be illustrated diagrammatically as follows:

1.



2.



The basic constructional pattern of a verb in Tonga, as demonstrated above is Verb Radical (VR) -+-Terminal Vowel (TV). According to Kiparsky and Mohanan (1982:20),

[10] VR stands for verb radical , V for verb and TV for terminal vowel.

this is the basic morphological pattern of a base verb. A base verb is an indivisible grammatical pattern of a word, which denotes action.

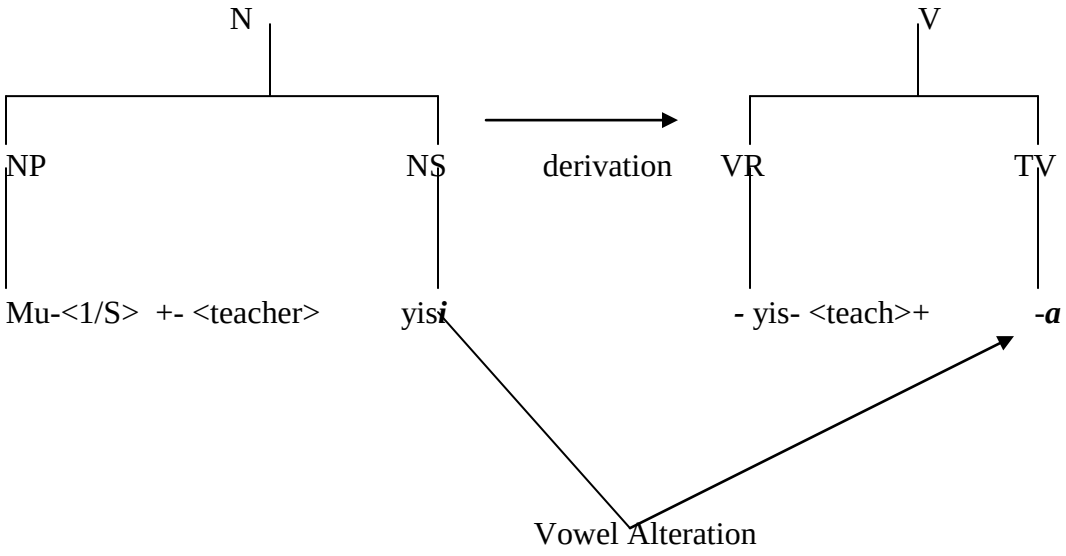
4.9.3 Derivational Morphology

According to the Lexical Phonology and Morphology Theory (Kiparsky and Mohanan 1982:1-100)) derivational morphology is a higher order morphological system as compared to base-word morphology. However, derivational morphology stems from base word morphology. This means that derivational morphology is a development from base-word morphology. This process handles all the morphological processes that derive new constructions from base-words. The morphological processes that fall under derivational morphology are vowel alteration, affixation and suffixation.

Though vowel alteration, affixation and suffixation are higher order morphological processes, they stem from base-word morphology. They build upon base-word systems to come up with new morphological processes of higher order, conceptually.

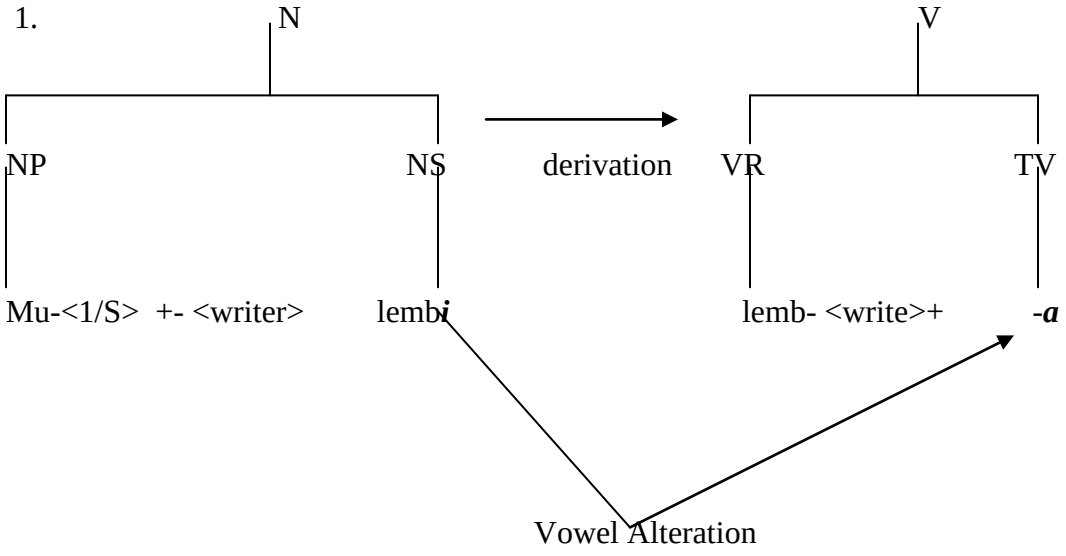
4.9.3.1 Vowel Alteration

This is level 2, of word morphology, as already indicated in the theoretical framework (Chapter Three), Lexical Phonology and Morphology Theory (Kiparsky and Mohanan (1982:30-60). While base words have base constructional patterns, vowel alteration entails, substituting the last vowels on a noun word with other vowels. This can be demonstrated by the following illustration:

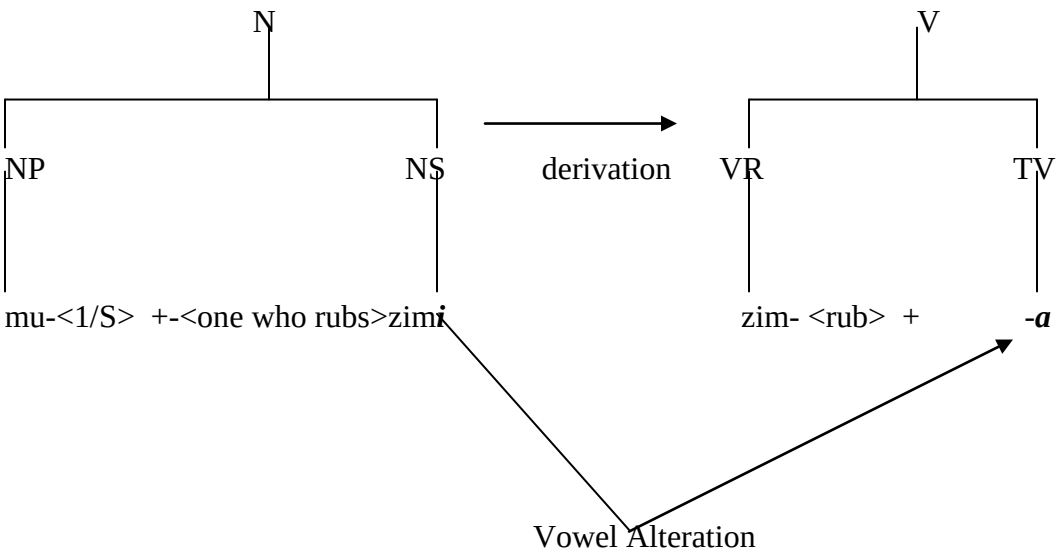


In this particular example, vowel alteration occurs on the last vowel of the noun base-word, mu-yisi. In this alteration morphological process, the high, front vowel [i] on the word *mu-yis**i*** (teacher) is substituted by the central low vowel [a], to finally have *yis-**a*** (teach). The morphological system changes simultaneously from a noun to a verb, thus from signifying a human object to signifying an action carried by a human object (causer).

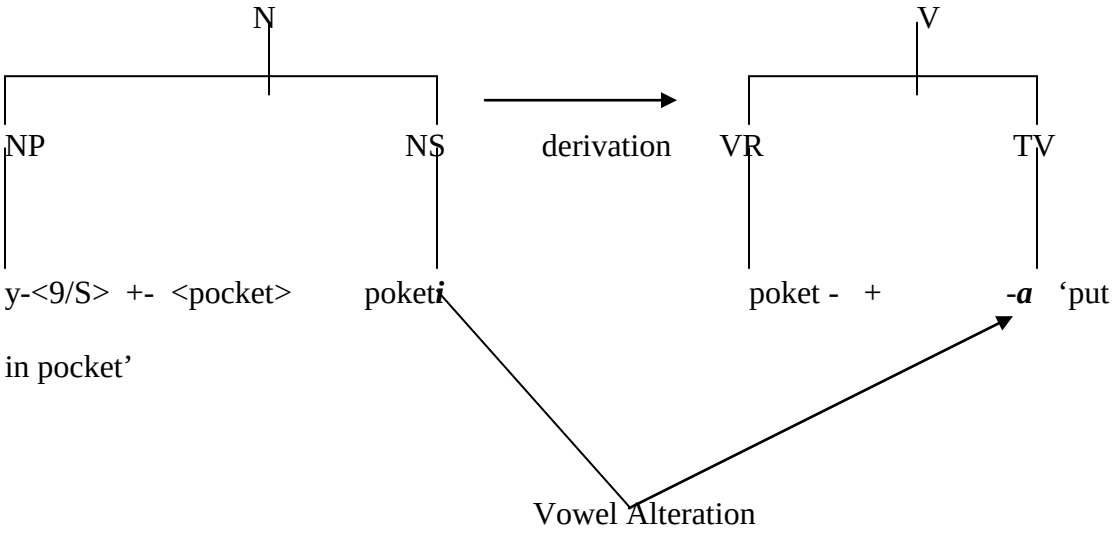
The following vowel changes illustrate the sub-regulatives, which the morphology of Tonga demonstrates:



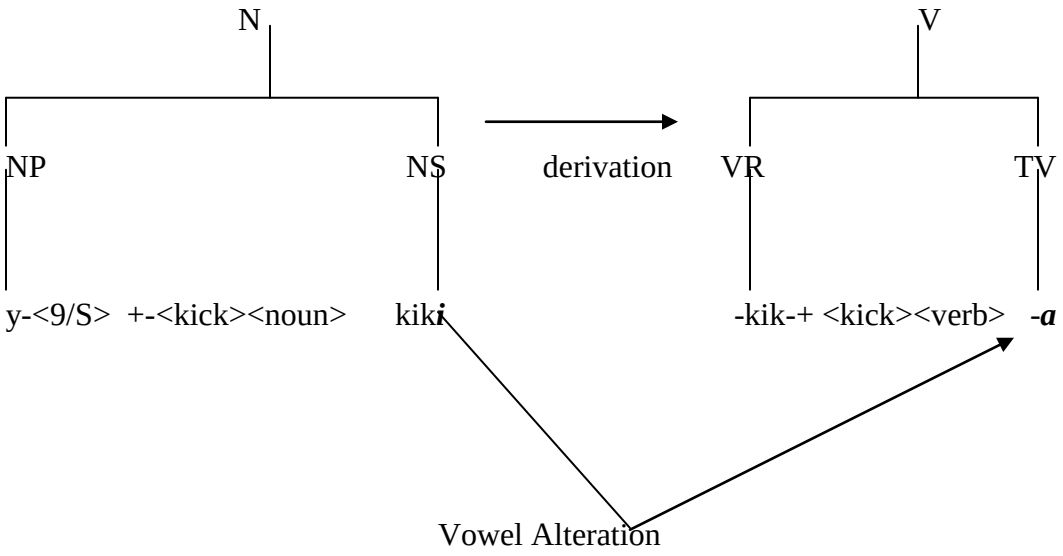
2.


N
V
NP
NS
derivation
VR
TV
mu-<1/S> +-<one who rubs>zimi
zim- <rub> +
-a
Vowel Alteration

3.


N
V
NP
NS
derivation
VR
TV
y-<9/S> +- <pocket>
poketi
poket - +
-a
‘put in pocket’
Vowel Alteration

4.



The trend demonstrated by the four examples given, above, is that Tonga verbs are derived from base nouns by altering the final vowels of the base nouns. The base word *mu-lemb**i*** is a noun, referring to human object (writer), class 1, denoted by the singular prefix ***mu-***. When the final vowel [i] [+front] [+ high], on the word *mu-lemb**i*** is substituted by the central vowel [a] [+ central] [+ low], then the whole base word changes in terms of meaning, morphology and the subsequent word category, thus from noun to verb. This can be illustrated as follows:

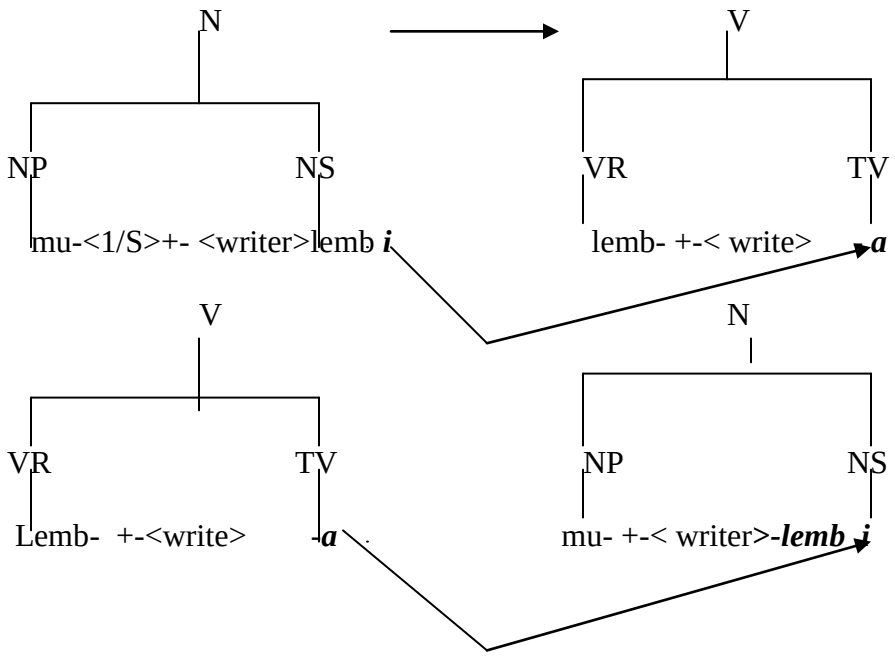
Table 17: Vowel Alteration

WORD	mu-lemb*i* (vowel alteration) →	lemb-*a*
WORD MORPHOLOGY	NP-+-NS	VR-+-TV
WORD CATEGORY	Noun	verb
MEANING	writer	write

The table above demonstrates that vowel alteration changes noun base words to verbs. It also follows that meaning changes, for example the word *mu-lembi* 'writer' when it changes to lemb-a 'write' (by the process of vowel alteration), meaning changes from noun to the action performed by the noun. The subsequent word category changes from noun (*mu-lembi*) to a verb (*lemb-a*).

The fact that there is change of the word class category (noun to verb) also entails change of the morphological pattern. The morphology for *mu-lembi* is NP-+-NS and *lemb-a* becomes VR-+-TV. This derivational process accounts for a number of words in Tonga. The process of vowel alteration is however a reversible process as illustrated below:

1. Forward Process (vowel Alteration)



4.9.3.2 Affixation

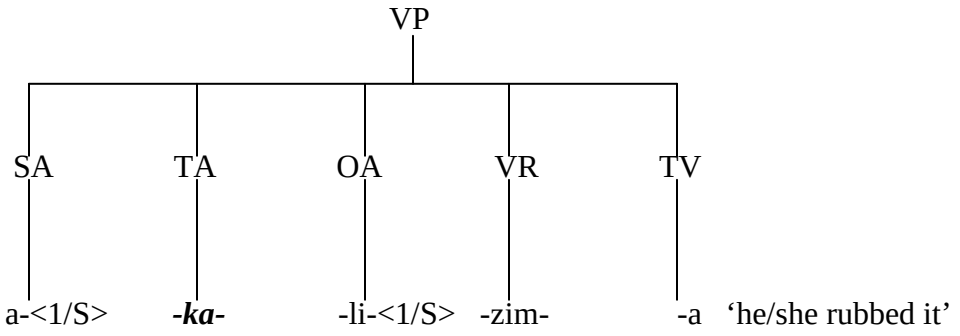
Affixation is on level 3 (according to Kiparsky and Mohanan 1982:1-100). This is a higher level associated with higher order morphological processes. At this level, affixations and suffixations occur on the derived word or verb base word. In Tonga there

are higher order morphological processes, which occur on the base word, since the language is both agglutinative and conjunctive.

4.3.3 Tense Inflection

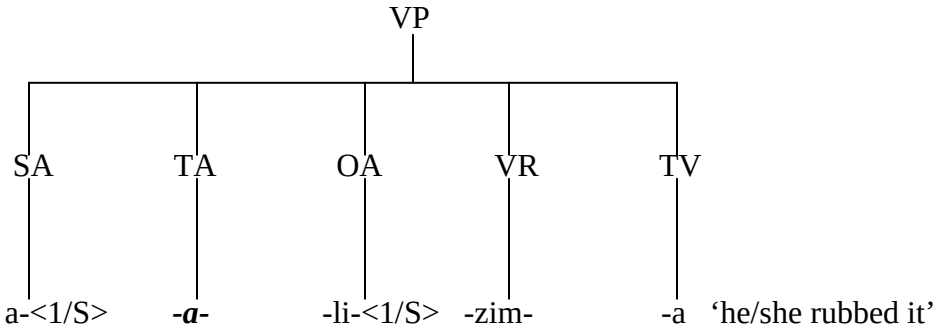
Tonga is a language with verbs that always denote tense. Verb constructions indicate time to show when the action was carried out. Since the language is agglutinative, as already asserted, it also follow that the tense affixes are inserted onto the base word (verb). Tense affixes are basically of three categories denoting the past, present and the future. Tense affixes can be inflected as follows:

1. Remote Past Tense



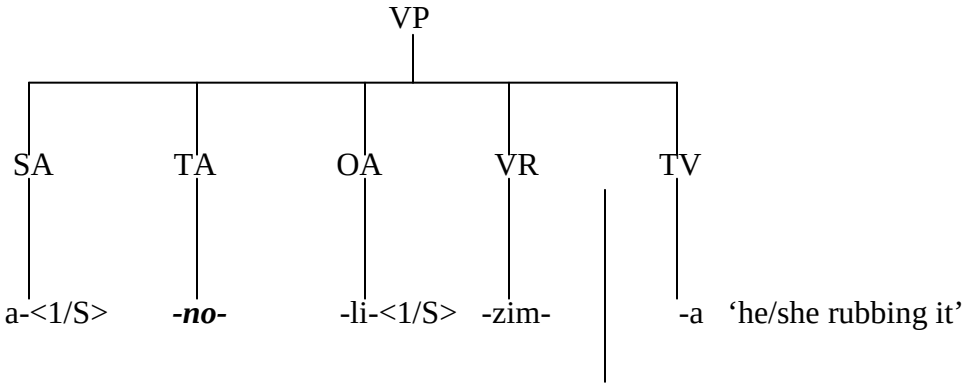
The above verb is derived from [lima] ‘rub’ and the insertion of the affix [-ka-] before the radical serves to denote time when the rubbing took place. The tense affix [-ka-] signifies the remote past. There is no change to the meaning of the word but more information is provided. The word [lima] ‘rub’ does not denote time, so the epenthesis of the remote past tense denotes time of the action.

2. Recent Past Tense



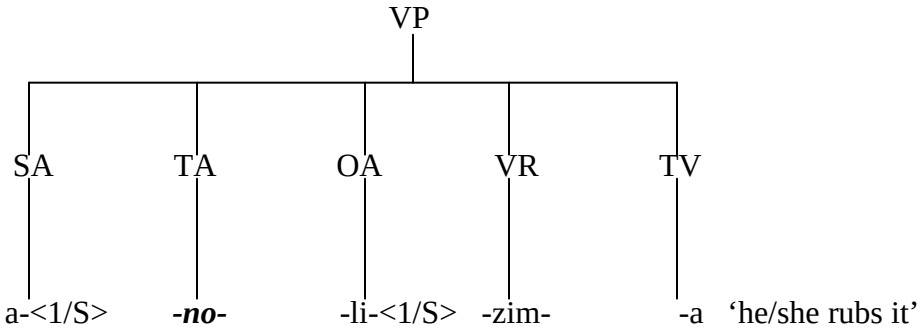
From the example above, vowel [-a-] serves to denote time. In Tonga, the tense is inserted preceding the radical. The [-a-] denotes recent past. This is an action that has recently been carried out.

3. Present Tense



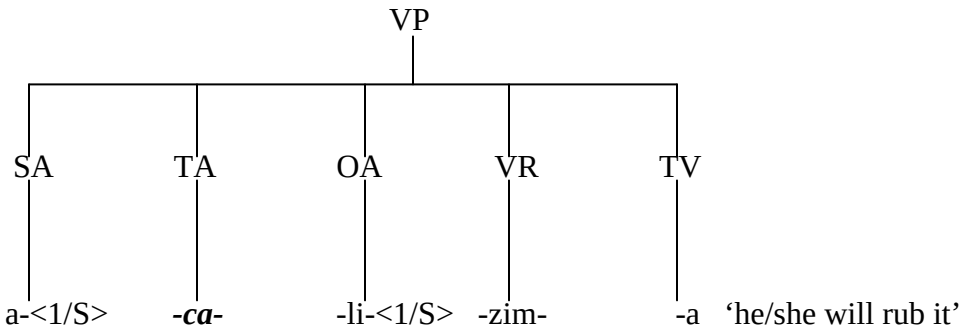
The existence of the tense affix [-no-] serves the same purpose as that of [-ka-] and [-a-]. This denotes the present tense.

4. Present Continuous tense



Apart from denoting the simple present tense, it also denotes present continous tense. This means that the action of the verb becomes a continous action.

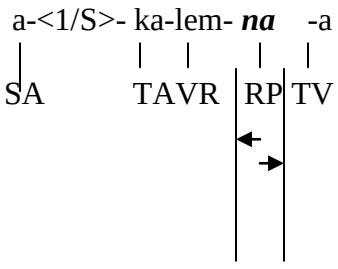
5. Future Tense



The tense is also inflected before the VR of the base verb as demonstrated by ***ka-,*** which is a past tense affix, ***-a-,*** which is present***, no-***, a present and present continuous affix, and ***ca-***, a future tense affix. Tense affix does not change the meaning of the word but rather it specifies the time setting of the action.

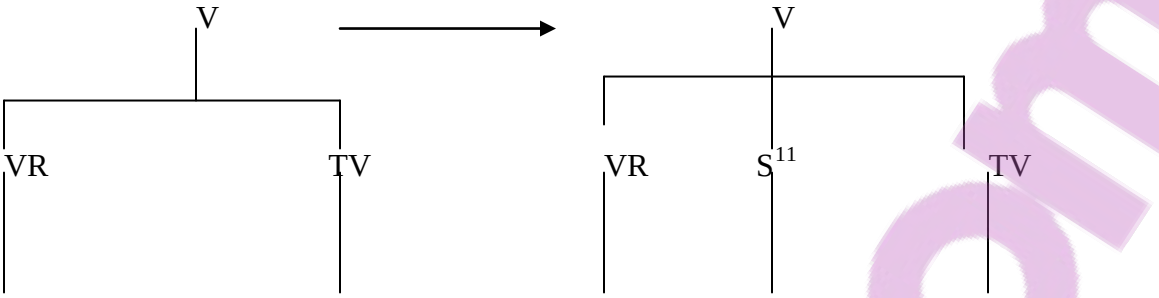
4.9.3.3 Suffixation.

Suffixation involves inserting a suffix after the verb radical but before the terminal vowel, as shown by the illustration below:



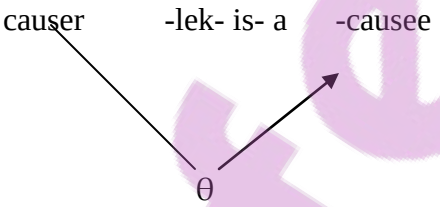
The reciprocal suffix has been inserted after the VR and before the TV. This is the sequencing of suffixes in the Tonga language. Tonga has a number of verb extension suffixes that can be demonstrated, some of which are:

1.



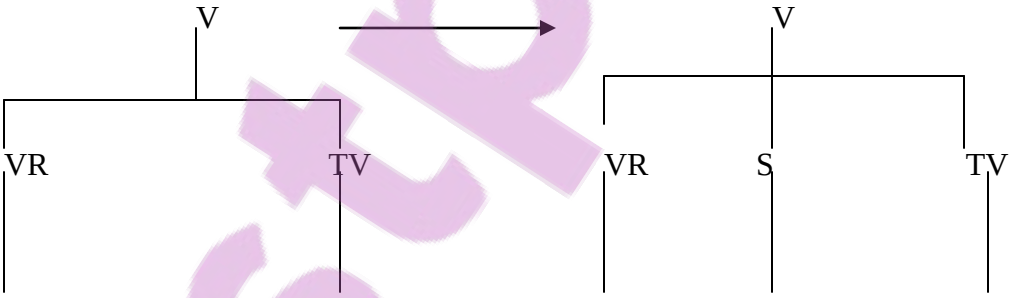
lek- + -a ‘beat’ lek-<beat>-is-<causative> -a ‘cause to beat’

The word *lek-a* changes meaning after the causative affix *–is-* is inserted [*lek-is-a]*. There is now an element of causer and causee in the action referred to by the base word. The following schema can illustrate this:



The causative affix *–is-* and can be *–es-*, its allomorph.

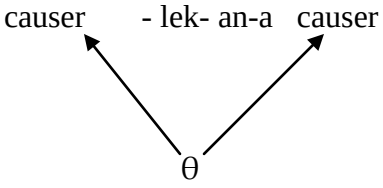
2.



The verb [lek-+ -a] ‘beat’ becomes [lek-<beat>-an-<reciprocal> -a] ‘ beat each other’

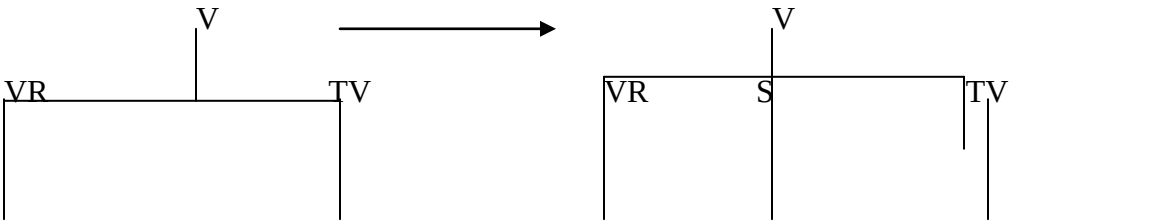
[11] S-stands for suffix.

The meaning has changed to mean beating each other, such that there is no indication of a causee in the morphological out put. The following schema demonstrates reciprocal affix insertion:



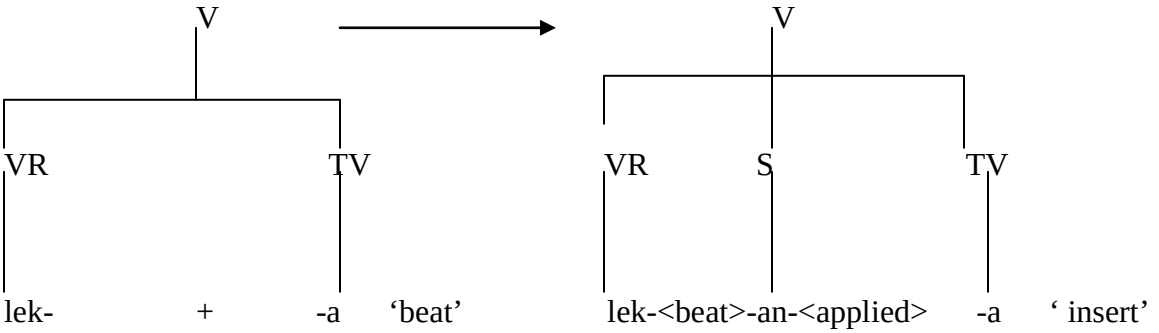
The reciprocal affix is –an- and has no allomorphs.

3.



The illustration above shows a morphological change from the base word (lek-a) to the extended verb (lek-iw-a/lek-w-a) ‘beaten’. Apart from that the meaning of the word changes from beat to beaten.

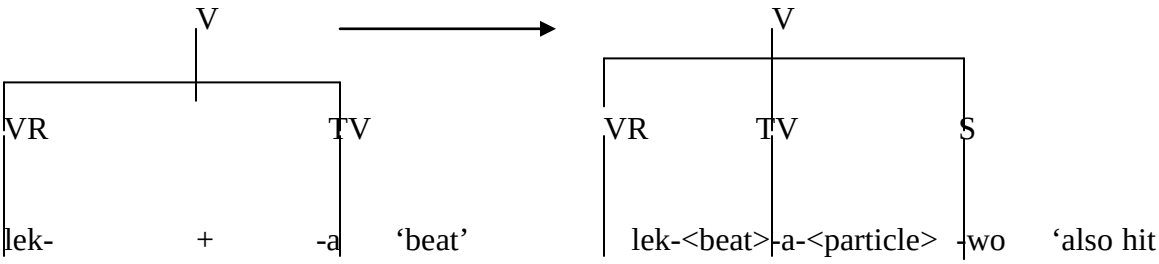
4.



The applied affixes are *–erer-* and *–irir-*. The morphology changes and more importantly so does the meaning. There is no longer the element of beating but rather a new concept is arrived at. There are a number of verb extension suffixes that are applicable to the Tonga language. The four discussed (causative, reciprocal, applied and passive) are representative of verb extension characteristics or behaviour in Tonga. The significant change caused by the insertion of these affixes is defining how action has been carried out.

The other affix that can be inserted after the VR and before the TV is the particle. These are suffixes such as enclitics that are inserted to base words. These particles are inserted after the terminal vowel, unlike SAs and OAs that are before the VR, as well as the verb extension suffixes that are inserted after the VR but before the TV. Suffixation of particles also changes the meaning of words in Tonga, as demonstrated below:

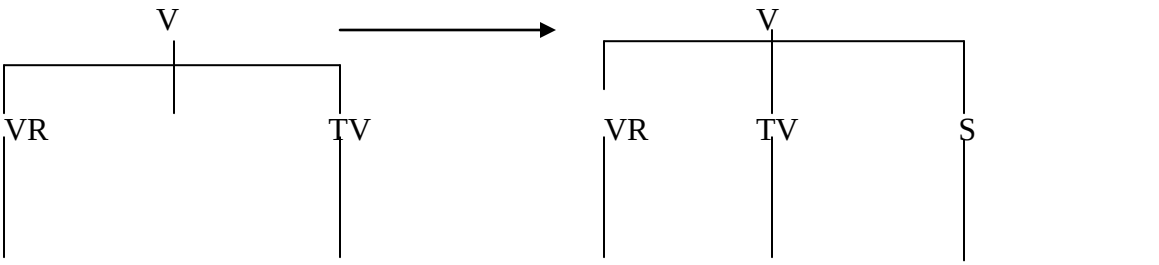
1.



lek- + -a ‘beat’ lek-<beat>-a-<particle> -wo ‘also hit back’

The inclusion of the enclitic *–wo,* changes meaning from ‘beat’ to ‘also hit back’.

1.



lek- + -a ‘beat’ lek-<beat>-a-<particle> - ze ‘ beat again’

The insertion of *ze-* (again) changes not only the meaning of the verb 'to beat again' but adds additional segments onto the morphological properties that constitute the base word. Morphologically, the paragogic insertion of the enclitic shifts the position of the terminal vowel from rightmost to an intermediate position. This is the only morphological construction (particle suffixation), which restricts the TV to the rightmost position.

4.10 CONCLUSION

This chapter demonstrates that Tonga has five vowels that are distinguished as [± high], [± low], [± back] and [± round]. These vowels can combine with any consonant in a CV pattern, thus [Ca], [Ce], [Ci], Co] and [Cu]. These same vowels can stand on their own as syllables in V-syllabic pattern. It has also been established that Tonga does not have long vowels or branching rhyme of vowels, which are called diphthongs and triphthongs.

Apart from vowels, an overview of the Tonga Phonology also establishes that Tonga has simple and complex consonants. These consonants are classified according to the place nd manner of articulation. Using this method, Tonga has therefore, no cluster consonants. Adopting unitary treatment of segments demonstrates that even where there is branching rhyme of the C-element, the segment is treated as one consonant segment, which is defined as complex.

The discussion also highlights that Tonga has core-syllables characterised by a CV-pattern and then derivational prototypical syllable patterns, notably, CCV, CCCV and CCCCV. Tonga also allows the deletion of the onset segment, to remain with a v-syllable typology. The Tonga syllable has the V-element as the compulsory constituent of a syllable. The C-element is marginal or peripheral because it is [-syllabic], hence cannot be a peak element of a syllable. The discussion also demonstrates that Tonga phonotactic constraints allow pre-nasalization of both voiced and voiceless sounds. Tonga also allows post-velarization of any consonant, simple or complex. This is because Tonga

considers the labio-velar [w] to be a semi-vowel [+ sonorant], allowing it to combine with any C-element.

The chapter also establishes that Tonga has a wide range of morphological systems. It has basically noun and verb base words that can derive other significant morphological constructions. Derivational constructions can be achieved by altering the last vowels on a noun word. Higher order morphological processes include affixation and suffixation. Inserting tense affixes before the radical serves to denote time when action of the verb has been carried out. The chapter also demonstrates that Tonga is an agglutinative language, hence it is morphological, hence it recognizes the concept of affixation and suffixation on base word at morphology level, which may be a syntactic construction in other languages which are not agglutinative.

CHAPTER FIVE

FINDINGS AND DISCUSSIONS

5.1 INTRODUCTION

This chapter is devoted to analysing, discussing and presenting the research findings of this study. It analyzes the phonological and morphological nativisation of English loans in the Tonga Language. The preceding chapter (Chapter Four) discusses the phonological and morphological systems of Tonga, in particular the sound inventory, the syllable, phonological processes, morphemes and affixes. These are the phonological and morphological processes that guide and give insight into the current chapter (Chapter Five), hence taken as the 'norm'in discussing the findings of this whole research.

This current chapter therefore, handles phonological and morphological processes that account for phonological and morphological changes from the loaner language (English) into the receiving language (Tonga). This is because for English words to be accepted into the Tonga linguistic environment, they have to conform to certain stringent phonological and morphological constraints. The chapter has only two sections, namely, phonological and morphological patterns. Each section is again further divided into manageable sub-sections. The phonological section comprises the following sub-sections; glide epenthesis and sound substitution.The morphological section has the following sub-sections, prefixation and suffixation.

The phonological section entails looking at how native speakers use phonological rules to handle complex peaks, thus resyllabifying English words with diphthongs and triphthongs to suit Tonga phonological rules. It also accounts for the handling of consonant clusters and segments not recognized in Tonga. The morphology section

involves the handling of noun prefixes and pluralization. It also handles tense affixation and suffixation of particles.

In handling the phonological and morphological processes (accounting for nativisation of English words entering into the Tonga language), three basic generative notations are adopted (has already been demonstration in chapter three), namely, Feature Theory, CV Phonology and the Lexical Phonology and Morphology. The three generative theories are blended into a theoretical framework that guides this discussion (Chapter Five). Since the discussion is interlanguage, analysis adopts the 'input-output' approach. In this regards all words with English phonology and morphology are an imput to be processed in the Tonga environment and the result is the output.

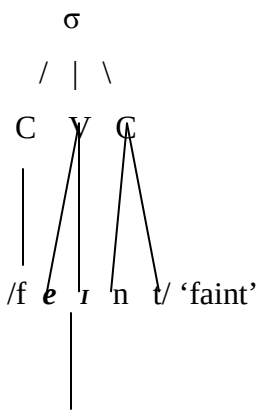
5.2 Phonological Nativisation

This section, of Chapter Five, handles how different sound systems, from English to Tonga are manipulated to account for the way Tonga speakers articulate English loans. Abdul (2002:12) asserts "…no two languages share the same phonological systems". This indicates that English phonological system is bound to be different from the Tonga phonological inventory, though similarities are inevitable. As a result, specific phonological rules are discussed, that account for how first language Tonga speakers adapt English loans into their language, without necessary breaching their language rules.

5.2.1 Resyllabification

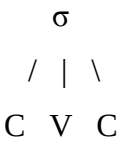
This is a process of reorganizing the syllable tiers (node, CV and segment tiers) from the English pattern to a pattern acceptable by the Tonga phonology. Tonga accepts CV syllables while English recognize CVC syllables. This implies that nativisation of English loans in Tonga entails reorganization of tiers that characterize English syllables to suit the Tonga syllable typology. Resyllabification entails handling complex peaks

(/CVVC/) not recognized in Tonga. The following diagram demonstrates a CV syllable typology with complex peaks (English syllable):

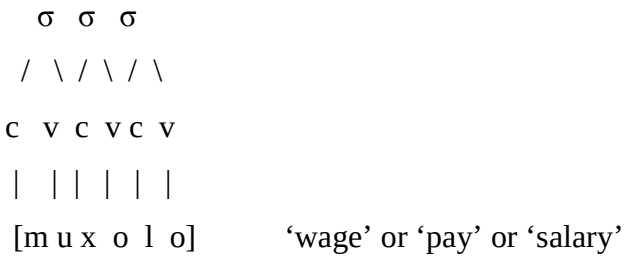


Complex peak (/VV/

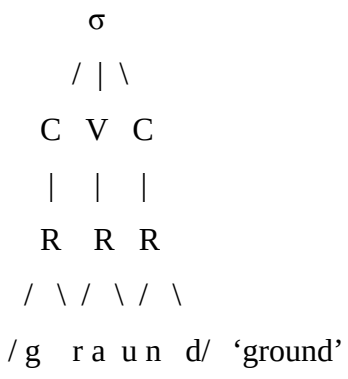
An onset consonant (C), left most, plus vowel segments (VV), characterized by a coda (C) at the end, right most, is regarded as monosyllabic (CVC). From the above illustration /f/ is the onset, /eɪ/ is the nuclears and /nt/ is a complex coda. A monosyllabic pattern is characterized by a single node / σ/, as demonstrated below:



The syllable above /feɪnt/ is characteristic of the English language because of the presence of the coda. This coda is not acceptable in Tonga because there are no CVC syllabic words in Tonga. Tonga accepts a CV syllabic pattern, as shown below:



A CV syllabic pattern in Tonga is characterized by an onset (C) and a simple nuclears (peak). Such a syllable has no coda (tail) as demonstrated above [muxolo]. This implies that the final segment (rightmost) is a vowel and not a consonant. It follows that Tonga has no coda, hence a 'simple peak' CV syllable. The English syllable allows branching rhyme for both the [C] and the [V] segments of the CV-tier:



Complex onset, peak and coda

The diagram above shows a CV – syllable-typology characterized by a branching rhyme [R] of the C – elements /gr/ and /nd/ and another branching scenario of the V – element /au/. Contrary to this, Tonga only accepts a branching rhyme for the C – element (not vowel), for example [mueni] 'visitor' is a Tonga word but rephonologized to become [mweni]. Diphthongs are (branching rhyme on the V element) not acceptable in Tonga, so [w] is epenthsised, to break the diphthong.

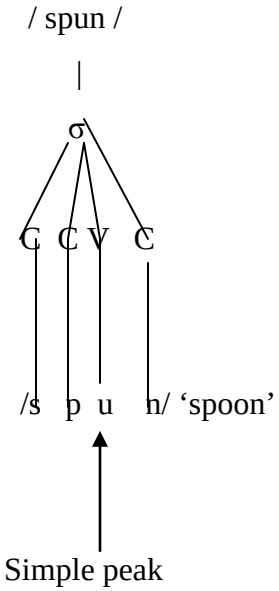
Resyllabification is therefore a complete process that entails reorganization of the syllable structure. This is achieved by adopting nativisation processes that handle complex peaks, cluster consonants and segments not recognized in Tonga.

5.2.2 Phonological Processes to Handle Complex Peaks

The syllable nuclears [+sonorant], [-periphery] is said to be complex, when instead of having pure vowels, it is found to have either diphthongs or triphthongs. Diphthongs

entail a V – element characterized by a double branching rhyme (2 branches). This is because the English language allows diphthongs and triphthongs as V – segments in a syllable. This means that the English language has two kinds of peaks, namely, the simple and the complex peaks. Whilst complex peaks are realized by the existence of branching rhymes, simple peaks have no branching rhymes on the V – element of the CV – tier. English language therefore has diphthongs, triphthongs and monophthongs. V– elements for the English language can be illustrated as follows:

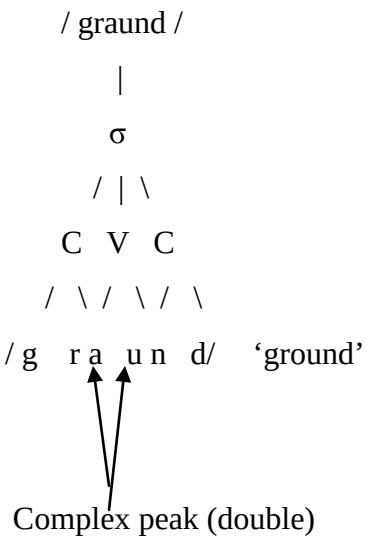
i) Simple Peak (pure vowels)



Other examples of simple peaks are as follows:

/ pa:stə /	'pastor'
/ stul /	'stool'
/ kəmpju:tə/	'computer'
/ gri:n /	'green'

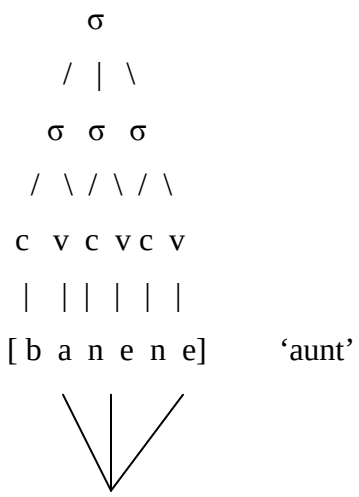
ii) complex peak



Other examples are as follows:

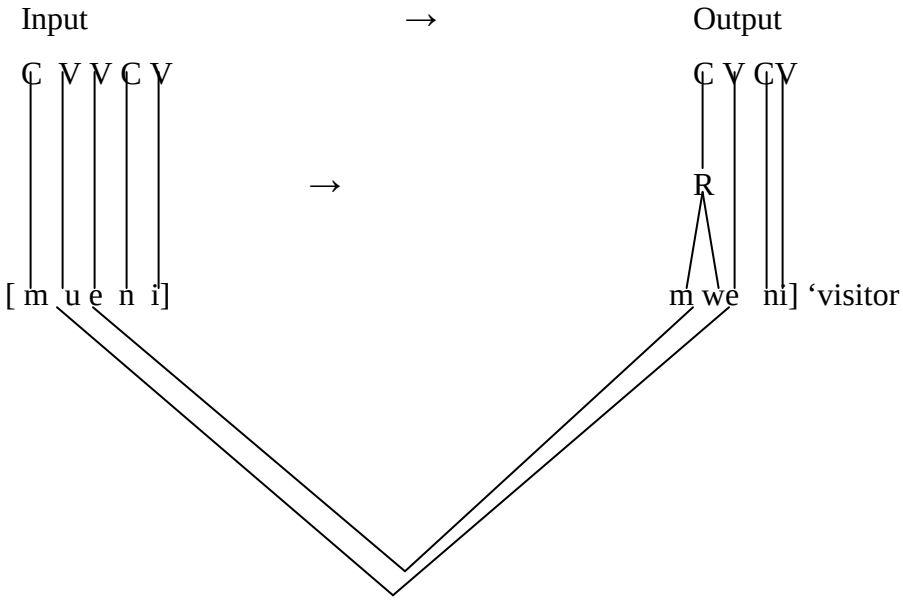
/ paund / 'point'
/ hæt / 'hat'

Example (i) demonstrates the existence of pure vowels and monophthongs in English, since the word /spun/ is not characterized by a branching rhyme on the V – element of the CV – tier. Example iia) illustrates a double branching rhyme of the V-element /au/, demonstrating the characteristic features of a diphthong. The fact that there is a branching rhyme on the V – element is an indication that English has complex peaks. The nuclears in demonstration i) is permissible in Tonga but example ii) constitute complex peaks that are not permissible in Tonga, since Tonga only recognizes a simple nuclears, as illustrated below:



Simple peaks

Each of the above Tonga syllables consists of a simple peak, since there are no branching rhymes on the V – elements of the CV-tier. Words with complex peaks are therefore resyllabified as follows in Tonga:



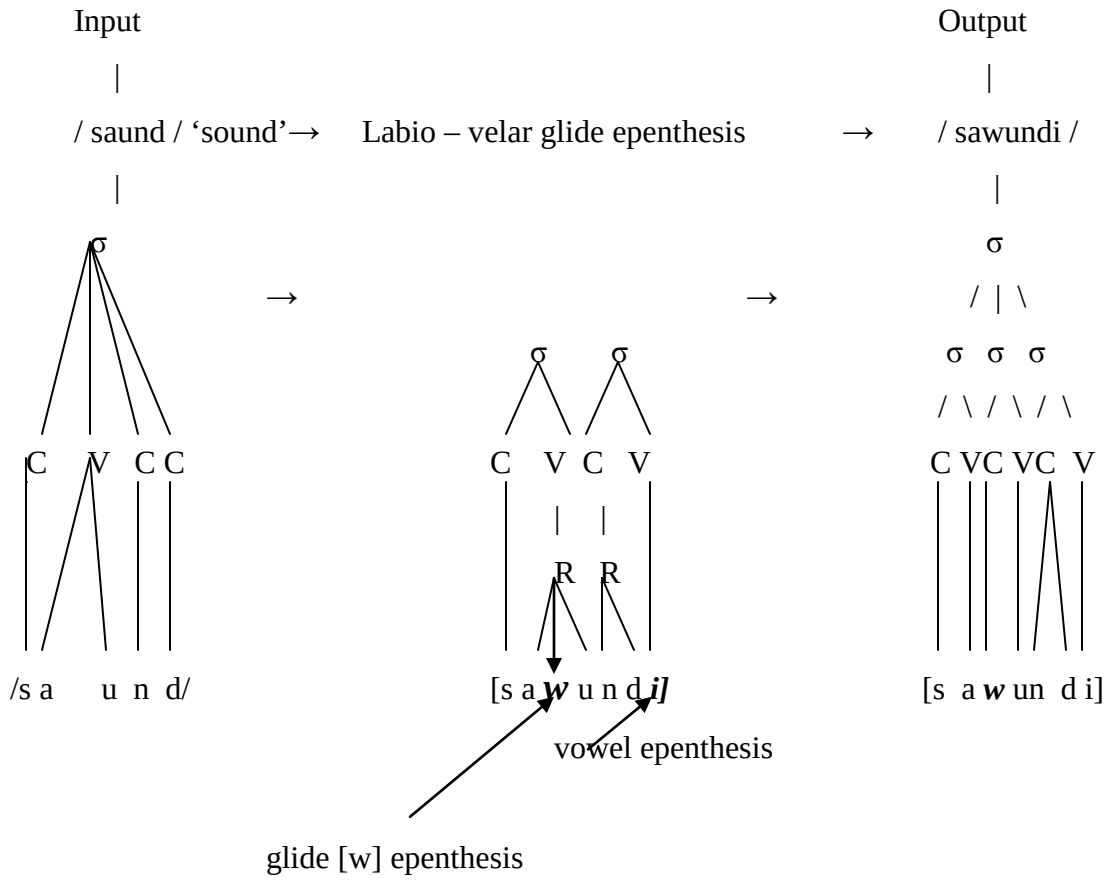
Shift of the branching rhyme

The word [mueni] is originally Tonga, which is realized as [mweni], where [mw-] is an allomorph of the prefix [mu-<1/S>]. The morphophonemic changes on the vowel commencing stem [u], brings in a labio – velar glide [w]. This is done to break up the double vowel sequence (VV), on the two syllables [mue]. However, double vowel sequence is permissible in Tonga, though Tonga monolinguals would prefer syllables with onsets. This argument, in other words means that [u] and [e] are separate syllabic peaks but [u] is nuclears to a syllable with an onset [mu].Introduction of [w] creates a post-velarised monosegment such that the two syllables [mu] and [e] are reduced to one [mwe].

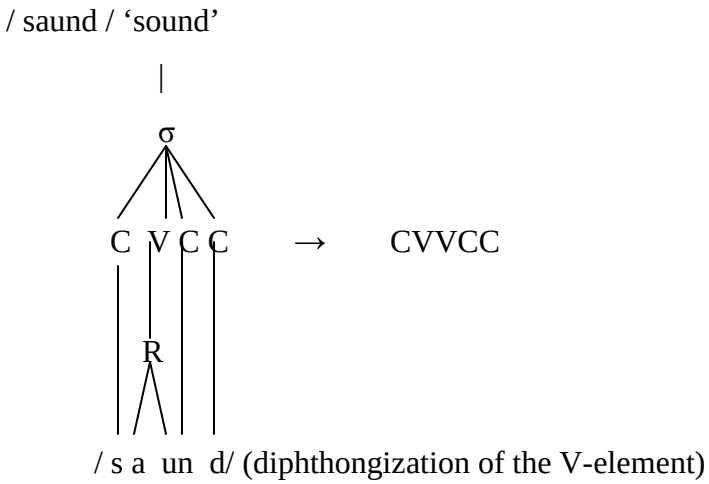
The double vowel sequence [mue] is then substituted by branching rhyme on the onset consonant [mwe]. Similarly where English words, with complex peaks, (in particular diphthongs and triphthongs) were loaned to Tonga, the labio-velar approximant [w] was epenthesised to break the complex peaks. This was possible because the labio-velar approximant [w] has the following feature matrices [+sonorant], [- syllabic] and [+consonant]. The alveo - palatal [j] was also epenthesised, in situations where the glide [w] was not permissible. The glide [j] has a feature configuration ([+sonorant] and [-syllabic]) similar to that of glide [w], enabling it to break branching rhymes of the V – elements.

5.2.3 Epenthesis of the glide [w]

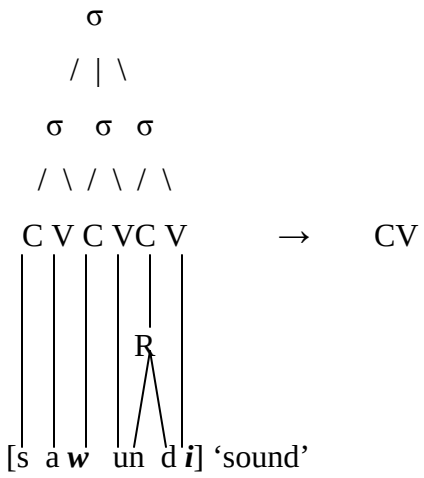
Glide epenthesis is a phonological process with which diphthongs and triphthongs were dealt with in Tonga. Crystal (1997:45) defines epenthesis as the intrusion or insertion of an extra sound, medially in a word. Hock (1999:10) refers to these glides as semi – vowels. Glide epenthesis is demonstrated as follows:



The labio – velar glide [w] was epenthesised to break the diphthong [au]. It was also accompanied by the epenthesis of the vowel [i] at the end since Tonga does not allow coda consonants at the end of the syllable. The input in this process was an English word /saund/ with English phonological rules, (complex peaks) as demonstrated by [au] in the word [saund]. That scenario was not permissible in Tonga. To deal with the diphthong, the Tonga speakers epenthesised a labio-velar approximant [w] as demonstrated on the diagram above. The fact that the input /saund/ had a branching rhyme on the V – element meant that [au] was a diphthong as shown on the following diagram:



The illustration portrays a diphthong which is not permissible in Tonga. Epenthesis of the labio-velar approximant [w] broke the complex peak /au/ to a simple peak /wu/ which is permissible in Tonga, as shown below:

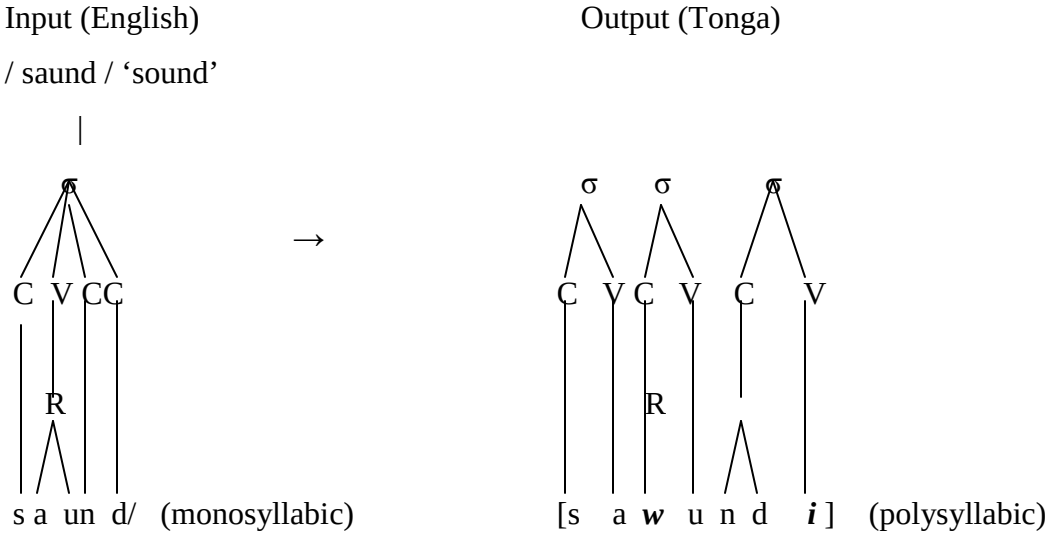


Epenthesis of the labio-velar approximant [w] was necessitated by the phonological observation that /u/ and [w] share similar distinctive features, as shown below:

[u]→ [+ sonorant]
[+ syllabic]
[+ round]

[w]→ [+ sonorant]
[+ - syllabic]
[+ round]

Glide [w] epenthesis results in a change from a monosyllabic pattern (CVC) to a polysyllabic one (CV CV CV). This can be demonstrated as below:



Change has only been realized on vowels, where branching rhyme on [au] has been broken to [wu]. Apart from that, epenthesis of the glide [w] introduces an extra syllable [wu], such that a polysyllabic pattern results on the output (Tonga). In Tonga, the labio-velar approximant [w] was epenthesised in the following complex (peak) environment:

1) /au/ environment

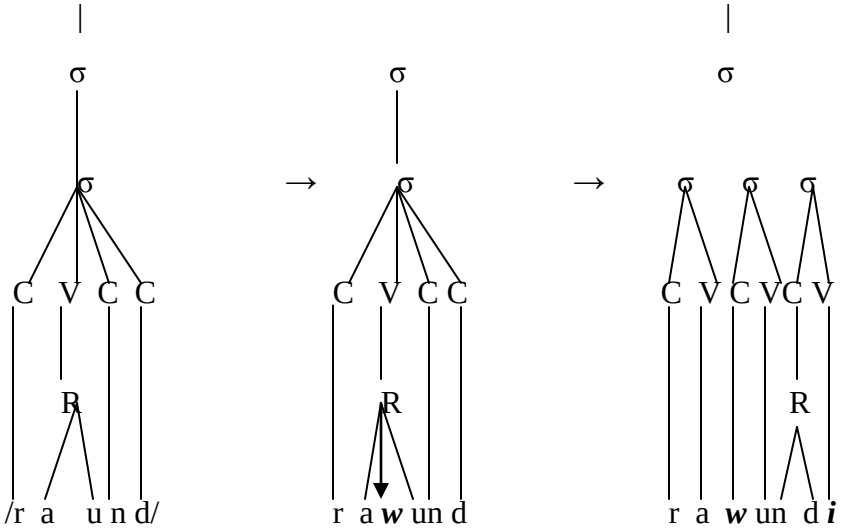
Rule 1: / au / → [awu]

Figure 54: Glide [w] Epenthesis

(a) Input → labio – velar approximant → Output

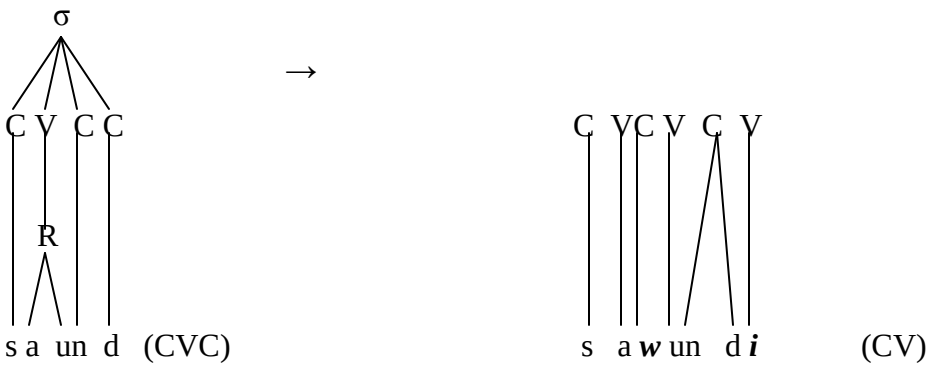
| [w] Epenthesis |

/ raund / ‘round’ [rawundi]



b) Input Output

/ saund / ‘sound’

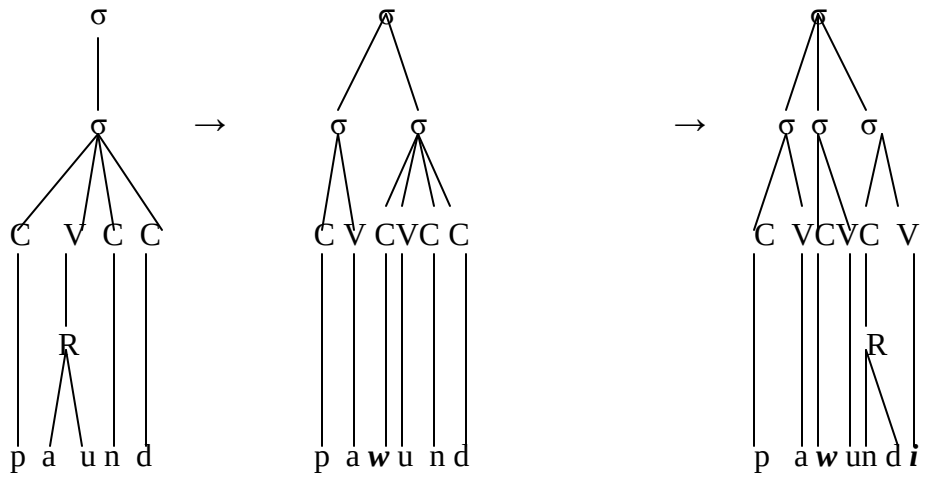


c).Input → labio – velar approximant [w] → Output

| Epenthesis |

/ paund / ‘pound’ / pawundi /

|



1. /ua/ environment

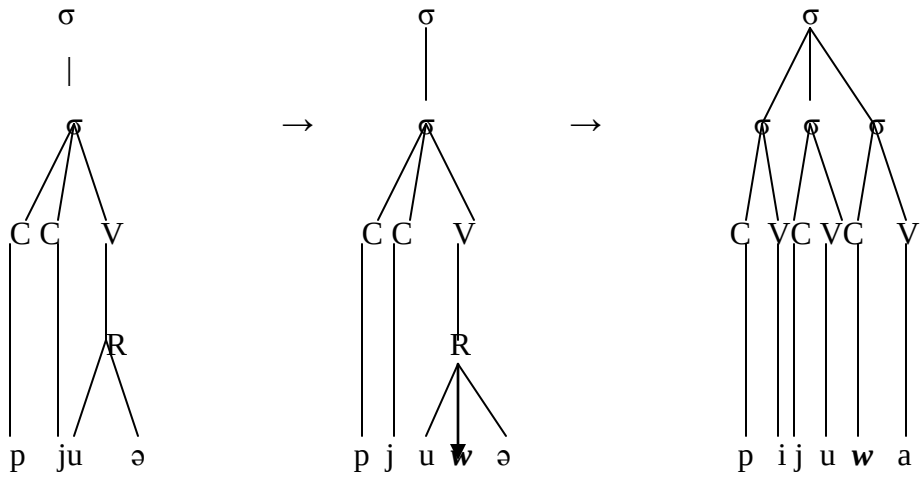
Rule 2: / ua / → [uwa]

(a) Input → labio – velar approximant [w] → Output

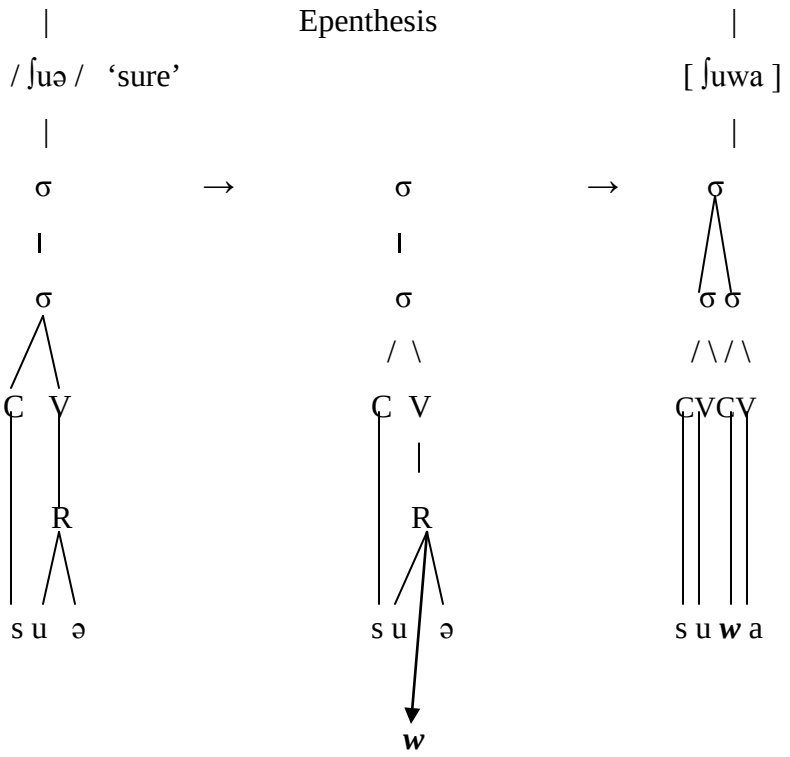
| Epenthesis |

/ pjuə / ‘pure’ [Pijuwa]

|



(b) Input → labio – velar approximant [w] → Output



This phonological environment where the two rules (/~~au~~/ [awu] and /ua/→ [uwa]) were applied are characterized by a combination of a low, central and unrounded vowel [a] and a back, high and rounded vowel [u] in the sequence /ua/ or /au/. In this scenario, epenthesises of the labio – velar approximant [w] was therefore, possible since it shares similar feature configurations with [u]. The rule is that the sound which can be epenthesised should share similar feature configurations with any one of the vowels in the sequence /VV/. This can be demonstrated as follows:

a) [u] and [w]: → [+ round]
[+ sonorant]

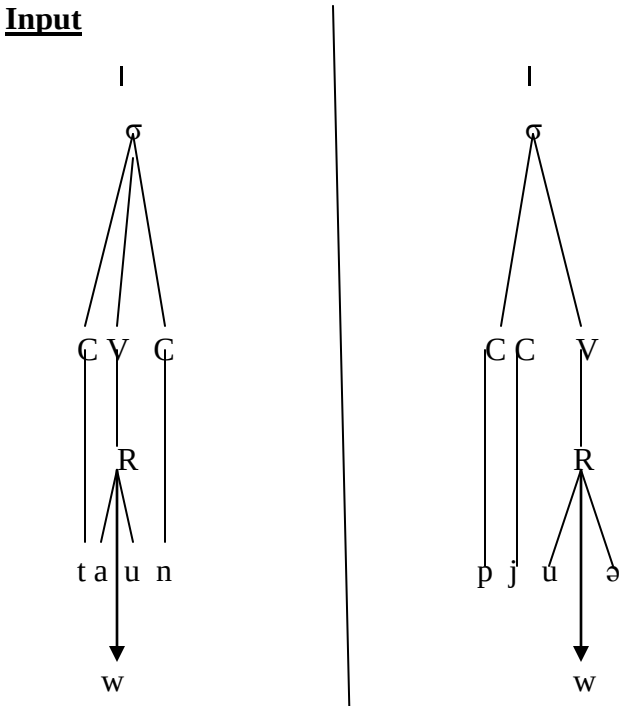
This is applicable to both environments /au/ and /ua/. This means that [u] and [w] share similar distinctive features, hence [w] can be epenthesised.

Rules 1 and 2, so far illustrate that the labio velar approximant [w] is epenthesised when either preceding or following a back, rounded vowel [u]. The reason for that is that they share the same feature configurations [+ back], [+ round] and [+ sonorant]. The only difference is that [u] is [+ peak], [+ syllabic] whilst [w] is [- peak], [- syllabic].

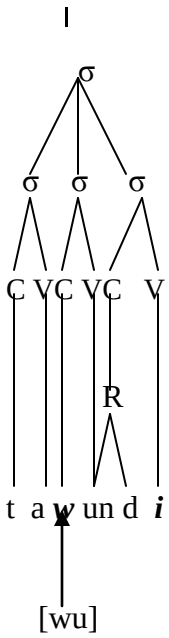
The illustrations (Rule 1 and 2) capture the process of glide [w] epenthesis, so as to break English diphthongs, [au] and [ua], that entered into the Tonga vocabulary. This was done to create either [awu] as in [gilawundi] ‘ground’ or [uwa] as in [ʃuwa] ‘sure’.

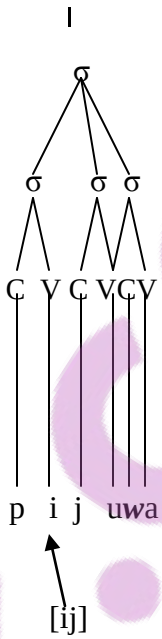
Epenthesis of the labio – velar approximant [w] results in the creation of onset-vowel (OV),[wu] and vowel-onset (VO),[uw] assimilation. This implies assimilation in the following patterns:

Epenthesis of the labio-velar [w]



Output





OV Assimilation VO Assimilation

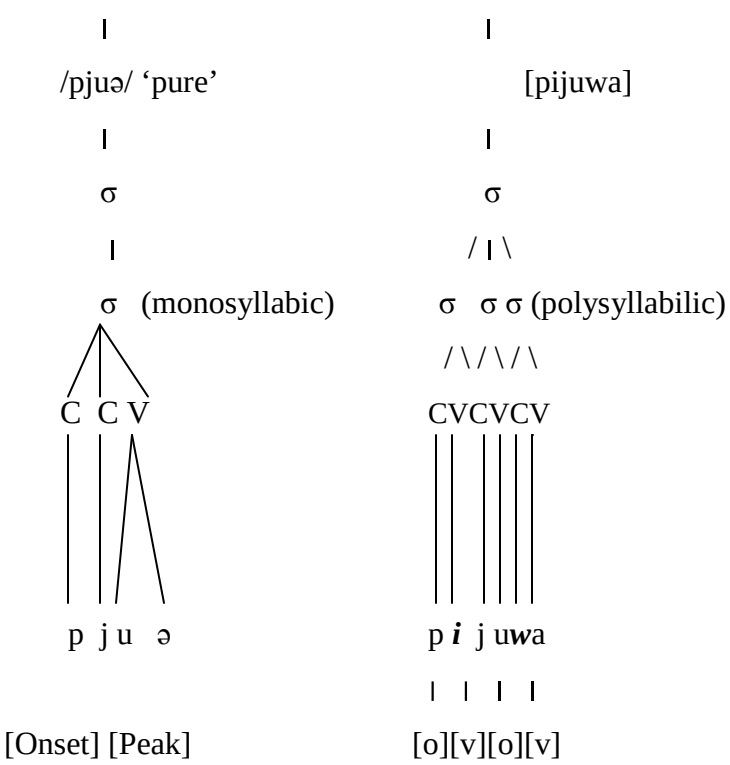
Scenario a) [wu] demonstrates regressive assimilation (OV), in which the labio – velar takes characteristics of [u]; scenario b) [uw] illustrates progressive assimilation (VO), in which the labio velar assimilates feature configurations of [u]. The Tonga rule is that the approximant [w] assimilates feature values of a segment that precedes or follows in a CV – sequence, hence [OV] and [VO] assimilation.

/taun/ town /pjuə/ pure

This means that in Tonga, glide epenthesises [w] is not done randomnly but rather systematically, being guided by distinctive features. In other words, it is only permissible in [au] and [ua] phonetic environments.

When the glide [w] is inserted, there is a shift from a complex peak to simple peaks on the V-element of the CVsyllable, [au] to [awu] and [ua] to [uwa]. The phonetic environments [ua] and [au] demonstrate complex peaks whilst the presence of the glide [w] breaks the diphthong, resulting in a simple peak [awu] or [uwa], as follows:

Figure 55: Syllable Change [tawundi] [pijuwa]



[O]: → [+High]
[+ Front]
[+ round]
[+ sonorant]

[i]: → [+ high]
[+ front]
[- round]
[+ sonorant]

The other notable phonological change is an increase in the syllable nodes. The English word /taun/ has only one syllable (monosyllabic) but epenthesis of the glide [w] opens up two more syllables [tawundi], hence three syllable nodes (polysyllabic). These phonological changes are interpreted as changing from complex to simple peaks.

The introduction of the glide [w] brings in an onset (O) in the place of a peak (V), which creates a new CV syllable. The introduction of a new CV – pattern changes the English CVC typology to a CV typology, acceptable in Tonga.

5.2.1.1.2 Epenthesis of the palatal approximant [j].

In order to break diphthongs and triphthongs, not necessarily having [+ round], [+ back], [u], the alveo–palatal [j] is epenthesised. The reason that diphthongs of any nature are not recognized in the Tonga linguistic environment applies. To nativise English words with such complex peaks, breaking the diphthongs and triphthongs is done.

The rule that supercedes all processes is that epenthesis of the alveo-palatal approximant is done when there is a V element that has the same feature configurations with the glide [j] (John 2000:14). The second rule also applicable is that the V element which shares similar feature matrices with the glide [j] should either precede or follow the glide [j], in the CV sequence. This rule denotes the point of epenthesis.

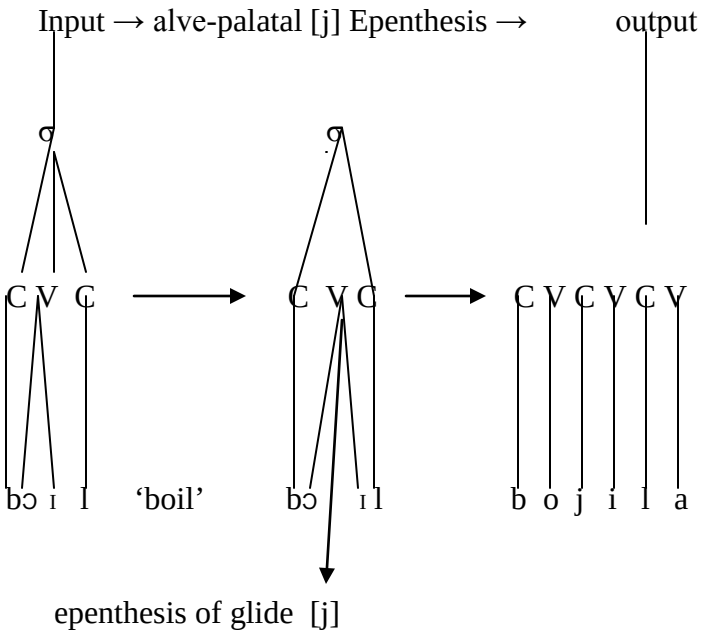
The /ɔɪ/>[oi] phonetic environment disallows epenthesis of the glide [w]. This is because epenthesis of the glide [w] is only permitted in the phonetic environment [ua] or [au]. The scenario /ɔɪ/>[oi] rather accepts epenthesis of the glide [j] between [o] and [i] vowels in the sequence [oi]. The vowel /i/ and glide [j] have the following feature values:

[j]/[i]: [+ sonorant], [-round]

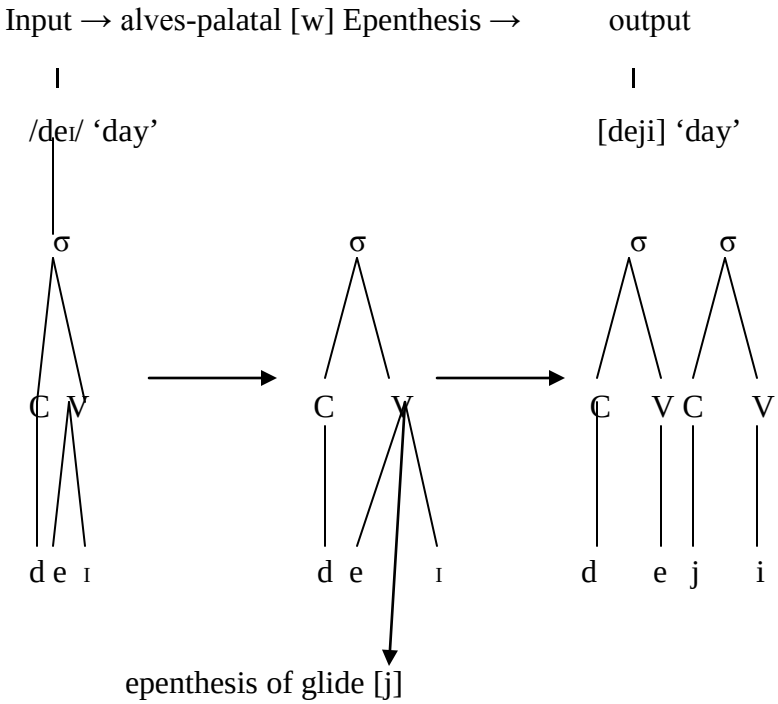
From the two sounds, the glide [j] demonstrates similar feature configurations with the vowel [i]. This means that the vowel [i] should be either before or after the alveo– palatal approximant [j], epenthesised. Epenthesis of the alveo-palatal in the environment [o - - i] is as follows:

Figure 56: Alveo-Palatal Epenthesis

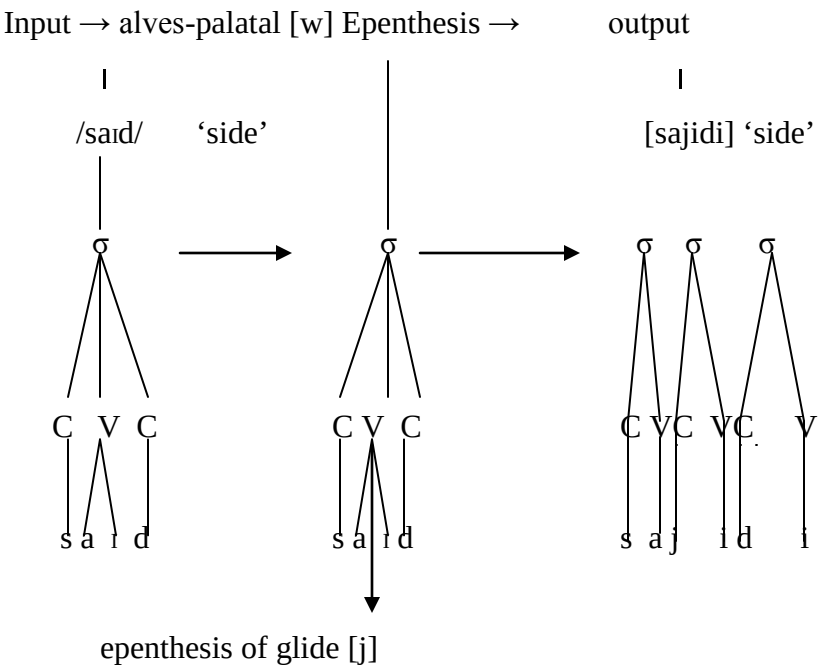
Rule 1: /ɔ ɪ/>[oji]



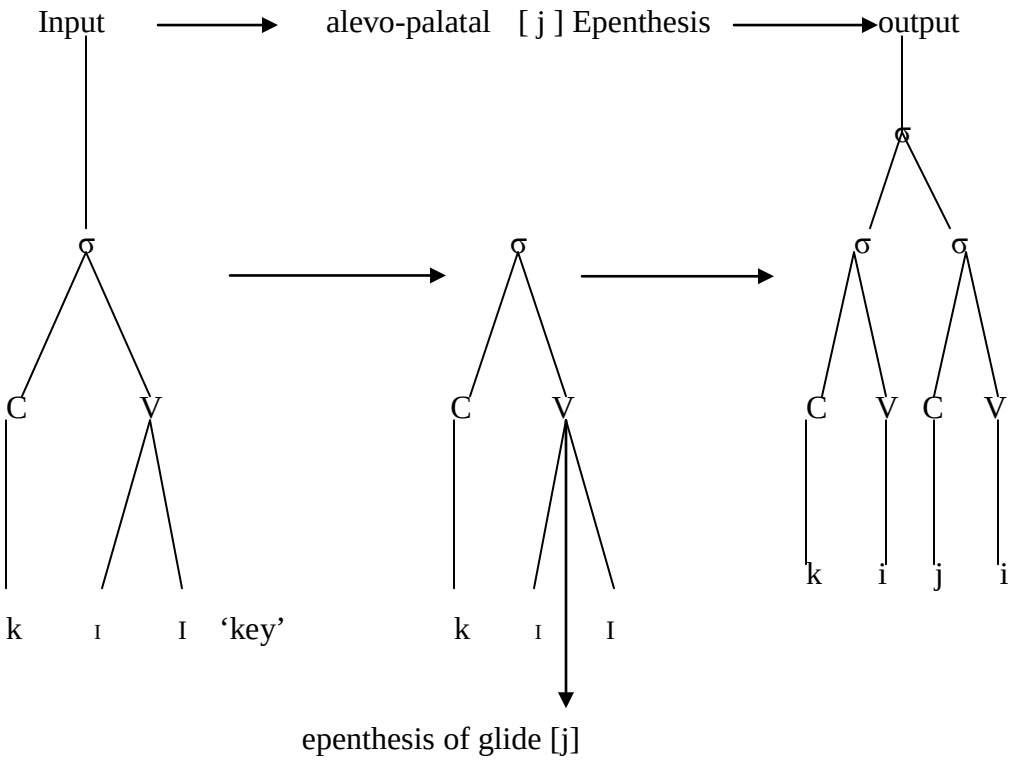
Rule 2: /eɪ/ → [eji]



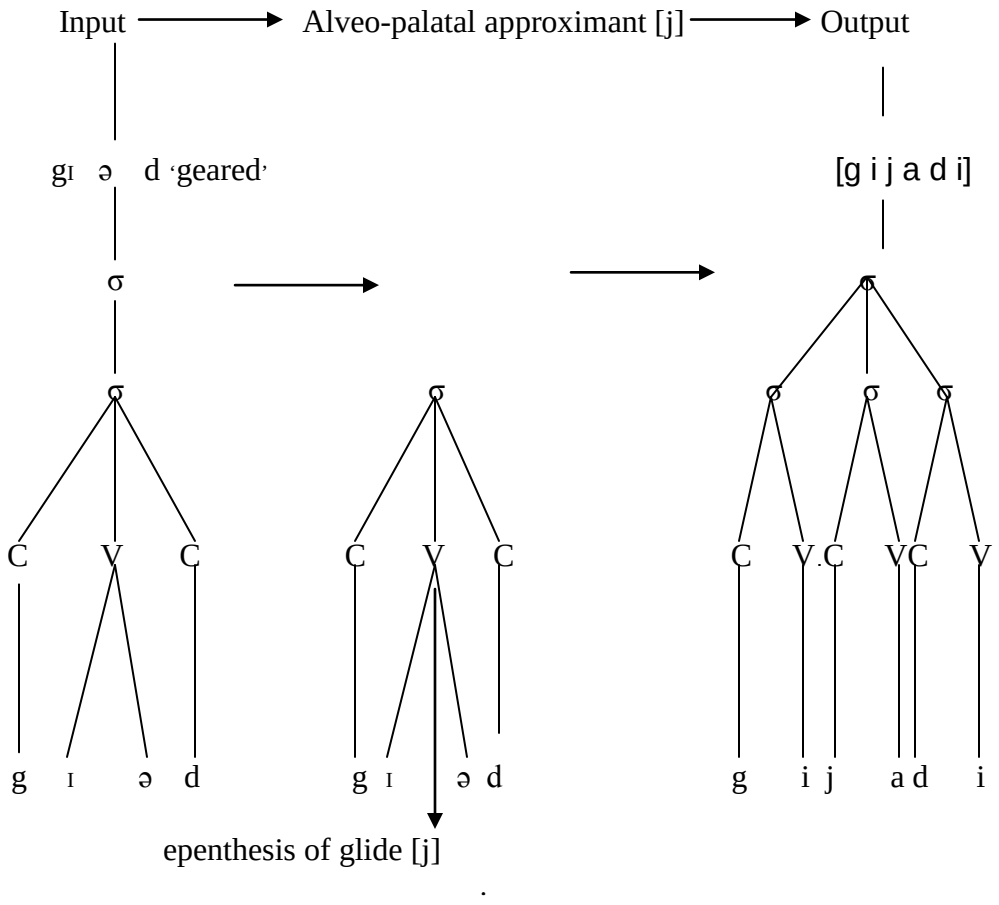
Rule 3: /aɪ/=[aji]



Rule 4: /ɪː/=[iji]

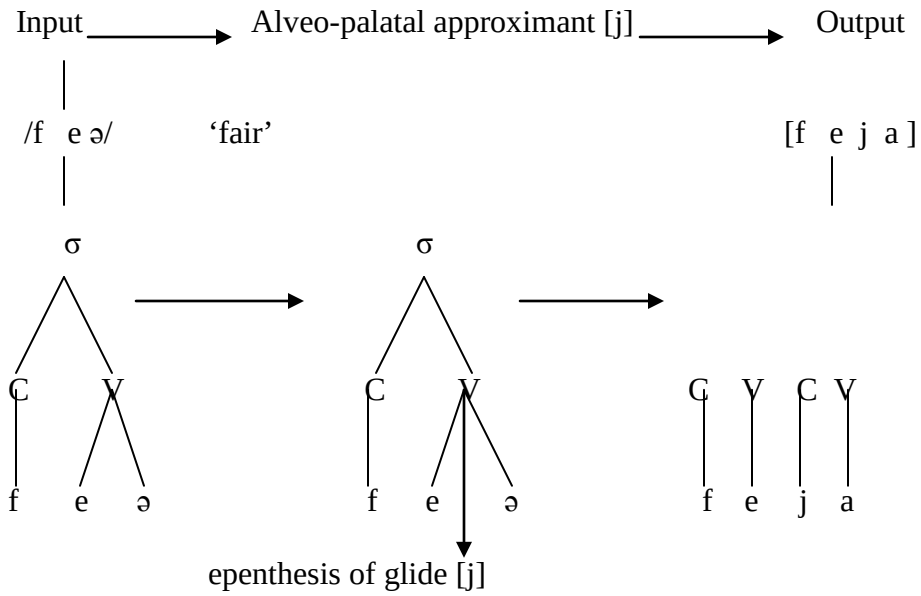


Rule 5:

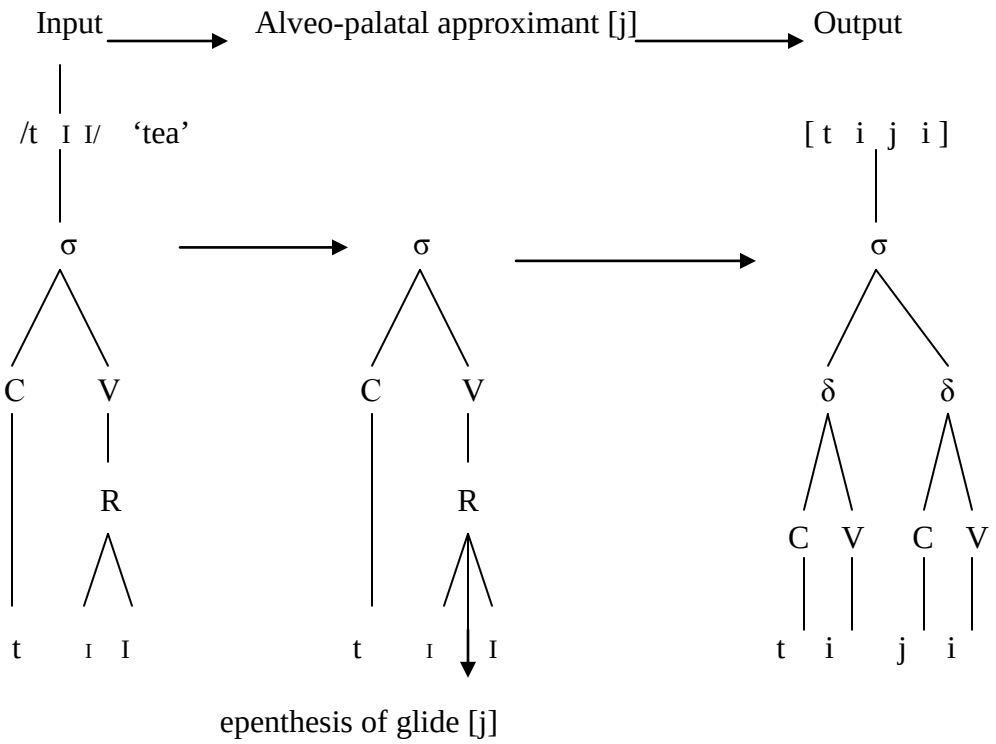


Rules 1 to 5 demonstrate breaking diphthongs by inserting the alveo–palatal approximant [j] when [j] is preceded by [i]. The general pattern is that [j] can be proceded by [i], as in the following complex peaks /ai/, /ei/, /oi/ and /ui/. The other rule is that the glide [j] is also epenthesised when it is preceded by the vowel /i/ and followed by any vowel, as in the following complex peaks, [ia], [ie], [io], [ii] and [iu]. The following examples illustrate this rule:

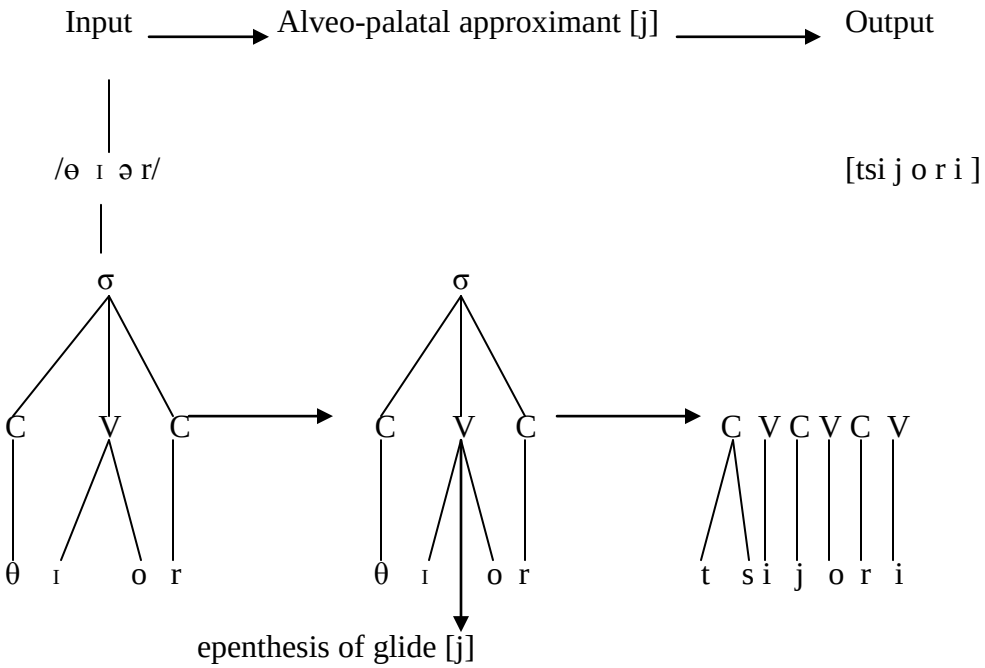
Rule 6:


Input
Alveo-palatal approximant [j]
Output
/f e ə/
‘fair’
[f e j a]
σ
σ
C V
C V
C V C V
f e ə
f e ə
f e j a
epenthesis of glide [j]

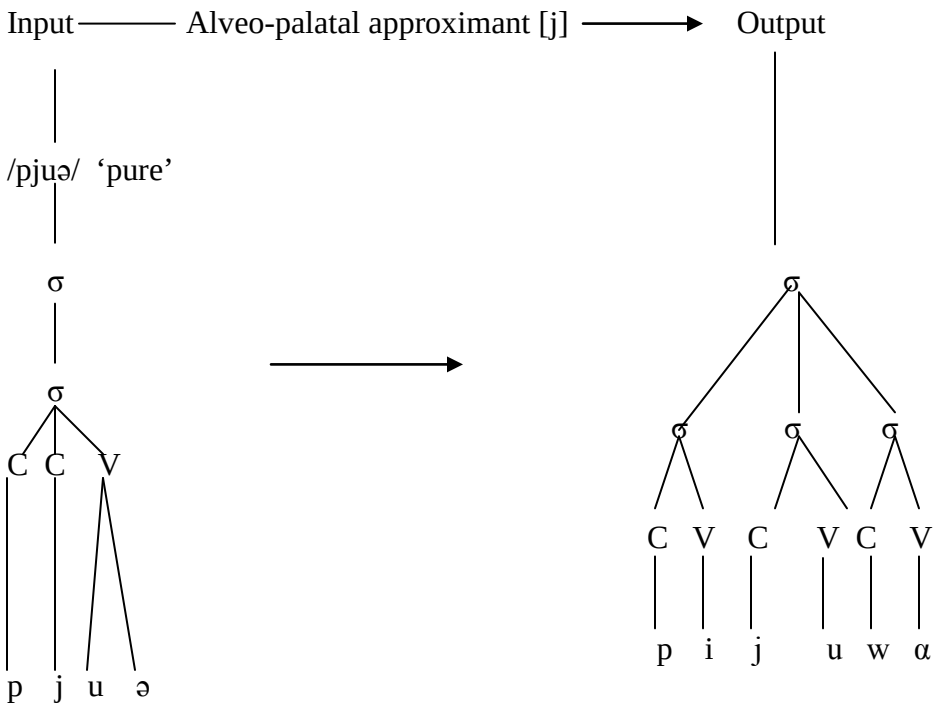
Rule 7:


Input
Alveo-palatal approximant [j]
Output
/t I I/
‘tea’
[t i j i]
σ
σ
σ
C V
C V
δ δ
R
R
C V C V
t I I
t I I
t i j i
epenthesis of glide [j]

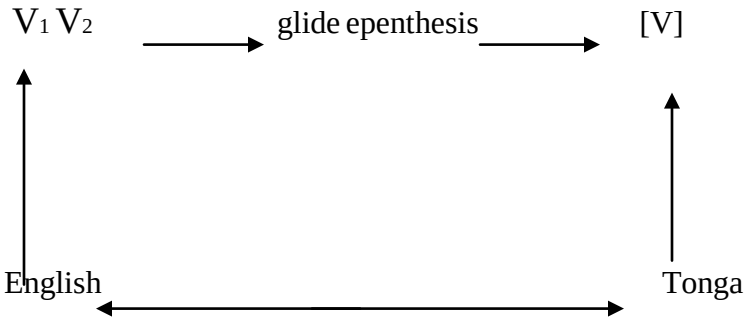
Rule 8:


Input
Alveo-palatal approximant [j]
Output
/θ ɪ ə r/
[tsi j o r i]
σ
C V C
θ ɪ o r
σ
C V C
θ ɪ o r
C V C V C V
t s i j o r i
epenthesis of glide [j]

Rule 9:


Input
Alveo-palatal approximant [j]
Output
/pjuə/ ‘pure’
σ
σ
C C V
p j u ə
σ
σ σ σ
C V C V C V
p i j u w α

During epenthesis of the alveo-palatal [j] and labio-velar approximant [w], the English complex peaks are broken. This means that the long vowels are altered, leading to a simple vowel, as follows:



The English diphthong /ɪɪ/ as in /kII/ 'key' has a complex peak, VV sequence, but epenthesis of the alveo–palatal approximant [j], result in short vowels [i] and [i], characterized by simple peaks, [k***i*****j*****i***]. The other noticeable change towards resyllabification is the change from the English monosyllabic syllable /kii/ /CVV/ to a double syllable [CVCV] word [kiji].

This means that in phonetic environments where the alveo-palatal [j] is preceded or followed by the high front vowel [i], thus [ij] or [ji], epenthesis is possible. When the glide [j] is followed by [i] assimilation is regressive , but when it is preceded by vowel [i], the assimilation is progressive. Above all, resyllabification by breaking diphthongs (rule 1 – 9), demonstrates how CVC syllabic words (English) are changed to CV syllabic Tonga words. This is because Tonga does not recognise CVC or monosyllabic words and the insertion of the glide [j] enables the breaking of diphthongs but the process also affects the number of syllables from English to Tonga. Epenthesis of the glide [j] also creates vowel-onset (VO), [iji], or onset-vowel (OV), [ji] assimilation. In the word [peja] 'pair', vowel [e] precedes the glide [j] and the two share similar distinction features and these are [-back] and [-round], hence the phonetic environment [ea] which permits epenthesis of the glide [j].

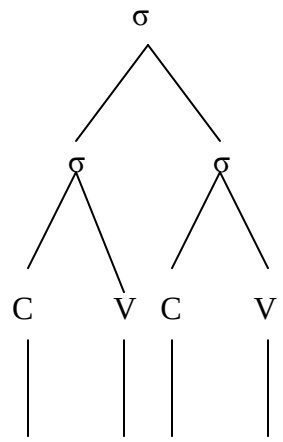
[OV] is realized on words such as [k***i***j***i***] ‘key’, [f***e***j***a***] ‘fair’, [f***o***j***i***la] ‘fail’, [f***a***j***a***] ‘fire’ and so on, where the alveo-palatal approximant [j] assimilates to vowels [i] and [a] that follow glide [j], hence [-high], [-back] and [-round]. The only difference is that [j] is [-syllabic], and [-peak], whilst [i] and [a] are [+ syllabic] and [+ peak]. From the illustrations above, epenthesis of the glide [j] is possible when it is followed or preceded by any vowel other than [u].

[VO] and [OV] assimilation are summarized as follows:

Figure 57: Assimilation Process

i) [VO] assimilation

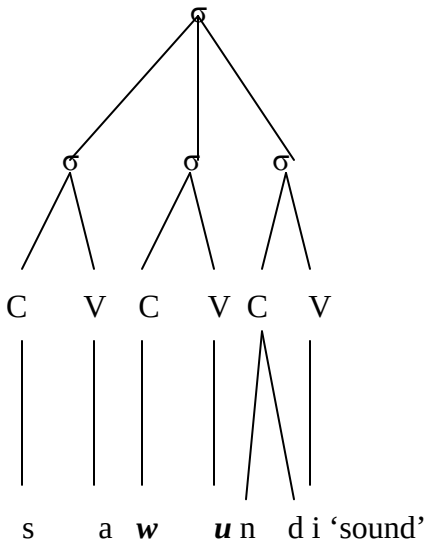
/peə/ ⟶ [peja] ‘pair’

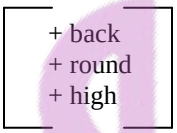


p e j a ‘pair’

[j] assimilates [e]: [+ high, - back, - round] lation

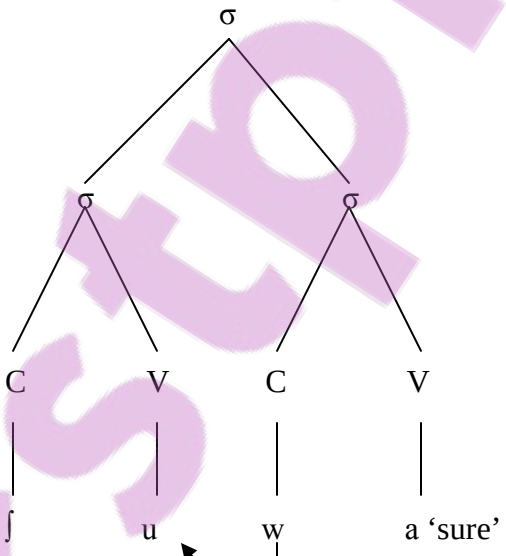
ii) [OV] assimilation

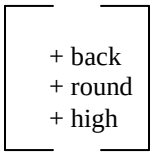




[w u]

iii.'sure' ʃ u ə → [ʃ u w α]



[w] assimilates [u]: 

/ [u w]

Illustrations i) shows the patterns of assimilation during epenthesis of the approximant [j]. The glide [j] insertion is only possible in the Tonga phonological environment in situations where the epenthetic glide [j] is either preceding or following the vowels: [e], [a], [i] or [o]. This epenthetic process can be accounted for by the principle that the alveo–palatal approximant [j] and the vowels [a], [e], [i] and [o] share similar distinctive values. They are both [+ coronal] and [-round]. They differ in that the glide [j] is [-syllabic] and the front two vowels are [+ syllabic].

5.2.4 Phonological processes to handle consonant clusters

Vowels were epenthesised by Tonga speakers to deal with the English consonant clusters. According to John (2000:45), vowel epenthesis is the insertion of a vowel into the word segments. Vowel epenthesis was intended to satisfy the syllable structure of the Tonga language. In other words, vowel epenthesis occurs together with resyllabification process. The English loans do not conform to the syllable structure of the Tonga language because the English language has consonant clusters whilst Tonga does not. On the other hand, Tonga has complex consonants whilst English does not have them. Consonant clusters are consonants that follow each other in a CC pattern but without necessarily being articulated simultaneously (Zivenge 2005:40).

The Tonga language does not recognize consonant clusters but rather complex (CC) or consonants that are co-articulated in a CC sequence. In other words, Tonga only recognizes consonants in a CC sequence articulated as a unitary segment. Chimhundu (2002:109) regards unitary treatment of consonant segments as considering double and triple consonants to be one complex consonant rather than a cluster of consonants. If words that are borrowed from English have CC clusters, then there should be co–articulations for them to be recognized in Tonga (homorganic or adjacent elements). If a CC sequence exists articulated from positions far apart, then there ceases to be co–articulation but these are rather referred to as clusters (Kadenge 2003:27). This means that Tonga does not recognize non co–articulation of CC, without a vowel in between them. This is a phonotactic constraint that restricts cluster consonants in Tonga. English

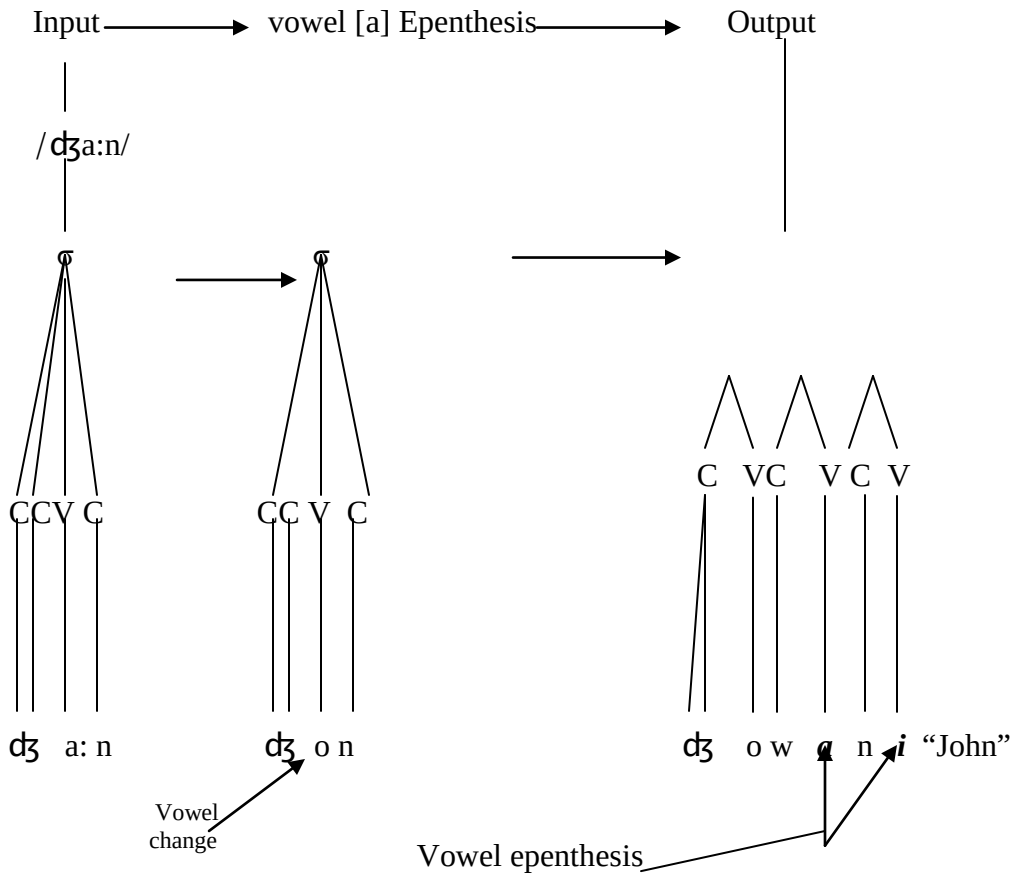
loans (with clustes) therefore do not conform to the syllable structure acceptable in Tonga. In other words, English words have cluster consonants whilst Tonga words have complex consonants. When English words were borrowed into the Tonga phonological environment, vowel epenthesis was done to come up with phonologically acceptable words. There were generally two types of vowel epenthesis applied to English loans that were entering into the Tonga inventory and these are 'mid word' and 'Paragogic' vowel epenthesis.

5.2.**4 'Word Medial' vowel epenthesis**

According to Abdul (2002:55), 'Mid–word' vowel epenthesis is defined as "the insertion of vowels in the middle of a word". This was done to break the English cluster consonants that are not acceptable in Tonga. This is demonstrated by the illustrations that follow:

5.2.4.1.1 Epenthesis of the central vowel [a]

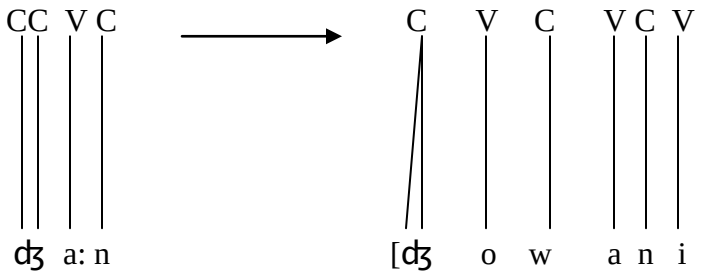
Figure 58: Epenthesis of the Central Vowel [a]

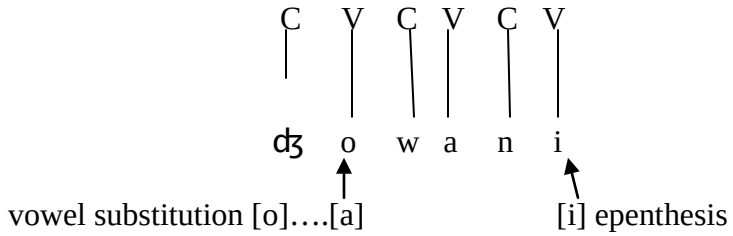


From the demonstration, the first C sequence identified on the word /ʤa:n/ ‘John’ is /ʤ/. This is acceptable in Tonga but what is not acceptable is the V sequence which is characterized by a /a:/ pattern. This was broken by inserting the the glide [w]. The resulting construction was [ʤowani], where [i] has been epenthesised as a paragogic vowel. This sequence again is phonologically unacceptable in Tonga [aw]. In Tonga, the glide [w] can only exist in a CV tier either preceded or followed by a vowel which is [+round]. This means that either [u] or [o] is acceptable. The vowel [u] can only apply in the environment [uwa] or [awu], whilst [o] can apply in [oi] or [io] environment. Looking at the word [ʤowani], it means that [o] was preffered to substitute /a:/. The word /ʤa:n/ finally became [ʤowani] ‘John’ in Tonga. Mid-word vowel [a] epenthesis is therefore accompanied by glide [w] epenthesis and vowel [a] on the syllable [ʤa] to be substituted by the vowel [o] to make the CV sequence [ʤowani] that is acceptable in Tonga.

It was possible to insert [a] in between the epenthetic glide [w] and [n] because vowel [a] can be preceeded by the glide [w] in Tonga. Glide [w] can also be preceded or followed by either [o] or [u], thus [uwa] or [owa]. The epenthesis of the glide [w] and [a] can be demonstrated in a simplified way as follows:

1. / ʤa:n/ ‘John’

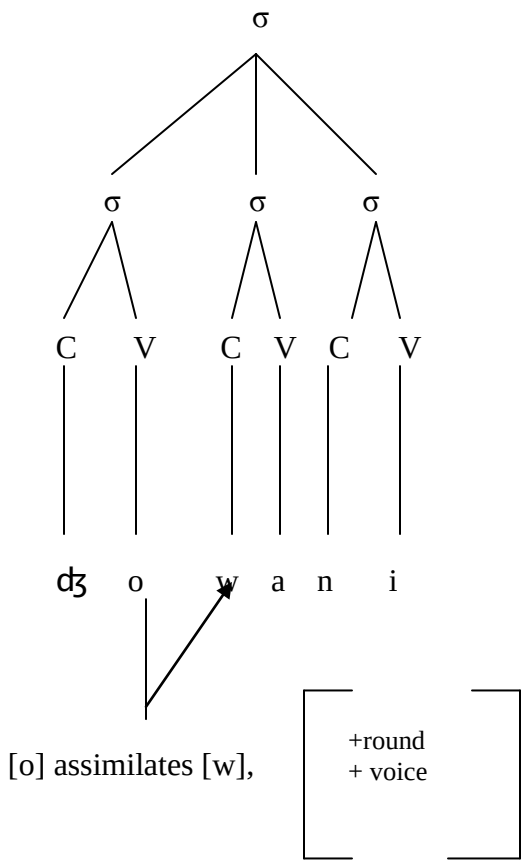




Epenthesis of the vowel [a], in between [w] and [n], result in CV pattern, from the CVC pattern, as demonstrated above.

The introduction of the epenthetic vowel [a] also brought in simple syllable peaks [ʤ***o***w***a***n***i***], thereby introducing additional syllables [wa] and [ni]. There is therefore [OV] assimilation [ow]: [+ round], as demonstrated below:

ʤa:n ‘John’ [ʤowani] (VO assimilation)



In this phonological environment, there is “vowel-onset” (VO) assimilation, hence the above scenario.

The only vowel acceptable for epenthesis was [a] since it applies to the environment [owa], hence [ʤow***a***ni]. The [i] was also preferred as the paragogic vowel because of the principle that vowel [i] follows a coronal consonant in a paragogic position [coronal +/i/]. This means that epenthesis of [a] is characterised by [owa] environment and [i] by [cor.+/i/], hence the following csenerios:

i) [ʤowani] ‘John’ ⟶ [ow***a***], [cor. +/i/]

ii) *[ʤoweni] ⟶ [ow***e***], [cor.+/i/]

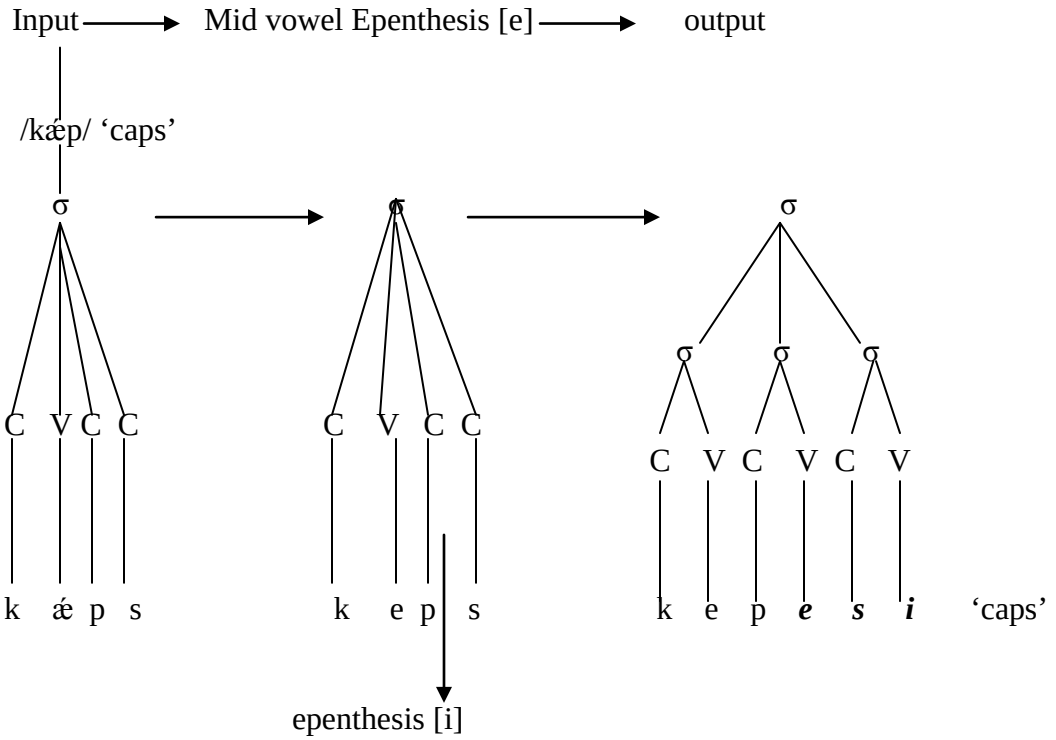
iii) *[ʤowini] ⟶ [owi], [cor. +/i/]

iv) *[dzohoni] ⟶ [owo], [cor. +/i/]

v) *[ʤohuni] ⟶ [owu], [cor.+/i/]

5.2.1.2.1.2 Epenthesis of the high front vowels [e] and [i]

Figure 59: Epenthesis of [e] and [i]

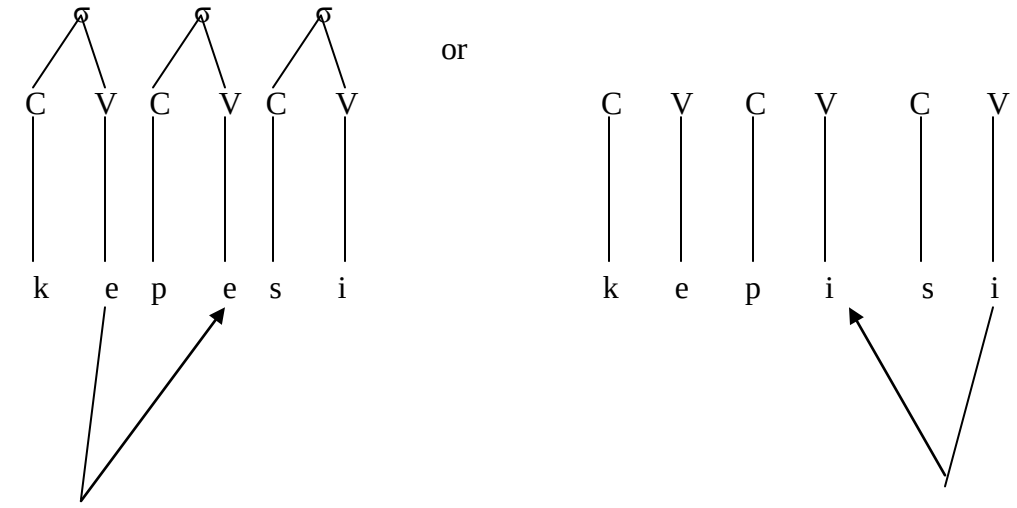


Epenthesis of the vowel [e] is necessitated by the fact that the epenthetic vowel [e] should assimilate the preceeding vowel, which is [e], on the syllable [ke]. This means that vowel [e] is epenthesised proceding [p]. Epenthesis is done because consonant [p] can not function without a vowel. This is because only vowels can function as syllables without consonants but consonants can not function without vowels (Zivenge: 2005:60).

From the demonstration above, it shows that it was possible to epenthesise [e] proceding [p], since [e] is in harmony with the peak on the preceeding syllable, [ke]. Vowel [i] was also considered as the paragogic vowel since it can combine with coronal consonants [cor.+/i/]. The nativised version is [kepesi]. Since the paragogic vowel is [i], [cor.+/i/], it can as well mean that Tonga speakers can as well use [i] in between [p] and [s] since Tonga does not allow consonant sequence[ps]. The choice of vowel [e] is determined by

the paragogic vowel [i]. Tonga speakers therefore use either [k***e***p***e***si] or [kep***i***s***i***] ‘caps’, with [e] and [i] as epenthetic vowels respectively.

The insertion of the vowel [i] or [e] changes the English syllabic structure CVC to CV. In other words the change is interepreted as resyllabification from a CVC /kæps/ to a CV [kepesi]. This entails resyllabification from a closed English syllable to an open Tonga syllable. Epenthesis of either the front, high vowel [i] or [e] is necessitated by theb concept of vowel harmony, which is either [i..i], [kepisi] or [e..e]. kepesi], as demonstrated below:

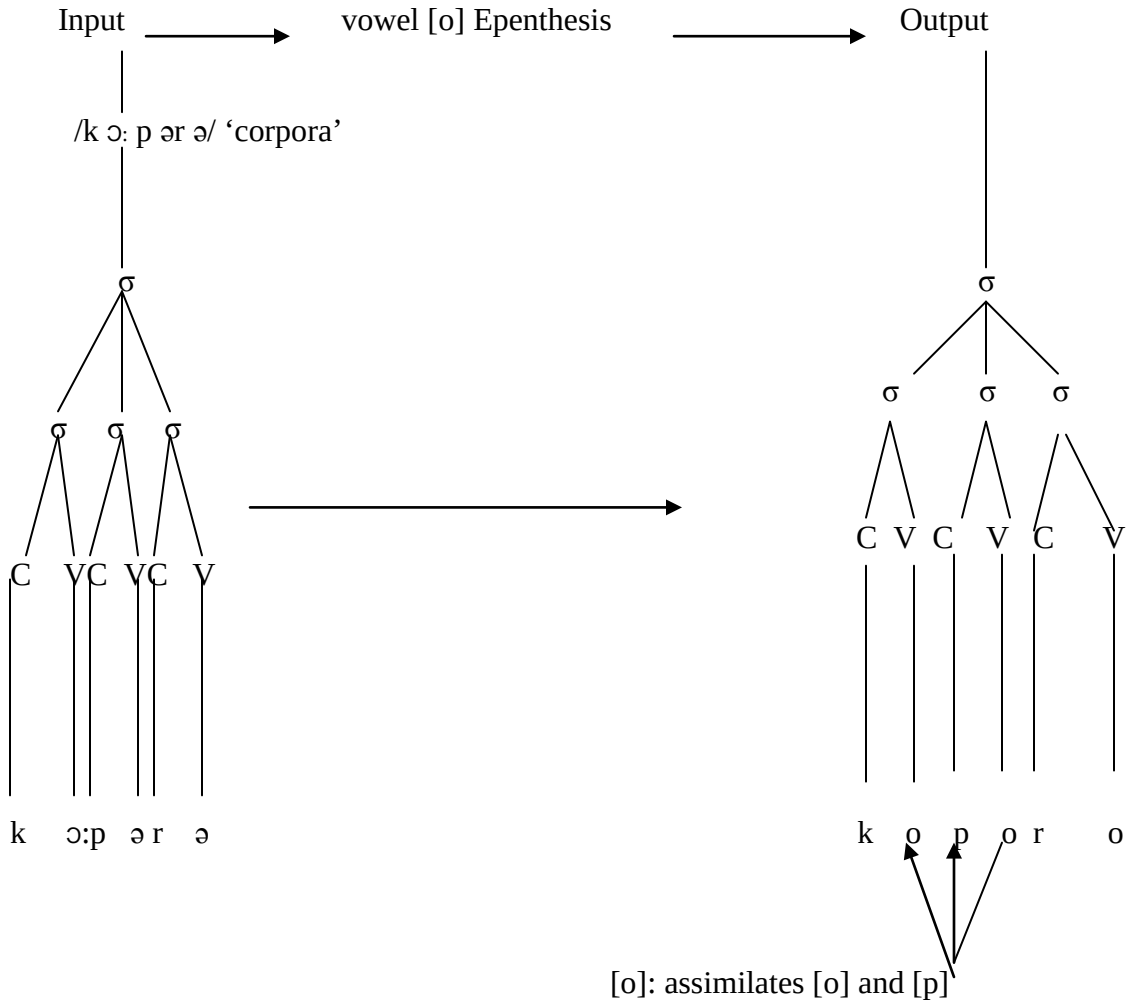


[e] harmony [i] harmony

The epenthesis of [i]/[e] is due to matching or harmonization the V elements of the adjacent syllables in a word.The other point to note is that after the epenthesis, there is harmony between the mid-vowel [i] and the proceding vowel [i], hence [kep**i**s**i]**, for easy articulation. On the other hand, there is also harmony between the preceding vowel [e] and the mid-vowel [e] (k**e**p**e**si).

5.2.1.2.1.3 **Epenthesis of the back vowel [o].**

Figure 60: Vowel [o] Epenthesis



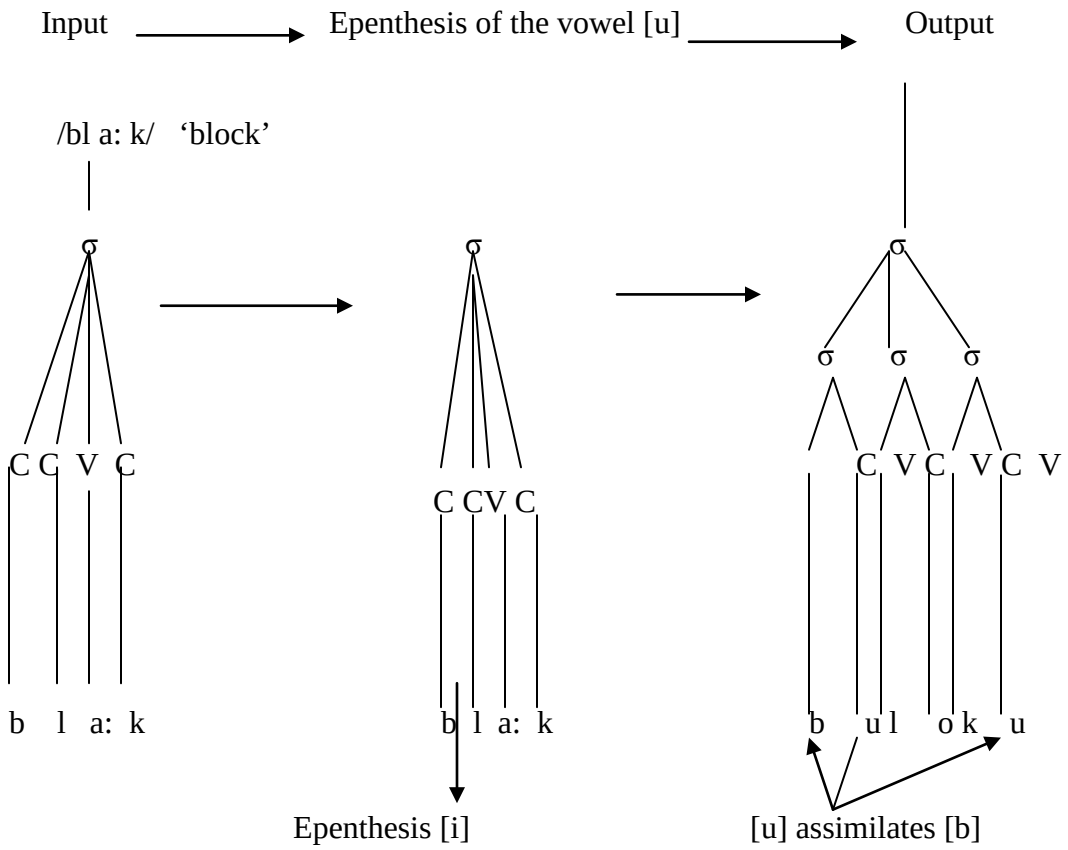
The rule is that [o] can be epenthesised in harmony with the preceding or proceeding vowel or both, as exemplified by the word [koporo] above. In this illustration the epenthetic vowel [o] is in harmony with both the vowels and the consonant [p], since they are both labial. In this demonstration, there is VV assimilation (harmony) and vowel-consonant, VO harmony. The other vowels in the word have the feature [+ labial], hence [o] becomes the only applicable epenthetic vowel. The epenthetic vowel [o] is thefore, in harmony with the preceding [o], the proceeding vowel [o] and bilabial [p].

The insertion of [o] alters the syllable structure from the CVC to CV acceptable in Tonga. The closed English syllable changes to the acceptable open CV Tonga syllable. The introduction of the vowel [o] brought in the concept of open syllables, a characteristic of

the Tonga language. In general, vowel epenthesis on English words creates open syllables (Mheta and Zivenge 2008).

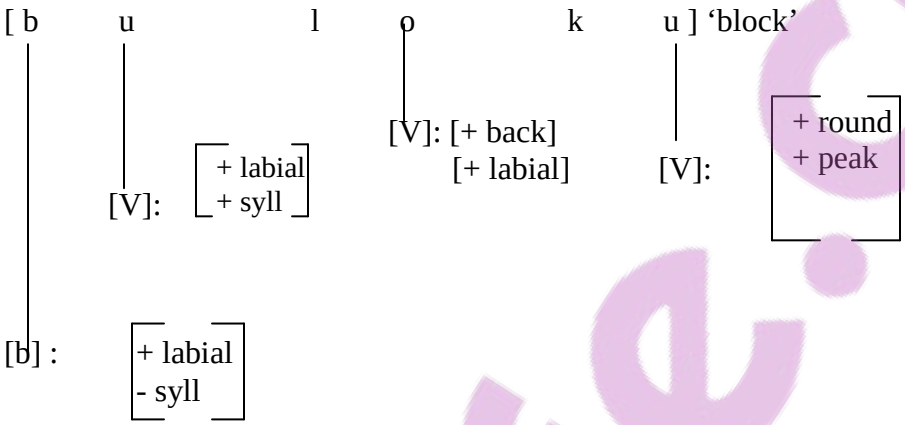
5.2.4.1.4 Epenthesis of the back vowel [u].

Figure 61: Vowel [u] Epenthesis



Vowel [u] can be epenthesised in the consonant cluster /bl/. This is because vowel [u] and the consonant [b] are labial, thus the rule, [labial+/u/]. In this regards, vowel [u] can therefore be epenthesised between consonants [b], [+labial] and [l]. The resulting construction is [bula:k]. The coda /k/ is not again acceptable in Tonga and vowel epenthesis was done to create an open syllable, making coda /k/ an onset consonant. The choice of the vowel is influenced by the preceding vowel [u] on the syllable [bu]. The principle of vowel harmony is applied and vowel [u], which is in harmony with the peak of the syllable [u] and consonant [b] becomes the paragogic vowel. The result of such phonological changes is [bula:ku]. The combination /a:/ is again not acceptable in Tonga.

The [a:] vowel is substituted by vowel [o]. The choice of the mid vowel is again determined by the distinctive values of the peak preceding and following [a:]. The vowel to use should therefore share feature values with the preceding vowel [u] and the vowel which follows it, [u]. Since [u] can not combine with [l] using the principle [labial+/u], it then follows that [o], which is [+ labial] like [u] and [b] should substitute [a:], hence [buloku] 'block'. This process can be illustrated as below:

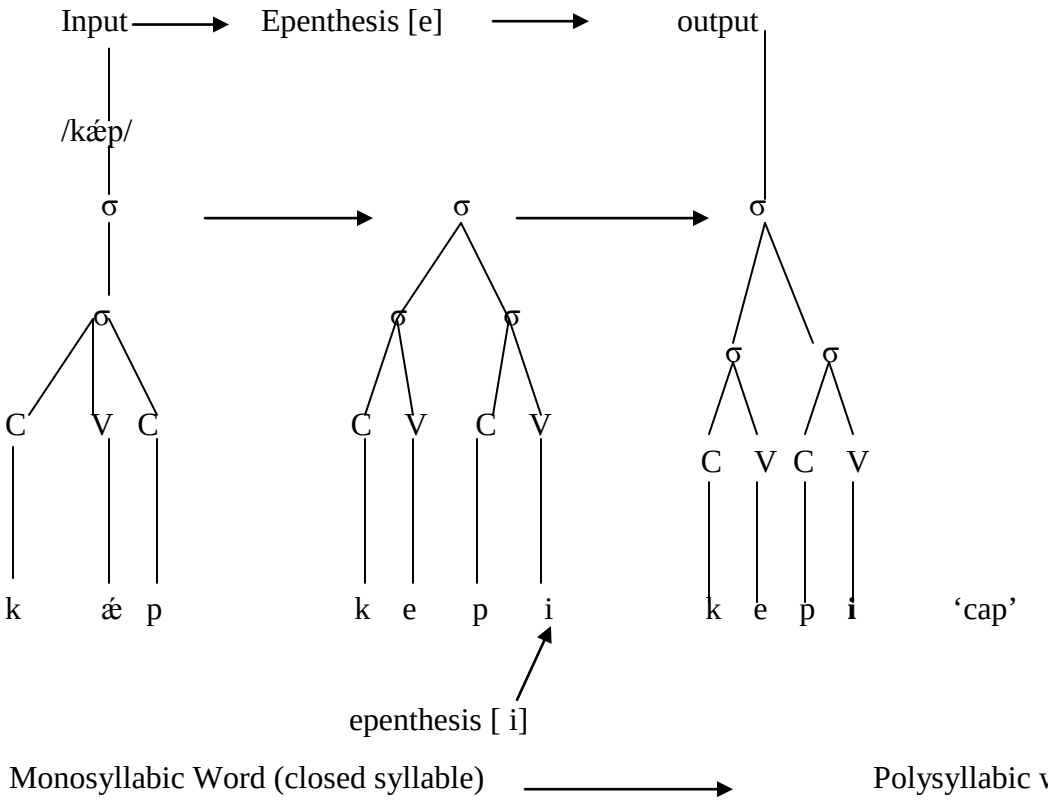


There is harmony of vowels that are peaks on each of the syllables forming the word [buloku], whereby the epenthetic [u] in [bu] is in harmony with the preceeding consonant [b], since they are both labial. This harmony is necessitated by the feature value [+round]. This is intended ease articulation since any contradicting feature (-round) can make articulation difficult. However, epenthesis of the back round, high vowel [u] results in syllabic change from closed /bl a:k/ 'block' to open syllable [buloku].

Mid word vowel substitution was done in Tonga in positions where it serves to handle peaks not recognized in Tonga /a:/. Inserting vowel [o] was intended to have a simple peak acceptable in Tonga. Epenthesis occurs in tandern with resyllabification of closed syllables, changing them to open syllables. This breaks the unacceptable English consonant and vowel sequence. Breaking the cluster consonants by vowel epenthesis means the introduction of new peaks to cluster consonants /bl/. Besides opening closed

syllables, vowel epenthesis creates new syllable nodes, hence new CV syllables and segmental tiers, as shown by the change, /kæp/>[kepi], as demonstrated below:

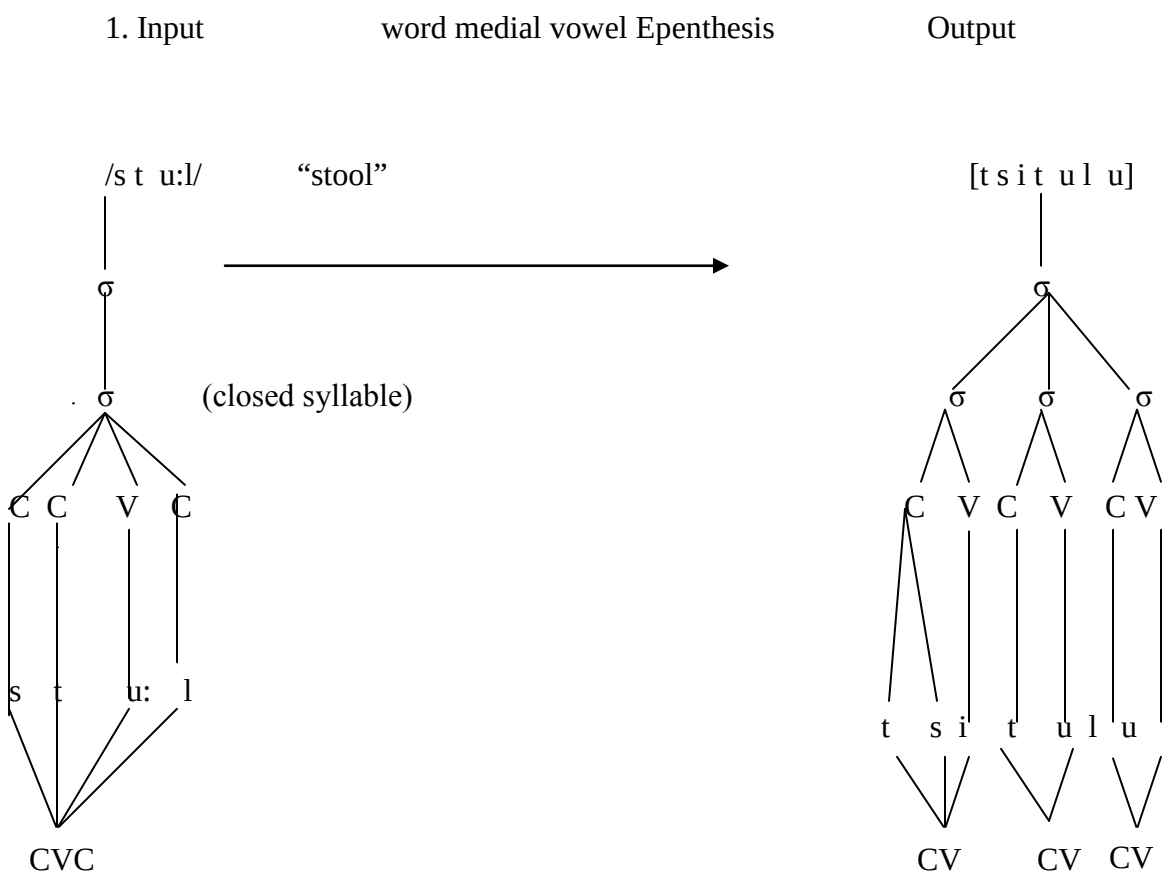
Figure 62: Epenthesis of vowel [e]



5.2.4.1.5 Paragogic vowel epenthesis

According to John (2000:23), paragogic vowel epenthesis is vowel insertion at the end of a word. This means the the epenthetic vowel becomes the last segment of a segmental tier in a word. English words have closed syllables /CVC/ whilst Tonga has open syllables [CV]. This means that the Tonga syllable is exclusive of the coda, as already been established in previous chapter (Chapter Four). Epenthesis of this nature (paragogic) was done to open closed syllables, in the same way and manner in which vowel epenthesis at the middle of a word opens closed mid-word syllables.The only difference is that paragogic epenthesis handles codas in general. This is highlighted by the following few selected examples:

Figure 63: Word Medial Vowel Epenthesis

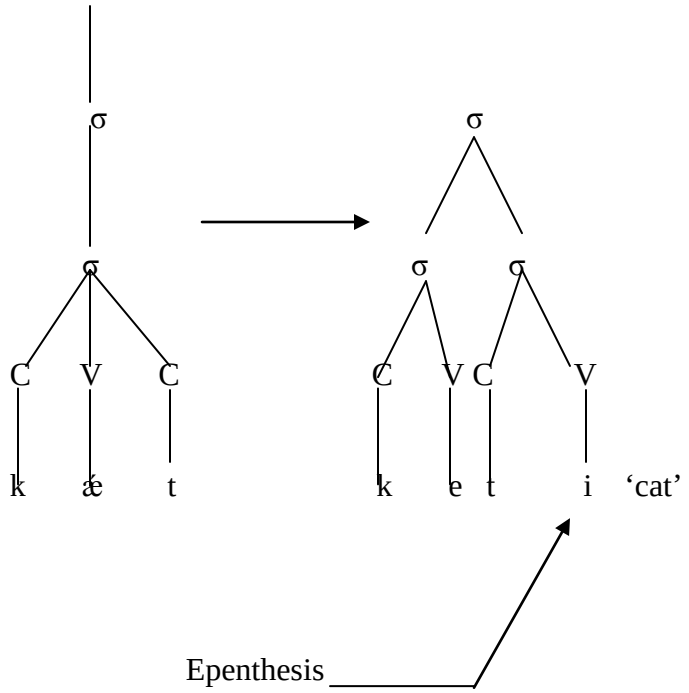


The rule which applies is that [i] is in harmony with [s], thus coronal.

Figure 64: Paragogic Vowel Epenthesis

2. Input Paragogic vowel [i] Epenthesis -Output

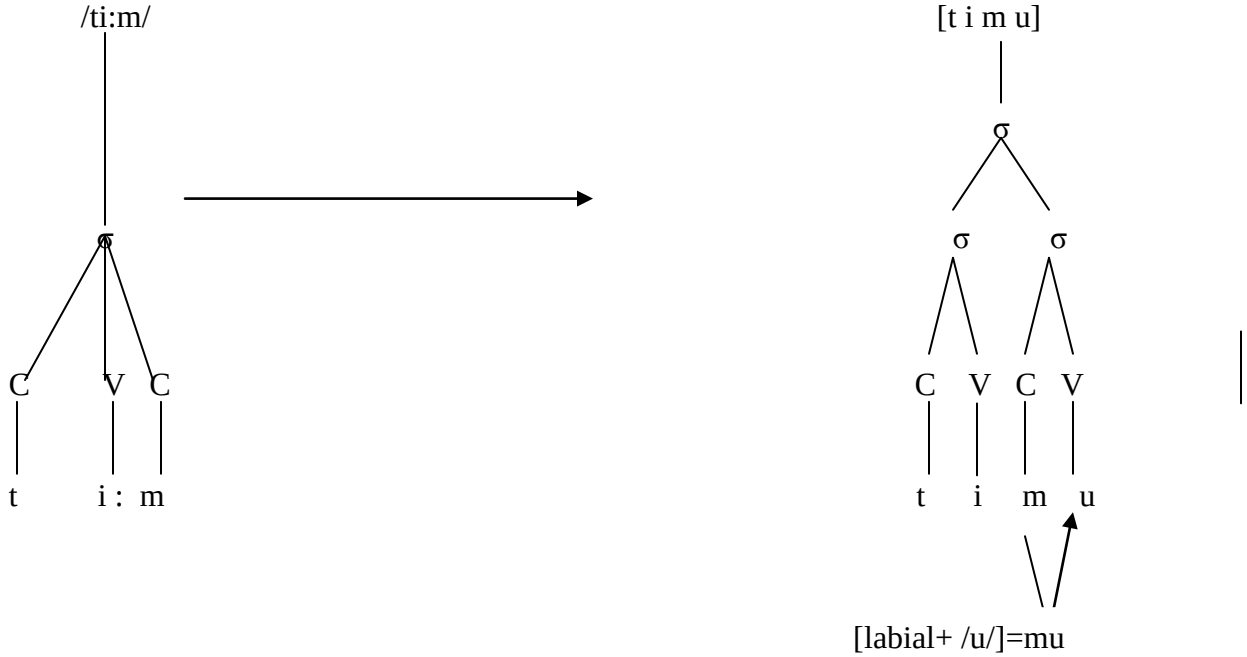
/kǽ t/



The rule is that vowel [i] assimilates consonant [t], that is they are both coronal.

Figure 65: Paragogic Vowel [u] Epenthesis

3. Input → Paragogic [u] Epenthesis → Output



The above three demonstrations highlight paragogic epenthesis. Vowels epenthesised are [i] and [u]. In general, Vowels [a], [e] and [i] are epenthesised preceded by a coronal consonant, for instance [t] in /feInt/>[fenta] or /tent/>[tente]. A coronal is defined by Crystal (1997:94), as a sound "produced with the blade of the tongue raised from its neutral position. Sounds that are described as coronal are alveolar, dental and alveo – palatal. The articulation of these sounds is opposed to labial and velar consonants that are produced with the tongue in its natural position [-cor]. The vowels [u] and [o] follow a labial, for instance [m] and [p] in the words, /stup/> [stupu] 'stoop' and /tI:m/>[timu] 'team'.

Another vowel epenthesis rule is that vowel [o] and [u] are in harmony with labial sounds such as [m] and [b]. In this line of argument, epenthesis of [u] on the word /k æ t/ 'cat' is not possible because [t] is coronal and not labial, hence *[ketu]. In that regards, Tonga speakers prefer to insert the coronal vowel [i], hence [kiti] 'cat'. In the same way, [u] can combine with either [m] or [p] which are labial as in the words [stupu] 'stoop' and [timu] 'team'.

This is an acceptable paragogic epenthesis process since the vowels [u] or [o], can be epenthesised in a labial phonetic environment. It also follows that the other two vowels [e] and [i] are epenthesised in a coronal environment.

5.2.5 Epenthetic Predictability

The best predictor for the choice of the epenthetic vowel was also the place of articulation of the consonant preceding to the epenthetic vowel positon. In the example of the word 'team' [timu] for example, it was established that the epenthetic vowel [u] immediately follows a labial phonetic enevironment, [labial + u]. This means that the epenthetic vowel, [u], and the preceding onset consonant, [m], have a similar 'place of articulation' [labial], hence similar features values.

Besides the coronal consonants, (excluding liquids), the epenthetic vowel [i], [+front], [+high] and [-round] is epenthesised systematically. The labial obstruent followed by [i] allowed the epenthetic vowel to be [i], not [u], for example [biti] 'beat' and not *[bitu], where there is also vowel harmony between the preceding [i] on the syllable [bi] and the epenthetic vowel [i]. Similarly [u] followed by a coronal or obstruent give room for [i] epenthesis for instance [ŋuzi] 'news' and not *[ŋuzu], where the influence of [z] overrides that of [u] between the preceding peak [u] and the paragogic epenthetic vowel [i]. This is opposed to what is sometimes called 'vowel copy'. This is a phonological situation in which the paragogic vowel copies the features of the preceding vowel, for instance [ŋuzi] 'news' would be [ŋuzu]. In the given example, [ŋuzu], the paragogic epenthetic vowel [u] copies the preceding vowel [u], thus V1-V2 copy.

The other strategy employed was that the back, mid vowel [o] followed by a labial consonant, triggered [u] as the epenthetic vowel, for example /dra:p/ became [dilopu] and not [dilopo], if we are to testing the 'preceding vowel' principle discussed earlier on. This is rather called VV– labial effect (John 2000: 40). The vowel [o] in the labial environment is correlated with [u].

The above phonological principles account for the various paragogic vowel epenthesis processes that occurred with the English loans during nativisation. The introduction of a vowel at the end of a word also resulted in the creation of new syllable nodes, CV syllables and additional segments. Simple peaks also appeared at the end of words rather than the coda. This means that the English CVC syllable structure was changed to CV, which is recognized in Tonga. According to Clements and Keyser (1983:10-100), all vowels are peaks and inserting them following onset consonants means that there is creation of CV syllables. The paragogic vowel was epenthesised to open the closed English syllable, for instance, /kæt/>[kiti], hence acceptable syllable structure in Tonga.

5.2.6 Accurate pronunciation vis-à-vis Grammaticality.

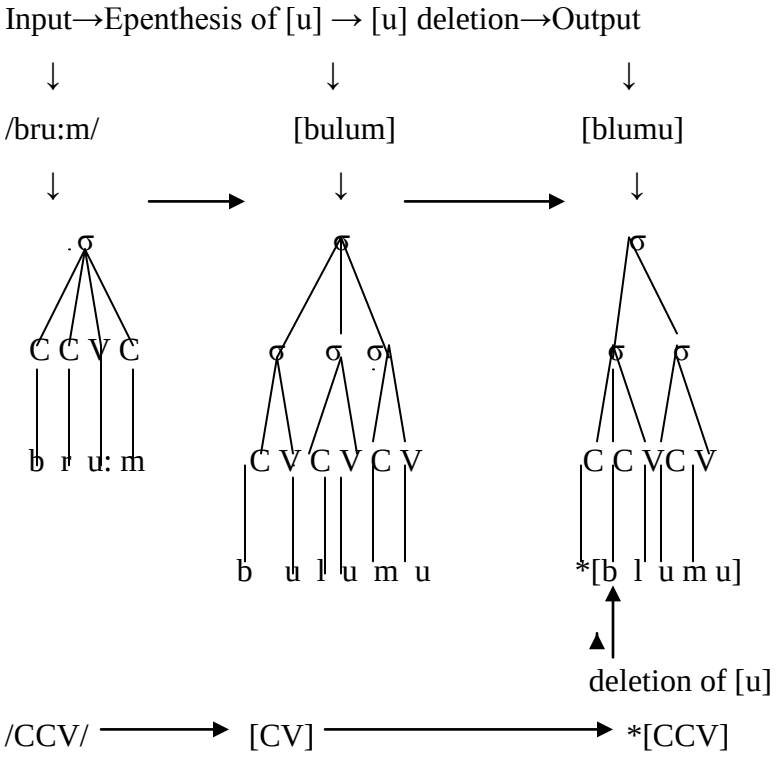
Both mid-word and paragogic vowel epenthesis resulted in the resyllabification from the English CVC to the Tonga CV typology. In other words, resyllabification was intended to 'ease' articulation, if assimilation is taking place. This entails re-arranging the nodes, CV– tiers and bundles of segments according to the requirements of the receiving language (rules of grammar). It is these rules that guide towards 'ease' articulation. English words that enter into the Tonga language therefore undergo resyllabification to be acceptable in the Tonga linguistic environment. However, there are instances when nativisation (resyllabification) is deliberately incomplete in the Tonga environment. These are instances when vowel epenthesis is ignored in order to pronounce English words properly. This entails violation of certain grammatical rules to allow 'proper' pronunciation of English loans, as they are articulated by the native English speakers. The dilemma here is between 'proper' pronunciation and 'proper' grammar. There were instances when Tonga speakers sacrificed language rules for 'accurate' pronunciation of words, which is sometimes reffered to as 'correct approximation'. This normally happens in a number of consonant cluster environments.

5.2.6.1 [Labial + /u/] Environment

English words with bilabial cluster consonants were dealt with by epenthesising the back, high and rounded vowel [u], as demonstrated in the previous sub-section (vowel epenthesis).This was intended to break up cluster consonants that were not recognized in Tonga. However, the insertion of the vowel [u] in bilabial clusters [labial+/u/] affected 'proper' approximation of syllables negatively, which is called "incorrect approximation of the quantitative prosodic features on the word" (John 1984:50). This, inturn, affected proper pronunciation of English loans in the environment [labial + u].This ultimately affected what Chimhundu (2002:185), refers to as "correct approximation of isolate forms constituting the loan word". For purposes of correct pronunciation, native bilinguals deleted the epenthetic vowel [u]. Deletion can be defined as the removal of a vowel as apposed to epenthesis, which is insertion of a vowel (John (2000:54). This process of deletion can be demonstrated as below:

Figure 66: Breaking the /b/ cluster

1. Bilabial stop /b/cluster

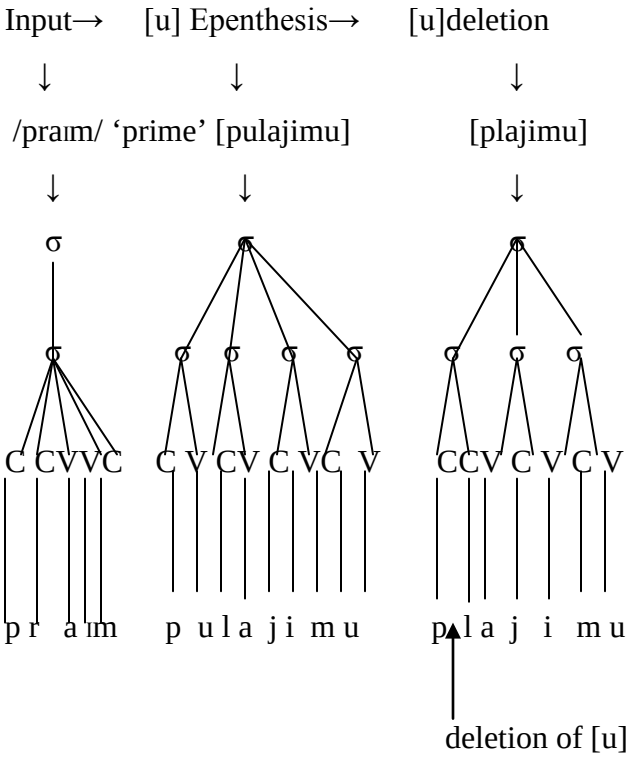


The above diagram shows that the epenthesis of the vowel [u], in the environment [bilabial + u] was intended to handle the cluster consonant combination /br/. The insertion of the vowel [u] alters the approximation of isolate forms /blu/ to [bulu]. This is because /blu/ has one syllable (CCV), while [bulu] has two syllables (CVCV). However, the change in syllable-timed rhythm affected pronunciation of the syllable. According to Chinhundu (2002:219) pronouncing words accurately means 'correct' approximation of their isolate forms. By inserting vowel [u] in the cluster /bl/, means that the duration of the syllable timed rhythm is affected since [blu] is one syllable and [bulu] has two syllables. Articulation of the syllable [bulu] becomes different from the English version /br/. In the Tonga linguistic environment, the liquid trill /r/ was substituted by another liquid [l]. Both /l/ and the trill [r] are alveolar. In order to correct the problem of incorrect approximation [bulu], the Tonga bilinguals deleted the epenthetic vowel [u], hence [blu].

According to Crowhurst (1993:70), this is called loan blend or what Chimhundu (2000) refer to as incomplete adaptation for purposes of accurate pronunciation. However, the Tonga monolinguals prefered [b***u***lumu] rather than *[blumu]. Though 'correct' articulation was maintained on the word *[blumu], Tonga syllable well formedness (grammaticality) was affected, (/bru:m/> [bulumu]> *[blumu]). The choice in this context was between 'correct' articulation and 'correct' grammar.

2. Bilabial stop[p] cluster

Figure 67: Breaking /p clusters

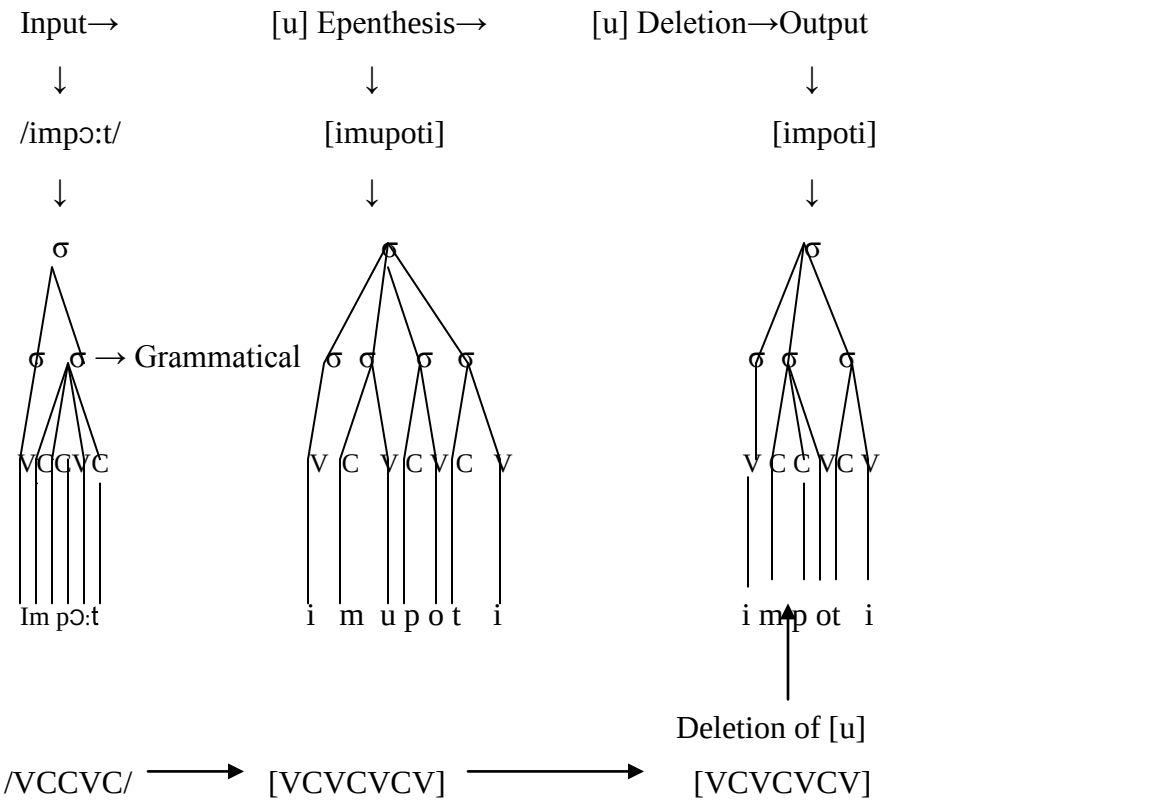


/CCVC/ → [CVCVCVCV] ⟶ *[CCVCVCV]

In this particular example, the bilabial oral stop [p] cluster was handled by the epenthesis of the back, high and rounded vowel [u], in the environment [bilabial, p +/u]. This was the grammatically accepted nativisation version, in Tonga. However, the presence of the vowel [u] affected correct pronunciation, as by the native English speakers. The existence

of the vowel [u], introduced an additional prosodic segment, [**u**], which is absent in the English version /**pr**aɪm/ 'prime'. To articulate the word [p***u***lajimu] as it was done by the English native speakers, there was need for the removal of the epenthetic vowel [u]. This is demonstrated by the output [plajimu]. Tonga syllable wellformedness is affected, [CVCVCVCV]>[CCVCVCV]. [pl] is not a complex consonant in Tonga and applying unitary treatment of consonants is not possible, since [p] and [l] can not be combined, hence a cluster. This is not acceptable in Tonga, hence incorrect grammar but correct approximation. The Tonga grammatical rules are violated in the process of achieving correct pronunciation.

Figure 68: Breaking the bilabial /m/ cluster



In the diagram above, nativisation of the English word /impɒt/ required the epenthesis of the high, back and rounded vowel [u]. The existence of this vowel on the bilabial cluster /mp/ serves to break the cluster, since it is not acceptable in Tonga. Epenthesis of the

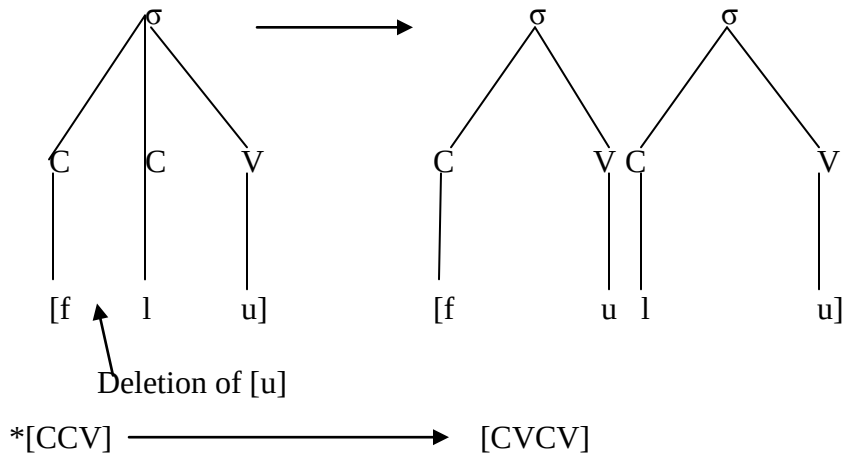
vowel [u] is grammatical in the Tonga, language [labial+/u/]. In Tonga any syllable should have a peak, which is a V-element of the CV tier. However, pronunciation of the word with an additional vowel segment [u] affects syllable pattern, [VCVCVCV]>*[VCCVCV], hence 'incorrect' pronunciation in the English version but correct syllable structure. This therefore means that the presence of the peak, [u], to break the bilabial cluster [mp] affected proper pronunciation. In this regards, the bilingual Tonga-English speakers deleted the vowel [u], such that the output, in this [bilabial +u] environment, becomes *[impoti]. This output is grammatically wrong, *[impoti], but necessitates 'correct' approximation of the English prosodic features, on the word /impɔːt/ 'import'. Other examples are as follows:

1. [u] deletion [m+u]: 'import'/impɔ:t/ →[u]epent→ [imupoti]→met[u]→*[impoti]
2. [u] deletion [b+u]: 'broom' /bru:m/→[u]epenthesis→bulumu]→met[u]→*[blumu]
3. [u] deletion [p+u]: 'prime' /praɪm/→[u]epenthesis→[pulajimu]→met[u]→*[plajimu]

4. Labio-dental [f] cluster

In the environment characterized by a labio-dental cluster, epenthesis of the vowel [u] was intended to break the cluster. This resulted in phonologically well-formed syllables on the nativised word. However, for Tonga-English bilinguals, correct grammar meant 'incorrect' pronunciation of the word. In order to achieve proper pronunciation of the labio-dental cluster [f], deletion of the epenthetic vowel [u] was done. The result was a grammatically 'incorrect' CC sequence but correct pronunciation as done by the native English speakers. Deletion of the epenthetic vowel [u] in the phonetic environment [labial+u] is demonstrated by illustrated below:

Figure 69: Vowel Deletion

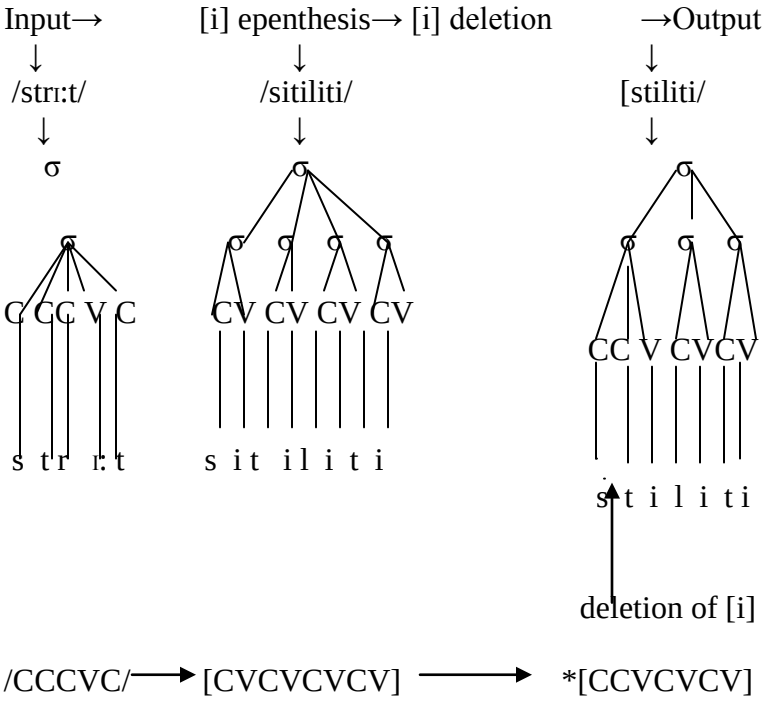


Deletion of the high, back and rounded vowel [u] in the environment [labial + u], [f+/u/] results in an ungrammatical construction [flu] in the Tonga linguistic environment. The pronunciation in the English version /flu:/ is the same as that of the Tonga version [flu]), hence what Chimhundu (2002:219) refer to as 'pure' articulation. However, incomplete nativisation (loan blend) is ungrammatical in Tonga.

5.2.6.2 [Coronal + /i/] Environment

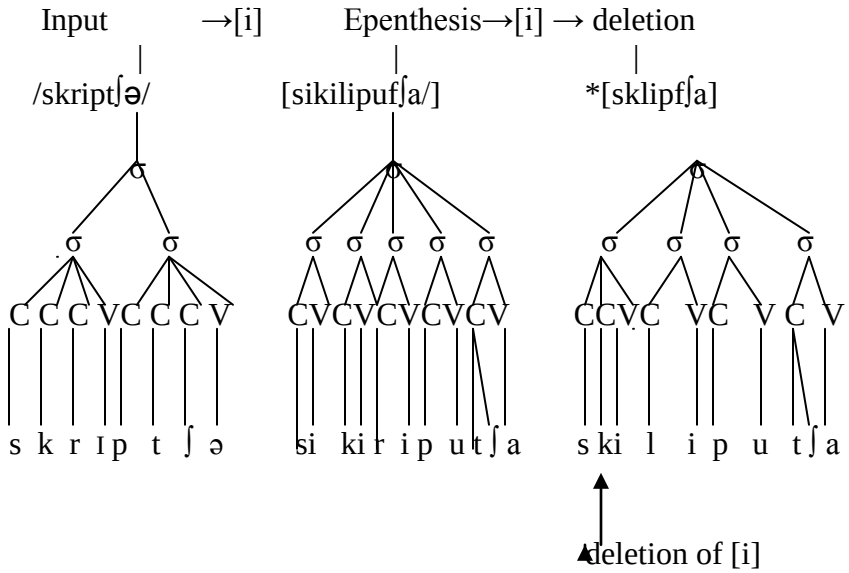
In the [cor + /i/) phonetic environment, there are only three clusters namely, [t], [k] and [s] cluster. Epenthesis of the front, high vowel [i] was done by the Tonga native speakers to make sure that the output (loans) was grammatically accepteable in the Tonga language. Contrary to this, deletion of the front, high and unrounded vowel [i], by the Tonga-English bilinguals, was intended to 'ease' pronunciation. This can be demonstrated as follows:

Figure 70: Alveolar stop [t] cluster



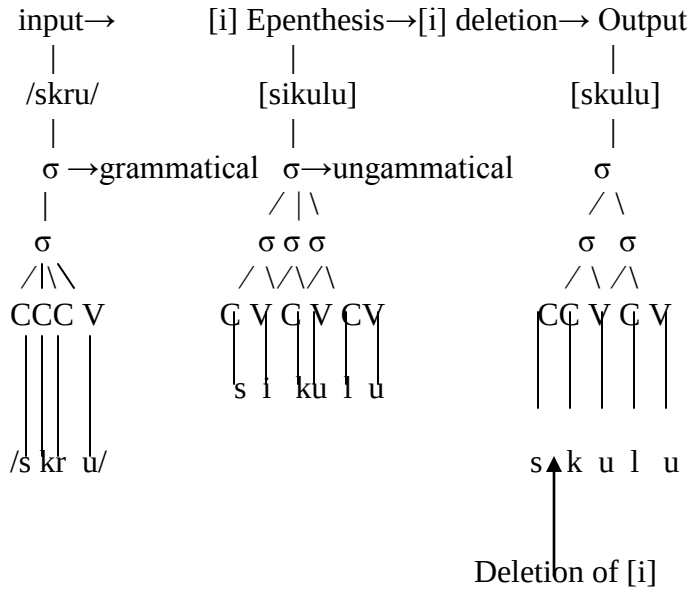
The monolingual Tonga speakers nativised the English word /strɪ:t/ by epenthesising the high, front vowel [i] onto the alveolar cluster /st/. The result was a grammatically correct phonological CV-sequence. The problem was that the nativised version lacked proper pronunciation as could be expected by the English speakers. In the Tonga linguistic environment, [st] is a cluster, not acceptable grammatically. Bilingual Tonga speakers may choose not to insert [i] on the same word. This made the grammatical pattern on the word *[stiliti] wrong. This is because Tonga does not recognize cluster consonants *[st]. It only accepts complex consonants, considering Chimhundu's (2002) unitary treatment of segments. However, the pronunciation was similar to that by the English native speakers, making the nativised word approximated correctly. This is what Abdul (2002:50) refers to as incomplete nativisation of words.

Figure 71: Velar stop /k/ cluster



In the velar environment, the rule [cor + i] was applicable to handle the velar cluster consonants. This is because both consonant [r] and vowel [i] are coronal. Epenthesis of the vowel [i], word-medial epenthesis, was done by monolingual native Tonga speakers. These could hardly pronounce the cluster /skr/ without vowels in between them. The insertion of the vowel [i] breaks the cluster /skr], making the nativised version acceptable in the Tonga phonological environment. This way, the correct pronunciation of the word was sacrificed. On the other hand, the bilinguals nativised the same word by deleting the same vowel [i]. The output was a wrong segmental sequence [skr], a cluster that is unacceptable in Tonga. In this particular context, grammar was sacrificed for correct pronunciation. The aim was to come up with the nearest possible approximation of the English version. According to Babie (1999: 87), the approximated version (English) is the ‘control version’, since it is the ‘norm’.

Figure 72: Alveolar Fricative [s] cluster



Deletion of vowels for purpose of achieving ‘pure’ articulation affects (negatively) grammaticality of the output, as shown by the above diagram, where vowel [i] was deleted from the alveolar fricative cluster /sk/. The Tonga grammar was affected but the articulation of sounds in Tonga became similar to that of English native speakers. The syllable timed rhythm of English and that of Tonga are similar, hence ‘pure’ articulation. However this situation is referred to as ‘partial adaptation’ or ‘loan blend’ (Zivenge 2005:40).

The problem with that was the existence of an unacceptable cluster (alveolar fricative cluster) on the output. The scenarios below demonstrate this concept:

[Labial + u]: /br/→*[blumu] ‘broom’
/pr/→ *[plajimu] ‘prime’
/mp/→*[impoti] ‘import’
/fl/→ *[flu] ‘flu’

[Coronal + i]: /st/→*[stiliti] ‘street
/sk/→*[skulu] ‘srew’

The asterisk (*) shows that the above-mentioned sequences are ungrammatical, though 'purely' articulated or pronounced. Deletion of the peak vowel simply affected the organization of the syllable nodes, CV-tiers and segments, for example, the word [sikulu] has three syllable nodes and a simple onset consonant [s], followed by a simple peak. This sequence is grammatical in Tonga (appropriate Consonant-vowel-tier). Deletion of the high, front and unrounded vowel [i], reduced the number of syllable nodes by one and a cluster onset [sk] was also created, affecting the CV-tier and the consequencing segments, thus from [sikulu] after [i] vowel epenthesis, to [skulu], after vowel [i] deletion, hence two syllable nodes result. The segmental changes from three to two syllable nodes demonstrate an ungrammatical change. The segments consequently went down from six to five.

The syllable timed rhythm becomes the same for the SL and TL or the loaner and receiving language respectively. Chimhundu (2002:219), describe the SL as the loaner language and the TL as the receiving language. In this case, it is English and the Tonga language, respectively.

The syllable structure was affected [sikulu]>[skulu], since the Tonga syllable is characterized by an onset and a V-element [CVCVCV] and the nativisation output by bilinguals was /CCVCV/. The onset was rather optional (peripheral) in Tonga, whilst the V-element (peak) was compulsory. Dropping of [i] created a syllable [sku], without a nucleus between cluster consonants /sk/, hence ungrammatical but 'pure' pronunciation was achieved. The CV-tier was unacceptable in the Tonga phonological environment. There was a CV-tier, characterized by a cluster onset [skr], made up of heterorgenic consonants [s], [k],[r] and the peak [V].

Cluster consonants are not permissible in Tonga, which is the case with other Bantu languages in the same family such as Shona, Bembe, Kihaya. Gikuyu, Kinyarwanda and Chewa. As for the cluster [sk], [br] and so on, it can be argued that under the influence of native Tonga bilinguals, the Tonga CV-sequence was affected. This created ungrammatical cluster consonants on the syllable *[sku] (CCV). Native Tonga phonology

does not allow cluster consonants because they are heterorgenic C-elements. During deletion of the epenthetic vowel, [i], the heterorgenic C-sequences become a cluster of consonants. This type of nativisation is called partial nativisation ([sku]), for complete nativisation results in [siku]. An important observation was that the loan word was rephonologized to be accepted grammatically at the expense of correct approximation.

The prosodic pronunciation of the vowel was undermined by Tonga bilinguals, to satisfy 'pure' pronunciation. In this regard, the native Tonga bilingual speaker's 'pure' pronunciation was enhanced by way of introspective examination of their English second language. Ibdoil (2004:18) refers to this as "interference of the native language by the second language". This means that characterizing C-and V-sequences was rather controversial, since partial nativisation was viewed negatively by monolinguals speakers. Bilinguals however, also viewed incorrect approximation as an inaccurate translation of the English words. For this reason, it may be understood that the use of cluster consonants was only done to provide a platform for 'pure' pronunciation, whilst breaking the cluster consonants was rather aimed at achieving the correct Tonga syllable typology. According to Chimhundu (2002:185), such a version (vowel deletion) is moving away from 'purity' in as for as grammar is concerned but 'pure' in as far as pronunciation is concerned.

5.2.7 Handling Sounds not recognized in Tonga

Sapir (1964:128) says that languages are loosely equivalent. This means that languages, to a greater extent, have slightly different inventories, with some equivalence. There were certain sounds existing on English loans that were not recognized in Tonga. Two approaches were adopted to handle this problem, namely substitution and deletion.

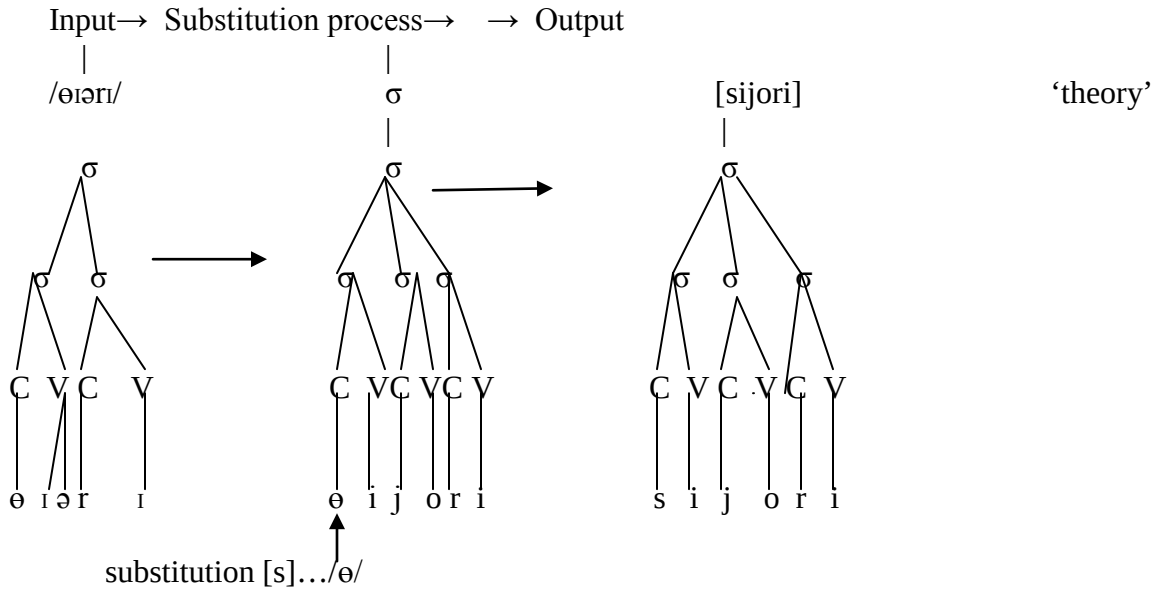
5.2.7.1 **Substitution**

Segments that were not recognized in Tonga were replaced by those that were recognized. According to Ibdoil (2004:20), substitution refers to the replacement of one linguistic item by another at a particular place in a structure. There were two ways in which substitution was done, in the process of nativising English loans entering into Tonga. There was consonant and vowel substitution.

5.2.7.1.2 Consonant Substitution

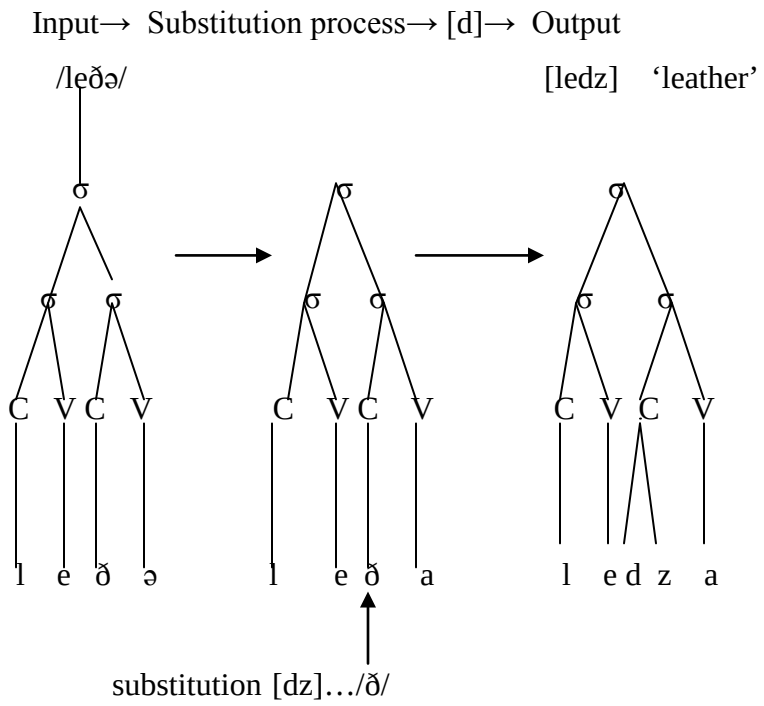
Substitution was done to replace English consonants that do not exist in Tonga. There were a number of English consonants that do not exist in Tonga, namely /ɵ/ , /ð/, /ŋɵ/, /ns/, /r/, /nɵ/ and sj/. Consonant substitution can be demonstrated as follows:

Figure 73: English /ɵ/>Tonga [s]



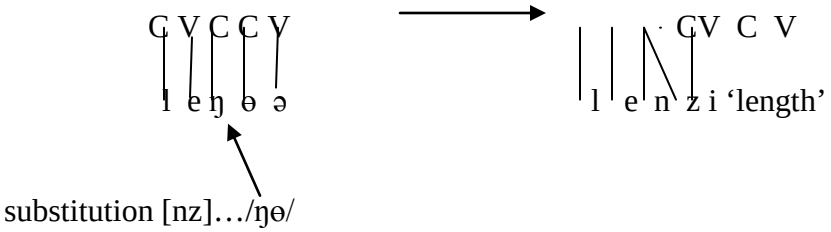
The above demonstration shows that the English /ɵ/ is substituted by the Tonga consonant [s]. This is because both /ɵ/ and /s/ are alveolar sounds, as a result they can substitute each other. They are regarded as equivalences. The word /ɵɪərɪ/ therefore becomes [sijoli] in Tonga.

Figure 74: English /ð/>Tonga [dz]



Tonga language does not have the consonant sound /ð/. The Tonga native speakers handled this problem by finding an equivalent consonant. In the place of /ð/, they inserted [dz] which is the Tonga equivalent. The [dz] was the most applicable since the English /ð/ is a voiced alveolar sound, [dz] have the same feature values, hence the close approximation of /ð/ in Tonga. The word /leðə/ therefore changes to become [ledza] in Tonga.

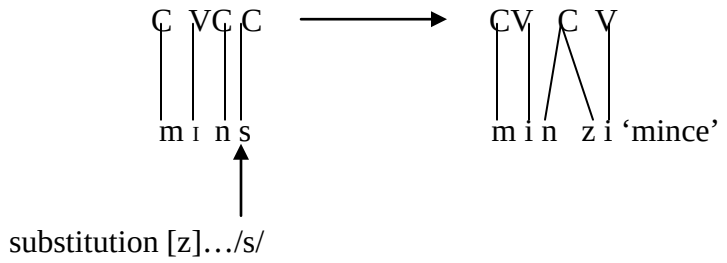
Figure 75: English /ŋɵ/>Tonga[nz]



From the above illustration, Tonga does not have the consonant /ŋɵ/ and all English words with such a consonant were nativised by first substituting the English /ŋɵ/ with [nz]. The underlying principle which accounts for the choice of the equivalent in Tonga

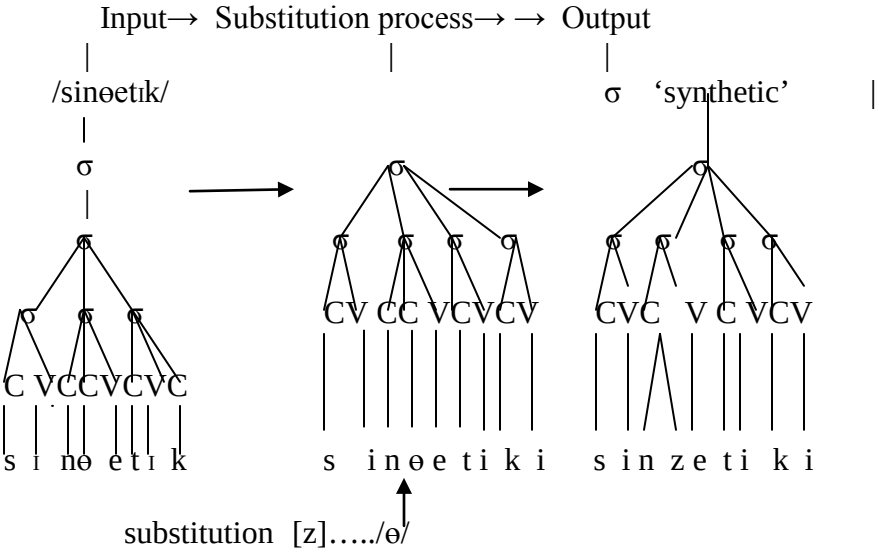
was that only those consonant sounds that share the same feature values can substitute each other, inparticular place of articulation. In this line of argument, /nθ/ and [nz] are both [+nasal], [+voice] and [+alveolar].

Figure 76: English /s/>Tonga[z]



The above demonstration show that /s/ was replaced by [z] in a prenasal [n] environment. Considering the principle of feature values, the two /s/ and [z] share similar features. The featutres are [+alveolar] and [+ cor.]. This makes it possible for Tonga speakers to choose [z] in the place of the English /s/.

Figure 77: English /θ/>Tonga [z]



The above illustration shows the process with which substitution took place between English and the Tonga language. The consonant sound /nθ/ was not acceptable in Tonga and in its place the complex consonant [nz] was put. Replacing /nθ/ with [nz] was made possible by considering sounds in Tonga that had a similar approximation as that of /nθ/. Selection of sounds that depicts

/nɵ/ approximation was achieved by inferring into feature matrices of sounds. It was realized that the alveolar complex consonant [nz] was the best since it shares the highest number of features values with /nɵ/, namely; [+alveolar], [+nasal], [+cor] and [+voice].

The following was the guide line:

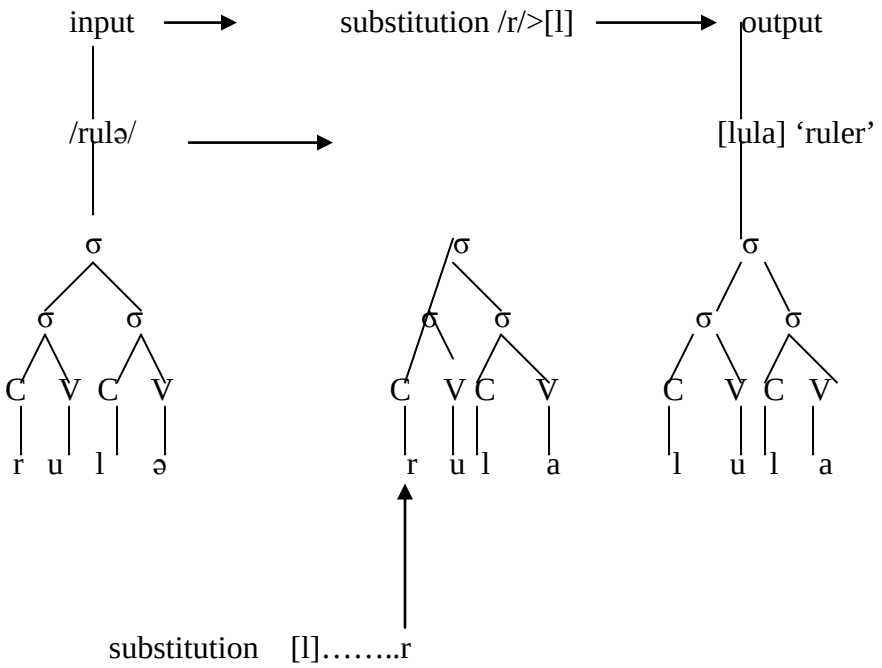
/nɵ/: [+ voice, + alveolar, + coronal]

[nz:] [+ voice, + alvoelar, + coronal]

The above-mentioned scenario explains that /nɵ/ and /nz/ are sounds that share the same place of articulation (alveolar ridge). Thus it follows that they can substitute each other. This also means that feature values determine the choice of the substitute consonant.

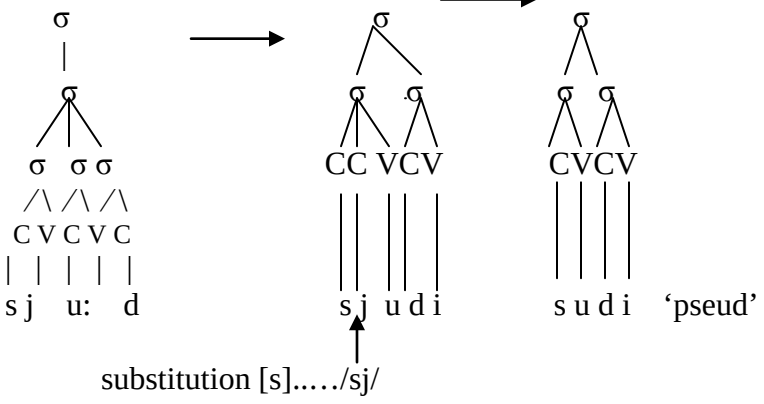
Substitution of English consonants, not recognized in Tonga, with the Tonga equivalent was not done randomly but rather systematically. The major consideration was that substitution was only possible among consonants that share similar distinctive features.

Figure 78: English /r/ >Tonga [l]



The simple English consonant /r/ is not recognized in the Tonga linguistic environment and therefore was substituted by another one which shares similar feature matrices, existing in the Tonga sound inventory. Since the trill /r/ is a liquid and produced at the alveolar ridge, it follows that its close substitute in the Tonga environment is the liquid [l], which is also an alveolar sound. Both /r/ and [l] are voiced consonant sounds, hence [l] was used to substitute the liquid trill /r/. The alternation of /r/ and [l] is however common cross-linguistically (John 1984:18).

Figure 79: English /sj/>Tonga [s]



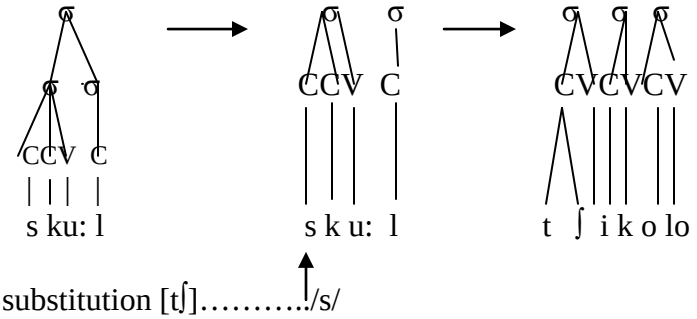
The cluster consonant /sj/ is not acceptable in Tonga, therefore is substituted by its close equivalent in Tonga, which is [s].

There are other consonants that were found in both English and Tonga but restricted to certain phonological environments. This means that there were consonants common to the two languages but may have been found used in certain specific English phonological environments that were not acceptable in the Tonga language. This also means that these consonants were substituted by those applicable in those particular contexts. There was /s/ which was found in variant phonological environments but exist in both English and Tonga sound inventories.

8.1. English /s/ cluster >Tonga [tʃ]

The sound /s/ exists in both the English and Tonga phonological inventories. However, English uses /s/ as both a simple and cluster consonant whilst Tonga restricts it to the simple consonant. This means that using [s] in a cluster was not allowed. In such situations a Tonga equivalent was sought. The following diagram demonstrates this substitution:

Figure 80: English /s/> Tonga [tʃ]



The sound /s/ exists in both Tonga and English inventory. The consonant /s/ is found with English nouns that fall in class 7, in the Tonga language. However, Tonga does not allow the use of /s/ as onset to the prefix syllable. Instead, the Tonga speakers use [tʃ], as an onset consonant for the prefix syllable of nouns in class 7. All situations where /s/ was

used as onset of the prefix for nouns in class 7, the Tonga complex consonant [tʃ] was used. The following are some of the examples that explain the same behavior:

/st pɔː/ 'store' > [tʃitolo]
/stul/ 'stool/ > [tʃitulo]
/skɜːt/ 'skirt' > [tʃiketi]
/stæf/ 'staff' > [ʃitafu]

In the above [s] clusters, (Class7 Prefix), the Tonga consonant /s/, is restricted from performing the function of a prefix. When words with /s/ were adopted into Tonga, the /s/ was replaced with [tʃi], which is the Class 7 prefix in Tonga. Since the two share similar distinctive features, [-voice] and [+cor], they therefore qualify to be equivalent substitutes. The following demonstration elaborates this conception:

/s/, [tʃ]: [-voice, +alveolar, + coronal]

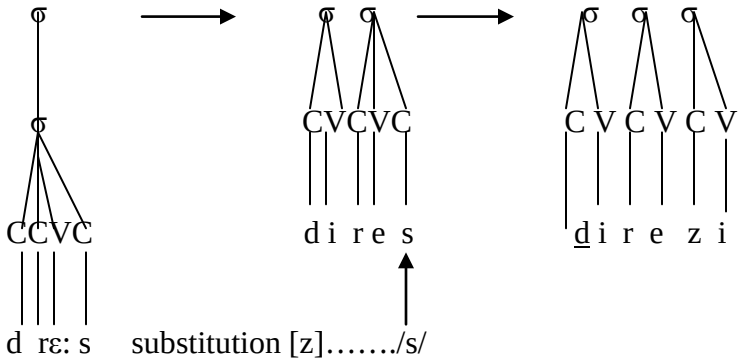
The two above substitutes are a sibilant [s] and an affricate [tʃ]. This accounts for the substitution of the English /s/ with the Tonga [tʃ] of class 7. The constraint here is not that the sound /s/ does not exist in Tonga but rather it is constrained in the prefix environment in which it exists on the English word.

8.2. Handling /s/ as a coda

The sound /s/ can again exist as a coda in English syllables. One of the examples of such syllables is /drɛːs/ 'dress'. The same alveolar /s/ exists in both Tonga and English. However, since it is a coda in the phonological environment where it is preceded by a voiced consonants [d] and [b], it follows that the voiceless alveolar /s/ assimilates the voicing configurations of the preceding [+ voice] consonant in the sequence CVC. In this regard, the voiceless /s/ adopts voicing feature value of the preceding consonant, thereby

changing into a voiced, alveolar fricative [z]. This implies that in all the English words with the voiceless, alveolar, fricative /s/ preceded by a voiced consonant [d] or [b], the sound /s/ was replaced by [z] as shown below:

Figure 81: English /s/>Tonga[z]



From the illustration above, the underlying principle is not that /s/ does not exist in Tonga but rather it is restricted to exist as onset on the prefix (class 7) syllable. This means that the substitution of this nature was systematic in Tonga. Only sounds that share similar distinctive features with sound /s/ could replace /s/, as follows:

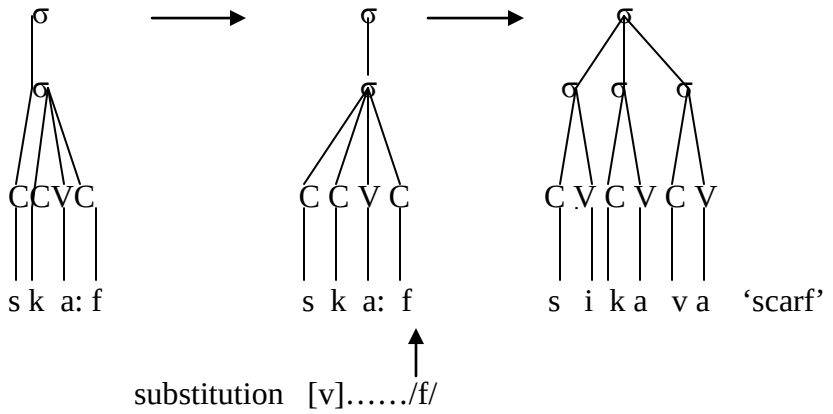
/s/:	[+ alveolar]
	[+fricative]
	[+coronal]
	[-syllabic]
[z]	[+alveolar]
	[+fricative]
	[+coronal]
	[+voice]
	[-syllabic]

Since the substitute of /s/ should be a consonant with all distinctive features in common with it then accpunts for why [z] is the only consonant acceptable as a replacement of /s/ in Tonga, as demonstrated above.

9.English /f/>Tonga[v]

Another phonological situation where a sound common between English and Tonga is unacceptable is with the labiodentals /f/ as a coda in English words. When the labio-dental /f/ exists in a syllable sequence where it is an onset and all the other onsets of syllables are voiceless, it is realized as a [z]. It is substituted by another similar consonant sound that is voiced (dssimilation). The principle is not that the sound /f/ does not exist in Tonga but the problem is that the Tonga language constraints the existence of [f] as onset consonant of the last syllable in nouns belonging to class 7. This is normally when the preceding consonant is [-voice]. While the substitution of the alveolar /s/ requires the preceding consonant to be voiceless, the substitution of the labio-dental /f/ requires that the substitute consonant should be [-voice] as shown below:

Figure 82: English /f/>Tonga[v]



As a result, the labio-dental /f/ can be substituted by a voiced consonant, articulated at the same place and in the same manner, [+ labial]. This means that the labio-dental, voiceless /f/ in the Tonga environment is substituted by the labio-dental, voiced sound [v]. This is applicable to words like /ska:f/ 'scarf' which changes to [sikava], where the

sound /f is replaced by [v]. In all situations where the labio-dental /f/ exists preceded by a voiceless consonant for nouns in class 7, it is substituted by [v]. The following is a summary of consonant substitution done by Tonga native speakers to make English loans acceptable in Tonga:

[nz]: /ŋɵ/, /ns/, /nɵ/

[ts]: /ɵ/, /s/

[d] : /ð/

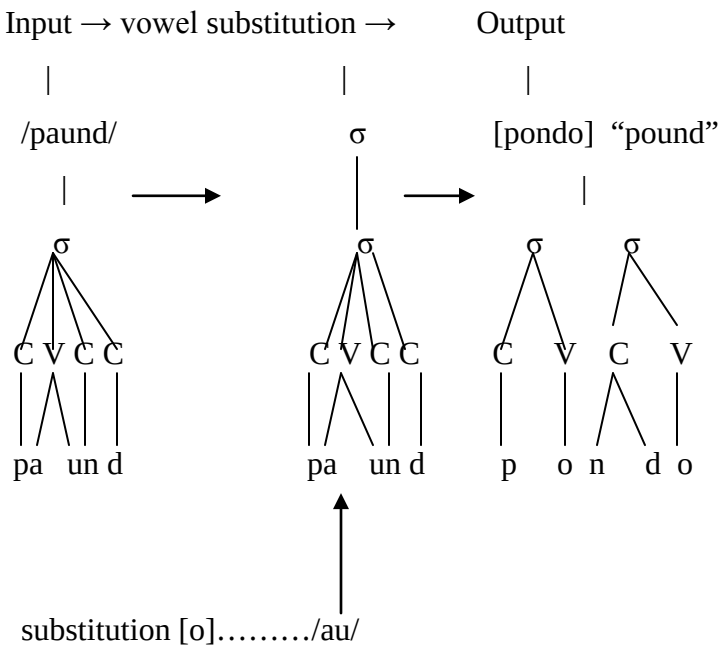
[l] : /r/

[s] : /sj/

5.2.7.1.2 Vowel Substitution

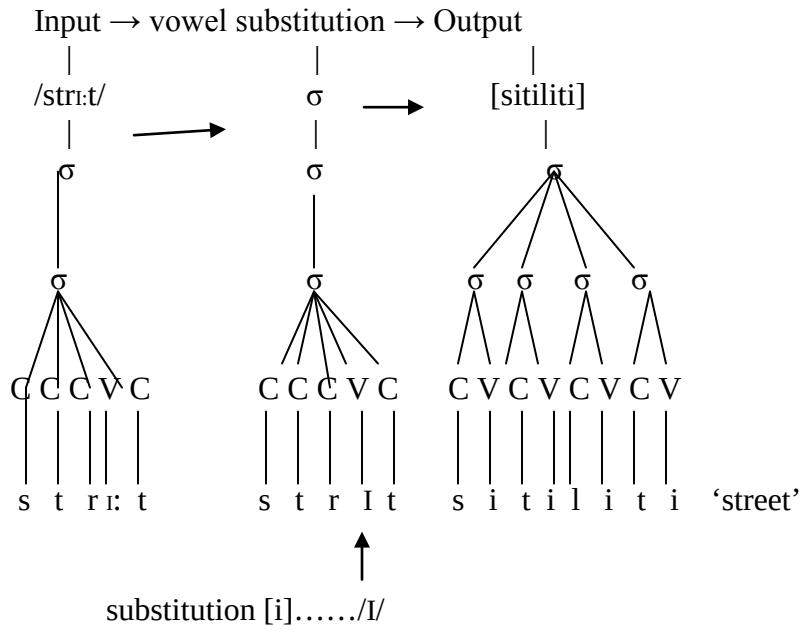
Tonga has a vowel system that is different from that of the English language, in the same way consonants of the two languages differ. Vowels were therefore, substituted in the same manner as consonants, substituting those in the English language that are not recognized in the Tonga language. The major challenge was that English has twenty-eight vowels that include monophthongs, diphthongs and triphthongs (Chimhundu 2002), whilst Tonga has only five simple vowels (Zivenge 2005:47), which were to be equated to the twenty eight, from the English language. This is illustrated by the following demonstrations:

Figure 83: English /au/>Tonga [o]



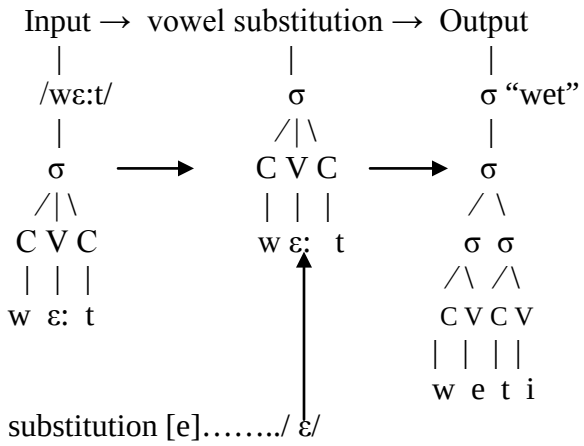
As shown on the diagram, the diphthong /au/ was substituted by the [+back] and [-high], vowel [o].This was primarily because the English diphthong /au/ is not acceptable in Tonga. It was realized that the vowels that were made to substitute each other shared similar feature values. The diphthong /au/ and the vowel [o] are both [-high], [+ back]. This applies to all vowel substitutions done during nativisation. To handle vowels not existing in the Tonga inventory, Tonga native speakers adopt the substitution processes to come up with acceptable sound segments.

Figure 84: English /ɪ:/> Tonga [i]



The English vowel /I/ was substituted by the Tonga vowel [i] in the CV-phonological environment. This was because the two vowels are both [+high], [-back].

Figure 85: English /ɛ/> Tonga [e] vowel substitution

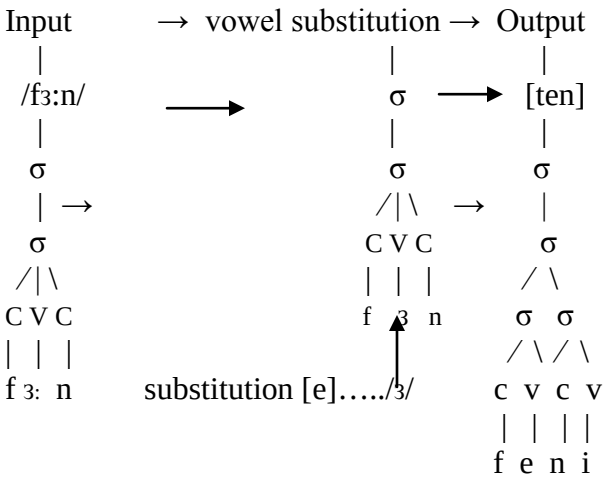


Similar feature values makes it clear how these vowels differ from each other, for instance, the English vowel /ɛ/ and the Tonga [e] made it possible for substitution. The

rule was that sounds sharing similar feature matrices can substitute each other. In this case /e/ was substituted by [e] because they have the following similar feature matrices:

English /e/:	[+ high] →	Tonga [e]:	[+ high]
	[+ front]		[+ front]
	[+ voice]		[+ voice]
	[- round]		[- round]

Figure 86 : Englsh /ɜ/> Tonga [e] vowel substitution



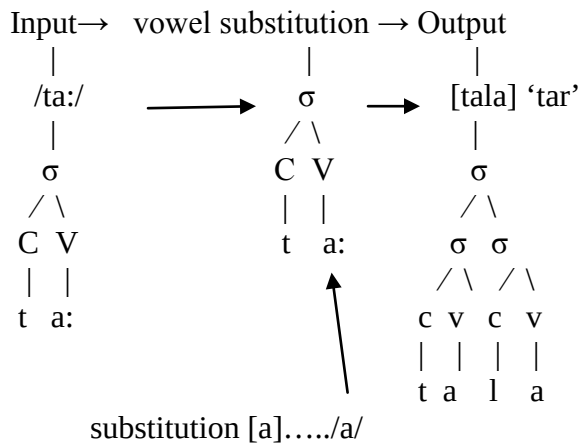
The above two vowels /ɜ/ and [e] are both [+ high], [+ front], [+ voice]. This determines substitution between the English /e/ and the Tonga /e/ in the CV phonological environment. The English monophthong /ɜ/ was therefore, substituted by [e] by the native Tonga speakers.

English /a :/> Tonga [a]

These two, /a:/ and [a], are realized as [- high], [- front], [- back] and these similar feature values made it possible for the vowel [a] to be used in the place of the English vowel /a:/ in the Tonga linguistic environment. However, the English vowel [a] is longer than the Tonga [a].

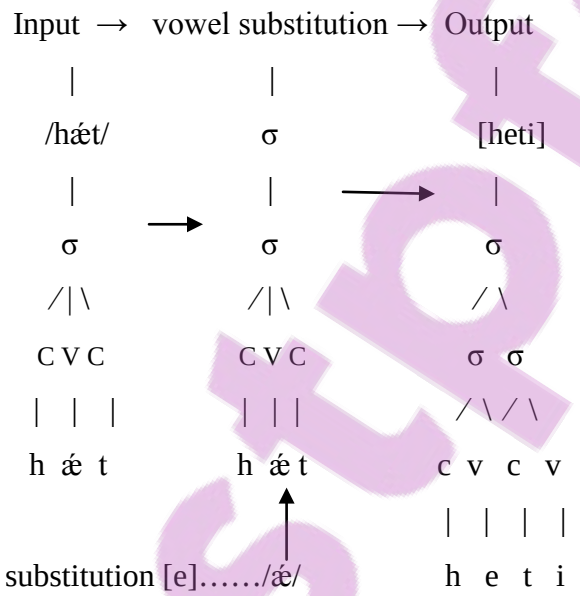
The substitution process is demonstrated as follows:

English /a/>Tonga [a] vowel substitution



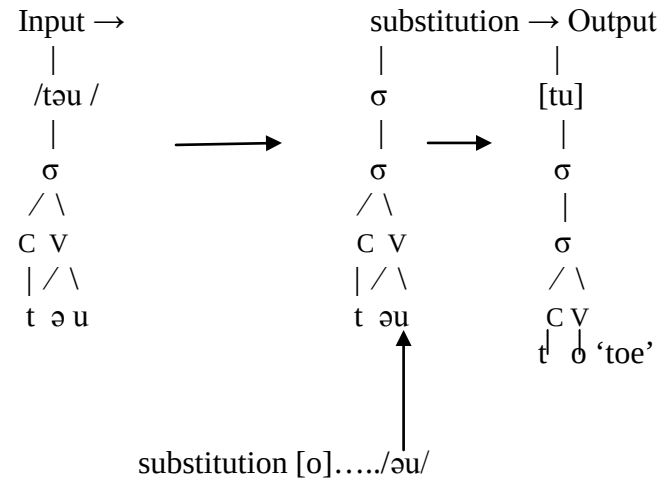
The noticeable change here is from the monosyllabic word to a polysyllabic word.

Figure 87: English /æ/> Tonga [e]



The English /æ/ and the Tonga [e] are both [- back], [- round], hence /æ/ was substituted by [e] in all situations in the Tonga environment.

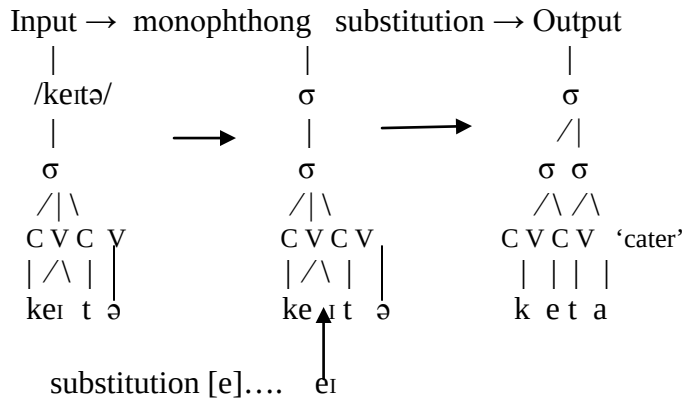
Figure 88: English /əu /> Tonga [o]



The English diphthong /əu/ is closest to Tonga [u] in terms of feature values.These two, diphthong /əu/ and [o] vowel have the following distinctive features matrices:

/əu/ > [u]: [- front]
[+ back]
[+ round]

Figure 89: English /eɪ/ > Tonga [e]



The above word /keɪtə/ ‘cater’ contains a diphthong /eɪ/ and the sequence is not acceptable in Tonga. This diphthong is then substituted by the Tonga vowel [e] in all environments. The substitution had been facilitated by the principle that both vowels, in Tonga and English are characterized by similar feature values: [-back] and [-round].

Figure 90: English /ʌ/ > Tonga [a]

These two, English /ʌ/ and Tonga [a] are characterized by the following feature values: [+ low] and [- back]. Since these share similar features values, substitution was possible as follows:

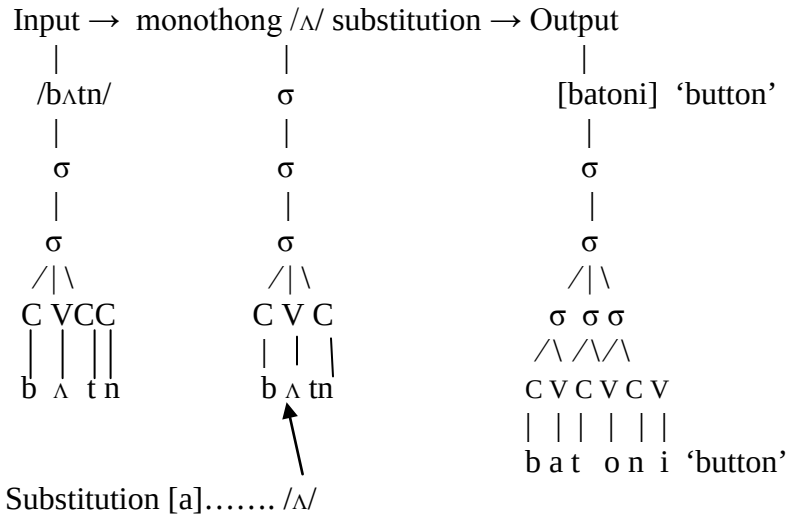
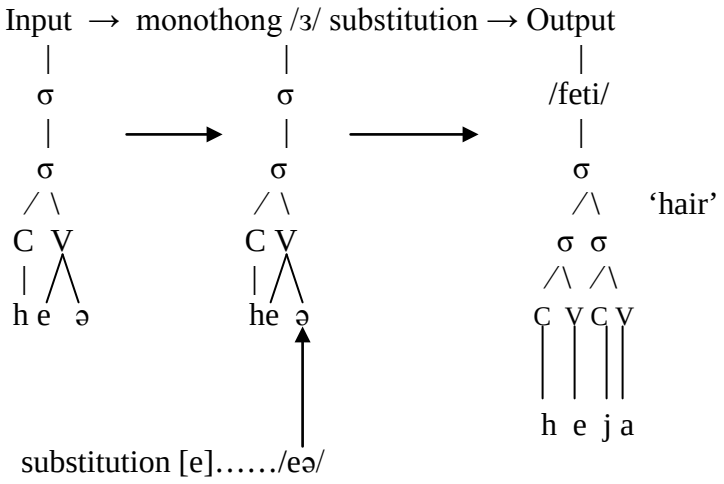
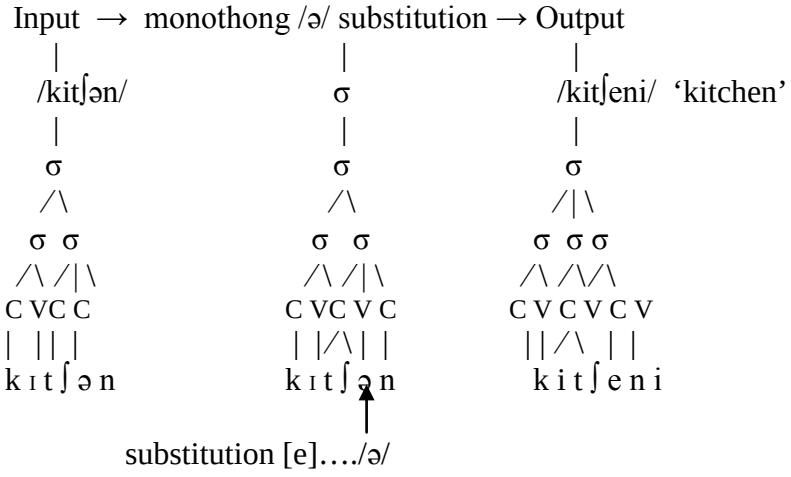


Figure 91: English /eə/ > Tonga [e]



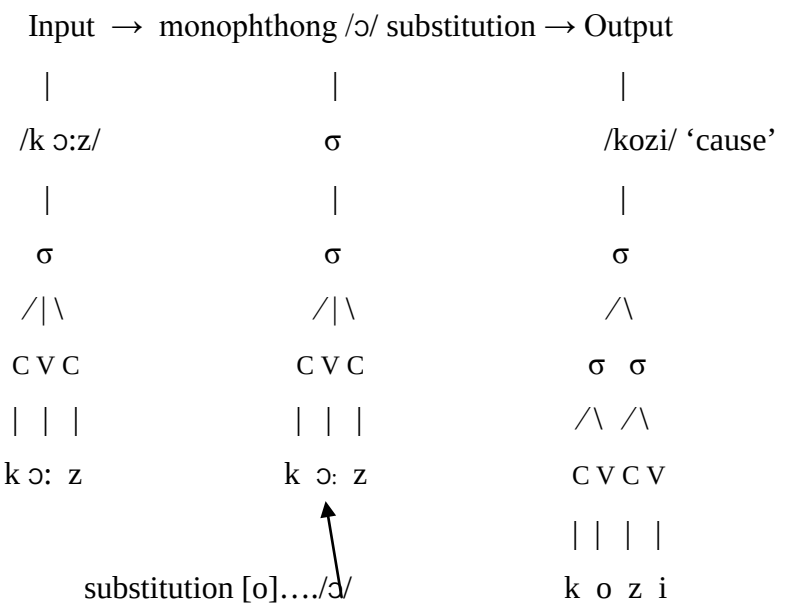
The English /eə/ and the Tonga [e] are both front vowels, the other feature value is that they are [-round], hence can substitute each other. The Tonga therefore opted to use [e] which exists in their inventory, in the place of the English /eə/.

Figure 92: English /ə/ > Tonga [e]



The monophthong /ə/ is front and unrounded, it was substituted by [e] which is its Tonga equivalent, since it is also [- round] and [-back].

Figure 93: English /ɔ/ > Tonga [o]



The monothong /ɔ/ was realized as the vowel [o] in the Tonga language. In any English situation where /ɔ/ was used the Tonga vowel [o] was opted for as shown above, since the two are [+back] and [+round].

Figure 94: English /ə/>Tonga [o]

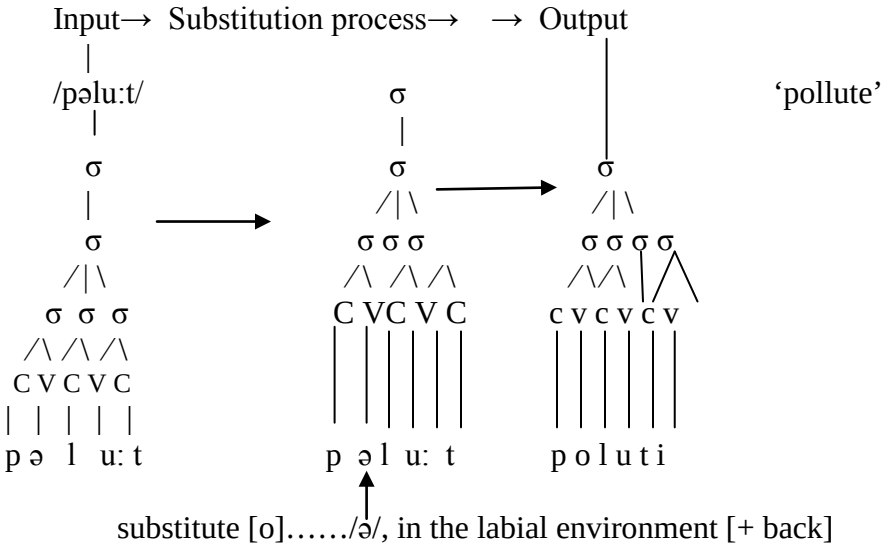


Figure 95: English /ə/>Tonga [a]

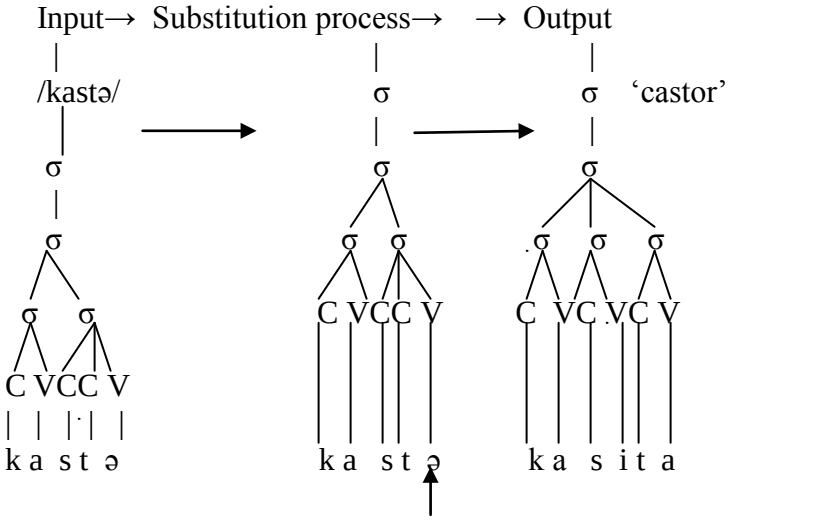
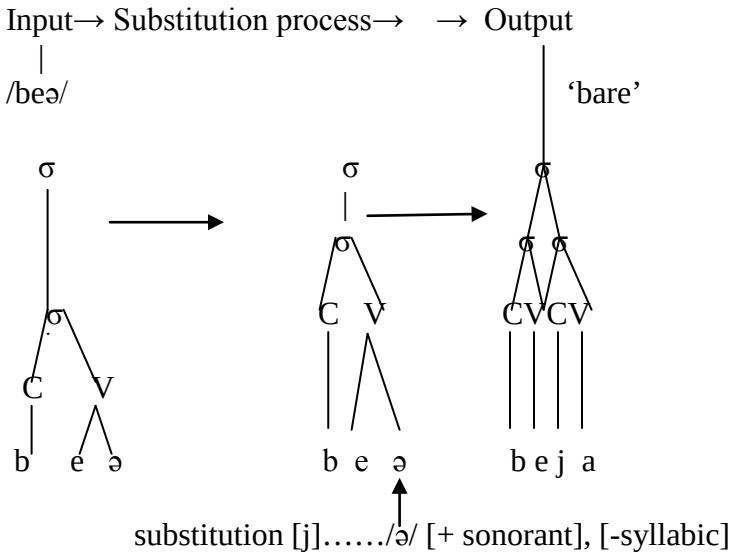


Figure 96: English /ə/>Tonga [j]



97: English /ə/>Tonga [i]

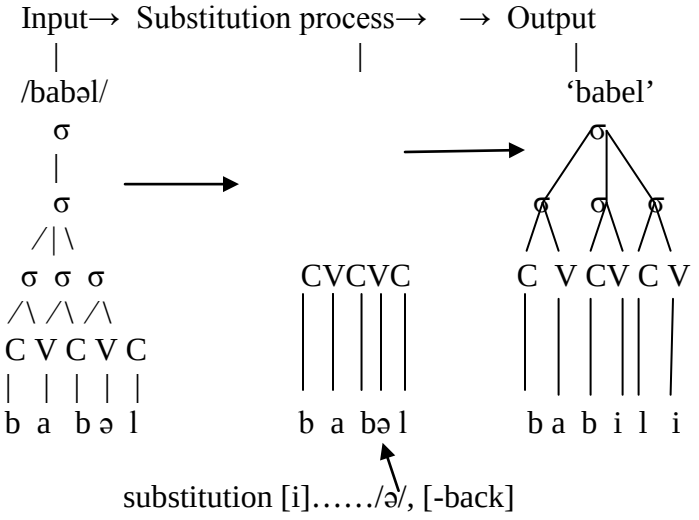


Figure 98: English /æ/>Tonga [a]

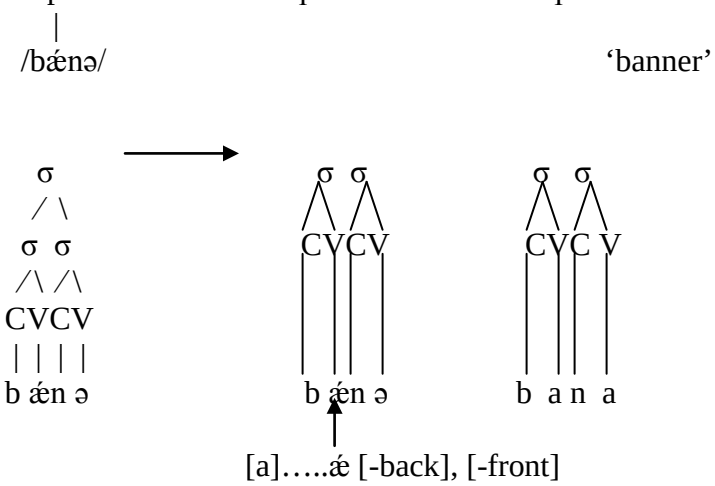


Figure 99: English /ə/>Tonga [u]

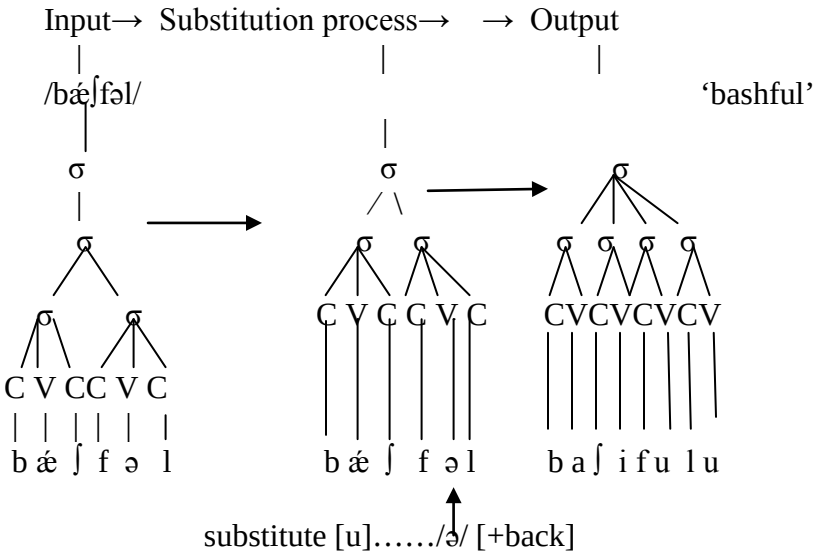


Figure 100: English /au/>Tonga [o]

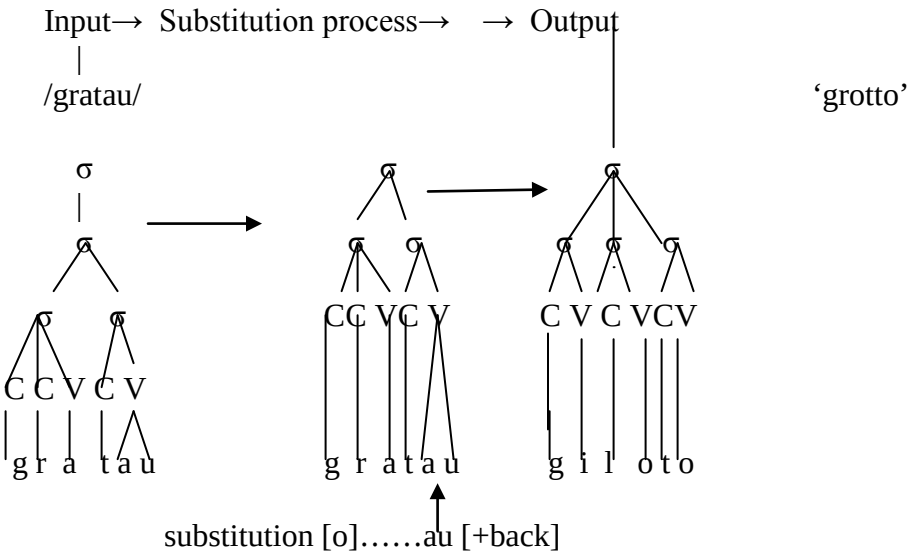


Figure 101: English /əu/>Tonga [o]

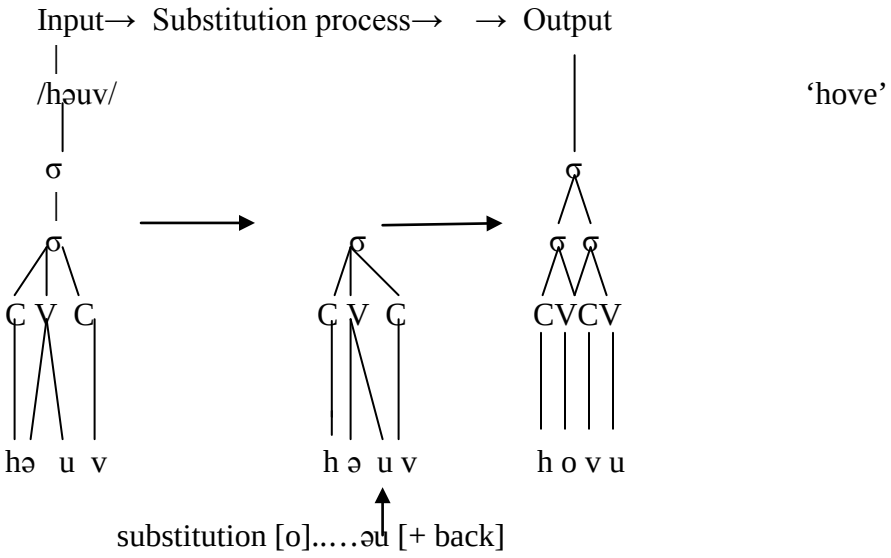


Figure 102: English /a/>Tonga [o]

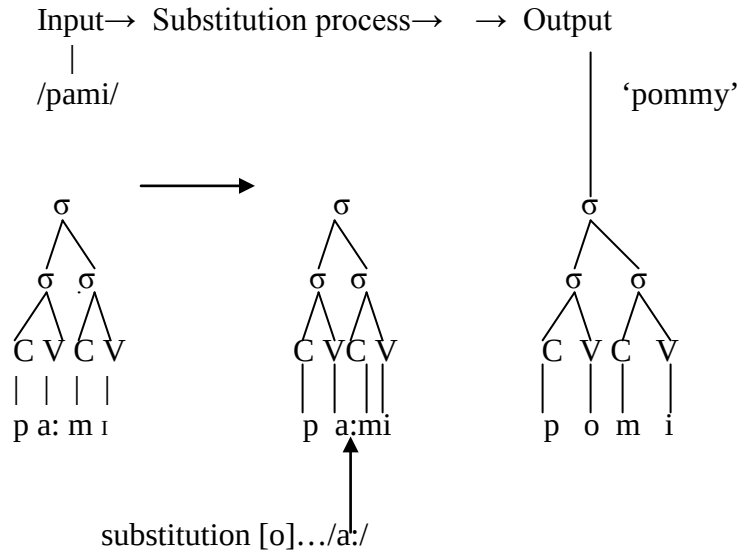


Figure 103: English /oώ/> Tonga [o]

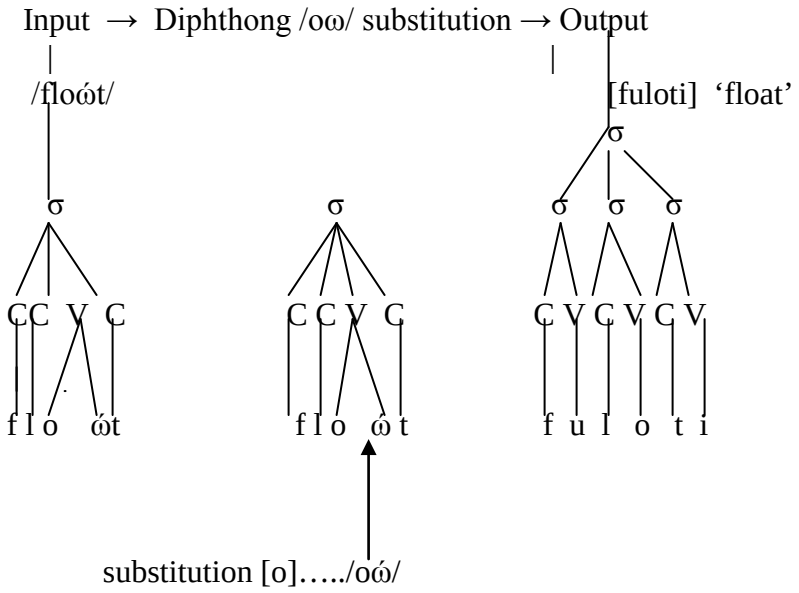
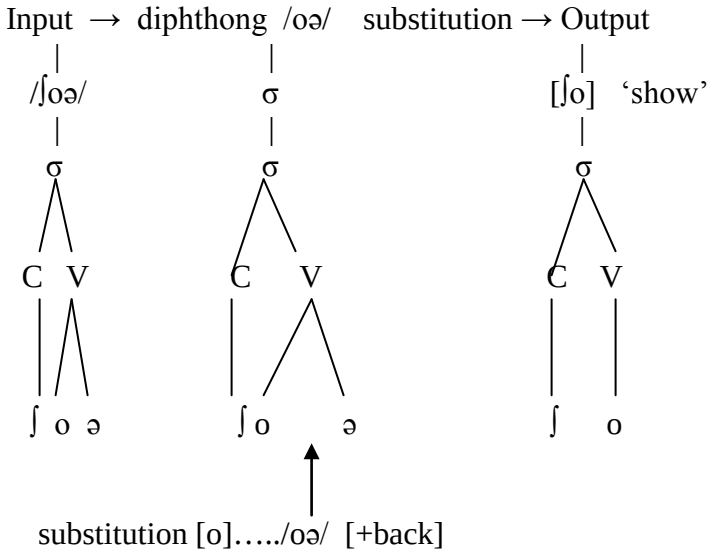


Figure 104: English /oə/> Tonga [o]



According to Chimhundu (2002:158), English has twenty five vowels, including monophthongs, diphthongs and triphthongs. These have been demonstrated from rule 1 to

rule 20. Some of the monophthongs and all diphthongs are not recognized in Tonga and were not substituted by the vowels acceptable in the Tonga linguistic environment. Demonstrations (1-22) illustrate the handling of English cardinal vowels and monophthongs.

This shows that English vowels are more 'elastic' than their Tonga counterparts. The elasticity of vowels refers to the ability of vowels to be realized differently in various different phonolocal environments (Chimhundu 2002:159).

The following demonstrations show the various elasticities of the English vowels and their relations to the Tonga vowels:

/a/ : [ʌ]
[a:]
[ə]
[ǽ]

/e/ : [ɜ]
[ə]
[æ]
[ɛ]
[e]
[eɪ]
[eə]

/i/: [ɪ]
[ə]

/o/: [ə]
[ɔ]
[o]

[ə]

[au]

[əu]

[ʌ]

[a]

/u/: [uώ:]

[u]

[ώ]

[ə]

[uə]

So far, the illustrations, (1-22), demonstrate how the English vowels were handled by the Tonga speakers to make English words fit into the Tonga phonological inventory. The general trend was that the twenty five English vowels (April 2002) were equated to only five pure Tonga vowels. This was not done randomly but rather systematically. The underlying principle was that those vowels that shared similar feature values could substitute one another.

5.3 MORPHOLOGICAL NATIVISATION

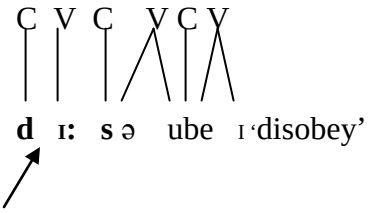
The previous section handles phonological processes that account for various sound and syllable changes in English loans that enter into the Tonga linguistic environment.The current section (Morphological) discusses the morphological processes that account for morphological changes from the English system to suit the Tonga grammar in the process of lexical adaptation.This entails analysing how lexical items change morphologically from the English linguistic environment into the Tonga environment. According to the Lexical Phonology and Morphology Theory (LPM) (Kiparsky 1982:14-44), such changes are at three levels, namely, the base-word, vowel level and affix or suffix level. The first level is characterized by base- words, followed by vowel alteration and the third level is

characterized by a higher order morphological processes, affixation and suffixation. Stages two and three are characterized by derivational morphology, whilst level one is simple baseword morphology. Simple baseword morphology refers to the breaking down of a word into its immediate constituencies. Though the discussion is basically morphological, the discussion will adopt the LPM paradigm, which marries phonology and morphology. This study therefore, uses both phonological and morphological principles in handling morphological units.

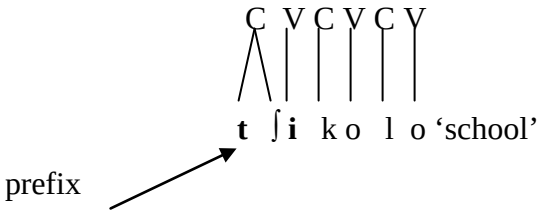
5.3.1 Handling Nouns

English is a language that is characterized by a base-word morphology which is different from that of Tonga. Tonga is generally both prefixal and suffixal language in the same way as the English language. This can be demonstrated as follows:

English Prefixes

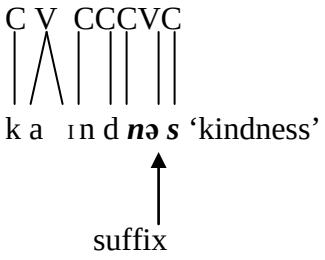


Tonga Prefixes

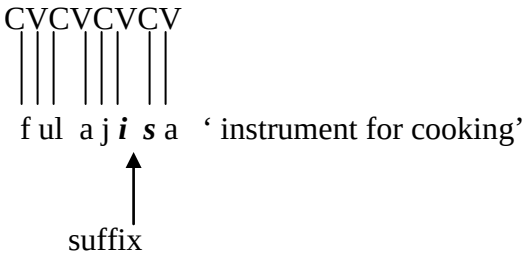


Both English and Tonga are prefixal and suffixal languages. Suffixes for the two languages again are inserted after the base word, as demonstrated below:

English word



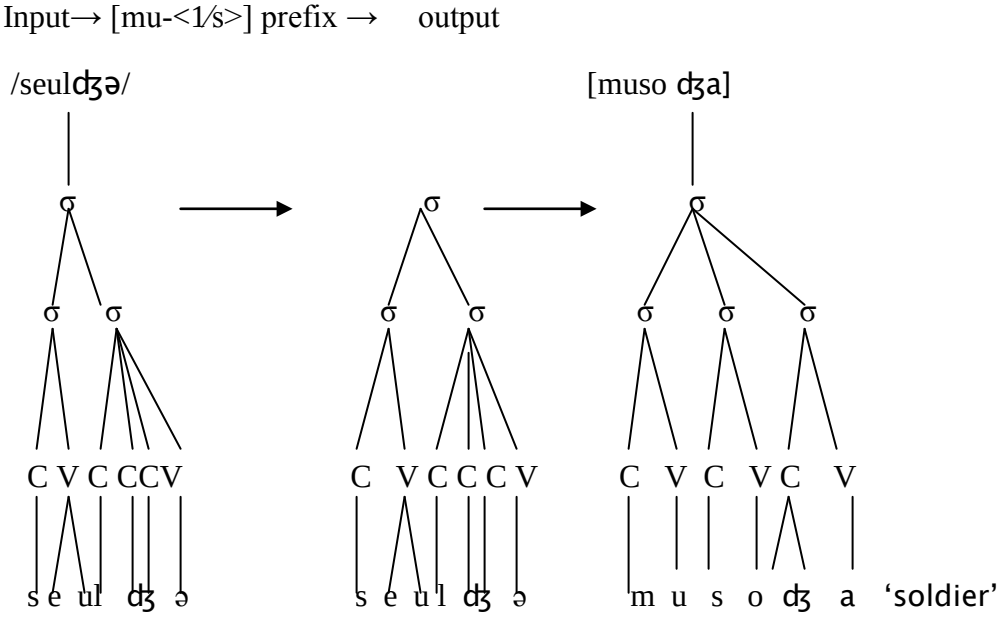
Tonga Word



For both English and Tonga, insertion of suffixes is mostly done after the base word.

However, the way these two languages represent the syllables of the prefixes and suffixes differ, since Tonga has a CV pattern whilst English sometimes has CVC. Noun words entering into Tonga were prefixed (CV) in order to make them acceptable grammatically. This is because all Tonga nouns have prefixes Native speakers therefore inserted prefixes both monosyllabic and polysyllabic prefixes before the English base-word, as demonstrated below:

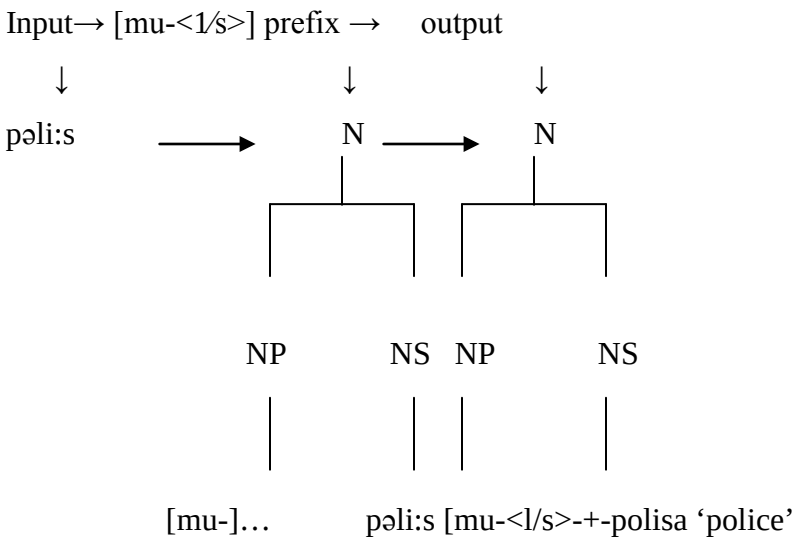
Figure 105: English Syllable



The insertion of [mu-] prefix onto the English word 'soldier' was done because Tonga has monosyllabic prefixes. This means that the morphome [mu-], which is monosyllabic [CV], of class 1, makes the word [musoʤa] 'soldier' to be in noun class 1. The other noticeable phonological change was that the syllable nodes increased from two, /seulʤə/, to the three [m***u***s***o***ʤ***a***] in Tonga. The syllable structure was changed, especially from /CVC/ to [CV].The output of the nativisation process, introduces new segments to the base-word segments. Segments [m] and [u], which were introduced to the base-word /seulʤə/, makes the base-word belong to class 1 nouns in Tonga. In general, the prefix

was inserted before the English noun /seulʤə/ and the output was [mu-soʤa]. All prefixes inserted onto the English nouns were done before the English base word. This means that there were a set of rules governing insertion of prefixes adopted in the process of lexical adaptation at base-word level.

Figure 106 Insertion of Class 1 Prefix: [mu-<l/s>]



The affixation of the monosyllabic prefix [mu-,1/s] to the English word /pəli:s/ makes it morphologically acceptable as a noun base-word in Tonga.The illustration above shows that [mu-] is a visible prefix, denoting class 1, nouns.These signify singular human beings in Tonga. Apart from that, the phonological pattern /CVC/ changes to [CV] creating proper Tonga syllables. The noun base-word in Tonga became polysyllabic, thus it has a monosyllabic prefix and polysyllabic stem.

The other words which were adapted using the same rule are as follows:

/krɪʃən'> [mu-<l/s> =-kilisitu] > [mukilusitu] 'Christian'

/kɔ:rinɵɪən/ > [mu-<l/s>-+-korinte] >[mukorinte] 'Corinthian'

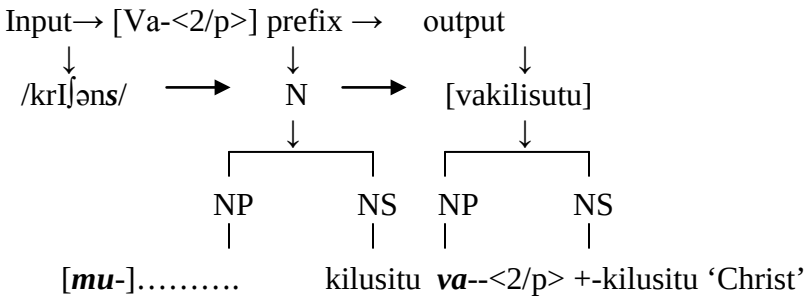
/kena:nɪən/ >[mu-<l/s> +-kenani] >[mukenani] 'Cananian'

/Ita:liən/ >[mu-<l/s>+-italijeni] >[muItalijeni] 'Italian'

/prɪ:st/ >[mu-<l/s> +-plista] >[mupilisita] 'priest'

All the words given above, as output, have two things in common. The first thing being that they all have a monosyllabic prefix [mu-] of class 1 and the second thing being that they are all singular in reference. This therefore made the word qualify to be a noun base-word in Tonga, characterized by a noun prefix and a noun stem.

Figure 107: Class 2a: [Va-<2/p>]



The Tonga native speakers inserted the monosyllabic prefix [va-], substituting the English /s/, to come up with the plural form of noun based-words of class 1. The inserted prefix [va-] is a monosyllabic prefix, denoting nouns in class 2. These are human beings, who at least are two in number, hence <2/P> characteristic feature.The syllable nodes of the plural form of a word in class 2, the CV-tiers and the ultimate morphemes become acceptable in Tonga.

Other scenarios that apply the same rule are as follows:

/hi:bru:s/> [va-<2/p>] -+-hebelo]> [vahebelo]

/kǽna:niəns/ > [va-<2/p] -+-kenani> [vakenani]

/kɔ:rɪnəɪəns/ > [va-<2/p] -+-korinte] >[vakorinte]

/Ita:liəns/ > [va-<2/p] +-italijeni] >[vatalilana]

/prɪ:sts/ > [va-<2/p] -t-pilista] >[vapilisita]

/apɔ:stləs/ > [va-<2/p] –t- positoli]> [vaposiliti]

Adaptation of the English word /seuldzəs/ using the rule [va-<2/P>] was constrained and as a result [ma-] of class 6 was used as the appropriate prefix of the base-word [sodza]. The major constraint is that /seudzə/ makes reference to profession whilst class 1 prefix denotes human beings. The prefix (honorific) [va-] was also inserted before the singular prefix [mu-] of class 1, creating a base-word with two prefixes, namely [va-] and [mu-] and the output was [va-mu-sodza]. At the phonological level such a word is characterized by a polysyllable prefix, which has a CV- pattern, hence two syllable nodes (CVCV). The plural prefix [va-] is not denoting number but it is rather honorific.The second prefix [mu-] is the one that denotes number, [mu-<l/S>]. In general, the prefix [va-+ mu-] is characterized by <2/hP>, which means that it makes reference to one soldier but there is an element of honour, [va-<hP>.

Other words that were handled in the same way are as follows:

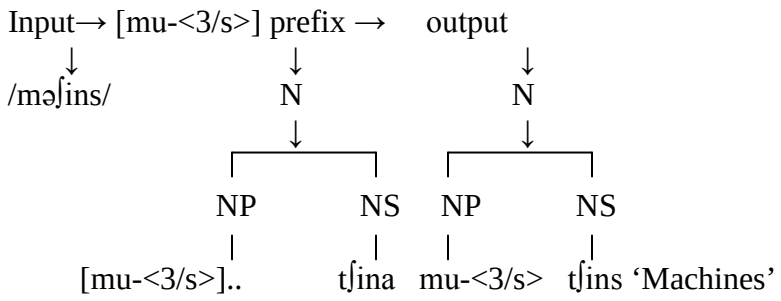
‘Police’ /pə:li:s/> [va-<2/hp>-+- mu-<l/s>+-polisa

‘christian’ /krɪʃən/> [va-<2/hp>-+-mu-<l/s>-+-kilusitu]

‘coloured’ /k ʌ ləd/>[va-<2/hp>-+- mu-<l/s>-+-kaladi

‘italian’ /Itǽliən/> [va-<2/hp>-+-mu-<l/s>-+-talilana

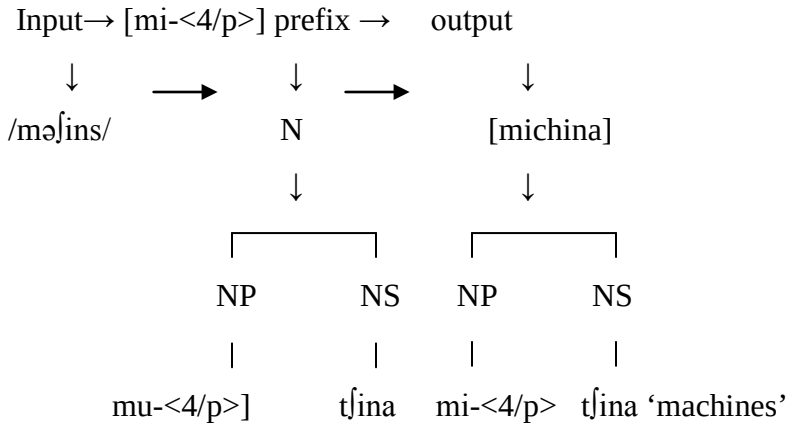
Figure 108: Rule 3: [mu-<3/s>]



The native Tonga speakers inserted the [mu-], prefix, in the same way as that of class 1. This <mu-> of class 3, denotes singular objects [mu-<3/S>]. This puts the word /məʃin/ into class 3 in Tonga.This [mu-] prefix is monosyllabic and has one syllable node (CV).

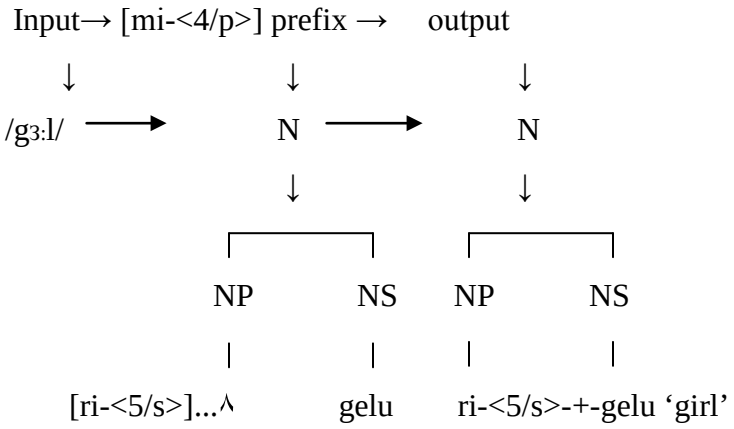
Another word with similar prefix is ‘matches’ /mətʃis/> [mu-<3/s>-+-tʃisa]. There were very few words that underwent affixation of the [mu-] [prefix of class 3.

Figure 109: Rule 4: mi-<4/P>



The monosyllabic prefix [mi-] was inserted on the base word /məʃins/.Pluralization in English is characterized by the super addition of the suffix (s) onto a base-word.This super addition of a suffix is not recognized in Tonga, since it is a prefixational language.This was handled by inserting a plural prefix before the word /məʃin/.This changed the word from its singular form to its plural form.All the words in class 3 were pluralized by inserting a monosyllabic prefix [mi- <4/p>]. Another example characterized by the same affixation is ‘matches’ /m∂tʃis/> [mu-<4/p>-+-tʃisa]> [mitʃisa].

Figure 110: Rule 5: [ri-<5/s>]



The native Tonga speakers adapted the word /gel/ by inserting an invisible prefix [ri-], which demotes big objects.The invisible prefix [ri-] categories the word /gel/ into noun class 5.The invisible prefix [ri-] is singular in number.The other nouns that have the same morphological behaviour are as follows:

‘guy’ /gaɪ/> [ri-<5/s>]> [gayi]

‘day’ /deɪ/> [ri-<5/s>]> [deji]

‘gay’ /gəI/> [ri-<5/s>]> [geji]

‘gear’ /gɪə/> [ri-<5/s>]> [gija]

‘geyser’ /gɪːzə/> [ri-<5/s>]> [giza]

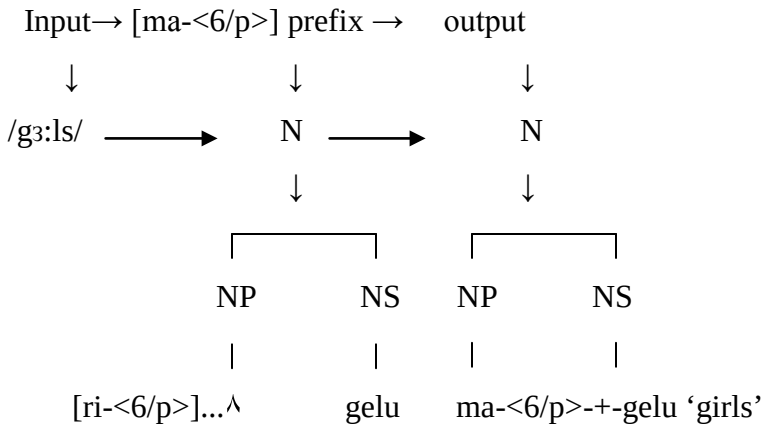
‘gas’ /gǽs/> [ri-<5/s>]> [gasi]

‘bottle’ /baːtl/> [ri-<5/s>]> [botolo]

‘beer’ /bɪə/> [ri-<5/s>]> [bija]

‘desk’ /desk/> [ri-<5/s>]> [desiki]

Figure 111: Rule 6:[ma-<6/p>]

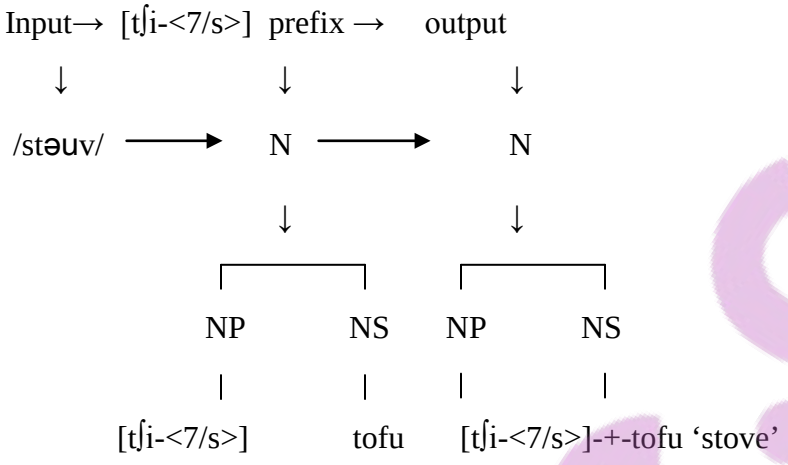


The monosyllable and visible prefix [ma-] was epenthesised before the word /gels/.The English word /gels/ has a plural suffix (s), which denotes number.This pluralisation is not acceptable in Tonga.To handle this a plural prefix [ma-] was epenthesised before the word /gɜ:l/ because Tonga is a prefixal language, hence the insertion of a plural prefix [ma-<6/p>] before the word /gɜ:l/.Unlike the singular prefix [ri-], which is invisible , the plural [ma-<6/p>] is visible. All the nouns in class 5 are pluralized by epenthesising the prefix [ma-] as follows:

‘guys’ /gaɪs/> [ma-<6/p>]-+-gayi]> [magaji]
‘days’ /deɪs/> [ma-<6/p>]-+-deji]> [madeji]
‘gays’ /gəɪs/> [ma-<6/p>]-+-geji]> [mageji]
‘gears’ /gɪəs/> [ma-<6/p>]-+-gija]> [magija]
‘geysers’ /gɪ:zəs/> [ma-<6/p>]-+-giza]> [magiza]
‘gas’ /gǽs/> [ma-<6/p>]-+-gasi]> [magasi]
‘bottle’ /ba:tl/> [ma-<6/p>]-+-botolo]> [mabotolo]

The relationship between class 5 and class 6 in Tonga is that class 6 is the plural form of words in class 5. Nativisation of loan words in class 5 entails having their plurals in class 6.

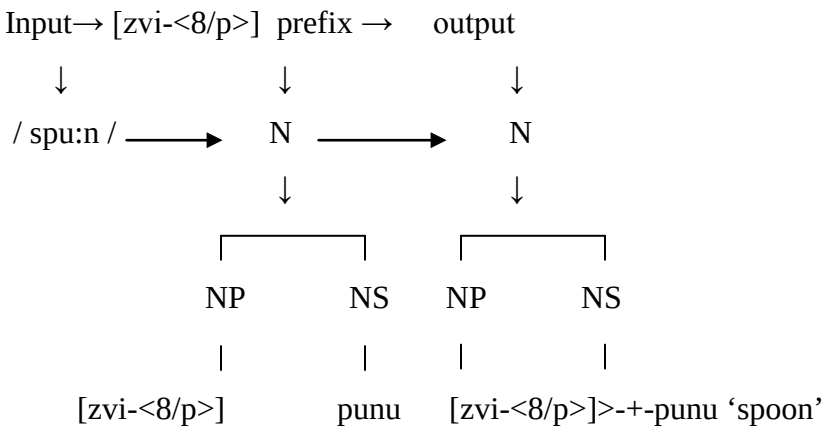
Figure 112: Rule 7: [tʃi-<7/s>]



Words that denote objects of noun class 7 were adapted by inserting the [ʧi -] prefix, with singular form of address.This is determined by <7/s>, which means singular base-noun of class 7. The class 7 prefix [ʧi -] is monosyllabic and has one syllabic node. Words adapted in the similar way are as follows:

'store' /stɔ/> [tʃi-<7/s>-+-tolo]> [tʃitolo]
'school' /skul/> [tʃi-<7/s>-+-kolo]> [tʃitolo]
'skill' /skɪl/> [tʃi-<7/s>-+-kili]> [tʃikili]
'stood' /stu:l/> [tʃi-<7/s>-+-tulu]> [tʃitulu]
'spoon' /spu:n/> [tʃi-<7/s>-+-punu]> [tʃipunu]
'scale' /skeɪl/> [tʃi-<7/s>-+-kelo]> [tʃikelo]

Figure 113: Rule 8:[zvi-<8/p>]



English is a suffixal language.This means that pluralisation of nouns in class 7 entails epenthesis of the simple consonant /s/ at the end of the base-noun /spʊn (s)/. However, this is unacceptable for a prefixal language, hence prefix affixation. Such affixation was done in the following morphological environments:

‘stores’ /stɔs/> [zvi-<8/p>-+-tolo]> [zvitolo]

‘schools’ /sku:ls/> [zvi-<8/p>-+-kolo]> [zvikolo]

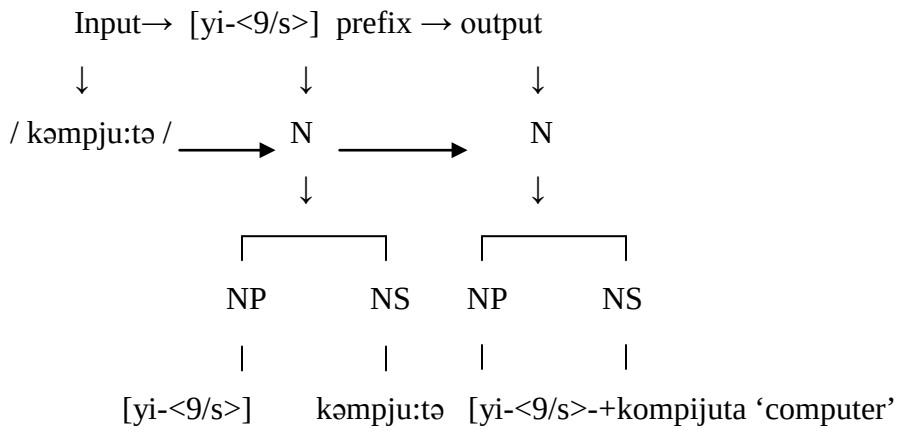
‘skills’ /skɪls/> [zvi-<8/p>-+-kili]> [zvikili]

‘stools’ /stu:ls/> [zvi-<8/p>-+-tulu]> [zvitulu]

‘spoons’ /spu:ns/> [zvi-<8/p>-+-tulu]> [zvitulu]

‘scale’ /skeɪls/> [zvi-<8/p>-+-kelo]> [zvikelo]

Figure 114: Rule 9: [yi-<9/s>]



Nativisation of object words of class 9 was done by inserting an invisible noun affix, [yi-].The affix [yi-] denotes objects that are uncountable and also animals and birds as well as technological objects like the computer. The [yi-] signifies singular objects other than those in class 3, 5 and 7. The prefix is invisible in that it can not be articulated together with the stem of the base-word. Its only realized grammatically but does not form part of the word's phonics.

On the word /kəmpju:tə/>[kompijuta], its only the stem which is audible, however, the class affix [yi-] is grammatically present.The class affix also determines the concordial agreement for the base-word [kompijuta], for example Ikompijuta (yi-) yake' his/her computer'.From the example given, when the noun base-word is nativised into Tonga sentences, suffixes are dropped for affixes.

Other morphological environments where the rule [yi-<9/S>] is applied are as follows:

‘ruler’ /ru:lə/> [yi-<9/s>-+-rula]> [rula]

‘meter’ /mɪ:tə/> [yi-<9/s>-+-mita]> [mita]

‘kettle’ /ketl/> [yi-<9/s>-+-ketelo]> [ketelo]

‘cattle’ /kǽtl/> [yi-<9/s>-+-ketelo]> [ketelo]

‘key’ /kɪ/> [yi-<9/s>-+-kiji]> [kiji]

‘pillow’ /pɪləu/> [yi-<9/s>-+-pilo]> [pilo]

‘plate’ /pleit/> [yi-<9/s>-+-puleti]> [puleti]

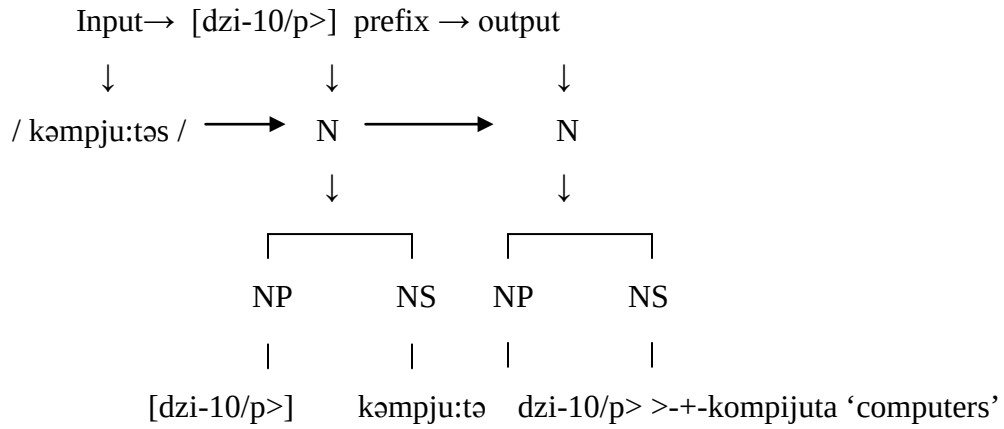
‘player’ /pleɪə/> [yi-<9/s>-+-puleja]> [puleti]

‘team’ /tɪ:m/> [yi-<9/s>-+-timu]> [timu]

‘chicken’ /tʃɪkən/> [yi-<9/s>-+- tʃikeni]> [tʃikeni]

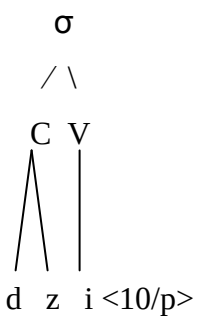
‘radio’ /reɪdiəu/> [yi-<9/s>-+-redijo]> [redijo]

Figure 115: Rule 10: [dzi-10/p>]



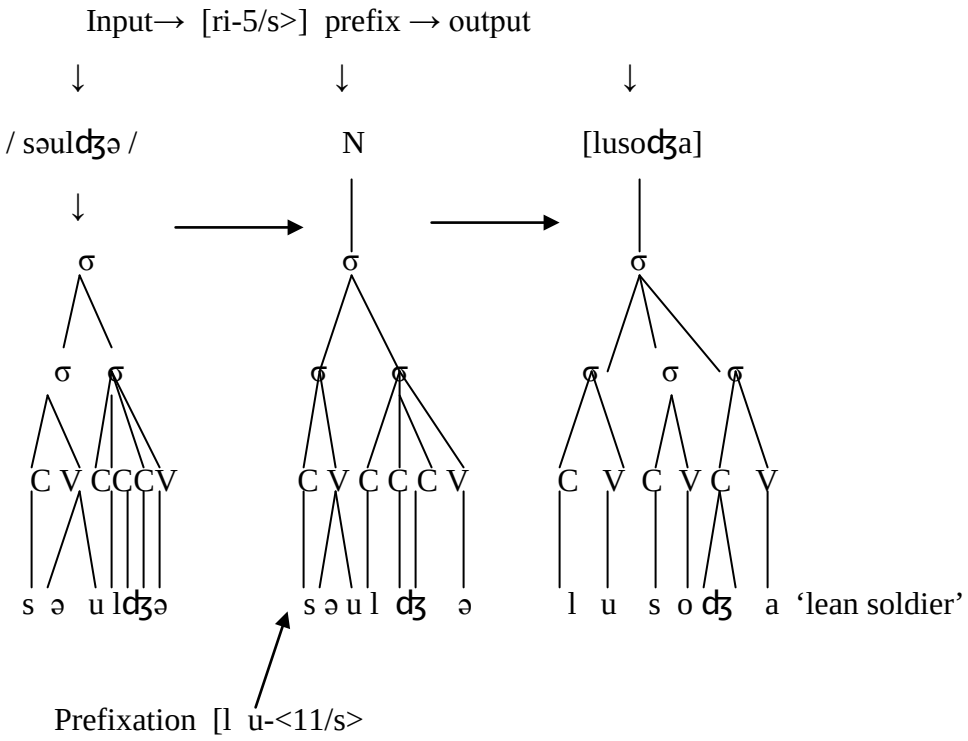
The Tonga native speakers inserted the plural suffix [dzi-] to substitute the English suffix /s/, which is not acceptable in Tonga. English is a suffixal language, meaning to say that pluralisation of base-nouns in class 9 is done by inserting a class 10 affix /s/ at the end of the baseword /kəmpju:tə/. In the Tonga environment, the prefix [dzi-] is both monosyllabic and invisible. It is not articulated together with the stem [kompijuta] but is grammatically realized. Phonologically, it demonstrates a branching rhyme of the

consonant [dz] and no branching rythme on the vowel. The vowel demonstrates a single normal stress. It also has one syllable node, hence a morpheme, as demonstrated below:



[dzi-10/p>] class 10 affix with one syllable node and [dz] and [i] at the level of segment tier and a cv-tier characterized by a branching rythme on the consonant and a simple stressed vowel [i].

Figure 116: Rule 11: [lu-<11/S>]



All the English nouns that signify objects were adapted by prefixing the words with prefix [lu-], which signifies class 11 nouns in Tonga.The prefix [lu-] denotes lean,

singular objects. All singular nouns in any other class (1-10) could be pre-prefixed by inserting the [lu-] prefix of class 11, as shown below:

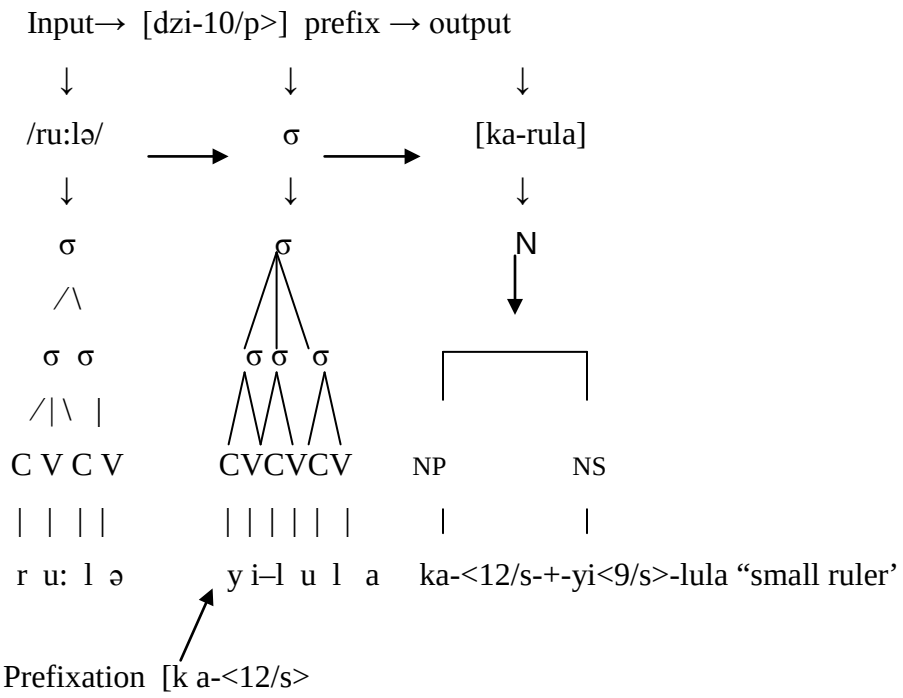
Class 1: /səulʤə/> [musoʤa]> [lu-<11/s>+-mu-<1/s>-+-soʤa]

Class 3: /məʃin/> [mutʃina]> [lu-<11/s>-+-mu-<3/s>-+-tʃina]

Class 5: /gɜ:l/> [gelo]> [lu-<11/s>-+-ri-<s/s>-+-gelo]

Class 7: /sku:l/> [tsikelo]> [lu-<11/s>-+-tʃi-<7/s>-+-kolo]

Figure 117: Rule 12: [ka-<12/s>]



English noun base-words that fall into class 9, were pre-prefixed with [ka-], in the same way as noun in class 1,3,5 and 7 were pre-prefixed with [lu-] of class 11.The prefix [ka-], denotes small stature in the same way as [lu-] which denotes lean objects.The prefix [ka-] is monosyllabic, visible and characterized by a single syllable node. Other examples of words in class 12 are as follows:

‘small ruler’ /ru:lə/> [ka-<12/s>-+-yi-<9/s>-+-rula]> [karula

‘small meter’ /mɪ:tə/> [ka-<12/s>-+-yi-<9/s-+-mita]> [kamita]

‘small kettle’ /ketl/> [ka-<12/s>-+-yi-<9/s>-+-ketelo]> [kaketelo]

‘small cattle’ /kǽtl/> [ka-<12/s>-+-yi-<9/s>-+-ketolo]> [kaketolo]

‘small pillow’ /pɪləu/> [ka-<12/s>-+-yi-9/s>-+-pilo]> [kapilo]

‘small shore’ /ʃəu/> [ka-<12/s>-+-yi-9/s>-+-sho]> [kasho]

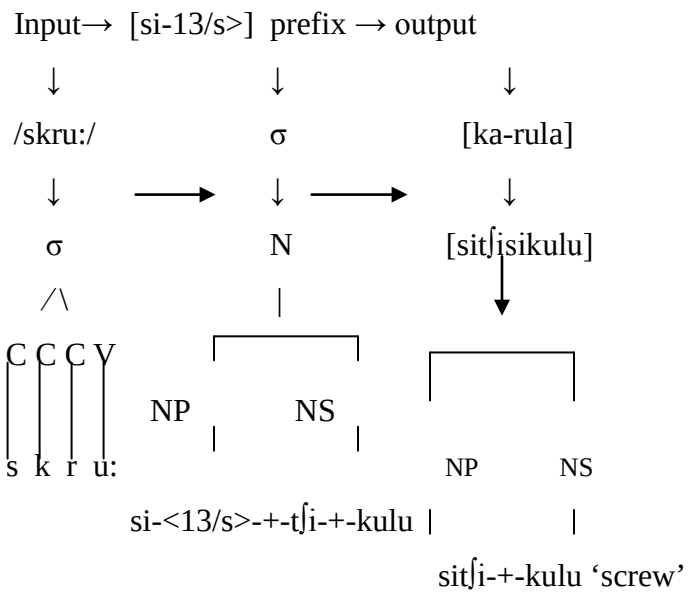
‘small player’ /pleɪə/> [ka-<12/s-+-yi-9/s>-+-puleja]> [kapuleja]

‘small team’ /tɪ:m/> ka-<12/s>-+-yi-9/s>-+-timu]> [katimu]

‘small plate’ /pleit/> ka-<12/s>-+-yi-9/s-+-puleti]> [kapuleti]

Figure 118: Rule 13: [si-<13/s>] prefixation

The prefix [si-] was also inserted on nouns in class 1,3,4,7 and 9. This can be demonstrated as follows:



The insertion of the class prefix [si-] of class 13 entails changing meaning from normal sized screw [tʃikulu] to a small sized screw [sitʃikulu]. Other examples are as follows:

Class 1: /prɪ:st/> [mupilusita]> [si-<13/s>-+-mu-<1/s>-+-pilusita]
Class 3: /məʃin/> [mutʃina]> [si-<13/s>-+-mi-<1/p>-+-tʃina]
Class 4: /məʃins/> [mutʃina]> [si-<13/s>-+-mi<4/p>-+-tʃina]
Class 7: /skɜ:t/> [tʃikeli]> [si-<13/s>-+-tʃi-<7/s>-+-keti]
Class 9: /metl/> [metalu]> [si-13/s>-+-<9/s>-+-metalu]
Class 10: /metls/> [metalu]> [si-+-13/s-+-dzi-<10/p>-+-metalu]

Figure 119: Rule 14a: [i-<14/s>] prefix

Words in class 5 were also pre-fixed with the class prefix 14 [i-].The [i-] prefix is pre-prefixed on nouns that denotes objects with the prefix [ri-], which are nouns in class 5. Examples are as follows:

'gap' /gǽp/> [ri-<5/s>-+-gepu]> [i-<14a/s>-+-gepu]> [igepu]
'tini' /tɪ:n/> [ri-<5/s>-+-tini]> [i-14a/s>-+-tini]> [itini]
'peg' /pɜ:g/> [ri-<5/s>-+-pegi]> [i-14a/s>-+-pegi]> [ipegi]
'gas' /gǽs/> [ri-<5/s>-+-gasi]> [i-14a/s>-+-gasi]> [igasi]
'book' /bu:k/> [ri-<5/s>-+-buku]> [i-14a/s>-+-buku]> [ibuku]
'glass' /gla:s/> [ri-<5/s>-+-gilazi]> [i-14a/s-+-gilazi]> [igalizi]

The [i-<14a/s>] was also pre-prefixed to nouns of class 9.

Examples of such words are:

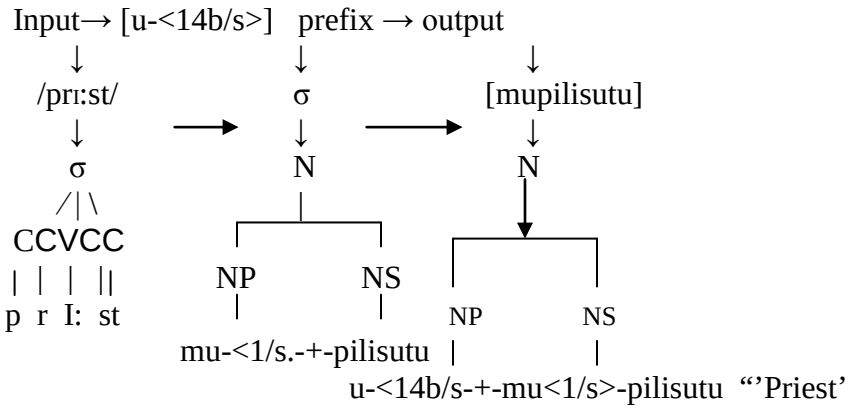
'cup' /k ʌp/> [yi-<9/s>-+-kapu]. [i-14a/s>+-yi-+-kapu]
'cash' /kǽʃ/> [yi-<9/s>-+-keʃi]> [i-14a/s>+-yi-+-keʃi]
'kit' /kIt/> [yi-9/s>-+-kiti]> [i-14a/s>+-yi-+-kiti]
'shift' /ʃɪft/> [yi-<9/s>-+-ʃeti]> [i-14a/s-+-yi-+-ʃeti]
'shine' /ʃain/> [yi-<9/s>-+-ʃajini]> [i-14a/s-+-ʃajini]
'shelf' /ʃelf/> [yi-<9/s>-+-ʃelufu]> [i-14a/s-+-ʃelufu]

‘key’ /kɪ/> [yi-<9/s>-+-kiji]> [i-14a/s-+-kiji]

‘player’ /pleɪə/> [yi-<9/s>-+-puleja]> [i-14a/s-+-puleja]

‘cousin’ /kʌzən/> [yi-<9/s>-+-kazini]> [i-14a/s-+-kazini]

Rule 14b: [u-<14b/s>] prefix



The prefix [u-] was inserted on nouns in class 1, to make them be in class 14, which denotes singular human beings. The prefix [u-] is monosyllabic, but comprising only the peak without the onset in the [-C +V] .Examples of words where this rule was used are as follows:

‘dealer’ /di:lə>[mu-<1/s>-+-dila]>[u-<14/s>-+-mu-+dila]

‘grapetree’ /greiptrɪp/ >[mu-<l/s>-+-gilepi]>[u-<14l/s>-+-mu-gilepi]

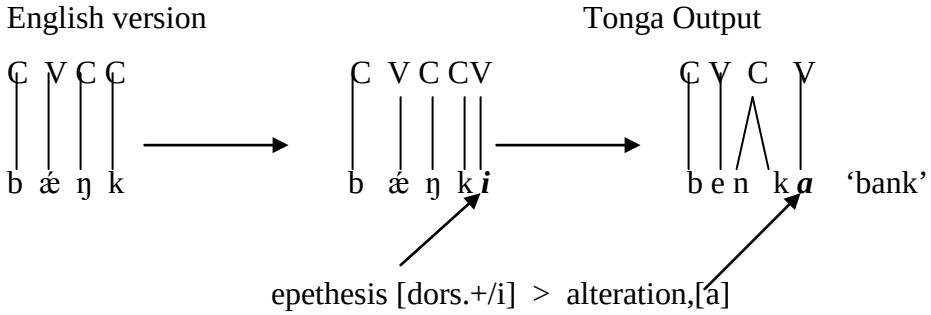
‘Peter’/Pi:tə/>[Ø-<l/s>-+-pi:tə]>[u-<14/s>-+- Ø-+-pita]

‘machine’ /məʃin/>[mu-<3/s>-+-tʃina]>[u-<14ls>-+- [tʃina]

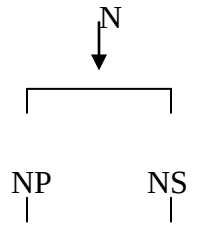
5.3.2 Handling Verbs

Apart from altering the morphological patterns of English words in the Tonga linguistic environment, the Tonga native speakers also altered vowels of the last syllables of words. According to the Lexical Phonology and Morphology Theory, vowel alteration is the second level of word building. Words entering into Tonga as noun base-words go through three morphological process.The first process was base-word morphological nativisation,

the pre-occupation of the previous sub-section (5.2.1). The second morphological process was vowel-alteration in the environment [dorsal+-i]. The following diagram demonstrates how vowel alteration was done:

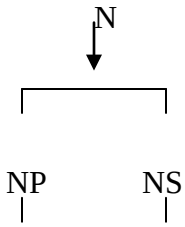


The word /bǽŋk/ was borrowed and then nativised into the Tonga morphological environment. In the English linguistic environment, the lexical item /bǽŋk/ was a noun and also a verb (to put money in the bank) base-word. In order to be accepted in the Tonga morphological environment, the paragogic vowel [i] was epenthesised, at the level of phonology. The product was a noun version (benki) only in Tonga. Epenthesis of the vowel [i] onto the coda consonant [k] was possible applying the rule [dors+/-i/]. This is because [k] and [i] have feature matrices [+ high], [+ back] and [- round]. The epenthesis of the high, front and unrounded vowel [i] onto the English word /bǽŋk/ 'bank' made it acceptable as a well-formed noun base-word of class 5, in the Tonga language, as follows:



ri-<5/s>-+-benki

The alteration of the high, front and unrounded vowel [i] to [a], a central, low and unrounded vowel [a] in the same phonetic environment [dors + i]> [dors + a], changed the base-word from a noun to a verb.This means that the prefix was dropped [ri-<5/s>] and a verb radical characteristic was picked (benk-a). There was change of the signified from object (noun) to action (verb). The noun base-word /bǽŋk/>[benki] signifies an noun object of class 5, whilst /bǽŋk/> [benka] signifies action done in the object of class 5, /bǽŋk/ 'bank' as follows:



ri-<5/s>-+-benki……> benk-a 'bank'

Vowel alteration affects word category as already demonstrated by /bǽŋk/> [benki] and /bǽŋk/> [benka] signifying noun and verb respectively. Vowel alteration is characterized by a two tier morphological process (noun-base-word (Noun Morphology) and verb base-word (derivational morphology). The immediate constituencies of the word /bǽŋk/ are alterated, [NP + NS]>[VR + TV] as a result of the [dorsal + i]> [dorsal + a] vowel alteration.These two tier nativisation processes were also used in the following morphological environment:

'rent' /rent/> [yi-<9/s>-+-renti]> [rent-+-a]> [renta]
'paint' /peint/> [yi-<9/s>-+-penti]> [pend-+-a]> [penda]
'volley' /va: li/>[yi-<9/s>-+-voli]> [vol-+-a]> [vola]
'bill' /bɪl/> [yi-<9/s>-+-bili]> [bil-+-a]> [bila]
'gril' /grɪl/> [yi-<9/s>-+-gilili]> [gili-+-a]> [gilila]
'drink' /driŋk/> [yi-<9/s>-+-dilinki]> [dilink-+-a]> [gilila]

‘deal’ /di:l/> [yi-<9/s>-+-dili]> [dil-+-a]> [dila]

‘mill’ /mɪl/> [yi-<9/s>-+-mili]> [mil-+-a]> [mila]

‘key’ /kɪ/> [yi-<9/s>-+-kiyi]> [kij-+-a]> [kija]

‘kick’ /kɪk/> [yi-<9/s>-+-kiki]> [kik-+-a]> [kika]

‘beat’ /bɪ:t/> [yi-<9/s>-+-biti]> [bit-+-a]> [bita]

‘bid’ /bɪd/>[yi-<9/s>-+-bidi]> [bid-+-a]> [bida]

‘deep’ /dɪ:p/> [yi-<9/s>-+-dipi]> dip-+-a]> [dipa]

‘bed’ /bed/> [yi-<9/s>-+-bedi]> [bed-+-a] [beda]

‘pin’ /pɪn/> [yi-<9/s>-+-pini]> [pin-+-a]> [pina]

‘tint’ /tɪnt/> [yi-<9/s>-+-tinti]> [tint-+-a]> [tinta]

‘bail’ /beɪl/> [yi-<9/s>-+-bejili]> [bejil-+-a]> [bejila]

‘taste’/teist/> [yi-<9/s>-+-tesiti]> [tesit-+-a]> [tesita]

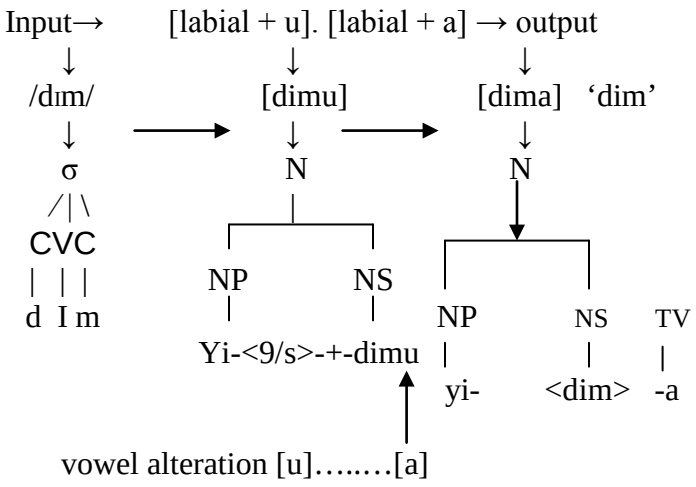
‘test’ /test/> [yi-<9/s>-+-tesiti]> [tesit-+-a]> [tesita]

‘paste’ /peist/>[yi-<9/s>-+-pesiti]> [pesit-+-a]> [peseta]

‘kiss’ /kɪs/> [yi-<9/s>-+-kisi]> [kis-+-a]> [kisa]

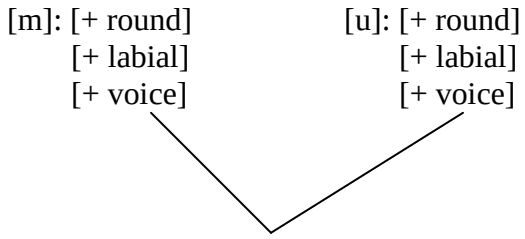
Vowel alteration using the rule [dorsal + i]> [dorsal + a] was applicable only on nouns in class 5 and 9. These have invisible prefixes.The output were verbs showing or denoting action of the noun with the vowel [i], [dorsal+ i] which is altered to [a], [dorsal + a]. The noun base-word /bǽŋk/ ‘bank’ for instance, demonstrates that when the vowel alteration rule [dorsal + i]> [dorsal + a] was applied the output [benka] is a verb denoting the action of the noun base-word /bǽŋk/> [benki]. This was appropriate to all nouns in class 5 and 9, where the rule [dorsal + i]> [dorsal + a] was applicable.

Figure 120: Rule [labial + u]. [labial + a]



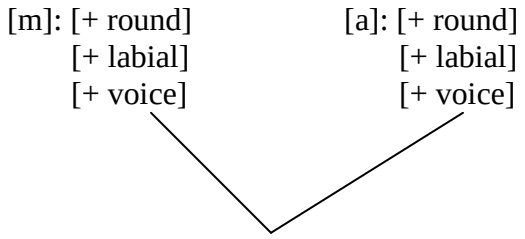
The Tonga native speakers were altering vowels [u]>[a], in the labial phonetic environment.The rule [labial + u]> [labial + a] was applied. It was possible to epenthesis vowel [u] in the labial phonetic environment, characterized by the labio-nasal [m] because both [u] and [m] are characterized by [+ voice] and [+ labial]. The paragogic epenthesis of the vowel [u] on the English word /dɪm/ made it an acceptable noun base-word of class 9, denoting singular noun. The alteration of [u], replacing it with [a], changed the base-word category from noun to verb.The structure of the word ultimately changed from noun [NP + NS] to a verb pattern [VR + TV]. This has been demonstrated by /dim/>[dimu] and /dimu/>[dima], respectively. In the presence of the paragogic vowel [u], there is also the noun prefix [yi-<9/s>].When the vowel [u] is altered and replaced by the central, low and unrounded vowel [a], the noun prefix [yi-] is lost, thereby changing the noun base-word to a verb [dima]. This means that vowel alteration results in the dropping of the prefix [yi-] to pick up the verb radical [dim-], thereby changing the morphological pattern and meaning of the output, from signifying object in class 9 to signify action by the same object. The rule [labial + u] is then violated, introducing vowel [a] as demonstrated below:

Rule [labial + u] applied



(OV) assimilation [mu]

RULE [labial + u] is violated



OV dissimilation [ma]

This type of vowel alteration was found in a number of loan words. The [labial + u]>[labial + a] was applied to a number of loans also, characterized by such [labial + u] phonetic environment. Other words that were nativised using the rule [labial + u]> [labial + a] were as follows:

‘steam’ /stɪ:m/> [yi-<9/s>-+-sitimu]> [stim-a]> [sitima]

‘beam’ /bɪ:m/> [yi-<9/s>-+-bimu]> [bim-+-a]. [bima]

‘seam’ /sɪ:m/> [yi-<9/s>-+-simu]> [sim-+-a]> [sima]

‘dam’ /dǽm/> [ri-<9/s>-+-demu]> [dem-+-a]> [dema]

‘perm’ /pɜ:m/> [yi-<9/s>-+-pemu]> [pem-+-a]> [pema]

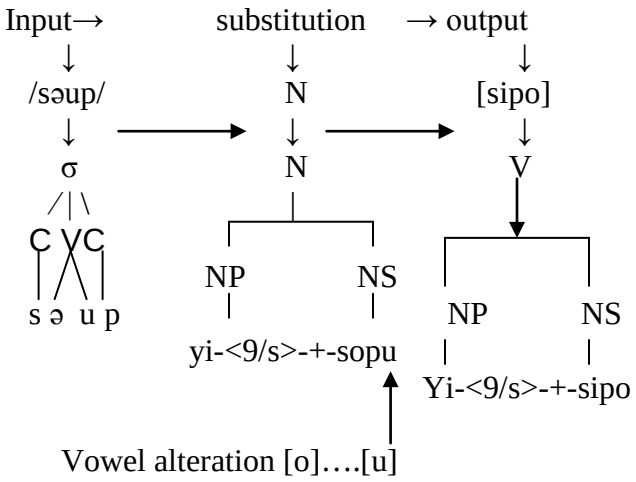
‘form’ /fɔ:m/> [yi-<9/s>-+-fomu]. [fom-+-a]> [foma]

Words which were nativised using the rule [labial + u]> [labial + a] are those that belongs to noun class 5 and 9 and these are very few in the Tonga inventory but they are often used (high frequence).

So far, the discussion has demonstrated how words were nativised by altering the vowels, as according to the Lexical Phonology and Morphology Theory's rule 2 (Vowel Alteration).

Such vowel alteration changed the nativisatised words from nouns to verbs. This means that the input was an English noun and the output (in Tonga) was both a noun and a verb but with different paragogic vowels (final vowels), for instance the English noun /bǽŋk/ is nativised to a Tonga noun [benki/, using the rule [dors. +/i/]. When the vowel [i] is altered to [a], the the word [benki] ceases to be a noun but is converted into a verb [benka] 'to bank'. Vowel alteration also occurs at the middle of a word rather than the paragogic position. The following diagram demonstrates nativisation by altering vowels at the middle of a word, as opposed to paragogic vowel alteration:

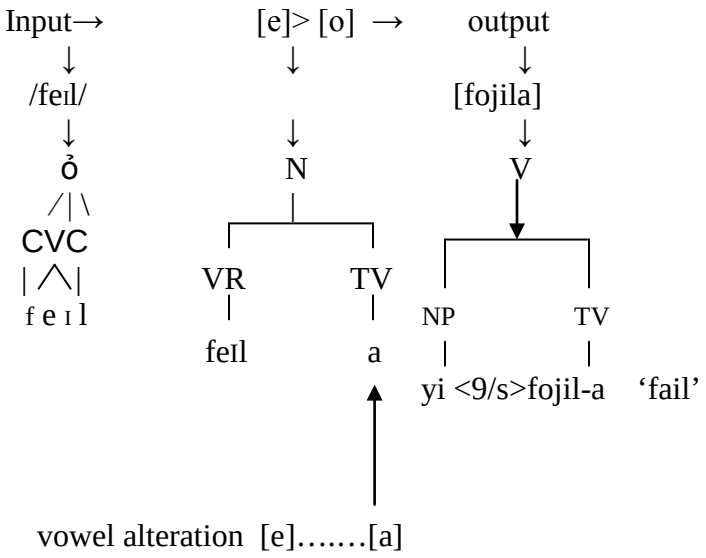
Figure 121: Rule: [əu]> [o]



Substitution of diphthong /əu/, on the English word /səup/ 'soap' by vowel [i] in Tonga was because a coronal consonant, [s], in Tonga is followed by vowel [i], thus [cor+/i/]. This therefore accounts for the replacement of the diphthong /əu/ by the pure Tonga

vowel [i]. In the same way Tonga does not accept coda consonants, for instance /p/, in the word /səup/, so vowel [u] was epenthesised. This was possible since Tonga allows labial consonants to be followed by [u]. The vowel [u] was used interchangeably with [o]. The vowel [o] has similar feature values with [u], [+labial], [+round], the difference is that [o] is a mid-vowel whilst [u] is high. However, the input /səup/ is a noun and the output is again a noun [sipo] or [sipu]. Vowel alteration was therefore systematic and not just randomly done. The illustration below also demonstrates this process:

Figure 122: Rule: [e]> [o]



Tonga does not accept diphthongs /eɪ/ and was to be substituted by [e] to become [fejila] ‘fail’. However, the consonant [f] is a labial sound which can combine very well with a rounded vowel, applying the rule [labial+ /o/] or [labial +/u/]. This accounted for altering vowel [e] to [o] which shares similar feature values with the labio-dental consonant [f]. This vowel alteration was done on verbs, so that they could be articulated or pronounced in the way acceptable by the native Tonga speakers. The class category of the word remains the same (noun) but rather nativised. Most of the verbs alter the paragogic vowel rather than the mid-word vowel.

To change a word category from a noun to a verb, vowel alteration is done at the paaragogic position but if nativisation intends to maintain the word category (noun) then vowel alteration is experienced at the middle of the word.

5.3.3 Handling Tenses

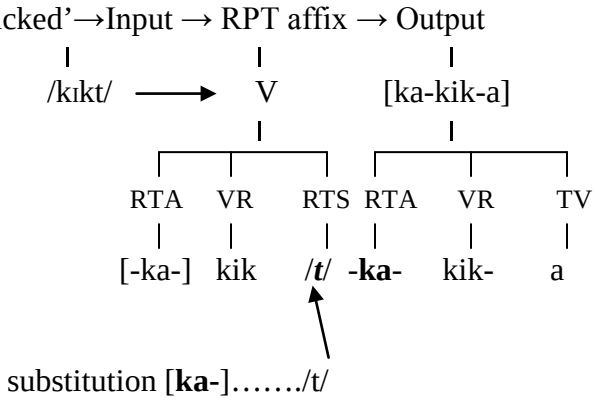
This is level three of word building, as according to Kiparsky (1982:1-60). Affixation of any form, in the Tonga linguistic environment is a syntactic process. However, since it is a morphological process in the English language, this research therefore treats it as a morpho-syntactic lexical process. On the other hand, the theoretical frameword adopted by this theory (LPM in Chapter Four) treats affixation as level three processes in lexeme building. Since the Lexical Phonology and Morphology Theory provides principles that guide this research, this discussion therefore treats constructions that are a result of affixation as morpho-syntactic lexemes.

Affixes were also inserted on base-words to handle differences in handling prefixes and tense signs between the loaner language (English) and the receiving language (Tonga). Nativisation of English tenses and prefixes resulted in morpho-syntactic lexemes in Tonga. While English uses suffixes for tenses, Tonga uses tense affixes onto verb base-words.This was done on English words, to handle differences in the treatment of tense. For the English language, tense signs, /t/ as on the word /weIvt/, (/t/), ‘waived’ is suffixed on to the verb base-word in the same way as the plural form /s/, whilst Tonga speakers use tense affixes (**ka**-woka) to denote tense and prefix to denote plural (**yi**-kitsi). This means that tense signs and prefixes are inserted before the base form of the word in Tonga and after the base of the word in English.

Handling of tenses on base-words, in the two languages can be demonstrated as below:

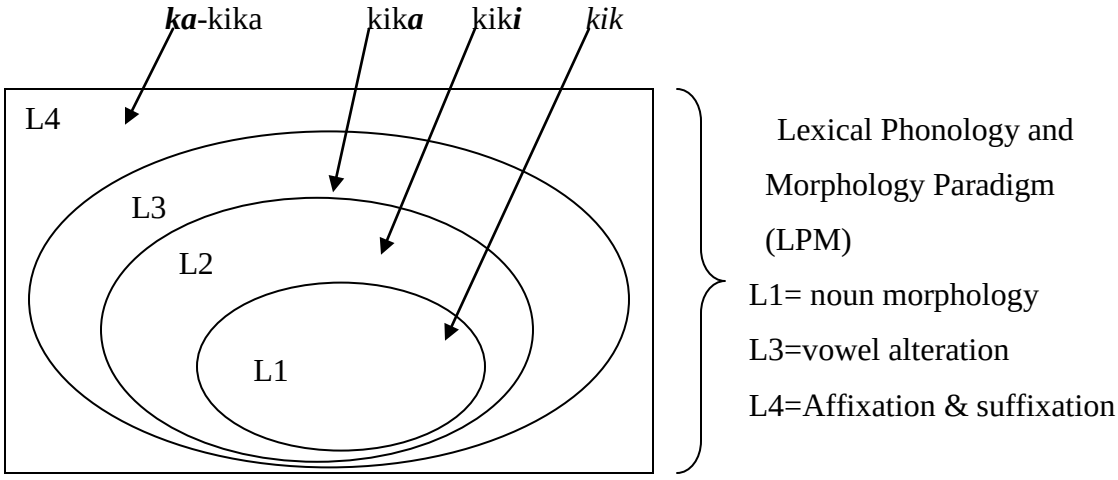
5.3.3.1 Handling Remote Past Tense (RPT)

Figure 123: Remote Past Tense



The English base-word /kɪkt/ has a suffix epenthesised on it /t/, to make it demotes action done in the remote past 'kicked'. The word was nativised by dropping the tense suffix /t/ and substitute it with the Tonga tense affix [-ka-].This Tonga affix is epenthesised before the radical [kik-].The output was a verb in the remote past tense [ka-kik-]. The remote past tense affix inserted is monosyllabic, characterized by an onset consonant and a nucleus or peak.The output [-ka-kik-], shows that at segmental level [-ka-] replaces /t/ such that the number of segments are not affected, as well as the meaning of the word.The Tonga word [-ka-kik-] when translated into English means exactly the same as /kɪkt/.There is complete nativisation of the term /kɪkt/ in the Tonga linguistic environment [ka-kik-a], However, the only difference is that the word /kɪkt/ in English is a morphological construction whilst in the Tonga language it is a morpho-syntactic lexion (agglutinative). This means that it fulfills well-formed conditions for both morphogical and syntactic constructions.Though that is the case, the English word /kɪkt/ is a morphological construction. In addition to that, the Lexical Phonology and Morphology Theory, which informs this study, treats [-ka-kik-a] as a morphological construction, since affixation is regarded as level three of LPM morphological processes, as shown below:

Figure 124: LPM Processes

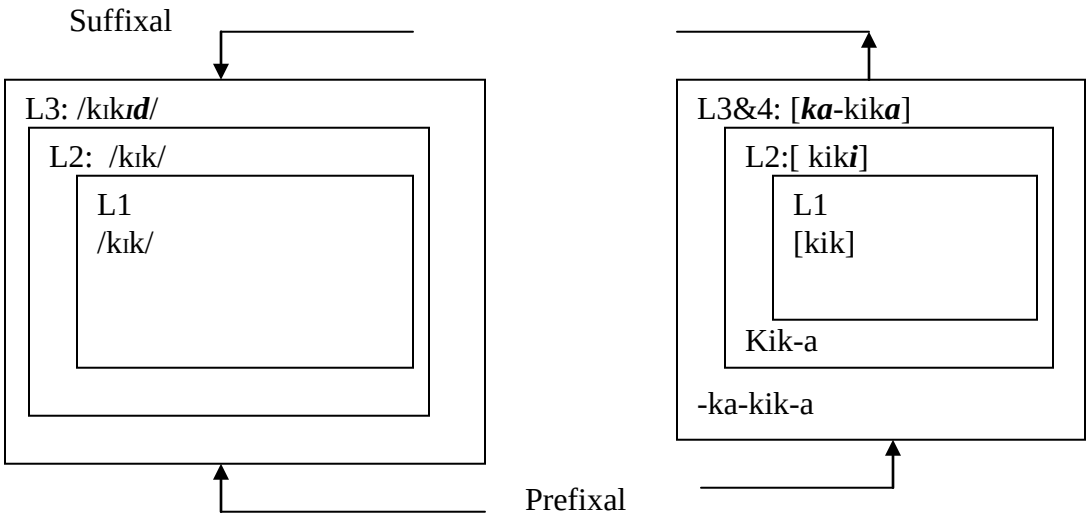


L1= base-word morphology
L2 & L3= Derivational morphology
} Segmental morphology

L4a= Tense Morphology-Segmental Morphology
L4b=Tone and Stress Morphology } supra-segmental morphology

Though [-ka-kik-a] sounds like a syntactic construction, Kiparsky (1982:1-60) treats such constructions as a morphological. It is level three according to the LPM paradigm. This can further be elaborated as follows:

Figure 125: Affixation of Remote Past



Nativisation of the word /kɪk/ ‘kick’from English into Tonga was handled at three morphological levels. At base word level, for /kɪk/ to be accommodated in Tonga the base word construction changes by inserting a paragogic vowel [i] on the coda /k/. The choice of [i] is accounted for by the principle [dors +/i/]. In Tonga, this word is a noun ‘kick’. This is denoted by the paragogic vowel [i]. To change the word from noun to verb category, level 2 process of the LPM paradigm was adopted. This entails altering the paragogic vowel [i]>[a]. The output of vowel alteration was a verb [kika] ‘to kick’. At level three, the English tense sign /t/ was dropped and the Tonga tense affix [ka] was epenthesised, as demonstrated above.

The LPM processes are summarized as follows:

English	Nativisation	Tonga
/kɪk***t***/	↔	[***ka***-kik***a***]

Other examples of words that can be explained using the same processes are as follows:

‘filled’ /fɪlt/> [-ka-<RPT>-fil-a]> [-ka-fil-a]

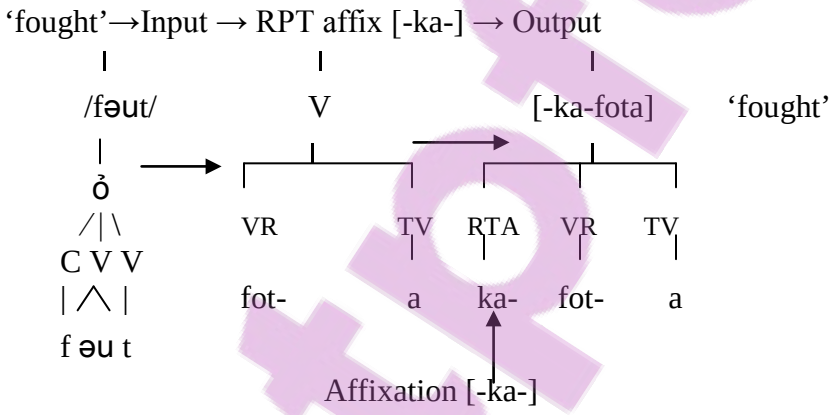
‘pinned’ /pɪnɪt/> [-ka-<RPT>-pin-w-a]> [-ka-piniwa]

‘finished’ /fɪnɪʃt/> [-ka-<RPT>-finiʃ-a]> [-ka-finiʃa]

‘killed’ /kɪlt/> [-ka-<RPT>-kil-a]> [-kakila]

All the English words that were suffixed with /t/ were natvised by substituting the tense suffix with the Tonga tense affix [-ka-].This, in other words, means that all regular verbs in the English language were natvised by simply substituting the tense suffix /t/ with the Tonga affix [-ka-]

There are other English verbs that are in the simple verbs category, but do not need the suffix /t/ for them to be in the past tense. These are basically called the irregular verbs, demonstrated below:

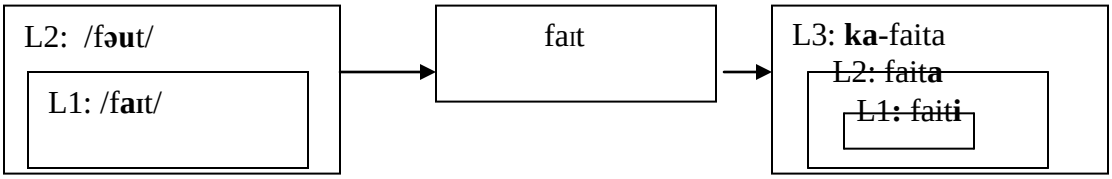


The irregular verb /faɪt/ ‘fight’ changes to /fəut/ to denote past in the English language. This is achieved by altering vowels /aɪ/>/əu/. In the Tonga environment, it was natvised by inserting the remote past tense (RPT) affix [-ka-], in the same way as the regular verbs. The only difference is that the word /fəut/ has no suffix /t/ but is in the remote past tense. Since the word /fəut/ is an irregular verb, past tense is demoted by vowels. The alteration of the vowel in the English linguistic environment /aɪ/ to /əu/ in /faɪt/ ‘fight’ and

/fəut/ respectively, accounts for changes from the present to the past tense. This is demonstrated as follows:

Figure 126: Past Tense in Tonga

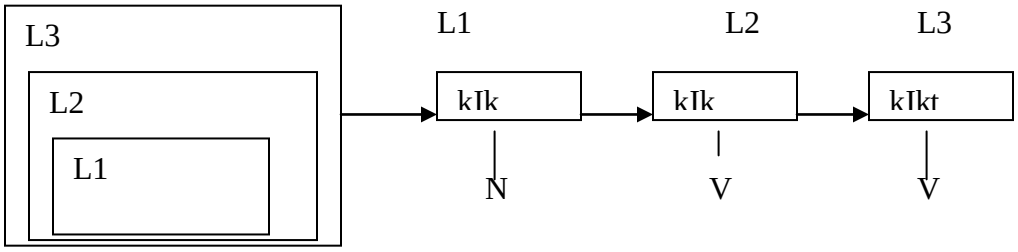
A) English Tonga



Such a scenario slightly differs with regular verbs. Regular verbs have tense affixes, satisfying level three of the LPM paradigm. Irregular verbs have a tense affix, thus vowels are altered to denote tense /faɪt/>/fəut/. This means that such a processes (vowel alteration) is level two of the LPM paradigm. Though that is the case, this process is within the generative paradigm, in particular, LPM Theory. These are fewer lexemes in English. The majority of the English vocabulary demonstrates the following:

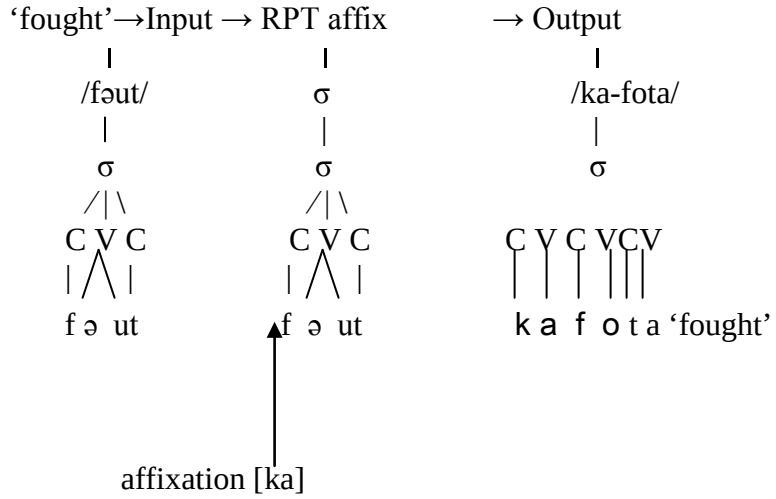
Figure 127: Past Tense in English

B)



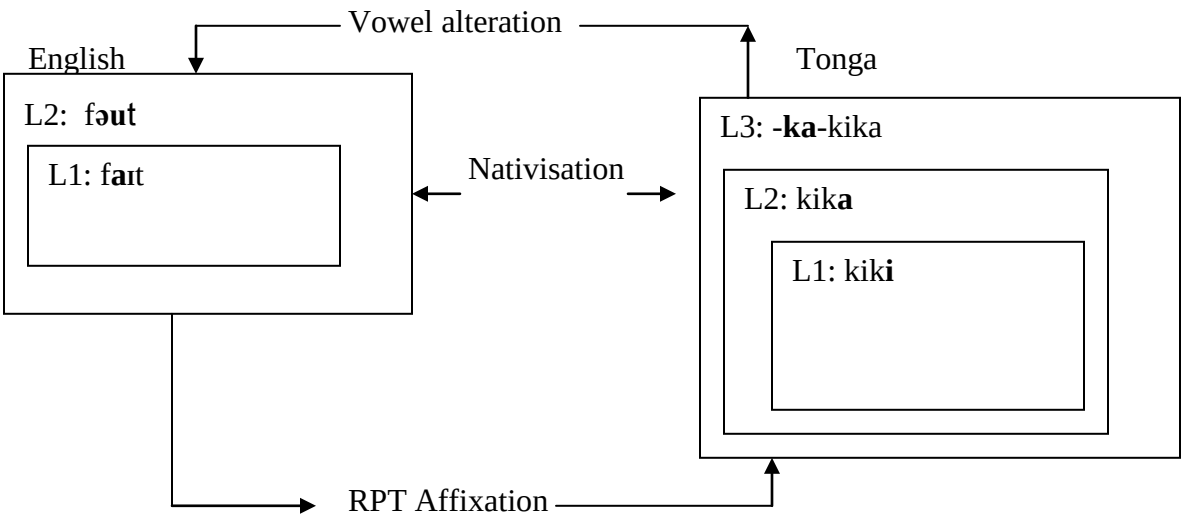
The above scenario shows that RPT suffixation is on level 3, whilst irregular verbs shows that it is on level 2. A comprehensive demonstration of the insertion of suffixes on irregular verbs is as follows:

Figure 128: Suffixation of Irregular Verbs



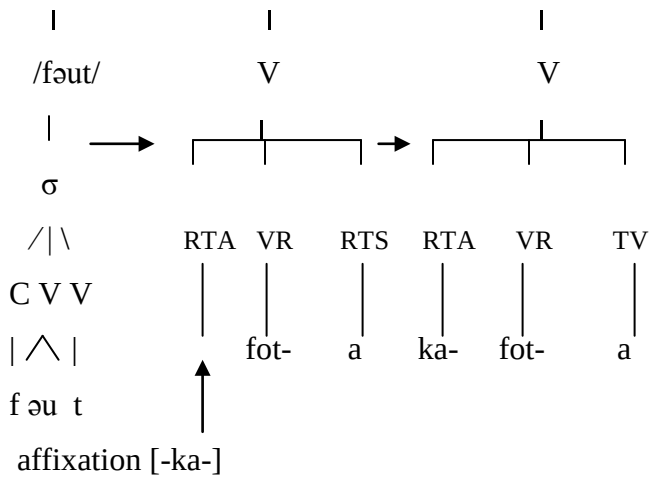
The diagram above, demonstrates that instead of having a suffix to denote tense, the verb /faɪt/ relies on vowel alteration /fəut/. As shown above, the word /faɪt/ is in the present tense and to change it to the remote past, the V-element of the CV syllable, or nucleus of the word /faIt/ 'fight', (C**V**C), is altered to /əu/. The diphthong /aɪ/, denotes present tense, whilst /əu/ denotes remote past.The onset consonant /f/ and the coda /t/ remain unchanged and they serve to maintain the meaning of the verb.The change of the diphthong from /aɪ/ to /əu/ does not alter the meaning of the word but rather the tense. This change is at level 2 of the LPM principle but nativisation of such a word in the Tonga environment occurs at level 3, as shown below:

Figure 130: Handling Irregular Verbs



The level 2, (English process: vowel alteration) is changed to level 3 in Tonga (affixation) in the following manner:

Figure 131: RPT Algorithm



The English word /fəʊt/ was nativised by epenthesising the Tonga RPT affix /ka/ and drop the English ʊ/ʊu/ . English irregular verbs were nativised in the same way. Some of the few other examples were as follows:

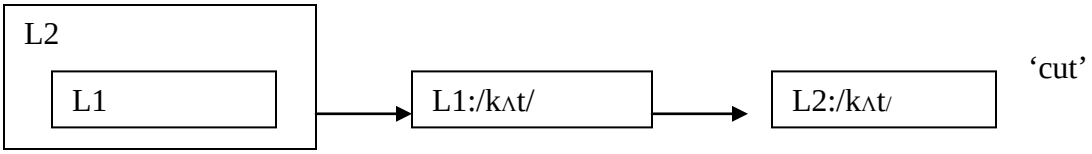
‘caught’ /kɔ:t/> [-ka-kot-a]> [kakota]

‘got’ /ga:t/> [-ka-<RPT>-got-a]> [kagota]

‘spent’ /spent/> [-ka-sipend-a]> [kasipenda]

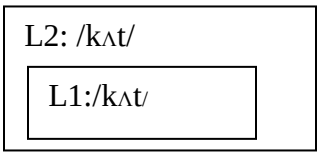
There were however, other simple verbs that showed no difference between the present and the past:

English

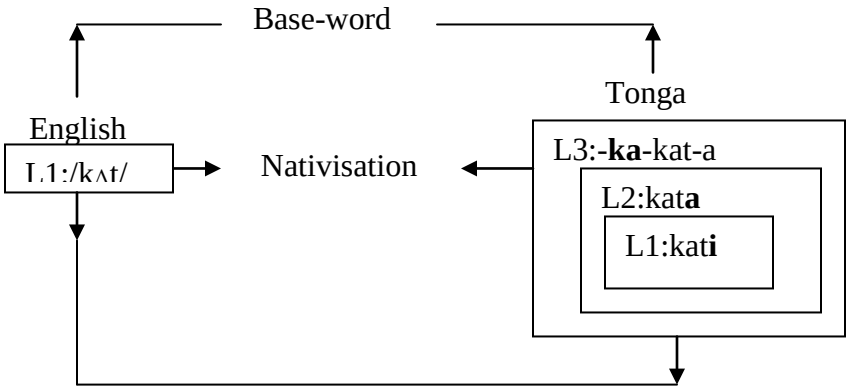


These are words that do not change either the consonant or vowel segments of the CV-tier at all levels of lexical morphology. Whilst the previous example shows change from /faɪt/ to /fəut/, thus alteration of the vowel, this current example show no change at all levels as follows:

English ‘cut’

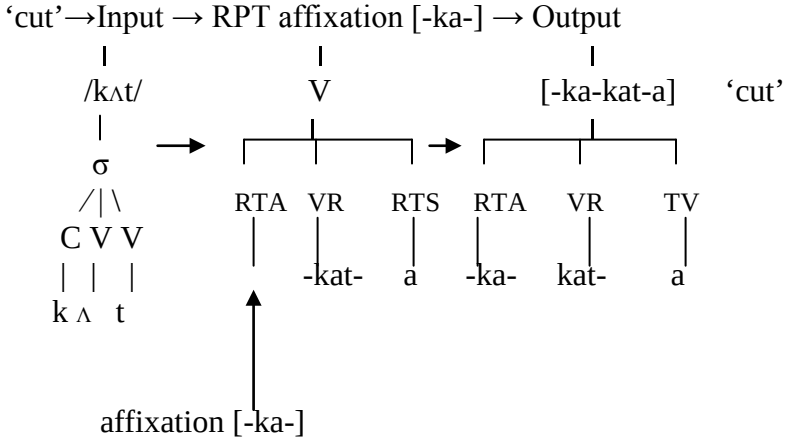


Since there is no vowel alteration at level 2, it follows that the word /kʌt/ ‘cut’ has no level 2 and 3. Nativisation of such a word was done by inserting the RPT [ka] affix in the Tonga environment, which is level 3.There is change from L2 English verb to L3 in Tonga, as follows:



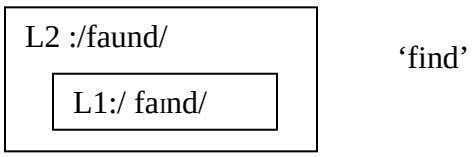
From the example above, the verb /kʌt/ has no /ɪd/ and it is also not characterized by vowel alteration. Since the word /kʌt/ is in the simple past, it was nativised by inserting a remote past affix [-ka-] on the verb base-word.The output was therefore in the remote past in the Tonga linguistic environment.The RPT affix [-ka-] is monosyllabic and demotes action in the past, in the same way as those verbs that have the <t> suffix or that experienced vowel alteration. Such loanwords were very few. These were nativised as follows:

Figure 132: Recent Past Tense



From the above demonstration, the English word /kʌt/ was nativised by inserting the Tonga remote past tense [-ka-].This means that whilst the English version was on the LPM level 1, Tonga RPT equivalent was at level three.

There are also other English verbs that denote remote past tense by altering vowels in the same way as all the other irregular verbs, as follows:

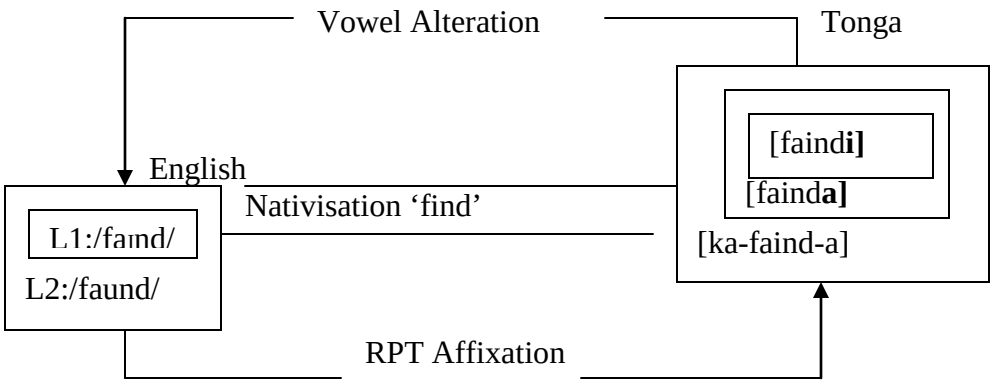


'find'

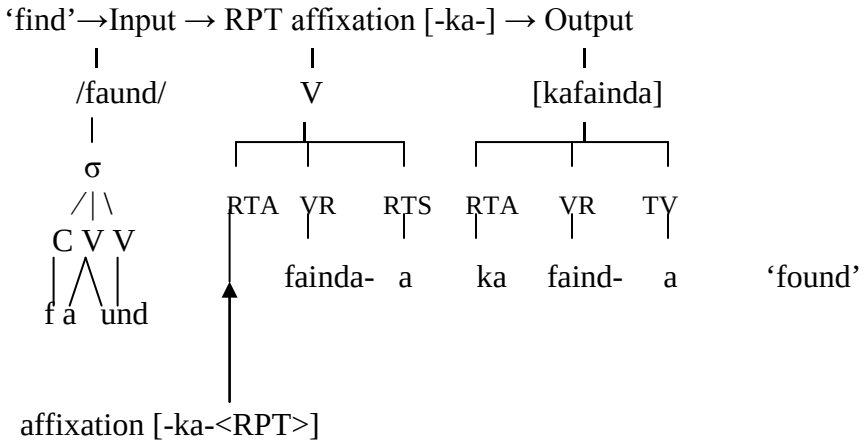
L1-verb base-word morphology

L2-vowel alteration

Level 1, is made up of the verb base-word in English /faɪnd/ 'find'. At a level above that, that is level 2, the nucleus element of the CVC, at segmental level is altered from /aɪ/ to /au/, which denotes remote past tense. When nativised it got to level 3, in the Tonga language as follows:

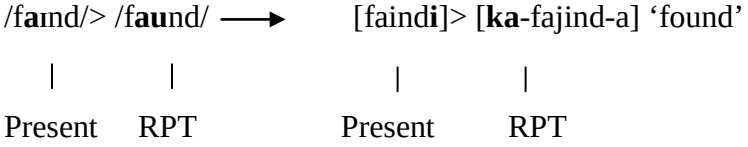


The Nativisation process is demonstrated as follows:



Still the remote past affix is [-ka-] is inserted.This was epenthesis before the verb [fainda], which is a morphological process at level 3.

The nativisation process is as follows:



The scenario below is ungrammatical in Tonga:

/faɪnd/> /faund/ ⟶ *[-ka-faundi]> *[ka-faunda] ‘found’

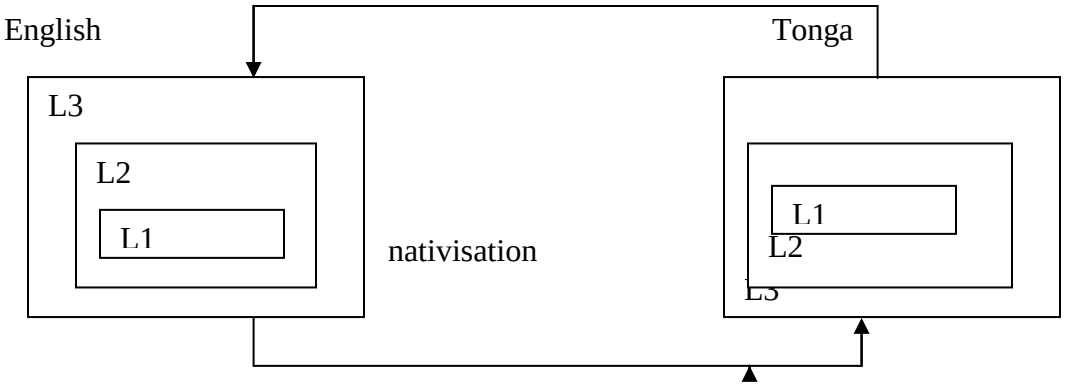
This explains why the RPT is epenthesised on the English present tense version /faɪnd/.

In general, RPT is realized by inserting RPT affixes onto English words so that they become RPT verbs in the Tonga Language.

5.3.3.2 Recent Past Tense

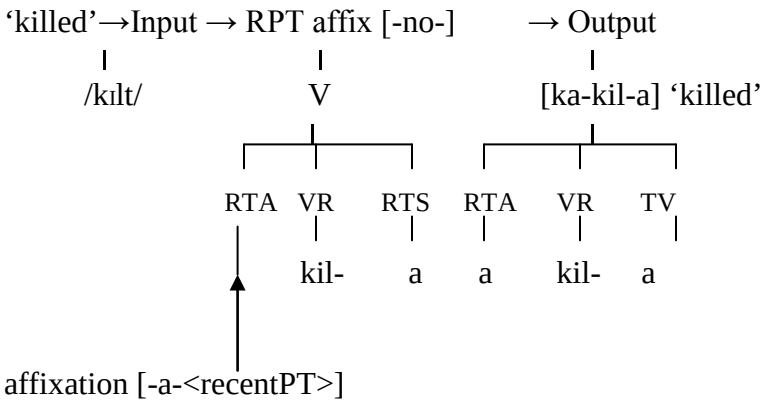
Recent past tense affixes were also epenthesis onto English loans to achieve recent past tense in the Tonga Language. Again this was done on both regular and irregular verbs. The regular verbs were of two types again. Nativisation for the two categories of verbs can be illustrated as follows:

Figure 133: Affixation of RPT



The diagram shows that nativisation was at three levels, namely level 1, 2 and 3.The observation was that English recent past tense morphology is on level 1, 2 and 3, whilst that of Tonga is only level 3. Following these nativisation processes, the following segmental changes were noticed:

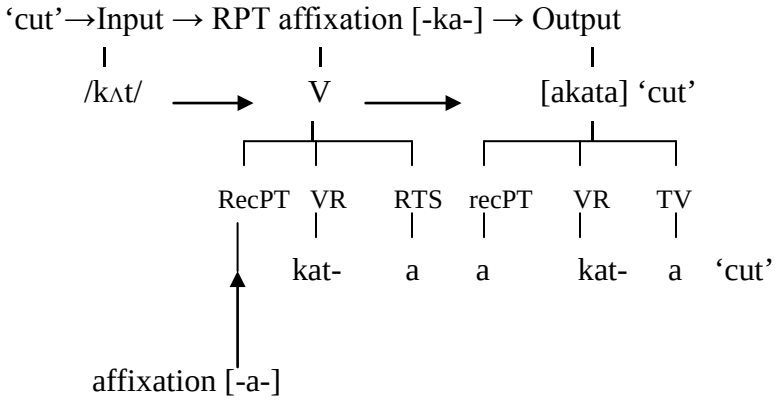
Figure 134: Nativisation Process



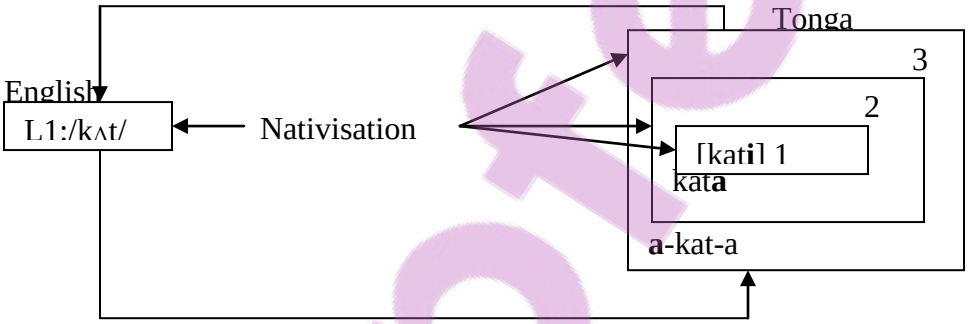
The recent past tense [-a-] is inserted onto the English verb at level 3.The output of the epenthesis is also a morphological construction at level 3, in the Tonga linguistic environment.The affix [-a-] is monosyllabic (V syllable), like the RPT [-ka] but the difference is that [-a-] is only made up of a V-element of the CVsyllable, whilst [-ka-] is characterized by both C and V elements of the CV-tier. However, both are at level 3. List of words that were nativised in the same way are:

‘fined’ /faɪnt/> [-a-faind-a]> [afajinda]
‘briefed’ /brɪːft/> [-a-rePT>-bilif-a]> [abilifa]
‘ditched’ /dɪtʃɪt/> [-a-recPT>-ditʃ-a]> [aditʃa]
‘filled’ /fɪːlt/> [-a-recPT>-fil-a]> [afila]
‘smelled’ /smelt/> [-a-recPT>-simel-a]> [asimela]
Watched’ /waːtʃt/> [-a-recPT>-wotʃ-a]> [awotʃa]
‘kicked’ /kɪkt/> [-a-<recPT>-kik-a]> [akika]

All these regular verbs have /ɪd/ in the English version, which denotes recent past tense and is on level 3.The suffix /ɪd/ was replaced by the RPT affix [-a-] and was done at level 3. This means that both the English version and the Tonga version are at the same morphological level. English words of this nature rely on suffixation and Tonga on affixation to construct RPT verbs. Another example is as follows:

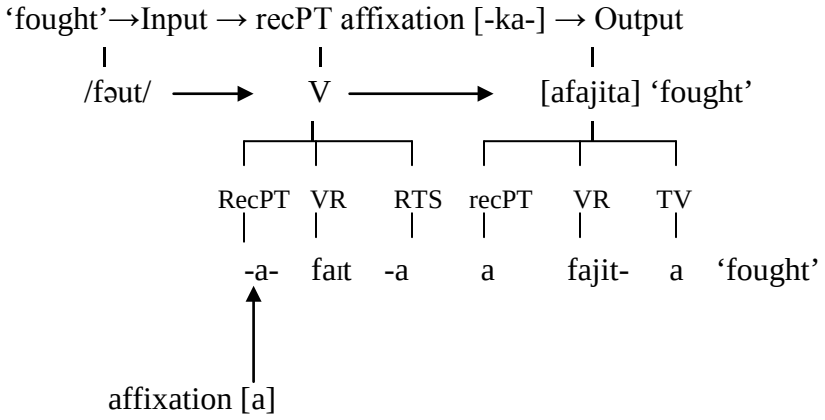


The word /kʌt/ is on level 1 but being both a noun and verb. Its Tonga equivalent is at level three [ka-kata]. The English word /kʌt/ constraints suffixation or vowel alteration but is realized in both present and recent past tense. Its Tonga equivalent is at level 3, as shown below:



There were few words that were nativised this way.

Those English words that required vowel alteration to denote tense were also nativised using L3 principles, as demonstrated below:



The English word /fəut/ is at level 2, vowel alteration level, /f**a**ɪt/>/f**əu**t/) but its Tonga equivalent is at level 3, [-**a**-fajit-a], since it is characterized by the affixation of the RPT affix [-a-].

Other words nativised in the same way are:

‘found’ /faund/> [-a-fajind-a]

‘stood’ /stud/> [-a-sitend-a]

‘fell’ /fel/> [-a-fol-a]

‘shove’ /ʃʌv/> [-a-ʃev-a]

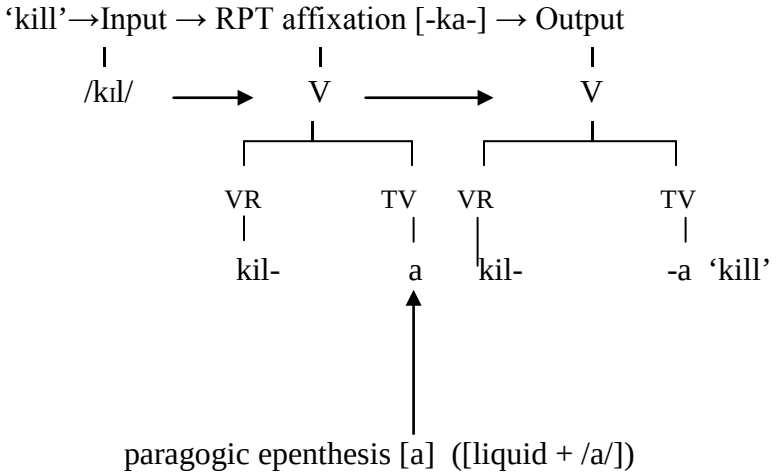
‘caught’ /kɔːt/> [-a-ketʃw-a]

‘fought’ /fəut/> [-a-faijit-a]

5.3.3.3 Present tense

Verbs in the present tense (English) were also nativised in the following manner:

Figure 135: Present Tense



The epenthesis of the terminal vowel, [a], in the environment [liquid+/a/], made the English verb /kɪl/>[kila] acceptable in the Tonga linguistic environmrnt. The presence of the vowel /ɪ/ and the absence of [ɪd] denote present tense in English. However,vowels in Tonga do not denote tense sign.The absence of a tense affix on the verb /kila/ denotes present tense. Other verbs in the present tense are as follows:

'drive' /draɪv/> [dirajiva]

'smoke' /sməʊk/> [simoka]

'chair' /tʃeə/> [tʃeja]

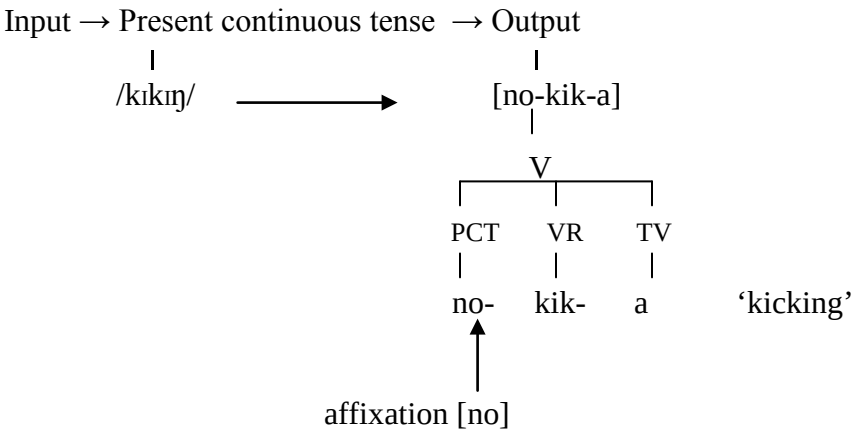
'stir' /stɜ:/> [siteja]

'cook' /kuk/> [kuku]

'kick' /kɪk/> [kika]

5.3.3.4 Present Continous Tense

Figure 136: Present Continuous Tense



The insertion of the tense affix [no-], in the Tonga language, was to substitute the English present continuous tense /ɪŋ/.The presence of the affix [-no-] on the verb /kɪk/, made the verb to denote action in the present continuous tense. Other words that were nativised in the same way were as follows:

'beating' /bɪtɪŋ/> [-no-bit-a]

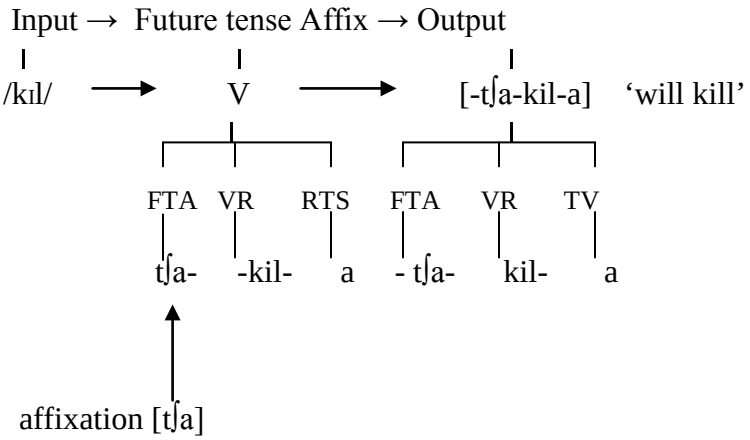
'stealing' /stɪlɪŋ/> [-no-sitil-a]

'feeding' /fɪ:dɪŋ/> [-no-fid-a]

'dancing' /da:nsɪng/> [-no-denz-a]

5.3.3.5 Future Tense

Figure 137: Future Tense



The English language uses words like /ʃæl/ ‘shall’ and /wɪl/ ‘will’ to denote future tense for instance, /wɪl kɪl/ ‘will kill’ orʃæl kɪl/ ‘shall kill’. At this level, the English verb phrase /‘ʃǽ kɪl/ ‘shall kill’ is translated in the future tense to [ʧa -kila] ‘shall kill’ at the morpho-syntactic level in the Tonga environment. The word ‘will’ or ‘shall’ is substituted by the future affix [-tʃa-], in the Tonga environment, as shown on the diagram above. This therefore, follow that the word [-tʃa-kil-a] is a morpho-syntactic lexicon. Other morpho-syntactic lexemes nativised in the same way are as follows:

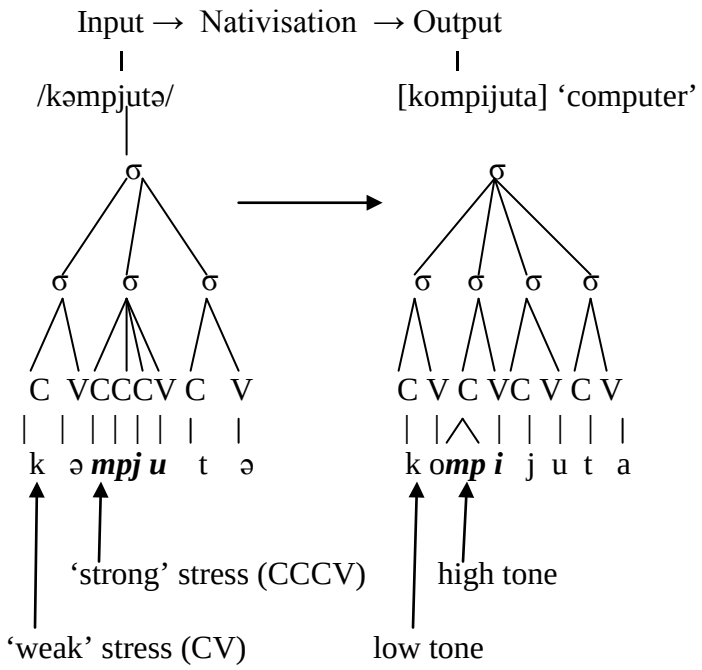
‘will beat’ /wɪl bɪ:t/> [tʃa-bit-a]
‘will fill’ /wɪl fɪl/> [tʃa-fil-a]
‘will feed’ /wɪl fɪ:d/> [tʃa-fid-a]
‘will steal’ /wɪl steɪl/> [tʃa-sitil-a]
‘will make’ /wɪl meɪk/> [tʃa-mek-a]

All these seem like syntactic constructions but the LPM Theory regard them as morphological process.

5.3.4 Handling stress

English is a language characterized by stress, while Tonga is a tonal language. Stress relies on pitch at suprasegmental level. Pitch is basically denoted by the peak of the syllable, thus the V-element of the CV-tier. English stress is realized on the second syllable, in polysyllabic words. The first syllable is characterized by a ‘weak’ stress and the second syllable always by a ‘strong’ stress. The ‘strong’ stress in English is realized as high tone, whilst the weak stress is characterized by low tone.The following diagram summarises low tone to nativise words as follows:

Figure 138: Handling Stress



The diagram shows that on the English word /kəmpjutə/, the first syllable, /kə/ marked by the peak /ə/, denotes 'weak' stress, whilst the second syllable /mpju/ denotes 'strong' stress, which is highlighted on the vowel /u/. In the Tonga environment, the weak stress translates to 'low' tone and the 'strong' stress also translates to high tone as shown by the demonstration above.

Nativisation of English loans at supra-segmental level was done in a way that English 'weak' stress was translated into 'low' tone whilst 'strong' stress into high tone. That way stress was handled, since Tonga does not recognize stress in its phonological inventory. Examples of words nativised in this way were as follows:

'plate' /pleɪt/ (WS)> [puleti](LT)

'driver' /draɪvə/(WS)> [dilaiva] (LT)

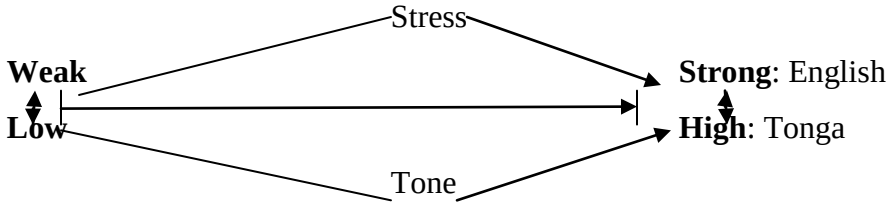
'testament' /testəmənt/(WSST)> [tesitamente](LTHT)

'temperature' /tempərətʃə/(WSSS)> [tempeletʃa] [LTHT]

'conference' /ka:nfərəns/(WSSS)> [ko nifarenzi] [LTHT)

'fantasy' /fǽntəsi/(WSSS)> [fa ntasi](LTHT)

Pronunciation of English words, using suprsegmental rules is done by handling English stress, translating it to tone, since Tonga is a tonal language. English stress is substituted by tone in the Tonga suprasegmental environment. The examples above demonstrates that in pronouncing English loans the Tonga speakers substituted stress with tone in the following ranges:



The interpretation from the diagram above is that where English has ‘weak’ stress, Tonga speakers equate ‘low’tone, where English has ‘strong’ tone, Tonga has high tone.

5.3.5 Handling Homonyms

Figure 139: Handling Homonyms

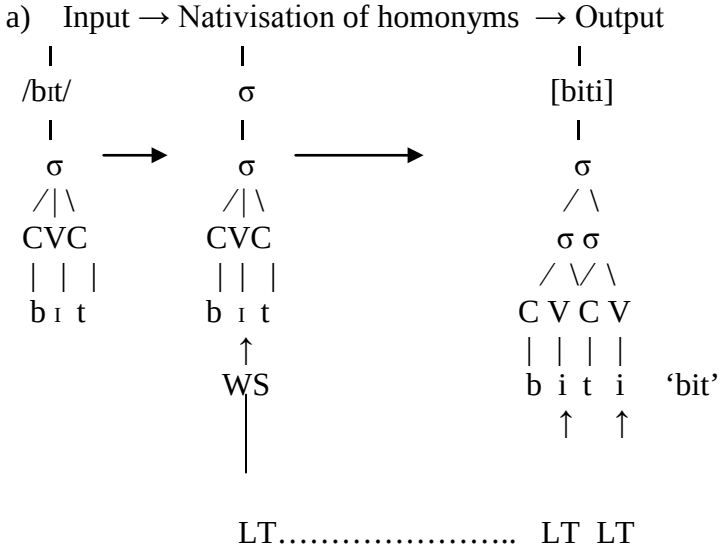
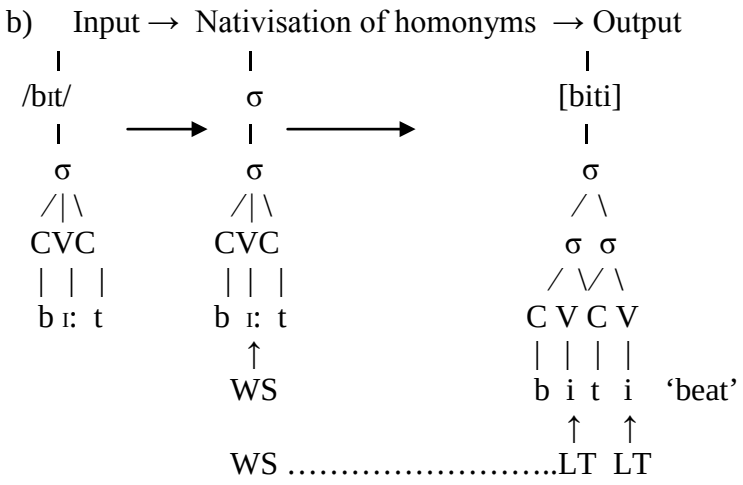


Figure 140: Handling Tone on Homonyms



The illustration a) demonstrates that the word 'bit' /bɪt/ has only 'weak' stress, since it has only one syllable /CVC/, where /b/ is the onset, /ɪ/ is the peak and /t/ is the coda.The 'weak' stress is realized at the peak, the syllable nuclears /ɪ/. This was nativised and changed to [biti], characterized by two syllables. Both syllables are characterized by low tone (LT), since the corresponding word in English has only one syllable (WS). The issue of LT and HT on the first and second is not applicable, since there is only one syllable, hence not polysyllabic. The interpretation is that the output [biti] 'beat' is characterized by LT on both the first and last syllable.

The second [biti] is translated as 'beat' /bɪ:t/. Since the English version /bɪ:t/ has one syllable, it follows that it is characterized by weak stress. The nativised version [biti] therefore, should be characterized by LT. Tonga therefore, could not distinguish between [biti] 'beat' and [biti] 'bit' using the principle of stress and tone. It is also difficult to distinguish the two using vowels since Tonga vowel elasticity is very low. English can distinguish because of a high elasticity of its vowels, /bɪ:t/ 'beat' and /bɪt/ 'bit'.The differences in vowels /ɪ:/ and /ɪ/ accounts for the differences, which is not possible in Tonga since there is only one vowel [i] for the two words. According to Chimhindu (2002:195), English has pitch, which is slightly different from Bantu languages. He says that contrast between lexemes, may be achieved by making use of relatively high and low

pitch levels, whilst Bantu languages use tone. All homonyms were handled following this principle. Not many words were found in this category but the few ones are as follows:

‘skim’ /skɪm/‘scheme’ /ski:m/> [sikimu]/[sikimu]
‘flower’ /flauə/ ‘flour’ /flauə/> [fulawa]/[fulawa]
‘test’ /test/ ‘taste’ /teɪst/> [tesiti]/[tesiti]
‘pick’ /pɪk/ ‘peak’ /pɪ:k/> [piki]/[piki]

5.4 CONCLUSION

This chapter has established that English words were nativised at two levels. The first level was a phonological one whilst the second level was a morphological one. The phonological level involved handling diphthongs, cluster consonants and sounds not acceptable in Tonga. The Tonga native speakers inserted the glide [w] and [j] to break diphthongs since they are not accepted in Tonga. In situations where glide epenthesis was not applicable, diphthongs were substituted by pure vowels. The substitution process was not randomn, it was rather systematic in that vowels in Tonga that share similar feature configurations with the diphthong were used as substitutes.

Apart from that, Chapter Five also established that Tonga does not recognize cluster consonants and as a result, the native speaker’s inserted vowels in between the consonant cluster, thereby creating more syllables at the same time breaking up the cluster consonants. The result was not only the breaking up of cluster consonants but also opening the English closed syllables to become open syllable acceptable in the Tonga language. Those English sounds not recognized in Tonga were also substituted by their equivalent in the Tonga environment.

Morphologically, English and Tonga are both prefixal and suffixal languages. However, the difference is in how each of the two languages handles prefixes and suffixes. English sometimes inserts prefixes following the base of the word whilst Tonga inserts before the base of the word.This means that English plurals are realized by inserting /s/ at the end of the word while Tonga uses the prefixes. This chapter therefore established that Tonga

speakers replaced the English plural suffixes with Tonga plural prefixes. In the same way, English inserts tense suffixes to denote time of the verb and is usually ‘ed’ /ɪd/ whilst the Tonga speakers use tense affixes like [ka-] for remote past, [no] for present continous and so on. These are some of the morphological processes captured in this chapter.

The chapter also highlights the processes that account for differences in handling tone and homonyms. Whilst English uses stress to distinguish words, Tonga speakers use tone. As a result, the Tonga native speakers managed to handle loans effectively using internalized phonological and morphological rules. However, there were instances when language rules were overlooked to ensure proper approximation of certain words, since Tonga and English differ in phonological and morphological inventories.

CHAPTER SIX

6.0 CONCLUSION

6.1 RESEARCH FINDINGS AND CONCLUSION

This study, which investigates how English words are handled in the Tonga linguistics environment, accounts for the various ways in which words borrowed from English into Tonga are phonologically and morphologically adapted. The objectives of the study are to unveil how loanwords from the English language are phonologically and morphologically altered to adhere to the Tonga phonotactic and morphological constraints. Phonological and morphological processes discussed involved vowel and consonant substitution, glide epenthesis and epenthesis of affixes. The researcher targeted these processes because they are the ones which account for differences between English and Tonga. Any changes to the English words in the Tonga linguistic environment are subjected to these processes. This means that the researcher selected processes that enabled him to observe and explain changes experienced by lexical items from the English language into Tonga. The research therefore, was aimed at studying the phonological and morphological nativisation of English loans that exist in the Tonga language.

For a comprehensive study of English loans in Tonga, the researcher required valuable data and in order to solicit the data from sampled informants, he adopted a holistic approach. In other words, not one research method was used but to a great extent the researcher adopted a qualitative method and to a lesser extent a quantitative paradigm. In soliciting data, the qualitative method was more applicable since language study is intricate. It was very difficult to predict people's responses and as a result, the qualitative method and its techniques were adopted. However, there were times during the research when quantifying data was inevitable, especially when recording the number of respondents per certain variables. Also sampling people for interview required quantification of data. This made it indispensable to adopt and harmonize the two

methods (qualitative and quantitative). There was therefore harmonization of the quantitative and qualitative research methods and techniques, to solicit valuable data from sampled informants. The sampling methods, namely, random and systematic adopted the quantitative research paradigm, whilst soliciting data from informants required a qualitative approach, since human behaviour is unpredictable. As a result, arriving at informed decisions required both qualitative and quantitative methods.

This, therefore, prompted the researcher to adopt a holistic approach. Apart from that, the research design, human based, demanded a number of research tools since human behaviour, unlike matter, varies from one person to another. John (1984:45) says that "no two people are a replica of each other, even those who share the same culture and environment". In this respect, a wide spectrum of research tools was used. These included questionnaires, structured and unstructured interviews, focus group study, reference groups, as well as already constructed corpus, a glossary of terms and participatory and observation techniques. Questionnaires enabled the respondents to provide data without the influence of the researcher, since there was no direct interaction between the two. Respondents completed questionnaires in the absence of the researcher, making the process free from bias. However, the major problem was that some of the questionnaires were not returned and some of the information provided was not relevant. The structured and unstructured interviews were adopted to circumnavigate this problem. The presence of the researcher meant that he could redirect or sometimes rephrase the questions when not properly comprehended and valuable data was solicited using these two techniques, however, the presence of the researcher made it very difficult for informants to be free, since the research coincided with political instability in Zimbabwe, in particular the March 2008 pre-election violence and intimidation.

It was even more difficult to adopt participatory method, since respondents had developed internal censorship, especially to strangers. The use of research assistants that were known in the researched areas made it possible to use the methods, though informants were still skeptical about interviews. The researcher also got readily available data from the Tonga corpus, under construction at African Languages Research Institute

of the University of Zimbabwe. From such a wide spectrum of data soliciting techniques, useful data was collected.

To analyze the data systematically, a theoretical framework was designed and adopted. The theoretical framework adopted was a blend of three generative linguistic theories, namely, Distinctive Feature theory, CV Phonology model of syllable structure and Lexical Phonology and Morphology. The theoretical framework is therefore crafted in a generative paradigm, with phonological and morphological arguments. The distinctive feature paradigm was insightful in as far as substitution processes were concerned, since this process can only take place when sounds substituting one another have similar distinctive features. The CV Phonology paradigm was needed to account for the various syllable typologies and changes in both the English and the Tonga linguistic environments. The Lexical Phonology and Morphology theory was very much insightful in handling word forms from the base form to the higher order derived version.

Apart from just providing an informed and systematic guide for data analysis, the theoretical framework also provides systematic notations for the purposes of data presentation. This, in other words means that the theoretical framework informs the researcher on the methodology to process large volumes of data solicited from informants and also the methodology of how to systematically and comprehensively present the data during discussions of findings, the preoccupation of Chapter Five of this study.

Apart from the theoretical framework, the researcher also discussed the Tonga phonology and morphology. The processes handled were intended to be the control of the discussions, in Chapter Five. This was because for any word to enter into the Tonga language, it has to pass various phonotactic constraints and morpho-lexical tests. These were therefore, discussed comprehensively in Chapter Four and were taken as the 'norm' in this whole study.

The findings show that Tonga has no diphthongs but rather it has pure vowels and glides which are sometimes referred to as semi-vowels. The glides are functioning as diphthong breakers, during nativisation, to enable loanwords to concur with Tonga phonology.

Two glides were epenthesized, [w] and [j], so as to break diphthongs that are not acceptable in the Tonga language, which were found to be part of the English loans that were entering into Tonga. These glides are [w] and [j]. The data seems to show that the diphthongs /ɪa/ and /aɪ/ were broken by the epenthesis of [j], whilst /au/ and /ua/ were broken by the epenthesis of [w]. All this is evidenced by the existence of glides [j] and [w] in the place of the diphthongs, given above, on nativised English loans.

The glides seem to introduce an additional syllable onset to the word, hence creating more syllable nodes, CV tiers and segments on the nativised form. The diphthongs broken become peaks on the adopted words, whilst the glides, epenthesised, are onsets. The epenthesis of glides also change English loans from the general CVC or VCV structures to a CV structure that is acceptable in Tonga. This also confirms that, apart from breaking diphthongs, glide epenthesis also serve to change the syllable structure from CVC to the CV, from the English syllable structure to the Tonga structure respectively. More syllable nodes are also created by the introduction of glides, thereby transforming some English monosyllabic words to become polysyllabic. The choice of the epenthetic glide systematically depended on the phonological environment.

From the data, it is clearly established that English has clusters, whilst Tonga has complex consonants that have root nodes characterized by two or more simultaneous oral tract constrictions. Considering the unitary treatment of these consonants, adopted in this study, it is established that Tonga has no cluster consonants. Tonga has complex onsets, whilst English has cluster consonants. This confirms that consonant clusters are not acceptable in Tonga. These (clusters) were dealt with by breaking them up. The breaking of clusters was done by means of vowel epenthesis. Vowels were epenthesised at the mid and paragogic positions on a word. From the data, it was clear that vowel epenthesis resulted in the introduction of syllable peaks to clustered onsets. This resulted in CV

syllabic words as opposed to CVC syllabic English words. The introduction of vowels (peak) to clustered onsets resulted in the establishment of more syllable nodes and segments during vowel epenthesis. Vowel epenthesis was therefore, used to change the CVC English syllable to become CV acceptable in Tonga, since Tonga does not recognize CVC syllable structures.

It was also observed that vowels (peak) were epenthesised to open up closed syllables. Vowel epenthesis also demonstrated that Tonga does not allow closed syllables since these syllables have codas that are not acceptable in Tonga. It was also established that the choice of vowel epenthesis depended on the phonological environment.

The data demonstrated that English has twenty-five pure vowels and diphthongs added together, whilst Tonga has only five pure vowels. These are monothongs, diphthongs, triphthongs and pure vowels. The many English vowels were reduced to only five vowels [a,e,i,o,u] in Tonga. The analysis of the findings showed that vowel substitution was achieved by replacing diphthongs with pure vowels, which share similar feature values with them.

The data also seem to suggest that Tonga does not accept the following sounds: /ɵ/, /n and s/, /s and j/, /r/ and so on. These two sounds were replaced by their equivalencies in Tonga. The choice of sounds to replace the English ones was phonological. It was observed that sounds with similar feature values substituted one another or those that are close to each other, in terms of feature values. This can be evidenced by the Englis sound /s/ which was substituted by [ʧ] in words like ‘school’ /skul/ to [tʃikolo] and this was necessary considering the fact that both /s/ and [ʧ] share the same phonological features, where ‘school’ /skul/ becomes [tsikolo]. The choice of either [s] or [ʧ] in Tonga to place the English /s/ was not merely a matter of competence by native speakers but rather phonologically acceptable. The substitution processes demonstrated were not affecting syllable structures of these words, since they were only done on onsets. The changes were only consonantal and syllable structures were not affected by the nativisation processes.

The analysis of the findings also showed that English and Tonga allow pre-nasalisation of voiceless sounds such as /p/, /t/, /k/. This was shown by the existence of these voiceless consonants, in pre-nasalized environments and the voice [b], [d] and [g] at the same time. The sounds [b], [d] and [g] are voiced and were found to be acceptable in Tonga. The choice of where to use voiced or voiceless sounds was accounted for by distinctive features. Only those sounds that share certain oral features could exist in certain environments. This was evidenced by /p/ used in voiceless environments whilst its close voiced equivalent [b] was also used in voiced environments, the same with /t/ and [d] as well as /k/ and [g] because the pairs share similar distinctive features. Tonga allows the existence of voiceless and voiced sounds in pre-nasalized environments. This is because nasals [m] and [n] are [+voice], whilst /p/, /t/ and /k/ are [-voice].

Morphologically, English and Tonga are both prefixational and suffixational languages but the way they handle tenses and prefixes differ. The study established that during the process of nativisation, the English tense suffixes were dropped for the tense affixes that are acceptable in Tonga. This meant that the way English language handles prefixes and tenses is different. While English uses tense suffixes, the speakers substituted these suffixes with tense affixes. It was also established that some irregular verbs handled tenses by altering vowels on English words and the morpho-phonological process not acceptable in Tonga. English also demonstrated that pluralization was done (nouns) by inserting the suffix /s/ on most of the countable nouns, though uncountable nouns constraint the insertion of the plural suffix /s/. On the contrary, Tonga speakers substituted all the suffixes with tense affixes. Like the uncountable nouns in English that constraint suffixation of the plural suffix /s/, Tonga's class <9> nouns also constrained to the affixation of the plural affix [dzi]. This implies that during morphological nativisation of English loans in Tonga, substitution process was adopted to replace English suffixes with Tonga prefixes.

6.2 RECOMMENDATIONS

Though the research has unveiled valuable data and informative discussions were advanced, there were a number of interesting areas that remained void. It is hoped that this study will stimulate further research in the areas of Tonga phonology, morphology, orthography, syntax and nativisation, so as to deepen a phonological and morphological understanding of nativisation. Since phonological and morphological systems of a language are important for the development of a language's orthographies, it is also hoped that other such studies will stem from the current one, since Tonga is a language without a comprehensive orthography. Developing orthography for a language ensures the language's continued existence and its assertiveness as an independent language that can handle loans fully.

Understanding of the Tonga language's rules also enables the development of syntax at segmental level and other higher order rules and at supra-segmental level. This current study is therefore an eye opener and provides insightful behaviours of the language at both phonological and morphological levels, which is a pre-requisite for studies at levels above. From this assertion, it is also hoped that higher order segmental and supra-segmental studies can be opened. The theoretical framework designed for this research is generative and findings of this study are best explained taking a generative paradigm. Other researches may also emerge, testing the same language phenomena but taking other linguistic theoretical paradigms, to enhance understanding of English loans in the Tonga linguistic environment, from a number of theoretical bases.

The study is also hoped to be used as a basis to further constructive studies relating to Bantu languages, other than Tonga. Since Tonga is a Bantu language, the findings from this study can be an 'eye opener' and insightful to the understanding of similar languages in a diaglossic situation with English.

The research therefore, recommends a thorough interrogation of phonological and morphological behavior of English loans in Tonga, for a deeper understanding of the language. It also recommends studies of higher order processes to fully develop the

language since the language has not been studied before, except in the corpus process which is underway at African Languages Research Institute. It is also hoped that other valuable researches can be opened in all the other minority languages of Zimbabwe and the rest of the world, as a way of preserving and developing the languages which are under threat of extinction.

BIBLIOGRAPHY

PUBLISHED BOOKS

Abercrombie, D. 1967. Elements of General Phonetics. Edinburgh: Edinburgh. University Press.

Abudulaziz, M. 1978. Advances in the Study of Societal Multilingualism. The Hague: Mounton.

April, M. S. 2002. An Introduction to English Phonology. Edinburgh: University Press.

Adler, P. A. and Adler, P. 1987. Membership Roles in Field Research. Newbury Park: Newbury Publishers.

Anderson, J. M. and Ewen, C. 1987. Principles of Dependency Phonology. Cambridge: Cambridge University Press.

Becker, H. S. 1996. The Epistemology of Qualitative Research. Chicago: Chicago Press.

Bloomfield, L. 1933. Language. London: Allen and Unwin.

----------1941. An Introduction to the Study of Language. New York: Holt, H. and Company.

Boudelae, S. 2002. Perspectives on Arab Linguistics. Florida: Benjamins.

Catford, J. C. 1977. Fundamental Problems in Phonetics. Edinburgh: Edinburgh University Press.

Chimhundu, H. 2002. Adoption and Adaptation in Shona. Oslo: Unipub AS.

Chomsky, N. and Halle, M. 1968. The Sound Pattern of English. New York: Harper and Row.

----------1970. Aspects of the Theory of Syntax. Massachusetts: Massachusetts Publishers.

Clements, G. 1985. The Geometry of Phonological Features. Cambridge: Cambridge University Press.

Clements, G.N. and Keyser, S.K. 1983. CV Phonology: A Generative Theory of the Syllable. Cambridge: Mas MIT Press.

Coupland, N. and Jaworsky, A. 1997. Sociolinguistics. London: Macmillan.

Clide, M. 1967. Transference and Priggering. The Hague: Nijhoff.

Crystal, D. 1997. A Dictionary of Linguistics and Phonetics. Oxford: Blackwell.

----------2000. Language Death. Cambridge: Cambridge University Press.

Clements, G. N. and Hume, E. V. 1995. " The International Organization of Speech Sounds" in Goldsmith, J.A. (ed) The Handbook of Phonological Theory. Oxford: Blackwell.

De Lacy, P. 2007. The Cambridge Handbook of Phonology. Cambridge: Cambridge University Press.

Denzin, N. K and Lincoln, Y. S. 2000. Participant Observation. Walnut Creek: AltaMira Press.

DeWalt, K.M. and DeWalt, B. R. 2002. Particpant Observation. Walnut Creek: AltaMira Press.

Doke, C.M. 1931. A Comparative Study in Shona Phonetics.Johannesburg: Witwatersrand University Press.

Durkeim, E. 1995. Critical Assessments. London. Routledge.

Goldsmith, J, A. 1995. Language Arts and Discipline. Cambridge: Cambridge Press.

Glimson, A.C. 1964. An Introduction to the Pronunciation of English. London: Arnold.

Gleason, J. H. A. 1961. An Introduction to Descriptive Linguistics. New York: Holt Rinehart and Winston.

----------(1965. Linguistics and English Grammar. NewYork: Holt Rinehart and Winston.

Hachipola J.S.1998. A Survey of the Minority Languages of Zimbabwe. Harare: University of Zimbabwe Publications.

Hadebe, S. 2002. The Standardization of the Ndebele Language through Dictionary Making. Oslo: University of Oslo.

Halliday, M.A. 1994. An Introduction to Functional Grammar. London: Edward Anold.

Haugen, E. 1949. The Ecology of Language. Stanford: Stanford University Press.

Haralambos, M. and Holborn, M. 2004. Sociology: Themes and Perspectives. London: Collins.

Hock, H. H.1991. Principles of Historical Linguistics. New York: Mounton de Gruyter.

Hooper, J. B. 1976. An Introduction to Natural Generative Phonology. New York: Academic Affairs.

I.P.A. 1949. The Principles of the International Phonetic Association. London: University College

Jakobson, R. and Halle, M. 1952. Preliminaries to Speech Analysis: The Distinctive Features and their Correlates. Cambridge: MIT Press.

James, C. 1988. Contrastive Analysis. London: Longman Publishers.

Jespersen, O. 1938. Growth and the Structure of the English Language. Oxford: Basil Blackwell.

John, A. 2000. The Handbook of Phonology Theory. Amazon: Blackwell Publishers.

Jones, D. 1956. The Pronunciation of English. Cambridge: Cambridge University Press.

Jones, D. 2000. An Outline of English Phonetics. New York: Dutton.

Katamba, F. 1989. An Introduction to Phonology. London: Longman Academic Press.

Labov, W. 1972. The Social Stratification of English in New York City. Washington DC: Center for Applied Linguistics.

Ladefoged, M. 1975. Preliminaries to Linguistic Phonetics. Chicago: Chicago University Press.

Laver, J. 1994. Principles of Phonetics. Cambridge: Cambridge University Press.

Lehman, W. P. 1992. Historical Linguistics. London: Routledge.

Lodhi, A. 2000. Oriental Influences in Swahili: A Study in Languages and Culture Contacts.

Lyons,J. 1968. An Introduction to Theoretical Linguistics. Cambridge: Cambridge University Press.

Mathangwane, J. T. 1999. Ikalanga Phonetics and Phonology: A Synchronic and Diachronic Study. Califonia: C.S.L.I. Publishers.

McCarthy, J. J. and Prince, A.S. 1992. Prosodic Morphology: Constraint. London: Routledge.

O'Connor, J. D. 1973. Phonetics. Harmondsworth: Penguin.

Pongweni, A. J. C.1990. Studies in Shona Phonetics: An Analytical Review. Harare: University of Zimbabwe.

Plag, 2003. Morphological Productivity, Structural Constraints in English Derivation. Berlin: Monton deGruyter.

Robins, R.H. 1964. General Linguistics: An Introductory Survey. London: Longman.

Rockey D. 1973. Phonetic Lexicon. London: Hayden.

Sapir, E. 1949. Language. Harcourt: Brace Company Publishers.

Schapera, I. 1937. The Bantu Speaking Tribes of South Africa. London: Routledge.

Shillington, K. 1995. History of Africa. Oxford: Macmillan Publishers Limited.

Wenreich, H. 1953. Languages in Contact. Mouton: The Hague.

Wolcott, F. 1995. The Art of FieldWork. Walnut Creek: AltaMira Press.

ARTICLES AND DISSERTATIONS

Abdul. M. 2004. "The Effects of Language Contact: The Case of Arab and Ibgo." Unpublished DPhil Diss. Khartoum: International University of Africa.

Aronoff, M. 1976. "Restricting Suffix Combinations in German and English: Closing Suffixes and Monosuffix Constraint". In Aronoff, M. (ed. 1976), Natural Language and Linguistic Theory. Cambridge: Cambridge University Press. Vol. 20, Number 3. 162-180.

---------- 1976. "Word Formation in Generative Grammar." In Linguistics Inquiry Monograph. Cambridge: Cambridge University Press. Vol. 2, Number 1. 15-31.

Babie, J. 1999. "The Influence of L1 on L2". In Abdul, J. (ed. 1999), The Education Yearbook 2003. Khartoum: International University of Africa. Vol. 3. Number 1. 22-40.

Ballot, E. 1971. "A Preliminary Survey of Adoptives in Southern Sotho" Unpublished Dissertation for Hons. Johanesburg: University of Witwatersrand.

Booij, G. and Rubach, J. 1984. "Morphology and Prosodic Domains in Lexical Phonology". In . Veira, S. (ed. 1984), Yearbook. Vrije: Vrije University. Vol. 1, Number1. 88-102.

Brevins, J. 1995. "Phonological Theory." In Goldsmith, J. (ed. 1995), A Handbook of Phonology. Oxford: M.A. Blackwell. 206-214.

Brown, F. 2004. "Adaptation of English Words in Scandinavian Languages." In Colonel, P. (ed. 2004), Linguistics Fieldwork. Oslo: University of Oslo. 22-40.

Canworth, M. 1991. "Language Acquisition". In Modern Language Journal. Cambridge: Cambridge University Press. Vol. 10, Number 2. 150-177.

Chevalky, O. 2001. “Language Interdependency: A Synchronic and Diachronic Paradigm.” In Steven, Y. (ed. 2001), Language Interdependency. Cambridge: Cambridge University Press. 112-135.

Chikanza, J. 1986. “Borrowing in Shona.” Unpublished MA. Diss. Florida: University of Florida.

Chimhundu, H. 1979. “Some Problems relating to Incorporation of Loanwords in the Lexicon”, Zambezia, Harare: University of Zimbabwe. Vol. 11, Number 1. 75-91.

Crowhurst, M. 1993. “Minimality and Foot Structure in Metrical Phonology and Prosodic Morphology.” Doctoral Dissertation. Arizona: University of Arizona.

Dembetembe, N. C. 1970. “Verbal Constructions in Korekore.” Unpublished MPhil Dissertation. London: University of London.

Denson, N. 1972. “Some Observations on Language Variety and Pluralingualism.” In Pride, J. B. and Holmes, S. (eds. 1972), Language in Context. London: University of London. 65-77.

Greenberg, J. H. 1971a. “The Study of Language Contact in Africa”, In Greenberg, J. H. (ed. 1971a), Languages. London: Batsford. 185-197.

----------1971b. “ African Languages.” In Greenberg, J.H. (ed. 1971b), Languages London: Batsford. 12-30.

Harlborn, R. 2004. “Bilingualism.” In Conference Procedings 2004. New Delly: Indiana University. 78-99.

Hawkins, S. and Allen, G. 1982. “Phonological Rhythm: Definition and Development.” In Yeni-Komishian, G. H., Kavanagh, J. and Ferguson, C. A. (eds. 1982). Child Phonology. Vol. 2, Number 1. 227-256.

Hymes, D. 1968. “The Ethnography of Speaking.” In Fishman, J. A. (ed. 1968). Language in Culture and Society. New York: Harper and Rov. 99-138.

Ibrahim, M. 1998. “Arabization and its Effects on Kinyarwanda.” Unpublished MA Thesis. Khartoum: International University of Africa.

Ibdoil, G. 2004. “Intricacies of the African Arab Language.” Unpublished MA Thesis. Khartoum: International University of Africa.

John, H. 1984. “Borrowing.” In John, H. (ed. 1984), Yearbook.Vol. 2. Number 1. Harmondsworth:University of Warsaw. 122-140.

Kadenge, M. 2003. “The Influence of the Shona Phonology on the English Speech of First Language (L1) Shona Speakers of English-With Specific Reference to Vowels”. Unpublished Hons Diss. Harare: University of Zimbabwe.

Kadenge, M. 2007. ”Nambya Phonology.” Unpublished DPhil Thesis. Harare: University of Zimbabwe.

Kaisee, E. and Show, M. 1985. “On the Theory of Lexical Phonology. In Holmes, P. (ed.1985), Phonology Yearbook. Vol. 2. Number 1. Washington DC: University of Washington. 135-150.

Kashoki, M.E. 1978. “The Language Situation in Zambia.” In Channesian, S. and Kashoki, M. E. (eds., 1978), Ecology of Language. Lusaka: University of Zambia. 19-46.

Kiparsky, P. and Mohanan, S. 1982. “From Cyclic Phonology to Lexical Phonology.” In va der Hulst, H. and Smith, N. (eds. 1982), The Structure of Phonological Representations. New Delly: Indiana University. Vol 1 1, Number 1. 130-153.

Laver, J. 1979. “The Description of Voice Quality in General Phonetic Theory.” Work in Progress, Edinburgh: Department of Linguistics: Edinburgh University. 30-52.

Mazrui, A. 1966. “From Lingua Franca to National Language: A Re-Examination of Standard”. Unpublished DPhil Thesis. New York: University of New York.

Maxwel, P. 2004. “The Intricacies of Language Research: The Case of Sudanese Arabic.” Unpublished DPhil Thesis. Khartoum: International University of Africa.

Mheta, G. 2005. “The Impact of Translation Activities on the Development of African Languages in a Multilingual Society: Duramazwi reMimhanzi as a

Case Study." In LEXIKOS 15. Stellenbosch: Bureau of the Wat. 15-33.

Mheta, G. and Zivenge, 2008. "Phonological Adaptation of Borrowed Terms in Shona Lexicography: The Case of Duramazwi reMimhanzi." LEXIKOS's on going project. Stellenbosch: Bureau of the Wat. Number 18. 41-67.

Mhloyi, L. 1995. "An Appraisal of the Quantitative Research Method." Unpublished MSC Diss. Boston: Boston University.

Mkanganwi, K.G. 1973 "An Outline of the Morphology of Substatives in Ndau, with a Preliminary Note on Ndau Phonology." Unpublished Dissertation for MPhil. Harare: Harare: University of Zimbabwe.

Miller, R. 2003. "The Concept of Bilingualism." In Miller, R. (ed. 2003). The Education Yearbook. Khartoum: International University of Africa. 133-150.

Mosha, M. 1971. "Loan-Words in Luanda: A Serach for Guides on the Adaptation of African Languages to Modern Conditions." In Whiteley, W. H. (ed., 1971), African Linguistics. Luanda: Batsford. 288-308.

Morrison, B. 1989. "Using News Broadcasts for Authentic Listening Compensation." In ELT Journal 1989, Vol. 1, Number 1. Oxford: Oxford University. 99-115.

Nkabinde, A.C. 1968. "Some Aspects of Foreign Words in Zulu." In Communication of U.N.I.S.A. Pretoria: Unisa. 33-59.

Odeingo, D. 2004. "Languages in Interaction." In Odeingo, D. (ed. 2004), Linguistic Diversity. Cork: Cork University. 113-134.

O'Leary, T. 2004. "Linguistic Diversity at an Earlier Age: An Independent Evaluation of the Modern Language in Primary School Initiative in Ireland." in Roberts, J. (ed. 2004), Linguistic Diversity. Cork: Cork University College 66-89.

Raymond, W. 2005. "Field Guides in Academe: A Citation Study." In Journal of Academic Librarianship. Vol. 2, Number 1. Cork: University of Winois. 213-229.

Rodgers, J. 1995. “Using Diachronic Linguistics in the Classroom Language.” In Modern Language Journal. Vol. 111, Number 2. 212-222.

Roberts, J. 1962. “Sociocultural Change and Communication Problems.” In Frank, J. (ed. 1962), Languages of Multiracial Communities.Cork: University of Winois. 109-123.

----------2004. “Language Contact.” In Rice, T. (ed. 2004), Aspects of Bilingualism. Cork: University of Winois. 233-248.

Robert, P. 2004. “Research Tools in Language Inquiries.” Unpublished MA Thesis. Khartoum: International University of Africa.

Steven, B. 1990. “Constraint-Based Phonology.” Unpublished Doctoral Dissertation. Edinburgh: University of Edinburgh.

Uffmann, C. 1993. “Distinctive Features: An Introduction”. Unpublished Lecture Notes. Stanford: Philipps Universitat Marburg.

Zivenge, W. 2005. “An Analysis of the Tonga Phonological Nativization of English Loans in Tonga.” Unpublished MA Diss. Harare: University of Zimbabwe.

Zivenge, W. 2006. “A Colonial Legacy of Repressive Education Curriculum, Africa’s Greatest Challenge and Cause for Underdevelopment: The Need for a Policy towards Africa.” In Interaction and Interelations in Africa. Academic Reserch Papers, AU Congress 2006. Khartoum: International University of Africa. Vol. 1, Number 1. 29-47.

ACADEMIC REPORTS

Minority Languages Committee. 1984. Report on the Introduction of Tonga, Kalanga and Venda in Schools in Zimbabwe. Harare: Ministry of Education and Culture.

APPENDIX A

QUESTIONNAIRE

This questionnaire is intended to solicit information for the purpose of a Doctorate thesis only. The information that informants are going to give will be treated confidentially and your identity will not be revealed.

SECTION A: BIOGRAPHIC INFROMATION

1. Code Name……..……
2. Age…...……
3. Address…….
4. Phone……
5. Sex……
6. Race…..…….
7. Ethnicity…….
8. First language.……
9. Second language……
10. Third language..…….
11. Mother's place of origin..……..
12. Father's ethnic group…….
13. Mother's ethnic group…..……..

14. Where did you spend your:

Childhood	
1-5	
6-10	
11-15	
Adult hood	
16-20	
21-25	
25+	

15. Did you move from your original speech community (tick) Yes/ No
16. What is your new resident area?……..
17. How often do you go to your original speech community?.....…….

……
……

18. Did your language change as a result of this migration? (tick) Yes/No

19.1 If yes, which language do you often use?.....…….. ..

19.2 Which are some of the changes that you have noted?.....

……
……
……
……

19.3 What might be the causes of changes in your language?.....

……
……
……
……

20 Standard of education for your:

mother	
father	
self	
wife	

eg. Certificate or B.A.

21 Occupation for your:

<u>Former Occupation</u> mother	
father	
wife	
self	
<u>Present Occupation</u>	
mother	
Father	
Self	
Wife	

22 Languages that you can speak and levels: (tick)

Language	Levels		
Name of the Language	Satisfactory	Good	Excellent
1.			
2.			
3.			
4.			
5.			
6.			

23 Which one is your first language?.....

24 On which occassions do you normally use your first language?.....

……

……

……

……

25. What language do you speak at work?.....

……...

26. Which language do you speak when you are at public gratherings?.....

……

27 In the current area of residence, how long have you lived in:

a) rural areas……

i) which language were you using? .....

ii) which language is used in/on?

Institutions of learning	
government offices& administration	
economic transactions	
national documents eg. passports, birth certificates etc.	

iii) if the language used in institutions of learning is not your first language, how is this affecting your first language?.....
……..
……..
……..
……..
b) urban places:…….
i) which language were you using?.....
ii) which language is used in/on?

Institutions of learning	
government offices& administration	
economic transactions	
national documents eg. passports, birth certificates etc.	

28. Former places of residence:

a) In rural areas

Place	Length	Language
a.		
b.		
c.		

b) In urban areas

Place	Length	Language
1.		
2.		
3.		

SECTION B: REPERTOIRE

1. What language were you using while playing with peers?.....……
2. What language were you using at school?.....
3. Which other languages were you using ? …..……
4. How did you come to speak these languages?.....
5. What language do you use at your work place?.....
6. What language do you use with
   a) Your parents …….…….
   b) Your wife……..……..
   c) Children ……..……
   d) Relatives……..……
7. Do you sometimes use English words? (tick) Yes/ No
8. If your answer is yes, give some of the words that you use for each of the headings below:

Area	Words used
a) Health	
b) Education	
c) Trade & Commerce	
d) Judiciary & Legislature	
e) Banking	
f) Engineering	

9. How good is your English?

Show by way of ticking:

Can't speak	
Satisfactory	
Good	
Excellent	

10. What language do you use in following domains?

Domain	Language
music and entertainment courtship media buying in shops transport labels of goods	

11. list down some of the words that you use:

a) music ……
b) courtship ……
c) media…….
d) buying in shops……
e) transport……
f) communication……
g) religious practices…….

12. Which other words do you get from English and use them when speaking in your own language?

……
……
……
……
……
……
……
……
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……

13. Do you sometimes use English words when speaking your language? If the answer is yes, why do you use words that you get from English rather than using those that are indigenous to your language?

……
……
……
……...
……
……
……
……

APPENDIX B

ILLUSTRATIONS OF PHONOLOGICAL NATIVISATION

NATIVISED WORD	PHONOLOGICAL PROCESS	GLOSS
sawundi	epenthesis of glide [w]	sound
rawundi	epenthesis of glide [w]	round
pijuwa	epenthesis of glide [j]	pure
ʃuwa	epenthesis of glide [w]	sure
tawundi	epenthesis of glide [w]	town
bojila	epenthesis of glide [j]	boil
deji	epenthesis of glide [j]	day
sajidi	epenthesis of glide [j]	side
kiji	epenthesis of glide [j]	key
Feja	epenthesis of glide [j]	fair
tiji	epenthesis of glide [j]	tea
tsijori	epenthesis of glide [j]	theory
ʤowani	epenthesis of glide [w]	John
ʤojini	epenthesis of glide [j]	join
ʤemusi	epenthesis of vowel [u]	James
kepi	paragogic epenthesis of vowel [i]	cap
buloku	epenthesis of vowel [u]	block
tʃitulu	/s/>[tʃi] consonant substitution	stool
timu	pagagogic vowel [u] epenthesis	team
lula	/r/>[l] consonant substitution	ruler
ŋuzi	/s/>[z] consonant substitution	news
sikava	/f/>[v] consonant substitution	scarf
ledza	/ð/>[dza] consonant substitution	leather
lenzi	/ŋθ/>[nz] consonant substitution	length
minzi	/ns/>[nz] consonant substitution	mince

sudi	/sj/>[s] consonant substitution	pseudo
pondo	/au/>[o] vowel substitution	pound
sitiliti	/ɪː/>[i] vowel substitution	street
weti	/ɛ/>[e] vowel substitution	wet
feni	/ʒ/>[e] vowel substitution	fern
heti	/ǽ/>[e] vowel substitution	hat
keta	/ə/>[a] vowel substitution	cater
batoni	/ʌ/>[a] vowel substitution	button
kitʃeni	/ə/>[e] vowel substitution	kitchen
poluti	/ə/>[o] vowel substitution	pollute
babili	/ə/>[i] vowel substitution	babel
bana	/ǽ/>[a] vowel substitution	banner
baʃifulu	/ə/>[u] vowel substitution	bashful
hovu	/əu/>[o] vowel substitution	hove
pomi	/a/>[o] vowel substitution	pommy
ʃo	/oə/>[o] vowel substitution	shore
disiobeji	/əu/>[o] vowel substitution	disobey
mukenani	/ǽ/>[e] vowel substitution	cananian
tʃipunu	/u/>[u] vowel substitution	spoon
tʃikelo	/eɪ/>[e] vowel substitution	scale
sepa	/əu/>[e] vowel substitution	soap
feila	/eɪ/>[ei] vowel substitution	fail

APPENDIX C

ILLUSTRATING MORPHOLOGICAL NATIVISATION

NATIVISED WORD	MORPHOLOGICAL PROCESS	GLOSS
-ka-ditʃ-w-a	insertion of remote past tense affix	ditched
-ka-fil-w-a	affixation of remote past tense sign	filled
-a-faj-a	epenthesis of present tense affix	fire
-a-simail-a	insertion of present tense affix	smile
-no-kat-a	affixation of the present continuous tense	cutting
-no-tʃej-a	affixation of the present continuous tense	chairing
-tʃa-bojil-a	insertion of the future tense affix	will boil
-tʃa-vot-a	insertion of the future tense affix	shall vote
mu-positoli	[mu-<1/s>] prefixation	apostle
va-positoli	[va-<2/p>] prefixation	apostles
mu-tʃina	[mu-<3/s>] rule	machine
mi-tʃina	[mi-<4/p> rule	machines
-gelu	[ri-<5/s>] rule	girl
ma-gelu	rule [ma-<6/p>	girls
tʃi-kolo	rule [tʃi-<7/s>]	school
zvi-kolo	rule [zvi-<8/p>]	schools
-kompijuta	rule [ji-<9/s>]	computer
-kompijuta	rule [dzi-<10>]	computers
lu-positoli	[lu-<11a/s] prefixational	lean apostle
ka-positoli	[ka-<12/s>] prefixational	short apostle

APPENDIX D

DETAILS OF BILINGUAL MALE INFORMANTS

CODE NAME	QUALIFICATIONS	Age	LANGUAGES SPOKEN
Mr 1	B.A	22	Tonga, Ndebele, English
Mr 2	B.A	27	Tonga, English, Ndebele
Mr 3	B .A	29	Tonga, Ndebele, English
Mr 4	B.A	24	Tonga, Ndebele, Setswana, English
Mr 5	M.E.D	24	Tonga, Ndebele, Setswana, English
Mr 6	M.A	22	Tonga, Ndebele, Herero, English
Mr 7	B.E.D	38	Tonga, Ndebele, Herero, English
Mr 8	B.E.D	44	Tonga, Shona, English
Mr 9	B.A	56	Tonga, Shona, English
Mr10	B.A	69	Tonga, Shona, English
Mr 11	M.A	35	Tonga, Shona, Ndebele, English
Mr 12	B.E.D	33	Tonga, Shona, Ndebele, English
Mr 13	B.E.D	46	Tonga, Shona,Ndebele, English
Mr 14	B.E.D	48	Tonga, Venda, Ndebele, English
Mr 15	M.A	40	Tonga, Venda, Ndebele, English
Mr 16	B.A	21	Tonga, Kalanga, Ndebele, English
Mr 17	B.A	28	Tonga, Bemba, English
Mr 18	B.A	30	Tonga, Kalanga, English
Mr 19	B.A	30	Tonga, English
Mr 20	B.A	30	Tonga, Bemba, Ndebele, English
Mr 21	B.A	34	Tonga, Kalanga, Ndebele, English
Mr 22	B.A	36	Tonga, Kalanga, English
Mr 23	B.A	27	Tonga, Bemba, Kalanga, English
Mr 24	B.A	42	Tonga, English
Mr 25	B.A	51	Tonga, Bemba, English

APPENDIX E

DETAILS OF BILINGUAL FEMALE INFORMANTS

CODE NAME	QUALIFICATIONS	AGE	LANGUAGES SPOKEN
Miss A	B.E.D.	27	Tonga, Ndebele, English
Miss B	B.A.	30	Tonga, Ndebele, English
Miss C	B.A.	35	Tonga, English
Miss D	B.A.	31	Tonga, Ndebele, English
Miss E	B.A.	24	Tonga, Shona. English
Miss F	B.E.D	26	Tonga, Shona, English
Miss G	B.A.	32	Tonga. Kalanga, English
Miss H	B.E.D	23	Tonga,Kalanga, Setswana, English
Miss I	B.A.	28	Tonga, Venda, English
Miss J	CERT IN E.D.	34	Tonga, Venda, English
Miss K	B.A.	24	Tonga, English
Miss L Miss A	B.A.	38	Tonga, English
Miss M	M.A.	45	Tonga, Ndebele, Kalanaga, English
Miss N	B.A.	21	Tonga, English, Ndebele, Herero
Miss O	DIP. ED	40	Tonga, Ndebele, Shona, English
Miss P	B.A.	48	Tonge, Ndebele, Shona, English
Miss Q	B.TECH. ED	60	Tonga, Venda, Ndebele, English
Miss R	B.E.D.	68	Tonga, Ndebele, Venda, English
Miss S	B.A.	29	Toga, Shona, Ndebele, English
Miss T	B.E.D	35	Tonga, Ndebele, English
Miss U	B.A.	37	Tonga, Shona, Ndebele, English
Miss V	B.A.	39	Tonga, Shona, English
Miss W	B.E.D	55	Tonga, Shona, English
Miss X	B.A.	60	Tonga, Shona, English
Miss Y	M.E.D	63	Tonga, Shona, Venda, English

APPENDIX F

DETAILS OF MONOLINGUAL INFORMANTS

CODE NAME	QUALIFICATION	Age	LANGUAGES SPOKEN
Mrs A	Nil	40	Tonga
Mrs B	Nil	42	Tonga
Mr C	Nil	59	Tonga
Mrs D	Nil	40	Tonga
Mrs E	Nil	50	Tonga
Mrs F	Nil	33	Tonga
Mrs G	Nil	60	Tonga
Mrs H	Nil	39	Tonga
Mrs I	Nil	37	Tonga
Mrs J	Nil	45	Tonga
Mrs K	Nil	44	Tonga
Mr L	Nil	53	Tonga
Mr M	Nil	53	Tonga
Mr N	Nil	43	Tonga
Mr O	Nil	33	Tonga
Mr P	Nil	48	Tonga
Mr Q	Nil	63	Tonga
Mr R	Nil	38	Tonga
Mr S	Nil	41	Tonga
Mr T	Nil	49	Tonga
Mr U	Nil	38	Tonga
Mr V	Nil	34	Tonga
Mr W	Nil	55	Tonga

APPENDIX G

GUIDE FOR REFERENCE GROUP DISCUSSIONS

Column A is for the English words and column B shows whether or not if the word exists in the Tonga language and column C is for the Tonga equivalent. Please indicate your answer in the appropriate box. Where no answer is identified, show by inserting (-).

SET 1: ILLUSTRATIVE OF TOOLS

ENGLISH WORDS	VERSION IN TONGA	TONGA INDIGENUOS EQUIVALENT
ru:lə 'ruler'	Lula	-
mɪ:tə 'metre'	Mita	-
ketl 'kettle'	Ketelo	Mupinga
pleɪt 'plate'	Puleti	Mbinda
məʃin 'machine'	mutʃina	-
kɪt 'kit'	Kiti	-
kʌp 'cup'	Kapu	-
kɪ: 'key'	Kiji	-
səup 'soap'	Sepa	-
bru:m 'broom'	Bulumu	-
skru 'screw'	Sikulu	-
leða 'leather'	Ledza	-
sinθetik 'synthetic'	Sinzetiki	-
stul 'stool'	Tʃitulu	tʃigalo
fɜn 'fern'	Feni	-
gɪ:zə 'geyser'	Giza	Tukutuku
ba:tl 'bottle'	Botolo	-

APPENDIX H

GUIDE FOR REFERENCE GROUP DISCUSSIONS

Column A is for the English words and column B shows whether or not if the word exists in the Tonga language and column C is for the Tonga equivalent. Please indicate your answer in the appropriate box. Where no answer is identified, show by inserting (-).

SET 2: ILLUSTRATIVE OF CLOTHING AND ASPECTS OF HUMANS

ENGLISH WORDS	VERSION IN TONGA	TONGA INDIGENUOS EQUIVALENT
kæp 'cap'		
skɜ:t 'kirt'		
hæt 'hat'		
stæf 'staff'		
drɛs 'dress'		
Ska:f 'scarf'		
bʌtn 'button'		
tɪ:m 'team'		
prɪ:st 'priest'		
kæna:nɪən 'cananian'		
krɪʃən 'chritian'		
gɜ:l 'girl'		
gaɪ 'guy'		
bɪə 'beer'		
pɪləu 'pillow'		
pleɪə 'player'		
kʌzən 'cousin'		