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SEGMENTAL PHONOLOGY OF BARWE WITH SOME ARTICULATORY PHONETICS

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A Thesis Submitted to the Department of Linguistics and Literature of the Faculty of Arts and Social Sciences, in Partial Fulfilment of the Requirements for the Degree of Doctor of Philosophy at the University of Eduardo Mondlane.

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Abstract

This thesis looks at the segmental sounds that are operative in Barwe. It starts by describing how the data collection was strategized starting with preliminary surveys. It describes the data collection stages that subsequently took place. A description of how the data was processed, stored and retrieved for analysis using corpus processing programmes such as the Corpus Query and the Transcriber programmes was also made.

The thesis thus identifies and makes a description of the characteristics of the phonemes as they occur and operate in the language. It also makes a phonetic description of how the sounds are articulated. The main focus is the operations of the sound system of the language that involves the sounds that have been placed into two categories which are consonants and vowels. These sounds combine and operate together in the formation of syllables which consist of consonants which are represented with C and vowels represented with V. As they combine to form syllables these sounds have defined roles as the Cs are shown to be syllable margins while the vowels play the nucleus role in syllables known to be CV shaped. As these sounds string and partner for the syllable formulation they interact between themselves thereby setting the phonological processes which are traced and analysed in this thesis. Thus the stringing together of the sounds is not random as Barwe like all the other languages of the world regulates the patterning that is permissible within the language. Thus, in the thesis we show that as these sounds partner they position themselves in ways that allow the mentioned sound interaction. This occurs in regulated fashion as some positioning can be allowed while some are disallowed. Thus as we identify the unitary sounds that are operative in the language we also demonstrate that these sounds do not linearly operate as individual sounds.

Two theoretical frameworks are used in the thesis to try analyse the phonological processes in the language. These are the Lexical Phonology theory and CV Phonology. Lexical phonology theory recognizes that morphological processes in a word trigger new sound configurations in the word. On the other hand, CV Phonology recognizes that sounds combine but they are in two categories as they either belong to the C or V tier of the syllable. Thus in the thesis the operations of the sounds are analysed and described looking at the functional role in terms of the C and V demarcations. The sounds are shown to be operating as composite phonological units which are thus shown as occupying the C or V slot on the CV tier. Thus as reflected in the title of the thesis, the interest is in the constituent elements and as the analysis in the thesis goes on we show that each sound belongs to a syllable position while each syllable has segment content.

We thus make a historical analysis of the Bantu sounds development in general but also making a focus on the development in Barwe. We then look at the specific phonological processes that involve particular categories of sounds. We describe and analyse glide formation, glide insertion, vowel deletion, vowel coalescence, and vowel harmony as phonological processes that involve Barwe vowels. We also look at sound processes that involve consonant operations as we analyse prenasalizition in general and one that comes as a result of the class 9 and 10 prefixation (N). Also looked at are the operations of the syllabic nasal N̩ which now operates as a C component without a vowel after the historical prefix vowel loss. The N̩ is shown to assimilate the place features of the consonants it precedes. The thesis also discusses the complex sound production in the language as we analyse the sound modifications that come with secondary articulation involving the labiovelar [w]. It partners other consonants thereby resulting labialization and velarization of those sounds. The thesis also looks at the operations of the liquids [l] and [ɾ] which are shown to be a single sound as there are no minimal pairs to demonstrate that they are separate sounds of the language.

These co-occur in unextended verbs domains for the purpose of dissimilation. [ɾ] is shown also operating as a pre-flap as it pre-modifies [k] and [ʒ]. We also draw the conclusion that as Barwe go through language sound change of the two liquids [ɾ] is preferred as the [l] from adoptives is rephonologised to [r]. We then sum up the discussion looking at conclusions and summaries made in all the chapters.

List of Symbols and Abbreviations

Symbols

σ……..……Syllable node

ø……..Zero segment or deletion

→……Re-write as

˜…….. Also realized as

— ……Environment

//…… Phonemic representation

[ ]……Phonetic representation

<…… Coming from

Abbreviations:

ALRI…….. African Languages Research Institute

ant……. Anterior

CAS……Centre for African Studies

C……Consonant

C1……...Fist consonant

C2……...Second consonant

CV……..Consonant Vowel

cont…… Continuant

cor…….. Coronal

CQP……Corpus Querry Programme

CROBOL……Cross Border Languages Project

fri……Fricative

G…… Glide

IPA……International Phonetic Alphabet

lab……. Labial

N…….Nasal Prefix

N̩……Syllabic nasal

nas……. Nasal

pal……...Palatal

PB……...Proto-Bantu

son…… Sonorant

SUSO……. Standard Unified Shona Orthography

syll……...Syllable

UEM…….. University of Eduardo Mondlane

UG……. Universal Grammar

UNESCO……... United Nations Educational Scientific and Cultural Organization

UZ……...University of Zimbabwe

vel……..Velar

V……Vowel

V1……...First vowel

V2…… . Second vowel

V3……...Third vowel

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Declaration

I do here declare that this thesis is of my own composition and contains no material which has been submitted for the award of any degree or diploma at any university of learning. To the best of my knowledge, the contents of this thesis are a product of my intellect and contains no material previously published by another person except where acknowledgement is made within the text and bibliography of this thesis.

Candidate	Supervisor
(Esau Mangoya)	(Professor Armindo Ngunga)

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Dedication

To my daughter Makaita Nyasha for the unfailing love.

CHAPTER 1: Introduction

1.1 The scope of the study

Generally speaking, phonology is a branch of linguistics which investigates the ways in which sounds are used systematically in different languages (Katamba 1989 and Crystal 1991). It is concerned with the ways in which these speech sounds form systems and patterns in human language (Fromkin and Rodman (1998). For Fromkin and Rodman (1998:253),

> "Phonology, like grammar is used in two ways – as the mental representation tab of linguistic knowledge and the description of this language. Thus, the word phonology refers either to the representation of the sounds and sound patterns in a speaker's grammar, or to the study of the sound patterns in a language or in human language in general."

That is, there is a high level of mental organisation as these speech sounds are voluntarily and intentionally produced. The Barwe speaker or speaker of any other language uses the speech sounds following the sound systems and patterns permissible in the language s/he speaks. The present study is concerned with the segmental phonology of Barwe, a cross-border language spoken in Mozambique and Zimbabwe. The study looks at the phonological processes that involve vowels and consonants of the language. Segmental phonology makes reference to the identifiable discrete phoneme units in the stream of speech. In this study, the focus is mainly the perceived unitary sounds which Bloomfield (1933) calls 'primary phonemes.' It also makes a phonetic description of how these sounds are produced.

Segmental phonology is in contrast to suprasegmental phonology whose domains are larger than the segmental phonemes as in tone, stress, pitch, and rhythm which operate at a level higher than the segments. "Therefore, these features are called plurisegmental," (Trask 1996: 343). They cannot be segmented or subdivided into identifiable single units. Hence they are not the main focus of the present research whose interest is the segments. These features are however made reference to in the description of the Barwe segments.

To a great extend, the sounds are contrastive or distinctive. Their stringing in speech has a communicative value. It is voluntary and organised since the same tract that produces these speech sounds also produces other involuntary sounds that do not count as part of speech sounds as teeth gnashing and snoring (Katamba 1998) to which we can also add bellowing.

As Dobrovolsky and Katamba (1987:18) put it, "The starting point in the study of language is the examination of the inventory and structure of the sounds of a language." This assertion equally applies to Barwe. For a better appreciation of any other grammatical properties of Barwe, there is need to understand its sound system and phonological processes that result from the interaction of the different sounds first. The research's interest here is to explore those phonological processes. As Hudson (2000: 20) puts it:

> "The unitary qualities of phones are quite transitory, because the physiology of speech is constantly in motion during speech, so that at any moment of time each phone is being influenced by and influencing neighbouring phones."

In other words the speech sounds influence each other as they string together in speech. Clements and Keyser (1999:185) observe that, "The phonological representation should move away from the traditional representation of the segments which did not recognise hierarchical organization but considered the segments as linear strings." This stringing process does not occur in a random fashion, and the interest of the present research is to trace and establish patterns of combinations and trends of influence by neighbouring phonemes in Barwe. There is a general agreement that the segments do exist and can be identified but nevertheless they do not operate in isolation.

They combine with other phonemes in order to form larger units. Thus, their unitary existence is acknowledged but operationally they do not work as solitary entities. The present

research is of the view that phonological patterning takes place in order to fulfill certain linguistic structural goals that effect communication in Barwe.

The next section discusses the Barwe language, its classification and who the Barwe people are.

1.2 The Barwe Language

Barwe has remained a cross-border language spoken in Zimbabwe and Mozambique. The bigger population of the speakers is in Mozambique. Hachipola (1998:61) says, "Barwe form a larger group with the Sena and Hwesa in Zone N group 40." This is according to Guthrie's (1967:71) classification. In Mozambique it has over a long period stayed without a standard name and has been known by four names: Barwe, Rue, Balk, and Cibalke. However, the name Barwe has of late been commonly used as the standard one.

In Zimbabwe, Barwe is mostly spoken in the North East of the country in Nyanga District. In Mudzi District, the Barwe speakers are mainly found between Honde and Mazoe Rivers. In Mozambique, it is mainly spoken in Manica Province, in Barwe District. In Zimbabwe, unlike in Mozambique the Barwe people settled in areas that were dominated by the Manyika. When the Barwe came in later from Mozambique, fleeing from the Portuguese, they settled under the Manyika and Hwesa chieftainships that had moved into those areas earlier on. Thus according to Hachipola (1998: 68), "Over the years, the Barwe have tended to adopt the languages of the communities into which they moved," The Manyika are the majority and are the bigger group. As a result, the most functional language used by the Barwe people in Zimbabwe is mainly Manyika although Barwe has thrived alongside Manyika in areas such as Katerere and Arifandika of the Nyanga District.

Due to its close linguistic relationship with Hwesa, as they, according to Guthrie's (1967) classification, both belong to N40, and both having been accorded minority language

statuses in Zimbabwe, there has grown a tendency to casually identify them as the Barwe-Hwesa or vice-versa as if they are one language. In reality, the two are separate languages. It has become quite common to have a reference to them in the double barrelled label such that in Zimbabwe to the non-speakers of the languages, there is no clear distinction between Barwe and Hwesa vocabulary. Anything that is not Manyika is labelled Barwe-Hwesa. Hardly are issues concerning one of the languages discussed without mentioning the other.

In Lews (2009) the Barwe population is given as 17 000. Barwe is described as being one of the languages spoken in Mozambique and there is no reference to it as being spoken in Zimbabwe as well. It is also classified as a sub-group of Sena. It is also indicated as being spoken in the Tete Province of Mozambique. No reference is made to the fact that it is actually mainly spoken in the Barwe District of Manica Province of Mozambique stretching across the border into Zimbabwe. This means the group is much bigger than what is given as the total population since the Barwe in other areas are not considered in that figure.

On the other hand, there have been new developments regarding Barwe and other cross-border languages. In recent language classification reviews that are now expanding beyond the restrictive zoning demarcations, Chebanne et al (2008) contend that Barwe should be placed in Zone S of the Shona group as shown in table 1.1 that follows on the next page.

Major Zone	*Language Group*	*Varieties*
S 10	Shona Group	Karanga Korekore Zezuru Hwesa Barwe Manyika Ndau Lilima (Kalanga) Nambya Teve (Ute)

Source: Chebanne (2008:7)

Table 1.1: *The Shona Varieties: Zimbabwe, Mozambique, Zambia and Botswana*

The above table shows that the varieties that belong to the newly proposed zone S group. The argument put forward by Chebanne et al (2008) is that the earlier classification looked mostly on the geographical positioning of languages. According to Mpofu (2009: 1) "This (earlier) classification of the language zones is geographical and not genetic because the basis for the classification of the languages into these different zones is according to the geographical locations in which they are found and not according to any linguistic properties."

Barwe, Hwesa, Manyika, and Ndau are spoken in both Zimbabwe and Mozambique. In Mozambique, all the four are considered as languages but in Zimbabwe Ndau and Manyika are classified as dialects of Shona. Chebanne et al (op.cit) argue that as Barwe stands today, it shares linguistic properties and has high mutual intelligibility with all of these despite the statuses they have in the different countries. An updated orthography called the Standard Unified Shona Orthography (SUSO) has been produced to cater for all the varieties under Shona. Also included under Shona group is Kalanga which is a cross-border language

shared between Zimbabwe and Botswana. The harmonised orthography was developed from the one that existed for Shona which is centrally positioned and was expanded to cater for the feature requirements of all the others, be it that they have dialect or language status in the different countries they are spoken.

These new classification efforts are at the preliminary stages. The linguistic evidence of that new classification and zoning is as yet to be laid bare, thus the current research sticks to the view that Barwe is a language. This does not mean any contradictions with the current harmonisation goals since the current research's goal is to bring a better understanding of Barwe which can also help to put it in proper classification.

Having taken the position that Barwe is a language we also argue that it is composed of dialects which have not been studied and labelled since not much research has been carried out on the language. However we can identify three varieties in the language which we can name as the Catandica dialect, Nyanga dialect and the Changara dialect. Catandica dialect is spoken in the Barwe District of Manica province of Mozambique. The Changara variety is spoken in the Changara District of Tete province, Mozambique while the Nyanga variety is spoken in Nyanga District of Zimbabwe. However the present research was centred mainly on the Catandica variety because Catandica has remained the capital of the Barwe speaking community. Also, as described below the Barwe of Barwe District believe the other two dialects have been greatly influenced by the other languages they are in contact with.

The Barwe people believe that they came from Samatamba and Kairezi areas of Nyanga that stretches across the present day border between Zimbabwe and Mozambique before settling in the current Barwe District in the Manica Province of Mozambique. This also corroborates with Filimao (1987) who says that they historically were part of the Mutapa Kingdom. The Mutapa Kingdom is known to have existed from around 1430 to 1760 and geographically stretched between the Zambezi and Limpopo rivers in modern Zimbabwe and

Mozambique. According to the Barwe people's account, later on, due to protracted conflicts with the Portuguese, there was movement back and forth across the border between Zimbabwe and Mozambique. As a result of these conflicts, part of their group moved up and crossed the Zambezi River and settled in Tete Province of Mozambique. The people of Barwe District believe that their language as it is spoken today in Tete is highly influenced by Nyungwe and Nyanja. They believe they have remained linguistically and culturally intact by staying together as the predominant linguistic and cultural group in Barwe District. They eventually made a permanent settlement in the District with the group stretching across the border into Zimbabwe.

The present research focuses on the phonology and some phonetics of Barwe. The research is mainly morphophonemic so it is important that we also give some notes on basic but important grammatical information. Thus below we give some notes on the noun classes and verbs of Barwe. These are given in the general Barwe orthographic presentation and not phonetic or phonemic representations.

1.2.1 Some notes on theBarwe noun class and verb

It will be noted that Barwe like other Bantu languages has nouns that are grouped according to noun classes. Each noun class has some identifiable noun prefix that is joined to the noun stem in the construction of nouns. However there are situations where the noun prefix is not directly reflected on the noun but is only reflected on in the concordial agreement. A case in point is class 5 noun prefix. There is also the case of class 9 and 10 prefixes where we have a historical nasal that combines with the stem initial consonant. Consider the table on the following page.

Class	Noun prefix	Noun stem	Examples
1	mu- mw- m-	-kadzi -ana -bale	mu-kadzi auya ‘the woman has come’ mw-ana alira ‘the child has cried’ m-bale ajula ‘the relative has opened’
2	wa- wa- wa-	-kadzi -na -bale	wa-kadzi wauya ‘the women have come’ wa-na walira ‘children have cried’ wa-bale wajula ‘the relatives have opened’
3	mu- mw- N-	-nda -aka -pwando	mu-nda ukuru ‘big field’ mw-aka uno ‘this year’ m-pwando ukulu ‘big celebration’
4	mi- mw- mi-	-nda mw-aka mi-pwando	mi-nda inorimwa ‘fields that are ploughed’ mw-aka ino ‘these seasons’ mi-pwando mikuru ‘big celebrations’
5	(li-) (li)	-dziso -thika	(li)dziso linoona ‘the eye that sees’ (li)thika ladya mbuzi ‘hyenas that have eaten a goat’
6	ma- ma-	ma-dziso -thika	ma-thika yadya mbuzi ‘hyenas have eaten the goat’
7	ci-	-gayo	ci-gayo cinosewenza ‘the grinding meal that works’
8	zvi-	-gayo	zvi-gayo zvinosewenza
9	N-	goma	ngoma yafa ‘wild animal has died’
10	N-	goma	ngoma zafa “wild animals have died’
11	lu-	-mbu	lu-mbu apoka ‘the frog has busted’
12	ka-	-lu-mbu	ka-lu-mbu kapoka ‘the small frog has busted
13	ti-	-motika	ti-motika tabheuka, ‘small cars have fallen on their sides’
14	u-	-loyi	u-loyi udanyangala ‘witchcraft is bad
15	ku-	-neriwa	ku-neriwa kunorwadza ‘to be beaten is painful’
16	pa-	-nyumba	pa-nyumba pakanaka ‘the home place is good’
17	ku	-nyumba	ku-nyumba kuna warendo ‘there are visitors at home’
18	mu-	-nyumba	mu-nyumba munewarendo ‘there are visitors in the house’

21	zi-	-mu-nthu	zi-mu-nthu lauya ‘the big person has come’

Table 1.2 *Barwe noun prefixes, noun stems and the examples of the prefix agreement*

Table 1.2 gives the Barwe noun classes with some illustrative examples showing the agreement that is controlled by the noun prefix on the verbs. The noun is structured in such a way that it consists of the class prefix and a stem. The noun **mu-kadzi** ‘woman’ of class 1 consists of the prefix **mu-** and stem **-kadzi** and the noun **mu-nda** ‘field’ of noun class 3 consists of the prefix **mu-** and stem **–nda**. Looking at the noun classes 1 and 3 we see two processes which we need to point out here. In the cases of **mw-ana** ‘child’ and ***mw-aka*** ‘this year’ the vowel /u/ of the prefix goes under glide formation as the prefix mu becomes mw-. Glide formation process is discussed in detail later in chapter 5. In onother case, the vowel of the prefix mu- deletes as in m-bale m-bale cl1 ‘relative’ and m-pwando cl3 ‘celebration’. What remains after the loss of the syllable is the syllabic nasal m- which as shown in the table is represented as N̩. A fuller description of the operations of the syllabic nasal is done in Chapter 7.

Also noted is the noun class 9 and 10 prefix where we have a nasal prefix N-. The nasal prefix modifies the stem initial consonant which becomes prenasalized. There N is homorganic with the stem initial consonant as is the case of **ngoma** ‘wild animal’. The phonological processes involving the Nasal prefix N are also discussed in Chapter 7.

It is also demonstrated that the noun prefix for class 5 is (li-) but this does not reflect directly on the stem. As shown in the table we do not have a **li-** prefixing **–dziso** to get *lidziso. However, li- is reflected in concodial agreement as in **dziso li-noona** ‘the eye that sees’. So we take it that the prefix **li-** although not directly reflected on the noun it is reflected

in the concordial agreement which is controlled by the noun prefix. In other words we can say there is an underlying /li/ which is phonetically realized as zero.

Also to be noted from the table is that prefixes of noun classes 12, 16, 17, 18, and 21 act as pre-prefixes as they are prefixed to nouns that already have prefixes by themselves. Taking the example of noun class 21 we have the prefix **zi-**coming before another prefix **mu-** in the noun **zi-mu-thu** 'big' person.

Although the focus of the present study is mainly phonology we have sought to show the noun morphology in order to demonstrate some of the grammatical processes from which we also assess phonological processes that arise and are here described.

In the above discussion we have alluded to the fact that the noun prefix predetermines the form of agreement that occurs with other substantives. In the table below we show the occurrence of five substantives namely the noun, adjective, quantitative enumerative and the selector. We start with the noun and show the relevant substantives that occur with the noun of that noun class. Taking the noun **mu-thu** 'person' of class 1 in the first column we demonstrate the adjective, quantitative, enumerative and the selector that can go with that noun. We break the substantives to show the prefixes and the stems that constitute the substantives. See the table below:

Noun class and noun	**Adjective**	**Quantitative**	**Enumerative**	**Selector**
1.mu-thu 'person'	mu-refu 'tall one'	wi-ese 'all of him/her'	mu-mwe 'single one'	u-no 'this one
2.wa-nhu 'people'	wa-refu 'tall ones'	wi-ose 'all of them'	wa-mwe 'same ones'	wa-no 'these ones'
3. mu-ti 'tree'	mu-kuru 'big one'	wi-ese 'all of it'	u-mwe 'one of '	u-no 'this one
4.mi-ti 'trees'	mi-kuru 'big	yi-ese 'all of	mi-mwe 'of a	i-no 'these ones'

	ones’	them’	type’	
5. (li-) -dima ‘garden’	(li-) –diki ‘small one’	lu-ose ‘all of it’	li-mwe ‘of the same type’	li-no ‘this one
6. ma-dima ‘gardens’	ma-diki ‘small ones’	-ose ‘all of them’	ma-mwe ‘of the same type’	a-no ‘these ones’
7. ci-dima ‘small garden’	ci-diki ‘small one’	ci-ose ‘all of it’	ci-mwe ‘of the same type’	ci-no ‘this one’
8. zvi-dima ‘small gardens’	zvi-diki ‘small ones’	zvi-ose ‘all of them’	zvi-mwe ‘of the same type’	zvi-no ‘these ones’
9. (N-) ngoma ‘game meat’	diki ‘small one’	yi-ose ‘all of it’	i-mwe ‘of the same type’	i-no ‘this one’
10. (N-) ngoma “types of game meat’	diki “small ones’	dzi-ose ‘all of them’	dzi-mwe ‘of the same type’	dzi-no ‘these ones’
11. lu-oko ‘hand’	lu-diki ‘small one’	li-ose ‘the whole of it’	lu-mwe ‘of the same type’	li-no ‘this one’
12. ka-lu-mbu ‘small frog’	ka-shata ‘gone ugly’	ki-ose ‘all of it’	ka-mwe ‘of the same type’	ka-no ‘this small one’
13. ti-motika ‘small cars’	ti-diki ‘small ones’	ti-ose ‘all of them’	‘of the same model’	ti-no ‘this ones’
14. u-loyi ‘witch craft’	u-kulu ‘big one’	u-ose ‘all of it’	lu-mwe ‘of the same type’	u-no ‘this witchcraft’
15. ku-nera ‘to beat’	ku-shoma ‘less intensive’	ku-ose ‘all of it’	ku-mwe ‘of similar intensity’	ku-no ‘this beating’
17. ku-nyumba ‘to home’	ku-le ‘far away’	Ku-ose ‘all of it’	ku-mwe ‘of the same area’	ku-no ‘to this home’
18. mu-nyumba	mu-diki ‘small	mu-ose ‘the	mu-mwe ‘of the	mu-no ‘in this

'in the house'	interior'	whole inside of it'	same house'	house'
21. zi-mu-thu "big person'	zi-dema 'dark one'	ri-ose 'whole self"	ri-mwe 'the same big person'	ri-no 'this big person'

Table 1.3 *Some Barwe substantives*

The table on previous page shows some elements of Barwe substantival morphology. The adjective that comes after the noun **muthu** of class 1 is **mu-refu** 'tall one' the quantitative is **wo-se** 'all of him/her', the enumerative is **mu-mwe** 'single one', and the selector is **u-no** 'this one'. The corresponding form for class 1 noun **mu-nhu** is **va-nhu** (class 2) and the corresponding form for class 3 noun **mu-ti,** is **mi-ti** (class 4).

As given by Chigidi (1988:78), "Substantives qualify nouns and pronouns in substantive phrases." The qualificatives are headed by nouns in noun phrases. Taking example of class 4 we can have **mi-ti mi-kuru '**big trees' which is noun + adjective, or **miti ino** 'these trees' where we have noun + selector. In the phrase **mi-ti mi-kuru** we realise the qualificative **mi-kuru** carries the agreement **mi-** from the noun **mi-ti**. However it is a different scenario with the selector **u-no** where the prefix is **u-**. We realise that the two prefixal morphemes are related as the noun head controls the agreement markers of the qualificatives. But from the phonology perspective we see that the prefix /**mu-**/ of the noun and /**u-**/ of the selector are phonologically different. The interest of the present study is to explore some of these phonological occurrences as different grammatical processes take place with some substantives and the other various grammatical elements in Barwe.

Of note are the quantitatives where the root is given as -ose. The basic formular of these can be given as the quantitative prefix + quantitative stem. Like in the case of the class 1 and 3 there can be some phonological process involving the quantitative prefix and the quantitative stem. Taking the example of the quantitative of class 11 the underlying structure is /lu-ose/ with the surface structure being [lose]. Thus we see there is vowel delition of the

quantitative /u/. These and other phonological processes involving substantives are discussed later in the thesis.

In a similar way, the verb is found to be relevant to the present study. It is important to show the verb morphology as the study also looks at the phonological processes within the verb domain as well. Thus in the next page we present a table of some underived verb roots and some derived verb extensions in Barwe.

Verb	Verb extension	Examples
-ling-a -long-a	Applicative -ir- -er-	-ling-ir-a ‘look/check on behalf’ -long-er-a ‘organize on behalf’
-nin-a -cem-a	Perfective -irir- -erer-	-nin-irir-a ‘blow nose nicely’ -cem-erer-a ‘low screaming of appreciation’
-cinj-a -cona-	Causative -is- -es-	-cinj-is-a ‘make someone change’ -con-es-a ‘make someone go for good’
-mbuluk-a -cen-a	Intensive -is- -es-	-mbuluk-is-a ‘fly a lot’ -cen-es-a ‘make someone too smart’
-nin-a -lowol-a	Neuter -ik- -ek-	-nin-ik-a ‘be able to blow the nose’ --lowolek-a ‘marriageable’
-ner-a -pik-a	Passive -iw- -w-	-ner-iw-a ‘get beaten up’ -pik-w-a ‘get cooked’

Table 1.4 *Some underived verb roots and the derived extension of Barwe.*

The above table demonstrates some Barwe verb morphology. It will be noticed that there is a link between what we have in the tables 1.2-1.4. Table 1.2 shows the Barwe noun prefixes. Table 1.3 shows the agreements that occur in the language as controlled by the noun class prefix. Table 1.4 shows some verb morphology showing the underived verb roots and the derived extensions. On the left side of the verbs (underived and extended) there has been placed a dash (-) which can be occupied by subject or object prefixes that are shown occurring in table 1.3. This presentation is important for the better appreciation of grammatical constructions that occur in the Barwe nouns and verbs, word domains from which we explore phonological processes that arise.

1.3 Relevance of Research

Most of the Bantu languages' orthographies are inclined to their phonologies. It is the sounds in that language that we try and represent orthographically. By engaging in phonological studies we lay the foundation for the creation of a solid Barwe orthography which is one of the most importantly needed facets for a language that is at intial stages of documentation.

The present research becomes part of concerted efforts being exerted to document one of the many neglected cross-border languages between Zimbabwe and Mozambique. Barwe has hugely remained undocumented in both countries. According to Katupha (1991:24), "As a consequence of the Portuguese colonial policy, Bantu languages in Mozambique were deliberately neglected." The African languages were deliberately denied space. According to Mkanganwi (1992:10), "The Portuguese authorities discouraged the vernacular languages to the extent of a legal requirement that nothing can appear in print in an African language." Today, there is a concerted effort to document and promote the African languages in the country but not much ground has been covered on Barwe as evidenced by the general absence of reading materials in and on the language. Earlier on, Katupha (1983:12) bemoans the general statuses of the languages of Mozambique when he says:

> "….following the colonial background of assimilation by the Portuguese in which the native languages were considered as dialects in a rubbished sense which resulted in all indigenous languages of Mozambique receiving no scholarly attention except for few vocabulary list by early missionaries, slave traders, and travelers who needed these to communicate with the locals. Most of these lists based on Portuguese and Latin Grammars were inaccurate."

On the Zimbabwean side, Barwe has also largely remained undocumented. This has equally been a result of historical circumstances. Initial documentation of the indigenous languages of Zimbabwe was done by the missionaries as they also established missionary stations which also became documentation centres as they established small printing presses. Of note are

mission stations like: Morgenster (Dutch reformed Church), Gokomere and Mambo Press (Roman Catholic), Old Umtali (United Methodist Church). Doke's (1931a) publication of the unified Shona orthography was mainly guided by the collated notes from the missionaries. There is not much known missionary activity in most of the Barwe speaking areas in Zimbabwe and also generally to the northeast of the country. So we are making a refocus on a languge that has been left unattended. That way we are building on linguistic literature that can be vital for other and further linguistic studies. It is this gape that has not been attended to which this study tries to plug.

In situations where no research has been done on the indigenous languages, foreign languages are given room to dominate since in one way or another; a developed language will have to be in place. The current study can also contribute to the efforts being directed to try and fully redress the historical circumstances where the set up was that Portuguese was imposed as the lingua franca for Mozambique. This is not a unique situation to Mozambique as Miti (2006: 32) observes: "Besides the indigenous tongues, a handful of historically non-African languages, mostly the languages of ex-colonial masters are also used as both first and second languages." Their introduction has come with some domination over the local indigenous languages and researches like the current one can help undo the situation as more and more knowledge about the language is made available. This can also prove that the language is grammatically complex and has the capacity to be used in any sphere of life just like the Western languages that had been imposed. The hope is that this study helps lay bare phonological facts about the language which had, together with other indigenous languages, been neglected. It is also hoped that the knowledge here obtained will give basis for further research and documentation to bring the knowledge about Barwe at par with that of other Bantu languages that have been well documented. There is also hope that this study makes a

contribution to the general knowledge of Barwe phonology and also complements efforts made to broaden Bantu linguistics knowledge.

Language rights are human rights as well. Writing and learning Barwe is a right as embodied in the United Nations Educational Scientific and Cultural Organisation (UNESCO)'s (1930) resolution which according to Mkanganwi (1992:11) "It is a universally accepted principle in modern education that a child should receive the education in and through his mother tongue, and this privilege should not be withheld from the African child." Colonial languages have been compulsorily taught in schools at the detriment of indigenous languages. Ngara (1982:X) says, "There is emphasis on the teaching of these dominant languages while the language of the indigenous learner is removed from the scene and is viewed as a hindrance to the successful learning of the more important language of education and technological development." The colonial languages were introduced with the justification that they were languages of wider communication. Such a scenario has left Barwe and many other indigenous languages in a state of neglect. This research is part of the efforts to recognise the importance of Barwe as a language that its speakers have the right to learn and write. We can then in a way fully reverse the scenario that had been imposed by the colonial set up. On the other hand, it becomes easier to teach and to produce reading materials once a language has been documented. Lack of documentation has also stalled teaching efforts and production of reading materials for schools in both countries. As a result, in Zimbabwe, Barwe students are forced to learn Shona, one of the two major indigenous languages of the country at primary and secondary levels of school. Hachipola (1998:61) stresses that, "Barwe has never been taught in schools in the areas it is spoken in Zimbabwe." Publishers argue that publication in minority languages is unprofitable, because the consumers of publication products are too few (Chimhundu 1998). This is the predicament that Barwe and all the minority languages of Zimbabwe which are listed as sixteen, face. As a

result, Barwe has not been seriously studied, a situation which motivates this research. The hope is that this research brings about a better understanding of Barwe so that reading materials can be developed in the education system in both countries.

Language planning can be guided by the sociolinguistic data made available about a language. There has not been a coordinated approach on language policy and planning involving cross-border languages between Zimbabwe and Mozambique, a situation that has led to neglect of Barwe and other languages in similar cross-border geographical positioning. When sociolinguistic and grammatical facts are brought forward through research it becomes easier to implement language planning policies. The cross-border language research highlights the need for coordination in language planning. Such an approach may actually show that some languages that had been labelled minority are not necessarily minority if numbers across the borders are brought together and consumers of published works will no longer be few. It is hoped that this research can help give direction as to the way forward with regards to language planning on cross-border languages between Zimbabwe and Mozambique.

Researched languages can be saved from extinction. Continued neglect creates an effect where the African people tend to lose their languages which are also part of their heritage and identity. As a result, this research is in line with a realisation of the importance of the Barwe and all the neglected indigenous languages of Africa. Seeking in-depth knowledge about Barwe phonology is an attempt to demonstrate that the language is as sophisticated and effective as communicative tool that equals any other language of the world. In this context, it can justifiably be said that there is need for linguistic research and documentation of Barwe. This is in line with Hyman's (2003:12) observation that "All of linguistics seems now to accept, if not enthusiastically encourage, the study of 'endangered

languages' as well as 'minority languages', or what are generally referred to as unempowered languages." In other words language research is also language preservation.

It is also hoped that the study will bring about a general understanding of the phonological patterns of Barwe while also making a general contribution to the general Bantu linguistics studies. Facts about Barwe phonology are brought to the fore and comparisons can also be drawn for purpose of cross-linguistic studies with Bantu and other languages of the world. A phonological study of Barwe gives us the opportunity to look at the segments that are operational in Barwe. Thus we make a segmental analysis to lay the foundation for broader phonological analysis of Barwe and other languages it is linguistically related to.

1.4 Previous research on the language

Research works on Barwe are quite scarce. Filimao (1985) makes a descriptive analysis of the Barwe phonology. He identifies the phonemes that are operational in the language. He also describes the consonantal sequencing involving the oral and nasal consonants. He also points out that Barwe is like many other Bantu languages that operate on a five vowel system. His work also cites a few other written materials on Barwe. A publication by Cabral (1924) looks at the diversity of the dialects of the languages of Mozambique where Barwe is also discussed. Again Filimao cites Mbokolo (1985) who mentions that there are historical and social anthropological documents by Isaac Mann (1973), Ferreira (1975), and Pelissier (1904) in which the life of the Barwe people and language is discussed among that of other languages of Mozambique. Filimao also makes reference to the Cabral (1924) publication that discusses issues of dialects of the languages of Mozambique. Parreira (1930) compiled a dictionary that focused on Citonga in which references to Barwe words are also mentioned. Filimao gives important information on what ground has been covered in line with research on Barwe in Mozambique.

Sitoe and Ngunga (2000), Ngunga and Faquir (2011) compiled manuals of the orthographies to be used in writing the indigenous languages of Mozambique. There are also orthographic guidelines on the writing of Barwe indicating the vowels and consonants that are used in the writing of Barwe. Consonantal sequences allowed in the writing of Barwe are also presented including cases of prenasalization, aspiration and labialisation. With a laid down standard alphabet, it became easy for the researcher to read and listen to recorded texts of Barwe since the alphabet is basically phonemic as well.

On the Zimbabwean side, Hachipola (1998) makes brief description of the sociolinguistic situation of Barwe in Zimbabwe where he looks at the position of Barwe in the education system. He also makes an assessment of the prospects of the language being taught in schools to which he gives a damning conclusion that it is not possible considering the number of speakers and the non availability of reading materials. Guthrie (1967) makes a general language classification of the Bantu languages to which Barwe is classified as belonging to N40 together with other languages such as Nsenga, Nyungwe, Sena, Kunda and Podzo. Similarly, Doke (1931) makes a sociolinguistic description of Barwe and describes the Barwe as belonging to the major Barwe group of Mozambique. These are basically sociolinguistic descriptions that do not tackle the actual linguistic descriptions of the language.

In view of the circumstances of limited written materials we can have a better appreciation of Barwe by looking at other research works that have taken place in other languages surrounding it in Mozambique and Zimbabwe. Fortune (2004) looks at the phonetic differences between Zezuru and other dialects of which among them are Manyika and Ndau which are also spoken in both Zimbabwe and Mozambique. Dembetembe (2004) looks at the outstanding characteristics of the Guta sub-dialect of Manyika dialect while Mkanganwi (2004) looks at the outstanding characteristics of Ndau. In their analysis of the

outstanding characteristics, the trio also discusses the phonological characteristics of those dialects. Katupha (1983) makes a preliminary description of sentence structure in the se-Saaka of e-Makhuwa where he also makes preliminary discussion of its phonology. In view of the situation where we do not have many research works on Barwe the researcher drew comparisons with works that have been done in other surrounding languages to be able to understand some grammatical trends in Barwe as well. From these studies we can by comparison have a better appreciation of the Barwe phonology.

1.5 Theoretical Assumptions

The data analysis takes a two pronged theoretical approach, namely, Lexical Phonology as expounded by Kiparsiky (1982, 1985) and Hargus (1993) and also applied by Ngunga (2000), and the CV Phonology model of syllable structure as expounded by Clements and Keyser (1983).

Lexical Phonology theory has roots in Pesetsky's (1979) unpublished paper and was later picked up by Kiparsiky's (1982, 1985) publications (Hargus and Kaisse 1993). It is an approach to phonology that recognises and accounts for interaction between morphology and phonology. Any morphological processes that take place in a word lead to phonological developments in that word. The lexicon plays a central role as it consists of ordered levels in which phonological and morphological processes take place. According to Oosterndorp (2000:8), "The assumption is that lexical phonology is lexical and sensitive to the morphological structure." Its domain is the word as opposed to across the words. Application of theory across the words or on syntactic structures is known as 'postlexical'. The initial word is phonological, which is the reason why we are able to hear and recognise it. The approach is called 'cyclic' in that there is application of the phonology every time there is addition of an affix.

The current research is aware of the opposing views regarding the theory. To the contrary, scholars like Halle, Harris and Vergnaud (1991), Halle and Vergnaud (1987a, 1987b), Odden (1993), Szpyra (1987) are of the view that phonology cannot precede any morphology (Hargus 1993:4). Theirs is a non-cyclical approach. Here, what we realise is a question of preference as they seek to prioritise morphology over phonology but at the same time they do not deny the relationship between the morphology and phonology. Hargus also observes that there is a third perspective proposed by Martin (1998), according to which, phonology and morphology are on equal footing, that is, the possible operations in morphology are exactly those found in phonology.

The Kiparsky (1982, 1985) approach is preferred in this study among other several possible useful theories. With this theory phonological rules can be applied after the suffixation and the suffixation can be multiple. After the morphological processes we again apply the phonological rules on the new lexical item that we now have in a cyclical fashion. This theory can be applied on the analysis of Barwe phonology because the language, like many other Bantu languages is morphologically agglutinative. That way we realise that the Barwe cognates are receptive to multiple morphemes. We thus argue that each morpheme has phonological properties that are bound to inderact with those of other morphemes when they combine in word building. To that effect, there is a phonological process wherever there is a morphological addition. As such, the study explores the phonemic process in Barwe that result from the sequencing of morphemes and looks at the phonological processes triggered by the morphological operations.

According to Ngunga (2000:3) the "Lexical Phonology model assumes that phonological rules apply at different levels in the grammar and there are rules which apply at lexical level and rules which apply postlexically." The former are lexical rules and the later are postlexical. On the other hand the CV model was specifically designed to deal with

syllable related facts (Katamba 1989). In phonology, we acknowledge that sounds may be combined in syllables that form words in order to produce acceptable sentences. As pointed out by Ngunga (2000:11), the basic syllable structure in Bantu is CV where C may be a single consonant, a glide, a cluster, nasal plus oral consonants, any consonant plus a glide, or a nasal plus an oral consonant plus a glide. Also describing the Bantu syllable Hudson (2000: 225) says, "Bantu syllable is [+syllabic] with zero or more [-syllabic] phones on the left." Thus the vowel is the compulsory element of the syllable while the consonants are the [-syllabic] phones.

The current research assumes that the syllable in Barwe, like the other Bantu languages, is also basically CV structured. After identifying the sounds the research seeks to further prove the compatibility of the sounds as belonging to Barwe, a Bantu language where Bantu languages syllables are known to be CV structured. In this regard, the study describes and seeks to show their operations as constituents of the syllable. The view is that there is phonological hierarchical ordering starting with individual phonemes that string to form syllables that in turn also combine to form words. So through the contextual use we seek to prove the compatibility of the sounds that we have identified and described. Both the phonemes and the syllable are known to be theoretical constructs. So we try to theoretically show the operational organization of those sounds that we have identified as belonging to Barwe through a theoretical entity of a syllable.

The lexical phonology and the CV approaches are found to be complementary since according to Blevins (1996:209), ".....the syllable is the target of affixation, truncation substitution or movement." In phonology, as given by Coulmas 2003:63, "The syllable is seen as the minimum unit of sequential speech sounds or a unit of metrical systems of a language." This is also noted by Kadenge (2007:213) when he says "Sounds are

hierarchically organised such that a layer of segments will build a layer of a syllable which also builds a layer of words"

1.6 Organization of study

Chapter 1, Introduction, gives an overview of the study and its relevance with emphasis on the scope of the study, historical aspects and significance of the study of Barwe language, previous studies on the language and theoretical approach used in this research.

Chapter 2, Methodology, discusses how the data for this study was collected and processed for purposes of analysis. It describes the activities that were undertaken during the preliminary survey and the fieldwork trips. It also describes how the data was organized into electronic corpus databases, retrieved and analysed.

Chapter 3, Literature Review, makes a review of some selected works that were consulted in this research. To have an appreciation of the phonological processes now operational in Barwe the study looked at other works that dwell on Bantu phonology and other related linguistic issues. Also reviewed are works on phonetics and phonology as they are the basis of the discussion of the present study. Also reviewed are works that discuss the Lexical Phonology Theory and CV Phonology Theory which are the major theoretical tenets of the study. A review of the works is made in order to put this research in perspective with other researches that have been undertaken by other scholars.

Chapter 4 looks at Barwe syllable structure in view of the general Bantu syllable structure. It is demonstrated that the preferred syllable structure is CV. Consonants are shown to be the syllabic onsets while vowels are the syllabic nuclei. The compulsory component of the syllable is the vowel nucleus. There are cases where the vowel can stand as a syllable without the consonant onset. In the cases where the vowel nucleus has been historically lost, we also get cases of consonants standing as syllables, issues that are discussed in the chapter.

Chapter 5 makes a phonemic analysis of the operations of the vowels in Barwe. The chapter looks at the vowel systems firstly focusing on the historical developments which have led to the existence of the five vowel system now operational in Barwe from the Proto Bantu (PB) seven. It discusses vowel processes in Barwe such as glide formation, glide insertion/epenthesis, vowel deletion/elision, vowel coalescence and vowel harmony.

Chapter 6 discusses consonants and makes an analysis of some elements of their articulatory phonetics. The chapter looks at speech sound production and gives a description of the airstream mechanisms that are functional in the process. Also described in the chapter are the places at which the sounds are produced in the vocal tract. The chapter also describes the manner in which the sounds are produced as being stops, approximants, fricatives, affricates, nasals and laterals. It also discusses the difference between the consonants and the vowels and the vocal tract constrictions that characterize their production.

Chapter 7 looks at nasal prefix N and the syllabic nasal N̩ occurrence and their operations in Barwe. N is shown to result from noun class 9 and 10 prefixation while N̩ is discussed as occurring as a result of the historical loss of the prefix vowel. Also discussed is the way the two operate in syllable formulation and how they fit in on the CV tier.

Chapter 8 discusses complex consonant operations in Barwe. The complex sounds are described as being produced with strictures at different locations which differentiates them from simplex sounds that are characterized by having a single articulator feature. The sound operations analysed there are the doubly articulated sounds and prenasalised sounds.

Chapter 9 discusses secondary articulation with the main thrust being labiovelarization. The process is discussed as resulting from the post modification by the labiovelar [w]. The discussion looks at articulator organ movement that takes place as consonants with different place feature have [w] as the secondary articulation. Also discussed is how the secondary articulated sounds operate as onsets in the Barwe syllable formulation.

Chapter 10 discusses the phonological processes involving liquids [l] and [ɾ]. These two are argued to be one sound that is in the process of separation as there are no minimal pairs involving the two to show that they are distinctive. They however do not operate in free variation as they are shown to occur in single word domains for purposes of dissimilation. Also discussed are the phonological processes involving the two liquids as they also play the onset roles in syllable formation.

Chapter 11 is the conclusion of the work undertaken in this study. It is a general rerun of the discussions highlighting the major thrusts made in the study, most importantly being the phonological operations of the vowels and consonants. It also summarises how the different sections of discussion are ordered in the study.

1.7 Summary

To conclude, it is important to recall that this chapter was intended to be a general introduction of the work undertaken in this study. As was seen, it introduced the main scope of the work covered in this study, which is the segmental phonology of Barwe giving some phonetic description of how they are articulated. The scope and delimitations of the study together with the importance of the research as contributing to the general linguistic and to the study of Bantu languages are also discussed. Also discussed are other works that have focused on the Barwe language to try and show what areas have been covered in order to put the present research in perspective with other research that has taken place on the language. Theoretical frameworks applied in this research were also explained. The chapter also discussed the historical and the sociolinguistic status of Barwe which has led to the non-documentation predicament, both in Mozambique and Zimbabwe.

The next chapter looks at the methodology. It discusses how the data was collected and organized for this research.

CHAPTER 2: Methodology

2.0 Introduction

This chapter looks at the ways in which the research was set beginning with a preliminary survey. It describes how the data for this study were collected, processed and analysed. It describes how the data were organised for the purpose of retrieval and analysis to make the phonological and phonetic transcription in order to identify and describe the sounds. According to Crystal (1991:93) "The term 'data' makes reference to the phenomena which constitute the subject of inquiry." In this particular case, the subject of inquiry is the identification of the Barwe phonemes. To confirm and reaffirm identified sounds the study also made introspection and elicitation approaches in addition to the corpus based sound analysis.

Before embarking on extensive data collection the researcher was part of a team that did a preliminary survey in the Sofala and Manica provinces which we describe below.

2.1 Preliminary Survey

For the current research, the researcher took advantage of having earlier on participated in a preliminary survey that was undertaken in order to assess viability of cross-border language research between Mozambique and Zimbabwe. The researcher participated in the preliminary survey as a member of the Cross Border Languages (CROBOL) Project team. He was also involved in workshops that trained the research assistants on how to collect data.

The preliminary survey was carried out in July 2007 in the Manica and Sofala provinces of Mozambique and the Nyanga District of Zimbabwe. It was a broad-based survey on all the cross-border languages that had been targeted for research in the CROBOL Project. The main goal of the project was to collect linguistic data that was going to be used

for dictionary making and writing of grammar books. The aim was to make sample recordings in order to also do a preliminary linguistic analysis of the languages.

Contacts were established and research assistants were recruited who were mainly local teachers, college and university students in the Manica and Sofala provinces. Some radio presenters from the local radio stations in Catandica, Chimoio, and Beira were also recruited. The recruited research assistants were speakers of the languages and are members of the local community also, knowledgeable about all the protocol needed do be done with the local authorities for one to be able to conduct research in their communities. We had to be introduced to the local communities for them to be free to relate with us during that preliminary survey and also during the full-scale data collection that would subsequently take place. Together with Barwe, the other languages that were focused on are Ute and Hwesa as well as Ndau and Manyika that have language statuses in Mozambique but are regarded as dialects of the Shona language in Zimbabwe.

The current researcher being part of the surveying team took special interest to study Barwe after realising some mutual intelligibility between his mother tongue, Shona, and Barwe. The researcher realised that there were some linguistic elements that were common in both languages. Kadenge (2007) notes that there is an added advantage to the linguist who does research on a language that he or she is familiar with. Meaning to say, when a researcher has some knowledge of the linguistic operations of a language, he or she will be in a position to appreciate the underlying grammatical patterns in that language. In the same vein, my personal appreciation of Barwe was also important for me to understand some of the linguistic dynamics of Barwe.

So, we were able to collect data samples of Barwe and the other targeted languages by making tape recordings that were orthographically transcribed at the University of Zimbabwe

(UZ) for us to do the preliminary grammatical analysis. After the preliminary survey, more fieldwork trips were undertaken while the researcher was still part of the CROBOL Project team. When the chance to conduct research for the present study came by, the researcher engaged seven teachers and three students of the Barwe researchers identified in Manica Province during the preliminary survey which he had participated in during the pereliminary survey as a member of the CROBOL Project.

2.2 Data Collection and Processing

Fieldwork to collect data for the present study was embarked on in January 2010. The present researcher went to Barwe District of Manica Province to specifically collect Barwe data. Data were gathered mostly around Catandica. Given below is an account of how fieldwork was undertaken and how much data was collected. Also described is how the data has been stored for retrieval and analysis.

2.2.1 Fieldwork

The field research coming after the preliminary survey was an intensified data collection in Barwe District of Mozambique. The data was collected mainly to build a Barwe computer corpus. The bulk of the data was collected from the Barwe District particularly around Catandica to avoid grappling with dialect variations of Barwe dialects of other areas such as Changara District of Tete Province and Nyanga District in Zimbabwe. Part of justification focusing on Catandica variety is that Catandica is the capital of the Barwe people. Knowledgeable informants were identified by the local research assistants.

2.2.2 Unstructured Interviews and Recordings

The purpose of the interviews was to collect as much spoken language as possible. To allow for the interviewees to produce as much we used unstructured questionnaire. As noted by Chabata (2007), research assistants have to be trained on issues relating to identification of

interviewees, topic selection, as well as management of interviewer-interviewee relationship. The research assistants had to interview and record on a variety of socio-economic and socio-political topics that related to issues such as farming, modern and traditional medicine, Barwe culture, modern and traditional music, cookery, sport, and music depending on specialization and interest of the interviewees. The interviews were mainly open form where the interviewees were given room to talk as much as possible about the subject areas they had interest in or on which they were highly knowledgeable. The aim was to get as much of spoken word as possible for we sought to get the Barwe phonology from the spoken speech.

Interviews were supposed to be thirty minutes long so as not to make the interviews too long which would be laborious to both the interviewer and the interviewee. On average each research assistant had to interview ten interviewees within a period of two weeks. This would give each interviewer an average of three hundred minutes. This multiplied by ten (the number of research assistants) would give us an average total of three thousand minutes of interviews. After the encording with all the data put together, we made a word count. This gave us a total of about two hundred thousand running words. Total headwords divided by total number of minutes gives us an average of six hundred words per interview. Our main concern was the total corpus from which we looked for the phonological processes in Barwe.

However it will be noted that not all the words produced through the interviews were usefull. As a result the researcher had to sieve through the corpus to find the relevant data. Also as will be noted other complementary sources were used to complement the corpus.

This was meant to get a true reflection of the Barwe language. The recordings on a variety of topics that involves the life of the Barwe people would arouse interest from the subjects and they would freely and comfortably give accounts of what they knew about those topics. This way, the informants would articulate the Barwe in a comfortable way and the researcher felt the data was representative of the Barwe language. As proved by the cognates

that were retrieved we were able to make a descriptive analysis of Barwe phonology as is always the case with corpora research. As demonstrated in the Appendix B, cognates were retrieved from the computer corpus to which we did phonetic transcriptions in order to see the sounds that were operational Barwe.

Recordings were done using modern recorders that have internal memory discs. Unlike the older versions that used cassettes the interviews are stored in the memory disc. The memory disc of the recorder can be plucked on the computer to download the sound recordings.

2.2.3 Orthographic transcription of recordings

The recorded materials were computer encoded by the researcher being assisted by two data entry operators and three student research assistant from the UZ using the Sitoe and Ngunga (2000) Barwe orthography. Inputting the data from voice to written is the encoding and is part of computer corpus building. Renouf (1996:1) defines the computer corpus as: "….a collection of texts of the written or spoken word, which is stored and processed on computer for the purpose of linguistic research." The advantage of using the computer corpus being that it is a source of information based on real language. As given by McEnery and Wilson (1996), a corpus is a body of written or spoken texts. Such texts can be used for literary and linguistic analysis.

The researcher then sieves through the corpus for observable linguistic elements, an approach that has interested many corpus linguists such as McEnery and Wilson (1996), Hunston and Francis (1996) and Renouf (1996). Some software programmes have also been produced in order to processes vast tracts of data, among them being the Transcriber and the Corpus Querry Programme (CQP) also used for data analysis in this research.

This enabled the researcher to do phonological transcriptions and analysis of Barwe. Using CQP, the researcher was able to retrieve individual words or phrases. The major advantage of using the CQP is that it enables the researcher to retrieve word forms or phrases from the electronic corpus and the transcriber programme allows the researcher to listen to their pronunciation at the same time. This then enables the researcher to identify the sounds that are phonemic and make an assessment of the phonological processes that are operative in a language as was the case with Barwe.

In the Language marked corpora, details of the interviewees such as age, sex and profession were recorded as well as the time, place and date of the interview for purposes of retrieval and analysis. In order to identify and observe the operations of sounds in the language the researcher had to do the phonemic and phonetic transcription as discussed below.

2.2.4 Phonemic and Phonetic Transcription

Different transcriptions are done to cater for different needs per given time and context. The phonemic transcription was done through a simultaneous act of reading of the orthographically transcribed text and listening to the linked voice. That way, the researcher was able to listen and phonemically transcribe the Barwe words and be able to identify and describe the Barwe sounds. That way the researcher was able to describe phonological properties and the functional differences between sounds that are used to distinguish word meanings in Barwe. The general orthography would present the term that denotes tobacco as ‘forzha’ which the researcher, after listening transcribed it as /foɾʒa/. The phonemic transcription was also employed in order to show the phonological structure or underlying representation of words in Barwe. Thus as indicated these are represented by the standard slashes. I also used the phonemic transcription to show the underlying phonological

structures of words as in /ku+enda/ ‘to go’ which becomes [kwenda] in surface representation. Thus the square brackets were used to indicate phonetic realizations. The sounds were transcribed using the symbols from the International Phonetic Alphabet (IPA).

2.2.5 Introspection

As noted by Sinclair (1991:9) “A corpus cannot be adequate for a reliable description of the language as a whole no matter its size.” We can also make a blanket labelling that no research tool is all adequate to cover every aspect of research by itself. We therefore acknowledge that every research tool has its inadequacies. To supplement the corpus driven approach we also employed introspection. Introspection is when mother speakers of the language being researched draw on their knowledge of their language. They can rely on their intuitive knowledge and as such I had several meetings with Barwe speakers who are based in Maputo to seek clarification on many issues relating to the Barwe language. Such clarifications would help fill in gapes where the corpus could not adequately cover.

2.2.6 Elicitation

Elicitation was done with Barwe speakers (students at UEM) who had some working knowledge of phonology and phonetics. Elicitation was done in order to get some judgement from the native speakers about the description of sounds done by the researcher. It was done to solicit for information about occurrence of some grammatical configurations that bore some phonological process observed in Barwe. This came with two tests

(a) Operation test: where informants supplied more examples of identified sounds

(b) Evaluation test: where informants were asked to judge acceptability of sound sequences and provide more words as empirical evidence of the existence of such sounds in the language.

There are also corpora databases at University of Eduardo Mondlane (UEM) and UZ. These are general corpora compiled for general language research. Barwe data, amongst data from many other languages spoken in Mozambique are part of the corpora at UEM. The researcher was also able to access these databases of the Barwe data to try and verify general phonological phenomena in Barwe since these corpora were not mainly from Catandica but from different places where Barwe is spoken both in Mozambique and Zimbabwe. The statuses of the databases are described below.

2.3 Databases at UEM and UZ

The language databases have been built at the Centre of African Studies (CAS) at UEM and at the African Languages Research Institute (ALRI), UZ as the two institutions have jointly embarked on a harmonisation programme of the cross-border languages that Mozambique and Zimbabwe share. These data were collected prior to the commencement of the present study. In both cases the databases consist of transcribed data from the languages spoken in those countries. Barwe materials have also been recorded and orthographically encoded into the computers and the data now exists in audio and text forms. The data were also encoded using the transcriber programme. The databases are available for language related research. The researcher was able to access the databases to verify issues that could not be adequately covered by the database of the Catandica variety.

Having had the needed data available for analysis, the researcher had to make a systematic analysis. The section below looks at how the data was analysed.

2.4 Data Analysis

This section looks at how the data were analysed after being collected from the field. The research used the qualitative analysis which is mainly a description of the findings. These method of data analysis applied is described below.

2.5 Qualitative analysis

Qualitative analysis of data is mainly descriptive which as a result is the main approach adopted in this study. The research also describes how the phonemes string together to form syllables in Barwe speech. At the same time, it looks at the ways these phonemes relate and influence each other as neighbours that partake in syllable and word formation. These trends were checked from the different databases that have been built out of the materials collected from the field and referred to above. By qualitative means, the research describes those phonological processes and characteristics that prevail in the Barwe language. The research describes the vowels and consonants that are operative in Barwe. It describes the sequencing of the phonemes that is allowed in the language and the phonological conditions that also constrain the sequencing in particular instances.

2.6 Summary

By way of conclusion, it can be noted that this chapter looked at the methodology that was started with preliminary survey of the cross-border languages. It discussed the fieldwork that ensued after the preliminary survey. It also describes how that data was inputted and has been used in the data collection and analysis. It describes the different stages of data collection. It also describes the form in which the data now exists as a research tool. Barwe data can be retrieved using the CQP and the researcher was able to read and listen to the words as the text is linked to the voice through the Transcriber programme. The chapter also

describes the corpora that have been created at UEM and UZ which were also availed to him for the present study. Both corpora are language marked and they use the transcriber programme that links the text to the voice.

Chapter 3 below is mainly the literature review of some works that were consulted in this study. It discusses the ground that the works cover and the gaps that this research endeavors to also make a contribution towards.

CHAPTER 3: Literature Review

3.0 Introduction

Every research gets nourished by ideas that come from other researchers as well. For a better appreciation and understanding of the present research, there is need to have a look at the interaction that has taken place between it and works by other scholars. The present research picked on its perspective as influenced by other researches which have also discussed different issues of general linguistics and phonology in particular. As is usually the case, any attempt to probe into different fields of inquiry also raises new questions that still need to be probed further. Thus, research is a continuous process. Every research builds a foundation for further probing and new ideas come to the fore as more and more research is conducted from different angles using different theoretical models. The present research also leans on other scholars' contributions to build its own perspective and line of discussion. It is from the breath and depth of other researches that the present study drew some of its insights. Below is a review of the works that describe phonetics and phonology.

3.1 Review of works on phonetics and phonology

Chapman and Routledge (2005) discuss the contributions put forward by renowned scholars of phonetics and phonology like Firth. According to these scholars, Firth made distinctive contributions in the field with some of his popular publications being *Speech* (1930), *Technique of Semantics* (1935) and *Tongues of Man* (1937). All his works advocate that phonology be viewed as purposefully meant to bring about meaning. This is the position also adopted in the present study as we also argue that sounds are contrastive in order to give meaning. Also picking on Firth's view is Jakobson and Waugh (1979) who also argues that words are distinctive by the sounds that constitute them. Both, Firth and Jakobson's line of thinking is also preferred in this study as shown and thus we pick on the Lexical Phonology

theory where it is argued that we recognize the said words because we are familiar with the strewing up of particular sounds as they formulate those words. Phoneticians and phonologists make distinctions between phonetics and phonology. Phonology definitions remain stuck with the sound functionality for purpose of communicating. Trubetskoy (1969) makes a distinction between phonology and phonetics thus giving phonetics as the production and perception of sounds as he also emphasises the functionality of phonology as we also seek to explore the functionality of Barwe sounds. At the same time while we emphasize the functionality of sounds in a particular language there is need for us to know what exists and what does not exist in a language by spreading our knowledge broadly to understand how sounds are generated and operate elsewhere. Thus we can then argue that despite there being a vast range of sounds in the world's languages, Barwe, like any other language, is not set to utilize the whole range, but has a limited set which we can identify and show their phonological operations. Trubetskoy is arguing that the speech sounds play an equally fundamental role in giving meaning as they are contrastive for the purpose of conveying that meaning. Thus we can have Barwe:

1.	/pika/	'cook'	/t^hika/	'hyena'
	/fuka/	'cover self'	/fula/	'wash clothes'
	/ɟiwa/	'dove'	/ɟiɾa/	'cloth/blanket'

The above minimal pairs show that /p/ and /t^h/, /k/ and /l/ and /w/ and /ɾ/ are contrastive sounds of Barwe. Each pair has two words with different meanings. Thus, according to Trask (1996:224), "The existence of such a pair demonstrates conclusively that the two segments which are different must belong to different phonemes." The interest of the study is thus to identify those sounds and show their phonemic operations in Barwe.

Several scholars have written on phonetics and phonology. One of them is Katamba (1989:1), who defines phonetics as "the study of the inventory of all speech sounds which humans are capable of producing." Thus scholars like Ladfoged and Maddieson (1996) make a detailed description of how sounds of the world are produced and differ. Through such works we can also probe the languages we are interested to study in order to distinguish them as having their own sound sets that are operational and that distinguishes them from the other languages with different phonological operations. This means to say as a field of study, phonetics attempts to describe all the speech sounds that are produced in the languages of the world. It is from this universal pool that individual languages like Barwe draw the sounds that are usable to them. It means that Barwe and any other individual languages may not utilize all the phonetic sounds as some may not be part of their inventory.

For Crystal (1991:259) "Phonetics is the science which studies the characteristics of human sound-making, especially those sounds used in speech and provides methods of their description, classification and transcription." Phonetics gives a general and broader description of sound production without necessarily concerning itself with a specific language. These speech sounds are also known as 'phones'. According to Rodman and Fromkin (1998:220)", "In 1888 the interest in scientific description of speech sounds led the International Phonetics Association to develop a phonetic alphabet that could be used to symbolise the sounds found in all languages. Our focus is mainly the phonetics and phonology and not much about the association that came up with the alphabet, as such in this study we use the IPA to make reference to the International Phonetic Alphabet. Phones are represented using the IPA. This symbolises all the sounds found in all languages, and is meant to give them constant standard value. As a result, not every member of the IPA phonetic alphabet is utilised by all the languages. Where the IPA is not adequate we make

modifications and explain as in the situation where we represent the breathy voiced nasals [m̤] and [n̤] with an underline to differentiate them from the non breathy voiced ones.

We can describe these phones looking at the physiological movement of the vocal organs during the production of these phones to show manner and place of articulation. Hudson (2000), Ladefoged (2001), and Fromkin and Rodman (1998) describe how these phones are produced in human speech. These scholars are picking up from earlier descriptions that were given by scholars like Catford (1979), and Abercrombie (1976). They describe how the pulmonic airstream is manipulated at different points of the vocal tract to produce sounds. Also exploring the sound production processes are scholars like Mannel (2009), Ashby (2009) and Roach (2009). These scholars agree that the place of articulation is the point at which there is constriction to the airstream mechanism. The place feature is very important as it is also used in the description of the different sounds that are also produced differently and at different points of articulation. Also important to note is the fact that by contrast, the vowels also contrasted to the consonants are not produced at the discernible points of articulation, a point also important for the distinction between vowels and consonant whose operations is described in Barwe. We thus in the study make a description of their functional roles in syllable formulation.

These are the major concerns of this research as it describes the segmental phonemes of Barwe. When the focus is mainly on the physiological movement of the organs of the tract during the production of phones it is known as 'articulatory phonetics'. The present study's main thrust is the articulatory phonetics as it looks at how the Barwe sounds are produced.

Initially, the distinction between phonetics and phonology was not clear. According to Trask (1996:277),

> "The modern distinction between phonetics and phonology was not well established before the 1950s. The term 'functional phonetics' coined by Andre Martinet has often been used in preference to 'phonology' and is not quite dead even today in some quarters."

The present study draws from the broad field of phonetics as it looks at Barwe 'functional phonetics' to do an analysis of the segmental phonology of Barwe. Resultantly, these have had to have a common way of representation hence the use of the IPA. At a phonetic level it can be noted that we can assume generalisations. At a phonological level we do a characteristic description of sounds that are operative in individual languages. In this particular case, we look at the sound system of Barwe.

Phonology has to do with language specifics unlike phonetics which is a general and non-specific. As observed by Ladefoged and Maddieson (2003), a general cardinal table would show mid-vowels placed equidistance from the high /i/ and /u/ and the low vowel /a/ in Xhosa as prescribed in the general Bantu phonetics but there are higher variants of the /e/ and /o/ when /i/ or /u/ occur in the preceding syllable. Similarly, it is observed that Kalanga mid vowels /e, o/ are relatively closer to high vowel /i, u/ and are much higher from /a/. Thus phonology gives the detailed description of operations of the phonemes within a language. Having made phonological observations elsewhere as guided by these scholars, the present research looks at the sound operations in Barwe.

Phonology also describes the sound combinations that are allowed or disallowed in the language. Some sound combinations that are possible in some languages may not be allowed in the other languages. Thus Selkirk (1999) and Pike and Pike (1999) look at the segmental ordering in the syllable. They are of the view that some segments have particular preferences of segments with which to co-occur within the syllable and that not every ordering is possible. Some forms of ordering are not permitted. As a result there have been several phonological studies of different languages. Quite a lot of studies have been done on Bantu languages some of which are discussed in the following section.

3.2 Review of some works on Bantu phonology

A number of works have focused on various grammatical studies of Bantu languages. The study of Barwe phonology has also to be put in perspective of other Bantu studies. This helped to understand the Barwe phonological study within a broader Bantu languages framework. Works by Miti (2006), Hyman (2003, 2007) and Ladefoged and Maddieson (2003) describe some grammatical developments that have taken place in Bantu languages from Proto Bantu (PB). There have been instances of convergences, divergences and some retention of originals from this parent language, a process that has led to the birth of several other Bantu languages characterized by some similarities and at the same time some differences of the consonants and vowels that now exist in the daughter languages. As a result, some of the Bantu languages have decreased the number of their vowels from the PB's which are deemed to have been seven with others increasing the number. Some upped the number to eleven and others decreased the number down to five. In the same manner, some Proto-Bantu consonants have been maintained while others have changed in sound while new consonantal combinations have come into being in the other languages.

Talking about divergences and convergences, Kanana (2011:1), says, "It is common phenomenon that dialect clusters within a given geographical area tend to become more mutually intelligible than dialects that are more distant." As noted in Chapter 1, Barwe, Ute and Ndau are considered languages in Mozambique while Chebanie et al (2008) consider them to be dialects of Shona. So what Kanana points out is relevant to both what may be deemed to be dialects or languages in the same geographical region. As a result we can see some form of convergence between Ute, Manyika, and Barwe as in the table in the following page.

Barwe	**Manyika**	**Ute**	
wa-na	wa-na	wa-na	Children

Table 3.1 *Similar prefix for noun prefix in Barwe, Manyika and Ute*

The table above shows that Barwe, Manyika and Ute have a similar prefix /wa-/. These are languages in contact found in the same geographical area and have had a common convergence. It has to be noted that we are arguing that there is a tendency by the languages that are in contact to converge. At the same time similar processes can take place in other Bantu languages elsewhere as languages retain or transform themselves the reason these languages have been identified as Bantu. In a similar way we see that the prefixes wa- and va- do exist in other languages that are distant from the once shown in the table. Thus Kimani of Mozambique and Swahili of East Africa do also have wa- prefix while Makonde has the prefix va-. Linguistic processes in Bantu languages can be similar but there is a tendency that those languages in contact tend to preserve those processes as a linguistic block as demonstrated in the table 3.1.

On the other end, there are also works that point out that different languages are continuously diverging following different trends. Using the same word for children we see that the more the languages are separated the more there are signs of divergence. Consider table 3.2 below where we show differences between Ndau, Shona and Kalanga:

Ndau	**Shona**	**Kalanga**	
a-na	ʋa-na	βa-na	Children

Table 3.2: *Geographically separated languages have different forms of prefixes.*

The table 3.2 on the previous page shows that Ndau now has onsetless prefix /a-/ while Shona has /ʋa-/ with labiodental /ʋ/ onset while Kalanga has the prefix /βa-/ with a bilabial /β/ onset. These languages are geographically separated apart and hence we see this trend of divergence where in contrast to the case of examples in table 3.1 where we see that languages that are in contact tend to converge. The argument is that this is the case with languages that developed from the PB. The issue of development from the PB is discussed in Chapters 5 and 6 below.

Miti (2006) points out that unlike in the case of vowels, all Bantu languages have more consonants than the reconstructed PB and the increase is attributed mainly to creation of fricatives and affricates which were not present in the PB.

There have been consonantal developments in Barwe. It has developed fricatives and affricates as well. Thus, the present research explores and describes both the vowel and consonant phoneme operations that now exist in Barwe. Ladefoged and Maddieson (2003) make a closer look at the sounds of the Bantu languages and demonstrate that despite the general similarities in the sounds there exits diversity in their patterns some of which are hidden in the orthographies that tend to standardize and coalesce the various sounds in languages and their varieties. I think what he meant by coalescence was that some of the sounds may not be representated orthographically. A case in point is the term for run and the rhumba music which are orthographically represented as **rumba.** But phonologically we realize that it is /ɾumba/ for 'run' and /ɾhumba/ for 'rhumba music'.

Different languages have had different trends of change from the parent PB. Barwe like the other Bantu languages has had its phonological developments which this research sought to explore.

For a better understanding and appreciation of the Barwe grammar and phonology, the study draws insights from the other studies of Bantu languages. Such works include Doke (1931) which looks at the unification of Shona dialects. Fortune (2004) and Mkanganwi

(2004) discuss the outstanding characteristics of Shona dialects looking at their grammatical and phonological processes. Chimhundu (2002) also discusses the phonological and grammatical processes that take place during adoption of words in Shona, and similarly, Ngara (1982) looks at the phonological impact of English on Shona in a language contact situation in Zimbabwe. Ngunga (2000) looks at the phonology and morphology of the Ciyao verb and Katupha (1983) describes the sentence structure of the e-Saaka dialect of eMakhuwa. Kadenge (2007) looks at the phonology of Nambya. These works analyse the grammars and phonology of different Bantu languages of which comparisons were drawn with Barwe in order to fully appreciate some grammatical trends of Bantu that lead to the described phonological processes in this language.

3.3 Review of works on lexical phonology and CV phonology theories.

As has been pointed out in 1.5, this research is premised on two theoretical foundations namely, Lexical Phonology and CV Phonology. As described by Hargus and Kaisse (1993), the lexical phonology hypothesis has roots in Kiparsky's (1982, 1985) works. Kiparsky was also picking on an idea from a paper by Pesetsky (1979). The argument for Lexical Phonology is that there is cyclical relationship between phonology and morphology. There is a morphology-phonology interface. The argument posted is that every morphological construction to a word brings with it new phonological reaction within the lexical unit. That is to say, any new affixation to a word leads to new phonological characteristics in that word. Thus Malambe (2009) observes that suffixing the passive /-ew/ or /-w/ to verb roots triggers palatalization in root final labial plosives in siSwati. Similarly, this study sought to explore the phonological configurations that arise as a result of affixation in Barwe. Taking that lead from Kiparsky and others the present research explored the resultant phonological properties arising from that affixation in Barwe.

Oostendorp (2005) and Hargus and Kaisse (1993) describe the operations of the Lexical Phonology theory. The two scholars are of the same view that lexical phonology is applied within a word and that we get to know a word because of the sounds that constitute it. According to these scholars lexical phonology is sensitive to morphological structures. The interface between phonology and morphology leads to what they call a "cyclical" relationship. It is cyclical in that there is a phonological application again and again after the addition of every new affix. Application of the rule across words is called 'postlexical phonology'. Lexical phonology is one of the approaches taken in this study. The understanding is that, lexical phonology results in new phonological properties to words with new affixes. The study explores the phonological developments that take place after the affixation to the Barwe words. It looks at what happens to the phonemes of the word and the affix as the two come together as guided by theory prescribed by these scholars. The research argues that those phonological readjustments after affixation have a common goal to formulate acceptable syllables in the language.

Coulmas (2003) is of the view that syllables vary with different languages hence the roles played by the syllables in language studies vary. He points out that some languages join syllables to form words while in other languages the words consist of single syllables. The syllable has attracted a lot of interest as an area of linguistic study.

Thus, in phonology, the syllable is seen as the minimum unit of sequential speech sounds. Selkirk (1999) talks bout the universal character of the syllable in which there is what she calls a constituent break between the syllable nucleus and its margins. Observations have led to the conclusion that the vowel plays the nucleus position while the onset can be constituted by one or more consonants, a view also shared by Pike and Pike (1999) Ngunga (2000) and Hayes (1999). Summarily, the syllable in Bantu languages is said to be CV shaped from which we obtain information that segments that constitute the syllable are

allocated the C or V slot. The quartet also point out that the nucleus is the compulsory part and can constitute a syllable on its own which the consonants cannot do except in situations where the vowel has been historically lost. As Miti (2006) observes, there are cases where we have syllabic consonants where the historical V has been lost such as /l/ in Sepedi **mo-l-lo** 'fire', /m/ as in ciCewa **m-tengo** 'tree' and /n/ as in CiNsenga **n-twake** 'take/escort'. Syllabic consonants are also noted to exist in Barwe as in /m/ of **m-pase** 'give someone something' where the class 1 noun prefix mu- has lost the vowel -u-.

The study explores how the Barwe segments order as they form syllables. As pointed out by Selkirk (1999) there is no random ordering in the formation of syllables as there is a selection criterion by some of the segments that have the privilege of choosing cohabitants in the syllable. This occurs according to the combination rules allowed in the language According to Ngara (1982:32), "Shona nasals combine only with voiced consonants while English permits both voiced and voiceless consonants" This is evidence that phonemic combinations rules are language specific. This is as also observed in Barwe where the combination /dz/ as in /dzina/ 'name' is allowed while the reverse [zd] is not allowed. This research looks at the phonemic combinations in Barwe drawing insights from descriptions of other Bantu syllables that have been described in other languages.

Some studies such as Malambe (2009), Kadenge (2007) Blevins (1996) and others have approached the syllable as the basic phonological unit and are interested in its composite phonological phonemes. On the other hand scholars like Liphola (2009), Liberman and Prince (1999), Odden (1996), and others view the syllable as a unit of speech that can be articulated in isolation and is able to bear a single degree of stress or single tone. Thus Blevins (1996:207) says "Other phonological properties which take the syllable as their domain are stress and tone". The approach is to look at its composite nature and thus consider it as consisting of the obligatory nucleus which is usually a vowel, and optional initial and

final margins which are usually consonants. As earlier on noted above, Bantu syllables are CV shaped. Thus, they do not have consonantal final margins. Summarily, the syllable has stress, duration and tone as its properties. Scholars' interests on the syllable differ. Some focus on the constituent elements of the syllable while others have interest on its suprasegmental roles. As noted in Chapter 1, the present research acknowledges that there are many approaches to the study of the syllable but takes to analyse how phonemes are put together in Barwe to build these syllables and the syllable suprasegmental roles are mostly outside the scope of this study, although they have generally been made reference to in the description of the Barwe phonemes.

Having known the characteristic of the Bantu syllable, the study takes the CV Phonology theoretical approach alongside the Lexical Phonology Theory. According to Hayes (1999: 225) "CV Phonology is an outgrowth of autosegmental phonology as developed in Goldsmith (1976) and other works. The basic tenet of CV Phonology is that the property of syllabicity is represented on a separate autosegmental tier from strictly segmental features." What is being pointed out here is that the properties that constitute the syllable can hierarchically be represented through the autosegmental tiers. According to Clements and Keyser (1999: 185),

> ".....phonology was premised on the notion that phonological representation consists of linear strings of segments with no hierarchical organisation other than that provided by syntactic phrase structure. In particular, the notion syllable was thought to play no role in phonological organisation."

The CV Phonology model outlines the syllabicity or non-syllabicity of the segments as determined by their positioning in the syllable tree of the autosegmental tiers. According to Kadenge (2007: 217) "It should be noted that each segment of a word has a syllable position and each syllable has segmental content.'' In this theory, the CV tier marks the syllable onsets or margins which are mainly consonants and the syllable peaks which are the vowels.

In the CV tier the C is interpreted as the non-peak and the V as the peak. Hayes (1999) views this model as allowing for one-to-many and many-to-one association. Thus in a syllable consisting of an affricate onset and a vowel, the affricates will be represented by a single C on the CV tier, which becomes a many-to-one association. Similarly diphthongs and long vowels will be represented by V in the CV tier also a situation of many-to-one.

In CV Phonology of the syllable structure, the segments that constitute the syllable are marked according to their function in that syllable. In the CV Phonology model, we have the syllable node followed by the CV tier and then the segmental tier. It can be deduced that the syllables have Cs and Vs as their constituent members. The CV tier is followed by segmental tier. The segments belong to either the C or V slot of the CV tier as in the Barwe example /dula/ 'undress' in figure 3.1 below.

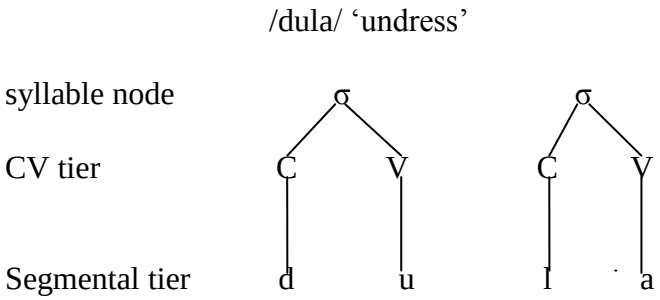


Figure 3.1: *Representation of the word /dula/ on the CV tier*

From this illustration we can deduct that the word /dula/ has got two syllables where /d/ and /l/ are the consonant onsets and /u/ and /a/ play the nucleus roles. Also expounding on the CV phonology model are scholars like Katamba (1989), Belvins (1996, Clark and Yallop (1990) and Goldsmith (1996). They emphasise the need for multilinear phonological analysis replacing the traditional analysis which focused on individual phones as being independently articulated. As guided by these scholars, the present research also makes CV phonology representation of the syllable of Barwe.

Prince (1999) makes an analysis of the Finish syllables. He demonstrates language specific rules in view of the syllable structure. These phonemes are related in such a manner that there is bound to be a reaction to occupy space by the phonemes adjacent when one of them is deleted through what he calls 'autosegmental spreading'. This results in lengthened or shortened vowels. Thus, similarly, having applied the Lexical Phonology Rules the present research assesses how the phonemes that constitute the syllable relate between themselves. It looks at phonological adjustments that take place as the affixes are added to the base lexical units. This was done using some descriptive tools some of which are phonological features described in the next section below.

3.4 Review of works on phonological features:

As we do the phonological analysis, there are also descriptive tools that got to be used in the description amongst them being phonological features. Thus we do not pursue the feature theory but borrow the feature description tools from the theory. As pointed out by Hudson (2000:220), "Phones are made up of phonological features which are the fundamental or atomic elements of linguistic sound. These phonological features are vital in the description of the phones. According to Clements (1999:201) "Phonological segments or phones are not the ultimate constituents of phonological analysis but factor into smaller simultaneous properties or features." Also as noted by Chomsky and Halle (1999), these features are binary, indicating the presence or absence of phonological qualities. They are said to be binary because they have two values which are the positive (+) or negative (–) to the described phones indicating the qualities that this phones have or do not have. Thus, by contrast the phone [m] can be described as being [+voice] and [+ nasal] while [p] can be said to be [-voice] and [-nasal] although they are both bilabials.

These descriptive features are applied in some of the descriptions of the Barwe phonemes. They are applied to indicate the values present or not present in the Barwe phonemes.

3.5 Summary

This chapter was set out to do a review of selected works that were consulted in this research. It discussed the works on phonology and phonetics to appraise itself of the field that is its major focus and thrust. The research also looked at other works that have made contribution in the area of Bantu phonology. Also discussed are works that expound on the lexical phonology and the CV phonology theories that were applied in the study. The chapter also made an appraisal of the phonological features that were used to describe some qualities of the Barwe phones.

The next chapter looks at the consonant and vowel operations in formulation of Barwe syllables. It looks at how the syllable is constituted in terms of the consonants and the vowels.

CHAPTER 4: Barwe Syllable Structure

4.0 Introduction

It is important at this point to make a description of the Barwe syllable as it shows how the sounds work together to formulate the syllable. We look at sequential ordering of the sounds in the syllable formulation. The study also employs the CV-Phonology theory whose interest is the functional role of phonemes in the syllable. It is therefore important that we make the description of the Barwe syllable since most of the discussion of the study is mostly based on the syllable. Thus as discussed below, we have scholars such as Mudzingwa (2010), Miti (2006, 2001), Ngunga (2000), and Mkanganwi (1995), who agree that the Bantu syllables are generally regarded as consisting of consonantal onsets and having a vowel nucleus. As such, the syllable has been described as being CV shaped a situation that equally applies to Barwe as one of the Bantu languages.

4.1 CV structured syllables

Thus taking example /moto/ ‘fire’ we can show the syllables and their constituents as follows:

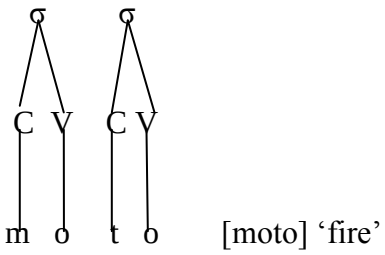


Figure 4.1: *Representation of /moto/ on the CV tier*

The above figure demonstrates that /moto/ has two syllables. These two syllables consist of consonants represented by C as onset and vowels represented by V as nuclei. So

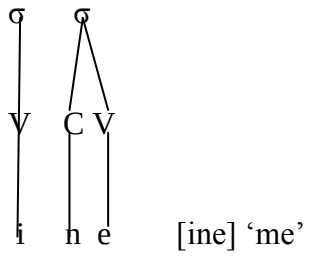
the word /moto/ has the syllables /mo-/ and /-to/. There are situations where the vowel can constitute a syllable on its own as discussed below.

4.2 V structured syllables

Besides the CV syllables, Barwe allows onsetless syllables as well like many Bantu languages, which gives rise to a situation where vowels stand as syllables on their own. Consider the examples below:

1.	ine	/i.ne/	‘me’
	apa	/a.pa/	‘here’
	unaɓwera	/u.na.ɓwe.ra/	‘you have to come’

In the above examples, /i/, /a/, /u/ are vowel syllables without consonantal onsets.
We can also take the word /ine/ ‘me’ and represent it on the CV tier as follows:



[ine] ‘me’

Figure 4.2: *Representation showing a V syllable.*

The above figure demonstrates that the word /i.ne/ has two syllables /i/ and /ne/. The first syllable consists of a single V showing that /i/ is a syllable on its own. Thus we have a case of a syllable without an onset which is different from the second syllable /ne/ which is CV structured where /n/ is the syllable onset and /e/ is the syllable nucleus. However, as described in Chapter 5 below, it is demonstrated that V syllables are generally less acceptable

although the vowel remains the compulsory component of the Barwe syllable. Thus the Barwe syllable like in many other Bantu languages is CV shaped. However there are cases where we have exceptions to this. These are situations where the vowel nucleus has been lost as is discussed in the section below.

4.3 C structured Syllable

There are also instances where the syllabic nasals constitute the syllable upon themselves without the vowel nucleus through a derivational process. The processes that derive the C structures syllables are as demonstrated in the examples that follow:

2. a) [m-]

/mu-peni/	→ [mø-peni] →	[m̩-peni]	'knife'
/mu-pwando/	→ [mø-pwando] →	[m̩-pwando]	'celebration day'
/mu-pwere/	→ [mø-pwre] →	[m̩-pwere]	'young kid'
/mu-fambo/	→ [mø-fambo] →	[m̩-fambo]	'distance'
/mu-fambi/	→ [mø-fambi] →	[m̩-fambi]	'traveller'

b) [n̩-]

/mu-tolo/	→ [mø-tolo] →	[n̩-tolo]	'big load'
/mu-tohwe/	→ [mø-tohwe] →	[n̩-tohwe]	'type of wild fruit tree'
/mu-tondo/	→ [mø-tondo] →	[n̩-tondo]	'type of indigenous tree'
/mu-tombwe/	→ [mø-tombwe] →	[n̩-tomwe]/	'traditional medicines'
/mu-solo/	→ [mø-solo] →	[n̩-solo]	'head'

/mu-sana/ → [mø-sana] → [n̩-sana] ‘back’

/mu-sasa → [mø-sasa] → [n̩-sasa] ‘type of indigenous tree’

/mu-sumbu/ → [mø-sumbu] → [n̩-sumbu] ‘bunch of grass’

/mu-zimu/ → [mø-zimu] → [n̩-zimu] ‘ancestral spirit’

/mu-t^{h}iko/ → [mø-t^{h}iko] → [n̩-t^{h}iko] ‘cooking stick’

/mu-kufu/ → [mø-kufu] → [n̩-kufu] ‘necklace’

/mu-tima/ → [mø-tima] → [n̩-tima] ‘heart’

/mu-sintu/ → [mø-sintu] → [n̩-sintu] ‘something’

c) [ŋ̩-]

/mu-gazi/ → [mø-gazi] → [ŋ̩-gazi] ‘argumentative person’

/mu-golo/ → [mø-gazi] → [ŋ̩-golo] ‘water jug’

/mu-gwala/ → [mø-gwala] → [ŋ̩-gwala] ‘iron rod’

/mu-kombo/ → [mø-kombo] → [ŋ̩-kombo] ‘gourd for drinking water’

/mu-kwambo/ → [mø-kwambo] → [ŋ̩-kwambo] ‘son in law’

In this section we are only showing the C strucyred syllables occurring in Barwe. The detailed phonological processes and rules involving these C structured syllables are discussed in Chapter 7. The examples (2a-c) above show that through a derivational process, Barwe has syllabic nasals /m̩], [n̩-] and [ŋ]. In the case of (2b and c) there is place assimilation of the [m-] with the stem commencing consonant. Thus it becomes [n̩] before [t] and [t^{h}] and becomes

[ŋ̩] before [k]. The detailed morphophonemic cyclical rules and processes involving nasal prefix and syllabic nasal is done below in Chapter 7. However from the previous page, the first example [m̩-peni] ‘knife’ on the list will be represented on the CV tier of the syllable structure as follows:

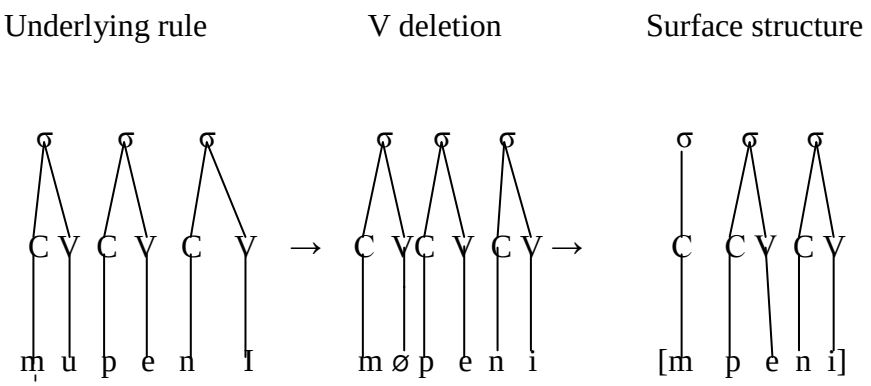


Figure 4.3*: Syllabic representation of the syllabic nasal /m̩/*

As demonstrated in the figure above, the syllabic nasal [m̩-] does not have a vowel nucleus as the prefix vowel [-u-] got lost in the historical development of the language. We then can show the above derivational process in a slightly different manner as below.

a) /mu-pe ni/ Underlying Representation

b) /mø-pe ni/ V-deletion

c) [m-pe ni] Phonological Rule

Thus we show the phonological process that takes place from the underlying structure as in (a) to the surface structure as in (b). This trend is also observable in other languages such as Chinsenga (Miti 2001) and Ciyao, (Ngunga 2000). Thus Blevins (1996) also notes that Kiamath has instances where CC shaped syllables are allowed word initially though such syllables are not allowed word internally. What is basically notable in Barwe and in other languages is that the CV shaped syllables are much generally acceptable with less

occurrences of V shaped ones and isolated cases of C shaped ones discussed in Chapter 7 and the subsequent chapters that focus on the Barwe consonantal processes as well.

In other words, consonants are generally not allowed to form syllables on their own, except as observed by Miti (2006), in situations where the vowel has been historically lost. Thus, making an account of consonants in Sitoe and Ngunga (2000), Barwe has fifty two consonants and consonants clusters that operate with the five vowels. Although this is the general orthographic alphabet, it is based on phonemic representation as it tries to orthographically represent the sounds that exist in Barwe. In the same manner, proving that consonants are far much more than the vowels used in a language, Mkanganwi (1995) observes that Shona has five vowels to fifty four consonants and consonant clusters.

The section that follows looks at the presentation and ordering of the consonants and vowels on the CV tier.

4.4 One-to-many representation

The CV phonology theory thus allows for one-to-many and many-to-one association. According to Hayes (1999:225), "Examples of many-to-one can be witnessed in the case of affricates, short diphthongs and prenasalized stops where more than one segment fall under one slot of the CV tier." (Here we will touch on the issue of affricates and prenasalized consonants in the context of syllable margins). These are discussed as complex sounds in Chapters 8 below.

This means to say the theory does not recognize group segments that make a syllable onset to a single syllable as belonging to independent C slots. Taking the Barwe example /p^{f}uma/ 'wealth' it is thus represented on the CV tier as below in the following page.

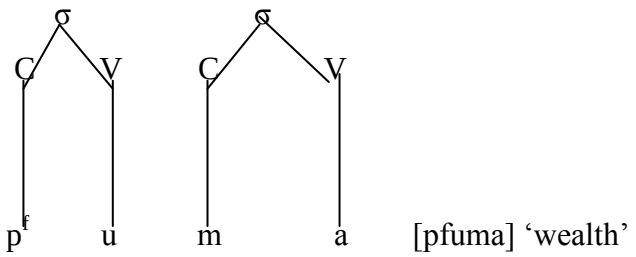


Figure 4.4: *Syllabic representation of the affricate [p^f]*

As demonstrated in the figure above [^{f}] is not an independent phoneme, it is just a release and as a result it does not exist as an independent sound on the segmental tier. The whole affricate sound is therefore phonetically represented by a superscript [p^f] to show that it is a stop and a release.

However, it has to be realised that there are scholars who would recognise the sounds that make up the affricate as individual sounds. Thus Kadenge (2007) makes a segmental representation of /tʃi/ of the Nambya word /tʃibula/ 'chair' as below:

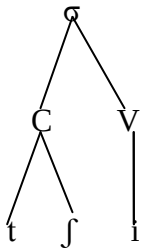


Figure 4.5: *Presentation of /tʃi/as constituted by independent phonemes*

The above figure demonstrates that the affricate is associated with a single C element of the CV tier. This does not contradict our representation of the affricate with a superscript to show that it is a sound with a single phonemic value. The figure 4.5 captures the phonetic structure of the affricate but at the same time the affricate belongs to the single C-tier as we also present. Thus the conventions of the CV-phonology account for the affricate segment as

belonging to a single C slot on the CV tier and thus the /tʃi/ like we also represent our /p^{f}/ as in figure 4.4 remains a single C syllable onset.

Going by our presentation and as earlier on mentioned above by Hayes (1999), we thus can categorise affricates of this nature in the same manner we can do with geminate consonants and vowels. On the surface structure it would look like the geminate consonants would occupy separate C slots while the geminate vowels would occupy separate V slots as well. However, the CV syllable structure denies the geminate sounds independent slots on the CV tier as they are considered as single sounds as is the case with the affricates described above. Describing geminate consonants Campbell (2004:45) says,

> "Gemination (from Latin germination-em 'doubling', related to geminus 'twin,' seen in the astrological sign Gemin) means, as the name suggests, the doubling of consonants, that is the change which produces a sequence of two identical consonants from a single starting consonant, as in *t* > *tt*...In Finish dialects..... long vowels and long or geminate consonants are written double: /aa/ = [a:], /ss/ = [s:] as in *osaa* > *ossaa* 'he/she knows', *pakoon* >*pakkoon* 'into flight (fleeing)'.

The long vowels and consonants are conventionally written as double but are phonetically and phonemically regarded as single sound units. We can make a moriac representation of the sounds. According to Trask (1996:226), "A mora is a phonological unit larger than a single segment but typically smaller than a syllable." The moraic representation of double consonants and the double vowel can be given as follows:

Figure 4.6: *Moraic representation of geminate consonant and long vowel.*

(a) and (b) in the figure above, demonstrate that, C1 and C2 are represented by a single C. It means the two consonants will occupy one C slot on the CV tier. In the same manner, the V1 and V2 will occupy a single V slot on the CV tier. As such, it can be noted in figure (4.4) that the affricate and release co-occur as single sound onsets to the syllable. In the same manner, long vowel and geminate consonant occupy V and C slots as single sound segments respectively.

The argument that the affricate is regarded as a single phoneme is also bolstered from observations of sound sliding from one sound quality to another elsewhere with regards to vowel diphthongs. Diphthongs share some articulatory features as well. Going by the CV phonology dictates, again the diphthong occupies a single V slot. Like affricates, prenasalized and aspirated consonants also occupy single C slots on the CV tier as discussed below.

4.5 Prenasalized and aspirated stops as syllable onsets

In the same manner the aspirated and prenasalized sounds belong to single C slots. Consider the prenasalised /^{m}b/ of /^{m}buzi/ ‘goat’ and aspirated /t^{h}/ of /t^{h}aha/ ‘chief’s death’

Figure 4.7: (a) *representation of* /^{m}b/, (b) *representation of /t^{h}/*

The above figure demonstrates that the prenasalized [^{m}b] belongs to a single C while at the same time the aspirated [t^{h}] also belongs to a single C as well. Both are shown as single syllable onsets. Thus the prenasalized and aspirated sounds can also be accounted for on the

CV tier and they are shown to belong to single C slots. Thus the C represents the sounds that constitute the syllable margin and the V represents the vowel nucleus.

4.6 Summary

Vowels have been described as phonemically operating as syllable nuclei while in contrast consonants have been shown to be syllable onsets. The vowel nucleus has been shown to be the compulsory element of the syllable. As such there are cases where they can stand as syllables on their own without consonant onsets. Except in situations where the vowel has been historically lost, consonants cannot stand as syllables without the vowel nucleus. It has also been shown that the consonant onsets, be they single or more than one act as single syllable onsets as they are allocated a single C slot on the CV tier as prescribed by the CV Phonology theory. Below the study looks at the Barwe vowel processes.

CHAPTER 5: Barwe Vowels

5.0 Introduction

The present chapter discusses the Barwe vowel production and the phonological processes that involve them. Generally, speech sounds are produced by way of manipulation of air stream in the oral tract. As shall be seen in the discussion on consonants below, there are various airstream mechanisms that are operative in the production of sounds. However, vowels are produced mainly through the manipulation of the pulmonic airstream. According to Katamba (1989:2), "When the mechanism (pulmonic airstream) is employed air is expelled from the lungs and gets out through the mouth or through the nose or through both." The airstream passes through the glottis being the space between vocal cords. As given by Laver (1994:128), "The larynx (….) can adjust the vocal folds to modify the airflow to produce audible voicing of variable pitch and loudness." As shall be demonstrated below in the chapter, the airflow is manipulated in different ways in the oral tract to produce the vowels.

"Vowels are characterized by momentary shaping of the airstream without interruption" (Hudson 2000: 26). That is, the production of vowels is characterized by no discerned obstruction to the airstream mechanism in the vocal tract. This is unlike consonants as it is difficult to specifically feel the points at which the vowels are articulated. That is why "Vowels are typically voiced but they have no place or manner of articulation" (Katamba 1998:9). In vowel production, the articulators remain apart and do not touch or come close to the extent that they do during the production of consonants. There is open approximation of articulators during the production of vowels (Abercrombie 1967). As such, vowels do not have precise place or manner of articulation. They also function as syllable nuclei, a phonological role that distinguishes them from glides or semivowels whose articulation is quite close to that of vowels as discussed later in this chapter.

Speech sounds interact with other neighbouring sounds. Phonologists take cognizance of the fact that within a syllable, segments relate with their neighbours in a phonological relationship on both sides. On other instances, this may lead to permanent change of sounds as part of language change. As noted by Campbell (2004:17) "Regular changes recur generally and take place uniformly where ever the phonetic circumstances in which the change happens are encountered." Thus, through historical linguistic studies, some linguistic changes can be made and a postulation of the historical sounds can obtain as well.

To understand the present vowel processes, there is also need to delve a little in the historical processes that has led to the present Barwe vowel system. As described by Hyman (2003a), there have been historical developments to the speech sounds of Bantu languages. The historical developments have taken place in the Bantu languages' phonological structure from the Proto Bantu (PB). Those sounds from the PB continue to change and trigger more changes to others as they interrelate among themselves. As given by Miti (2006) it is through this process that some languages have lost some vowel sounds from the PB seven vowels system to five while others have increased the number upwards with some languages having as many as ten.

5.1 Historical development of the Barwe vowel system

According to Miti (2006) and Hyman (2003a), the PB had a seven vowel system which has been postulated to be */i, u, e, o, ɛ, ɔ, a/. There have been alternations of the BP vowel system by different languages. As noted by Hyman, some languages such as Siwahili have reduced the vowels from the seven vowel system to five. Many languages have taken this reduction root among them being Shona (Mkanganwi 1995), Nambya (Kadenge 2007) and Barwe Stoe and Ngunga (2000), Ngunga and Faquir (2011).

Language change is inevitable. Acknowledging the fact Ladefoged (2001:2) says, "We do know that languages change, often quite rapidly so that elderly people cannot readily understand what their grandchildren are saying." Sound systems change in a way that after a long period, we can only postulate what sounds used to exist in particular languages.

As also demonstrated below, Barwe now has the vowels /i, e, a, o, u/. Reduction of the vowels to five resulted from the merging of the PB vowels. Also lost from the BP vowels, in Barwe and other Bantu languages are the long vowels. Also to be noted is that some languages did not take the root of vowel reduction from the seven PB but instead have increased the number. As noted by Hyman (2003a) different languages have charted different pathways with regards to the vowel sound systems as Nande of Democratic Republic of Congo has eight and Sotho-Tswana of southern Africa has nine while Bafia of Cameroon has eleven.

Besides the merging of vowels, the long vowels were lost through truncation (Miti 2006). The truncation process is described below.

5.1.1 Loss of long vowels through truncation in Barwe and other Bantu languages

According to Trask (1996:363), truncation is any process which removes one or more segments from a word. Historically, truncation in Bantu languages is observed to have taken place in instances where two identical vowels followed each other in the PB. It is believed that in some languages the two vowels merged to form a long vowel while in others they merged to form short ones. The resultant long and short vowels in Bantu languages have become distinctive in the languages they occur.

Barwe is one of those languages that have adopted the short vowels. Examples on the following paage have been adopted from Miti (2006) and adapted to include Barwe.

1.	PB	ICIBEMBA	CILUNGU	CINSENGA	BARWE	
	*-daad-	-laal-	-laal-	-lal-	-lal-	‘lie down’
	*-dɛɛt-	-leet-	-leet-	-let	------	‘bring’
	*-dɔɔt	-loot-	-loot-	-lot-	-lot-	‘dream’

The examples above show that some languages adopted the long vowel while others developed short ones. As noted in the above examples Barwe has adopted the short vowels.

Miti (2006) notes that the languages where vowel length is distinctive contain a significant number of minimal pairs whose meanings are distinguished purely by the difference in the length of two vowels in the same context within two words, a case that has been found to exist in Ciyao as noted by Ngunga (2000). This is different from Barwe where the length is not contrastive and the source of length is predictable as seen in the following examples:

2. a) <u>nouns:</u>

/maŋgwana:ni/	‘morning’
/diɳe:ɾo/	‘money
/ nukuti:ɾa/	‘black jack leaves vegetable’
/piɾiŋgani:so/	‘something that leads to confusion’

b) <u>unextended verbs</u>

/ɓoɓo:dza/	‘stirring okra’
/mbulu:ka/	‘fly’
/pɾofi:ta/	‘prophesy’
/tanangu:la/	‘explain’

In the above examples it is shown that the vowel in penultimate syllable is always long because of the position it occurs. The vowel length is not contrastive, i.e., no minimal pairs can be obtained as a result of this. The above examples of nouns and verbs have varying number of syllables but as noted, the lengthening targets the penultimate syllable. We can further demonstrate this by adding some verb extensions to the verbs of (2b) as shown below:

3. unextended verb +applied extension –iɾ/eɾ +applied extension er/ir +causative tension is/es

/ɓoɓo:dza/	/ɓoɓodze:ɾa/	‘stir okra for’	/ɓoɓodzeɾe:sa/	‘cause to stir okra for’
/mbulu:ka/	/mbuluki:ɾa/	‘fly for’	/mbulukiɾi:sa/	‘cause to fly for’
/profi:ta/	/profiti:ɾa/	‘prophesy for’	/profitiɾi:sa/	‘cause to prophesy for’
/tsanangu:la/	/tsananguli:ɾa/	‘explain for’	/tsananguliɾi:sa	‘cause to explain for’

The above examples show that by adding more suffixes to the same verbs we see the lengthening targeting the penultimate syllable. In the first instance we have unextended verbs. In the second list we have verbs with applied extension. In the third list we have the verbs with a double extension, applied + causative extensions, but the lengthening remains on the penultimate syllable in all the three situations. We see that the lengthening is position-dependent as its occurrence is not conditioned by the number of syllables in a word.

In the next section we discuss the three to five vowel increase.

5.1.2 Argument for the three to five vowel increases in Barwe and some Bantu languages

Some scholars are of the view that those languages that have developed a five vowel system including Barwe had three non-mid vowels [i, a, u] and the additional two mid vowels [e, o] were created as a result of phonological interaction between the non-mid vowels. Mkanganwi (1995) and Kadenge (2007) are of that view according to which the non-mid vowels are the primitive ones that bore the mid vowels. Coming to the conclusion, after analyzing the Nambya vowel system, Kadenge (2007: 382) asserts,

> "On the basis of this observation, I can safely argue that Nambya was historically a three vowel language. This observation is based on the realization that diachronically the two secondary (mid) vowels [e, o] are phonologically derived from their basic counterparts."

He arrives at that conclusion after observing patterns of vowel coalescence in Nambya where some of the following examples are cited:

4.	/hwa + zwipo/	→	[hwezwipo]	'of the gifts'
	/na + mulume/	→	[nomulume]	'with man'

These examples demonstrate that there is a general patterning in which /a/ is realized as [e] when followed by [i] and is realized as [o] when followed by [u]. However the above coalescence occurs through distant coalescence. Trask defines (1996:77) coalescence as, "The phonological process in which two segments occurring in sequence in a single linguistic form combine into a single segment." The above is distant coalescence as the vowels that result in the production of the new vowel are not in direct sequence. It is direct sequence coalescence that is prevalent in Barwe. (Direct sequence coalescence in Barwe is discussed in section 5.4 below.)

Nambya is a southern Bantu language that is spoken in the western parts of Zimbabwe. There is a general agreement that there is a diachronic explanation as to the historical development of the vowels in Bantu languages. What is not tallying is the general direction. The three to five vowel theory caters only for the languages that have five vowels systems and does not provide clues on how those languages that have more than five vowels developed.

However, the PB vowel shift theory seems to be more embodying of the majority of the languages. In that PB theory, the reduction from seven to five can easily be accounted for as the languages shaded off some of the vowels. In any case the number of vowels in world languages vary a lot but in cases where there has been some reduction the patterns are almost similar. Thus according to Clark and Yallop (1990:70), "Five vowel systems are wide spread and are often similarly distributed with a common pattern found in Spanish Modern Greek, Maori, Polynasian languages and Swahili and some Bantu languages of Eastern and southern Africa (…) while classical Arabic, and some Australian Aboriginal languages have only three vowels." Thus we can easily attribute the reduction to some sound shading with the pattern not only confined to Bantu languages. The increase is also catered for as the increased number can be attributed to the creation of nasal vowels.

Having looked at the hypothetical historical phonological processes the study looks at the vowel processes that take place in Barwe. To have a better understanding of the phonological processes involving those vowels, a brief description of the Barwe vowels is made below.

5.2 Vowel Description

Every spoken language has some vowels that also string with consonants and other vowels as well in speech. By way of articulation production and phonemic functions, the

vowels differ from the consonants. It has to be noted that each language has finite sounds that are phonetically and phonologically distinct among themselves. Consonants will also be shown to be different among their group. Vowels are also different as they also phonemically contrast among themselves in the word formation. A language would be difficult to comprehend if only one vowel was to be used the whole way through in speech. Compared to consonants the vowels are quite few but variably combine with consonants in a contrastive manner. One will be able to discern the difference between the following Barwe minimal pairs:

5. a)	/ɓud**a**/	[a]	'move out of something'
	/ɓud**u**/	[u]	'bag'
b)	/ts**e**ŋga/	[e]	'chew'
	/ts**i**ŋga/	[i]	'vein'
c)	/l**i**ma/	[i]	'farm'
	/l**u**ma/	[u]	'bite'
d)	/m**o**t**o**/	[o]	'fire'
	/m**u**to/	[u]	'soup'
e)	/**kula**/	[u]	'grow up'
	/k**a**l**a**/	[a]	'burning charcoal'

In the examples above, it is shown that the vowels /a/ and /u/ in (5a), /e/ and /i/ in (5b), /i/ and /u/ in (5c), /o/ and /u/ in (5d) and /u/ and /a/ in (5e) are contrastive in that in the minimal pairs, they occur in the same sequences following the same consonants to produce different meanings. As noted by Ladefodged (2001) it is the vowels' contrastive nature that gives meaning to different words. It is through this contrast that we can discern the different words

as different upon hearing them spoken. Summing up from the list (5a) to (5e), it can be noted that the Barwe vowels that have been playing the contrastive roles are /i, e, a, o, u/.

"Phonetically the (vowels) are sounds articulated without a complete closure in the mouth or a degree of narrowing which would produce audible friction as the air escapes evenly over the centre of the tongue" (Crystal 1991:377). That is, the absence of closure of the vocal tract and therefore no blockage to the pulmonic airstream during their production is the main feature of vowels. However, in some languages, they are produced with a lowered velum such that the airstream is directed through the nose to produce nasal vowels. As noted by Miti (2006) Umbundu, (Guthrie's H21a) of Angola is one of the Southern Bantu languages that have nasal vowels.

The vowels that are produced through the mouth are thus categorized as oral vowels and those that are produced through the nose, as it happens in some languages, are nasal vowels. This points out to the fact that they are produced using the pulmonic egressive airstream mechanism. The lung air forces its way through closed vocal cords causing them to vibrate, hence they are voiced.

The position of lips (rounding/protrusion, spreading or neutral) and tongue has been found to be significant in the phonetic description of the vowels (Ladefoged 2001, Abercrombie (1967), Crystal (1991), Fromkin and Rodman (1998) and Mkanganwi (1995). However the spreading and neutral positions are often labeled under one feature label [unrounded]. The features [rounded] and [unrounded] have gained prominence as vowel feature descriptions. Vowels are also classified according to the tongue heightening, fronting and backing. These variables determine the quality of each and every vowel.

As described by Clark and Yallop (1990: 62) "The tongue moves within a special continuum without making any significant constriction in the area surrounding the middle of the oral cavity (...), as a result we cannot locate a specific point of constriction or blockage

and phoneticians have had to struggle to devise a satisfactory way of plotting the position of the tongue." This is in contrast to consonants whose description is relatively precise as the place of articulation can precisely be singled out.

Thus we do not use the place of articulation such as: labial alveolar, palatal and velic in their description. For vowels, the tongue movement is in that 'spatial continuum' where point of articulation is less precise compared to that of consonants that will be described later in the following chapter.

However, in an attempt to get a clearer description of vowel production, phoneticians have resorted to the tongue axis descriptions. There is a two way tongue description. One is the height axis that describes the tongue height and the other is the horizontal axis that looks at the position of the tongue in terms of how front it is pushed or how backward it is retracted in the oral tract.

Different parts of the tongue take different positions to articulate the different vowels, but the hump or dorsum of the tongue plays a significant role in the description of the height variable. Thus according to Katamba (1998:9),

> "Vowels produced with the highest point of the hump in the tongue close to the roof of the mouth are said to be high and those produced with the highest point of the hump in the tongue barely rising above the floor of the mouth are said to be low; the intermediate position is referred to as mid."

This suggests that the physiological movement of the sections of the vocal tract takes centre stage in the description of any language phonemes as the airstream mechanisms are manipulated at different points of the vocal tract to produce the different sounds of a language.

In conjunction with the height axis, the horizontal axis is important since the highest point may be at the front in the centre or at the back of the mouth. This is why vowels can be described as being *high* or *low*, *front* or *back*. As given by Hudson (2000:1), "Those produced with neither fronting or backing are *central* while those produced with neither raising nor

lowering are *mid"*. Thus in examples (5) above it has been shown that Barwe has the vowels /i, e, a, o, u/. The five vowels chart can be represented as below.

	Front	**Central**	**Back**
High	i		u
Mid	e		o
Low		a	

Table 5.1*:* *Barwe vowel representation showing their phonetic properties.*

The table 5.1 above shows the representation of the five Barwe vowels. [i] is high front, [e] is mid front, [a] is low central, [o] is mid back and [u] is high back. The figure shows that the vowels are described mainly in terms of the tongue body position in relation to the roof of the mouth. Thus, in Barwe, [i] is produced with highest part of the tongue close to the alveolar ridge while [e] is produced with the tongue pushed to the front but at a middle height position. That is to say, it is neither high nor low, being the reason why it is called mid vowel.

The vowel [a] is produced with the tongue lowered but in a central position in terms of the front or back axis of movement. The tongue is down on the floor of the mouth while [o] is produced with the back of the tongue in a middle height position and [u] is produced with the back of the tongue raised high. For Barwe, a five vowel system language, there are three non-mid vowels, namely, [i, a, u] and the two intermediate vowels [e] and [o].

In his description of Cinsenga, a Bantu language spoken in Zambia, Miti (2001:4) suggests that "It is necessary to assume a feature matrix which specifies the height value for each of five vowels (…) where [+1Hi], [-1Hi] and [0Hi] represents High, Low and Mid (…), and also [+Rd] and [-Rd] stand for rounded and unrounded, respectively". The feature matrix

description suits the Barwe vowel description which, like Cinsenga, also has a five vowel system, as shown below:

	i	e	a	o	u
Hi	+1	0	-1	0	+1
Rd	-	-	-	+	+

Table 5.2: *Barwe vowel feature Matrix.*

The table above shows that the Barwe vowels [i] and [u] are [+1Hi] which means the tongue is high during their production. [a] is [-1Hi] which means it is produced with a lowered tongue. The vowels [e] and [o] have the feature [0Hi] meaning to say they are neither high nor low. In terms of lip rounding it can be seen that the vowels [i], [e] and [a] have the feature [-Rd] as they are produced with unrounded lips. [o] and [u] are produced with rounded lips as they have the feature [+Rd].

Vowels can also be functionally classified as being long or short. Thus, according to Clark and Yallop (1990:70), "Vowel length is often exploited in such a way that each short vowel is matched by a long vowel." In such a situation the long/short apposition is distinctive. Barwe has five short vowels /i, e a, o, u/. As earlier on noted in examples (3), penultimate lengthening, does occur in Barwe. Also as noted, the penultimate lengthening does not have a contrastive effect.

Besides duration, another phonemic classification can be made by looking at vowel quality. If the quality of the vowel does not change during the duration of articulation, then what obtains is a pure vowel (Ngara 1982). Barwe examples of these are [e] and [a] as in /ema/ 'stop'. Pure vowels are known as monophthongs.

As earlier on noted, vowels are prominently recognized for their nucleus role in syllables. It was demonstrated that Barwe has a five vowel system consisting of the vowels

/i, e, a, o, u/ which have been described as being phonetically produced with no closure as the air is allowed to escape evenly through over the centre of the tongue.

It has been pointed out that vowels play a crucial role as syllabic nuclei. They are the compulsory elements that mostly constitute the syllable except in some exceptional cases where the vowel has been lost. As such being key players as constituent members of the syllable there are processes that are triggered as vowels within words make phonological interaction amongst themselves, which we describe in the sections that follow.

5.3 Phonological processes involving Barwe vowels

Having discussed the general historical development of the Bantu vowels, the present status of the Barwe vowels and their production, the study looks at what happens when vowels occur one after another within and across words in Barwe. Describing how consonants relate, Selkirk (1999: 239) says, "There is a restriction to which consonants can cohabit." This equally applies to the vowels since in particular instances they disallow other vowels in adjacent syllables. In situations where they happen to co-occur, usually as a result of the concatenation of morphological units, the language uses different phonological processes in order to remove the less preferred sequences. The unwanted vowel sequences form what is usually called *hiatus*. According to Trask (1996:170) hiatus is, "The occurrence of two consecutive vowels forming separate syllables." As discussed below, that type of set up is less preferred and a number of strategies are used to avoid its occurrence.

In order to resolve the hiatus, Barwe uses different phonological processes such as glide formation, glide insertion, vowel deletion and vowel coalescence. The other phonological process involving Barwe vowels but which is not motivated by hiatus is vowel harmony. These processes are the object of discussion in the next sections.

5.3.1 Glide formation

Before looking at the glide formation in Barwe, it is also important to look at the phonological characteristics of the glides. It is also important to look at the role they play in syllable formation in order to have a better understanding of glide formation and understand what motivates it. Hulst and Weijer (1996), Clements and Hume (1995), and Fromkin and Rodman (1991) describe glides as sounds that are produced with little obstruction of the pulmonic air stream as the tongue moves rapidly in a gliding fashion either toward or away from a neighbouring vowel. The glides that are commonly talked about in Bantu languages are the palatal [j] and the labiovelar [w].

As aforementioned, these sounds are also referred to as semivowels due to their articulation that allows freer passage of the airstream that is almost similar to the way vowels are produced. It is important to note that despite their articulation that is close to that of vowels these two sounds [j] and [w] are classified under the consonant group as they will be demonstrated to take onset roles in syllable formation.

In other instances, the term vowel is reserved for phonological analysis while the term vocoid is used to phonetically classify the vowels and the other consonantal sounds that are produced in a vowel like manner (Crystal 1991). In contrast, the consonants that are produced with a much more pronounced constriction on the pulmonic air stream, causing friction or total closure, are also phonetically classified as contoids.

As noted, one of the ways employed by Barwe to break vowel succession is by glide formation which takes place when the vowel nucleus of the prefix precedes an onsetless initial syllable of the suffixed stem thereby juxtaposing the two vowels as demonstrated in the examples below:

6. u→ G/_V[+high]

a) u +a

/mu+ana/	→	[mwana]	‘child/kid’ (c l1)
/mu+ando/	→	[mwando]	‘cold/moisture’ (cl 3)
/mu+aka/	→	[mwaka]	‘season’ (cl 3)
/tu-ana/	→	[twana]	‘small children’ (cl 13)

b) u + e

/mu+ene/	→	[mwene]	‘owner’ (c l1)
/ku+enda/	→	[kwenda]	‘to go’ (cl 15)
/mu+endo/	→	[mwendo]	‘leg’ (cl 3)
/mu+eya/	→	[mweya]	‘spirit/smell’ (cl 3)

c) u+i

/mu+iɾi/	→	[mwiɾi]	‘body’ (cl 3)

d) u+o

/mu+oŋgo/	→	[mwoŋgo]	‘marrow’ (cl 3)
/mu+oyo/	→	[mwoyo]	‘heart (cl3)

The noun examples above demonstrate that /u/ undergoes gliding [w] whenever it precedes the vowels /a e, i, o/. However the vowel /u/ does not change when it precedes a /u/ vowel commencing stem as demonstrated in the examples that follow:

7. /mu-uyi/ → [muuyi] /[muwuyi] ‘he/she who comes’

/mu-umisi/ → [muumisi]/[muwumisi] ‘he/she who dries things’

The /-u-/ of the prefix does not become a glide. Instead it is retained or as demonstrated a glide is inserted between the vowel of the prefix and the vowel of the stem through a process called glide insertion, a process also discussed in section 5.3.2 below.

However, in this research we observed that there was less evidence of the formation of the glide /j/. We only observed it in the quantitative prefix +quantitative stem as shown in the example below:

8. Quantitative prefix + quantitative stem

/i + entsene/ → [je-ntsene] ‘all of it’ (cl 9)

We see that /i/ becomes [j] when it precedes the mid vowel [e]. The Barwe syllables are open and in examples (6) the CG onset and the G onset in example (8) take the vowels of the onsetless syllables they precede respectively. The generalization about glide formation is that in Barwe, the high vowels undergo glide formation. We can generalize the glide formation as follows:

9. u+a = wa i+a = ja

u+e = we i+e = je

u+i = wi i+i = ji

u+o = wo i+o = jo

u+e = wo i+u = ju

The above examples demonstrate that the semivowel formation targets the left side vowel. It can be noted that the front unrounded /i/ becomes glide [j] while the back rounded vowel /u/ becomes the glide [w]. Kadenge (2007) Mkanganwi (1995) and Doke (1931b), have labeled glide formation process as 'consonantalization' where /i/ and /u/ are glided to [j] and [w], respectively and the glides no longer play vowel nucleus roles as they become syllable onsets. As such, in the CV syllable analysis used in this research, the glides are assigned C status.

In glide formation, one of the vowels in succession cedes its nucleus position as it gets linked to the C node of the CV tier of the syllable in the new resyllabification as demonstrated below. Taking the first example from (6b) above, the process of resyllabification and glide formation can be represented on the CV tier as below.

Input output

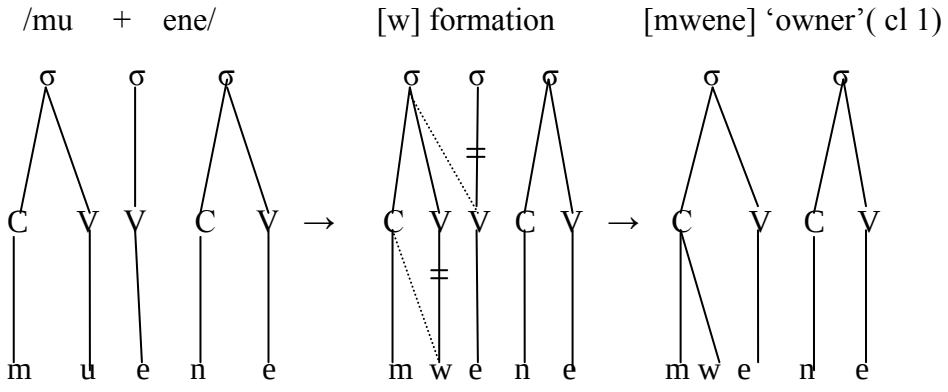


Figure 5.1: *[w] glide formation in the word [mwene]*.

The figure 5.1 above shows that initially, we have the vowels /u/ and /e/ in sequence. The /u/ is then delinked from its V slot as it gets linked to the C slot of the CV tier. Thus, the vowel /u/ glides as it gets linked to the C slot of the CV tier. The left high back vowel turns into a glide to create a CGV ordering. To start with, /muene/ was a CVVCV word. After the glide

formation of the first of the VV vowels it becomes [mwene] which is a CGVCV, with the G breaking the VV sequence. In /mu + ene / there are underlying three syllables. Glide formation leads to resyllabification as it is noticed that /mwe.ne/ has two syllables. After the glide formation the onsetless initial syllable of the stem gets the CG on the left as its onset. In the case of /i+entsene/ the vowel /i/ just turns into a glide without partnering any other C on its left since it is word initial. However, going by the above examples, it can be noticed that it is the front and back high vowels that go through the glide formation process. Glide formation is shown as one of the hiatus resolution strategies that block the undesired vowel sequence in the Barwe syllables.

As proclaimed in the Lexical Phonology Theory, every affixation to a word results in new phonological makeup to the newly created lexical unit. After every affixation, there is need to apply the lexical phonology rules to check on the new phonological setup that would have taken place including elimination of the undesired vowel sequence.

Besides glide formation, hiatus can also be resolved by glide insertion as described in the section that follows.

5.3.2 Glide insertion/epenthesis

In the above discussion it has been shown that there are some morphophonemic processes that take place to resolve hiatus. One of the vowels becomes a glide as it relinquishes its syllable nucleus status. On the other hand, in glide insertion, both vowels that precede each other are retained but a semivowel is inserted between them to resolve the hiatus.

The insertion of a sound that was not there in a word is also known as epenthesis. In situations where there is subject prefix and vowel commencing verb roots, vowels get

juxtaposed and to avoid hiatus, a semivowel is inserted between them. The semivowels [w] and [j] are operative in this process as in the examples below.

10 . ∅ →[-syl, +son, -back, +pal]/[syl] - [+syl, +ant]

a) <u>subject prefix+verb</u>

/ka+ita/	→	[kajita]	‘it has done/worked well’
/ma+isa/	→	[majisa]	‘you have put/placed’
/ʐa+itika/	→	[ʐajitika]	‘it has happened’

b) /ma+ema/ → [majema] ‘you have stopped/stood up’

/wa+enda/ → [wajenda] ‘they have gone’

/ta+erenga/ → [tajerenga] ‘we have read’

/wa+enda/ → [wajenda] ‘they have gone’

/wa+enzana/ → [wajenzana] ‘they all did the same/are of the same size

c) /i+enda/ → [ijenda] ‘as s/he was going’

/ci+enda/ → [cijenda] ‘go now’

d) /to+enda/ → [tojenda] ‘we are going’

e) /mo+isa/ → [mojisa] ‘you are putting’

/ko+itika → [kojitika] ‘when it happens sometimes’

f) /ku+ita/ → [kujita] ‘to do something’

g) <u>verb+interrogative -i</u>

/maɾimiɾe + i/	→	[maɾimiɾeji]	‘what kind of farming
/cece + i/	→	[ceceji]	‘what kind of church
/maɓeɾo+i/	→	[maɓeɾoji]	‘what kind of thighs’
/foɾʒa+ i/	→	[foɾʒaji]	‘what kind of tobacco’

As demonstrated in the above examples, there is insertion of the glide [j] between the vowels in sequence. It is the second of the vowels in sequence that determines the glide to be inserted. In the above examples (10a-g), it is shown that the semivowel is inserted before the front vowels [i] and [e]. As given by Fromkin and Rodman (1998) gliding takes place as the tongue moves away or towards one of the neighbouring vowels. In a way, it can be seen that the glide will share some features with one of the vowels. Thus from the above examples we can note that [j] is coming after the vowels [i] and [e] which have the feature [-back]. That is it is the characteristics of the second vowel which is [-back] that determines the nature of the glide [j], which is also [-back] to be inserted.

In the same manner [w] is also inserted before particular vowels as discussed below.

11. ∅→[-syl, +son, +lab, +velar]/[+syl] - [+syl, +back]

a) <u>subject prefix+verb</u>

/ta+otsiɾa/	→	[tawotsiɾa]	‘we have sneezed’
/a+oniwa/	→	[awoniwa]	‘he/she has been seen’
b) /ʐa+ona/	→	[ʐawona]	‘they have seen them’
c) /ca+otsila/	→	[cawotsila]	‘it has sneezed”
d) /to+ulaja/	→	[towulaja]	‘we are killing’
e) /ku+otsila/	→	[kuwotsila]	‘to sneeze’
f) /ca+ulaya/	→	[cawulaya]	‘it has killed’
g) /a+ume/	→	[awume]	‘to dry them’

The examples (11a-g) demonstrate that it is the glide [w] that is preferred before the [+back] vowels [o] and [u]. Thus, the features [+back] are also passed on to the labiovelar glide [w], as it also has both lip rounding and raising of the back of the tongue.

The examples (10) and (11) above are showing that Barwe breaks the hiatus by inserting the semivowels [j] and [w] between the vowels in sequence. The inserted semivowel provides the C component to the onsetless initial syllable of the verb stem as the glide now functions as a consonant in syllable formation. Taking the first example in (10a) the resyllabification can be represented as follows:

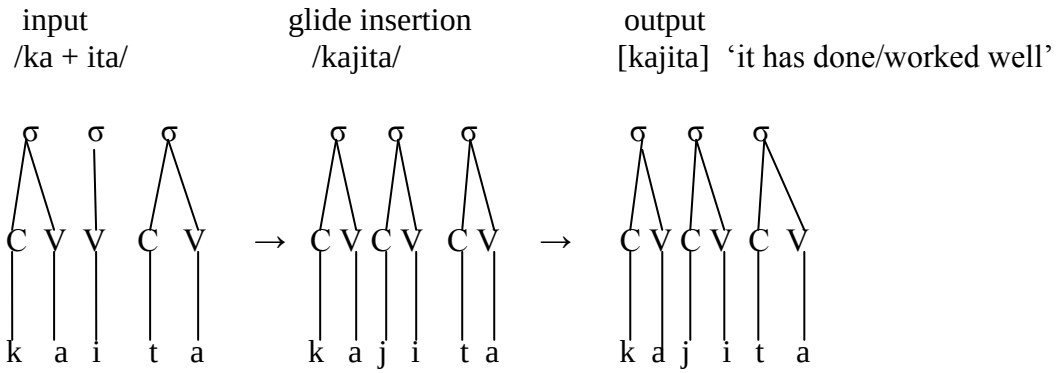


Figure 5.2: Semivowel [j] insertion

In figure 5.2, vowel sequence /a+i/ of the input is broken by a semivowel [j] insertion between the vowels. The onsetless syllable /i/ remains in nucleus position as to its left side is inserted a semivowel [j] which is now the onset of the formerly onsetless syllable.

There are circumstances when both the glide formation and glide insertion are not allowed. At the same time, hiatus is not favoured either and resultantly one of the vowels in sequence is deleted. This is going to be the subject of the next section.

5.3.3. Vowel deletion/elision

According to Trask (1996:105) "Deletion is a loss of segment from a word or other phonological form." It also has to be noted that the same author also gives a similar definition for 'elision'. Scholars like Mudzingwa (2010) and Kadenge (2007) prefer using the term elision while Ngunga (2000) prefers to use 'deletion' which is also preferred in this research. However, the two terms mean one and the same thing.

Vowel deletion can be noticed in instances where there is noun prefix + vowel commencing stem. This leads to vowel sequencing. One of the vowels in succession is deleted and the resultant syllable reconfiguration leads to the preferred CV shape as demonstrated in the examples that follow next.

12. <u>noun prefix + noun stem</u>

a) /mu+oŋko/ → [moŋko] 'murrow' (cl 3)

/mu+oto / → [moto] 'fire' (cl 3)

/mu+ojo/ → [mojo] 'heart' (cl 3)

/co+oto/ → [coto] 'fire place' (cl7)

/ʐi+oto / → [ʐoto] 'fire places (cl 8)

b) <u>quantitative prefix+quantitative stem</u>

/va+entsene/ → [ventsene] 'all of them' (cl 2)

/ci+entsene/ → [centsene] 'all of it' (cl 7)

/ʐi+entsene/ → [ʐentsene] 'all of them' (cl 8)

/ji+entsene/ → [jentsene] 'all of it' (cl 9)

/dza+entsene/ → [dzentsene] 'all of them (cl 10)

As demonstrated in examples (12) above, one of the vowels in sequence is deleted. It is the vowel of the noun prefix that becomes the target of deletion. The stem vowels are retained. Taking the first example /mu+oŋko/, the vowel /u/ of the prefix is deleted and the /m/ becomes the syllable onset with the onsetless vowel of the stem becoming the nucleus. After the resyllabification, the resulting word is [moŋko]. It can be noticed that the deletion is a way of hiatus resolution. Thus, in the underlying structure the word /mu-oŋko/ (CVVCCV)

shaped becomes [moŋko] (CVCCV) in the surface structure. Deletion occurs in order to avoid VV sequence occurrence.

In examples (12b) above, it is the quantitative prefix vowel that becomes the target of deletion. The consonants of the prefix become onsets as the onsetless commencing vowel of the quantitative stem becomes the vowel nucleus to construct the CV preferred syllable in the surface structure. It can be concluded that Barwe avoids hiatus occurrence. It also does not favour onsetless syllables.

There also is a process of suffixation as a way of hiatus resolution in a demonstrative+pronoun construction in (13a) and in verb + pronoun in (13b) in the following examples:

13. i→∅/[+syl - [+syl, -back]

a) <u>demonstrative +pronoun</u>

/ɾine+iɾi/	→	[ɾineɾi]	‘this one’ (cl5)
/ɾine+iɾo/	→	[ɾineɾi]	‘that one’ (cl5)
/cine+ici/	→	[cineci]	‘this one’ (cl 7)
/ine+iji/	→	[ineji]	‘this one’ (cl 9)
/ʐine+izvi/	→	[ʐineʐi]	‘these ones’ (cl 21)

b) <u>verb + pronoun</u>

/fuŋgula+ipo/	→	[fuŋgulapo]	‘open something when at that place’
/lala+iko/	→	[lalako]	‘sleep at that place’
/ ponela+imo/	→	[ponelamo]	‘seek safety inside that place’
/diŋga+iko/	→	[diŋgako]	‘look in that direction’

The examples (13a) and (13b) above show suffixation of demonstrative clitics to the indefinite pronoun. The cliticisation results in vowel sequencing with [i] preceding the

vowels /e/ or /a/. The vowel /i/ of the pronoun and the demonstrative becomes the target of deletion.

However, it is taken note that some scholars like Kadenge (2007) and Mkanganwi (1995) argue that this process is not a hiatus resolution process. The argument posted being that the deleted is just epenthesized vowel which they consider not to be a grammatical entity except to give monosyllabic words a bisyllabic status. From this point of view, the deletion of the stablising vowel is a means of getting rid of redundant element whose stablising function role has been lost as the demonstrative is cliticised to the preceding word. According to their view the position is that the disappearance of the epenthesized vowel /i-/ is not driven by phonological rules.

In light of the divergent views, the present research upholds the view that it is a hiatus resolution process. The phonological rule deletes one of the vowels that become adjacent as pronouns and demonstrative clitics are suffixed to pronouns and vowel as demonstrated in the examples (13a) and (13b) above. The concatenation of the demonstrative and the pronoun creates vowel sequencing. One of the vowels in sequence is deleted and the remaining syllables take the preferred CV shape. The concatenation results in vowel sequencing which also results in vowel deletion as a way of hiatus resolution and maintaining CV structured syllables word internally. What we realize is that vowel deletion as hiatus resolution takes place when the VV sequencing occurs word internally. This results in the following structured formular.

14. V1 + V2 = V1

The above shows that the deletion targets V2 as V1 remains. It can be noticed that onsetless vowels do occur word initially on the clitics. Taking the example from the examples (13a) the

demonstrative /iri/ retains its onsetless initial V /i-/ in the underlying structure but the same vowel gets deleted upon the demonstrative's cliticisation to the pronoun. Similarly taking the first example in (13b) the pronoun /ipo/ is vowel initial but the vowel gets deleted as the pronoun concatenates with the verb. The vowel gets deleted as the pronoun gets encliticized to the verb.

From the viewpoint that encliticization is not a hiatus resolution it may be important to have a closer look at the grammatical function of the vowels that are targeted for deletion. Chigidi (1988:77) describes the pronoun as consisting of an initial stabilizer + pronominal class affix + a terminal vowel. The stabilizer is the epenthesized vowel. As such, the pronoun /ine/ 'me' is described as consisting of epenthesized vowel i- + pronominal class affix -n- + terminal vowel -e. The author also describes the demonstrative as consisting of epenthesized vowel + demonstrative affix + vowel.

According to Mkanganwi (1995:166), "Monosyllabic constructions have another syllable added in the form of a stabilizing vowel /i-/ which we cannot call a morpheme (…) it has no meaning and no grammatical function." The argument that is then posited is that the word initial vowels of the demonstrative and absolute pronouns are not there in the deep structure or the underlying representation. The epenthesized vowel features on monosyllabic words that appear in isolation for the purpose of maintaining word minimality requirements. Thus Barwe and other languages that insert the epenthesized vowel do so to maintain disyllabic syllables.

In line with this view, in the examples (13a) and (13b) epenthesized vowels have been shown to be the target of deletion as they do not have any grammatical function besides stabilizing the monosyllabic pronouns and demonstratives. It then means that the epenthesized vowel is not part of the underlying representation of the demonstrative and the absolute pronoun. In both cases the demonstratives were cliticised to indifinitive pronouns

and the verb, respectively. After the deletion, the preceding vowel becomes the penultimate vowel in the new constructional setup. In Barwe, the penultimate syllable carries penultimate length as was mentioned earlier.

However, the present study argues that deletion of the epenthesized vowel takes place when the phonological environment is met like in all other situations where concatenation leads to unfavoured VV sequencing. The phonological rules will determine which of the vowels in sequence has to be deleted as new phonological configurations take place. Deletion is a hiatus resolution and it does not target less important grammatical elements as per Kadenge and Mkanganwi point of view. Examples (13a) and (13b) show that once some phonological conditions are met a phonological reaction is bound to take place. In the examples, deletion has been shown to take place in situations where there are no epenthesized vowels and in which there is no categorization as to which are less appreciated grammatical entities. As such, the deletion targeting the epenthesized vowels is dictated by the phonological rules and deletion takes place wherever these phonological conditions are met.

However, there are also growing views that are coming on board arguing for the importance of the epenthesized vowel as a genuine grammatical entity. The epenthesized vowel may not be an entity just to stabilize the single morphemic words. It is a grammatical entity that can occur in many underlying grammatical features of many words. According to Ngunga et al (2010) there are situations in Bantu languages where the epenthesized vowel has been retained but is not directly reflected on the words, but whose phonological influence is reflected on the genitive vowel that precedes them. Crystal (1991:152) describes a genitive vowel as, "One of the forms taken by a noun phrase which expresses grammatical relationship (eg: the boy's book), or some other similarly close connection." The genitive examples given by Ngunga et al (2010) for Shona are [e] or [o] as in the example that follow.

15. a) musoro wemwana ‘head if a child’

cf musoro womwana

b. sadza rekudya ‘sadza for eating’

cf sadza rokudya

c. mvura yekunwa ‘water for drinking’

cf mvura yokunwa

d. gaba reuchi ‘tin of honey’

cf gaba rouchi

Thus, the genitive vowel can be either [e] or [o]. Thus as given by Ngunga et al (2010), examples above show that when the vowel of the first syllable of the noun that is being preceded by the genitive vowel is rounded, the vowel of the genitive may be realized either as [-round] or [+round]. However, this does not take place with the word categories of classes 5 and 9 nouns where single morphemic nouns exist and directly take the [-round] epenthesized vowel as demonstrated in examples below.

16. a) Genitive + class nouns

[kona + jebwe] < /kona ja + ibwe/ ‘corner of a stone’

cf [kona + *jobwe]

[kukura + kweibvi] < /kukura kwa + ibvi/ ‘size of knee’

cf [kukura + *kwobvi]

[muswe + weigo] < /muswe wa +igo/ ‘tail of wasp’

cf [muswe + *wogo]

b) Genitive+class 9 nouns

[gumbo+renda] < /gumbo ra + inda/ ‘a lie’s leg’

cf [gombo *ronda]

[kusaonekwa+kweɲo] < /kusaonekwa kwa + iɲo/ ‘the privacy with regards with one’s anus’

cf [kusaonekwa + *kwoɲo]

The above examples are showing that the initial epenthesized vowel is [-round] and is preceded by the [-round] genitive vowel [e] and is not preceded by the genitive vowel [o]. The argument being posted here is that the epenthesized vowel is a grammatical entity that has grammatical functions as its presence has influence on phonological processes. We can see that it is involved in vowel coalescence with the /a/ of the possessives. Taking the first example in (16a) we can show the coalescence process as below:

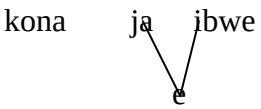


Figure: 5.3 *Vowel coalescence of /a/ and /i/ to /e/.*

The above figure shows the coalescence of /a/ and /i/ to [e]. /a/ is [+low] while /i/ is [+high]. They coalesce to [e] a front mid vowel. This shows the importance of the [i] as a grammatical entity. It is [-round] also bars the nouns from taking the [+round] genitive vowel and we can put forward an argument that initial epenthesized vowel deletion is a hiatus resolution process that realizes the epenthesized vowel as a genuine grammatical entity, not only in Barwe but in other Bantu languages as observed about the Shona case.

Resultantly, this epenthesezed vowel is recognized as existing in underlying structures although it does not appear on longer words of both classes. Despite the vowel of the first syllable being [+round] in the nouns of classes 5 and 9 the genitive [o] is not allowed as in the examples below:

17. a) Genitive vowel + longer class 5 nouns

[varidzi+vegore] < /varidzi vegore/ 'honors of the year'

cf. [varidzi+*vogore]

[mukati+meguruşuşu] < /mukati+meguruşuşu/ 'inside the group of people'

cf. [mukati *moguruşuşu]

b. Genitive vowel+longer class 9 nouns

[gumbo re+mombe] < /gumbo remombe/ 'cow's leg'

cf. [gumbo+*romombe]

[kureba kwembudzi] < /kureba kwembudzi/ 'got's height'

cf. [kureba * kwombudzi]

In the above examples it can be noted that despite the vowel of the first syllable being [+ round] the genitive vowel does not follow the rule demonstrated in examples (17 a-b) where the genitive vowels [e] and [o] are allowed to precede the nouns whose first syllable vowel is [+round]. The argument posted by Ngunga et al (2010) is that in the underlying nouns that are longer the word initial vowel /i/ does not appear because the word has more than one syllable. Nouns of classes 5 and 9 may or may not reflect the initial vowel [i] in the surface

structure but is realized in the underlying structure as it also has phonological influence on the genitive vowel. However, its surfacing is obligatory in monosyllabic nouns.

This is to say that in Bantu, the classes 5 and 9 nouns may or may not take the initial vowel /i/. The presence of this vowel in words of these classes is obligatory in monosyllabic words and optional in longer words. Although this vowel does not surface in longer nouns of these classes, the phonology acknowledges the presence of this /i/ as reflected in its influence on the genitive vowel that precedes these nouns. In the ongoing research draft Ngunga et al (2010) say, "In this case, when the genitive prefix is affixed, this /i/ is "seen" as the first vowel of the first syllable. Therefore, the rounding assimilation of the mid-front vowel is blocked."

However, it has to be noted that we had to seek evidence from another Bantu language to show the importance of the epenthesized vowel thereby bolstering the argument we have put across that an epenthesized vowel is a genuine grammatical entity common in Bantu languages, and has varying influence on the phonological processes in Barwe and other Bantu languages. Having realized the general importance of the epenthesized vowel as a genuine and versatile grammatical entity we can come to the conclusion that vowel deletion involving Barwe monosyllabic words with epenthesized vowel is a means of hiatus resolution and not mere enclitisation.

Coming back to Barwe we can prove this by encliticising demonstratives to pronouns. Both demonstratives and pronouns are /i-/ initial. Consider the following examples:

18. [irori] < /iro+iri/ 'this one' (cl 5)
    cf [*rori]
    [icoci] < /ico+ici/ 'this one' (cl 7)
    cf [*coci]

[iʐoʐo] < /izvo+izvo/ ‘those ones (cl 8)

cf [*ʐoʐo]

[ikoko] < /iko+uko/ ‘there’ (cl 17)

cf [*koko]

The above examples show the enecliticization process of demonstratives to pronouns. Taking the first example [irori] the stabilising vowel [i-] of the pronoun [iro] would get automatically deleted upon encliticization as the new setup results in a construction with more than a single syllable if the epenthesized vowel’s role was merely stabilization. Such vowels would then automatically get deleted in situations where there would be more than one syllable after word concatenation. However we realize that it is the [i] of the demonstrative that gets deleted after getting in succession with the final vowel [o] of the pronoun. We still come to the point that deletion of the initial vowel of the demonstrative is hiatus resolution as the final vowel of the pronoun is in succession with the initial vowel of the demonstrative. We may realize that the deletion is not just a matter of dispensing with grammatically less important characters as the initial vowel of the pronoun where there is no hiatus is not deleted.

It has to be borne in mind that these phonological processes have as some of their primary goals being effective communication and maintaining well-formed grammatical entities. As such, deletion would not be just a useless grammatical process bent on wanton and goalless grammatical mutilation. It is a process that is dictated by the phonological rules in the language.

In the next section we discuss coalescence process in Barwe.

5.3.4 Vowel Coalescence

According to Mutaka and Tamanja (2000:43) "Vowel coalescence refers to the process where two vowels of different qualities merge into one." In the Barwe case, vowel sequencing that leads to coalescence can be noticed in a possessive construction, as illustrated in the following examples:

19. /a+i/ → [e] [+syl, +low] + [+syl, +high] → [-low, -high]

a) <u>possessive prefix+pronoun</u>

/wa+iko/	→	[weko]	'those of that place' (cls1, 3)
/la+iko/	→	[leko]	'that belongs there' (cl11)
/ca+iko/	→	[ceko]	'that belongs there' (cl7)
/ʐa+ipo/	→	[ʐepo]	'those that belong to that place' (cl8)
/twa+iko/	→	[tweko]	'those that belong to that place (cl11)

b) <u>verb+pronoun</u>

/ɓala+isu/	→	[ɓalesu]	'give birth to us '
/ɓatsila+iʐo/	→	[ɓatsileʐo]	'help those ones'
/mpasa+imi/	→	[mpasemi]	'give to you'
/loola+ini/	→	[loleni]	'marry me'

c) <u>noun prefix+noun stem</u>

/ma + zi+ino/ → /ma + ino/→ [meno] 'teeth' (cl 6)

/a + u/ → [o] [+syl, +low] + [+syl + high] → [-low, -high]

d) <u>auxiliary verb -gara + infinitive verb</u>

/gara+ kudanga/ → /gara+udaŋga/ → [garodaŋga] 'often have self

pride’

/gaɾa+kuɲula/ → /gaɾa+uɲula/ → [gaɾoɲula] ‘sinks quite often’

/gaɾa+kupotedza/ → /gaɾa+upotedza/ → [gaɾopotedza] ‘visits all the places oftenly’

/wanza+kuɾʒa/ → /wanza+uɾʒa/ → [wanzoɾʒa] ‘eating most of the times’

/wanza+kufuna/ → /wanza+ufuna/ → [wanzofuna] ‘craving for something most of the time’

As seen in examples (19a-d) above, /a/ and /i/ combine and form [e]. The possessive prefix is CV shaped. According to Ziervogel and Mabuza (1985:44), “The true pronoun is characterized by a pronominal stem which is derived from corresponding noun prefix.” As already discussed in this chapter, the constructional pattern of a pronoun is initial vowel /i-/+pronominal stem. In a possessive prefix+pronoun construction, the [+low] vowel prefix comes in succession with the [+front, + high] initial vowel. These coalesce with the [+front; -high, -low] vowel in the process as has been demonstrated in examples (19a) above.

It is the merger of the non-mid vowels /a/+/i/ that produces a front mid vowel [e]. Examples (19b) demonstrate that similar processes also occur in the verb+pronoun situation. This involves the final vowel of the verb and the pronoun initial vowel. There is also evidence of vowel coalescence of the verb terminal vowel /a/ with the initial vowel /i/ of the pronoun into [e] in the verb + pronoun construction as in the examples (19b). There is also evidence of coalescence in a noun prefix + noun stem situation after some sounds deletion, as seen in the example (19c). The class 6 prefix vowel gets juxtaposed to /-ino/ after the deletion of /d/ and /z/. The deletion allows the adjacency of the final vowel of ma- and the initial vowel of **-ino** from which results the coalescence to result in [meno].

Examples (19d) also demonstrate that coalescence also takes place in an auxiliary verb + infinitive noun setup. When the auxiliary verb /gara/ combines with the /ku-/ prefixed class 15 nouns, the /k/ of the prefix gets deleted. The deletion is a result of grammaticalization phenomenon which takes place through a process known as 'attrition'. This process causes the loss of some of the phonological characteristics in newly grammaticalised words as demonstrated in the given examples. Wherever it is possible, and when it does not create communicative breakdown speakers use shorter word forms. They apply various ways of collapsing the longer forms and the deletion and coalition demonstrated in examples (19d) is one way through which the Barwe speakers create shorter word forms. However the shortening is optional as the longer forms are currently also used in Barwe.

As is seen in the examples above, through attrition, the consonant onset /k/ of the infinitive marker /ku-/ gets deleted leaving the final vowel /a/ of the auxiliary verb juxtaposed to the vowel /u/ of the infinitive marker left behind after the disappearance of the /k/. According to Mberi (2006:112), "Grammaticalisation of the lexical to grammatical morpheme can involve phonological and semantic reduction." This process may lead to permanent loss of the phonological characters with time.

However, as noted above, there are different ways through which words can be shortened in languages. An exciting example is the phonological processes involving the near minimal pair of nouns /madziso/ 'eyes' and /mazino/ 'teeth'. They are both noun class 9 nouns. They are phonemically closely similar. However the two take different pathways after attrition as demonstrated in the following examples.

20. a) /ma-zino/ → [ma-øino] → [meno] 'teeth'

b) /ma-dziso/ → [ma- ø-so] → [ma-so] 'eyes'

The example (20a) above demonstrates vowel coalescence resulting [meno] from /madzino/. Example (20b) shows the deletion process which results in [maso] from /madziso/. The two examples show that attrition takes place in both nouns. After the deletion of /z/ in /mazino/ we remain with /ma+ino/. So the vowel of the stem commencing syllable remains while the onset /z/ is deleted.

In (20b) after the deletion of /dzi-/ in /madziso/ there remains [ma-so]. In the case of [ma+ino] there is juxtaposition of the prefix vowel /-a-/ and stem initial vowel /-i-/ resulting in the two coalescing to become /e/ and resultantly the noun becomes [meno]. In the case of [maso] there is deletion of the whole syllable stem initial vowel /dzi-/ and it becomes [maso]. As a result there is no juxtapositioning of the prefix vowel and that of the stem commencing prefix hence, no coalescence. Resultantly the resyllabification of the two nouns differs as the phonological pathways they take have also been shown to differ.

As earlier on noted, in a sense, the language seeks economic ways of word articulation and attrition is one of the ways that words resyllabify, remorphologise and rephonologise as preferred shorter words are created. In examples (19 a-d), it is only when the phonological conditions are met that coalescence occurs. Thus, as a grammatical realignment process, attrition can take place and may result in the juxtapositioning of vowels that favour coalescence or may result in situations where some of the vowels are totally deleted and coalescence cannot take place.

As coalescence has been shown to take place, the trends have been shown to follow formulaic processes as in the following:

21. a) /a+i/ → [e]

    b) /a+u/ → [o].

The above examples show that the coalescence that /a/ and /i/ coalesce to [e] while /a/ and /u/ coalesce to [o]. We thus can generally represent the coalescence process as demonstrated next.

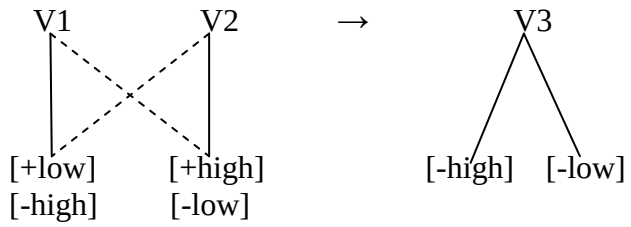


Figure 5.5: *V1 and V2 **v**owel coalescence process.*

From figure 5:5 above we can see that V1 which is /a/ considering the formulaic representations above is [+low]. The V2 which is /i/ in the first formula and /u/ in the second is [+high]. However as demonstrated above we see that there is height assimilation by both V1 and V2. However there is no total height assimilation as resultant V3 is mid as it is [-high] and [-low]. However, V2 plays a major role in determining the V3 place. In the case of /a+i/→[e], /i/ (V2) is [αfront] and the /e/ (V3) is [αfront]. In the /a+u/ → [o] the V2 /u/ is back and the V3 [o] is [αback].

The above sections focused on the Barwe vowel description starting with the development from the PB. We thus make a diachronic assessment as we seek to show the foundation on which the present synchronic processes are premised. The synchronic analysis that we make dwell most on the interaction of the vowels as they adjacently occur in words. The discussed processes have been shown to result in glide formation, glide insertion, vowel deletion, and vowel coalescence. These phonological processes have been shown to be necessitated by the need for hiatus resolution. However, there is yet another form of vowel processes in Barwe that does not occur as a hiatus resolution. It a process where we see vowel harmony in words and thus in the following section we discuss vowel harmony in Barwe.

5.4 Vowel harmony

According to Katamba (1989:210), "Vowel harmony is a process whereby within a certain designated domain, usually the word, all vowels are required to share one or more phonological properties." Thus some vowels cede their quality as they share qualities of the other vowels within the word. It is some form of assimilation as the vowels move to have common properties. The other processes involving vowels as discussed above lead to the resyllabification or new syllable structure as some segments are deleted or new glides are employed in order to break the less desired word internal vowel sequencing. In vowel harmony, vowels within a word or a construction tend to agree in features such as [front], [back], [high], [low], and [round].

Vowel harmony is a phenomenon that has been found to be quite common in many languages. It has been approached from different theoretical angles. Thus Mathangwane (1999: 57) notes:

> "Bantu vowel harmony can be traced back to Proto-Bantu. As observed in Greenberg (1951) roots with mixed vowels from different levels were almost non-existent in Proto-Bantu. A word of a higher level got lowered if the preceding vowel were of a lower level and vice versa."

This observation shows that what got detected earlier on was the influence of the preceding vowel. As observed by Mathangwane, it is the preceding vowel that has influence on the vowels that come afterwards. This is also noted in the Barwe verb roots. Vowel harmony can also be realized as a form of assimilation. According to Hudson (2000:413), "In assimilation sounds become like neighbouring phones." It can be argued that assimilation can as well be between adjacent syllables as the study here looks at the influence of the vowel of the preceding syllable to that of the following syllable. Thus, according to Campbell (2004:28), "Assimilatory changes are classified according to three intersecting dichotomies *total-partial, contact-distant,* and *regressive-progressive."* However, vowel harmony can be viewed as

distant assimilation in that it takes place across syllables as the vowel of the preceding syllable influences the features of the vowels in ensuing syllables. As demonstrated in the examples below, vowel harmony is here considered as being both total and partial. It will also be considered as being both distant as it is not direct but across syllables. It is progressive in that we see the left to right assimilation as it is the last vowel of the radical that influences features on the concatenated grammatical elements. It is here considered that it is progressive type of assimilation in that it is the vowels of the concatenated extensions that get feature influence from the vowel of the last syllable of the verb root.

The present study explores vowel harmony, firstly looking at its occurrence in the verb roots. It then explores vowel harmony that takes place after addition of affixes to the roots. The study also looks at the direction of the vowel harmony in terms of whether it is from the right to left or left to right direction. Kadenge (2007, Campbell (2004) and Katamba 1989) refer to the right to left vowel harmony as "progressive vowel harmony" and the right to left as vowel harmony as "regressive vowel harmony." According to Bauer (1988: 47), "In a language that has vowel harmony; all the vowels in the word form share some phonetic features such as backness, closeness or unroundedness." In Barwe, vowel harmony can be noticed at two levels involving the two sets of vowels. The first group being [i, a, u] and the other ones being [e, o]. In the first group [i] and [u] are [+high] while [a] is [+low]. [e] and [o] are neither high nor low and are therefore [-low, -high].

It should be recalled that the vowels have been categorized into two sets, namely non-mid vowels [i, a, u] and mid vowels [e, o]. They occur as sets in simplex verbs. Consider the following examples:

22. <u>Vowel harmony involving single [+high] and single [+low] vowels</u>

a) /i/ /dʐiɲiɾiɾ-a/ 'oppress'

/ntʂintʂin-a/ 'extract sweetness by tongue like from a sweet'

	/dididz-a/	‘swim’
/a/	/fanan-a/	‘look alike’
	/ntsakal-a/	‘wear out’
	/lalam-a/	‘live’
	/paɾaz-a/	‘destroy’
	/tawal-a/	‘run away’
/u/	/fuŋgul-a/	‘open’
	/ɓuluk-a/	‘climb down’
	/pukut-a/	‘rub off’
/i, a, u/		
	/takul-a/	‘carry something.
	/sijan-a/	‘different/separate’
	/tawul-a/	‘speak’

b) <u>Vowel harmony involving [+mid] vowels</u>

/e/	/cenjeɾ-a/	‘ be careful’
	/beɾek-a/	‘carry on the back’
/o/	/ɓoɓodz-a/	‘stir okra’
	/nonok-a/	‘be late to do something’
/e,o/	/loŋgedz-a/	‘arrange’/put in order’
	/potedz-a/	‘go all over the place’

The examples in (22a) demonstrate involvement of non-mid vowels [i,e,a] in verbs while (22 b) demonstrate involvement of the mid vowels [e] and [o]. What can be noted about vowel

harmony at word level is that non-mid and mid vowels do not usually occur in the same word domain.

A single non-mid vowel is shown repeating itself in the consecutive syllables in the first three examples of (22a). Thus, it is acceptable to have the same vowel repeated in the different syllables of the verb root as a means of one form of vowel harmony. The last set of examples in (22a) show that non-mid vowels [i, a, u] can mix in the verb roots as a harmonic set. First two sets in examples (22b) show the mid vowels [e] and [o] are repeated in the verb roots while the last set demonstrate that the mid vowels can form a harmonic set as well.

However, when we look at the vowel harmony in non-suffixed verb roots the direction of vowel harmony is not automatically clear in terms of whether it is progressive or regressive. A look at suffixation to the verb roots also demonstrates the vowel harmony and the direction it takes thereby indicating the vowel that is triggering that vowel harmony. Progressive vowel harmony can be illustrated when verb roots are suffixed with verb extensions. The verb extensions that can be observed to be involved in that vowel harmony in Barwe are the applicative, perfective, causative intensive and neuter.

The applicative extension is realized as -iɾ-/-eɾ-, and the perfective is -iɾiɾ-/-eɾeɾ-. The causative extension is -is-/-es-, the intensive is -isis-/eses and the neuter is -ik-/-ek-. Consider the following examples:

23.a) <u>Verb root+Applicative</u>

/liŋg-a/	→	/liŋg-iɾ-a/	‘look on someone’s behalf’
/gal-a/	→	/gal-iɾ-a/	‘sit on/ sit for
/tawal-a/	→	/tawaliɾ-a/	‘run away for someone’
/dzumb-a/	→	/dzumb-iɾ-a/	‘body convulsion for something’
/ɓwez-a/	→	/ɓwez-eɾ-a/	‘fear for’
/toŋg-a/	→	/toŋg-eɾ-a/	‘rule on behalf’

b) Verb root+ perfective

/petuk-a/	→	/petuk-irir-a/	'coming back for something'
/punguɾ-a/	→	/pungu-ɾiɾiɾ-a	'spoiling a kid'
/lal-a/	→	/lal-iɾiɾ-a	'having not eaten decent meal for a while'
/cem-a/	→	/cem-eɾeɾ-a/	'small scream of appreciation'
/jes-a/	→	/jese-ɾeɾ-a/	'liking to share food on behalf of a kid'

c) Verb root+Causative

/**c**inj-a/	→	/cinj-is-a/	'make someone change'
/ɗaŋg-a/	→	/ɗaŋg-is-a/	'make someone to have pride'
/mbuluk-a/	→	/mbuluk-is-a/	'make something fly'
/bek-a/	→	/bek-es-a/	'make someone see something'
/con-a/	→	/con-es-a/	'make someone not to return'

d) Verb root+Intensive

/mbuluk-a/	→	/mbuluk-is-a/	'fly a lot'
/d-a/	→	/d-isis-a/	'love/like some thing a lot
/liɾ-a/	→	/liɾ-isis-a/	'cry a lot'
/ɗaŋg-a/	→	/ɗaŋg-isis-a/	'have a lot of pride'
/lim-a/	→	/limi-sis-a/	'practicing farming a lot'
/puŋgula/	→	/puŋgul-isis-a/	'remove a substantial amount of liquid from a container'
/jes-a/	→	/jes-eses-a/	'kid's love to share food'
/cen-a/	→	/cen-eses-a	'be very smart'

e) Verb root+ Neuter

/nin-a/	→	/nin-ik-a/	'to be able to blow the nose'
/nam-a/	→	/nam-ik-a/	'to be able to be plastered'

/lowol-a/ → /lowol-ek-a/ ‘able to be married

/nemb-a/ → /nemb-ek-a/ ‘ability to write something’

/con-a/ → /con-ek-a/ ‘ability to go and never to return’

The examples (23a-e) show that vowel harmony occurs as the verbal extensions are suffixed to the verb roots. The vowel of the syllable that precedes the extension plays a pivotal role in bringing about the vowel harmony. When the last vowel in the root is one of the non-mid vowels [i, a, u], the extensions also take non-mid vowels. It is also demonstrated in the above examples that when the last vowel of the verb root is one of the mid vowels [e, o], the extensions also take the mid vowel. We can formalize the vowel harmony as in the next figure.

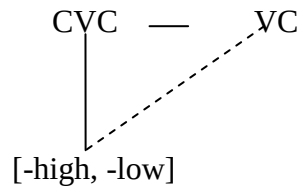


Figure 5.6: *Height agreement of last vowel of the root and vowel of the extension.*

The vowel of the extension is mid if the last vowel of the root is mid. Making an observation about Ciyao verb extensions Ngunga (2000:46) says, “(….) typical of verb derivation where most of the derivational suffixes have two allophones, one with high front vowel in initial position and other one with mid front vowel in initial position.” This is also observed in the Barwe verb extensions. In situations where it is not mid vowel as a result of vowel harmony it therefore remains a high vowel.

However, one can recall that in the introduction to this section it was pointed out that vowel harmony is here considered as being both total and partial. As demonstrated, it is mainly partial as the non-mid vowels [i, e, u] influence the vowels of the extensions to take

the /i/ vowel. In the same vein, we can still deduce that, it is not necessarily that one of the mid vowels is [e] that we also have the extension vowel also taking the [e], a front mid vowel. It is the feature [+mid] that is passed on to the extensions as also the radicals with a mid back vowel [o] will take the mid vowel [e] as well. So, the major driving influence on the feature of the vowels of the extensions is the height features.

As demonstrated in the above examples, the perfective -iɾiɾ-/-eɾeɾ- and intensive -isis-/-eses- extensions have a double same vowel in the extensions. As demonstrated in the examples (23b) and (23d), when the last vowel of the verb root is non-mid, both vowels of the extension take the non mid vowel /i/. When the last vowel of the verb root is mid, equally both vowels of the extension also take the mid vowel /e/.

All these cases show that there is left to right influence as the last vowel of the root determines the height feature of vowel the extension will take. In this particular case, we have progressive harmony. As pointed out, there is already vowel harmony within the whole verb root as there is no vowel set mixing. The root vowel harmony remains stable even when suffixes are added to the root. Thus, according to Kadenge (2007: 359), "Root vowels do not alter to agree with affix vowels rather it is the vowels of the affix that change in order to agree with the vowels on the root."

As noted, vowel harmony does not involve vowels in succession. It involves vowels across syllables as the root final vowel determines the nature of the vowel the extension must take.

5.5 Summary

The chapter starts by making a brief focus on the historical developments of Bantu vowels in order to contextualize the developments of Barwe vowels operational in the language today. The PB vowels are given as having been seven in number. There has been a

historical shift, with Barwe and other Bantu languages having reduced the number of vowels from seven down to five while others increased them, with some getting up to as many as eleven. As noted some of the languages increased the vowel inventory through addition of nasal vowels.

The chapter also discussed the general truncation in Bantu where truncation is loss of some segments in words. This took place mostly in situations where there were geminate vowels. As discussed, in some instances the geminate vowels merged to form single long vowels while in some instances they merged to form short ones. Barwe has been shown to be one of those Bantu languages that took the short vowels pathway. The present discussion showed its bias towards the PB explanation of the Barwe vowel system. Thus the shift to more than seven is attributed to the occurrence of nasal vowels in the languages they occur while the shift to five is attributed to historical loss of some of the vowels.

On the other hand, a third historical perspective is that the mid vowels [e] and [o] derived from the three non-mid vowels [i, a, u] to make the total of five. The primary ones being considered to be the primitive ones from which the mid ones were derived by way of coalescence. However this explanation suits only the languages that have a five vowel system. It does not give explanation as to what happened for the languages that have more than five vowels where even some of them have more than doubled the five to eleven. This is the reason why we in the present study found the PB explanation more acceptable than the three to five increase one.

Having explored the historical development of the Bantu vowels in general, and that of Barwe in particular, the chapter discussed vowel phonological processes that take place in Barwe today, from a synchronic perspective. The main focus was mainly hiatus resolution processes that conspire against vowel sequences in Barwe, namely: glide formation, glide insertion, vowel deletion and vowel coalescence.

Vowel harmony was also discussed as one of the phonological processes involving Barwe vowels. Through this process, the vowels that occur in the same word domain show to share some phonological properties. As such, as a rule it is a requirement that vowels occurring in a verb root share height features. It was also demonstrated that the final vowel of the verb root will determine the height features to be taken by the vowel of the verb extension. Thus, as demonstrated, when the final vowel of the verb root is high, the vowel of the extension is also high, when it is mid the extension vowel is also mid. The vowels of the verb radical have been shown to determine the nature of the vowel to be taken by the verb extensions to those roots.

Having discussed and described the Barwe vowels and vowel processes the following section discuses the phonetic and phonemic processes involving the Barwe consonants.

CHAPTER 6: Barwe Consonants:

6.0 Introduction

The chapter looks at the historical development of the Bantu consonant in order to have an appreciation of how the Barwe consonant inventory developed. It looks at how the current set-up developed from the historical PB. The discussion then focuses on articulatory phonetics focusing on speech consonant production making reference to the sounds operational in Barwe. As earlier on mentioned, speech sounds of a language known as phonemes, are the sound units that are joined together in the formation of syllables and words in any given language. Also as afore mentioned, these speech sounds are in two groups, consonants and vowels.

6.1 Consonant Development from PB

As observed by Hyman (2003a) Bantuists such as Meeusan are of the view that PB had relatively simple consonants. These are given as:

1. p t c k, b d j g, m n ɲ

Making an analysis of the consonant sounds Hyman points out that there are some disagreements with regards to the reconstruction of some of them. There is agreement that the *p, *t, k* were originally voiceless stops whilst there is disagreement in as to whether *b, *d, *g should be reconstructed as stops or as *β, *l, *ɣ. Debate is also abound on whether to consider *c and *j as palatal stops or affricates. These disagreements are a result of the way the sounds now occur in the current Bantu languages which is varying making it difficult to consistently reconstruct the historical original ones. These languages have to be reconstructed as there are no written records about them. The reconstruction comes through comparisons of the terms now exisiting in the current Bantu languages. According to Miti (2006) Guthrie,

one of the Bantuist scholars is of the view that from the parent Bantu language there developed two dialects which he labeled PB-A and PB-B.

What is evident is that from the historical parent there have been developments leading to changes to the original consonants. The languages born out of the PB remain close in terms of the sounds but there is also evidence of sound shift from the parent language. As such different languages though related now have sound inventories which show some differences from the parent language. Newer consonant configurations have surfaced among them being prenasalization, glottalization and labiovelarization. At this point we then look at the sounds that are now operational in Barwe. Barwe like other Bantu languages has its own consonants that are operative.

6.2 From PB to Barwe

We thus can understand the new consonant occurrence in Barwe. Phonology acknowledges that a language consists of sound units. Each and every language has developed a distinguishable and finite set of sounds that combine in various ways in word formation. Thus we show some Barwe sounds through the following minimal set:

2. /pika/ ‘swear’
   /sika/ ‘create’
   /hika/ ‘edible’
   /ɲika/ ‘world/country’
   /kika/ ‘holding and shaking each other in a fight’
   /mika/ ‘needle for sawing sacks’
   /fika/ ‘arrive’
   /ʃika/ ‘get out of house’

/zika/ ‘depth’

The minimal set from the previous page demonstrates that the /p, s, h, ɲ, k, m, f, ʃ, z/ are sounds that are operative in Barwe. However these consonants can be classified into two groups namely: simplex and complex sounds. Laver (1994), and Clark and Yallop (1990) put it that simplex consonants are characterised as having single articulator features. Thus the table below shows the Barwe sounds which we label as simplex as they are characterized by single articulator features.

	Bilabial	Labiodental	Alveolar	Palatal	Palato-alveolar	Velar	Glottal
Plosive	p b		t d	c ɟ		k g	
Implosive	ɓ		ɗ				
Nasal	m		n	ɲ		ŋ	
Flap			ɾ				
Fricative		v f	s z		ʃ ʒ		H
Approximant				ɹ			
Lateral approximant			l				
Voiced murmur	m̤		n̤				

Table 6.1: *Barwe simplex consonant sounds*

In the above table, the Barwe [b], [p] [m] and [m̤] are classified as having single articulator feature [+labial]. The constriction takes place at one single place of articulation which is the upper lip. [f] is a fricative produced as the lower lip approaches the upper front teeth. The sounds [t], [d], [n], [n̤], [s], [l] and [ɾ] are [+alveolar] where constriction is at the alveolar ridge. [ʃ], [ʒ] are [+ palato-alveolar] produced at the position between the alveolar and the

palate while [ɲ, c, ɟ] are [+palatal] produced with constriction at the palate while [g], [k] and [ŋ] are [+velar] sounds where constriction takes place at the back of the tongue with the velum. So, the view is that single articulator sounds are simplex.

As pointed out, there are other various ways through which Barwe has increased its sound inventory one of which is through sound modification of the simplex sounds and also through involvement of more than single articulator in their articulation. There has since been a shift from the PB eleven as other sounds have been created and also as the sounds themselves combine and modify each other creating other sounds as well. We present a summary table as of the Barwe complex sounds below.

	Bilabial	Labiodental	Alveolar	Platal	Velar
Doubly articulated			ʂ ʐ		
Affricates		b^{v} p^{f}	t^{s} d^{z} $t^{ʂ}$ $d^{ʐ}$		
Aspirants			t^{h}		k^{h}
Prenasalized stops	^{m}b		^{n}t ^{n}d	$^{ɲ}ɟ$	^{ŋ}k ^{ŋ}g
Prenasalized aspirants			$^{n}t^{h}$		$^{n}k^{h}$
Prenasalized fricatives	^{m}v		$^{n}ʐ$ ^{n}z		
Prenasalized affricates	$^{m}p^{f}$ $^{m}b^{v}$		$^{n}t^{s}$ $^{n}d^{z}$		
Velarized labial stops	p^{w} $ɓ^{w}$				
Velarized nasal stops	m^{w}		n^{w}		
Velarized	$^{m}b^{w}$ $^{m}b^{g}$				$^{ŋ}g^{w}$

prenasalized stop					
Labio-velarized alveolar stop			t^w		
Labialized velar stops					k^w g^w
Labiovelarized flap			$ɾ^w$		
Labio-velarized fricatives			s^w z^w		

Table 6.2 *Barwe complex consonant sounds*

The simplex and complex sounds are now operative in Barwe. The phonological operations of these sounds are discussed later in Chapters 8 and 9. They have been presented here to demonstrate the inventory of the consonants that are operative in Barwe. We notice that from the PB eleven, Barwe has developed more simplex and complex sounds as demonstrated in the tables 6.1 and 6.2 above.

Each and every language has got its own inventory of these speech sounds although a number of them are shared among many languages. To this, Ladefoged (2001:1) says, "We will think of each language as a system of sounds subject to various evolutionary processes."

However, to meet the communicative goal, the limited number of sounds has to be distinct. It is their distinctness that the speaker-hearer can understand utterances in a given language and can judge the level of their correctness as words belonging to that particular language. The sounds are discrete units with identifiable phonetic characteristics. These characteristics emanate from the way each of them is articulated. As such, it is important to

look at the production of the different sounds and this enabled the research to make an inventory of the Barwe segmental sounds which are discussed in the subsequent chapters.

Thus, the next section of the present chapter looks at the general articulation of speech sounds while at the same time showing how the Barwe sounds are produced and are distinct from each other. To start with, the study looks at airstream mechanisms that are responsible for the production of the sounds.

As earlier on mentioned, there are two subsets of sound, consonants and vowels. Consonants are characterised by a complete closure or restricted opening that result in audible friction during their production. On the other hand as afore mentioned, vowels are produced without a complete closure or a constriction narrowing that would cause audible friction. This chapter starts by looking at the production of consonants and then the vowels thereafter. The next section focuses on the airstream mechanisms that are active in the production of consonants. We thus discuss consonant production below.

6.3 Air stream mechanisms

Three airstream mechanisms have been identified as being active in the production of speech sounds as described by the scholars such as Ladefoged (2003) and Crystal (1991). The air is the source of power that is utilised in the production of these speech sounds. The three main airstream mechanisms involved in sound production are: lung (pulmonic) airflow, glottalic airflow, and velaric airflow.

6.3.1 Lung Airflow

Scholars like Pike (1943), Abercrombie (1976), Catford (1977), Clark and Yallop (1990) and Ladefoged (2001) make detailed description of the articulatory mechanisms involving the different forms of airflow. With pulmonic airflow, the process that leads to the

production of the sounds starts when the air is pushed out of the compressed lungs. The route that the air stream follows is known as the "vocal tract." The compressed lungs build the pressure that pushes the air upwards. This airstream mechanism is commonly known as the "pulmonic eggressive mechanism." This air is manipulated at different points by way of blockage or constriction at different places of articulation on its way out through the mouth or the nose. Sounds produced by the manipulation of the eggressive air stream are also known as eggressive sounds (Fromkin and Rodman 1998). The process is fast such that a speaker of a language is able to continuously chain out sounds that are sequenced in speech. As the airflow is initiated in the lungs it passes through the windpipe. It also passes through glottis which is the opening that is between the vocal cords which are sometimes referred to as "vocal folds" (Clark and Yallop 1990) and are also described by Ladefoged (2001) as two muscular flaps.

If the vocal cords are closed the air that is being pushed from the contracting lungs builds pressure and the air forces its way through. The sounds produced when the vocal cords are vibrating are said to be voiced as in the examples that follow.

3. /b/ /bema/ 'smoke'
   /ɓ/ /ɓweɾa/ 'come'
   /m/ /maɾimo/ 'dry and warm season of year'
   /ɗ/ /ɗiŋga/ 'eel worm'
   /d/ /dididza/ 'swim'
   /ɟ/ /ɟula/ 'open'
   /g/ /gala/ 'sit'

In Barwe consonants /b, ɓ, m, ɗ, d, j, g/ demonstrated in the examples are voiced. That is to say the sounds are produced with the vocal cords vibrating. When the vocal cords open apart; the air passes through uninterrupted and the sounds there produced are voiceless. These are demonstrated in the examples that follow:

4. /f/ /fundikila/ 'shift to the other side'
   /p/ /ciripo/ 'something present'
   /t/ /moto/ 'fire'
   /s/ /maso/ 'eyes'
   /c/ /kacinja/ 'newly born puppy'

The Barwe examples above demonstrate the occurrence of the voiceless sounds /f, p, t, s, c/. These are produced with the lung air flowing through open vocal cords without causing them to vibrate.

Thus, voicing is one form of sound description. This means that according to the state of the vocal cords, speech sounds can be put into two groups, namely: voiced or unvoiced.

Besides the egressive air stream which has been described as being utilised in the production of the speech sounds as in examples (3) and (4), there also glottalic airflow. This is also utilized in the production of sounds as described in the section that follow.

6.3.2 Glottalic airflow

As opposed to the lung airstream mechanism, there also is glottalic air stream which utilises the air above the glottis. The glottis is closed and the subglottal air is blocked under. The larynx becomes the initiator of the air movement by moving up or downwards. The glotalic airflow has been shown to produce the sounds [ɓ] and [ɗ] in the language.

When the larynx is lowered the air rushes into the mouth upon the opening of the front closure. The airstream is ingressive. An ingressive air stream mechanism is one in which sounds are produced using inward moving air stream (Crystal 1991). Sounds are produced as the air is sucked into the mouth. The occurrence of the ingressive sounds [ɓ] and [ɗ] are demonstrated in the examples that follow.

5.	/ɓ/	/ɓaɓa/	‘father’
		/ɓoɓodza/	‘stir okra’
		/ɓala/	‘bear children’
		/kaɓuɗula/	‘short trousers”
	/ɗ/	/ɗuŋgu/	‘noise’
		/dzeguɗe/	‘mentally challenged person’
		/ɗiwa/	‘stone trap’
		/ɗimba/	‘garden’

The above examples show the occurrence of the two sounds [ɓ] and [ɗ] which are products of the glotalic airflow in Barwe. As noted the two are produced by an ingressive airflow. The air pops into the mouth hence the two sounds are also called implosive sounds to differentiate them from the plosives like [b] as in and [p] where produced with the air popping out of the mouth.

So in Barwe the glotalic airflow is utilized in the production of the implosives only where in other languages it would also produce ejectives. The other airstream mechanism responsible for sound production is velaric airstream

6.3.3 The velaric airstream

Velaric airstream mechanism is responsible for the production of clicks. The process takes place entirely in the oral cavity. The process is characterised by a double closure at two places of articulation. There is closure as the back of the tongue presses against the velar accompanied with simultaneous closure by the lips or the front of the tongue. Describing the process Clark and Yallop (1990:58) say, "The air is sealed off in front of this (velaric) closure by closing the lips or pressing the sides of the tongue against the roof of the mouth behind the teeth." When the two closures are made, the body of the tongue is lowered resulting in the increase of the oral cavity. Resultantly, the air between the closures is rarefied. The front closure (i.e lips or the front of the tongue) closure is released followed by that at the back of the tongue. This prompts a strong inrush of air from outside and the inflowing air causes the click sound. In Barwe clicks are produced mainly when a person is showing emotion eg showing sympathy or when showing anger resulting in single syllabic exclamations as in /li:/ 'expression for sympathy and /llɔ/ "expression of anger".

It has been noted that airstream mechanisms are essential in the production of sounds. However these airstream mechanisms do not produce identifiable sounds on their own. Some modification to the airstream mechanisms is done at different points above the vocal cords in the articulation of different sounds as described next.

6.4 Place of articulation

Place of articulation makes reference to the points of the vocal tract at which different consonant speech sounds are produced. These have been discussed to great lengths by different scholars who try to precisely describe where the sounds are produced in the vocal tract. Some of the early scholars such as Pike (1943) and Cartford (1977) sought a broadened description of all the descriptive phonetics in order to account for all the articulatory

mechanisms available to humans. There have been further revisits by modern scholars. However there is a general consensus as how to describe the points of sound of articulation also as described by modern scholars such as Ashby (2009), Mannel (2009) and Roach (2009) who together with many others agree that place of articulation is the point of articulation or obstruction to the airstream mechanism in the production of sounds. As demonstrated in table 6.1 page 111 the places of articulation in the production of sounds in Barwe are: labial, labiodentals, alveolar, palatal, velar and glottal.

But to know the place we also have to know the articulator that does the movement as it is particular articulators that can approach particular points. Below we look at the articulators that are responsible for the production of sounds.

6.4.1. Articulators

Defining an articulator, Crystal (1991:25) says, "Any specific part of the vocal apparatus involved in the production of a sound." Articulators are responsible for the manipulation of the airstream mechanisms in the production of different sounds. As described by Mannel (2009:3), "An active articulator is the one that does all or most of the moving during a speech gesture.(...)..as it moves towards the relatively immobile passive articulator." Thus there is the bilabial (lower lip and upper lip) as in the examples that follow:

6. /m/ /luma/ 'bite'
   /b/ /baraka/ 'kiosk'
   /p/ /mupwere/ 'kid'

Thus the sounds /m, b, p/ are produced when the lower lip comes in contact with the upper lip. The tip of the tongue gets in contact with or approximates towards the alveolar ridge in the production of alveolar sounds as in the examples:

7. /t/ /moto/ ‘fire’

/d/ /dibi/ ‘dip tank’

/s/ /maso/ ‘eyes’

The above examples show some of the sounds that are produced when the tip of the tongue is the articulator. The body of the tongue also gets in contact or approximates towards the palate as in the examples that follow.

8. /c/ /ciɾiɾo/ ‘crying of many people at the same time’

/ɟ/ /ɟoŋgololo/ ‘millepede’

/j/ /kuja/ ‘grind on stone’

The above are examples of sounds that are produced with the body of the tongue as the articulator. The body of the tongue approximates or gets in contact with the palate. At the same time the back of the tongue also acts as the articulator as it approximates or gets in contact with the velum. The following are examples of sounds there produced.

9. /k/ /kuja/ ‘grind on stone’

/mbuluka/ ‘fly’

/g/ /gala/ ‘sit’

/digidza/ ‘swim’

The above examples are produced with the back of the tongue as the active articulator. During the manipulation of the speech sounds there is movement of the active articulators.

Some articulators have access to more than one place of articulation. This can be noticed in the case of some affricates and labiovelariszed sounds. Consider the following examples:

10.	/p^{f}/	/m̩pfiti/	‘type of wild tree’
		/p^{f}uma/	‘wealth’
	/b^{v}/	/m̩b^{v}imi/	‘hunter’
		/b^{v}unzo/	‘examinations’
	/tw/	/ŋa̱t^{w}a/	‘problem’
		/t^{w}aɾa/	‘carry’

The above examples show the occurrence of sounds that are produced as the articulators touch or approach more than one point of articulation. The lower lip approaches the upper lip and the front teeth in the production of the affricates /b^{v}/ and /p^{f}/ in the examples shown above. There is also labio-velar movement as the tongue touches the alveolar in the articulation of /t^{w}/. It can be noted that /w/ itself is labiovelar as its articulation involves lip protrusion and raising of the back of the tongue. In the same manner the articulation of /ʂ/ as in /ʂika/ ‘arrive’ and /ʐ/ as in /ʐana/ ‘small children’ also involves the movement of more than one articulator as there is contact at the alveolar and simultaneous lip rounding.

In addition to the articulators and point of articulation, the consonants are also described by manner of articulation. This makes reference to the degree of stricture made in the production of consonants. It makes reference to how close the articulators get.

6.5 Manner of articulation

As earlier on mentioned, manner of articulation is basically the degree of obstruction to the airstream mechanisms that takes place during the production of a sound. Manner of articulation also helps in sound description. Describing the manner of articulation, Katamba, (1989:6) gives it as:

> "The nature and extent of the obstruction involved because sounds made at the same place of articulation and which are both voiced or voiceless as the case maybe can still differ depending on the manner in which the airstream is modified. Take the words which all begin with voiced alveolar consonants: *dine, nine, line, Rhine*. Not only do they sound different, they also mean different things.

As such, manner of articulation has a distinctive role. Thus, according to Yallop and Clark, (1990: 12), "The sound output can show rapid changes of quality and this dynamic aspect of speech is also important in providing cues that allow listeners to recognise a coherent sequence of speech." The main goal in the production of the speech sounds is to bring about communication. Resultantly, the sounds have to be well formed and well articulated in order for the listener to recognise them and get to understand what is being communicated. The manners of articulation have been given as being: stop, affricate, fricative, nasal, trill, flap, approximant and lateral. These are described in the section that follows.

6.5.1 Stop

The manner "stop" is one of the ways of classifying some of the consonants. There are three types of stops namely: plosives, implosives and nasals. As described by Abercrombie (1967), Clark and Yallop (1990) Kadenge 2007 and Mudzingwa (2010) the production of plosive stops is characterised by a blockade of the pulmonic airstream while there is also velic closure at the back. Velic closure results in pressure building up such that when the articulators separate, the air comes out with a small explosion. There is a momentary total closure or blockade of the vocal tract followed by an abrupt separation of

the articulators. The air is totally blocked. Whilst stops can be identified by way of manner of articulation the direction of the airstream mechanism also plays an important role in categorising the stop consonants. Sounds such as [p, t, k, b, d, g] are produced as the egressive airstream is blocked in the mouth on its way out. They are called plosive sounds. Their occurrence is demonstrated in the following examples.

11. /p/ /ʃupa/ 'trouble somebody'
/t/ /teɾevizau/ 'television'
/k/ /kuŋgubwe/ 'crow'
/b/ /beka/ 'look closely'
/d/ /mudala/ 'old man'
/g/ /guma/ 'end/stop'

The above examples demonstrate the occurrence of the plosive stops that are operative in Barwe. They are produced as the articulators make total stops at the place of articulation.

There is another category of stops that are produced with the air rushing from outside into the mouth. These are sounds such as [ɓ] and [ɗ] and are known as implosives. Examples in which they occur are as follows"

12. /ɓ/ /ɓarwe/ 'a cross border language between Mozambique and Zimbabwe'
/ɓakajawo/ 'dried fish'
/ɓambaiɾa/ 'sweet potato'
/ɗ/ /ɗàjiɾa/ 'answer/respond'
/ɗuŋgu/ 'nose'

/ɗiwa/ ‘stone trap’

The above examples demonstrate the occurrence of the implosive sounds /ɓ/ and /ɗ/ in Barwe. As described, they are produced with air rushing into the mouth in contrast to the production of the plosives where air pops out of the mouth.

Just like the plosives, there is a total closure of the mouth but there is no pressure building in the mouth. The air behind the closure is not compressed. On the release of the bilabial closure air is sucked into the mouth while at the same time the glottis is opened to allow the pulmonic airstream out. The vocal cords are closed and there is vibration as the air passes through and as a result the implosive sounds are voiced.

On the other hand there is blockade of the airstream in the mouth with the velum lowered such that some air escapes through the nose e.g., in the production of [m, m̲ n, n̲ ɲ, ŋ]. The air is blocked in the mouth but the lowering of the velum allows the air to escape through the nose. Also to be noted is that the underlined [m̲] and [n̲] are accompanied by some glotalization. The occurrence of nasals in Barwe is demonstrated in the examples that follow.

13. /m/ /boma/ ‘push’

/m̲/ /m̲iripiri/ ‘pepper’

/n/ /nemba/ ‘write’

/n̲/ /mun̲u/ ‘person’

/ɳ/ /ɳama/ ‘meat’

/ŋ/ /ŋkalamu/ ‘younger sister/brother-in-law’

The list above shows the occurrence of nasals in Barwe. These are produced at different points and as noted two of them are accompanied by some breath voice.

These are also recognised as stops but they are neither plosives nor implosives and they are recognised as nasal stops as discussed under nasal consonants below. Thus the research recognises that there are different stops that are produced by different manners of articulation.

Summarily, taking the examples [p, b, t, d, c, ɟ, k, g] it can be noted that [b, d, ɟ, g] are voiced while [p̰, t, c, k] are voiceless. So, the plosive stops can be either voiced or voiceless. The implosives [ɓ] and [ɗ] are both voiced. At the same time stops can be nasalised as in [m, n, ɲ, ŋ] and these nasalized stops are voiced.

Another manner of articulation results in the production of affricates which are discussed below.

6.5.2 Affricate

An affricate is also known as an affricated stop. In the production of affricates, there is a total cut off of the airflow as the articulators come together flowed by a gradual separation. Thus Mkanganwi (1995:51) defines an affricate as: "A stop released by a relatively slower opening." Also of the same view and definition is Ladefoged (2001). Thus the air in the vocal tract is completely blocked and then followed by a sudden slow release as the articulators separate. This is more of a combination of a plosive stop followed by frication sound. Thus Clark and Yallop (1990:101) observe that, "There is always some degree of air turbulence and hence friction at the release of a stop (...) normally of a short duration that it counts as part of the release burst of the stop itself." Examples of affricates can be [p^f], [b^v], [t^s], [$t^ʂ$], [d^z], [$d^ʐ$] as in:

14./p^f/	/map^{f}emba/	‘ninth’
	/p^{f}unza/	‘learn’
/b^v/	/b^{v}adzika/	‘put on clothes’
	/b^{v}uma/	‘agree’
/t^s/	/mut^{s}ope/	‘an albino’
/t^ʂ/	/tʂiŋga/	‘bundle of firewood’
	/kutʂa/	‘to be burnt’
/d^z/	/d^{z}ina/	‘name’
	/kabod^{z}i/	‘only once’
/d^ʐ/	/mad^{ʐ}ala/	‘mother-in-law’
	/d^{ʐ}iɾu/	‘type of wild fruit’

The above examples show the occurrence of the affricates. The articulation of the sounds is such that there is a stop that is accompanied by a fricative. These are articulated as single sound units. However there can be some differences in the articulation of the affricates as can be noted with cases where the stop and the frication sound are produced homorganically like /t^s/ as in /mut^{s}ope/ ‘an albino’. There are also cases like /p^f/ where /p/ and /^{f}/ as in /map^{f}emba/ ‘ninth’ are not homorganic. According to Kadenge (2007:331), “These are compound place segments because they are characterized by two place features.’ The place features for [b^v] and [p^f] are [labial] and [dental]. In a similar way the affricates [^{ʂ}] and [^{ʐ}] are also compound sounds as according to Laver (1994:317), “The whistling fricatives (….) are further examples of double fricatives with one stricture being made at the alveolar place of articulation with a laminal aspect of tongue articulation and the other at the labial location with lip-rounding.”

These affricates have been found to be contrastive with non-affricate phonemes in minimal pairs as demonstrated in the flowing examples:

15 .a) /p^{f}uma/ ‘wealth’

/puma/ ‘rest’

b) /b^{v}ula/ ‘burn on the fire’

/bula/ ‘hit strongly with a whip’

c) /t^{s}ika/ ‘step on’

/t^{h}ika/ ‘hyena’

d) /-tʂa/ ‘get burnt’

/ta/ ‘ideophone of filling up something

e) /d^{z}uma/ ‘get surprised’

/duma/ ‘ideophone of suddenly meeting’

f) /dʐamu/ ‘idiophone of moving together as a group’

/damu/ ‘dam’

In the above examples affricates form minimal pairs with non-affricate sounds. This demonstrates and bolsters the argument that these affricates are single phonemes rather than clusters.

6.5.3 Fricative

As already pointed out above, the production of affricates consists mainly of a stop plus a sudden release through a constricted opening to the extent that there is fricative air. When the release takes place alone without the stop then the sounds produced are fricatives. According to Katamba (1998:7), “The articulators are brought very close together leaving only a very narrow channel through which the air squeezes on its way out, producing

turbulence in the process." Examples of such sounds in Barwe are [f], [v], [s], [ʃ], [ʂ], [h], [z], [ʐ], [ʒ]. See the following examples:

16. /f/ /**f**amba/ 'go'
    /v/ /lo**v**a/ 'be absent'
    /s/ /ɓa**s**i/ 'only'
    /ʃ/ /**ʃ**amwali/ 'friend'
    /ʂ/ /**ʂ**ika/ 'arrive'
    /h/ /**h**embe/ 'shirt'
    /z/ /ma**z**ana/ 'hundreds'
    /ʐ/ /**ʐ**intu/ 'things'
    /ʒ/ /**ʒ**inji/ 'many'.

The above examples demonstrate the occurrence of fricatives that are operative in Barwe. As noted their production is different from that of stops in which there is total closure. The fricatives can be classified according to phonation. They are either voiceless such as [f, s, ʃ, ʂ] or voiced such as [v, z, ʐ, h, ʒ]. The level of turbulence may differ as a much more intensified turbulence results in the production of sibilants such as [s, ʃ, ʂ]. As the pulmonic airstream mechanism is manipulated at different points of the vocal tract the vocal cords activity may differ according to the sound category. When the glottis is open and the vocal cords are not vibrating voiceless fricatives are produced. When the glottis is closed and the vocal cords are forced to vibrate the fricatives there produced are voiced fricatives.

Also produced without articulators' closure are the approximants which we look at next.

6.5.4 Approximant

As given by Mkanganwi (1995:45) "An articulation in which the constriction is greater than in vowels but not great enough to produce turbulence at the point of articulation is called an approximant." The passage is less constricted as compared to when the fricatives that have been described above are produced. Although the articulators approach each other, the gape left between them remains large for air to escape without causing turbulence. The most prominently featuring approximants in Barwe are the labiovelar [w] and the palatal [j] as in:

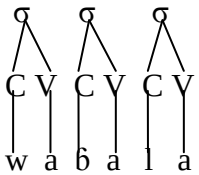
17. a) /w/ /waɓala/ 's/he who bore children'
/walipo/ 'they are around/fine'
/wako/ 'yours'
b) /j/ /kujita/ 'to do'
/kusija/ 'to leave'
/ndije/ 's/he is the one'

The above examples demonstrate the occurrence of the approximants /w/ and /j/. Besides these two, as noted by Kadenge (2007), in other Southern Bantu languages like Shona and Kalanga there also exists a labiodental approximant /ʋ/. Doke (1931b:82) describes it as a bilabial fricative which he however should have represented by the symbol /β/ as these are two different sounds. Barwe does not generally prefer the bilabial and labiodental approximants but due to language contact they sporadically occur in Barwe. Making an analysis of Manyika, a dialect of Shona which is in contact with Barwe from the western side, Dembetembe (2004:40) notes, "/w/ corresponds to /β/ in Zezuru, and /ʋ/ in Karanga." Karanga and Zezuru are also dialects of Shona. The present researcher also observed that

Utee, which Barwe is in contact with to the south, employs /w/ and prefers neither the bilabial /β/ nor the labiodental /ʋ/. Thus, it can be noted that the dialects in this cross-border region employ /w/ where the dialects to the west would variably employ the three /w, β, ʋ/.

The approximants /w/ and /j/ are also known as semivowels. Trask (1996: 320) describes a semivowel as "A non-syllabic segment which has phonetic characteristics of a vowel but phonological behaviour of a consonant, most usually a glide." What is realised is that the approximant as a manner of articulation is also responsible for the production of some non-consonantal sounds. As earlier on noted, vowels are also produced with the same manner of articulation but varying in degree of constriction since the production of the semivowels is much more constricted compared to that of the vowels. Thus Ladefoged (1964, 1971), includes all the vowels under approximants which interestingly as noted by Trask (1996) he has abandoned in recent works.

The debate rages on about the phonetic classification of vowels and semivowels. The difference lies between the phonemic function of the semivowels and the vowels. Thus phonemically, the semivowels are consonants. On the other hand the vowel production is phonetically similar to that of the semivowels. Thus Crystal (1991) sums up by pointing out that semivowels function as syllable onsets while vowels function as syllable nuclei. Thus, as earlier on stated in Chapter 4, Barwe and many other Bantu languages have CV syllable structure. Taking the example /wabala/ from above we can demonstrate that /w/ occupies the C slot on the CV tier as shown in the figure that follows.



/waɓala/ 'he/she who bore children'

Figure 6.1: *Approximant /w/ occupying C slot on the CV tier.*

The example on previous page shows that the approximant /w/ acts as a consonant. It is a syllable onset. It also takes a vowel nucleus to form a syllable. As noted semivowels can occupy the C onset slot but cannot occupy the V slot. To this, Mudzingwa (2001) and Kadenge (2003) conclude that semivowels are distinguished from vowels by the feature [-syllabic].

Having discussed the approximant the next section looks at the nasal feature as another manner of articulation. The nasal channel is involved in the production of sounds which are known as nasals.

6.5.5 Nasal

According to Yallop and Clark (1990:12), "Nasal consonants are produced with the soft palate lowered to allow air flow through the nasal cavity and with the oral cavity blocked for the duration of the consonant." As the velum is lowered, the airstream is channeled through the nose hence the sounds produced are called nasal sounds. Abercrombie (1967) observes that the nasal stops are not produced with a simultaneous velic closure. In the absence of the velic closure the lung airstream passes through the closed vocal cords causing them to vibrate hence the nasal consonants are voiced. In Barwe there are four nasals sounds that are produced in the way described above as demonstrated in the following examples:

18. a) /m/

/**m**uzuŋgu/	'white person'
/e**m**a/	'stand up'
/**m**udala/	'old man'
/wali**m**e/	'they plough'
/**m**a**m**una/	'man'

b) /n//**n**ipa/ ‘type of illicit beer’

/ku**n**embaɾiwa/ ‘to be written for/to’

/lowoza**n**i/ ‘make someone pay lobola’

/fu**n**a/ ‘want’

/ʃa**n**u/ ‘five

c) ɲ/ /**ɲ**atwa/ ‘problem’

/**ɲ**amasi/ ‘today’

/ʐe**ɲ**imbo/ ‘of the song’

/**ɲ**amutsi/ ‘some other day’

/pa**ɲ**umba/ ‘at the house’

/ku**ɲ**epa/ ‘to speak lies’

d) /ŋ/ /**ŋ**a/ ‘ideophone of biting’

/**ŋ**ombe/ ‘cattle’

/**ŋ**aŋga/ ‘traditional healer’

The above examples illustrate the four Barwe nasal stops mentioned earlier, namely /m, n, ɲ, ŋ/. There is contrastive velic positioning when compared to the way non-nasal stops are produced. In the production of oral sounds such as /p, t, d/ the velum is raised and the airstream passes through the mouth. According to Katamba (1998 :7), “To produce oral stops like /p, t, k, b, d, g, s, z/ the velum is raised right up against the back wall of the pharynx, cutting off access to the nasal cavity and making air escape through the mouth only.”

However, it has to be also noted that when the manner of articulation is nasal, the airstream also goes through the mouth in part as it is the oral articulators that constrict to produce the actual sounds that will bear the nasal qualities. Taking the Barwe examples, /m/ is bilabial nasal stop, /n/ is alveolar nasal stop, /ɲ/ is a palatal nasal stop and /ŋ/ is a velar

stop. The oral airstream is blocked and then since the velum is lowered the air then escapes through the nose. The articulators are placed in the oral channel and it is the manipulation of the airstream mechanism in the oral cavity that produces the sounds that have nasal qualities. As given by Ladefoged (2001:53), "Nasality has a relative acoustic impact on the amplitude of the sounds." The amplitude is lowered as the air escapes through the nasal channel. At the same time it can be noticed that the nasal stop consonants /m/ and /n/ can be produced with a breathy voice as in the following examples:

19. a) /m̤uka/ 'animal'
/m̤ondolo/ 'lion belonging to ancestral spirits'
/m̤aɾapaɾa/ 'sable'
/m̤ale-pale/ 'continuous scratching'
/m̤alame/ 'skin of dead animal'
b) /n̤unga/ 'mosquito'
/n̤enda/ 'disease/illness'
/n̤ukutiɾa/ 'black jack leaves vegetable'
/n̤uŋgulu/ 'ululation'
/n̤utu/ 'disease the causes body shivering'

The above examples demonstrate that there are breathy voiced nasal sounds /m̤/ and /n̤/ in Barwe. In some cases these nasals are contrastive to non-breathy nasals as in the following:

20. a) /m̤uka/ 'animal' /muka/ 'wake up'
/gum̤a/ 'knock against' /guma/ 'come to an end'

	/mama/	‘mother	/mama/	‘defecate’
b)	/naka/	‘inheritance’	/naka/	‘sweet’
	/namo/	‘poverty’	/namo/	‘sticky latex’

The above examples show that the breathy voiced nasals are contrastive to the non-breathy voiced nasals in conveying meanings. This is evidence that they are part of the sound segments that are operative in the language.

On the one hand, it is observed that there is no blockage of the airstream that goes through the nose during the articulation of nasal sounds. As a result some scholars argue that the nasal consonants can as well be classified as continuants. Some of the scholars expressing this view are Pongweni (1990) and Dembetembe and Fortune (1994). However, it can be noted that the reason why this view has not been adopted by many scholars is the fact that the mouth is essential in all the characterisation of the sounds because that is where the articulators are placed. As such Mkanganwi (1973:27) argues, “The description of nasals as stops is based on the importance of the mouth as an articulatory cavity.” On the overall, the sounds are classified and the articulators play a major role in both the sound articulation and manner description. The fact that we are calling them nasals tells us that the nose plays an important role here. Therefore, it makes sense that we call them continuants, because the air flows freely through the nasal cavity, although there is the blockage that indicates the place of constrictions in the oral cavity.

The other group of speech sounds are liquids which we look at in the next section.

6.5.6 Liquids

Barwe has two liquid sounds, the lateral /l/ and flap /ɾ/. As noted by Katamba, “The term is conventionally used to refer to ‘l’ and ‘r’-like sounds.” The Barwe liquids are both

produced at the alveolar. As given by Ladefoged (2001:153), “In lateral sounds the tongue forms an obstruction, so that air comes out over the sides.” As given, the tongue obstructs the air as one of its sides or both sides remain low to allow the air to escape during the articulation of /l/. According to Crystal (1991: 195), “Air released around only one side of the tongue produces unilateral sounds; around both sounds bilateral sounds.” Trask (1996) notes that these sounds are also known as lateral approximants. The approximation is in reference to the lowered tongue sides since the middle of the tongue makes a central closure to the airstream. The lateral /l/ occurs in Barwe as demonstrated in the examples that follow.

21. /**l**uma/ ‘bite’.

/fu**l**a/ ‘wash clothes’

/ka**l**a/ ‘chacoal’

/**l**uni/ ‘type of vegetable’

/**l**eke**l**a/ ‘stop doing something’

/**l**e**l**uka/ ‘easy/light in weight’

The above examples demonstrate the occurrence of the lateral /l/ in Barwe words. Hudson (2000) is of the view that in the absence of lowering of the tongue sides the resultant sound is [d]. So, [d] is a result of total airstream blockage at the alveolar ridge. According to Miti (2006:101) ‘[l] and [d] are allophones of the same phoneme in some modern Bantu languages.” However, this is not the case in Barwe as [d] is neither used in free variation nor complementary distribution with [l]. Unlike other languages that have [d] as an allophone to [l] Barwe has flap [ɾ] in complementary distribution. Below we present the words in which /ɾ/ occurs.

22. /ji**ɾ**a/ ‘cloth’

/fende**ɾ**e/ ‘shift sideways’

/ɗende**ɾ**e/ ‘bird’s nest’

/gi**ɾ**azi/ ‘glass’

/towe**ɾ**a/ ‘follow’

/ɾ/ has been shown to occur in Barwe in the above examples. Examples where the two are in complementary distribution are as in /kulira/ ‘to cry’ and /malire/ ‘boundary. As such they cannot substitute each other.

However, it has to be noted that in some other Bantu languages the two sounds are used in free variation.

6.6 Summary

This chapter was set to describe speech sounds. Special reference was made to Barwe where sound examples were needed. The chapter has given speech sounds as being the basic sound units that combine in the formation of words in speech. Each spoken language has developed its system of speech sounds which speakers of the language are intuitively able to join together in speech. The Barwe speech sounds are in two set categories, namely: consonants and vowels. However, the two sets have different phonetic and phonemic characteristics as reflected in the difference in the way they are produced and also in the way they operate in the language.

The chapter goes on to do a phonetic description of the consonant production. The phonetic description details the operations of the airstream mechanisms that are active in the production of consonants, these being lung airflow, glottal airflow and velaric airflow. At the same time, different articulators have been shown to be operative in the production of

different consonants. The articulators are in two categories, namely, active and passive. The articulators that include the lower lip and the different sections of the tongue body move towards the places of articulation manipulating airstream mechanisms, thereby producing different sounds. The places of articulation include upper lip, front upper teeth, alveolar ridge, the palate, velar and glottis.

The chapter also describes the manner in which the consonants are produced. Manner has been described as the nature and extent of obstruction to the airstream. It makes reference to the type of closure that occurs in the production of sounds. The different manners are given as stop, affricate, fricative, approximant, nasal, and lateral. So, different manners produce different consonants that are distinctive in Barwe. Consonants are phonemically recognised as syllable onsets. Described as being produced in a manner close to that of the vowels are the approximants [w] and [j]. They have been shown to be produced with freer passage of the airstream compared to the other consonants. However, despite having an articulation manner close to that of the vowels they have been shown to take the onset role in syllable formulation. It has also been demonstrated that they occupy the C slot on the CV tier showing that they function as consonants.

The chapter that follows looks at the operations of the nasal prefix and the syllabic nasal. The two are discussed as being operational in Barwe.

CHAPTER 7: Nasal Prefix and Syllabic Nasal

7.0 Introduction:

Firstly, we discuss nasalization as classes 9 and 10 nasal prefixation. The prefix nasal is represented as N. We then look at the syllabic nasal. The syllabic nasal is represented as N̩-. This N̩ has variational realizations in Barwe as also discussed.

The class 9 and 10 nasal falls into what Ngunga (2000), Hyman and Ngunga (1997) and Nasukawa (2010) call "moraic nasal". As earlier on stated by Trask (1996:226), "A mora is a phonological unit larger than a single segment but typically smaller than a syllable." So, the mora makes reference to the operations of sounds that work together as part of and not the complete syllable.

7.1 Noun class 9 and 10 nasal prefix formulation and the case of dissimilation.

Barwe, like many Bantu languages is an agglutinative language where words can be formulated by conjoining different grammatical elements. In simple terms, the formulation of nouns reflects this as nouns are formed by conjoining noun prefixes and noun stems. Thus the noun /ma-ɓero/ 'thighs' is made up of the noun prefix /ma-/ and the noun stem /-ɓero/. However, there are cases where the prefix is not directly reflected as it does in the /ma-ɓero/ example but occurs as a nasal prefix. This occurs with some singular nouns of class 9 and their class 10 corresponding plurals. Thus, according to Mpofu (2011:305), "For class 9, the class marker is (N-) which, in combination with stem initial consonants results in certain modifications that are a result of the assimilation of the homorganic nasal." This may be found to occur with some nouns of these classes while some may not. Our interest here are the nouns that have nasal prefix.

With classes 9 and 10 nouns, no noun prefix is placed before the stem but the stem commencing consonant is nasalized while the same stem can take prefixes of the other

classes without some form of nasalization. The following are examples of nouns in which the nasal prefix is shown to be occurring:

1. a) /p/ → [m]

/piɾipiɾi/	[miɾipiɾi]	'chilly pepper'
/paɾapaɾa/	[maɾapaɾa]	'sable'
/palepale/	[malepale]	'continuous body scratching'
/palame/	[malame]	'skin of dead animal'

b) /t/ → [n]

/tambe tambe/	[na-mbe ta-mbe]	'children's play
/te-me te-me/	[ne- me te-me]	'cutting things at random'
/tembo/	[nembo]	'tattoo marks'
/tuŋga/	[nuŋga]	' mosquito"

c) /t^h/ → [n]

/t^hambe/	[nambe]	'pool of water on the rock'
/t^heŋga/	[neŋga]	'feather'
/t^hepwe/	[nepwe]	'type of smallish prones'
/t^hukutiɾa/	[nukutiɾa]	'black jack leaves vegetable'
/t^huŋgulu/	[nuŋgulu]	'ululation'
/t^hutu/	[nutu]	'disease the causes body shivering'

The examples (1a-c) above show that the voiceless labial /p/ becomes a depressor nasal [m], while the /t/ and /t^h/ become depressor nasal sound [n]. Two factors come into play in effecting this phonological process. Firstly, all the examples are nouns conforming to the

requirements of class 9 and 10 nasal prefixation. Taking the first example **piri-piri** in (1a) we can present the process as follows:

input		output 1		output 2
/pɪɾipiɾi/	→	[m-ɪɾipiɾi]	→	[m̲i-ɾipiɾi]

Figure 7.1: *Nasalization of /p/ to [m̲]*

What we can deduct from the above is that the nasalization targets the word initial consonant as we are talking about prefixation. Thus in the input we see the N- targeting the word initial /p/. In output 2 we see the disappearance of the /p/ and the breath voicing of the [m̲]. The breathy voicing can be said to be triggered by the disappearance of the voiceless /p/ as the initial consonant becomes a nasal. As noted in the rule, there is no noun prefix but then nasalization accounts for the prefixation of nouns that fall into class 9.

The rule demonstrates that there is place assimilation of the nasal to that of the following consonant. As demonstrated the nasal is not syllabic as it takes the onset role of the deleted consonant. Going by the rule we can summarise the process observed in the above examples as:

2. N → m̲/-p
   → n̲/-t

The above shows that /m̲/ has place assimilation with /p/ and /n̲/ has place assimilation with /t/. When the consonant being nasalized is bilabial the N is also bilabial and it is alveolar

when the nasalized consonant is alveolar. Taking the example of **miripiri** 'pepper' above we can show the deletion of /p/ and substitution by N as follows:

3. /p/ → / [+nas, + lab] + iripiri

The above shows the /p/ nasalization. The N is labial as it substitutes a labial consonant /p/. We can also represent the process as below.

4. piripiri → N-iripiri → [miripiri]
[+lab]

The above shows that /p/ becomes nasalized. As earlier on noted, one of the common features of the Bantu languages is the organization of nouns into groups known as classes that are determined by their prefixes. But according to Ngunga and Mathangwane (2009:1), "In some of the Bantu languages some of these noun classes are without prefixes in which case they are identified by their agreement prefixes." Classes 9 and 10 nouns are also a case in point where the prefix is represented as N- for the nasalization. Thus taking the examples above it is the stem initial consonant that becomes a nasal in the formation of nouns of class 9 and 10 nasal prefixes. As demonstrated in the examples /p/ becomes [m] and /t/ and /t^h/ become [n]. From the examples in (1) the rules have been summarised as in the next examples:

5. a) /N-p/ → [N] → [m]

b) /N-t/ → [N] → [n]

c) /N-t^h/ →[N] → [n]

The examples above demonstrate that a bilabial /p/ coming after the nasal prefix N becomes a nasal. The N has place assimilation with the transformed /p/ to become a breathy voiced nasal

[m̲]. Examples (5b-c) show that the initial consonants /t/ and /t^h/ are nasalized and there also is place articulation as in both cases the nasal N becomes a breathy voiced alveolar [n̲].

As described, the nasal assimilates the place of articulation of the stem initial consonant to become class 9 and 10 nouns. Besides, this nasalization also occurs for the purpose of dissimilation.

7.2 Dissimilation through nasalization in reduplicated words

At another phonological level, the nasalization process comes as a result of dissimilation. According to Katamba (1989:94), "Dissimilation is a phonological process which ensures that differences between sounds are enhanced so that sounds become more auditorily distinct to make speech perception easier." From (1a) and (1b) the following are the examples that demonstrate dissimilation.

6.	/piri piri/	[m̲iri-piri]	'chilly paper'
	/para para/	[m̲ara-para]	'sable'
	/pale pale/	[m̲ale-pale]	'scratch'
	/tambe tambe/	[n̲a-mbe ta-mbe]	'children's play'
	/teme teme/	[n̲eme teme]	'act of cutting things at random'

In the above examples, it is demonstrated that the stem initial /p/ becomes glottal nasal [m̲] while the alveolar /t/ and aspirated /t^h/ become breathy nasal [n̲] but the stem initial consonant of the reduplicate remain unchanged. The process whereby the sounds are made to be different is known as Dahl's law of dissimilation. As noted by Campbell (2004:30), "Dahl's law is a sound change which took place in a number of East African Bantu languages in which two voiceless consonants in a word dissimilate so that the first become voiced." He

was making reference to the dissimilation processes that led to permanent sound change. However, we see the process as currently taking place in Barwe.

We also witness this process as the first consonant of the reduplicated word dissimilates by becoming a breathy nasal sound. Taking the first example **piripiri** 'chili pepper' from (1a) the nasalization process can be represented on the CV tier as follows:

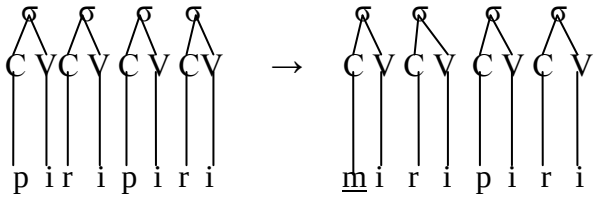


Figure 7.2: *Illustration of the nasalization of /p/ to [m]*

The above figure illustrates the nasalization process of /p/ to [m] through the process of class 9/10 nasal prefix formation while at the same time it also effects dissimilation to the reduplicated word. The word **piripiriri** becomes a noun of class 9/10 through the nasalazation of the word commencing /p/ as the first part of the reduplicated word is also dissimilated from the reduplicated part that maintains the /p/ initial consonant.

The voiceless stops become nasal consonants and going by the Ngunga (2000) analogy, the process can be represented as follows:

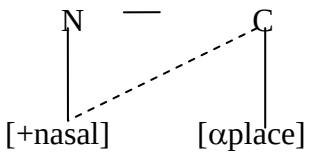


Figure 7.3: *Illustration of the process of nasalization in Barwe*

The above figure shows the nasalization process that is taking place. There is place assimilation of the nasal and the consonant that is being transformed. The resulting nasal

takes the place of the C. That is, if the C is alveolar, the nasal will be alveolar and if the C is labial, the nasal will be labial after nasalization. We can demonstrate the place assimilation as follows:

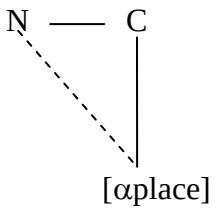


Figure 7.4 *Place assimilation of the nasal*

The above figure is demonstrating that there is place assimilation of the nasal to the C place. We can summarise the place assimilation rules that have been shown to take place in the examples as follows:

7. p[-voice] → m[+nasal+voice]
   t[-voice] → n[+nasal +voice]

The above summary shows that there is place assimilation of the [p] and [m], and [t] and [n]. The consonants /t/ and /t^h/ are both alveolar sounds that is why, as shown in the examples they both nasalize to [n] which is also alveolar. At the same time we can also account for change in manner from a plosive stop to a nasal stop. As has been shown in the figure 7.4 above, the nasal assimilates the place of the [p] consonant to become [+stop].

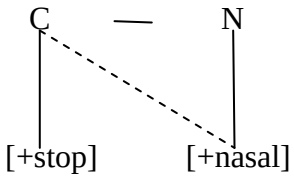


Figure 7.5: *Sound transformation from [p] to breathy voiced nasal [m]*

The figure above shows that the C links to the nasal manner. The consonant remains a stop but also assimilates the nasal manner as it becomes a nasal stop [m̲].

Besides the nasal prefix we also have the N driven prenasalization in Barwe. The next section looks at the nasal prefix. These are cases where we have N driven prenasalization.

7.3 N driven prenasalization.

As has been pointed out, the class 9/10 prefix is N-. This comes in combination with stem initial consonants and as has been shown above it results in some sound modification to the stem initial consonant. However, the modifications vary according to stem initial consonant. In the above section the stem initial consonant has been deleted and the nasal has asserted itself in the noun initial position. However, there are cases where the N- does not replace the stem initial consonant but only prenasalizes it as illustrated in the following examples.

8. a)	/N-buzi/	[^{m}buzi]	‘goat’
	/N-bama/	[^{m}bama]	‘open palm’
b)	/N-pfuti/	[^{m}pfuti]	‘gun’
	/N-mpfaji/	[^{m}pfaji/	‘epilepsy’
c)	/N-zaɾa/	[^{n}zaɾa]	‘hunger’
	/N-zeve/	[^{n}zeve]	‘ear’
d)	N-dzila/	[^{n}dzila]	‘way/path’
e)	/N-tsotso/	[^{n}t^{s}otso]	‘thin pieces of fire wood’
	/N-tsomba/	[^{n}tomba]	‘fish’
f)	/N-ɟoɾe/	[^{n}ɟoɾe]	‘children’s moonlight games’
	/N-ɟanɟi/	[^{n}ɟanɟi]	‘railway line’

g) /N-kufu/ [ᵑkufu] ‘ornament’

/N-kali/ [ᵑkali] ‘over protective person’

h) /N-gɪrozi/ [ᵑgɪrozi] ‘angel’

/N-goma/ [ᵑgoma] ‘drum’

The above examples demonstrate that there is prenasalization in the surface structure that comes as a result of the N prefix coming before the stem initial consonants in the underlying structure. As observed by Mathangwane (1999), unlike other class prefixes, the class 9/10 prefix is not syllabic but simply behaves as one segment with the stem. Thus as shown in the examples above, the N precedes the stem initial consonant and it modifies it by way of prenasalization. Also as we can observe, the N assimilates the place of articulation of the consonant it precedes. As observed in (8a) and (8b), the nasal becomes [ᵐ] before the bilabials /b/ and /p/. It becomes an alveolar /ⁿ/ before the alveolar consonants /z/ /d/ and /t/ as shown in examples (8c-e). It is palatal /ᶮ/ before the palatal /ɟ/ as shown by examples (8f). It becomes a velar /ŋ/ as demonstrated in examples (8g-h).

Again, we see that there is place assimilation as the N assimilates the place of articulation of the consonant it follows. The prenasalization process is discussed in detail in Chapter 8.

There is also syllabic nasal in Barwe. This is the subject of discussion in the next section.

7.4 Syllabic Nasal (N̩)

We need to look at how the syllabic nasals relate in different phonological environments in the Barwe syllable formulation where the syllable is understood to be CV structured. Making a description of the syllabic nasal in Ciyao, Hyman and Ngunga (1997:138) observe, That it “derives from Proto-Bantu *mu- and even alternates with mu-

and mw-." Part of what was observed in Ciyao can be said to be true of Barwe, namely the occurrence of the syllabic nasal and its alternation with mu-. Observed in Ciyao is the fact that the syllabic nasal comes as a result of mu- prefixes of the classes 1, 3 and 18 which lost their vowel /u/. The present study will observe that in Barwe the syllabic nasal N̩ is also operational with noun classes 1, 3 and 18. In all the cases the prefix *mu- has historically lost the vowel /u/ and we now have a syllabic nasal N̩ as the prefix. The historical process that results in the syllabic nasal can be represented as follows:

9. *mu- → mø- → N̩-

The above is demonstrating the process by which the N̩ has come into being. The prefix was initially *mu-. It then lost the prefix vowel and what we have today is the syllabic nasal which operates without a vowel.

7.4.1. N̩ in view of the CV syllable structure

It will be recalled that it has been pointed out that the Barwe syllable is CV shaped. In the case where the prefix vowel has been lost we now have a C syllable. Consider the following examples:

10. a) /mu-bale/ → /mø-ɓale/ → [m-bale] 'relative'
CV-CVCV C-CVCV

b) mu-golo/ → /mø-golo/ → [ŋ-golo] 'water bucket'
CV-CVCV C-CVCV

The above examples demonstrate that we now have a C- syllable as nasal is shown not to have a vowel nucleus. The syllabic nasal now precedes the consonant of the stem without a vowel break between them since the vowel has been historically lost.

Different phonological processes occur when the N̩ precedes different stem commencing consonant. Below, the study looks at the occurrence of the syllabic nasal preceding the voiced stop commencing stems.

7.4.2 N̩ before voiced stop commencing stems

The syllabic nasal has been found to occur before voiced /ɓ/, /ɳ/, /ɟ/ and /g/ commencing stems. These are demonstrated in the following examples.

11. a) /m̩-ɓ- /

/m̩ -ɓale/ (cl.1)	[m̩-ɓale]	‘relative’
/m̩ -ɓodzi/ (cl.1)	[m̩-ɓodzi]	‘one person’
/m̩ -ɓeseɾi/ (cl.1)	[m̩-ɓeseɾi]	‘helper/assitant’
/m̩ -ɓereki/ (cl.1)	[m̩-ɓereki]	‘parent’
/m̩-ɓonde/ (cl.18)	[m̩-ɓonde]	‘in the sleeping mat’
/m̩-ɓasa/ (cl.18)	[m̩-ɓasa]	‘inside of where one works’
/ m -ɓakayawo/ (cl.18)	[m̩-ɓakajawo]	‘in the dried fish’

/m̩ -ɓ-/ → [m̩-ɓ]

b) /m̩-ɳ/

/m̩-ɳa̱ma/ (cl.18) [ɳ̩-ɳa̱ma] ‘in the meat’

/m̩-ɳa̱twa/ (cl.18) [ɳ̩-ɳa̱twa] ‘in the problems’

/m̩-ɳu̱mba/ (cl.18) [ɳ̩-ɳu̱mba] ‘in the house’

/m̩-ɳ/ → [ɳ̩-ɳ]

c) /m̩-ɟ/

/m-ɟanɟa/ (cl.18) [ɳ̩-ɟanɟa] ‘in the hand palm’

/m̩-ɟiŋga/ (cl.18) [ɳ̩-ɟiŋga] ‘in the frying pan’

/m̩-ɟiwa/ (cl.18) [ɳ̩-ɟiwa] ‘in the dove’

/m̩ -ɟ/ → [ɳ̩-ɟ]

d) /m̩ -g-/

/m̩ -golo/ (cl.3) [ŋ̩-golo] ‘water bucket’

/m̩ -gwala/ (cl.3) [ŋ̩-gwala] ‘iron rod’

/m̩ -gweɾe/ (cl.1) [ŋ̩-gweɾe] ‘sick person’

/m̩ -gwate/ (cl [ŋ̩-gwate] ‘spring trap’

/m̩ -geɾo/ (cl.3) [ŋ̩-geɾo] ‘contour ridge’

/m̩-gomo/ (cl.18) [ŋ-gomo] ‘in the mountain’

/m̩-giɾazi/ (cl.18) [ŋ̩-giɾazi] ‘in the glass’

/m̩-giliŋgili/ (cl.18) [ŋ̩-giliŋgili] ‘in the bicycle rim’

/m̩-g-/ → [ŋ̩-g-]

The above examples (11a-d) demonstrate occurrence of the syllabic m̩-. It is shown to be [m̩-] before [ɓ], is [ɳ̩] before the palatals [ɲ̩, ɟ]/ and is [ŋ̩] before the plosive stop [g]. As demonstrated in the examples, because it is a prefix on its own it does not make a single prenasalized sound with the preceding sound. According to Hyman and Ngunga (1997:144), "The syllabic nasal, by contrast, being already rigidly prosodified, would be stable and non-interactive with the surrounding segments." In the above examples it remains syllabic without a vowel nucleus and does not seek to attach itself to the preceding consonant.

Also as given by Hyman and Ngunga (1997:143), "These phonetically syllabic nasal prefixes are also tone-bearing units and for this reason also require a mora in their underlying representation." We then consider the description given by Crystal (1991) in which a mora is described as a unit of phonological length. However as also given by Crystal this does not normally apply to the syllable onset. We, in this particular case realise that the syllabic nasal is in a unique situation where on its own it carries moraic properties in that it is syllabic and is also the tone bearing unit in the syllable that it constitutes. It thus can be represented as follows:

[+nasal]

Figure 7.6:*Syllabic and moraic representation of the syllabic nasal.*

The above figure shows that the syllabic nasal is a syllable on its own and as a tone bearing unit is moraic as well. What we realise is the fact that it is not incapacitated as a Barwe

syllable as it remains long enough to bear the suprasegmental properties such as tone. We realise that it is not shorter in comparison to the neighbouring syllables.

The following section seeks to assess the phonological processes that ensue when the syllabic nasal precedes the voiceless consonants.

7.4.3 N̩ before voiceless stop commencing stems

The syllabic nasal remains /m̩-/ when preceding some voiceless consonants. It also assimilates in place of articulation with stem commencing voiceless consonants. Consider the following examples:

12. a) /m̩ -p/

/m̩ -peni/ (cl.3)	[m̩-peni]	'knife'
/m̩ -pweɾe/ (cl.1)	[m̩-pweɾe]	'kid'
/m̩ -peɲu/ (cl.1)	[m̩-peɲu]	'a living person'
/m̩ -peɾa/ (cl.3)	[m̩-peɾa]	'type of crop'
/m̩ -paᵑgo/ (cl 3)	[m̩-paᵑgo]	'word/line to hang clothes'
/m̩ -puᵑga/ (cl.3)	[m̩-puᵑga]	'rice'
/m̩ -profita/ (cl 3)	[m̩-profita]	'prophet'

/m̩-t-/ → [m̩-p]

b) /m̩ -t/

/m̩-tenda/ (cl.1)	[n̩-tenda]	'a sick person'

/m̩ -tombwe/ (cl.3) [n̩-tombwe] ‘medicine’

/m̩ -tondo/ (cl.3) [n̩-tondo] ‘type of indigenous tree’

/m̩ -tolo/ (cl.3 [n̩-tolo] ‘burden’

/m̩ -tota/ (cl.3) [n̩-tota] ‘wet environment after rain’

/m̩ -tikiti/ (cl.3) [n̩-tikiti] ‘pumpkin vegetable’

/m̩ -toto/ (cl.3) [n̩-toto] ‘name of wild tree’

/m̩ -tambo/ (cl.3) [n̩-tambo] ‘game/ drama’

/m̩ -teme/ (cl.3) [n̩-teme] ‘type of wild fruit tree’

/m̩-t/ → [n̩-t]

c) /m̩ -t^h/

/m̩ -t^hambo/ (cl.3) [n̩-t^hambo] ‘napkin’

/m̩ -t^hunduluja/ (cl.3) [n̩-t^hunduluja] ‘type of wild bush’

/m̩ -t^heŋgo/ (cl.3) [n̩-t^heŋgo] ‘price’

/m̩ -t^haŋga/ (cl.3) [n̩-thaŋga] ‘animal pen’

/m̩-$t^{h/}$ → [n̩-t^h-]

d) /m̩-c/

/m̩-cidziwiso/ (cl.18) [ɳ̩-cidziwiso] ‘in the notice’

/m̩-cikulu/ (cl.18) [ɳ̩-cikulu] ‘in the big one’

/m̩ -ciɾiɾo/ (cl.1.8) [ɳ̩-ciɾiɾo] ‘in the noise by people crying’

/m̩-c/ → [ɳ-c]

e) /m̩ -k/

/m̩ -kadzi (cl.1)	[ŋ̩-kadzi]	‘wife/woman’
/m̩ -kulu/ (cl.1)	[ŋ̩-kulu]	‘big/elder person’
/m̩ -kulo/ (cl.3)	[ŋ̩-kulo]	‘river/stream’
/m̩ -kuma/ (cl.3)	[ŋ̩-kuma]	‘ash powder for cooking okra’
/m̩ -kuma/ (cl.3)	[ŋ̩-kuma]	‘forehead’
/m̩ -koma/ (cl.1)	[ŋ̩-koma]	‘elder brother’
/m̩ -kuce/ (cl.3)	[ŋ̩-kuce]	‘slept over thick porridge’
/m̩ -kono/ (cl,3)	[ŋ̩-kono]	‘male animal’
/m̩ -koto/ (cl.3)	[ŋ̩-koto]	‘fire place brewing beer’

/m̩-t/ → [ŋ̩-t]

The examples (12a-e) demonstrate that the occurrence of /m̩/ before the consonants /p, t, t^h, c, k/. It is [m̩] before the labial [p] and is [n̩] before the alveolar [t] and [t^h]. From the above examples it is shown that the syllabic nasal is the same for both [t] and [t^h]. What it demonstrates is that it is the place feature that matters and not the sound aspirant modification as the nasal is [n̩-] before [t] and [t^h]. The /N̩/ also assimilates to the palatal place of [c] to [ɳ̩].

The nasal prefix is a velar [ŋ] when preceding [k] to share the [+velar] place feature. The place feature assimilation can be represented as follows on next page:

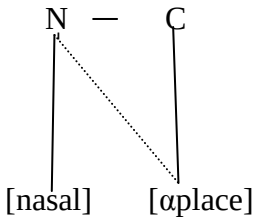


Figure 7.7 *The place assimilation of the /N̩/*

The above figure shows that there is place assimilation by the syllabic nasal to the place of the following consonant. This demonstrates the process above described in examples (12a-e).

The Syllabic nasal also precedes affricate commencing stems. This is discussed in the section that follows.

7.4.4 Before voiced affricates

It will be recalled that affricates are considered to be mainly stops that are characterised by a delayed release of air. It is this release that differentiates the plain stops from the affricates. The affricates are in two categories: voiced and voiceless. The voiced affricates found in Barwe are /b^{v}/ and /d^{z}/. They are also preceded by the syllabic nasal as stem commencing consonants as shown in the following examples.

13. a) /m̩ -b^{v}/

/m̩ -b^{v}alirke/ (cl.3)	[m̩-b^{v}alirke]	‘somebody’s way of dressing’
/m̩-b^{v}imi/ (cl.1)	[m̩-b^{v}imi]	‘hunter’
/m̩ -b^{v} unzo/ (cl.3)	[m̩-b^{v}unzo]	‘question’
/m̩ -b^{v} uli/ (cl.3)	[m̩-b^{v}uli]	‘shadow’

/m̩ -b^{v}umbi/ (cl.3) [m̩-b^{v}umbi] ‘incessant rain’

/m̩-b^{v}] → [m̩-bv]

b) /m̩ -d^{z}/

/m̩-d^{z}idzisi/ (cl.1) [n̩-d^{z}id^{z}isi] ‘teacher”

/m̩-d^{z}iwi/ (cl.1) [n̩-d^{z}iwi] ‘one who knows”

/m̩-d^{z}aŋga/ (cl.3) [n̩-d^{z}a^{ŋ}ga] ‘cigarette’

/m̩-d^{z}ambiɾiŋga/ (cl.3) [n̩-d^{z}a^{m}biɾi^{ŋ}ga] ‘grape tree’

/m̩-d^{z}egude/ (cl.3) [n̩-d^{z}egude] ‘ a mentally retarded person’

/m̩-d^{z}/ → /n̩-d^{z}-/

The above examples demonstrate that /m̩/ remain [m̩-] before the affricate [b^{v}] and is [n̩] before the alveolar [d^{z}]. Thus we note that there is place assimilation of the /m-̩/ and the affricates. The section that follows looks at the occurrence of the syllabic nasal before the voiceless affricates.

7.4.5 Before voiceless affricates commencing stem

The voiceless affricates preceded by a syllabic nasal in Barwe is /p^{f}/ as demonstrated in the following examples.

14. / m̩-p^{f}/

/m̩ -p^{f}ondo/ (cl.3) [m̩-p^{f}ondo] ‘tool for boring holes on wood’

/m̩ -p^{f}iti/ (cl.3) [m̩-p^{f}iti] ‘type of tree with buck used to make strings’

/m̩ -p^{f}umi/ (cl.1) [m̩-p^{f}umi] ‘rich person’

/m̩ -p^{f}endi/ (cl.1) [m̩-p^{f}endi] ‘aperson who collects strings from tree bucks’

/m̩-p^{f}/→ [m̩-p^{f}-]

In the same manner, the syllabic nasal manifests itself as [m̩-] before stem commencing labial affricate [p^{f}].

7.4.6 Before fricative commencing stems

15. a) /m̩ -f-/

/m̩-fambo/ (cl.3) [m-fambo] ‘distance’

/m̩-fambi/ (cl.1) [m-fambi] ‘traveller’

b) /m̩-s-/

/m̩-sikana/ cl.1 [n̩-sikana] ‘girl’

/m̩-susu/ (cl.3) [n̩-susu] ‘name of tree’

/m̩-solo/ (cl.3) [n̩-solo] ‘head’

/m̩-sana/ (cl.3) [n̩-sana] ‘back

/m̩-sasa/ (cl.3) [n̩-sasa] ‘type of indigenous tree’

/m̩-sumbu/ (cl.3) [n̩-sumbu] ‘bunch of grass tied together’

/m̩ -simbi/ (cl.18) [n̩-simbi] ‘in the metal’

/m̩-simba/ (cl.18) [n̩-simba] ‘in the power/energy’

/m̩-s-/ → [n̩-s-]

The above examples demonstrate that the syllabic nasal remains [m̩-] before the voiceless labio-dental fricative [f] and makes a place assimilation to become [n̩-] before the voiceless [s].

Summarily, the syllabic nasal occurrence can be given as below,

16. a) [m̩-] before: labials /p, ɓ, p, f, p^f, b^v/

b) [n̩-] before: alveolars /t, d^z, t^h, s/

c) [ɳ̩-] before: palatals /ɳ, c, ɟ/

d) [ŋ̩-] before: velars /k, g/

Going by the above summary it can be noted that the syllabic nasal remains [m-] before labial commencing stems as demonstrated in (16a). (16b) shows that it makes place assimilation to [n] when preceding alveolar sounds [t] aspirated stop [t^h] and the fricative [s]. It is palatal [ɳ̩] before the palatals [ɳ̩, ɟ, c] as shown in (16c). It also assimilates to [ŋ̩-] before the velar stops [k, g] as shown in (16d).

However it is noted that the sound modification that comes with affrication or aspiration has no role in the assimilation process. Thus we can see that the affricates /p^f/ and /b^v/ are labio-dental but the assimilation is at the labial position. So it is the major articulation that controls the place assimilation of the /N̩/. The place assimilation process can be represented as follows on next page.

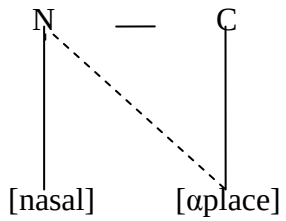


Figure 7:8 *Place assimilation of N̩*

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The above figure shows the place assimilation by the /N̩/. It assimilates to have the same place with the stem commencing stem of the noun. Having looked at the behaviour of the syllabic nasal, we then look at the operations of the noun class 18 prefix.

7.5 Pre-prefixation of nouns with syllabic nasal prefix with class 18 locative

The noun prefix for classes 1, 3 and 18 is presented as mu-. However it is only the class 18 locative prefix that can take an already prefixed noun as its stem which class 1 and 3 prefixes can not do. As such class 18 prefix can be pre-prefixed to nouns of classes 1 and 3. The following discussion assesses the phonological processes that occur when the classes 1 and 3 nouns with the N̩ prefix, are prefixed with the class 18 prefix mu-.

7.5.1 The class 18 mu-prefix preceding syllabic nasal commencing stems

In the discussion above, the syllabic nasal has been shown to take variational forms under different circumstances there discussed. It has been shown to occur as /m̩-/, /n̩-/, /ɳ̩/ and /ŋ̩-/. However, a different pattern is noted when nouns with a syllabic nasal are pre-prefixed with locative mu-. Consider the following examples.

17. /mu - m̩-/

/mu - m̩-ɓale/ (cl.1) → [mu-m̩-ɓale] ‘inside the relative’

/mu - m̩-ɓodzi/ (cl.1) → [mu-m̩-ɓodzi] ‘in a single one’

/mu - m̩-pweɾe/ (cl.1) → [mu-m̩-pweɾe] ‘in the kid’

/mu - m̩-peɲu/ (cl.1) → [mu-m̩-peɲu] ‘in a living person’

/mu - m̩-peɾa/ (cl.3) → [mu-m̩-peɾa] ‘in the type of crop’

/mu - m̩-b^{v}imi/ (cl.1) → [mu-m̩-b^{v}imi] ‘in the hunter’

/mu - m̩-b^{v} unzo/ (cl.3) → [mu-m̩-b^{v} unzo] ‘in the question’

/mu - m̩-p^{f}iti/ (cl.3) → [mu-m̩-p^{f}iti] ‘in the tree m-pfiti tree.’

/mu - m̩-p^{f}umi/ (cl.3) → [mu-m̩-p^{f}umi] ‘in the rich person’

/mu - m̩-/ → [mu-m̩-]

The above examples demonstrate that the vowel /-u/ of classes 1 and 3 remain deleted when it is pre-prefixed with prefix of class 18. The pre-prefixed nouns maintain their syllabic nasal prefixes. In such a situation the class 18 prefix retains its vowel. What we see is that one of the consecutive prefixes has to maintain the vowel. As such, the class 18 prefix maintains its vowel but can be a syllabic nasal before other nouns whose prefixes are not syllabic nasals. Consider the following example:

18. /mu - gomo/ (cl.5) → [m̩-gomo] ‘in the mountain’

/mu - nɟiɾa/ (cl.9/10) → [m̩-nɟira] ‘in the path’

/mu - ɟiwa/ (cl.9/10) → [m̩-ɟiwa] ‘in the dove’

/mu - suɾe/ (cl.17) → [m̩-suɾe] ‘afterwards’

/mu - ciɾiɾo/ (cl.7) → [m̩-ciɾiɾo] ‘in the noise of crying people’

/mu - ziŋumba/ (cl.21) → [m̩-ziŋumba] ‘inside the big house’

The above examples demonstrate that the class 18 is a syllabic nasal when preceding nouns whose prefixes are not syllabic nasals. In situations where the class 18 comes after the class 1 and 3 nouns with syllabic nasal prefixes we witness some form of retrogressive dissimilation. This means to say, the right side syllabic nasals influence the left side as the class 18 is denied vowel deletion under these circumstances.

However, the case of the examples in (18) is such that the syllabic nasal has been m̩ as it comes before labial commencing stems. As earlier on noted, the syllabic nasal has variational forms as it has place assimilation with the sounds that it precedes. However the class 18 prefix maintains its vowel even before non-labial syllabic nasals. Consider the following examples:

19. a) /mu-n̩-/

/mu-n̩-tondo/ [mu-n̩-tondo] ‘in the type of indigenous tree’

/mu-n̩-tolo/ [mu-n̩-tolo] ‘in the burden’

/mu-n̩-tota/ [mu-n̩-tota] ‘in the wet environment after rain’

/mu-n̩-tikiti/ [mu-n̩-tikiti] in the pumpkin vegetable’

/mu-n̩-t^{h}ambo/ [mu-n̩-t^{h}ambo] ‘in the napkin’

/mu-n̩-t^{h}unduluja/ [mu-n̩-t^{h}unduluja] ‘in the bush that bears bitter fruits’

/mu-n̩-/ → [mu-n̩-]

b) /mu-ŋ̩-/

/mu-ŋ̩-kadzi/ [mu-ŋ̩-kadzi] ‘inside the wife/woman’

/mu-ŋ̩-kulu/ [mu-ŋ̩-kulu] ‘in the big/elder person’

/mu-ŋ̩-kulo/ [mu-ŋ̩-kulo] ‘in the river/stream’

/mu-ŋ̩-kuma/ [mu-ŋ̩-kuma] ‘in the okra softening powder’

/mu-ŋ̩-/ → [mu-ŋ̩-]

In the above examples there has already been some assimilation as the syllabic nasal shares the place feature with the stem commencing consonant. Thus from the above examples we see that the /m̩-/ had become alveolar [n̩-] before [t] and [t^h] and a velar [ŋ̩] before the velar stop [k] prior to being pre-prefixed with the class 18 prefix mu-. Already there is a complex phonological transformation on the syllabic nasal which remains unchanged but denies the class 18 the phonological process of vowel deletion.

What is demonstrated in examples (19a) and (19b) is that assimilation is a stable phonological process. The phonological alterations earlier on set through place assimilation do not get altered but at the same time they deny similar phonological process to take place with the locative prefix. As has been shown, the class 18 prefix can be a syllabic nasal on its own but retains the vowel before the class 1 and 3 syllabic nasals. We can thus summarise the process involving the class 18 prefix and the syllabic nasal as follows:

20. /mu - N̩-/ → [mu -N̩-]

The above example shows that the class 18 maintains its syllabic prefix with the vowel [u-]. On the other hand the assimilated nasal prefix does not change and remains a syllabic nasal prefix. Thus, the above process can be represented on the CV tier as follows:

locative mu -m̩- prefix

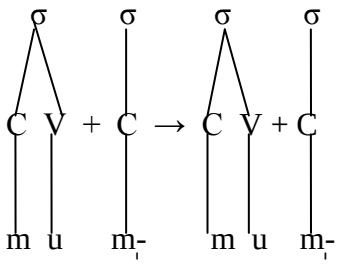

Figure 7.9: *Syllable prefix set-up after the addition of the locative mu- to the nasal prefix m̩-*

The above figure shows the syllable configuration that occurs with the addition of the class 18 locative prefix.

It is important that we also look at the phonological processes that occur as the syllabic nasal controls concordial agreement as a subject marker. This is the subject of discussion in the following section.

7.5.2 Noun classes 1, 3 and 18 object markers.

There are situations where there is concordial agreement as other grammatical entities copy the subject prefix as in the examples that follow.

21.

a) Wa-Barwe wa-nera bhora. 'The Barwe people have kicked the ball'

b) Ci-nsikana ci-nolinga thika. 'The little girl stares at the hyena.'

In the statement (21a) the noun class 2 subject prefix wa- is reflected on the verb **wa-neri-wa.** Similarly in (21b) the class 7 subject prefix **ci-** of the verb **ci-nolinga** is also copied from **ci-nsikana**. In the same manner, the syllabic nasals are copied as object prefixes as well. Consider the following examples:

22. a) /m̩-bᵛimi ndam̩-pasa ɲama jake/ ‘I gave the hunter his meat.’

/m̩-pᶠumi vaŋ̩-galisa pasi/ ‘They have made the rich man sit down.’

b) /n̩-tondo tan̩-tema/ ‘we have cut down the n-tondo tree’

/n̩-tolo tan̩-toɾa/ ‘We have taken the burden’

c) /ŋ̩-kadzi tan̩-lowola/ ‘We have married the woman’

/ŋ̩-kulu mʰepo yam̩-pinda/ ‘Cold has overwhelmed the elder’

The above examples show that the object markers of the syllabic nasals also appear as syllabic nasals. As has been demonstrated the syllabic nasal prefix has place assimilation with the initial stem consonant. The object marker is also realized as the syllabic nasal in the subsequent constructions but it also has place assimilation with the initial consonant of the verb. From the above examples we can note that the object is [m̩] before [p], [ŋ̩] before [g], [n̩] before [t] and [n̩] before [l].

Generally speaking, the class 18 is conservative as there is more of the prefix vowel retention. Once the vowel is retained in the prefix it is also retained in the subject markers. Consider the following examples:

23. /tamupinda muzimbabwe/ ‘we have entered into Zimbabwe’

/chinomuziwa mudistrito/ ‘it knows inside the whole district’

/wapika mupoto/ ‘they have cooked in the pot’

/mamujenda muɲumba/ ‘you have gone into the house’

The above examples show that since there is no vowel loss to the prefix, the subject prefix also retains the vowel. The locative mu- is a secondary prefix. As such it does not favour

phonological transformation as it has been shown to be conservative even when it occurs before syllabic prefixes that have had vowel loss. The Barwe class 18 is conservative with its prefix as also demonstrated in the object case of Ciyao. As noted by Hyman and Ngunga (1997:150), "In Ciyao the class 18 object prefix may not become a syllable nasal eg, in **ku-mu-peʹleʹkà**." The examples above also demonstrate that the class 18 object markers also retain the vowel.

Having discussed the operations of the syllabic nasal it is important to look at the evidence that it is originally mu- before the vowel loss. The sections that follow look at this evidence.

7.6 Evidence of lost vowel to the mu̩- prefix: Singular Plural linkage

Evidence that the vowel has been lost to the N̩ prefix can be drawn from the fact that nouns have singular plural linkage. Taking the examples of the nouns with the N̩ in its variational forms we can see that the plurals recognize the singular prefix as /mu-/. Plurals of class 1 nouns fall into class 2 while those of class 3 fall into class 4 respectively as in the following.

24. **Singular**	**plural**
[m̩-ɓale] (cl.1)	[waɓale] (cl.2) 'relatives'
[ŋ̩-kulu] (cl.1)	[wakulu] (cl.2) 'elders'
[m̩-pᶠiti] (cl.3)	[mipfiti] (cl.4) 'mipfiti trees'
[n̩-solo] (cl.3)	[misolo] (cl.4) 'heads'
[ŋ̩-kuma] (cl.3)	[mikuma] (cl.4) 'foreheads'

The above examples show that the prefix of the singular nouns of class 1 and 3 is mu-. The corresponding plural forms are wa- class 2 and mi- class 4. That is to say there is a mu- that takes wa- and mu- which takes mi-. In all cases the V of the class 1 and 3 gets deleted. In addition to the evidence from the general Bantu prefix descriptions, the above examples show that the singular plural linkage remains the same in the Bantu languages. It is predictable. The linkage has remained the same be it that the singular prefix has lost the vowel or not. The above examples demonstrate that vowel loss has occurred to the classes 1 and 3 noun prefixes but the plurals recognise that the prefix is /mu-/ in the singular plural linkage.

7.7. Suprasegmental evidence

On the other hand, we get suprasegmental evidence that a syllable is a tone bearing unit but tone is manifested on the vowels of the syllables (Hyman 2003a). We argue so because we are confronted with two forms of nasal configuration. Thus we can have an example [mbuti] 'goat' where we have [m] which is not a syllabic nasal. We can thus structure it as below to show how the syllable in which we have [^{m}] is a tone bearing unit.

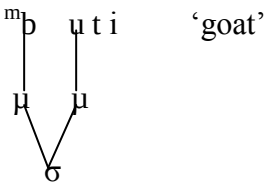

Figure 7.10 *The nasal [^{m}]as part of a mora*

In the above figure we see that the [^{m}] is part of a mora. It is a constituent member of the syllable. It needs other moraic members to formulate a syllable that can then be a tone bearing unit. As we look at the syllabic nasal the situation is different.

The [m̩] depends on other moraic elements to constitute a syllable which then becomes a tone bearing unit. Although the syllabic nasal prefix has lost its vowel nucleus it still retains the tone as demonstrated below where H represents high tone and L, low tone. This is demonstrated using the example [m-ɓodzi] ‘one’.

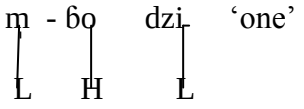

Figure 7.11: *Illustration of the syllabic nasal as a tone bearing unit*.

In the above figure, the N̩ prefix remains syllabic after losing the vowel /-u/. It does not seek other moras either on the right side or the left side for it to be a complete syllable. It remains a tone bearing unit in the same manner [o] and [i] are tone bearing units in the syllables -ɓo- and -dzi-. This is further evidence that [m̩-] is a syllabic nasal and does not form a prenasalized compound sound with the stem commencing consonant. What we are pointing out here is that the nasal prefix is a tone bearing unit to testify that it is a syllable by itself.

7.8 Presentation of the syllabic nasal on the CV tier

The [m-] prefix remains syllabic despite the loss of the nucleus vowel. This loss of the syllable nucleus does not eliminate the syllable since the remaining nasal become syllabic retaining the syllable. The process that brings about the prefix can be represented on the CV tier of the syllable as in the following page.

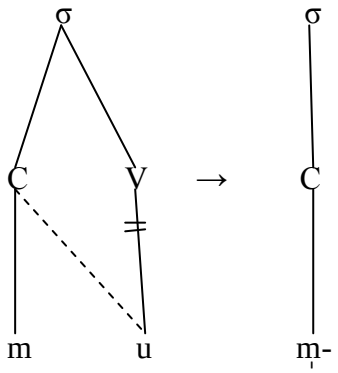

Figure 7.12: *Representation of the prefix [m-] on the CV tier after the historical loss of the vowel (-u-).*

The figure above represents the new configuration of the noun prefix after the loss of the nucleus /u-/. The nasal m- remains syllabic after the loss of the vowel. According to Nasukawa, (2010:2) "Characteristics of the CV-dichotomy, theory (of Structure Preservation Principle) tends to employ a strict CVCV structure for systems referred to as CV languages (...) these are assumed to have neither codas nor consonant clusters." As such, he proposes a syllable representation where O and N stand for 'onset' and 'nucleus', respectively. Using such a representation, a word like /uŋ̩kono/ 'male-hood' would be presented as follows:

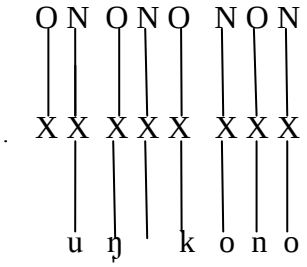

Figure 7.13: *Syllable configurations in the absence of the consonant onset to /-u/ and after loss of vowel /-u-/ to the syllabic nasal /ŋ̩/.*

In the above figure, it is demonstrated that the first syllable is constituted by /u/ which is onsetless while the nasal prefix /ŋ̩-/ does not have a nucleus. However, the /u/ syllable fulfils

part of the requirements of a syllable of a CV syllable as it was earlier pointed out that the obligatory part of the syllable is the vowel nucleus. In situations where the language does not allow codas and consonant clusters, the syllables that do not have the CV make-up do not interfere or borrow the vital elements they lack from neighbouring syllables.

As noted again by Nasukawa (2010:3), "In such a configuration, the empty nucleus must be phonetically silent to form an NC sequence phonemically." Resultantly, the syllabic prefix consonant can bear the phonotactic elements that are normally borne by the syllabic nucleus.

7.9 Summary

The chapter explored phonological processes where the word initial voiceless sounds become breathy voiced nasal when the class 9 and 10 nasal prefixes are added to them. Thus it was observed that through that process /p/ commencing stems became [m̲] commencing while /t/ commencing stems became [n̲] commencing. It was also discussed that besides this phenomenon, the word initial sound is dissimilated to the word initial sound of the second part of the reduplicate for purpose of clarity to the listener. The N was shown to assimilate the place of the following consonant.

The chapter also focused on the operations of the syllabic nasal N̩ which was shown to be naturally [m̩-] before labials, [n]/ before alveolars, [ɳ]/ before palatals and [ŋ]/ before velars as it assimilates the place of the consonant it precedes. It was however noted that the class 18 prefix did retain the vowel in some instances. It was shown not to lose its vowel when pre-prefixed to N̩ initial nouns. Also discussed is the concordial agreement controlled by the syllabic nasals. The syllabic N̩- is copied as subject marker from the noun but also assimilates place of the verb initial consonant.

The chapter also discussed the evidence of the syllabic nasal as originating from the historical /mu-/. In Barwe, the class 2 and 4 nouns take the /va-/ and /mi-/ prefix as plurals of the nouns of class 1 and 3 respectively. The class 1 and 3 nouns with N̩ prefixes were shown to have the va- and mi- prefix as plurals respectively. It was also demonstrated that the syllabic nasal is a tone bearing unit in a different manner a moraic nasal would bear it as part of a syllable. As discussed, we have a C syllable whose V element has been lost but remain unreplaced in syllable configuration.

In the next chapter we discuss operations of complex sounds in Barwe.

CHAPTER 8: Complex Consonant Operations in Barwe

8.0 Introduction

As noted, we are describing and looking at the operations of the sound segments in Barwe. This happens as consonants take the onset role while the vowels play the nucleus role in syllable formation. It will be recalled that besides the CV phonology theoretical framework, the study also uses the lexical phonology theoretical analogy which can basically be said to be morphophonemic in nature as it looks at words and morphological unit combinations that also result in newer phonological set-ups in the new constructions. The current chapter seeks to describe the Barwe consonants making an analysis of the complex sounds. These complex sounds have been given in table 6.2 where we discuss the development of the Barwe consonant system from the PB system.

8.1. The characteristics of complex consonants

There is also a general consensus among the scholars description of complex consonants. These are also realised as single sound segments made with two distinguishable strictures at different locations. Thus the Barwe affricate sound [t^{s}] as in the word /t^{s}a/ 'new' consists of an alveolar stop /t/ accompanied by the labialized fricative /^{s}/. The Barwe complex consonant can be put into three categories: doubly articulated consonants, compound consonants and consonants with secondary articulation. In the next section, the sounds classified as secondary articulated consonants are analysed.

8.1.1 Complex doubly articulated consonants

As noted by Ladefoged and Maddieson (1997), "Doubly articulated sounds are those which have two simultaneous articulations of the same degree of stricture such as two oral closures or two open approximants." The discerned stricture equality does not necessarily

distinguish this group from the compound sounds which also are deemed to have similar strictures. However, one of the major characteristics of the doubly articulated sounds that differentiate them from the other complex sounds is that they remain distinct without some superimposition of another sound on them.

Taking the example [ʐ] as in [ʐentsene] ‘all of them’ and [ʂ] as in [ʂika] ‘arrive’ are here considered as doubly articulated sounds which are distinct from [bg], of [n̩-tobge] ‘medicine’and [mb] of [n̲ambwe] ‘pool’. At the same time [ʂ], [ʐ], [bg] and [mb] have double strictures. [ʐ] is [+alveolar] [+labial], [mb] is [+labial] [+labial] and [bg] is [+labial] [+velar]. Thus it can be noted that [ʂ] as in [ʂika] ‘arrive’ is [+labial] [+alveolar] while [w] as in [wana] ‘children’ is [+labial] [+velar]. The sounds [ʐ], [ʂ] and [w] are complex by way of double articulation which is not prenasalization or secondary articulation. [mb] and [bg] are complex by way of prenasalization and velarization respectively.

Barwe has doubly articulated sounds which contrast and in some instances combine with the other simplex and complex consonant sounds. Below, we discuss [w] as a complex doubly articulated sound. Examples where that approximant [w] occur are as below:

1. /wana/ ‘children’
   /wentse/ ‘all of them’
   /ŋguwa/ ‘time’
   /woje/ ‘expression of joy’
   /chidziwiso/ ‘notice’
   /wabala/ ‘he/she who bore children’
   /wudza/ ‘tell’
   /waŋgasi/ ‘how many’
   /dziwa/ ‘know’

/waciwonda/ ‘as they get slim’

/wali/ ‘they are’

The above examples demonstrate the use of the doubly articulated labial velar approximant /w/ in Barwe. Both strictures are approximant in nature at the lip and velic points. The above examples demonstrate the use of complex /w/ without showing its involvement with other consonants in syllable formation as well. Thus simplex consonants become complex by virtue of being involved with the complex doubly articulated [w]. As such the simplex consonants (C) can be contrastive to the consonant + [w] (C^W) sounds as demonstrated in the examples below.

2.	plain C sounds		C^w sounds	
	/kana/	‘fight’	kwana	‘sufficient/enough’
	/mana/	‘mana’	mwana	‘child’
	/kace/	‘his/hers’	/k^wace/	‘his or her place’’
	/rara/	‘sleep’	/rwara/	‘be sick’
	/saka/	‘as a result’	/sakwa/	‘to be looked for’
	/ɲata/	‘watery state of slept over food’	/ɲatwa/	‘hounding problem’

The above examples demonstrate that the C^w vs. C are contrastive. Thus the complex doubly articulated [w] modifies the Cs and makes them complex. As such the plain sounds contrast with those involved with the doubly articulated [w] sound. Detailed phonological descriptions of the phonological processes involving [w] are given below, under labio-velarization topic. However the above examples show that [w] is a complex doubly articulated sound on its own

and also that its involvement with other sounds brings about sound contrasts with the sounds that are not involved.

Also in the category of doubly articulated sounds are above mentioned voiceless [ʂ] and the voiced [ʐ] fricatives. Their involvement in Barwe phonology is illustrated in the following minimal pair examples:

3.	a)	/ʂika/	‘arrive’	/sika/ ‘create’
		/ʂa/	‘sound indicating alertness	/sa/ ‘instruction to a dog to run’
		/ʂimba/	‘to roof a building’	/simba/ ‘power/energy’
		/ʂuta/	‘drink thick liquid’	/suta/ ‘withholding urine’
		/ʂota/	‘nauseate’	/sota/ ‘start to dry up’
		/ʂeka/	‘to break’	/seka/ ‘laugh’
	b)	/ʐana/	‘young children’	/zana/ ‘hundred’
		/ʐino/	‘now’	/zino/ ‘tooth’
		/ʐiro/	‘undefined things]	/ziro/ ‘zero/nothing’
		/ʐiʐi/	‘these’	/zizi/ ‘owl’
		/ʐipi/	‘which ones’	/zipi/ ‘zip’

The above examples show the occurrences of the doubly articulated fricatives [ʂ] and [ʐ] in contrast to the simplex sounds [s] and [z] respectively. As demonstrated in the examples the doubly articulated fricatives form minimal pairs with the simplex sounds. The doubly

articulated [ʂ] and [ʐ] sounds being contrastive to the simplex unrounded alveolar counterparts [s] and [z] shows how the language increases its sound inventory. The difference between the doubly articulated [ʂ] and [ʐ] sounds is that [ʂ] is [-voice] while [ʐ] is [+voice]. They both have articulator features [+labial] [+alveolar]. To produce these sounds the tongue moves towards the alveolar ridge while at the same time the lip rounding also takes place. This happens simultaneously. There is double fricative stricture at two different points. As noted by Laver (1994:317), "the whistling fricatives (.....) are further examples of double fricatives with one stricture being made at the alveolar place of articulation and the other at the labial location with lip rounding."

Thus, [w] [ʂ] and [ʐ] are the Barwe phonemes that are complex by way of being doubly articulated. As given by Abercrombiee (1979), these are distinguished from segments with secondary articulation. As noted, [w] is a doubly articulated sound that also gets involved with other consonants which are also in contrast with sounds that do not involve [w]. The labialised [ʂ] and [ʐ] are also contrastive with their non-labialised counterparts [s] and [z] respectively.

Another category of complex sounds in Barwe are compound consonants. These are discussed in the section that follows:

8.1.2 Prenasalization

Generally speaking, nasalisation can be in two forms, namely: prenasalization and postnasalization. However, as earlier on noted, sounds articulation vary according to the phonological rules of particular languages. As such, Barwe prefers prenasalization and there is no occurrence of postnasalization. As earlier on noted, prenasalization can be described as the articulation of a sound with an initial brief airflow through the nose (Trask 1997). These are complex sounds as they are partly nasal and partly oral during the duration of articulation. These are considered as unitary sounds.

Their duration of articulation is similar to that of simplex sounds. Ladefoged and Maddieson (1996:123) note, "Two adjacent segments which require homologous articulatory gestures may be produced with a single combined gesture." It is a single gesture that produces two sounds produced at the same time. Thus Clark and Yallop (1990:229) remark, "It is phonetically sound to consider [ᵐb, ⁿd, ᵑg] and [ⁿdʒ] as single sounds with a nasal 'kick-off'." They are single complex sounds. Prenasalization takes place with voiced stops in Barwe and it is the subject of discussion in the following section.

8.1.2.1 Prenasalized stops

The prenasalised stops [ᵐb/, /ⁿd/, /ᶮɟ] and [ᵑg] have been found to occur in any position within a word, as can be seen in the following examples:

4. a) /ᵐb/

/wafaᵐbi/	'travelers'
/ᵐbani/	'who'
/ᵐbeᵐbeti/	'disorganised things'
/ᵐbuto/	'place'
/ᵐbewa/	'mice'
/ᵐbija/	'old woman'
/ᵐbudu/	'mosquito'
/ᵐbama/	'open palm'
/ᵐbiɾa/	'rabbit'
/ᵐbeɾeko/	'cradle'
/ᵐbalame/	'bird'

/ᵐbuma/ ‘type of wild bird’

/mutoᵐbo/ ‘harmful magic’

b) /ⁿd/

/ⁿdida/ ‘I wanted’

/fuⁿda/ ‘learn’

/ⁿdiko/ ‘the right place’

/kweⁿda/ ‘ to go’

/iⁿduka/ ‘change side when sleeping’

/mweⁿde/ ‘you go’

/ᵑkʰoⁿdo/ ‘war’

c) /ᶮɟ/

/ᶮɟala/ ‘hunger’

/maᶮɟe/ ‘now’

/ciᶮɟa/ ‘change’

/ʒiᶮɟi/ ‘many’

/ᶮɟoɾe/ ‘children’s moonlight games’

/ᶮɟuᵑga/ ‘taking a squatting posture’

/ᶮɟiwa/ ‘dove’

/ᶮɟaᶮɟi/ ‘railway line’

/maᶮɟiᵐba/ ‘name of a person’

/ɟeᶮɟe/ ‘a pit’

/ᶮɟeɾa/ ‘rapoko’

/kuᶮɟeᶮɟemeɾa/ ‘a razor head shave after initial scissors hair cut’

/ᶮɟeɾe/ ‘maize flower’

/ᶮɟema/ ‘handcuffs’

/ᵑɟiᵑga/ ‘bicycle’

/kaᵑɟikeᵑɟike/ ‘type of crickets that make sharp sounds after rainfall”

d) /ᵑg/

/wanaᵑgu/ ‘my children’

/ᵑgazi/ ‘blood’

/ᵑgawahirire/ ‘let them go back’

/maniᵑgi/ ‘a lot’

/ᵑgirozi/ ‘angel’

/roᵑgera/ ‘organize for’

/ᵑgoma/ ‘type of wild animal’

/ɲaᵑga/ ‘horns’

/ɲoᵑgo/ ‘bile’

/ɲoᵑga/ ‘space between legs when one is standing”

/ᵑɟiᵑga/ ‘bicycle’

The above examples show that the voiced prenasalized stops /ᵐb, ⁿd, ᶮɟ, ᵑg/ occur with all the five vowels. There is place assimilation by the prenasal. Thus the prenasal to the bilabial stop [b] is also the labial [ᵐ]. The prenasal to the alveolar [d] is the nasal alveolar [ⁿ]. The palatal [ɟ] is prenasalized by the palatal nasal [ᶮ]. In a similar way, the velar stop [g] is also prenasalized by [ᵑ]. The prenasals and the stops form compound sounds. The prenasalised consonants also occur in any position within words.

The examples above show that the prenasalized sounds [ᵐb] [ⁿd], [ᶮɟ] and [ᵑg] are made with simultaneous strictures. As such, it is observed that the stops [b, d, ɟ, g] are simplex non-nasal stops. They attain nasality superimposed on them from the prenasals [ᵐ, ⁿ, ᶮ, ᵑ]. The prenasalized sounds are complex in two ways. Firstly, they have a compound place

of articulation. Secondly, they have conflicting manner features as they are [+nasal] [-nasal]. Taking the sound [^{m}b] as in [wafa^{m}bi] ‘travelers’ (4a) we can represent the place feature as follows:

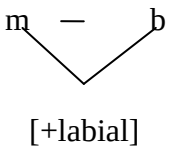

Figure 8.1: *Place feature of the prenasal sound [^{m}b]*

Figure 8.1 illustrates that the homologous articulated sound [^{m}b] has a single place feature [+labial]. It has to be pointed out that the compound sounds are complex but they are considered as single unitary sounds. Thus /wafa^{m}bi/ can be represented on the CV tier as below:

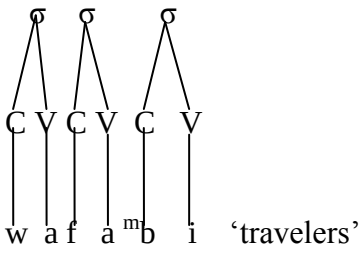

Figure: 8.2: *Prenasalised [^{m}b] on a single C slot on the CV tier.*

The figure 8.2 illustrates that the prenasalised sound [^{m}b] is a single sound and occupies a single C slot on the CV tier acting as a single syllable consonant margin.

However, it has to be noted that there is a syllabic nasal N̩ in Barwe which, with its different realizations [m̩],[n̩-] and [ŋ̩] does not prenasalize the voiceless labial [p, t, t^{h}, c, k] in Barwe. This has to be mentioned since in general orthographic representation N̩ is written as

m when it precedes [p] stem initial position. The syllabic nasal does not prenasalize the stem initial consonant. Resultantly it is not phonetically represented as *[^{m}p, ^{n}t, ^{ŋ}k]. It has to be [m̩-p, n̩-t, ŋ̩-k]. This means that the nasal and the voiceless stop occupy two different C slots in the CV tier, as it has been seen under the syllabic nasal section.

There are other circumstances where prenasalization takes place with the voiceless alveolar and velar stops. The following section discusses the prenasalization of alveolar voiceless stops [t] and [k] as another form of compound articulation found in Barwe. [t] and [k] are both [-voice]. These form compound complex sounds with [^{n}] and [^{ŋ}] respectively as discussed in the section that follows.

5. a) /^{n}t/

/^{n}teme/	‘type of wild tree’
/^{n}tu^{m}bu/	‘bulging stomach’
/^{n}ta^{n}da/	‘a log’
/^{n}tumi/	‘messenger’
/nove^{n}ta/	‘nine hundred’
/ku^{n}tera/	‘to follow up somebody’

b) /^{ŋ}k/

/^{ŋ}kati/	‘inside’
/^{ŋ}kali/	‘over proactive person’
/^{ŋ}kufu/	‘ornaments’
/^{ŋ}kuma/	‘ash used to soften okra’
/^{ŋ}kumi/	‘bad things that happen after doing bad things to others’

The examples (5a) and (5b) above demonstrate another occurrence of compound articulated consonants that are operational in Barwe, the alveolar [^{n}t] and velar [^{ŋ}k]. It can be noted that the stops predetermine the phonation to be taken by the compound sound as both [^{n}t] and [^{ŋ}k] are voiceless compound sounds. Thus, the voiceless sounds [t] and [k] predetermine the voicing of the prenasalised sound. However, it has to be pointed out that the issue of voicing did not arise in the discussion of examples in (5a) and (5b) as in other cases, both the nasal and prenasalised sounds are voiced. Taking /^{n}t/ as in the first /^{n}teme/ 'wild fruit' from the examples (5a), we can represent the phonation process of the prenasalized sound as follows:

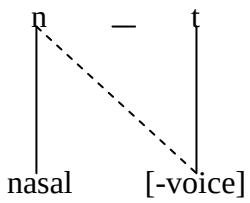

Figure 8.3: *Illustration of the phonation process of the prenasalised sound [^{n}t]*

The above figure shows that the nasal sound [n] takes the [-voice] feature. It modifies the [t] sound as a prenasal but makes a voice assimilation with the [t] to become voiceless. In terms of sound distribution, [^{n}t] occurs at different positions in words while [^{ŋ}k] favours word initial position. We note that its occurrence is a result of the N prefixation as discussed in Chapter 7.

As can be noted from the examples, [^{n}t] can be preceded by all the five vowels. As also demonstrated in examples (5b), [^{ŋ}k] precedes the two non-mid vowels [a] and [u] in syllable formation. The corpus search did not yield occasions of occurrence of [^{ŋ}k] preceding the vowels [i, e, o]. What it shows is that while both [^{ŋ}k] and [^{n}t] operate as prenasalized consonants in Barwe they differ in the way they are distributed in words.

Another form of complex and compound articulation occurs with aspirated stops [t^{h}] and [k^{h}]. The aspirated sounds found to be operational in Barwe are the alveolar [t^{h}] and the

velar [k^h]. The nasal N is realized according to the place of the following consonant. It is thus realized as [^{n}] before alveolar stop [t^h] and as [^{ŋ}] before [k^h]. As per noticed trend, the prenasal and the prenasalized sound share the place feature but contrast in manner feature. Consider the following examples.

6. a) /$^nt^h$/ /wa$^nt^h$u/ 'people'

/ka$^nt^h$u/ 'a small thing'

/^{n}tu$^nt^h$u/ 'place'

/$^nt^h$u^{n}du/ 'load'

/$^nt^h$o$^nt^h$o/ 'marshy place'

/$^nt^h$eme/ 'type of wild fruit'

/$^nt^h$u^{n}duluɟa/ 'inedible wild fruit'

b) /$^ŋk^h$/

/$^ŋk^h$ali/ 'clay pot'

/$^ŋk^h$unu/ 'eating greedily'

/$^ŋk^h$alamba/ 'old person'

/$^ŋk^h$ondo/ 'war'

/$^ŋk^h$ula/ 'thick porridge food'

/$^ŋk^h$uku/ 'chicken'

/$^ŋk^h$umba/ 'pig'

/$^ŋk^h$onde/ 'first name given to a person at birth'

/$^ŋk^h$anando/ 'fresh water crab'

The examples in (6a) show that the [$^nt^h$] compound can occur with the five vowels of Barwe. The compound sound can occur at any position in the word. Examples in (6b) show that the

compound [$^{ŋ}k^{h}$] has different phonological operations from [$^{n}t^{h}$]. Firstly the prenasalised aspirated stop occurs mainly word initially. As syllabic margin, it occurs before the low central [a], mid back [o] and high back [u] and not before the high front [i] and mid front [e] vowels.

It will be recalled that in the examples (5b) the prenasalized velar [^{ŋ}k] was mainly word initial and was also selective in vowels it preceded. Then we again witness the aspirated counterpart [$^{ŋ}k^{h}$] in (6b) being restricted in terms of position in the words and the number of vowels it precedes. It has to be noted that aspiration is not distinctive in Barwe. As such there are no minimal pairs involving aspirated and unaspirated sounds to bring about difference in meaning. As such at times to aspirate or not is of no phonological significance. In other words, the two can be used at the same position in a word without making a difference in meaning.

Also to be noted is that the [^{n}k] and [$^{n}k^{h}$] initial words above are nouns of classes 9 and 10. It can be argued that this is another case of nasal prefix (N) which is slightly different from what we witness in Chapter 7 examples (1a). In the examples of Chapter 7, [p] is nasalized to [m] as in the word [piripiri] which after the addition of the class 9 prefix N- prenasalization becomes [miripiri]. In the case of examples in (6b) of the present chapter the N that prenazalizes the aspirant as it also acts as the prefix of the nouns that now belong to the noun classes 9 and 10. Making observations about noun class 9 prefix in Ikalanga Mathangwane (1999:158) says,

> "Historically class 9 and 10 had a nasal prefix (*N-) for a class prefix but this has been lost in most of these nouns in Ikalanga. Today the remains of this prefix are found before voiced stops only, where unlike other class prefixes it is not syllabic but simply behaves as one segment with the following voiced stop, that is as part of a prenasalized stop."

Barwe, like Kalanga and the other Bantu languages has the Nasal prefix (*N-) reflecting as a prenasal to the stem initial consonants.

It has to be understood that the aspirated sound is a single sound and remains so even after prenasalization. The first example from (6a) will be represented on the CV tier as in the following figure.

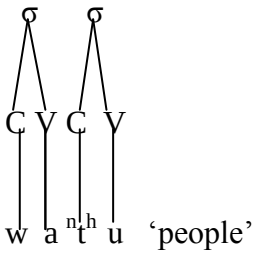

Figure 8.4: *Prenasalized aspirated [$^{n}t^{h}$] on a single C slot on the CV- tier.*

The above figure illustrates that the prenasalized aspirated sound [$^{n}t^{h}$] occupies a single slot on the CV tier. Affricates are also prenasalized in Barwe. There are voiceless and voiced affricates in Barwe. The following section looks at the prenasalization of the Barwe voiceless affricates.

8.1.2.2 Prenasalized Affricates

The voiceless prenasalized affricates that are operational in Barwe are the labio-dental [$^{m}p^{f}$] and the alveolar [$^{n}t^{s}$]. Examples of the voiceless prenasalized affricates are given below.

7. a) /$^{m}p^{f}$/

/$^{m}p^{f}$uti/ 'gun'

/$^{m}p^{f}$ula/ 'amarula fruit'

/$^{m}p^{f}$aji/ 'epilepsy'

/$^{m}p^{f}$ondo/ 'metal used to make holes on wooden tools'

/$^{m}p^{f}$iti/ 'type of tree with buck that has sting'

/$^{m}p^{f}$endekeɾa/ 'tooth that are over squeezed in the mouth'

b) /$^{n}t^{s}$/

/ʒe$^{n}t^{s}$e/	‘all of them’
/ci$^{n}t^{s}$ikana/	‘small/young girl’
/$^{n}t^{s}$iku/	‘night’
/$^{n}t^{s}$oso/	‘small bits of fire hood’
/$^{n}t^{s}$omba/	‘fish’
/$^{n}t^{s}$ima/	‘thick porridge food’
/$^{n}t^{s}$imba/	‘power/energy’
/$^{n}t^{s}$ato/	‘python’
/$^{n}t^{s}$eŋgwa/	‘small winnowing basket’
/$^{n}t^{s}$oka/	‘foot’

The above examples demonstrate that the labio-dental [p^{f}] and the alveolar [t^{s}] are also prenasalized. They form prenasalized compounds like [$^{m}p^{f}$] and [$^{n}t^{s}$]. They occur with all the five vowels of Barwe. [$^{n}t^{s}$] occurs in any position of the word while [$^{m}p^{f}$] favours the word initial position.

It is interesting to note that there is no direct prenasalization of the fricatives [f] and [s]. They are only involved in prenasalization when they occur as part of affricates. Thus Ngunga (2000:68) notes that, “There are some exceptional cases where the classes 9 and 10 marker fails to trigger consonant alternations.” As a general rule there is no nasal before fricative sounds a process which Ngunga (opt cit) calls nasal affacement. The Barwe examples that follow demonstrate the nasal affacement process.

8. a)	/s/	/N-simbi/	→	[simbi]	(cl.9/10) ‘metal’
		/N-sepa/	→	[sepa]	(cl.9/10) ‘soap’

b) /ʃ/ /N-ʃamwali/ → [ʃamwali] (cl.9/10) ‘friend’

/N-ʃaʃa/ → [ʃaʃa] (cl.9/10) ‘expert’

c) /f/ /N-foni/ → [foni] (cl.9/10) ‘phone’

/N-foɾʒa/ → [foɾʒa] (cl.9/10) (tobacco)

The above examples demonstrate the non-occurrence of nasals before the fricatives /s, ʃ, f/ Taking the first example from (8a) we can represent the nasal affacement process as follows:

9. $N \rightarrow \varnothing / - \cdot S$

The above example demonstrates the nasal affacement taking place before the fricative /s/. The rule shows that the class 9/10 nouns with the above mentioned fricatives initial stem have no nasal before them.

Having looked at the prenasalization of the voiceless affricated sounds, the next section looks at the prenasalization of voiced affricated sounds [b^{v}] and [d^{z}].

These form compound sounds as they are prenasalized with [^{m}] and [^{n}] respectively. The complex prenasalized labial affricates compound consonants are presented in the examples that follow.

10. a) /$^{m}b^{v}$/

/$^{m}b^{v}$ere] ‘fur’

/$^{m}b^{v}$u/ ‘hippopotamus’

/$^{m}b^{v}$i/ ‘grey hair’

/$^{m}b^{v}$ema/ ‘type of insect’

/$^{m}b^{v}$iko/ ‘leaves put on water container to limit spilling.

/$^{m}b^{v}$unde/ ‘type of cucumber’

/$^{m}b^{v}$uwe/ ‘additional porridge for cooking thick porridge’

/$^{m}b^{v}$ana/ ‘a woman who has had a child’

b) /$^{n}d^{z}$/

/$^{n}d^{z}$iwa/ ‘know’

/$b^{v}u^{n}d^{z}$ani/ ‘ask’

/$^{n}d^{z}$ala/ ‘hunger’

/$^{n}d^{z}$aŋa/ ‘type of edible tuber’

/$^{n}d^{z}$ama/ ‘type of ground nuts’

/$^{n}d^{z}$ira/ ‘path/way’

/ma$^{n}d^{z}$uŋgu/ ‘groundnuts’

/u$^{n}d^{z}e^{n}d^{z}$a/ ‘a non-attentive and playful person’

/ku$^{n}d^{z}$ula/ ‘act of lifting up dress to show private parts by a woman’

/ku$^{n}d^{z}e^{n}d^{z}$ereka/ ‘staggering step’

The above examples demonstrate that the [+labial] affricates [b^{v}] make a compound sound with [^{m}] which is also [+labial]. The alveolar [d^{z}] makes a compound sound with [^{n}]. The nasal element is superimposed on the affricates. Thus, the compounds [$^{m}b^{v}$] and [$^{n}d^{z}$] are both [+voice]. They both occur with the five vowels that are operative in Barwe. [$^{m}b^{v}$] favours the word initial position as a result of the class 9/10 nasal prefixation also described above. The alveolar [$^{n}d^{z}$] occurs at any position within words as it even allows for repetition within a single word as in the last two examples of (10b).

Also prenasalized in Barwe are the voiced fricatives as discussed in the section that follows.

8.1.2.3 Prenasalization of voiced fricatives

Besides the stops which have been demonstrated to be prenasalized in the above examples, there are also occurrences of prenasalized fricatives in Barwe. The fricative sounds that have been observed to be involved in compound prenasalization are the alveolar [z] which is [+alveolar] [+coronal], and [ʐ] which is [+alveolar] [+labial]. The section below looks at prenasalization of the two. Consider the following examples:

11. a) /ⁿz/

/ⁿzala/	'hunger'
/soweⁿza/	'work'
/ⁿzowu/	'elephant
/ⁿzimuⁿdiliᵑge/	'dangerous place'
/ⁿziɾe/	'reeds'
/ⁿzeɾu/	'brain'
/zeɓwa/	'problem of being forgetful'
/ⁿzuᵑgu/	'groundnut'
/haⁿzu/	'clothes'
/uⁿza/	'bring'
/ɗoⁿza/	'make/mend something'

b) /ⁿʐ/

/ⁿʐaɗe/	'woman who gave birth recently'
/ⁿʐeᵑga/	'dribble'
/ɗuⁿʐi/	'leader of group'
/ⁿʐiɾu/	'type of wild fruit'
/ⁿʐoɲo/	'penis without sheath'

/ⁿʐiʃe/ ‘unmarried person of marriageable age’

/dɔⁿʐi/ ‘senseless person’

/ⁿʐeŋgeɾeɾa/ ‘going and disappearing behind something’

/ⁿʐuwo/, /nʐijo/ ‘lid of a container’

The examples above show that both the alveolar fricative [z] and the retroflex [ʐ] are prenasalized with [ⁿ]. Both fricatives are [+voice], a feature they both pass onto the prensalized compound. As prenasalized sounds they both precede all the five vowels of Barwe. They also occur at various positions in words and are not restricted in their distribution. It shows that prenasalization is not only confined to noun class 9/10 nasal prefixation. As demonstrated in the above examples, prenasalization can occur word internally as well.

As already noted above, [ʐ] is [+alveolar] [+labial], as a doubly articulated sound. It can be prenasalized, making it a much more complex sound as it already has double articulation. It already has a double constrictions which are [+labial] [+alveolar].

Barwe has short vowels and characteristically involvement of the compound nasalized sounds does not effect vowel lengthening as has been observed to take place in other Bantu languages. In other words in Barwe there is no vowel length be it compensatory or contrastive. See the following examples:

12. /sowe^{n}za/ ‘work’

/ⁿʐeᵑgeɾeɾa/ ‘going and disappearing behind something’

/ku^{n}dᶻula/ ‘indecent act lifting up dress by a woman’

/tu^{m}bu/ ‘bulging stomach’

/^{n}ta^{n}da/ ‘a log’

By listening to the articulation of the above examples it was observed that there is no lengthening of the vowel preceding the prenasalized sound. Thus the vowels preceding the prenasalized sounds remain short which is unlike other languages that have vowel lengthening after the prenasalization. Consider the Ciyao examples from Hyman and Ngunga (1997).

13. Vowel lengthening before moraic N+C

/ku-gumb-a/	[ku.gu:^{m}b-a]	'to mould'
/ku-tend-a/	[ku.te:^{n}d-a]	'to do'
/ku-saɲj-a/	[ku.sa:^{ɲ}j-a]	'to sharpen (tool)'
/ku-ciŋg-a/	[ku.cii:^{ŋ}g-a]	'to herd'

In the Ciyao examples above it is demonstrated that the vowel preceding the prenasalized consonant is realized as a long vowel. This is similar to Lungu language. As given by Nasukawa (2010:), "In Lungu a vowel is always long in a pre-NC contexts eg /u/ in [muu-ntu] 'person'. Barwe vowels remain short. Nasukawa rightly acknowledges that some languages are restrictive and would not allow the vowel lengthening resulting out of moraic remodification. As noticed, Barwe is one of the languages that are restrictive and does not allow vowel lengthening.

8.2 Summary

The chapter set to discuss the operations of Barwe phonemes as simplex and complex sounds. It was noted that the simplex sounds are characterised as having single articulator and single place of articulation. They therefore are made with a single stricture. On the other

hand some of the complex sounds are made with simultaneous strictures at different points while others such as compound sounds are characterized by contrasting manner such as compounds. Also in the complex sounds category are doubly articulated sounds. Examples of doubly articulated sounds given are [w], [ʂ] and [ʐ]. The doubly articulated sounds have been shown to be complex on their own without any other sound imposition on or from another portion sound.

The doubly articulated sounds are different from the complex prenasalized sounds which have portion sounds produced as single sounds some of which were given as: [^{m}b, ^{n}d, ^{n}z, ^{n}ʐ, ^{n}ɟ, ^{ŋ}g, ^{ŋ}k, ^{ŋ}k^{h}, ^{n}t^{h}]. Thus it was demonstrated that prenasalization occurs with various sounds, that is stops, aspirated stops, affricates and voiced fricatives. It was also noted that as a rule, there is no prenasalization of voiceless fricatives in Barwe. Prenasalized sounds were demonstrated to be unitary sounds with single C value on the CV tier. Also noted is the fact that prenasalization in Barwe does not result in vowel lengthening of the preceding vowel as is the case in Ciyao.

The next Chapter 9 looks at the process of labiovelarization as part of complex sound production in Barwe.

CHAPTER 9: Secondary articulation: Labiovelarization

9.0 Introduction

Secondary articulation involves stricture at two different positions in the production of a single sound. As pointed out in Chapter 8, secondary articulations are defined as those associated with constrictions ranking lower than main articulations. What is noted is that, like in the case of double articulation, there is also double stricture occurring with secondary articulation. What distinguishes secondary articulation from double articulation is that in the former, the degrees of the two strictures differ. One is of higher degree of stricture while the other one is less. Consider the following examples:

1. /m^{w}/ /m^{w}ana/ ‘child’
   /k^{w}ana/ ‘enough’
   /ɲat^{w}a/ ‘problem’

In the above examples we see that there is higher degree of stricture in the articulation of /m, k, t/ which are stops preceding /w/ which is an approximant. Thus Ladefoged and Maddieson (1996) put it, “Secondary articulation is that it is an articulation of a lesser degree of stricture accompanying a primary articulation of a higher degree.” In the examples above, the stops /m, k, t/ are the primary strictures and /w/ is the secondary stricture. The greater constriction is said to be the primary or major articulation while the lesser stricture is the minor or secondary articulation. Thus, secondary articulation is mainly characterised by the major-minor dichotomy. Like the name of the process denotes, there is a second articulation that takes place after the main one. As such, labialization and velarization are commonly featured in the description of secondary articulation. Also important to note is that secondary

articulation results in complex doubly articulated sounds. The main one is the major and the secondary one being the minor.

The difference given between compound and secondary articulated segments is that the former are not categorised in terms of being major or minor while that distinctive dichotomy is the main categorisation in the later. In prenasalization, as the name implies the modification occurs on the sound production onset while labialization and velarization are a post-modification coming after the major sound.

The next section discusses sound modification by [w].

9.1 The Labial and velar features of [w].

As noted [w] is a labio-velar sound. Ideally there is supposed to be both labial and velar movements on its articulation. However as shall be noticed in the discussions of this chapter it will be demonstrated that one of the two features is more pronounced as the [w] sound is involved as the minor articulation to the other various major sound articulations. However it can be demonstrated that there is both labial and velic movement when it is articulated not as minor articulation to any other sound. Consider the following examples:

2. /wana/ ‘children’
   /wentse/ ‘all of them’
   /wudza/ ‘tell’
   /lowola/ ‘marry’

In the above examples /w/ is articulated independently and not as a secondary articulation to any other sound. It becomes the ideal situation where we have the sound being articulated

with the features [+labial] [+velar]. We thus can represent the velar labial features of [w] as follows:

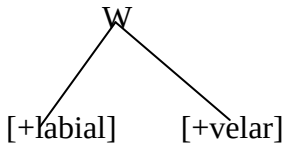

Figure 9:1 *Feature properties of [w]*

The above figure demonstrates that [w] has the features [+labial] and [+velar]. Ideally, its involvement as secondary articulation is supposed to add the two features to the new complex sound but as shall be seen in the discussion there are circumstance that allow for that and others that inhibit or limit the passing on of one of the feature in a given complex sound production.

There are instances when phoneticians remove the [w] from the picture in describing the velarization and labialization. Thus commenting on Doke's definition Mathangwane (1999:107) notes,

> "His use of the term velarization for both (labialization and velarization) processes stems from his definition of velarization, given in which the labio-velar glide /w/ is simply referred to as velar semi-vowel instead of a labio-velar glide. Doke's classification which considers both plain velarization and secondary labialization under the same umbrella of velarization can be confusing to the reader. (.....) the labiality in the labiovelar glide is lost changing the primary place of articulation of the sound into a velar."

What can be noted is that the involvement of the [w] can result in various phonetic processes some whose descriptions do not clearly acknowledge the involvement of the [w] glide in their production. What we realise is that there is a difference in the way [w] modifies the sounds. There is raising of the back of tongue resulting in velarization of some of the sounds whilst there is more latitude for lip rounding with others resulting in labialization and both processes

take place simultaneously with the major articulation. Consider its involvement with the labial and velar sounds as demonstrated in the following examples:

3.a) /i^{m}b^{w}a] ‘dog’

/m^{w}ana/ ‘child’

/ɓ^{w}eɾa/ ‘come’

b) /k^{w}ana/ ‘enough’

/g^{w}eɾa/ ‘be swollen’

/iŋg^{w}e/ ‘leopard’

In the above examples (3a) [w] comes after the labial sounds [^{m}b], [m] and [ɓ]. As the three are already labial sounds there is no latitude for further labial movement for the [w] minor articulation. Instead there is more latitude for velar movement. [w] comes after the velar sounds [k], [g] and [^{ŋ}g] in (3b). There is limitation in velar movement as the major articulations are velar stops. Resultantly there is more latitude for labial movement as shall be further demonstrated below.

What is important is the degree and extent to which the articulatory organs are moved. As such it is not possible to discuss one and totally ignoring the other. Fittingly, in the sections below the processes are discussed as emanating from the [w] glide formation process.

As earlier on mentioned, the purpose of all these complex consonant production is to increase the segmental inventory from the simplex consonants. As also noted, these processes are not bent on creating totally new segments but use is made of those simplex consonant in a complex manner to increase segmental inventory. These complex sounds are contrastive to

the simplex ones as demonstrated in the following examples where non-labiovelarized sounds contrast with the labiovelarized ones.

4.	/mana/	'mana'	/m^{w}ana/	'child'
	/tara/	'tar'	/t^{w}ara/	'carry'
	/saka/	'as such'	/sak^{w}a/	'be sought after'
	/kana/	'fight'	/k^{w}ana/	'enough/sufficient'

The above examples demonstrate that simplex sounds are contrastive to complex sounds that involve [w] as the secondary articulation. Complex sound production, as earlier on pointed out, is meant to increase sound inventory in the language. At the same time the term "complex" is mainly a phonetic perception as the actual articulation is done with utmost ease as there is mostly concurrent and synchronised articulation.

It has been pointed out that labialisation and velarization involve the [w] glide. It was demonstrated in Chapter 5 that there is occurrence of the [w] glide that results in Barwe from one of the hiatus resolution rules. As such before delving into the issue of labialisation and velarization there is need to clear the position with regards to this glide.

9.2 Secondary articulation and [w] glide formation

It was described in Chapter 5 that glide formation involves change of one of the vowels in a hiatus situation. As glides, they are produced with freer passage of the airstream. As also described, the glide formation is meant to break hiatus as Barwe tries to avoid geminate vowels. In the process, the back vowel [u] becomes glide [w]. Some of the examples that have been given in Chapter 5 are as below:

5.	/w/	/mu+ene/	→	[mwene]	'owner'

/mu+iɾi/	→	[mw-iɾi]	‘body’
/ku+enda/	→	[kwe-nda]	‘to go’
/mu+ana/	→	[mwa-na]	‘child/kid’
/mu+ando/	→	[mwa-ndo]	‘cold/moisture’
/mu+aka/	→	[mwa-ka]	‘season’
/mu+endo/	→	[mwe-ndo]	‘leg’

The above examples are a recap of the discussion on [w] glide formation as it has been given in Chapter 5. In the example [u] becomes [w] in order to avoid sequencing of [u] and another vowel as vowel sequencing is not favoured in Barwe. Of interest in this section is the occurrence of [w].

Once [u] becomes [w] in the process of avoiding hiatus, it automatically leads to labiovelarization of the consonant it precedes. We see that the [w] gets to involve with the preceding consonant by way of secondary articulation to the preceding consonant. The discussion here points to the fact that hiatus resolution brings about the presence of the glide [w]. However, the presence of the glide also leads to further phonological interaction as the [w] now acts as a sound modifier to the preceding consonant. So [w] is found to be a modifier to the preceding consonant, be it as a product of hiatus resolution or a result of ordinary sequential ordering in syllable formation.

One of theoretical tenets applied in this study is lexical phonology. According to Goldsmith (1996:218) “Lexical rules are involved, first, those phonological adjustments that are fundamentally occasioned, or triggered by the juxtaposition of morphemes.” The phenomenon is called cyclic in that after the morphological alignment that also triggers newer phonological set-ups, there has to be a new phonological assessment in order to

understand the new phonological set up as demonstrated with the word [mwene] ‘owner’ and [mwendo] taken from examples (5). These are demonstrated below:

6. noun prefix /mu-/ + noun stem /-ene/ → [mwene] ‘owner’

   Noun prefix /mu/ + noun stem /endo → [mwendo] ‘leg’

In the first example the vowel of the prefix becomes a [w] glide. Similarly in the second example the vowel [u] of the prefix also becomes a glide. We can see that before being conjoined, the prefixes and the stems had their own phonological properties which got altered as they combined. The lexical phonology theory premises on the morphological and phonological interaction of the small and bigger domains that syntagmatically combine. This in a cyclical analysis we apply the phonological rule firstly on the smaller domains which in the case of the above examples are the prefixes and the noun stems. We again apply the rules on the bigger domain which is the noun itself. The cyclical process may also apply in phrasal and sentence structures.

So, in the above examples we saw the formation of the [w] glide. Going by that, we are going further to check on the phonological impact of the [w] on the preceding consonant as its existence leads to velarization which is the subject of this discussion.

Thus with the glide formation that has been described above, there is a new phonological configuration to the words. So, glide formation is a phonological process concerned with vowels. After the disappearance of the vowels as a result of hiatus resolution, new phonological set-up allowed in Barwe takes place. We then can have a consonant followed by [w] and the processes of labialization and or velarization takes place. The study does not make a categorization of the [w] that comes out of glide formation but makes an analysis of the segmental ordering that there arises. The study makes a general analysis of the

interaction between [w] and the preceding consonant. It seeks to discuss and demonstrate when it velarizes the preceding consonant and when it labializes the preceding consonant. Now that the response by different consonants differs when followed by [w] it is important to discuss the processes and the terms that describe them.

9.3 The terms 'velarization', 'labialization' and 'labiovelarization'

The general term 'velarization' makes reference to the raising of the back of the tongue during sound production. Thus according to Chimhundu (2002:113-114),

> "These (Cw) sequences involved velarization or raising of the back of the tongue as a secondary articulation. The distribution of /w/ which has several allophones in this position, is very wide. It can be preceded by about every other unit consonantal phoneme. The articulation of /Cw/ simply involves the articulation of the C segment or sequence plus velarization and or labialization as in: [pkere] 'young children' [batxwa] 'get caught,' [kwete] 'no'."

Thus from the above citation, we have [k], [x] as allophones of [w]. As noted the distribution of these is very wide. However, what determines the raising of the back or lip protrusion is the position of the sound receiving the secondary articulation. If the sound is anterior there is more of the raising of the back as from the citation we can see that the secondary articulation sounds to [p] and [t] and [k]. Since [k] is velar, there is more room of labial movement hence it has [w] as the secondary articulation.

Fortune (2004), Laver (1994) also point out that [ɣ] is yet another velar sound that occurs in some languages. Its occurrence in Barwe is demonstrated in the following examples:

7. /t^{ɣ}a^{ŋ}gu] 'bits belonging tome'

   /ɲat^{ɣ}a/ 'problem'

   /t^{ɣ}ara/ 'carry'

The above examples demonstrate the occurrence of [ɣ] in Barwe. The process that leads to the production of the velar sound is further discussed below. Thus velarization emphasises the raising of the back of the tongue towards the velum during secondary articulation as in the following:

8. [m^{w}ana] ‘child/kid’
   [ʃam^{w}ali] ‘friend’
   [zimbab^{w}e] ‘name of country’
   [memb^{w}e] ‘duiker’
   [pweɾe] ‘young child’

The above examples show that there is more of the raising of the back of the tongue in the articulation of [w] in the words. On the other hand there is also labiovelarization that takes place with other consonants. This means there is both labialization and velarization taking place as in the following:

9. /neɾwa/ ‘get beaten’
   /ɓatwa/ ‘be caught’
   /ɓaɾwa/ ‘be born’
   /izwa/ ‘listen’
   /sweɾa/ ‘spent the day’

Thus there is both labialization and velarization taking place in secondary articulation in the examples above. Befittingly, we can say there is labiovelarization taking place. On the other

hand there is more of labialization taking place with other consonants. Consider the following examples:

10. /k^{w}ana/ ‘enough’
    /k^{w}eneko/ ‘at the place’
    /^{ŋ}g^{w}ala/ ‘be clever’
    /^{ŋ}g^{w}ena/ ‘crocodile’
    /pu^{ŋ}g^{w}e/ ‘name of one of Mozambican rivers’

The examples above demonstrate that the involvement of [w] in secondary articulation results in labialization of the preceding consonant. As demonstrated, depending on the place feature, different sounds result in different organ movement during secondary articulation involving [w].

The process produces complex sounds in that the sounds there produced have a double place feature. Thus the labial stops [p, ɓ, m] and prenasalized stop [^{m}b]can be velarized while the alveolar stops [t], flap lateral [ɾ] and alveolar fricatives [s, z] are labiovelarized. Velar stops [k, g] and prenasalized stop [^{ŋ}g] are labialized.

9.3.1 Velarization of labial oral stops

The labial stops found to be involved with [w] in secondary articulation in Barwe are the plosive [p], and the implosive [ɓ] as in the examples that follow:

11 a) [p^{w}] /m̩-pweɾe/ ~ /m̩-p^{k}eɾe/ ‘young child’
    /pwata/ ~ /p^{k}ata/ ‘talk lies’
    /kupwa/ ~ /kup^{k}a/ ‘to dry up’

	/pwititi/	~	/p^{k}ititi/	‘being smoky’
b)	/ɓ^{w}]			
	/ɓ^{w}eɾa/			‘come’
	/ɓ^{w}eza/			‘be afraid of’
	/ɓ^{w}ino/			‘being fine heath-wise’
	/ɓ^{w}iɾa/			‘act of putting powdery food into the mouth’
	/ɓ^{w}ititi/			‘being smoky’
	/ɓ^{w}eka/			‘hitting something to cause a dent’
c)	/m^{w}/ ~ /m^{ŋ}/			
	/m^{w}eneciɾo/	~	/m^{ŋ}eneciɾo/	‘owner of something’
	/ʃam^{w}ali/	~	/ʃam^{ŋ}ali/	‘friend’
	/m^{w}ana/	~	/m^{ŋ}ana/	‘child’
	/m^{w}enda/	~	/m^{ŋ}enda/	‘leg’
	/m^{w}eja/	~	/m^{ŋ}eja/	‘air/spirit’
	/gom^{w}a/	~	/gom^{ŋ}a/	‘to be hit with a hard object’
d)	/^{m}b^{w}/ ~ /^{m}b^{g}/			
	/m̩-to^{m}b^{w}e/	~	/m-to^{m}b^{g}e/	‘medicine’
	/^{m}b^{w}e/	~	/^{m}b^{g}e/	‘act of many people sitting down’
	/i^{m}b^{w}a/	~	/i^{m}b^{g}a/	‘dog’
	/t^{h}a^{m}b^{w}e/	~	/t^{h}a^{m}b^{g}e/	‘homestead’
	/came^{m}b^{w}e/	~	/came^{m}b^{g}e/	‘belonging to a duiker’
	/ndase^{m}b^{w}a/	~	/ndase^{m}b^{g}a/	‘am engaged’

From the above examples (11a-b) it can be noted that there is secondary articulation taking place, with the major articulations being on [p] and [ɓ]. The labiovelar [w] velarizes [p] to have [p^{w}]. With an increased effort there can be much more pronounced raising of the tongue and that leads to the production of the velic stop [^{k}] which as demonstrated is an allophone of [w]. As such there is more of velic activity in comparison to the labialization because [p] is labial. Therefore, it can't get labialization feature any more. This tells that labio-velar glide [w] velarizes the labial consonants.

The case of [p] modification by [w] can be a case of offglide. As given by Hyman (2003a:55) 'While a [y] glide or offglide can trigger palatalization, [w] is responsible for velarization as in Rundi-Rwanda and Shona (...) as in *bw* [bgˌ], *fw* [fk] *mw* [mŋ] *tw* [tkw] (....)" As demonstrated with the [p] examples the Cw results in a velar stop and as such we end up with Ck configuration.

In the case of examples in (11b) the secondary articulation remains an unhardened offglide. There is less raising of the back of the tongue in the secondary articulation involving [ɓ]. The involvement of [^{w}] with [ɓ] does not lead to the pronounced raising of the back of the tongue towards the soft palate to produce a velar stop. Since [ɓ] is a bilabial stop, there is limited labialization and we get more of velarization. Thus labial stops have more of velaric secondary movement and limited labial secondary movement.

The labio-velar sounds are shown to be complex in that they are characterised by two oral articulator features. Thus for [p^{k}] as in examples (11a) the double articulator features are [+labial] [+velar] representing the two constrictions that occur in the production of the complex sound. At the same time [$ɓ^{w}$] of examples (11b) also have the same features but what differs between the two is the extend to which each velarizes. Thus with [p^{k}] the velarization leads to a total stop [k] whilst in [$ɓ^{w}$] there is only approximation.

The primary articulated sound determines the phonation of the complex articulated sound. Thus in the above examples [ɓ] is voiced and the velarized sound [ɓ^{w}] is [+voice]. The major articulated plosive [p] is [-voice] and the velarized [p^{w}] is [-voice]. It may be redundant to talk about voicing of [ɓ^{w}] since both [ɓ] and [w] are voiced. However there is voice assimilation in the case of [p^{w}] where [p] is voiceless and [w] is voiced but assimilates and becomes voiceless. We can represent the voice assimilation using [p^{w}] of [m-p^{w}ere] from examples (11a) as follows:

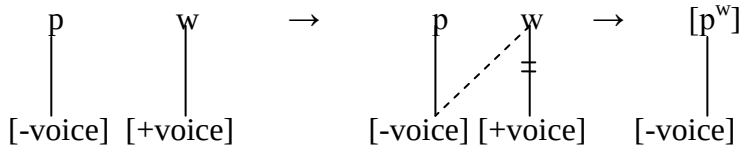

Figure 9.2: *[w] voice assimilation process*

The above figure shows the voice assimilation that takes place when [w] occurs as a secondary articulation to a voiceless sound. As demonstrated initially it is a voiced sound. It then delinks from the [+voice] feature and relinks to the [-voice] of [p] to also become voiceless. The major sound passes the phonation to the secondary articulated sound. At the same time [m] is classified as a nasal labial stop.

In the examples (11c) there is more of velarization taking place. The examples demonstrate the general velarization of the nasal stop [m] that results from the involvement of labio-velar [^{w}]. The bilabial closure results in the latitude to raise the back of the tongue. When we have a labiovelar after the labial consonant there is limited labialization. There is more of velarization.

In examples (11c) it can be noted that a bilabial closure allows for free raising of the back of the tongue that results in velic closure which results in [ŋ] production. It demonstrates that an anterior closure allows for the raising of the back of the tongue which as noticed from

examples result in the production of [ᵑ] if articulated with some effort. Discussing diachronic velarization in Kalanga, Mathangwane (1999:108) notes, that "the secondary articulation is hardened developing into a closure." Taking the first example [mʷeneciro] where we have velarization to [mᵑeneciro] we can show the phonological development of [mʷ] to [mᵑ] as follows:

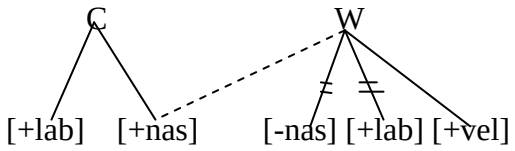

Figure 9.3 *Nasalization process of [w]*

The figure 9.3 above shows the nasalization process involving [w]. In the first instance [w] is [-nasal], [+labial] and [+velar]. On the other hand the [m] as represented by C is [+labial][+nasal]. As demonstrated in the figure, [w] links with the C to assimilate the feature [+nasal]. We can also represent the nasalization process of [w] as in the following figure:

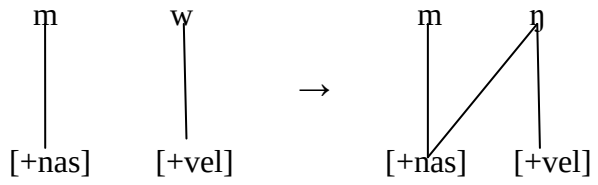

Figure:9.4: *Nasalization process of [w] to [ŋ].*

In the above figure is a [w] has the feature [+velar]. Considering that it is preceded by a labial stop which inhibits the [w] to cause labial protrusion. It is then linked to the nasal feature. It then hardens to become a nasal stop [ŋ]. Conclusively, when [m] is involved with the [w] in

secondary articulation there is more of velarization than labialization. The above figure shows that the [w] can assimilate and nasalize and also hardens to become a velar stop.

The secondary articulation in which the glide result in the velic closure is also noted in the following discussion involving the velarization of the prenasalize /^{m}b/ as demonstrated in examples (11d).

Some of the sounds that are already complex engage in secondary articulation as they gain more complex characteristics. A case in point is the prenasalized [^{m}b]. It will be recalled that [^{m}b] was described as complex single compound sound in Chapter 8. It is a [+labial] sound. As can be noted in the examples (11d) the prenasalized sound gets velarized to become /^{m}b^{w}/ and is sometimes /^{m}b^{g}/ if articulated with some extra effort. Both are realizations of the same sound.

As earlier on noted, labial sounds have restricted labialisation movement as the lips come together to produce a labial stop sound. At the same time, in the secondary articulation of these sounds there is latitude for the raising of the back of the tongue towards the soft palate which results in the closure at the velum producing an accompanying velar sound [^{w}] and or [^{g}]. [^{m}b] is already a labial sound. There is no room for further lip protrusion to labialize. As observed by Hyman (2003a:55) “When the Cw hardens labial offglide is lost or absorbed once the C is labial.” As such, there is more of raising of the back of the tongue making velarization more pronounced.

The prenasal remains a modification to [b] but has no influence on the post-velarized secondary articulated sound.

Also found to be involved in labiovelarization process are the Barwe alveolar sound, /t, s, z/. This is the subject of discussion in the next section.

9.3.2 Labiovelarization of alveolar sounds [t,s,z]

It has been earlier on noted that Doke realises the secondary articulation involving the glide [ʷ] as simply velarization. In this study we are demonstrating that this varies with the place feature of the primary sound. As has been demonstrated earlier on, there is more of velarization with labial sounds than there is labialization. In the following examples, the labiovelar [ʷ] is shown as effecting secondary articulation on alveolar sounds [t], [s] and [z].

12. a) /tʷ/

/tʷaᵑgu/	~	/tʸaᵑgu/	'bits belonging tome'
/ɲatʷa/	~	/ɲatʸa/	'problem'
/tʷara/	~	/tʸaɾa/	'carry'
/ɓatʷa/			'get caught'
/jitʷa/			'done'
/profitʷa/			'be prophesied'
/namatʷa/			'be prayed/worshipped'

b) /sʷ/

/sʷikiɾa/	'be able to touch something above'
/wobudisʷa/	'is led out/taken out'
/asʷeɾe/	'he/she spent the day'
/sʷika/	'arrive'
/mpasʷanyi/	'give someone something'

c) /zʷ/

/wanazʷa/	'they hear/understand'
/zʷentse/	'all of them'
/zʷace/	'his/hers'

/maz^{w}i/	‘words/voices’
/kuz^{w}a/	‘to hear’
/ɲa^{ŋ}gaz^{w}a/	‘abhorrent feeling’

In the examples (12a) it can be noted that the alveolar [t] can allow for both the labialization and velarization. There is latitude for lip protrusion and simultaneous raising of the back of the tongue. The production of the alveolar [t] gives leverage for organ movements at the labial and velar positions on secondary articulation. As such, in the above examples [t^{w}] is modified by way of simultaneous labialization and velarization. Discussing velarization in Ikalanga, Mathangwane (1999:109) says, “On the other hand secondary labialization is unrestricted in that it is found on the alveolars in this language.” This is unlike in the case of bilabials in which the lips come together to produce labial stops limiting any further labialization. The articulation of [t^{w}] does not hinder further labialization. This can be a clear case where the term labiovelarization can be applied to capture the secondary articulation. It is also a clear act of offglide that has not resulted in velar hardening.

However as observed in the first three examples of (12a), there are cases where the velarization results in the fricative sound [ɣ]. The three examples where there was evidence of velarization were captured from the corpus.

In the above [t^{ɣ}] is the alphonic realization of [t^{w}] found to be occurring in Barwe. The secondary articulation where there is the raising of the back of the tongue results in the occurrence of the velarized voiced fricative [^{ɣ}]. It has the features [+fricative + velar, -voice]. There is pronounced constriction from the [w] which is [+velar], [+labial], [+voice,] but is [-fricative]. We can present the frictivization process as in the figure on next page.

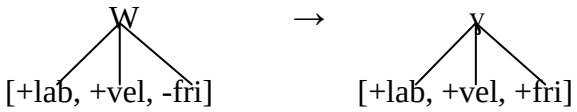

Figure 9.5: *The velarization of approximant [w] to a velar fricative [ɣ].*

From the above figure [w] is [+ labial] [+velar]. Those features are maintained as there is further velarization that produces the fricative [ɣ].

The velar fricative becomes the minor articulation to [t] to produce [$t^{ɣ}$]. The fricative comes with an effort in terms of articulation. Although [t^{w}] is more prevalent, as noted, there are instances [$t^{ɣ}$] occurs as an allophone and in some instances it consistently occurs in some individuals' speech. Thus, Mathangwane (1999:107) further notes that,

> "Even though both are derived from the same process of velarization in the development of the plain velarization, the labiality in the labiovelar glide is lost changing the primary place of articulation of the sound into a velar.(....). In other words, the secondary articulation is hardened developing into a velar closure."

In this particular case it is not total closure but a pronounced velar constriction that results in the production of the velar fricative [ɣ]. Going by Mathangwane assertion, it can be noted that the process and all the other processes of secondary articulation here discussed do not create new syllable configurations as it remains the same sound that remains a glide and or hardens through velarization.

As also demonstrated in examples (12c) and (12d) the fricatives [s] and [z] are also labiovelarized. There are a number of fricatives present in Barwe. As has already been pointed out, the Barwe consonant inventory includes the labials [v] and [f] the alveolar [z], [s], [ʂ] [ʐ], the palatals [ʒ] and [ʃ] and the velar [ɣ]. However, not all of these have been found to allow labiovelarization. A search in the Barwe corpus has shown that it is mainly the alveolar fricatives [z] and [s] that allow labio-velarisation as secondary articulation as shown in the examples (12c) and (12d) above.

The examples demonstrate that labiovelarization resulting from secondary articulation does occur with the Barwe fricative consonants [z] and [s]. The two occur as the major articulations. As has been noted with other alveolar sounds, the above fricatives allow for the labiovelarization movement. There is both labial and velar movement.

The majority of the articulations have been shown to be mainly stops. Thus, in secondary articulation there is structuring in which there is movement from a major articulation to the minor. However the involvement of fricatives as major articulations has been found to be selective as demonstrated in the examples (12b) and (12c) above, only [s] and [z] partake in this kind of phonological activity.

Below we look at the labialization of the velar stops

9.3.3 Labialization of velar stops

The Barwe velar stops that are involved in labialization are [g], [k] and the prenasalized [^{ŋ}g]. [g] and [^{ŋ}g] are [+voice] while [k] is [-voice]. The occurrence of the consonant sounds with secondarily articulated sounds are as demonstrated in the examples that follow.

13. a) /g^{w}]

/g^{w}embe/	‘animal skin disease’
/ag^{w}a/	‘adopted Portuguese word for water’
/g^{w}eɾa/	‘to be swollen’
/g^{w}ida/	‘push’
/g^{w}anda/	‘cut with axe’

b) /k^{w}/

/k^{w}eneko/	‘at that place’

/anatik^{w}anisa/ ‘is able to satisfy us all’

/ŋ-k^{w}ambo/ ‘son-in-law’

c) /^{ŋ}g^{w}/

/^{ŋ}g^{w}ena/ ‘crocodile’

/ʐinalo ^{ŋ}g^{w}a/ ‘it gets arranged/organised’

/^{ŋ}g^{w}ala/ ‘be clever/wise’

/pu ^{ŋ}g^{w}e/ ‘name of one of Mozambique’s big rivers’

The examples (13a-c) demonstrate that there is prevalently labialization in the production of secondary [w] sound on the primary stop sounds [g], [k] and the prenasalized [^{ŋ}g]. There is simultaneous double articulation when they get velarized. The primary sounds are produced at the velum and in the reverse manner to secondary articulation of labial sounds there is more of labialazation.

Since the primary sounds are already velar, there is more room for lip movement to labialise. Elsewhere in Karanga, the labialization that results in the labiovelarization of velar sounds results in total bilabial closure. This demonstrates that there is more room for labial articulatory movement during the production of the velar sounds. Some of the examples in which such a phenomenon takes place are given by Mkanganwi (2004) as follows:

14. [(p)k^{w}ereta] ‘borrow’

[ma(p)k^{w}ai] ‘sheep’

[ma(m)ŋg^{w}ana] ‘tomorrow’

[(m)ŋg^{w}ena] ‘crocodile’

[ma(m)ŋg^{w}anani] ‘morning’

[(b)g^{w}ari] ‘francoline’

[(b)g^{w}ai] ‘sheep’

[(b)g^{w}i(p)k^{w}i] ‘bush owl’

The above examples demonstrate that there is pronounced labialization that results in total bilabial closure during the articulation of labio-velarized velar stops. According to Kadenge (personal communication, 02-02-2011), these bilabial closures are products of gestural mistiming. This means the speech organs will produce sounds in excess which are not obligatory for the communicative purpose. However, we deem this to be evidence that there is much pronounced labialization during the production of velar sounds which results in excess articulator movement resulting in excess sound production in the Karanga case.

The discussion in this section has been focused mainly on the labio-velarized stops. However, the process also occurs with non stop consonants as well. Below we discuss the labiovelarization of [ɾ].

9.3.4 Labiovelarization of flap [ɾ]

Barwe has two liquids the lateral [l] and the flap [ɾ]. It will be recalled that in Chapter 6, the liquids were discussed as not operating in free variation. However, despite being alveolar counterparts, they operate differently when it comes to labiovelarization. It will be recalled that in the discussion of the labiovelarization of [t] it was pointed out that the production of an alveolar sound gave the latitude for movement of velic and labial articulators. In the same manner [ɾ] also labiovelarizes but [l] does not labiovelarize. Examples in which we have labiovelarized [ɾ] are as follows next.

15. /ɾ^{w}/

/neɾ^{w}a/	‘get beaten up
/ɾ^{w}ala/	‘be sick’
/temeɾ^{w}a/	‘to have induced power through a cut made on the skin’
/tumiɾ^{w}a/	‘to have something send to you’
/langiɾ^{w}a/	‘to be disciplined for something’
/baliɾ^{w}a/	‘to be born at/for’
/wabaɾ^{w}e/	‘the Barwe people.

The above examples show that there is labiovelarization of [ɾ] in Barwe. It is one of the cases in which although there is not pronounced raising of the tongue a slight constriction, it is not pronounced enough to raise the tongue that would result in creation of a velar fricative or stop. It is, as has been shown with the other alveolar sounds, a case of offglide where there is no hardening or total closure at both the labial and velar points. Thus, the complex sound there resulting from labiovelarization has the place features [+alveolar] [+labial] [+velar]. At the same time they have the manner feature [+lateral][+approximant].

Also found to trigger labiovelarization is verbal passivization involving the short passive verb extension -w-. The process is discussed below.

9.4 Secondary articulation through passive verb extensions

Like in many Bantu languages, in Barwe, the passive verbal extension is realised as -w- or -iw- as demonstrated in table 1.4 of Chapter 1. Verbal extensions are responsible for various morphophonemic processes in Bantu languages. Thus, according to Mberi (2006:69), “Extended stems are those that add some morpheme (extension) to the simplex stem to modify its (simplex stem) meaning and shape.” It is clear that Mberi’s interest in this

particular case is the morphological set-up of the extended verb as these also are the basis for meaning to the words. Also, Mbiavanga (2011) talks about the verb extension being recognised by some scholars as being a process whereby certain suffixes are added to the verbal roots in order to expand them.

In Barwe the most prevalent are the longer forms of extensions although the shorter ones do substantially occur. Labiovelarization has been found to easily occur when a passive extension -w- is added to the verbs and the vowel of the extension gets deleted as in the case of the verb /-bata/ 'catch/get hold of' as in the example below:

16. a) /-bat- + -iw- a/ → [-batiw-a] 'to be got hold of/caught'

b) /-bat- + -w – a/ → [-bat^{w}a]

Both examples show the passivised verb. The passive extension can be longer -iw- as in examples (16.a). It can be shorter (-w-) as in example (16 b). The example (16a) shows that the -i- of the extension has been retained while in example (16b) it has been deleted. Thus, after the deletion of the vowel the [t] and [w] are simultaneously articulated as a complex sound with [t] being the major articulation while the [w] is the secondary and minor articulation. Examples in which both the longer and shorter passive extensions occur are as in the examples 17 that follow:

17. l**onger passive**	s**horter passive**	
/neɾ-iw-a/	[neɾ^{w}a]	'get beaten'
/fukiz-iw-a/	[fukiz^{w}a]	'be covered with cloth or blanket'
/lum-iw-a/	[lum^{w}a]	'be bitten'
/nam-iw-a/	[nam^{w}a]	'plastered'

/pik-iw-a/ [pik^{w}a] ‘to be cooked’

Above, are the examples of some verbs that can take both the longer and shorter extension in Barwe. With the longer extension the [w] remains a glide while with the shorter extension [^{w}] is co-articulated with the root final consonant. It is more of a modifier to the final consonant. This is another clear act of an offglide. As has already been discussed earlier on, sound modification by [w] depends on the place feature of the major articulation. Thus from the above examples, the alveolar sound [ɾ] as in [neɾ^{w}a] allows for both labial and velar movement and the [w] comes off as an offglide. In the above examples labial sounds such as [m] in [lumwa] ‘be bitten’ and [namwa] ‘be plastered’ allows more of velarization while [k] as in [pikwa] ‘be cooked’ gives latitude for labialization.

There is a difference in syllable configurations that ensue after the addition of the passive extension in the shorter and longer form, respectively, as demonstrated in the figure below. The extended root -ner- ‘bit’ can be represented with the longer and shorter forms as follows:

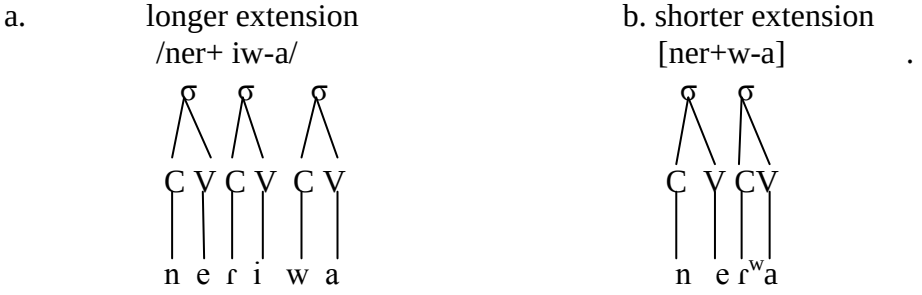

Figure 9.6: *(a) configuration of the syllable with a long passive extension (b) with a shorter extension.*

The above figure shows that there is a difference in syllable configuration after the addition of the longer extension and after the addition of shorter extension to the verb root -ner-. The longer extension remains a glide and also occupies a C node on the CV tier. As a result in

Figure 9.6 (a) we have a CVCVCV syllable set-up. Also in Figure 9.6 (b), the shorter passive extension -w- because of the absence of the -i- becomes co-articulated with the preceding root final consonant [ɾ]. In the case of (b) we now have a two syllable word that is CVCV shaped.

As already pointed out, with the longer passive form the glide [w] becomes a syllable onset and the terminal vowel becoming the syllable nucleus. In the case of the shorter passive form, the [w] extension is co-articulated with the preceding consonant as a secondary articulation that formulates a single labio-velarized complex sound that also forms a single syllable onset that takes the verb terminal vowel as the syllable nucleus.

This takes us to the context of Lexical Phonology Theory. As stated by Odden (1993:112), "Lexical phonology and morphology interact so that morphology has access to phonological properties derived by applying phonological rules on some earlier level." It is the morphophonemic interaction that creates new phonological set-ups that we here describe. Morphemic alteration also results in newer phonological set-ups getting created.

However, as earlier on noted, those verbs with the passive extension are some of the few examples that popped-up in the corpus. It, however, has to be noted that the longer passive occurred abundantly in the corpus. The Barwe Research Assistants confirmed that they would occasionally use the shorter form, but what was most common was the longer passive form. Shona dialects to the west spoken in Zimbabwe liberally allow for both long and shorter passive extension forms in its verbs except for one dialect, Korekore (which is in contact with Barwe to the north-west). As noted by Dembetembe (2004) Korekore does not use the short passive extension and we also see Barwe with which it is in contact also limiting the use of the shorter form. This may point to the fact that longer forms may be a result of influence from the languages in the west and the influence might not have fully spread to Korekore and Barwe.

Below we look at what happens to the syllable when the secondary articulation takes place.

9.5 Secondary articulation and syllable configuration

The process of secondary articulation is mainly a sound modification process. It does not lead to consonant clustering. As such the modified sound remains a single sound in all the cases above where the modification has been indicated with a superscript to the modified sound. We can take an example of the term /ɲat^{w}a/ 'problem' in examples (12a) above. This example can clearly demonstrate the issue of superscripts and syllable configuration adequately since it has been shown to have two forms of modifications involving /^{w}/ and /^{ɣ}/. We thus can represent /ɲat^{w}a/ and /ɲat^{ɣ}a/ on the CV tier as follows:

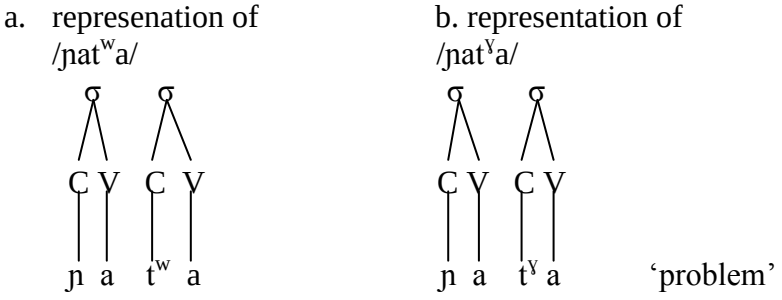

Figure 9.7: *Configuration of the /t^{w}/ and /t^{ɣ}/ on the CV tier.*

The above examples demonstrate that the involvement of the labiovelar [^{w}] and the velar fricative [^{ɣ}] in secondary articulation does not alter the syllable setup as the [t] together with either of the modifiers belong to a single C node on the CV tier. The modifiers in secondary articulation do not constitute syllables on their own and neither do they form a consonant cluster with the [t] which they are modifying through the secondary articulation process.

The complex sounds that are operative in Barwe have been demonstrated in table 6.2 of Chapter 6 above. As earlier on noted, new features are added to once simplex sounds in

order for the language to increase its sound inventory by way of affrication, prensalization and labialization and velarization.

Below we make a summary of the Chapter.

9.6 Summary

The main focus of this section was to discuss secondary articulation involving labiovelarization in Barwe. Secondary articulation has been discussed as at least having two constrictions. The greater of the two constrictions is the major articulation while the lesser constriction is the minor one. Comparatively, secondary articulation has been shown to operate in the same manner prenasalization does. That is, there is sound modification to some other sound. In prenasalization sound modification is by the prenasal and in secondary articulation the modification is by the labiovelar [w]. With prenasalization, there is pre-modification while the secondary articulation is post-modification.

Post-modification by [w] has been found to affect a number of consonants in various ways. Thus labial sounds were shown to velarise as reflected in the production of [$m^{ŋ}$] as in [$m^{ŋ}$eneciro] ‘owner’ and the production of [$^{m}b^{g}$] as in [m-to$^{m}b^{g}$e] ‘medicine’. In a reverse manner the velar sounds were also described as involving greater labialization as in [g^{w}embe] ‘animal skin disease’, [k^{w}eneko] ‘at that place’, and [$^{ŋ}g^{w}$ena] ‘crocodile’. It was also demonstrated that in Karanga, there actually results total bilabial closure during the production of velarized sounds as in [(p)k^{w}ereta] ‘borrow’.

The alveolar sounds were shown to have more of offgliding as there was simultaneous labialization and velarization as in [wanaz^{w}a] ‘they hear/understand’, [s^{w}ikira] ‘be able to touch something above’ and [ner^{w}a] ‘get beaten up’.

Barwe has been shown to have two liquids, the lateral [l] and the flap [ɾ]. The later has been shown to allow secondary articulation involving [w] while the former does not.

This seems to bolster the argument that whilst these are more like one sound that operates in free variation in other languages like Cewa and Cinsenga, it is not treated so in Barwe. The two are considered different sounds and their phonological interaction with other sounds also differs as shown by their difference in the labiovelarization process. Barwe has also been shown to be selective in the secondary articulation involving fricatives. Only [z] and [s] were shown to involve the labiovelar [w] in secondary articulation.

The occurrence of the labiovelar [w] preceding the consonants may come as a result of morphological or phonological processes. After such grammatical processes, it is shown to interact with the consonants it precedes. As such [w] has been discussed as resulting from glide formation as a hiatus resolution. It has also been shown to result from verb passivization with the shorter passive extension -w- which then interacts with root final consonant resulting in the consonant's labiovelarization as in:

18. [neɾ +-w-a] → [neɾ^{w}a] 'get beaten'

The involvement of the passive extension with the preceding consonant has been discussed as one of the processes where morphology-phonology interface occurs as prescribed in the lexical phonology theory.

It has been demonstrated that the process of velarization does not involve syllable alterations as [w] only modifies the consonants it precedes. Thus in the [neɾ^{w}a] example of figure 9.6 above [ɾ^{w}] belongs to a single C slot of the syllable on the CV tier.

Having discussed complex sound production in Barwe, the next chapter discusses operations of the liquids.

CHAPTER 10: Liquids [l] and [ɾ] in Barwe

10.0 Introduction

There are a number of lateral consonants in the various languages of the world. According to Catford (1977:251), "There are dental, alveolar, retroflex, palatal and velar liquids. Barwe has two liquids namely, the alveolar lateral [l] and the flap [ɾ]. They both have the features [+coronal], [+alveolar].

10.1 The occurrence of the [l] and [ɾ] liquids in Barwe

The two sounds are operative in Barwe. Their difference is that [l] is [+lateral] and [ɾ] is [+flap]. They occur in the verbs and nouns as demonstrated in the examples that follow.

1. a) /l/ in nouns

/mugole/	'in the year'
/ŋ̩-kulu/	'elder/senior'
/cipatala/	'hospital'
/kale/	'in the past'
/mulumbi/	'white person'
/muloŋgomuna/	'four'

b) /l/ in verbs

/lowola/	'marry'
/lapa/	'heal someone'
/ɾwala/	'to be sick'
/gala/	'sit'
/tola/	'take/collect something'
/lekeɾa/	'leave something as it is'

/laŋgaliɾa/ ‘remember’

d) /ɾ/ in nouns

/jiɾa/ ‘blanket’

/munjiɾa/ ‘on the road/path’

/nɟiɾa/ ‘path/way’

e) /ɾ/ in verbs

/fikiɾa/ ‘being ale to touch something above’

/peɾeka/ ‘giving something to somebody’

/biɾa/ ‘cross to the other side’

/ɾwala/ ‘to be sick’

/loŋgeɾa/ ‘organise for’

/hiɾiɾa/ ‘go back’

The data in (1a-b) show that /l/ and occurs in both verbs and nouns in Barwe while the data in 1c-d also show that /ɾ/ also occurs in both nouns and verbs. The two sounds have been demonstrated to occupy any position in these words.

Laterals are articulated when there is a complete closure in the mouth but with one or both sides of the tongue lowered to allow air to flow through (Trask 1996). Air is blocked from flowing through the medium line. When the occlusion occurs in such a way that the air flows through one side of the tongue, it is called unilateral flow. When it flows through both sides it is bilateral flow (Ladefoged 2001). As the tongue side is lowered (in the case of the unilateral) or both sides are lowered (in the case of bilateral), the side or sides do not make a complete blockage but remain in a near closure position, hence the sound [l] produced that way is an approximant. To this, Trask (1996:198) notes, “Analysts differ as to whether a lateral approximant should be classified as an approximant or not.” This stems from the fact

that there is partial oral closure and partial approximation by the tongue side or tongue sides taking place simultaneously.

/ɾ/ is produced with a single rapid contact of articulators. In this particular case it is the tongue tip and the alveolar that get in contact. For us to have a better appreciation of the liquid sounds now operating in Barwe we need to make some historical exploration.

10.2 A look at the historical development of the liquids.

It will be recalled that in Chapter 9 it was noted that some languages have both [l] and [r]. As there given, according to Miti (2006) in such languages the two phones are allophones of the same phoneme in free variation as they may occur in the same context or environment." When the sounds operate in free variation they can substitute each other in a word without making a change in meaning. One's idiolect determines which of the two one would prefer to use. This, however, is not the case with Barwe.

As noted, Barwe has the liquids [l] an [ɾ] with closely similar phonetic characteristics. Now that liquids are allophones in some Bantu languages we can also assume that the way they are now operating in Barwe is a question of the once allophones going separate ways and now standing as independent sounds. The following examples demonstrate that /ɾ/ does not substitute /l/.

2.	/lova/	(cf. *[ɾova]	'be absent'
	/vula/	(cf *[vuɾa]	'open'
	/kuwala/	(cf *[kuwaɾa]	'to be wounded'
	/loŋga/	cf *[roŋga]	'arrange/organize'
	/liŋga/	(cf * [ɾiŋga]	'stare at'

The above examples show that /l/ cannot be substituted with /ɾ/. The reverse is also true of the two phones. /l/ cannot substitute /ɾ/ in a word as demonstrated in the following:

3. /hiɾiɾa/ (cf. *[hilila] ‘travel back’
   /fikiɾa/ (cf.*[fikila] ‘being able to touch something above
   /ɓweɾa/ (cf. * [ɓwela] ‘come’
   /ciɾiɾo/ (cf *[cililo] ‘crying of many people at the same time’
   /ɗàjiɾa/ (cf *[ɗàjila] ‘answer’
   /feɳdeɾa/ (cf *[fendela] ‘move to the other side’
   /eɾeŋga/ (cf *[eleŋga] ‘read/count’

The above examples also demonstrate that /ɾ/ is not substituted by /l/ in Barwe. Substituting one for the other will be a case of mispronunciation although there are no minimal pairs involving the two sounds. What we notice is that unlike in other languages like Cewa and Nsenga where the liquids have remained allophones. In Barwe they have over the years been allocated distinctive roles.

In both examples (2) and (3) above, substituting one with the other would not totally distort the meaning. Intuitively, it will be like getting a meaning from what a child whose pronunciation is not yet perfect says. The meaning is obtainable but to the native speaker the sound will be wrongly placed. This may suggest that the sounds are now separating and are not allophones. It is one sound separating, but not yet totally separate as there can not be minimal pairs involving the two sounds.

We may be having a situation of language change where out of one sound we now have two in Barwe. However the fact that there are no minimal pairs shows they intuitively are recognised as one sound. Since the two do not operate in free variation there are

occasions where they both occur in the same word for the purpose of dissimilation. This is the subject of discussion below.

10.3 Dissimilation of [l] in successive syllables

There are instances of dissimilation in Barwe when the [l] occurs first in a word that we find [ɾ] coming in to dissimilate in the preceding syllable. Thus, as a rule, Barwe does not prefer [l] margined syllables in succession but favours the second syllable margin to be [ɾ]. Consider the following examples.

4. /ɾ/

/liɾa/	'cry'
/leɾa/	'baby sit'
/leɾuka/	'light weight'
/liɾime/	'tongue'
/liɾimbo/	'type of tree latex'
/liɾipo/	'presence of something'
/maliɾe/	'boundary of an area'
/kuliɾa/	'grow up in an environment'

The above examples demonstrate that the succeeding syllable has to have the [ɾ] syllable onset to dissimilate from the preceding syllable with the [l] onset. What we have seen so far demonstrates that there is only one phoneme in this language, which is [l] with two phones in complementary distribution: [l], which occurs in root initial position, and [ɾ], which occurs in lieu of a second [l] in word internal position. That is, there is an [l] in a preceding contiguous

syllable for the second [l] to be realized as a [ɾ] through the dissimilation rule which can be formalized as follows:

5. lv + lv → lv +ɾv

The above rule demonstrates that in the input we have the contiguous syllables with the [l] onset. The output shows that the consecutive of the syllables has the [ɾ] onset after the dissimilation.

Taking the example /liɾa/ we can show the dissimilation process on the CV tier as follows:

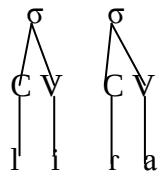

Figure 10:1 *Dissimilation process of the successive syllable onset from /l/ to [ɾ]*

The above figure shows that the /l/ of second syllable becomes [ɾ] for the purpose of dissimilation. It should be noted that this rule does not apply when there is another syllable separating the two syllables with the [l] onset. Consider the following examples:

6. /lowola/ ‘marry’
   /mulowola/ ‘daughter-in-law’
   /giliŋgili/ ‘rim of bicycle wheel’
   /lekela/ ‘stop doing something’

/lawila/ ‘taste food’

/lenelo/ ‘that one’

/palamula/ ‘start something big’

/lemala/ ‘to be disabled’

The above examples demonstrate that [l] may not dissimilate if the subsequent [l] onset syllable is not in succession with the initial one. As pointed out by Fromkin and Rodman (1998:284), “These (dissimilations) are rules in which a segment becomes less similar to another segment rather than more similar.” We can note that the rules have a two pronged purpose. Firstly, it becomes easier for the speaker to articulate the sounds. Secondly, it becomes clearer for the hearer to discern what has been spoken out as the sounds become clearly distinct. Once the syllables are not in succession, Barwe does not apply the dissimilation rule. The rule only applies on successive syllables.

However, the dissimilation rule does not apply through and through as there are some cases of exception where the [l] initial syllables can be in succession due to verbal extensions. Cases of non-dissimilation can be demonstrated in the apllicative extended verbs that follow.

7. /taul-il-a/ ‘tell me’

/vul-il-a/ ‘open for’

/palal-il-a/ ‘get scattered for’

/sal-il-a/ ‘remain behind’

/kuwal-il-a/ ‘get hurt for’

/sakul-il-a/ ‘weed for’

/gal-il-a/ ‘sit on’

/tsanaŋgul-il-a/ ‘explain for’

/lal-il-a/ ‘sleep over’

These were found to occur mainly in cases where the root final consonant [l] is followed by an extension consisting of vowel and [l]. Examples in (7) demonstrate that the [l] of the applied extension il/el does not dissimilate. In that particular case the dissimilation rule does not apply. What it shows is that dissimilation occurs inside unextended verb roots. Extension to those verb roots are not subjected to the dissimilation rule. We see that the /l/ is repeated in derived contexts unlike the situation that we have in examples (4). Since these are derived extensions we could be having a case of pseudo-exceptions. The examples in (4) remain the most authentic evidence of the dissimilation process involving /l/ and /r/ in Barwe.

Thus the examples in (4) can be viewed as supporting the argument that we uphold that the sounds [l] and [ɾ] are in the process of parting to become totally independent sounds. As such, derived forms may not clearly prove the phenomena as they have shown to defy the dissimilation process that has been found to occur in the verb roots of examples (4).

At the same time we note that the [ɾ] onset syllables can be in succession but there is no dissimilation that takes place. This is demonstrated in the examples that follow.

8. a) <u>/r/ in verbs</u>

/hiɾiɾ-a/ ‘plough for’

/ɓweɾ-eɾ-a/ ‘come on someone’s behalf’

/dziwiɾ-iɾ-a/ ‘protect’

/wiɾiɾ-an-a/ ‘getting along well’

/siɾiɾ-is-a/ ‘looking pitiful’

b) <u>/ in nouns</u>

/ciɾiɾo/ ‘crying of many people at the same time’

/neɾeɾa/ ‘orphan’

/masiɾiɾi/ ‘dripping saliva’

/chiɳeɾeɾe/ ‘a quiet person’

The above examples show that there is no dissimilation process in the case of [ɾ] margin syllables being in succession. What we note is that [ɾ], while related to [l] is no longer bound by the phonological operational rules that apply to [l]. It now has its phonological characteristics that are different from that of [l] hence there is no obligation to differentiate when /ɾ/ margined syllables are in succession.

Looking at these as two separate sounds, it can be noted that [ɾ] acts as ‘pre-flap’ to some selected Barwe sounds which [l] does not. ‘Pre-flap’ as a term has been adopted for this study following the occurrence of [ɾ] before other consonants in a way that shows that it forms a pre-modification articulation to the preceding sound. However, as pointed out in this study, it has been observed that in Barwe the flap [ɾ] occurs preceding other sounds. There is a slide from the liquid to a non-liquid sound, hence for the purpose of this study, we have the term ‘pre-flap as discussed below.

10.4 [ɾ] as a pre-flap in Barwe

The flap [ɾ] has been observed to occur with the stop [k] and the fricative [ʒ] forming complex pre-flap sounds in some word final syllables. Consider the following examples.

9.a) /waciᶠka/ ‘wash for’

/patiᶠka/ ‘hand over something’

/cemeᶠka/ ‘do be called/to cry for something’

/mubvaliᶠke/ ‘somebody’s way of dressing’

/baᶠke/ ‘the Barwe people/language’

b) /kuʳʒa/ ‘to eat’

/foʳʒa/ ‘tobacco’

As is seen above, the flap does not have a vowel nucleus and at the same time it is not syllabic on its own. Thus, there is no syllabic break after the flap [ʳ]. This makes us consider that it is a single sound together with the consonant it precedes.

These examples demonstrate that the [ʳ] is pre-flap to the sounds [k], and [ʒ]. It forms a complex sound with the preceding sound.

The flap [ʳ] forms complex syllable onset with the following sound in a similar way affricates, prenasalized and velarized consonants have been shown to be complex sounds. Going by the CV syllable structure, we observe that the pre-flapped sound forms the syllable onset followed by vowel nucleus. Taking the last example /foʳʒa/ from the above we argue that it has two syllables represented as CVCV. Thus /-ʳʒ-/ is considered a single syllable onset represented by a single C on the CV structure. That way, we do not view it as a coda whereby we would consider the word to be in broken into syllables /foɾ-/ and /-ʒa/. Firstly we argue that Barwe does not allow CVC structured syllables as we argue that it and many other Bantu languages have open syllables. The vowel has been shown to be a compulsory element of the syllable except in the N̩ case where the vowel has been historically lost.

According to Blevins (1996:223), “In languages with left – right syllabification the stray consonants if not erased will surface as syllable onsets while in right-to-left they will surface as codas.” As has been observed Barwe has a left to right syllabification process where onsets are on the left with the vowel nucleus coming to the right. We therefore associate the /ɾ/ with the consonant on the right side and not the vowel and consonants on the left side. We neither consider it to be a consonant that has lost its vowel as the vowel deletion

has been seen to favour noun prefixes of classes 1 and 3 and we did not get evidence of such loss within noun stem and verb roots in which in the examples in (9a) and (9b) [^{f}] occurs.

Sagey (1989) describes the labiovelarized [tk^{w}] in [tk^{w}asa] ‘straight’ as a triply articulated sound. In a similar way, we can also view the pre-flapped sound in Barwe as doubly articulated sound which is not split by a morpheme boundary. It is a single C sound produced of two sound portions.

In the other languages and varieties that Barwe is related to and some of which it is in contact with, the liquids do not occur, among them being in Manyika, Zezuru, Hwesa and Karanga. Adopted words from other languages that have these laterals are phonologically adapted for them to fit as acceptable vocabulary of these languages. We would like to look at the phonological process involving adoptives that have the laterals in Barwe. The adoptives discussed are mainly from Portuguese which Barwe has been in contact with for over four centuries.

10.5 Adoptives from Portuguese

Alveolar sounds [r] and [l] exist in Portuguese. Adoptives from the language that have these sounds are made to conform to the phonological rules consistent with Barwe. However, they both take a vowel nucleus in order to conform to the Barwe CV syllable structure as is demonstrated in the examples that follow:

10.	Portuguese		Barwe adoptive	
	igreja	/igreʒa/	/igeɾeʒa/	‘church’
	dinhero	/diɲero/	/diɲeɾo/	‘money’
	barraca	/baraka/	/baɾaka/	‘kiosk’
	inteiro	/intero/	/inteɾo/	‘whole thing’
	fronteira	/fronteɾa/	/foɾonteɾa/	‘border’

verdade	/veridadi/	/veɾidade/	‘the truth’
comprar	/komprari/	/komparaɾi/	‘buy’
alfândega	/alfandega/	/alifandega/	‘customs’
alfinete	/alfinete/	/alifineti/	‘a pin’
alferes	/alfereʃΣ/	/alifeɾi/	‘rank in the army’
alfaiate	/alfajate/	/alifaiati/	‘tailor’

The above examples demonstrate that the Portuguese trill [r] becomes a flap [ɾ] as the word becomes a Barwe adoptive. On the other hand, the lateral [l] is maintained in the Barwe adoptives. As demonstrated in the examples above the lateral [l] may occur without the vowel nucleus in the source language. Due to the fact that Barwe syllable structure is characteristically CV shaped, the lateral [l] is preceded by a vowel nucleus on adoption. However, of interest is the fact that the vowel nucleus preferred to follow the lateral [l] in the adoptives is the high front vowel [i].

10.6 Summary

The chapter has described some phonological processes involving liquids in Barwe. The liquids that have been found to be operative in the language are [l] and [ɾ] which are described as being produced with the blockage of the airstream at the alveolar region but, in the case of [l], with some airflow allowed through a lowered tongue side or both sides of the tongue. In the case of [r], this sound is produced through a single tap of the tip of the tongue against the alveolar region.

We may postulate that these two sounds are related and were once a single sound as in other Bantu languages where they operate as allophones. In Barwe, they no longer substitute each other where we also postulate that these sounds are in the process of separation and are

making a phonological role allocation as demonstrated in their occurrence in dissimilation process. It has been shown that dissimilation occurs when the [l] commencing syllables are in succession. At the same time [ɾ] has been shown to be guided by its own phonological rules different from [l] as no dissimilation takes place when [ɾ] commencing syllables are in succession. It has also been shown that [ɾ] has phonological characteristics which [l] does not have as it may premodify other sounds which [l] does not do. It has been argued that the preflapped consonants constitute a single C on the Barwe's CV syllable structure.

It has also been shown that /r/ is phonologically transformed to [ɾ] on adoption of Portuguese words into Barwe while the lateral [l] is directly imported with no need for adaption of any kind and it compulsorily takes a vowel nucleus in cases where it does not have in the source language

Having looked at lateral sound operations in Barwe, and the various other phonological processes, the next section seeks to make a summary of the chapters that were discussed in this thesis.

CHAPTER 11: Summary of Thesis

This chapter is mainly a summary of the discussions that were undertaken in the chapters of this study**.** We make a look at the discussions made in each individual chapter. Chapter 1, which is the introduction, made projections into what the study intended to cover. It was pointed out that the main focus was segmental phonology of Barwe with some articulatory phonetics. The main focus was given as being to investigate and analyse the way in which the sounds are produced organised and are operative in Barwe. Since the focus was mainly segmental phonology, it meant considering two categories of sounds which are consonants and vowels which are vital components in syllable formulation. We also acknowledge that the syllable is a target of other suprasegmental phonology such as tone, stress pitch and rhythm, very broad areas of research in their own right, which could not be justifiably covered under the thrust of the present research topic. We, however, point out that reference would be made to them in the context of the Barwe segmental phonology and phonetics operations framework. We emphasized the segmental phonology because we are dealing with a language that is on the initial stages of description and documentation. The understanding is that getting to know the basic sounds of a language can be the starting point for a better appreciation of other grammatical properties of the language. Thus, a language premises on the interaction of its different sounds in order to fulfill linguistic structures that effect communication.

The chapter also discusses the language classifications of Barwe that have been given so far. Guthrie's 1967 classification places it in the class N40 group together with Hwesa, Nyungwe and Sena. Later developments have seen scholars like Chebanne et al (2008) who place it in the S10 group together with other varieties spoken in the areas that stretch from Mozambique to eastern Botswana. The Guthrie classification was mainly in accordance with

geographical setting of the language in view of the other languages spoken in the region. Chebanne et al (op. cit) are trying to zone together languages basing on genetic relatedness of the languages with the aim of developing an orthography for the languages in order to redress the situation where some of the cross-border languages have remained undocumented on both sides of the borders, Barwe included.

A note was also made on the Barwe morphology within the general Bantu context. Most of the described phonological processes are shown to be taking place within the domain of the word. A description of the Barwe morphology was made to show the general grammatical categories of the Barwe word for a better appreciation of the phonological process that are described in the research. A description of the Barwe noun was done looking at the noun class system, prefixes, noun stem and the agreement. The verb morphology looked at the verb root and the derived forms that were also to be the domain of the described Barwe phonological processes.

The present research has been shown to fulfill the goals as it is part of the documentation process. It is also argued that the research seeks to fulfill human rights as enshrined in the UNESCO resolution of 1953 which recognizes the importance of the speakers of a language's rights to learn and write in their own language as it is both their identity and heritage (Mkanganwi (1992). Through researches such as the current one, we are recognising linguistic rights as human rights.

The research was shown to be based on two theoretical frameworks. One of the two is Lexical Phonology as propounded by Pesetsky (1979), Kiparsky (1982,1985) as described in Hargus (1993). It is a morphophonological based theory that recognises the interaction between morphology and phonology. It upholds the view that any morphological process that takes place in a word also brings about newer phonological set-ups.

Alongside the Lexical Phonology Theory, the study also applied the CV Phonology model which recognises that the various segments that are described collude for the purpose of syllable formation. The CV Phonology model, as noted by Katamba (1989) is meant to deal with syllable related facts as the Bantu syllable structure has been described as being CV shaped. Thus, the introduction gives insights into the discussion of thesis in which the individual sounds are shown stringing together to form syllables hence the use of CV Phonology model in order to analyse the phonological patterning inherent in Barwe. The two theoretical models have been shown to complement each other in laying bare the phonological processes of Barwe.

Chapter 2 focused on research methodology. It describes the way the research was strategised and the way the data was collected starting with the preliminary survey. It also discussed the fieldwork that ensued in Catandica District of Manica Province in Mozambique. The chapter describes the data collection process that took place. The data was put together to build a Barwe corpus. Interviews were carried out by ten research assistants who were Barwe mother tongue speakers. They interviewed the Barwe people on a wide range of socio-economic and political topics that touch on their lives. The recorded materials were orthographically transcribed with programmes that linked text to voice. Thus the CQP enabled the researcher to pick individual words by letter of alphabet while the transcriber programme enabled the reader to read and listen to the interviews for purposes of making phonemic and phonetic transcription, ways and means through which the Barwe sounds were identified and described.

To supplement the corpus data the researcher also did some introspection approach using the Barwe speakers based in Maputo. Particular questions requiring specific answers based on the mother tongue speakers' knowledge of the language were asked as additional data was sourced. The research also employed elicitation as mother tongue speakers

informants who were linguistic students at UEM were asked to give direct judgment and evaluation of conclusions drawn by the researcher.

Overally the data analysis was shown to be mainly qualitative as it described the Barwe sounds and their operations.

The chapter also described the databases that have been created at UEM and UZ which were also availed to him for the present study. Both databases were also language marked and they link the text to the voice which the researcher was able to read and listen to supplement the data from corpus he built.

Chapter 3 set to do a review of selected works that were consulted in this research. Through the literature review the research acknowledges the importance of discourse with other scholars. On a broader framework, the chapter discussed the general phonetics as a science that looks at characteristics of human sound making in human speech. These sounds are represented in the IPA which is the standard international sound transcription of human speech sounds.

The study then zeroed in on works on Bantu phonology and phonetics in order to have a better appreciation of how they operate in Barwe as well. Thus, research is shown to have foundation in the work also covered by other scholars.

Explorations of the operative theoretical frameworks applied in the study were also made. One of theoretical thrust being Lexical Phonology led to review of works that focused on scholars like Petsetsky (1979) and Kiparsky (1982, 1985). The theory is premised on the fact that morphological constructions also effect phonological processes within lexical units. The relationship between morphology and phonology is viewed as being cyclical as there has to be a review of the phonological setup that results from affixations of morphological units. Also looked at are the works that look at the resultant syllable set up as it is also realized that

the phonological realignment that takes place upon affixation is a result of the effort to construct Barwe syllables in the way that is permitted in the language.

The other theory considered for the study was CV phonology. Works by scholars such as Hayes (1999), Clements and Keyser (1999), Kadenge (2007) Katamba (1989) and Blevins (1996) that comment on the theory were also discussed. The theory considers that each segment of a word has a syllable position and each syllable is constituted by segments which are allocated functional roles in that syllable. Thus consonants (Cs) are shown to be the syllable onsets while the vowels (Vs) are syllabic nuclei with the Cs occupying the C slot and Vs the V slot on the CV tier.

Works that describe the phonological features used in phonology were also reviewed in the chapter among them being Hudson (2002), Clements (1999) and Chomsky and Halle (1999). The features are considered to be the smallest properties that characterise segments and these include manner features and place features.

Chapter 4 was set to do a description of the Bantu syllable. It was described as being CV shaped as described by Hayes (1999), Ngunga (2000) and Pike and Pike (1999) with exceptions being in situations where the vowel has been historically lost as in the Barwe case of m**upasa** which became **[m̩-pasa]** 'give someone something' through deletion of /u/ of the mu- prefix.

Chapter 5 discussed the Barwe vowel production. These are described as being characterized by momentary shaping of the airstream without interruption, which is in contrast to the production of consonants where there is interruption. Barwe was shown to have five short vowels [i, e, a, o, u]. These are described as being high, [i] and [u], mid [e] and [o] and low [a] looking at the tongue height in their production. They are also described as being front [i, e], central [a] and back [u, o], looking at the outward or retraction of the tongue in the mouth. They are also described as being rounded if accompanied by lip

rounding as in [o, u] or unrounded if there is no lip rounding accompanying them as in [i, e, a]. Basically they are described looking at the vertical versus horizontal movements.

Their major role in syllabic formation is mainly nuclei. The chapter also makes a description of the historical development of the Barwe vowel system which has seen reduction from the PB seven /i, u, e, ɛ, ɔ, a/ to the current five /i, e, a, o, u/. The Barwe vowels have been described as being short unlike Ciyao that has phonemic long ones. Characteristically, there is compensatory lengthening when a vowel is deleted in Ciyao.

The chapter discussed the processes that involve vowels in consecutive positions in words. It is given that vowel concatenation is less generally less preferred in Bantu languages and in Barwe in particular. As such glide formation, glide insertion vowel coalescence, vowel deletion are the phonological strategies preferred in Barwe to break the hiatus.

/u/ undergoes gliding to become [w] wherever it precedes another vowel while /i/ becomes [j] when also preceding a vowel. Glide insertion, also known as glide epenthesis takes place with the glide [j] being inserted before the front vowels /i/ and /e/ and /w/ is preferred before the back vowels /o/ and /u/. Vowel deletion is also discussed as one way through which Barwe avoids vowel hiatus. One of the consecutive vowels is deleted. In cases where there are geminate vowels one is deleted. Also described as one of the ways through which Barwe breaks hiatus is vowel coalescence where two vowels merge into one.

The chapter also discussed vowel harmony where vowels in a word domain are required to share similar phonological properties. The non-mid vowels [i, a, u] can occur in a single verb domain. Once they occur in the domain the non-mid vowels are not allowed. This is also demonstrated in verbal extensions where it is shown that when the last vowel in the verb root is one of the non-mid vowels the extension also takes a non-mid vowel and when it is one of the mid vowels the extension also takes one of the mid vowels. The extensions that have been shown to behave so are the applicative, perfective, causative, intensive, and neuter.

All the cases of vowel harmony have been shown to have left to right influence where the vowel on the left has influence on the vowels that come on the right side.

Chapter 6 makes a description of general phonetic production but also focusing on Barwe consonants. It thus gives a general historical development of the Bantu consonant from the PB. The P.B as discussed by the Bantuist Hyman (2003a) is said to have had eleven consonants. These have been shown as being /p, t, c, k, b, d, j, g, m, n, ɳ/. New consonants have developed in Barwe and in Bantu languages in general as these now have other consonants in addition to the historical eleven**.** The Bantu languages are said to have increased their consonant inventory through processes such as prenasalization, glottalization, and labiovelarization also found to be abound in Barwe. Also shown in the chapter is that Barwe has developed simplex and complex consonants whose tables are presented in the chapter. The simplex ones are characterized as having single articulators or potion sounds while the complex ones involve more than one articulator.

The sounds are described as being produced through different airstream mechanisms which are given as lung (pulmonic) airflow, glottal airflow and velaric airflow. The pulmonic airflow occurs with the compressed lungs building the pressure that pushes the air out. The air being pushed out is the eggressive airstream that passes through the glottis or the vocal cords. If the vocal cords are constricted and the airstream causes them to vibrate then the sounds there produced are voiced as in the production of the sounds [m] [b] and [g]. When the air passes through open vocal cords and is uninterrupted the sounds there produced are voiceless as in [p], [ʂ] and [ʃ].

Glottal airstream is given as resulting from utilization of air above the glottis. The larynx can initiate an eggressive airstream resulting in the production of ejectives such as [p’] [t’] and [k’]. However, in the description of the Barwe consonants these were not found to be part of the sound inventory. When the larynx is lowered air rushes into the mouth resulting in

implosive sounds such as [ɓ] and [ɗ]. The implosives are produced with the ingressive airstream.

Also discussed is the velaric airstream which is shown to be responsible for the production of clicks. There is closure at the velar and lips or front of the tongue as the enclosed air is rarefied. As the front closure opens there is inrush of air from outside leading to click sound production. However as noted there are no click sounds in Barwe.

The chapter also discussed the place and manner of articulation. Place is the point of articulation or obstruction to the airstream in the vocal tract. The articulators that include the lower lip and the different sections of the tongue body move towards the places of articulation manipulating airstream mechanisms, thereby producing different sounds.

The places of articulation have been discussed as including upper lip, front upper teeth, alveolar ridge, the palate, velar and glottal in the production of Barwe sounds. Also of note is that some sounds like [w] and the affricates [p^f] have more than one place articulation. Thus [w] is labiovelar while [p^f] and [b^v] are labiodentals

Manner has been described as the degree of obstruction in the production of sounds where we can have a stop, affricate, fricative, approximant, nasal, lateral or flap. The Barwe sounds in this category have also been tabled in the section of the chapter.

Chapter 7 discusses nasal prefixation and the syllabic nasal. Nasal prefix is discussed as another way through which the sounds [m̲] and [n̲] are produced. The stem initial sound [p] becomes the breathy nasal [m̲] while the alveolar [t] and [t^h] become [n̲] demonstrating that there is place assimilation of the nasal and the stem commencing consonants.

The syllabic nasal is also described. This has been shown to be the noun classes 1, 3 and 18 prefix mu- which has lost the vowel -u-. The syllabic nasal was shown to assimilate the place of the stem commencing consonant it precedes. The place assimilation was also shown to occur with the object prefixes of these nouns. They are shown to assimilate the

place of the verb to which they are attached as objects. However, class 18 mu- was shown to have maintained its vowel as mu- upon being pre-prefixed to the syllabic commencing nouns.

Chapter 8 looked at the simplex and complex categorization of sounds in Barwe. Simplex sounds were characterized as having a single articulatory feature where constriction is made at one point in the vocal tract. The other complex consonants are realized as single sound segments made with two distinguishable strictures at different locations. These have been shown to be doubly articulated sounds such as [ʂ], [ʐ] and [w]. They are produced by double constriction but they remain single sounds without any other sound superimposed on them unlike the compounds sound such as [^{m}b] in which two sounds combine into one. The discussion on compound sounds show that there are two sounds produced with a single gesture as in [^{m}b].

Chapter 9 discussed secondary articulation in Barwe. Secondary articulation is given as involving stricture at two different positions in the production of a single but complex sound. The degree of the strictures differs with one being higher than the other. The greater articulation is the major while the lesser one is the minor. In the particular case, it is more sound modification involving [w]. The chapter also indicates that the simplex and secondary articulated sounds are contrastive.

The description gives it that labial stops have limited labial movement. As such there is pronounced velarization. With increased effort there even can result velar stops as in [m-p^{k}ere] ‘small child’. It is also described that there is more of velarization to labial sounds as further labialization is inhibited. The alveolar sounds as major articulations have been shown to allow simultaneous labial and velic movement. Thus the sounds [t], [s], [ɾ] and [z] have also been described as being major articulators that allow labiovelarization.

Also shown to suit the labialization description is the secondary articulation involving velar sounds as the major articulations. The major constriction is at the velar point allowing

for greater lip protrusion where elsewhere in Karanga it has been shown to lead to excessive bilabial closure as in [(p)k^{w}ereta] ‘borrow’. The chapter also discussed velarization of the flap [ɾ] through passive extension as in [ner^{w}a] ‘get beaten’. Also discussed are secondary articulated sounds which are also shown to occupy single C slots on the CV tier.

Chapter 10 discussed the occurrence of liquids in Barwe. The liquids that are described as being operational in Barwe are lateral /l/ and the flap /r/. These have been found to be operational in both nouns and verbs and they occupy any position in words. Liquids are known to substitute each other in other languages such as Nyanja and Cinsenga but they do so in a limited way in Barwe. They have been shown to be involved in dissimilation processes as /l/ may not occur in consecutive syllables in a word. /l/ may occur without dissimilation process if the syllables in which it occurs are not contiguous except when the second syllable onset /l/ is part of derivational suffix. Thus /l/ was found to be repeated in contiguous syllables in some cases where it preceded the vowels [i, e, a] but did not occur before the back vowels [o] and [u]. However the [ɾ] could be repeated in consecutive syllables without any dissimilation taking place. Also discussed was the occurrence of the flap [ɾ] before [k] and [ʒ] in a processes that has been labeled as ‘pre-flap’. It is being argued that like in the case of prenasalization the [ɾ] also premodifies the two consonants when it precedes them without a vowel break in between.

Also discussed is the occurrence of the liquids in adoptives. Thus the trill /r/ became the flap /ɾ/ and the lateral /l/ was adopted as is but accompanied with a vowel nucleus in Barwe.

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Appendicis

Appendix A: Sample of ortgographically transcribed interview

Mati zita renyu ndiyani?

Franzisi Joao.

pakugadzira nyumba zvinatenderwa kuti nkwambo ayebde katola waxamwali owu wanyamagacha kuti wayende kam'etsa?

ya podi kuyita, kuwona kwako zha iwe ikwambo. wuna wona kuti basali ndukuda kuti ndikasike kupeza inepano, wuna pswaga munhu ndende kandi batsirewo owu nee uli kusendza pabasa wunapswaga munhu anakwanisa, wunawonawo kuti ninga ngana wule ningamutola ningamuyendesa kwa pswebzala wangu handidzanyali tayi. ayende kandi batira basa langu zemplo ninga nyumba. woyenda kakumangira nyumbayo nakuti wunenge wuciwona na mabatiro anenge ali kuyita. woyenda kakubatira iwe wuli kuxanda basa lako apeza kweneko iye iwe wudzamu pheya male yace iwe zha fazhidhekonta ndiwe wawaka nyumbayo. entawu woyita makhodzo eneyo kwenda kabvundza sankulu. entawu iwo wodzayenda zha kweneko. iwo wapswabzala wanenge wali kudziwa kuti awakayi ni munhu nyabasa manji awaka ni m'kwamboyi nakuti maleyi njace ali kuda kuti apagali.

seyi zvinyita kuti nkwambo ndiye ekha anenda kapagali kunyumba kwankadzi neyi azviiti kuti nkadzi ayende kapagali kubyumba kwa mamuna?

m'bvundzo weneyo wuda itika kale kuna wenango munhu.komo iwo wanayita kuti iwe ndiwe wawuya kudza palamula mwana wangu pano iwe ninga mwamuna.

mazhi tadana, iye ali kubdida ine ndiri kumuda pukeki ndi munhu m'bodzi anadikana kapagali mudzace wunangoyi nee kupagali mundzace nadha.

zvenezvi zvaka budira kuna wakuluko asi agola kuti ife tidziwe kuti thangweranyi ziri kuyitika hatizvidziwi asi iye anenge ali kudziwa kuti komo ni mwana wangu tenkuwuya kudzagula ninga se magulile ndidayita mayi wace.

kulonga kuti mamuna ndiye basi anadikana kuti ayende kapagali?

tikhalanga kuti purkeki mwamuna ndiye ega anenda kapagali kunyumba kwamukadzi? purkeki azvikhayitiki mukadzi ayende kiya pagali kunyumba kwamamuna?

mawonere angu komo wunamutola ndiwe kweneko wucaberekerana naye. pakuberekerana naye pale pswabzala acakuchajazve male ya wana wako wale. tempo igadzakwanambo nee kudzabverana panyumba tani podi kuyenda kunyumba kwace mukadzi wana wuna tola mwamuna nakuti ngako so wunenge wagula kale. iwe cako kugula budu lacero kuti acengete wana wakoyo basi. asi parwere mwentse munenge muci wonerera kuti tikuwona tsawana iyi atee kuswikira wana wagala bhom.

mwana anakhaxupha maningi kukudza kubvira pakubaliwa kuswikira akula. tilangileni padoko tinamukudza seyi mwana pasina mhingampini imwe niga baba ?

kumucengetedza. wuna cengeta se macengetero wadayita wabereki wathu. tinoti kana ali mwana mudoko tekugona pace pace. podi kudzawoneka mhingampini zinangombo zawurwere za mulungu munenge muciziwona pabodzi, sawudhe nonga iri kwenderera mberi.

purke anakhati mukadzi alale pabonde lace lace na mamuna pa kubaliwa kwa mwana?

si wanadziwa kuti mwamuna hawudzagwentali. entawu tekudza woneka kwenda kuna mayi wule kwenda ka batabata. agola iye ana tentali kuti iwe hawusi kuzviwonawo mwana aciri mudoko? pakutoma iwe mwamuna

podi kugwentali agola baxa angadzayita dhozhi trezhi meze wunenge wuli kufunga zinango asim. zha ninga nchimwiya cabwera zha kuna iwe.

anakha funya mabonde thangwe ana dziwa kuti mwamuna ndiye ana wubate wubate maningi?

ndizvo zvenezvo.
Manje mabonde anafunyiwa panguwa ya kuleba tini? mwezi mingasi owu makole mangasi?

APPENDIX B: Sample of Corpus Search for -nge- and -ha-

Barwe Corpus Search

21 hits (limited to 1000)

uti uzviite . Ee-e zvino imwimwi	**mwafungenyi**	? Mwaa muna 77 , eya 77 , ee . akomana Kunga mw
akomana . Wambonatse kutarisisa ere	**ngenyi**	, chikonzero chacho chaite kuti munhu a kuti
ira ndizvo unopuva zimba rakakura	**ngenyi**	, vaigwinyisira pamberi paMwari . Ini n kudare
ye , Rambai muchitipazve , Tikafira pano	**ngenyi**	. (A . C . Hodza , Mitupo Nezvidao Zvam
ka-tsvaka kuti mwana wambokorerwe	**ngenyi**	. Akakorerwe kuamwa tozodai kuti a , ta kuamwa
ka-tsvaka kuti mwana wambokorerwe	**ngenyi**	. Akakorerwe kuamwa tozodai kuti a , ta kuamwa
ati asi rodhi ndinoiziya kani ndambodaro	**ngenyi**	. Ndazoobude kumagaraji aana . Aaana Ba
ati asi rodhi ndinoiziya kani ndambodaro	**ngenyi**	. Ndazoobude kumagaraji aana . Aaana Ba
iwa haumbonyoreriwo vabereki vako	**ngenyi**	? Chipo chatakadanana handisati ndambok tsamba
zirawo kwaakuti hambai kwashe .	**ngenyi**	anhu ? Hino nyayayi yanga isikazi kufan Munodaro
cho zvikazi " Baba woye hino	**ngenyi**	gore rino ? " Baba akati , A-a rekai nd tingaponawo
anonga anokutaura usikazwi unoreke	**ngenyi**	iwewe ? Handiendiyo akati endayi ndikat kuzwa
traight forward question iyeye uyo . Iwe	**ngenyi**	kana ari kuti akauya anomutandanisa ndo
dza kwaunotaura kwacho ndekupi ?	**ngenyi**	ku fananidza vanhu vose vandinosiona ? Ndarega
mudumbu kuramba zvakadaro	**ngenyi**	kubudikidza ngendaa yeyi yehosha dzenjo zvichkonzerwa
mbomira atongwe . ' ' Kana asati atongwa	**ngenyi**	muchiti imbavha ? Musi weku tongwa acha
. VAnohwisisa kuti upenyu kuti	**ngenyi**	mumisha yavanonga vatanga kuti hunokiswa vanovamb
i hino pano uwu asati aonekwa	**ngenyi**	shumba Saka kumangweshe uku munenge kutiwakafa muc
nemishonga yekuti zvimwe zvese unodya	**ngenyi**	usikadyi ichiKwaakukugadzira , kwaakutody
akataura kuna Zebhedhia ndichiti , ' Asi	**ngenyi**	vadaro kutipa mwana wavo akura kudai ku
' Gibson akapindura . ' Ko , ndingaitwa	**ngenyi**	zvangu ini . And nhasi ndinoda kuhudhav

980 hits (limited to 1000)

(kuramba + kuedza) (ii) mashamba + **(kushamba** + nzou) (iii) chioko + homwe (ruoko nzou + m

basa 3 . -karinga -wana -vhetura -sumba **-shamba** -virima 4 (a) . . . ndokupfunya chisero

Akambonatsirwe kare kare kaya **achahamba** , asi handichazivi kuti chii madhumeni haachahamb

Akambonatsirwe kare kare kaya **achahamba** , asi handichazivi kuti chii madhumeni haachahamb

a ibenzi zvaanonga achitaura ari mupenyu **achahamba** nezvanozoita afa zvinosiyana . Munhu ak

a munonga muchindohamba uyu **achihamba** ukati munhu wandaona unohamba uyu wakandonyarara . I

e uyu munhu aigara kumakuva **achingozhamba** achizvicheka namabwe . 6 Zvino nomumakomo , kuzoti u

eza kuti mweya yakaipa ipere vese apinda **achishamba** . Vatora masadza vaakubika . Vaakugorer

, iye mukadzi achiti piriviri kunge ange **achishamba** kumeso nemushiya . APhiri vaya vakabva

mangwanani namasikati waingonzwa **achizhamba** , yoowe-e , mai-ii , ndiLegion unozhamb

mangwanani namasikati waingonzwa **achizhamba** , yoowe-e , mai-ii , ndiLegion unozhamb

igadziridza pahuro . Akazoenderera mberi **achizhamba** achidzokorodza mashoko ake . Akatozobva

here , ndokuzvipunzira pasi pamberi pake **achizhamba** achiti , " Munei neni , imi Jesu Mwanak

kanga voda kusvika , akatanga kudaidzira **achizhamba** achiti akanga abata Chauruka asi akanga

so . Akamhanya achipatarika nesango rose **achizhamba** achiti pamwe ati bhi kupunzika pamwe on

bva mukati mehama , mumakuwa , mumarinda **achizhamba** ariko , mangwanani namasikati waingonzw

bva mukati mehama , mumakuwa , mumarinda **achizhamba** ariko , mangwanani namasikati waingonzw

me wangu ? Unongomuzivawo Simoko . Maria **Achizhamba** izwi rakakwira . Haafaniri kuramba nepi

mutema chaiye . Ko , ndiani manje ? Juru **Achizhamba** neshungu . Mukadzi wangu ! Maria , wadi

18 " Izwi rakanzwikwa muRama , rokuchema **achizhamba** zvikuru . Racheri achichemera vana vake

kari kusadarika mugwagwa wacho . Nyenyai **agozhamba** achiti , ' Yowe-e , ndofa hangu weduwe-

nyakata nyakata , njira beuke . Echibva **ahamba** echoodarika . Vadarika chikazi " a-a ma