5.1. Introduction

The discussions on the Generative phonology of Dimasa presented in this chapter are based on the theoretical formulations propagated by Chomsky and Halle, Hyman and Dell. As already mentioned in Sect. 4.1, no phonological literature is available on Dimasa and hence while analysing Dimasa sound segments in the framework of Generative phonology, the researcher had no other alternative but to follow his own convictions in presenting the facts in the manner he deemed fit for a contrastive study. Hence all the aspects of Dimasa Generative phonology are not included in this chapter, those aspects which seemed necessary for a contrastive analysis are included in this chapter.

5.2. Distinctive feature composition of Dimasa segments

The total number of distinctive features used in this work is 13 and they include the following: consonantal, vocalic, sonorant, continuant, nasal, anterior, coronal, high, low, back, round, voice, strident. The feature [tense] is not pertinent for Dimasa sound segments and hence this feature is not used in this discussion. Though in 'The Sound Patterns of English' Chomsky and Halle proposed a system of thirty-six distinctive features all the features are not necessary for an understanding of Dimasa sound segments. Even the feature [syllabic] is not necessary for a description of Dimasa segments.
5.3. Segment Structure Matrices and Blank-filling Rules

5.3.1. Fully Specified Matrix

The fully specified distinctive feature composition constituting the Systematic Phonological Matrix of Himara is as follows:

Table I

<table>
<thead>
<tr>
<th>Systematic Phonological Matrix (Fully Specified) of Himara:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>consonantal</td>
</tr>
<tr>
<td>vocalic</td>
</tr>
<tr>
<td>sonorant</td>
</tr>
<tr>
<td>continuant</td>
</tr>
<tr>
<td>nasal</td>
</tr>
<tr>
<td>anterior</td>
</tr>
<tr>
<td>coronal</td>
</tr>
<tr>
<td>high</td>
</tr>
<tr>
<td>low</td>
</tr>
<tr>
<td>back</td>
</tr>
<tr>
<td>round</td>
</tr>
<tr>
<td>voice</td>
</tr>
<tr>
<td>strident</td>
</tr>
</tbody>
</table>
5.3.2. **Minimally Specified Matrix**

The matrix presented in the previous section has a number of redundant specifications which could be eliminated to construct a minimally specified phonological matrix of Dimasa segmental phones. Of the 286 specifications shown in the fully specified matrix 212 are actually redundant and hence in the minimally specified matrix a '0' mark has been put in the places of redundant specifications.

**Table II**

| Minimally Specified Systematic Phonological Matrix of Dimasa | i | e | a | o | u | p | t | k | g | z | s | m | n | r | l | h | w | y |
| consonantal                                                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| vocalic                                                    | + | + | + | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| sonorant                                                  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| continuant                                                | 0 | 0 | 0 | 0 | 0 | - | - | - | - | - | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| nasal                                                      | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| anterior                                                   | 0 | 0 | 0 | 0 | 0 | + | + | + | + | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| coronal                                                    | 0 | 0 | 0 | 0 | 0 | - | - | - | - | - | - | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 |
| high                                                       | + | - | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| low                                                        | 0 | 0 | + | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| back                                                       | 0 | - | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| round                                                      | - | 0 | - | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| voice                                                      | 0 | 0 | 0 | 0 | 0 | - | - | - | - | - | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| strident                                                   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
5.5.2.1. Description of Dimaic sounds with reference to features

\[
\begin{array}{c}
\text{/i/} \\
+\text{vocalic} \\
+\text{high} \\
-\text{round} \\
\\
\text{/e/} \\
+\text{vocalic} \\
-\text{high} \\
-\text{back} \\
\\
\text{/a/} \\
+\text{vocalic} \\
+\text{low} \\
\\
\text{/ə/} \\
+\text{vocalic} \\
-\text{low} \\
+\text{back} \\
-\text{round} \\
\\
\text{/o/} \\
+\text{vocalic} \\
+\text{high} \\
+\text{round} \\
\\
\text{/u/} \\
+\text{vocalic} \\
+\text{high} \\
+\text{round}
\end{array}
\]
\[/p/\]
\[
\begin{array}{c}
\text{-continuant} \\
\text{+anterior} \\
\text{-coronal} \\
\text{-voice}
\end{array}
\]

\[/t/\]
\[
\begin{array}{c}
\text{-continuant} \\
\text{+anterior} \\
\text{+coronal} \\
\text{+voice}
\end{array}
\]

\[/s/\]
\[
\begin{array}{c}
\text{-continuant} \\
\text{+anterior} \\
\text{+coronal} \\
\text{+voice}
\end{array}
\]

\[/z/\]
\[
\begin{array}{c}
\text{-continuant} \\
\text{+anterior} \\
\text{-coronal} \\
\text{-voice}
\end{array}
\]
\( /\text{x}/ \)

- Consonantal
- +Sonorant
- +Continuant
- -Nasal
- -Anterior

\( /\text{l}/ \)

- Consonantal
- +Sonorant
- +Continuant
- -Nasal
- +Anterior

\( /\text{h}/ \)

- -Consonantal
- -Vocalic
- -High

\( /\text{u}/ \)

- Consonantal
- -Vocalic
- +High
- +Round
The description of Dinasa segments given in this section takes note of distinctive features only and hence redundant feature specifications are not mentioned while describing a particular sound segment.

5.3.3. Segment Structure

A comparison of the Table I given in Sec. 5.3.1, and the table II presented in Sec. 5.3.2, suggests that a set of Redundancy Rules are to be formulated which may map the table at 5.3.2. onto the table at 5.3.1. by filling in the predictable blanks. These redundancy rules are referred to here as Segment Structure Conditions. But it may be mentioned here that some of these Segment Structure Conditions (henceforth, SgSc) actually belong to Language Universal rather than forming part of Dinasa phonology. The SgSc conditions are written in the format of "If-Then" rules, the top line being marked by I(c) and the bottom T(c). $\sqcap I(c)$ means "If-condition" and $T(c)$ means "Then-condition".

There are nineteen such Redundancy Rules that explain all the 212 blanks in the table presented in Sec. 5.3.2.
5.3.3.1. Segment Structure Conditions

\[
\text{SgSc I} \quad I(c) \quad [+vocalic] \\
\downarrow \\
T(c) \\
\text{SgSc II} \quad I(c) \quad [+high] \\
\downarrow \\
T(c) \quad [+low]
\]

This condition states that all \([+vocalic]\) segments are \([+\text{consonantal}, +\text{sonorant}, +\text{continuant}, -\text{nasal}, -\text{anterior}, -\text{coronal}, +\text{voice}, -\text{strident}]\).

This condition states that if a segment is \([+\text{high}]\) it must be \([+\text{low}]\).
This condition states that all $[\text{+round}]$ segments are both $[\text{+back}]$ and $[\text{-low}]$.

This condition states that a $[\text{+low}]$ segment must be $[\text{-high}, \text{+back}, \text{-round}]$.

This condition states that a segment which is $[\text{+back}, \text{-round}]$ must be $[\text{-high}]$. 
This condition states that a $[+\text{high}, -\text{round}]$ segment must be $[+\text{back}]$.

This condition states that $[-\text{high}, -\text{back}]$ segments are automatically $[-\text{low}]$.

This condition states that all $[-\text{anterior}]$ segments are $[-\text{high}, -\text{back}]$. 
This condition states that all [-consonantal] segments are [-vocalic, -low, -round].

This condition states that all [-continuant] segments are [-consonantal, -sonorant, -nasal, -strident].
This condition states that [\(+\text{strident}\)] segments are [\(+\text{consonantal}\), \(-\text{sonorant}\), \(+\text{continuant}\), \(-\text{nasal}\), \(+\text{anterior}\), \(+\text{coronal}\)].
This condition states that [\(+\text{nasal}\)] segments are [\(+\text{sonorant}\), +sonorant, +continuant, +voice, -strident].

\[
\begin{align*}
\text{SgSc XIII} & \quad I(c) & \quad \begin{array}{c}
\begin{array}{c}
\text{+nasal} \\
\text{+coronal}
\end{array}
\end{array} \\
& & \downarrow \\
& & \begin{array}{c}
\text{+anterior}
\end{array}
\end{align*}
\]

This condition states that if a nasal segment which is [\(+\text{coronal}\)] is also [\(+\text{anterior}\)].

\[
\begin{align*}
\text{SgSc XIV} & \quad I(c) & \quad \begin{array}{c}
\begin{array}{c}
\text{+nasal} \\
\text{+anterior}
\end{array}
\end{array} \\
& & \downarrow \\
& & \begin{array}{c}
\text{+coronal}
\end{array}
\end{align*}
\]

This condition states that if a nasal segment is [\(-\text{anterior}\)] it must be [\(-\text{coronal}\)].
This condition states that \{+consonantal, +sonorant, 
+continuant, -nasal\} segments /r/ and /l/ are \{+coronal, -high, 
-back, +voice, -strident\}.

\text{SgSc XVI} 
I(c) 
[-consonantal] 
-\text{vocalic} 

\text{T(c)} 
[-consonant] 
[-nasal] 
[-\text{anterior}, -\text{coronal}, -\text{low}] 
[-\text{strident}]

\text{SgSc XV} 
I(c) 
[+consonantal] 
[+sonorant] 
[+continuant] 
[-nasal]
This condition states that [-consonantal, -vocalic] segments /h, w, y/ are [+sonorant, +continuant, -nasal, -anterior]
- coronal, -low, -strident].

SgSc XVII  \( I(c) \)
\[
\begin{array}{c}
\text{-consonantal} \\
\text{-vocalic} \\
\text{+high} \\
\end{array}
\]
\[
\downarrow
\]
\[
\begin{array}{c}
\text{+back} \\
\text{+voice} \\
\end{array}
\]

This condition states that [-consonantal, -vocalic, +high] segments /w/ and /y/ are [+back, +voice].

SgSc XVIII  \( I(c) \)
\[
\begin{array}{c}
\text{-consonantal} \\
\text{-vocalic} \\
\text{-high} \\
\end{array}
\]
\[
\downarrow
\]
\[
\begin{array}{c}
\text{-back} \\
\text{-round} \\
\text{-voice} \\
\end{array}
\]

This condition states that [-consonantal, -vocalic, -high] segment /a/ is always [-back, -round, -voice].
### 5.4. Sequence Structure

Constraints on possible sequences of segments in Diassa morphemes are discussed in the following section in the format of 'If-Then condition', the top line being marked I(c) and the bottom...
T(c), as stated in Sec. 2.2.5.2, morpheme structure conditions state the redundancies at the systematic phonemic level. Morpheme structure conditions designate the feature values that are predictable in the lexical entries. Of the two types of MSCs Dimasa segment structure conditions have already been discussed in Sec. 5.3.3.1 and sequence structure conditions of Dimasa (henceforth, SqSc) are listed in Sec. 5.4.1.

5.4.1. Sequence Structure Conditions

\[
\text{SqSc I} \quad I(c) \quad \begin{array}{l}
\begin{array}{c}
+\text{segment} \quad +\text{consonantal} \\
\end{array}
\end{array}
\]

\[
T(c) \quad +\text{vocalic}
\]

This condition states that if any consonantal segment is preceded by another segment morpheme-initially then the latter must be [+vocalic].

Examples:

\[
\begin{array}{ll}
/\text{em}/ & \text{mat} \\
/\text{em}/ & \text{yes} \\
/\text{em}/ & \text{I}
\end{array}
\]

\[
\text{SqSc II} \quad I(c) \quad \begin{array}{l}
\begin{array}{c}
+\text{consonantal} \quad +\text{segment} \\
\end{array}
\end{array}
\]

\[
T(c) \quad +\text{vocalic}
\]
This condition states that if any consonantal segment is followed by another segment morpheme-finally then the latter must be $[-vocalic]$. 

Examples: 

- /bo/ he 
- /bi/ sharp 
- /tu/ sleep 
- /se/ not 
- /mi/ animal 

Sq3c 1 and Sq3c 2 rule out the possibility of any consonant cluster both morpheme-initially as well as morpheme-finally. Following forms are not permissible in Maza: 

- *# spa *# ans 
- *-kt *-ta #

Sq3c III I(c) $[-vocalic]$ #

T(c) $[-consonantal]$ 

This condition states that if a $[-vocalic]$ segment occurs morpheme-finally it must be $[-consonantal]$. 

Examples: 

- /bip/ hide 
- /muluk/ world 
- /son/ salt
This SqSc rule out the possibility of the occurrence of /i/, /w/ and /y/ morpheme-finally. Following are some impossible forms in Dimasa:

*bah
*kaw
*gay
*ow

SqSc IV

I(c) $\neg [+nasal]$ 

T(c) $[+anterior]$ 

This condition states that if a $[+nasal]$ segment occurs morpheme-initially it must be /m/ or /n/.

Examples:

/me/ big
/na/ fish
/maol/ false
/nana/ baby

This condition negates the occurrence of /n/ morpheme-initially. The following forms are, therefore, not permissible in Dimasa.
This condition states that if a consonantal segment occurs
morpheme-finally it must be $[^{−}\text{strident}]$. This rule implies that
/s/ and /z/ which are the only two $[^+\text{consonantal}]$ segments in Bisa
cannot occur morpheme-finally.

Examples:

/kirip/   all
/hok/     personal right
/kim/     flower
/pia/     again
/liis/    collection
/hor/     night
/aol/     swallow

Following forms are not permissible in Bisa:

* bis
* kas
This condition states that if a \( [-\text{consonantal}] \) segment occurs morpheme-finally it must be either /p/ or /k/. Out of the six \( [-\text{consonantal}] \) segments of Dimasa only /t/ and /d/ are \( [-\text{coronal}] \) and /b/ and /g/ are \( [+\text{voice}] \). Thus this SqSc negates the occurrence of /t/, /t/, /d/, and /g/ in morpheme-final positions.

Examples:

/\textit{taU.ki}/ banana
/\textit{pirik}/ silently
/\textit{kirip}/ all
/\textit{didap}/ mud

Following forms are not allowed in Dimasa:

* gisib
* hat
* lad
* zig
Sequence structure conditions VII and VIII state that when one obstruant is followed by another obstruant the two agree in the feature \([-\text{voice}\]) . Following words illustrate this agreement:

/sibba/ to blow
/bogdo/ neck
/rəsatəl/ song
/rəmədu/ is singing
Sequence structure conditions IX and X state that when a nasal is followed by a [-sonorant] segment the two agree in the feature [-anterior]. Following words illustrate this agreement:

/dainsi/  one month
/daingin/  two months
/riyemba/  to flow
/riyensu/  is flowing
/riyendsu/  flew
/sain/     sun
/sainzer/  evening
/saingerma/ solar eclipse

Sequence structure condition XI states that if [+vocalic] then:

T(c)

\{ [-back] \}
\{ [+low] \}
\{ [+round] \}. 

\( \exists \langle +\text{nasal} \rangle \) \( \langle -\text{sonorant} \rangle \)

\( \vdash \langle -\text{anterior} \rangle \)

\( \exists \langle +\text{nasal} \rangle \) \( \langle -\text{sonorant} \rangle \)

\( \vdash \langle -\text{anterior} \rangle \)
This condition states that if a [+vocalic] segment occurs morpheme-initially it may be any one of the following vowels: /a, e, o, u/.

Examples:

/-ik/ a suffix indicating feminine
/-an/ aat
/-on/ yes
/-an/ I
/-uk/ a locative suffix

This condition implies that /a/ cannot occur morpheme-initially.

Following are, therefore, impossible forms in Maasa:

*an
*en
*ak

SgSc XII 1(c) [+vocalic] #

\[
\begin{align*}
\downarrow \\
& \begin{align*}
& \text{[-back]} \\
& \text{[+low]} \\
& \text{[+round]} \\
\end{align*}
\end{align*}
\]

This condition states that if a vocalic segment occurs morpheme-finally it may be any one of the following vowels: /i, e, a, o, u/.
Examples:

/find/ animal
/find/ net
/find/ big
/find/ house
/find/ rice beer

This condition implies that /ɔ/ cannot occur morpheme-finally.

Following forms are not allowed in Dimasa:

* bo
* no
* lo
* te

SqSc XIII I(c) \( C^{[\text{vocalic}]} \) \( C^{[\text{vocalic}]} \)

\( \downarrow \)

T(c) \( \lceil \text{low} \rceil \)

This condition states that when a vowel cluster occurs morpheme-finally the first vowel of this cluster must be /a/ which is the only \( \lceil \text{low} \rceil \) vocalic segment in Dimasa.

Examples:

/find/ bird
/find/ run away
/find/ long
This condition states that when a vowel cluster occurs morpheme-
finally, the second vowel of this cluster must be either /i/ or /u/.

Examples:

'/kau/    steal
/bau/    worry
/salai/  tongue
/mai/    god

This condition states that if the first vowel of a CVV
sequence happens to be /ə/ the next vowel must be /a/.

Examples:

'/boda/  brother
/zama/  invite
/bika/  mind
5.5. Phonological Processes

Following rules describe conditions under which phonological processes take place in Slaasa. These rules reveal the abstract relationship between phonemic and phonetic representations.

I. The first obstruant takes on the same value for the feature voice as is found in the second obstruent. The rule may be presented in the following format:

\[ \text{-sonorant} \rightarrow \text{voice} \quad / \quad \text{-sonorant} \]

Examples:
- /sip/ blow, but /sibdu/ is blowing
- /razaptai/ song, but /rozabdu/ is singing
- /bisik/ daughter, but /bisigbi/ by the daughter
- /hilik/ curtail, but /hiligbi/ short

II. Obstruants are always voiceless when they occur in word-final positions. The rule is as follows:

\[ \text{-sonorant} \rightarrow \text{-voice} \]

Examples:
- /basik/ mountain
- /bip/ hide
- /rozap/ sing
- /tailik/ banana
- /muluk/ world
- /kirip/ all
III. Voiceless [-continuant] segments are aspirated when they occur morpheme-initially. The rule is as follows:

\[
\text{[-continuant]} \quad \text{[-voice]} \quad \rightarrow \text{[+aspirated]}
\]

Examples:

1. /pæi/ \rightarrow /pʰæi/ come
2. /tu/ \rightarrow /tʰu/ sleep
3. /kɪmba/ \rightarrow /kʰɪmba/ to fear

IV. [+anterior] nasals become [-anterior] when they are followed by [-anterior] obstruents. The rule may be presented in the following format:

\[
\text{[+nasal]} \quad \text{[-anterior]} \quad \rightarrow \text{[-anterior]} \quad \text{[-continuant]}
\]

Examples:

1. /dænzi/ one month
   but /dænɡin/ two months
2. /sainsurak/ sun rising
   but /sainkilim/ shadow
3. /saingezna/ eclipse
4. /kusapulu/ small basket
   but /kaŋkora/ covered basket
V. While \([-\text{continuant}, -\text{coronal}, +\text{anterior}]\) segments \(\text{p}\) and \(\text{h}\) occur before high vowels they become stridents. The rule is as follows:

\[
\begin{array}{c}
\text{[-continuant]} \\
\text{-coronal} \\
\text{+anterior} \\
\end{array} \rightarrow \begin{array}{c}
\text{[-strident]} \\
\text{[+vocalic]} \\
\text{[+high]} \\
\end{array}
\]

Examples:

- /gibin/ \(\Rightarrow\) /gɪbɪn/ other
- /pinba/ \(\Rightarrow\) /pɪnba/ to turn
- /bama/ \(\Rightarrow\) /bəma/ mother
- /gapu/ \(\Rightarrow\) /gəpʊ/ white

VI. Voiceless obstruents \(\text{p}\) and \(\text{k}\) become voiced when they are immediately followed by \([-\text{consonantal}, -\text{high}, -\text{round}, -\text{vocalic}, +\text{high}, -\text{round}]\) segment \(\text{y}\). The rule may be stated in the following format:

\[
\begin{array}{c}
\text{[-continuant]} \\
\text{-coronal} \\
\text{-voice} \\
\end{array} \rightarrow \begin{array}{c}
\text{[-voice]} \\
\text{[+vocal]} \\
\text{[+high]} \\
\text{[-round]} \\
\end{array}
\]

Examples:

- /sɪpya/ \(\Rightarrow\) /sɪbɪya/ not blowing
- /sikya/ \(\Rightarrow\) /sɪkɪya/ not drawing
VII. When the segment /k/ occurs before the glide /y/ it not only gets voiced, it also becomes palatalised. This palatalisation rule may be stated in the following format:

\[
\begin{array}{c}
\text{-continuant} \\
\text{-anterior} \\
\text{-coronal} \\
\text{-voice}
\end{array}
\xrightarrow{\text{high}}
\begin{array}{c}
\text{+nasal} \\
\text{-anterior} \\
\text{-coronal}
\end{array}
\]

Examples:

sikya \( \left[ \text{sik}^{\text{ya}} \right] \) not drawing
hilikya \( \left[ \text{hil}^{\text{ya}} \right] \) not short
pirikya \( \left[ \text{pir}^{\text{ya}} \right] \) not silently

VIII. When a suffix beginning with /n/ is added to a stem ending with /n/ the latter is dropped. The rule is as follows:

\[
\begin{array}{c}
\text{+nasal} \\
\text{-anterior}
\end{array}
\xrightarrow{\emptyset}
\begin{array}{c}
\text{+nasal} \\
\text{+coronal}
\end{array}
\]

Examples:

1. Underlying form # an+ni #
   - nasal deletion # an+ni #
   - surface representation # an #

2. Underlying form # sin+nip ran #
   - nasal deletion # sin+nip ran #
   - surface representation # sinip ran # from #
IX. When /h/ is immediately followed by /y/ the segment /g/ is inserted in between the two. The rule may be shown in the following format:

\[
\emptyset \rightarrow \left(\begin{array}{c}
\text{continuant} \\
\text{anterior}
\end{array}\right) / \left(\begin{array}{c}
\text{nasal} \\
\text{anterior}
\end{array}\right)
\]

Examples:

/nañga/ \[nañga\] not wanted
/liñga/ \[liñga\] not drinking
/niñga/ \[niñga\] not asking

X. When a suffix beginning with /r/ is added to a stem having /m/ as the final consonant /b/ is inserted between the /m/ and the following suffix. The rule is as follows:

\[
\emptyset \rightarrow \left(\begin{array}{c}
\text{continuant} \\
\text{anterior}
\end{array}\right) / \left(\begin{array}{c}
\text{nasal} \\
\text{anterior}
\end{array}\right)
\]

Examples:

# ham + rum # \[hámbrum\] top of a hill
# dam + ra # \[dámbrə\] heaven

XI. When a suffix beginning with a vowel is added to a stem whose final consonant is /N/ the segment /g/ is inserted between the stem and the suffix. The rule is as follows:
XII. When the voiceless sound /k/ occurs in between two high vowels it becomes its voiced counterpart. The rule may be stated in the following format:

\[
\begin{array}{c}
\text{[continuant]} \\
\text{-anterior} \\
\text{+voice} \\
\end{array}
\rightarrow
\begin{array}{c}
\text{[nasal]} \\
\text{-anterior} \\
\end{array}
+ [\text{+vocalic}]
\]

Examples:

\# s\text{an} + a \# \quad [s\text{an}\text{ga}J \quad \text{quickly}
\# s\text{i\text{il}} + au \# \quad [s\text{i\text{in}\text{ga}}] \quad \text{aeroplane}
\# te\text{n} + i \# \quad [t\text{hi}\text{gi}] \quad \text{a machine to flatten rice}

XIII. When the vowel /a/ occurs in between two bilabial stops it becomes /u/. The rule is as follows:

\[
\begin{array}{c}
[\text{+vocalic}] \\
\text{-high} \\
\text{+round} \\
\end{array}
\rightarrow
\begin{array}{c}
[\text{+vocalic}] \\
\text{+high} \\
\end{array}
+ [\text{+continuant}]
\]

Examples:

/b\text{aka}/ \quad [\text{Ba\text{ga}}] \quad \text{mouth}
/b\text{iki}/ \quad [\text{Bi\text{gi}}] \quad \text{waste product}
XIV. The segment /p/ or /b/ is inserted between the nasal segment /m/ and the -continuant segment /t/ or /d/. This openthetic rule may be presented in the following format:

\[ \varnothing \rightarrow \begin{cases} \text{[[-continuant], } \text{+anterior, -coronal] } \\
\text{[+nasal, +anterior, -coronal]} \end{cases} \]  

\[ \varnothing \rightarrow \begin{cases} \text{[[-continuant], } \text{+anterior, -coronal] } \\
\text{[+nasal, +anterior, -coronal]} \end{cases} \]

Examples:
- /kia'tau/ \( \rightarrow \) /k'la'pt'au/ earring
- /kia'daudi/ \( \rightarrow \) /k'la'ba'daudi/ a kind of flower
- /luatai/ \( \rightarrow \) /lümpt'ai/ small box
- /giliadi/ \( \rightarrow \) /gillabdi/ sweat
- /ya'tai/ \( \rightarrow \) /yadp't'ai/ big sat
- /ra'badu/ \( \rightarrow \) /ra'bambdi/ dew drops
- /wilimdu/ \( \rightarrow \) /wilimblu/ in bowing

XV. If the first vowel of a (C) VCV sequence is a high vowel, the next vowel also must be a high vowel. The rule may be stated in the following manner:

\[ \text{[+vocalic]} \rightarrow \text{[+high]} \quad \text{(C) } \text{[+vocalic]} \quad [\text{[+high, -round]}] \]
Examples:

/bi/ this
/bi/ wife
/si/ true
/si/ tiger
/si/ cloud
/di/ river
/si/ snake

XVI. If the third syllable of a polysyllabic word begins with either /g/ or /l/ the vowel of the second syllable is optionally dropped in quick speech and this dropping of the vowel gives rise to a phonetic cluster of two consonants. The rule is as follows:

\[ \overline{\text{vocalic}} \overline{\varphi} / \overline{cJ} \overline{yJcJ} \overline{cJ} \overline{uJ} \]

Examples:

/bubili/ /\text{\texttt{bubili}}/ time
/bupule/ /\text{\texttt{bupule}}/ fat
/bak le/ /\text{\texttt{bak le}}/ under
/gebele/ /\text{\texttt{gebele}}/ fool
/hond rej/ /\text{\texttt{hond rej}}/ orange

XVII. If the underlying form of the first vowel of a CVCV(C) sequence happens to be /\text{\texttt{o}}/ it changes to a high or low vowel depending on the highness or lowness of the following vowel. The rule may be stated in the following format:
Examples:

/ba\d/ brother
/bus\d/ daughter
/bi\h/ wife
/bu\k/ mouth
/b\h\o/ belly
/g\z\n/ old
/g\p\n/ white
/g\m\o/ dirty
5.6 NOTES & REFERENCES


   (English translation, Cambridge, 1980.)

4. In Bamas all [+vocalic] segments are [+syllabic] and all
   [-vocalic] segments are [-syllabic].

5. This rule has to be read along with the rule V. This aspiration
   rule applies to /p/ when it is followed by non-high vowels
   -vowel-phonologically-initially. If /p/ is followed by high vowels
   -vowel-phonologically-initially
   it becomes [φ] which is [+strident].

6. See the discussion on Morphophonemics in Sec. 2.2.4.1. In order
   to find out the relationship between /all/ and /ani/ a morpheme
   N is postulated which is sometimes represented by the phoneme
   /n/ and sometimes by the phoneme /N/.

7. It is to be noted that phonologically Bamas does not allow any
   consonant cluster-initially, medially or finally. See Sec. 5.3.3.2.
   in Chapter II where phonologic sequential constraints are discussed.