THE PHONOLOGY
OF
THE VERBAL PIECE
IN
COLLOQUIAL BENGALI

THESIS
submitted for the degree of

DOCTOR OF PHILOSOPHY
in the
UNIVERSITY OF LONDON
by

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SCHOOL OF ORIENTAL AND AFRICAN STUDIES
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In order to focus attention on correspondences between the grammatical and phonological levels of linguistic statement, the results of the present phonological analysis are presented within a grammatical framework set up in Part I, (Chapters 1 - 3).

Part Two of the thesis includes Chapters 4 - 6. Chapter 4 gives relevant details about the Texts presented at different levels: Orthography, Roman transliteration and Phonetic transcription.

Chapters 5 and 6 give a detailed description in general phonetic terms of the pronunciation of Bengali verbal forms. Chapter 5 deals with the vowel articulations and Chapter 6 the consonantal articulations.

Part Three includes Chapters 7 - 11. In Chapter 7 the elements of the Phonological analysis in terms of Phonemetic units and Prosodic elements are stated.

Two morphological abstractions are made for all verbal forms: viz. Stem and Ending. At the Phonological level syllables are named stem syllables and ending syllables. The structures of Endings are discussed in Chapter 8. Chapter 9 gives details about the V elements of structure. Chapter 10 gives a Phonological account of vowel harmony.

Chapter 11 deals with the C elements of Phonological structure in the stem.
Appendix 1 provides a list of verbal forms in Colloquial Bengali.

Appendix 2 provides a text of recordings of the verbal forms listed in the end of Chapter 1, and those used for the Palatograms and the Kymograms.

Appendix 3 gives a brief Bibliography.

In making the phonetic abstractions Palatograms and Kymograms are provided in the thesis. More Palatograms and Kymograms are provided in the appendix 4.

A grid and a record are provided in the pocket at the back of the thesis.
ACKNOWLEDGEMENT

My sincere gratitude is due to Mrs. Eileen M. Whitley, my supervisor in the S.O.A.S. But for her valuable comments and suggestions and active cooperation at all stages of my work, I would have hardly achieved success in the preparation of this thesis. Apart from supervising my work, she encouraged me with words of advice at critical moments.

I am also indebted to Prof. N.C. Scott, Mr. J. Carnochan and Mr. W.E. Jones whose suggestions and comments were readily available for this work at all times.

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My thanks are due to all of them.

Q. D. Muhammad.
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**ABBREVIATIONS (general)**

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<td>c. s.</td>
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<td>Mouth tracing.</td>
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<tr>
<td>N</td>
<td>Nasal tracing.</td>
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<td>J.D.L.</td>
<td>Journal of the Department of Letters, Calcutta University, Calcutta.</td>
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<td>J.P.</td>
<td>Journal de Psychologie.</td>
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<td>O.D.B.L.</td>
<td>The Origin and Development of Bengali Language.</td>
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<td>T.P.S.</td>
<td>Transactions of the Philological Society, London.</td>
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<td>T.C.L.P.</td>
<td>Travaux du Cercle Linguistique de Prague.</td>
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INTRODUCTION

Bengali is one of the major Indo-Aryan languages. In quality and in quantity of literary production it is the first and in general importance and in number of speakers it is second only to Urdu and Hindi. It is spoken by over ninety million people, more than half in East Pakistan and the rest in West Bengal, India.

Very little work has been done on the phonetics and phonology of the Bengali Language. It will not be incorrect to say that the spoken language has hardly been touched except in two works.\(^1\) The first, Dr. S.K. Chatterji's 'Brief Sketch of Bengali Phonetics'\(^2\) which is a pioneer work in Bengali and it was based mainly on Daniel Jones's Phoneme approach. It lacks precision and completeness on various points fundamental to an understanding of the Bengali sound system. The second and the most recent work on the language is 'A Phonetic and Phonological Study of Nasals and Nasalization in Bengali,'\(^3\) by M.A. Hai, who utilizes all modern theoretical approaches to linguistic study. His work presents a good deal of phonetic detail in spite of its limited scope.


2. It is a separate reprint for the international Phonetic Association (London, Paris, 1921), of an original article published under the title 'Bengali Phonetics' in E.S.O.S. 2, Pp.1-25 (1921)

It may be said here with all humility that I am the second student to undertake research in Colloquial Bengali on the basis of modern linguistic theories. It was found desirable to circumscribe my field of investigation. I have taken myself as an informant for the study of the problem. As one born and brought up in East Bengal and as a student and teacher of Bengali I myself speak that form of Bengali which is generally accepted by educated people as the standard and which is commonly understood all over Bengal. This kind of Bengali is used for broadcasting from Radio Pakistan and for imparting instruction in educational institutions. However, whenever I was in doubt about the validity of a particular pronunciation, I checked my utterance with that of other Bengali speakers living in London while this research was being conducted. By choosing the verbal piece as my subject of Phonological study, I have further limited my material for intensive research.

Phonetic observation for this thesis was made kinesthetically as well as through the techniques of Kymography and Palatography. I have made some recordings of my own speech and listened to them repeatedly. I used a mirror for visual aid. All the Kymograms and Palatograms were made as one word sentences uttered with a particular situation in mind; it is possible to set up relevant schematic constructs at the level of context of situation for all the sentences analysed in this thesis. The Kymograms and Palatograms produced in this thesis are chosen as typical for my pronunciation of the respective sentences, and in making this choice, the same sentences were
repeated several times on different days.

A grid for measuring Palatograms and gramophone records of the forms including those used to make Palatograms and Kymograms, are provided in a pocket at the back of the thesis.

In making the phonological statement of my findings, I set up a grammatical frame work for the language material under consideration. My attempt in this work is to state my phonological findings in relation to grammar, and to illustrate the relation between grammar and phonology. I have presented my statement in accordance with the requirements of the theory of the Prosodic approach to phonological analysis, which has been accepted as most conducive to an economical, consistent and comprehensive statement.¹

PART ONE

GRAMMATICAL OUTLINE

CHAPTER 1: Grammatical Categories
CHAPTER 2: Some Main Syntactic Structures
CHAPTER 3: Finite and Non-finite Verbal Forms
CHAPTER I

GRAMMATICAL CATEGORIES

1.0 General Outline.
1.1 Sentence types: Verbal and Non-verbal sentences.
1.2 Verbal sentences: Command and Non-Command.
1.3 Non-Command verbal sentences: Statement and Question.
1.4 Affirmative and Negative sentences.
1.5 Simple and Compound sentences.
1.6 Verbal Clause: Simple and Compound.
1.7 Verbal forms: Finite and Non-finite.
1.8 Verbal phrases: Finite and Non-finite.
1.9 Simple and Compound phrases.
1.10 Simple and Compound forms.
1.11 Indicative verbal forms.
1.12 Personal Pronouns.
1.13 Category of Number.
1.14 Category of Person.
1.15 Category of Grade.
1.16 Category of Tense.
1.17 Imperative verbal forms.
1.18 Causative and Non-Causative verbal forms.
1.19 Non-finite verbal forms.
1.20 Illustration of the verbal forms.
CHAPTER I

GRAMMATICAL CATEGORIES

1.0 This section is an outline statement of some of the grammatical categories to be used in certain verbal forms in colloquial Bengali. It is based partly on a phonological analysis and partly on syntactical analysis. The phonological statement will be made within the grammatical framework, for, 'a phonological statement made without considering the needs of grammatical analysis is not conducive to an economic statement of facts.'¹

For the analysis of sentences as a whole it is necessary to make a brief statement about the different types of sentence.

1.1 Sentences are of two types: verbal and non-verbal. Verbal sentences are characterized by the presence of a verbal form and non-verbal sentences are characterized by the absence of a verbal form.


In this outline of grammatical categories a verbal sentence with a finite verbal phrase in it is considered. A sentence containing one or more non-finite verbal phrases but not containing a finite verbal phrase, is excluded from consideration. The verbal forms themselves are not, however, excluded, and on examination they are seen to be similar in form and function to those non-finite verbal forms occurring in verbal sentences.
A verbal form is one of a recognizable set of forms taking part in an inflectional paradigm. On the basis of their morphology this scatter of verbal forms can be listed in a number of sentences and can be shown to lie in some relation with other forms in the sentence with respect to person or grade.

Thus, Je aJe "he comes" is a verbal sentence characterized by the presence of the verbal form aJe.

Je bhalo chele (he good boy ) 'he is a good boy' is a non-verbal sentence characterized by the absence of a verbal form.

This study is concerned with the verbal sentences only.

1.2 Verbal sentences can be classified under two headings:

(i) Command and
(ii) Non-Command.

Command sentences function in simple present and future tenses and are restricted to two persons, second and third in all grades. They do not function in the different aspects that are seen in non-command sentences.

Thus: tumi khelo 'play !'
khel 'play !'
khelo 'play !' (in future)
kheJ 'play !' (in future)

are command sentences.

1. All texts in thisPart (Ch.1-3) are in a reading transcription.
2. Imperative verbal forms do not function in different aspects. See p. 29
Non-Command sentences are those that have verbal forms which take part in the full paradigmatic range of verbal forms.

Thus, *je khāle 'he plays', and tumi khālo 'you play'* are non-command sentences.

1.3 Non-Command sentences are again classified into two:

i) Statement, and

ii) Question.

Statement sentences are those which are characterized by particular intonation patterns and in which none of the interrogative particles occur. Thus, *je khāle 'he plays'* is a statement sentence which has an intonation pattern and in which no interrogative particles are found.

Question sentences are those which may have one of the interrogative particles *ki, ke, kobe, kokhon, kotha, keno* etc, and are characterized by particular intonation patterns common to all questions of this type.

Thus, *je ki khāle 'does he play?'' is an interrogative sentence characterized by the presence of an interrogative particle *ki*, and has an intonation pattern ; and *je khāle 'does he play?' has an intonation pattern .

---

1. Interrogative particles can occur also in the sentence final position after the finite verbal phrase. But the style of speech considered here is not the same.
Each of these sentence types Command, Statement, and Question can again be classified into two:

(i) Affirmative, and
(ii) Negative.

All sentences in which one of the particles na and ni occurs are negative sentences; and all other sentences are affirmative.

Thus, Je aje 'he comes', is an affirmative sentence characterized by the absence of a negative particle.

Je ajena 'he does not come', Je ajeni 'he did not come' are negative sentences characterized by the presence of the negative particle na or ni.

Je aje 'he comes' is an example of an affirmative statement sentence: Je ki aje 'does he come?' is an example of an affirmative question sentence; and tumi khalo 'play!' is an example of an affirmative command sentence type.

Je ajena 'he does not come' is an example of a negative statement sentence; Je ki ajena 'does he not come ?' is an example of a negative question sentence, and tumi khelona 'don't play!' is a negative Command sentence.

1. A brief statement about the particles na and ni is made later. See p.45
2. In negative Command sentences verbal forms are always found in the future tense. This is one restriction of Imperative sentences.
The framework of classification of sentences outlined above may be shown in the following diagram.

Fig. I.

Sentence
  /   \
Non verbal  Verbal
   / \       /  \  
Command  non-Command
     /     |
1.5 Verbal sentences may further be classified into two

i) Simple, and

ii) Compound.

By simple is meant by definition, sentences having one verbal clause only.

Sentences having more than one verbal clause are compound sentences.

Thus: je aje 'he comes' is a simple sentence characterized by the presence of only one verbal clause (in this case one form only).

ami bolchi je je aje 'I say that he comes' is a compound sentence characterized by the presence of two verbal clauses, namely, ami bolchi and je aje linked by the particle je.

Only simple sentences are considered here.1

1.6 The verbal clause of a simple sentence may consist of one or more verbal phrases.

A verbal clause having only one verbal phrase functioning at the sentence final position is a simple verbal clause; and a verbal clause having more than one verbal phrase is a compound verbal clause.

1. It will be seen that most of the statements made about the simple sentences will hold good for the compound sentences also. And so far as the phonology of the verbal piece is concerned the statement about the verbal piece in a simple sentence is also true for the verbal piece in compound sentences. That is to say no separate statement is necessary for the verbal piece in other types of sentences.
Thus, *Je aše 'he comes' is a simple verbal clause characterized by the presence of a single verbal phrase only.*

*Je haṭṭe haṭṭe ghore aše 'walking he comes into the room' is a compound verbal clause characterized by the presence of two verbal phrases haṭṭe haṭṭe and aše.*

1.7 All verbal forms are classified under two headings:

a) Finite, and

b) Non-finite.

Finite verbal forms are found in sentence final position. 2 Non-finite verbal forms do not function in the sentence final position in a simple affirmative sentence as defined above.

Certain relations between the finite and non-finite verbal forms may be shown as follows.

1.7 Where the final verbal phrase consists of a single verbal form this is found to be a finite form. Where the verbal phrase is made up of more than one verbal form it is non-finite plus finite.

1.8 Where the verbal phrase consists of (i) a single finite verbal form; or (ii) a non-finite plus finite verb forms functioning either as verb and operator, or as verb and auxiliary; 3 or (iii) two non-finite plus a finite verb form, functioning as verb-operator and auxiliary in structure

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1. Two verbal phrases here are linked by a nominal form ghore.
2. Finite verbal forms also occur in the sentence final position, but not in the style of speech considered here. This statement is true of the affirmative sentences. In negative sentences where the negative particle *na* or *ni* occurs finally the finite verbal form occurs in pre-final position.
3. For operator and auxiliary, see § 3.0.2.2.1 and 3.0.2.2.2.
the phrase will be called a finite phrase; and the phrase containing one or more non-finite forms outside the structures mentioned above or in any place in the sentence will be called a non-finite phrase.

1.9 Where the verbal piece consists of a single finite phrase as mentioned above, it is a simple phrase, where the verbal piece contains a non-finite verb-phrase plus a finite verbal phrase it is a compound phrase.

1.10 Where the finite verbal phrase consists of a single finite verbal form it is a simple verbal form; where it consists of two or three forms within a simple phrase, it is a compound form.

In usual Colloquial Bengali a maximum of five verbal forms in succession are found in a simple sentence.¹ These may be divided according to the criterion stated above.

Thus:

jej boi po\(\ddot{\text{re}}\) 'he reads the book'

jej boi po\(\ddot{\text{re}}\) phello 'he has finished reading the book'

\(\ddot{\text{tar}}\) boi po\(\ddot{\text{re}}\) phela holo 'he finished reading the book'.

po\(\ddot{\text{re}}\), po\(\ddot{\text{re}}\) phello, and po\(\ddot{\text{re}}\) phela holo are all finite verbal phrases.

---

¹ It is theoretically possible to have sentences with more than five forms, but not in usual Colloquial Bengali. See § 3.0.4.
Je dekhte dekhte boi-khani po^e phello
tar boi khani dekhte dekhte po^a hoe gelo
Je boi-khani dekhte dekhte po^e phello
'He finished reading the book within a short time'

In each of these sentences, dekhte dekhte is a non-finite phrase.

Finite verbal forms in command sentences will be referred to as Imperative verbs, and those in Non-Command sentences will be referred to as Indicative verbs.

Non-finite verbal forms either in the finite phrase or in the non-finite phrase have a limited number of endings, namely, -e, -a, -le, -te and -on for non-causative form, and -e -no, -le, -te for causative and extended forms. The detailed function of non-finite forms and their endings will be discussed later.

1.11 Indicative Finite Verbal Forms.

Finite Verbal forms can be inflected to show:

i) Person,
ii) Grade, and
iii) Tense.

That is, finite verbs have sets of related forms which can be presented in paradigm.

Non-finite verbal forms are not inflected for Person, Grade and Tense.

---

1. See § 3.4. & See § l.18. (infra)
2. See § 3.4. Non-finite verbal forms, their endings and their function and position.
3. These will be discussed presently. See for Person § 1.14, for Grade § 1.15 & for Tense § 1.16.
4. They are inflected in terms of causative and non-causative, the reference of which will be made towards the end of this chapter.
The statement of a finite verbal form will have reference to all three categories, that is, any verbal form will have formal characteristics relating to Person, Grade and Tense.

There is a colligational relation between finite verbal form and personal pronoun in terms of Person and Grade.

1.12 The personal pronouns are stateable in terms of three categories:

1) Number
2) Person
3) Grade

Features of the finite verbal forms which refer to Person and Grade will correlate with features in the pronouns that relate to Person and Grade.

This may be shown in the following diagram.

```
```

For convenience of reference a list of the pronominal forms referred to as having Person, Grade and Number distinction is given.

It should be noted that there are no honorific ordinary and familiar forms for pronouns of the first person.
### 1.13 Number

It is to be noted that no category of number for the verbal forms is required. For, the verbal forms do not exhibit any distinction between singular and plural number, that is, they exhibit a common form for all numbers. Number has a formal function in the nominal piece and in the sentence as a whole.

Thus:

- **Sing.** tumi aṣo 'you come'. Je aṣe 'he comes'.
- **Pl.** tomra aṣo 'you come'. tara aṣe 'they come'.

### 1.14 Person

In this category a system of three terms will be stated. They will be referred to as first, second and third person, and marked in the table as 1, 2, and 3.

There is colligation between these terms and the terms in the personal pronoun system. The following examples

1. Indicative finite verbal forms of all statement and question sentences function in all these persons. Imperative verbal forms in command sentences function only in second and third person.
In this category three terms will be used. They are Honorific, Ordinary, and Familiar - marked as H, O, and F.

A further note is required about Grade. In order to state this fully, reference must be made to situation, particularly in respect of the relation between speaker and listener.

By Honorific forms are meant those forms which collocate with apni, apnara, tini, tāra, uni, ōra, ini, ēra, and which are, in one context of situation, used in addressing one's equals or superiors in society.

By Ordinary forms are meant those forms which collocate with tumi, tomra, and which are, in one context of situation, used in addressing one's equals or inferiors in society.

By Familiar forms are meant those forms which collocate with tui, tora, je, tara, e, era, o, ora, and which are, in one context of situation, used in addressing one's inferiors in society.

The following examples will illustrate this.

2.H. apni aʃen 'you come'.
2.O. tumi aʃo 'you come'.
2.F. tui aʃiʃ 'you come'.
3.H. tini aʃen 'he comes'.
3.O/F. je aʃe 'he comes'.
1.16 **Tense**

In the category of tense a system of three terms will be referred to as Future, Present and Past.

These tenses will be sub-divided into two groups: Simple and Compound.

Future tense functions only in simple groups, while present and past tenses function both in simple and compound groups.

Compound groups can again be sub-divided into three aspects.

i) Progressive,

ii) Perfective, and

iii) Habitual.

Present tense functions only in progressive and perfective aspects, and past tense functions in all three - Progressive, Perfective and Habitual aspects.

The three tenses classified in two different ways may be shown in a tabular form. The functioning of the tense and aspect found is shown by a tick.

<table>
<thead>
<tr>
<th>Group</th>
<th>Aspect</th>
<th>T E N S E S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Future</td>
</tr>
<tr>
<td>Simple</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Compound</td>
<td>Progressive</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Perfective</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Habitual</td>
<td></td>
</tr>
</tbody>
</table>

1. In traditional grammar books tenses have been treated under as many as 11 or 12 sub-headings. See S. Page, *Introduction to Colloquial Bengali*, W. Heffer and Son, Cambridge, 1934, p.137 ff. See also S.K. Chatterji, *Sankhipta Bhasha Prakash Banga la Byakaran*, Calcutta 1945, p.284 ff.
Indicative verbal forms of all Statement and Question sentences function in all these tenses and aspects.

The formal and functional distinction of these tenses and aspects will be discussed only very briefly in this chapter. A further description will be given in the chapters dealing with the phonological statement.

Before going into details I give below in tabular form the different endings that are found with different persons and grades in the indicative verbal system, in different aspects and tenses in Colloquial Bengali.

<table>
<thead>
<tr>
<th>Persons</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>F</td>
<td>O</td>
<td>H</td>
</tr>
<tr>
<td>Aspects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simp.Pres</td>
<td>-i</td>
<td>-iʃ</td>
<td>-o</td>
</tr>
<tr>
<td>Prog. &quot;</td>
<td>-chi</td>
<td>-chiʃ</td>
<td>-cho</td>
</tr>
<tr>
<td>Perf. &quot;</td>
<td>-echi</td>
<td>-echiʃ</td>
<td>-echo</td>
</tr>
<tr>
<td>Simp.Past</td>
<td>-lam</td>
<td>-li</td>
<td>-le</td>
</tr>
<tr>
<td>Prog. &quot;</td>
<td>-chilam</td>
<td>-chili</td>
<td>-chile</td>
</tr>
<tr>
<td>Perf. &quot;</td>
<td>-echilam</td>
<td>-echile</td>
<td>-echile</td>
</tr>
<tr>
<td>Habit. &quot;</td>
<td>-tam</td>
<td>-tʃ</td>
<td>-te</td>
</tr>
<tr>
<td>Simp.Fut.</td>
<td>-bo</td>
<td>-bi</td>
<td>-be</td>
</tr>
</tbody>
</table>

Various Formal distinctions in forms in different tenses can be shown thus:

(1) A form in Future tense is characterized by the presence of a -b- (voiced bilabial plosive) element in the ending.
(2) A form in past tense is characterized by the presence of either a -l- (voiced lateral) or a -t- (voiceless dental plosive) element in the ending.

(3) A form in present tense is characterized by the absence of a -b-, -l- or -t- element in its ending. The following distinctions with respect to different aspects occur:

(1) A form in Progressive aspect (both present and past) takes an infix -ch- (voiceless aspirated alveo-palatal plosive) before the ending of the simple aspect form.

(2) A form in Perfective aspect (both present and past) takes yet another infix -e- before the ending of the Progressive aspect form.

The following examples will illustrate this:

1. Simple present  je aje  'he comes'
2. Progressive  "  je asche  'he is coming'
3. Perfective  "  je efeche  'he has come'.
4. Simple past  je allo  'he had come'
5. Progressive  "  je aschilo  'he was coming'
6. Perfective  "  je efechilo  'he had come'
7. Habitual  "  je asto  'he used to come'.
8. Simple future  je ajbe  'he will come'.

1.17 Imperative Verbal Forms

In the Imperative forms (of Command sentences) a
system of two Persons, second and third, three Grades, Familiar, Ordinary and Honorific, and two Tenses, Present and Future are stated. Aspects are not stated for the Imperative forms.

Below are the different endings that are found with different Persons, Grades and Tenses in the Imperative verbal system.

<table>
<thead>
<tr>
<th>Person</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>F</td>
<td>O</td>
</tr>
<tr>
<td>Present</td>
<td>∅</td>
<td>-o</td>
</tr>
<tr>
<td>Future</td>
<td>-iʃ</td>
<td>-o</td>
</tr>
<tr>
<td></td>
<td>F/0</td>
<td></td>
</tr>
</tbody>
</table>

The forms in Present and Future Tenses in second person Honorific, third person Familiar/Ordinary and third person Honorific Grades have similar endings. It will be seen that like Indicative forms, Imperative forms in second Person Honorific and third Person Honorific show no distinction.

It is to be noted that the Imperative forms in -iʃ ending are similar to the Indicative forms in -iʃ ending, and the Present Imperative forms in -o ending are similar to the Indicative forms in -o ending.

* * * forms in Present -o and Future ending are different.

* ∅ represents zero ending.

1. This will be made clear in Chapter dealing with vowel harmony. See Ch. 1.
The following examples will illustrate the above statement.

1. Present 2nd person Familiar: tui kaṭ 'cut!' 
2. " " " Ordinary: tumi kaṭo 'cut!' 
3. " " " Honorific: apni kaṭun 'please cut!' 
4. " 3rd " Fam/Ord: je kaṭuk 'let him cut'
5. " " " Honorific: tini kaṭun 'let him cut'
6. Future 2nd " Familiar: tui kaṭiṣ 'cut!' (in future)
7. " " " Ordinary: tumi keṭo 'cut!' " "
8. " " " Honorific: apni kaṭun 'please cut!' "
9. " 3rd " Fam/Ord: je kaṭuk 'let him cut' " "
10. " 2nd " Honorific: tini kaṭun 'let him cut' " "

1.18 Causative and non-Causative

Verbal forms in Colloquial Bengali can be treated under two headings:

i) Non-Causative, and

ii) Causative.

Every verbal form belongs to one of these two classes. Formal distinction between these two classes will be discussed in the phonological statement. Their functional distinction may be stated here with reference to a limited number of sentences chosen as my texts for the purpose. Structure of the sentence as a whole and the type status of the verbal piece are interrelated.

Both non-causative and causative can function as finite as well as non-finite.
The following examples will illustrate the above statement.

**Finite**

(i) Non-Causative: Je pōpe  'he reads'

(ii) Causative: Je pōpae  'he causes to read',  
    'he teaches'.

**Non-finite**

(i) Non-Causative: Je likhe pōpe  'having written he reads'  
    'he writes it and then reads'

(ii) Causative: Je likhie pōpe  'he having got written reads'  
    'he has it written and then reads it'.

1.19 **Non-finite forms**

It has been said that, unlike finite verbal forms, non-finite verbal forms are not inflected for Person, Grade and Tense. The following are the endings found in non-finite forms.

Non-Causative: -a, -e, -on, -te, -le.

Causative: -no, -e, -te, -le.

Examples:

(i) -e: citkhikani lekhē ano 'bring along the letter when you have finished writing'.

(ii) -no: take amto khalano ucit nē 'It is not proper to make him work so hard'.

---

1. There are two more endings which function with non-finite verbal forms. They are -ba and -bar. The reason for excluding them here has been discussed in the section dealing with the non-finite endings: their functions and position. See §1.2.7. and §3.4. See S. Page, *An Introduction to Colloquial Bengali*, 1934, p.155.
1.20 The categories set up above will now be illustrated by arranging the 'formal scatter' of one verb in category columns. The verb chosen is kaṭa 'to cut'. The forms will be arranged under two main heads: non-causative and Causative, and under each of these, indicative, imperative and non-finite verbal forms will be set out.

**Non-Causative verbal forms**

### Indicative

<table>
<thead>
<tr>
<th>Person</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>F</td>
<td>O</td>
</tr>
<tr>
<td>Simp. Pres.</td>
<td>kaṭi</td>
<td>kaṭi</td>
</tr>
<tr>
<td>Prog. &quot;</td>
<td>katchi</td>
<td>katchi</td>
</tr>
<tr>
<td>Perf. &quot;</td>
<td>keṭechi</td>
<td>keṭechi</td>
</tr>
<tr>
<td>Simp. Past.</td>
<td>kaṭlam</td>
<td>kaṭli</td>
</tr>
<tr>
<td>Prog. &quot;</td>
<td>katchilam</td>
<td>katchili</td>
</tr>
<tr>
<td>Perf. &quot;</td>
<td>keṭechilam</td>
<td>keṭechili</td>
</tr>
<tr>
<td>Habit.&quot;</td>
<td>kaṭṭam</td>
<td>kaṭṭi</td>
</tr>
<tr>
<td>Future</td>
<td>kaṭbo</td>
<td>kaṭbi</td>
</tr>
</tbody>
</table>

1. This term is used in the sense used by Prof. J.R. Firth in his *Technique of Semantics*, T.P.S., 1935, p.62; and later by F.R. Palmer in 'The Verb in Bilin', B.S.O.A.S. XIX, 1, p.131.
### Imperative

<table>
<thead>
<tr>
<th>Person</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>F</td>
<td>O</td>
</tr>
<tr>
<td>Grade</td>
<td>F/O</td>
<td>H</td>
</tr>
<tr>
<td>Present</td>
<td>kaṭ</td>
<td>kaṭo</td>
</tr>
<tr>
<td></td>
<td>kaṭuk</td>
<td>kaṭun</td>
</tr>
<tr>
<td>Future</td>
<td>kaṭij</td>
<td>keṭo</td>
</tr>
<tr>
<td></td>
<td>kaṭuk</td>
<td>kaṭun</td>
</tr>
</tbody>
</table>

**Non-finite** kaṭa, keṭe, kaṭon, kaṭte, kaṭle.

### Causative forms

### Indicative

<table>
<thead>
<tr>
<th>Person</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>F</td>
<td>O</td>
</tr>
<tr>
<td>Simp.Pres.</td>
<td>kaṭai</td>
<td>kaṭaj</td>
</tr>
<tr>
<td>Prog. &quot;</td>
<td>kaṭacchi</td>
<td>kaṭacchij</td>
</tr>
<tr>
<td>Perf. &quot;</td>
<td>kaṭiechi</td>
<td>kaṭiechij</td>
</tr>
<tr>
<td>Simp.Past</td>
<td>kaṭalam</td>
<td>kaṭali</td>
</tr>
<tr>
<td>Prog. &quot;</td>
<td>kaṭacchilam</td>
<td>kaṭacchili</td>
</tr>
<tr>
<td>Perf. &quot;</td>
<td>kaṭiechilam</td>
<td>kaṭiechili</td>
</tr>
<tr>
<td>Habit.&quot;</td>
<td>kaṭatam</td>
<td>kaṭatij</td>
</tr>
<tr>
<td>Future</td>
<td>kaṭabo</td>
<td>kaṭabi</td>
</tr>
</tbody>
</table>
**Imperative**

<table>
<thead>
<tr>
<th>Person</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>F</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>kata</td>
<td>kato</td>
</tr>
<tr>
<td></td>
<td>kataf</td>
<td>katfo</td>
</tr>
</tbody>
</table>

Non-finite: katano, katie, katate, katalo.
CHAPTER II

SOME MAIN SYNTACTIC STRUCTURES

2.0 General outline of structures
2.1 Sentence constructions: Active and Passive
2.2 $N_1 \ N_2 \ Vb.$ structure.
2.3 $N \ Vb$ structure.
2.4 $Vb$ structure.
2.5 Finite verbal forms in the two constructions: Active and Passive.
2.6 Illustration.
CHAPTER 2
SOME MAIN SYNTACTIC STRUCTURES

2.0 Simple verbal sentences in colloquial Bengali are mainly found in the following main syntactic structures.

i. Vb. A finite verbal phrase

ii. N Vb. A noun phrase and a finite verbal phrase.

iii. N N Vb. Two noun phrases and a finite verbal phrase

The following examples will illustrate these.

i. Vb.  

ii. N Vb. khoka pope  

iii. N N Vb. khoka boi pope

2.1 In an examination of some Vb, N Vb, and N N Vb sentence structures two constructions,

I. Active, and

II. Passive

can be stated on a formal basis.

The active construction is characterized in its noun or nouns being with or without a post fix of a certain set, and verb is in paradigm according to aspect, tense, person and grade.

1. It will be noted that any Bengali simple verbal sentence will fit in one of these structures. This analysis on the basis of structure takes account of all the sentence patterns: Kartri bacya, karma bacya, bhaba bacya and Karma-Kartri bacya - described in the traditional grammar, on the basis of 'potential meaning'.
The passive construction is characterized in its \( N_1 \) having always a post fix of a certain set, in which \(-r\) is a characteristic feature, and \( N_2 \) with or without a post fix.\(^1\)

The verb consists of a non-finite form plus a finite verb-form of any of the stems of auxiliary verbs.\(^2\) The finite verb in this construction is always in the third person ordinary grade and in paradigm according to tense and aspect.\(^3\)

2.2 In the case of an active sentence of \( N_1 N_2 Vb \) type, the nouns may or may not be characterized by a post fix. The \(-r\) feature is not found as an essential feature in \( N_1 \) in this type of structure. Auxiliary verbs do not occur in this construction.\(^4\)

2.3 In the case of a sentence of \( N Vb \) type the noun may either be \( N_1 \) or \( N_2 \) of either constructions - active or passive, which will be recognized by the presence or absence of a post fix of a certain set and also by the context. In the passive sentence construction the verb phrase must have an auxiliary form in it.

2.4 In the case of a sentence type \( Vh \) the verb may either be a simple finite verbal form, or non-finite plus finite verbal form in paradigm of aspect, tense, person and grade.

---

1. A study of the case system of the noun is not undertaken here.
2. See for Auxiliaries - their function, position and meaning, § 3.2
3. Supra.
4. It should be noted that \(-r\) post fix is a particular feature with \( N_1 \) of the structure \( N_1 N_2 Vb \) in passive construction. \( N_2 \) of this structure and \( N \) of \( N Vb \) structure can occur with or without a post fix.
2.5 In the passive construction the finite verb form is always found from one of the stems of auxiliary verbs, and the finite verb in this type of construction is always in the third person, Ordinary Grade and in paradigm of Tense and aspect. In the Active construction the finite verb is never found with an auxiliary form.

These structural features of the Active and Passive sentences can be formulated thus:

'(|) will indicate the possibility of either presence or absence of the element that is signified by the symbol within them; F indicates Finite verbal form;

NF indicates non-finite verbal form.

<table>
<thead>
<tr>
<th></th>
<th>N&lt;sub&gt;1&lt;/sub&gt;</th>
<th>N&lt;sub&gt;2&lt;/sub&gt;</th>
<th>Vb</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. ACTIVE</td>
<td>N(P)</td>
<td>N(P)</td>
<td>(NF) F</td>
</tr>
<tr>
<td>II. PASSIVE</td>
<td>N P</td>
<td>N(P)</td>
<td>NF</td>
</tr>
</tbody>
</table>

2.6 I give below a few examples from spoken Bengali in order to illustrate the points discussed above in groups. For convenience I have chosen examples with one Person, one Grade and one Tense.

I. ACTIVE

1. poṛe (reads) 'he reads'
2. khoka poṛe (a boy reads) 'A boy reads'.
3. khoka boi poṛe (a boy book reads) 'A boy reads a book'.
I ACTIVE (continued)

4. khokati boi pōre (the boy book reads) 'The boy reads a book'.

5. khoka boikhani pōre (a boy the book reads) 'A boy reads the book'.

6. khokati boikhani pōre (the boy the book reads) 'The boy reads the book'.

II. PASSIVE

7. pōra hāe (to read is) 'It is read'.

8. khokar pōra hāe (by a boy to read is) 'A boy reads'.

9. boi pōra hāe (a book to read is) 'A book is read'.

10. khokatir pōra hāe (by the boy to read is) 'The boy reads'.

11. boikhani pōra hāe (the book to read is) 'The book is read'.

12. khokar boi pōra hāe (by a boy a book to read is) 'A boy reads a book'.

13. khokatir boi pōra hāe (by the boy a book to read is) 'The boy reads a book'.

14. khokatir boikhani pōra hāe (by the boy the book to read is) 'The boy reads the book'.

15. khokar boi khani pōra hāe (by a boy the book to read is) 'A boy reads the book'.

In the above examples, the grammatical elements of structure (i.e. the word classes) can be stated as follows:
Sentences 1 and 7.          Verb (Vb)
Sentences 2, 8-11          Noun Verb (N Vb)
Sentences 3-6, and 12-15   Noun Noun Verb (N N Vb)

That is, sentences Nos. 1 and 7 are constituted of one constituent, viz. verbal element; sentences 2 and 8-11 are constituted of two constituents, viz. Nominal and verbal elements; and sentences 3-6 and 12-15 are constituted of three constituents, viz. Nominal, Nominal and verbal elements.¹

I give below in tabular form an analysis of all the fifteen sentences on this formula. (In the formula the following notations are used: \( N_1 \) = first nominal element, \( N_2 \) = Second nominal element, \( Vb \) = verbal element in the sentence. \( N \) (without any notation) = noun without any particle, \( NP \) = noun with particles. The particles are shown by hyphen in the examples).

---

¹ This is only with reference to the sentences already cited. But \( N \) clause is not always a one word clause. Even where the \( N \) clause has more than one word, however, the head of the endocentric construction is always statable as \( N \).
<table>
<thead>
<tr>
<th></th>
<th>$N_1$</th>
<th></th>
<th>$N_2$</th>
<th></th>
<th>Vb</th>
<th>Simple finite</th>
<th>Non-finite + finite</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>NP</td>
<td>N</td>
<td>NP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. ACTIVE</td>
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<td>15. khoka-r</td>
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An analysis of these sentence structures will show that the establishment of the two groups of construction on the formal evidence is justified.
In group I (sentences 1 - 6) the verb is a simple finite verbal form.

In group II (sentences 7 - 15) the verb is a combination of a non-finite verbal form plus a finite verbal form formed from the stem he.

In sentences Nos. 2 and 9 N is without any particle.

In sentence 11 N is with a particle -Khani.

In sentence 3 both \( N_1 \) and \( N_2 \) are without any particle.

In sentence 4 \( N_1 \) is with a particle -\( \dot{t}i \) and \( N_2 \) is without any particle.

In sentence 5 \( N_1 \) is without any particle, \( N_2 \) is with a particle -khani.

In sentence 6 \( N_1 \) is with a particle -\( \dot{t}i \) and \( N_2 \) is with a particle -khani.

In sentence 8 N is with a particle -\( r \).

In sentence 10 N is with a particle -\( r \) in addition to the particle -\( \dot{t}i \)-

In sentence 12 \( N_1 \) is with a particle -\( r \), \( N_2 \) is without any particle.

In sentence 13 \( N_1 \) is with particles -\( \dot{t}i \) - and -\( r \), \( N_2 \) is without any particle.

In sentence 14 \( N_1 \) is with particles -\( \dot{t}i \) - and -\( r \), \( N_2 \) is with particle -khani.

In sentence 15 \( N_1 \) is with a particle -\( r \), \( N_2 \) is with a particle khani.
CHAPTER 3

Finite and non-finite verbal forms:
Simple and Compound verbs:
Defective verbs: Auxiliaries:
Operators: Non-finite endings: their function, position and meaning.

3.0 General outline.
3.0.1 One-form verbal piece: Vb.
3.0.2 Two-form verbal piece:
3.0.2.1 Simple verbal forms.
3.0.2.2 Compound verbal forms: Vb + O(perator) and Vb + A(uxiliary).
3.0.2.2.1 Vb + Operator.
3.0.2.2.2. Vb + Auxiliary.
3.0.3 Three form verbal piece.
3.0.3.1 Compound verbal forms: Vb + O + A.
3.0.3.2 Other three form verbal piece.
3.0.4 Verbal piece with more than three forms.

3.1 Defective verbs.
3.1.0 General outline.
3.1.1 √-ach / √-chi
3.1.2 √-ja / √-gi
3.1.3 √-a / √-e
3.1.4 √-bot
3.1.5 √-no
3.1.6 √-ghot
| 3.1.7 | √cuk |
| 3.1.8 | √baʃ |

### 3.2. Auxiliaries: their function, position and meaning.

#### 3.2.0 General outline.

#### 3.2.1 √ho

#### 3.2.2 √äch / √chi

#### 3.2.3 √Ja / √gi

#### 3.2.4 √thak

### 3.3 Operators: their function, position and meaning.

#### 3.3.0 General outline.

#### 3.3.1 √kor

#### 3.3.2 √poŋ

#### 3.3.3 √mor

#### 3.3.4 √dhɔr

#### 3.3.5 √boʃ

#### 3.3.6 √par

#### 3.3.7 √mar

#### 3.3.8 √lag

#### 3.3.9 √thak

#### 3.3.10 √dāra

#### 3.3.11 √phel

#### 3.3.12 √dekh

#### 3.3.13 √toʃ
| 3.3.14 | $p$ |
| 3.3.15 | $j$ / $g$ |
| 3.3.16 | $d$ |
| 3.3.17 | $n$ |
| 3.3.18 | $a$ |
| 3.3.19 | $a$ |
| 3.3.20 | $u$ |
| 3.3.21 | $h$ |
| 3.3.22 | $a$ / $c$ |

3.4  The Function, position and meaning of the non-finites.

3.4.0  General outline.

3.4.1  Ending  -a

3.4.2  Ending  -on

3.4.3  Ending  -no

3.4.4  Ending  -e

3.4.5  Ending  -te

3.4.6  Ending  -le

3.0 Certain problems connected with the analysis and description of the finite and non-finite verbal forms of Bengali will be discussed in this chapter.

Verbal forms occur in final and non-final position in the sentence.

The grammatical implications of verbs occurring in final position are different from those of verbs occurring in non-final position, and for a descriptive statement it is preferable to treat them separately.

First, I shall deal with those verbal forms that are generally found at the end of the simple affirmative statement and command sentence.

As will be seen the criterion of place and order, together with other formal and syntactical criteria, are used for the statement of such verbal forms.

As these verbal forms may be one or more within a final place in a sentence, it is preferable to refer to the whole section as a 'verbal piece' and its components as 'verbal forms'.

1. See § 1.6 - 1.10
The verbal piece in a simple sentence may consist of one or more forms, as can be seen from the examples given below. The verbal piece is underlined.

One-form verbal piece:

khoka boi popore
(a boy a book reads) 'A boy reads a book'

Two-form verbal piece:

khoka bhat kheye popore
(a boy rice having eaten reads) 'A boy reads after his meal'

Three-form verbal piece:

khokar bhat kheye popa hobe
(by a boy rice having taken to read will be) 'A boy will read after his meal'

Four-form verbal piece:

khoka bhat kheye jere porte boPote
(a boy rice having eaten having finished to read will sit)
'A boy will read after his meal'.

Five-form verbal piece:

khoka popa jona rekhe kholte gelo
(a boy to read to hear having left to play went)
'A boy left his study and went to play'.

3.0.1 One-form verbal piece: Vb

A One-form verbal piece occurring in sentence final position is associated with the formal scatter of a single verb, and may appear with all possible alternants for the categories of aspect, tense, person and grade.

je bhat khabe
(he rice will eat) 'He will take his meal'.

ami bapi jai
(I home go ) 'I go home'.

tumi iskule giechile
(you to school went ) 'You went to school'.

3.0.2 **Two-form verbal piece**: $V_b + V_b$

Two-form verbal pieces occurring in sentence final position are of two types: Simple verbal form and Compound verbal form.

3.0.2.1 **Simple verbal forms.**

Where the final verbal form is finite and the pre-final form is a non-finite verbal form in any of the non-finite endings, -a, -e, -te, -le, -on, and -no, and the two forms form two phrases which are not semantically interdependent, but are interrelated to express one action prior to another, they are found to be two simple verbal forms. Each of these verbs can be any one from the whole range of verbs. These are symbolized as $V_b(nf) + V_b(f)$.

That these two verbal forms are two separate verbal phrases is distinguished by marked stress. In the characteristic utterances of these types of verbal piece in sentences two major stress groups are recognized where each major stress group is a phrase. The pause between these forms and the

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1. These non-finite endings though apparently similar to some of the finite endings of the verbal paradigm, must not be confused with them. The functional implication of the non-finite endings and their positional meaning will be discussed later in detail. See § 3.4.

2. The expression 'major stress group' has the implication that there may be other stressed syllables within such groups; but the stress in such syllables is less prominent.

Kymograms and Oscillograms were made for certain utterances of this description. But they have not provided any characteristics which could be correlated with the stating of major stress groups. This division is, therefore, made at the level of kinaesthetic observation.
possibility of insertion of some forms of other word classes, such as, nominals, adjectivals or particles, between them are also the formal criteria for distinction.

Examples:

Je hat-mukh 'dhuye 'khabe
(he hand-face having washed will eat) 'He will wash his hands and face and take his meal'.

tarik pensil 'ketë 'likhlo
(Tarik pencil having cut wrote) 'Tarik wrote after sharpening the pencil'.

3.0.2.2 Compound verbal forms: Vb + O(erator) and Vb + A(auxiliary) 1

1. There are two-form verbal pieces where both the verbal forms are finite. They are of two types:
(a) where both the forms are in the same aspect, tense, person and grade in regular paradigm. e.g. ami 'albo 'jabo (with two stresses) (I shall come, I shall go) 'I shall come and I shall go'. tumi 'paro 'jao (you, you can, go) 'go there if you would'.
(b) where the two forms are not in the same aspects, tense, person, and grade. e.g. apni 'bolechen 'jabo (you, have said, I shall go) 'Since you have asked I shall go'.

On formal criteria it can be stated that these types of sentence are compound sentence and not simple sentences as defined. (See § 1.5 Ch. I, see also foot note 2 Ch.1. p. 20)

There is yet another type of two-form verbal piece where the two forms take the same ending. They together may either be used as finite or non-finite forms. The position of the two forms is collocationsally fixed. e.g. ejecho jokhon 'kheye deye jabe (you have come, when, having eaten, you will go) 'when you have come you must take your meal here'. khokader ek'ju 'dekho j'uno (of the children, a little, see! hear!) 'please look after the children'. These are treated as doubled forms which imply an action of same nature or repetition of an action. A few verbs are given below:
khawa dawa (to eat), nawa khawa (to bath, to eat), thaka khawa (to live and eat), jawa aja (to go, to frequent), aja jawa (to frequent), lekha pōra (to read and write), pōra lekha (to read and write), pōra jona (to read and write) dekha jona (to look after), ujha borsa (to be friendly), dwa thoa, (giving away), dewa newa (giving and receiving). The two words together are taken as one form and symbolized as Vb. e.g. kheye deye jabe in the above example is Vb (nf) + Vb(f); and dekho jano, (Vb(f). (See five form verbal forms).
The other types of the two form verbal pieces which are symbolized as Vb + 0 and Vb + A, are a combination of a non-finite verb plus an operator and a non-finite verb plus an auxiliary verb respectively. The finite verbal form, operator or auxiliary is one of a restricted series of verbs. The verbal piece as a whole behaves like a simple single form verb. In the characteristic utterances of these types of verbal piece in sentences, one major stress is recognized in the beginning of the phrase.

Sentences containing Vb + 0 types of verbal piece are always in Active constructions and those having Vb + A types of verbal piece are in Passive constructions. Thus,

\[
\begin{align*}
tomra & \text{ bo}j'e \\
(\text{you having seated} & \text{ fall}) \\
\text{p}o\text{ro} & \\
\text{'Sit down!'} \\
\end{align*}
\]

\[
\begin{align*}
amar & \text{ kh}a\text{w}a \\
(\text{my to eat} & \text{ has been}) \\
h\text{o}y\text{eche} & \\
\text{'I have had my meal'}. \\
\end{align*}
\]

3.0.2.2.1. **Vb + Operator**

In Vb + 0 types of verbal piece the non-finite verbal form is with any of the non-finite endings -a, -e, -te, -on and -no, and the operator is a finite verb from any one of the verbs listed below. All verbs are given in infinitive forms.

- kōra (to do), boj'a (to sit), dhora (to catch), poj'a (to fall), phela (to drop), dekha (to see), thaka (to live)
- para (to be able to, can), laga (to cling, to stick), tola (to raise, to lift), pawa (to get), cawa (to want), newa (to take)
- jawa (to go), dewa (to give), asa (to come) ana (to bring),
- uṭha (to get up) √-ach (stem of the verb 'to be'),
- hōj'wa (to be), √-gi (stem of the 'to go').

1. Infinitive forms from these stems are not used. See § 3.1.
Verbal forms from all these except √-ach and √-ja/gi ¹ occur within the whole range of the verbal paradigm as the second form in the verbal piece of Vb + 0 type.

Examples: tomra coj pot bole p#£0
(you quickly having seated fail)
'Sit down quickly'.

3.0.2.2.2 Vb + A(uxiliary)

In Vb + A types of verbal piece the finite verbal form is in the third person, ordinary grade and in all tenses and aspects. The stems of auxiliaries are: √-hɔ (stem of the verb 'to be'), √-ja/gi (stem of the verb 'to go'), √-ach/chi (the stem of the verb 'to be'), √-thak (stem of the verb 'to live') √-ro (stem of the verb 'to live', to stay').

It has already been said that the sentence where a compound verb of the type Vb + A is found is in the Passive construction. Where the auxiliary is formed from the stem hɔ the non-finite verb has -a, -te, -le, -no or -on ending. Where the auxiliary is formed from the stem ja/gi, ach/chi, or thak the non-finite verb has -a, -on or -no ending.

Examples: akajer obostha bhalo dekha jae
(of the sky condition good to see goes
'It is fine weather'.

3.0.3 Three-form verbal piece.

Compound verbal forms: Vb + 0 + A

Where the sentence is in the Passive construction

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¹ These are defective verbs.
See § 3.1.
and the finite verbal piece is composed of three forms, a verb, an operator and an auxiliary in succession the piece as a whole is a three-form Compound verbal form. The final form is any of the auxiliaries mentioned in Vb + A type verbal piece, inflected in third person, ordinary grade in all tenses and aspects. The operator is a non-finite verbal form from the stem of the operators mentioned above in connection with the two-form verbal piece of Vb + 0 type. The verb (Vb) is a non-finite form from any stem. The first and second form are in similar collocational relation to that of the two-form structure Vb + 0, and the second and the third are in a similar collocation to that of the two-form structure Vb + A. Hence the statement made about the formal and syntactical relations of the forms in two-form verbal piece Vb + 0 and Vb + A will also hold good for the structure Vb + 0 + A.

Thus:

boikhani eto bhalo je ek nissaje pōre
(the book so much good that one breath having read
phela jae
to drop goes). 'The book is so good that one can finish it at a stretch'.

Vb  0  A

3.0.3.2 Other Three-form verbal piece.

Other three-form verbal pieces are of the type:

Vb + Vb + Vb,  Vb + Vb + 0,  Vb + 0 + Vb,  Vb + Vb + A.

0 or A always forms the second component of a Compound verb.
Thus:

\[ o\tau a \ 'hete \ 'gie \ 'anbe \ Vb + Vb + Vb \]
\( \text{(that having walked having gone you will bring)} \)

'You will go there on foot and bring that'.

\[ 'khole \ 'bjo\v \ p\em \ Vb + Vb + O \]
\( \text{(if you would eat having seated fall)} \)

'Sit down if you would like to have your meal'.

\[ 'pore \ gie \ 'kheyo \ Vb + O + Vb \]
\( \text{(having read having gone eat! )} \)

'You will take your meal after you have finished your study'.

\[ boikhani \ 'pore \ 'rakha h\oyeche \ Vb + Vb + A \]
\( \text{(the book having read to keep has been)} \)

'The book was kept after having been read'.

3.0.4 Verbal piece with more than three forms.

Theoretically, though it is possible to have more than five forms in a finite verbal piece, in actual utterances a verbal piece with more than five forms does not usually occur. It has been seen that a three-form verbal piece may be of several combinations: \( Vb + Vb + Vb, \ Vb + Vb + O, \ Vb + O + Vb, \ Vb + Vb + A \) and \( Vb + O + A \). Any one form, \( Vb \) or two forms \( Vb + O \) may occur before any of the above verbal piece structures.

It is important to note that \( A \) (auxiliary) is always found in sentence final position and in sentences whose construction is Passive. \( O \) (operator) as a form can occur in any
place not initial in the verbal piece and never occurs without a Vb before it. A detailed statement about the auxiliaries and operators will follow.

It is clear now that the verbal pieces of the type Vb + A, Vb + 0 and Vb + 0 + A are treated under the heading of Compound verbs. In traditional grammar books these have generally been explained by such labels as incentives, desideratives, permissives, potentials, continuatives etc. These labels have not been made to present an outline of analysis for the description of such verbal pieces in purely formal and syntactical terms.

The sentences used for the purpose of the present analysis fall under the two main types of sentence structure within which the majority of grammatical relations operate, and in which nominal phrase or phrases and the verbal phrase are considered as occupying first, second and final place, and may be symbolized as N Vb and N1 N2 Vb respectively. The verbal piece within the structures has been symbolized as Vb + A, Vb + 0, and Vb + 0 + A. And although a determinative or an emphatic particle may occur within the verbal piece, and

1. The sentence structure provided and discussed here is only a limited section. But this statement holds good for any two clause or three clause verbal sentence of the N Vb or N1 N2 Vb type respectively, and can be extended without any ambiguity to any sentence in colloquial Bengali.
2. A detailed study of 'particles' in Bengali would provide materials for another thesis, hence is outside the scope of this thesis.
although a negative particle\textsuperscript{1} may occur within or in the end of the verbal piece, the position of the units should be regarded as fixed.

It may be recalled here, that in an Active sentence construction, the syntactic relation of the concord of person and grade is found between N and Vb in N Vb sentence structure, and between $N_1$ and Vb in $N_1 N_2$ Vb sentence structure.\textsuperscript{2}

In a passive construction the finite verb is always an auxiliary form and is found in the third person ordinary grade.

Before going into details of the characteristic function of the auxiliaries and operators, I feel it necessary to say a word about the 'defective verbs'\textsuperscript{3} and some of the 'particles.'\textsuperscript{4}

3.1 Defective verbs

There are certain stems the finite verb-forms of which do not function in regular paradigm of aspect, tense, person and grade as full verbs. These verbs will be called

\textsuperscript{1} See \textsuperscript{3} 3.3.1.5.
\textsuperscript{2} This is only with ref. to the sentences already cited. But the N piece is not always a one-word piece. Even where the N piece has more than one word, however, the head of the endocentric construction is always statable as N.
\textsuperscript{3} This will be discussed presently.
\textsuperscript{4} This thesis aims at dealing with a single word class: verbals. It is seen that in order to provide frame-works in which the verbal forms operate, forms of other word-classes are used in the text. Reference to particles, for instance, is not meant to be exhaustive, and any discussion of their form and function is only introduced to clarify discussion of verbals.
defective verbs. 1

As non-finite verbs their function is restricted to certain of the set of non-finite endings. Sometimes they function only in sentences of the Active construction. Some of them function in non-command sentences while some others function in Command sentences. That is to say, some verbs have indicative forms but not imperative forms, while others have imperative forms but not indicative forms. Some verbs function in certain tenses and aspects only. Some verbs only occur as non-causative forms and do not occur as causative.

The stems of the defective verbs are listed below:

\[ \sqrt{\text{ach/chi}} \] (the stem of the verb 'to be').

\[ \sqrt{\text{ja/gi}} \] ( 'to go').

\[ \sqrt{\text{a/ae}} \] ( 'to come').

\[ \sqrt{\text{bo}} \] ( 'to be', 'to be sure').

\[ \sqrt{\text{no}} \] ( 'not to be').

\[ \sqrt{\text{gha}} \] ( 'to occur, 'to happen').

\[ \sqrt{\text{cuk}} \] ( 'to complete' 'to settle') and

\[ \sqrt{\text{ba}} \] ( 'to feel').

3.1.1. \[ \sqrt{\text{ach/chi}} \] (the stem of the verb 'to be', 'to exist').

Indicative finite verbal forms from this stem are found only in Simple Present and Simple Past tenses in the Simple non-Command affirmative sentence in all persons and grades.

1. The term is not used in the same sense as 'irregular verbs'. See Sutton Page, Introduction to Colloquial Bengali, p.142. See also S.K.Chatterji, ṿakhipta Bhaṣā Prakasha Bangāla Byakaran, 1945, pp.300-302.
Forms of other aspects and tenses are substituted by the corresponding forms of the stem thak, which itself is a full verbal stem functioning in the regular paradigm.

Verbal forms of this stem do not function in the command sentence.¹

Causative and Non-finite forms are not found from this stem. This does not function in the passive sentence.

Examples:

(i) Simple Present:  Person Grade

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<tbody>
<tr>
<td>1</td>
<td>ami</td>
<td>achi</td>
<td>'I am'</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>tui achi</td>
<td>'You are'</td>
</tr>
<tr>
<td>2</td>
<td>O</td>
<td>tumi acho</td>
<td>''</td>
</tr>
<tr>
<td>2</td>
<td>H</td>
<td>apni achen</td>
<td>''</td>
</tr>
<tr>
<td>3</td>
<td>O/F</td>
<td>Je ache</td>
<td>'He is'</td>
</tr>
<tr>
<td>3</td>
<td>H</td>
<td>tini achen</td>
<td>''</td>
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</table>

(ii) Simple Past:

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</thead>
<tbody>
<tr>
<td>1</td>
<td>ami</td>
<td>chilam</td>
<td>'I was'</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>tui chili</td>
<td>'You were'</td>
</tr>
<tr>
<td>2</td>
<td>O</td>
<td>tumi chile</td>
<td>''</td>
</tr>
<tr>
<td>2</td>
<td>H</td>
<td>apni chilen</td>
<td>''</td>
</tr>
<tr>
<td>3</td>
<td>O/F</td>
<td>Je chilo</td>
<td>'He was'</td>
</tr>
<tr>
<td>3</td>
<td>H</td>
<td>tini chilen</td>
<td>''</td>
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</tbody>
</table>

¹. Forms from the stem 'thak' ('to remain, to live') are substituted for the finite verbal forms of other tenses and aspects, including imperative finites and all causative and non-finite forms.
It should be noted in this connection that these independent finite verbal forms of the stem 'ach/chi' should not be confused with the endings formed from this stem.¹

Thus,

(a) ami 'boj-e 'achi (with stress on both words)  
(I having seated am)  
'I am seated', and

(b) ami 'boj-echi (with a stress on single nucleus boj, in which $\sqrt{boj}$ is the stem and -echi is the ending), (I have sat), 'I have taken my seat'.

In the first sentence 'boj-e achi' are two words with two nuclei $\sqrt{boj}$ and $\sqrt{ach}$, related together with a non-finite ending in $\sqrt{boj}$, and a finite ending in $\sqrt{ach}$.

In the second sentence 'boj-echi' is treated as one word with a single nucleus $\sqrt{boj}$ as stem and -echi as a finite ending added to it.

(c) ami 'khey-e 'chilam (two nuclei) (I, having eaten, was) 'I stayed after the meal'.

(d) ami 'khey-echilam (single nucleus in which $\sqrt{kha}$ is the stem of the verb 'to eat' and -echilam is the finite ending). (I had eaten) 'I ate'.

3.1.2 $\sqrt{ja} / \sqrt{gi}$ (the stems of the verb 'to go').

The finite verbal forms from $\sqrt{ja}$ occur in the Future, Simple and Progressive Present, and Progressive and Habitual Past tenses in all persons and grades.

¹ The evolution of the verb form of the stem ach into the verbal endings for all persons and grades in the Simple Present and Past, and both Progressive and Perfective Present and Past has been historically established. See S.K. Chatterji: O.D.B.L. pp.1035-36. See for endings, § 1.20
The finite verbal forms of other aspects of the rest of the tenses, i.e. perfective present and simple and perfective past tenses in all persons and grades are formed from √gi.

Causative forms, both finite and non-finite, are formed from √ja and never from √gi.

Imperative forms are found always with the √ja and never with √gi.

Non-finite forms in -te, -a, -on and -no endings are found with √ja; non-finite forms in -e, and -le are found with √ja and √gi both.1

In sentences of a passive construction, finite and non-finite verbal forms from √ja and √gi occur according as has been mentioned for the finite and non-finite verbal forms in sentences of an active construction; i.e. forms from √ja occur in future, simple and progressive present, and progressive and habitual past tenses, and forms from √gi occur in simple past, perfective present and past tenses.

Examples:

Indicative forms:

Future: ami bari jabo 'I shall go home' (I home shall go)

Simple Present: ami roj iskule jai 'I go to school every day' (I daily to school go)

Progressive present: ami ḍhaka jacchi 'I am going to Dacca' (I Dacca am going)

1. The frequency of occurrence is found more with √gi in these endings.
Progressive past: ami dokane jachilam
(I to shop was going)
'I was going to the shop'.

Habitual past: ami roj ijkule jetam
(I daily to school used to go)
'I used to go to school every day'.

**Imperative forms.**

Present: ijkule jao 'go to school!' 
(to school go)

3.1.3 $\sqrt{a}/\sqrt{e}$ (the stem of the verb 'to come')

Indicative Finite forms from $\sqrt{e}$ are found only in the simple past tense in all persons and grades.

Only one imperative form in the simple present in the second person Familiar grade is found formed from $\sqrt{a}$.

Non-finite forms only in -le ending are found from $\sqrt{e}$.

Causative forms of any kind are not found from these stems. The indicative and imperative forms in all the other aspects, tenses and persons, and non-finite forms in all the other endings (except -le) are substituted by the forms from $\sqrt{a}j$ (the stem of the verb 'to come') which itself is a full verbal stem functioning in endings in the regular paradigm in all aspects, tenses, persons and grades.

Forms from $\sqrt{a}/\sqrt{e}$ do not occur in sentences of passive construction.
Examples:

(a) **Indicative Forms.**

**Simple past**

**Person Grade**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>ami elam</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>tui eli</td>
</tr>
<tr>
<td>2</td>
<td>O</td>
<td>tumi ele</td>
</tr>
<tr>
<td>2</td>
<td>H</td>
<td>apni elen</td>
</tr>
<tr>
<td>3</td>
<td>F/O</td>
<td>je elo</td>
</tr>
<tr>
<td>3</td>
<td>H</td>
<td>tini elen</td>
</tr>
</tbody>
</table>

(b) **Imperative present:**

**Person Grade**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>F</td>
<td>tui ae</td>
</tr>
</tbody>
</table>

3.1.4 $\sqrt{bo}$ (the stem of the verb 'to be sure', 'to be').

Indicative finite verbal forms from this stem function only in the simple present tense in all persons and grades.

No imperative, causative or non-finite forms from this stem are found.

All the indicative finite forms other than forms in the simple present tense and imperative, causative and non-finite forms are substituted by the forms from $\sqrt{ho}$ (the stem of the verb 'to be') which itself is a full verbal stem functioning in all aspects, tenses, persons and grades in regular paradigm.
Forms from $\sqrt{\text{bot}}$ do not occur in sentences of passive construction.

**Examples:**

**Simple present**

<table>
<thead>
<tr>
<th>Person</th>
<th>Grade</th>
<th>Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>$\text{ami chatro bo}\tilde{t}i$ (certainly) 'I am a student'</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>$\text{tui chatro bo}\tilde{t}i$ 'you are a student'</td>
</tr>
<tr>
<td>2</td>
<td>O</td>
<td>$\text{tumi chatro bo}\tilde{t}\circ$ 'you are a student'</td>
</tr>
<tr>
<td>2</td>
<td>H</td>
<td>$\text{apni chatro bo}\tilde{t}en$ 'He is a student'</td>
</tr>
<tr>
<td>3</td>
<td>F/O</td>
<td>$\text{se chatro bo}\tilde{t}e$ 'He is a student'</td>
</tr>
<tr>
<td>3</td>
<td>H</td>
<td>$\text{tini chatro bo}\tilde{t}en$ 'He is a student'</td>
</tr>
</tbody>
</table>

Note: The use of the forms of this particular stem (i.e. $\sqrt{\text{bot}}$) is strictly restricted to the finite forms of simple present tense in a one-unit verbal piece only. Forms from this stem can never function as forming a part of compound verbs of the $Vb + A$, $Vb + O$ or $Vb + O + A$ pattern. That is to say, a form from this stem does not occur as a non-finite verb with a finite form from any other stem, nor does it function as a finite verbal form in a two-or more-form verbal piece.

The form $\text{bo}\tilde{t}e$ is a particle and must not be confused with the homophonous verbal form in the habitual present in the third person ordinary grade. As a particle the form functions at the sentence final position, i.e. after the finite verbal form in a simple verbal and non-verbal
sentence, which will be clear from the examples given below.

\[ \text{tumi khelecho boṭe} \] *(certainly) you have played well*
(you have played certainly)

\[ \text{tumi khaṭo boṭe} \] *(certainly) you work hard*.  
(you work (hard) certainly)

\[ \text{tumi chatro boṭe} \] *( certainly) you are a student*.  
(you student certainly)

All these sentences indicate the response to confirm the point against doubt, taking for granted that there was some shadow of doubt.

Compare also 'tumi chatro boṭo' 'certainly you are a student' with 'tumi chatro boṭe' 'certainly you are a student'. In the first one 'boṭo' is a verb, and in the second 'boṭe' is a particle.

The particle 'boṭe' is found at the sentence final position in a non-verbal sentence as well. Although this position is normally fixed in the sentence, 'boṭe' can also occur in different positions in different phrases in other types of sentence, such as, Compound or Complex sentences.

The particle 'boṭe' usually occurs in a phrase final, middle or initial position, sometimes followed by another particle 'kintu' (but).

E.g. tumi eʃecho boṭe kintu ami jabona  
(you have come certainly but I shall not go)  
'Yes, you have come, but I am not going'.

---

1. The use of these forms - verbal as well as particle is growing obsolete. See S.K. Chatterji: Sankhipeṭa Bhāṣā Prakāṣh Bangāḷa Byākāraṇ, 1945, p.302,
Note also the peculiar use of 'boṭe' at the end of a phrase indicating non-finality of a sentence and the possibility of another phrase initiated by 'kintu'.

E.g. tumi khaṭo boṭe kintu mojuri paño na
(you work hard certainly but wages you get not)
'It is true that you work hard but you are not paid well'.

3.1.5 \( \sqrt{-no} \) (the stem of the verb 'is not', 'not to be')

Indicative finite verbal forms from this stem function only in simple present tense in all persons and grades.

No indicative forms in other tenses and aspects, imperative forms and causative forms occur in Colloquial Bengali.

Non-finite verbal forms from this stem are found only with -le ending.

Forms from \( \sqrt{-no} \) are not found to occur as a finite verbs in sentences of passive construction.

Examples:

Simple Present indicative forms:

<table>
<thead>
<tr>
<th>Person Grade</th>
<th>Grade</th>
<th>ami bhalo noI</th>
<th>'I am not good'</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>ami bhalo noI</td>
<td>(I good am not)</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>tui bhalo noI</td>
<td>'You are not good.'</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>tumi bhalo noo</td>
<td>(you good are not)</td>
</tr>
<tr>
<td>2</td>
<td>H</td>
<td>apni bhalo non</td>
<td>(you good are not)</td>
</tr>
<tr>
<td>3</td>
<td>F/O</td>
<td>Je bhalo noe</td>
<td>'He is not good'</td>
</tr>
<tr>
<td>3</td>
<td>H</td>
<td>tini bhalo non</td>
<td>(He good is not)</td>
</tr>
</tbody>
</table>
Non-finite form:

\[ \text{tumi noile jao} \quad \text{'You rather go!' } \]
\[(\text{You if not go!})\]

It will not be out of place to mention very briefly here the characteristic function of the negative particle. The forms 'na/ne,' 'nai/ nei' and 'ni' function as negative particles.

The particle 'na' is found after the finite verbal form in simple past, present and future and present progressive and past habitual tenses in all their aspects in non-command sentences and in only future tense in command sentences.

Particle 'ni' occurs with finite verbal forms of the simple present. This use of the particle 'ni' with the simple present is found to function as the corresponding negative implications of the perfective present and progressive and perfective past in all aspects and persons and grades.

No negative particles are found with the finite verbal forms of the progressive past nor with the perfective present and perfective past.

Examples:

(i) Non command sentences.

Simple Future \[ \text{ami dekhbo na} \quad \text{'I shall not see'} \]
\[(\text{I shall see not})\]

Simple Present \[ \text{ami dekhi na} \quad \text{'I do not see'} \]
\[(\text{I see not})\]

Simple Past \[ \text{ami dekhlam na} \quad \text{'I didnot see'} \]
\[(\text{I did see not})\]

Habitual Past \[ \text{ami dekhtam na} \quad \text{'I was not used to see'} \]
\[(\text{I used to see not})\]
Present Progressive: ami dekhchi na 'I am not seeing'
   (I am seeing not)
Past Progressive: ami dekhi ni 'I was not seeing'
   (I have not seen)
Present Perfective: ami dekhi ni 'I have not seen'
Past Perfective: ami dekhi ni 'I had not seen'

(ii) Command sentences

Future: tumi dekho na don't see!
   (you see not)

With non-finite verbal forms the negative particle
na occurs before them.

Thus: Je na ele ami jabo 'I shall go if he
   (he not if comes I shall go) does not come.'
   Je na ajte pare 'He may not come.
   (he not to come can)

   cf. this with Je ajte pare na 'He cannot come'.
   (he to come can not)

When the finite verbal form is with -i ending
the alternative realization of the negative particle after it
is -ne. This alternative pronunciation of na is due to
the vowel harmony.

Examples: ami dekhina / ami dekhine 'I do not see'
ami dekhchina / ami dekhehine 'I am not seeing'.

nai, the alternative phonetic realization of which is
nei, is found at the end of a non-verbal sentence; or at the

1. The use of the particle 'na' can also be found at the end
   of the past progressive tense, but the use is very rare
   and is not accepted as standard Colloquial style.
end of a verbal sentence in Passive construction where the verbal form is non-finite and is with -a and -te endings.

Examples:

```
amar taka nai/nei  'I have no money'.
   (my money have not)
tomar dekha nai/nei  'You are not seen'.
   (you to see is not)
tomake dekhte nai/nei  'You are not to see'.
   (to you to see is not)
```

It is to be noted that the negative particles 'ni', or 'nei', or 'ne' must not be confused with the verbal forms of \( \sqrt{\text{ne}} \), (the stem of the verb 'to take') which is a full verbal stem, the verbal forms of which can operate as a full finite verbal form in all aspects, tenses, persons and grades in the regular paradigm, as well as non-finite verbal forms in the non-command and command sentences, and also as causative forms.

In command sentences only the negative particle 'na' occurs after the finite imperative forms in the future tense in order to indicate negative imperative or to prohibit. Thus, dekhona 'don't see!'

'na' is either an emphatic command or an earnest desire, or a polite request or an order form, where it is found after an Imperative form in the Present tense.

```
Thus: dekhona  'please do see!'
      dekhun na 'please do see!'
      hok na  'may it be!'
```

All sentences with a negative particle 'na' are negative sentences. A sentence with an Imperative verbal form
in the present tense where 'na' is not a negative particle is not negative.

Note also that 'na' occurs before an imperative form in third person and present tense in all grades, to indicate negative imperative or prohibition.

Thus:  
émon na hok  'may it not be so!'  
(such no let it be)  

khoda na korun  'God forbid!'  
(God no let him do)

3.1.6  $\sqrt{gh\dot{o}t}$ (the stem of the verb 'to occur', 'to happen').

Non-causative Indicative finite verbal forms from this stem are found only in the third person ordinary/familiar grade in all aspects, and tenses.

Non-causative Imperative forms are not found from $\sqrt{gh\dot{o}t}$.

Causative finite forms, both indicative and imperative, from this stem are found in all tenses, aspects, persons and grades.

Non-finite forms, both causative and non-causative, from this stem are found with endings, -e, -le, -te, -and -no, and are not found with -a and -on endings.  

Examples: (3rd person, familiar or ordinary grade).

---

1. This is true of a verbal sentence with a finite verbal form in it. Non-finite forms with -a and -on endings, however, occur in non-verbal sentences, e.g. ta ghoṭa ucit (that to happen, should) 'that should happen'.

Tense.
Future Simple:  
  ta ghoṭbe 'that will happen',
      (that will happen)

Present "
  ta ghoṭe 'that happens'.

Past "
  ta ghoṭlo 'that happened'.

"  Habitual
  ta ghoṭṭo 'that used to happen'.

Present Progressive
  ta ghoṭche 'that is happening'.

Past "
  ta ghoṭchilā 'that was happening'.

Present " Perfective
  ta ghoṭeche 'that has happened'.

Past "
  ta ghoṭchilā 'that had happened'.

Non-finite forms:
-e : ta ghoṭe gelo 'It so happened'.
-le: ta ghoṭle hoe 'It is better if it so happens'.
-te: ta ghoṭte pare 'It may happen'.
-no: ta ghoṭano hobe 'It will be caused to happen'.

3.1.7 (vii) √cuk (the stem of the verb 'to complete',
            'to settle')

Like √ghoṭ indicative finite verbal forms from this
stem are found only in the third person ordinary/familiar
grade in all aspects and tenses.

Non-causative imperative forms from this stem do not
occur.

Both indicative and imperative causative forms from
this stem are found in all tenses, aspects, and grades.
Non-finite forms, both causative and non causative, from this stem occur with endings -e, -le, -te, and -ne; but not with endings -a and -on.¹

Forms from both $\sqrt{gho}$ and $\sqrt{cuk}$ occur in the Passive construction.

Examples: (3rd person, Ordinary/Familiar grade).

tense aspect

<table>
<thead>
<tr>
<th>Future</th>
<th>Present Simple</th>
<th>Past Simple</th>
<th>Past Habitual</th>
<th>Present Progressive</th>
<th>Past</th>
<th>Present Perfective</th>
<th>Past</th>
</tr>
</thead>
<tbody>
<tr>
<td>golmal</td>
<td>cuke</td>
<td>cuklo</td>
<td>cukto</td>
<td>cukche</td>
<td></td>
<td>cukeche</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Non-finite forms:

- e : golmal cuke jabe 'The matter will be settled'
- le: " cukle hoe 'It is better if the matter is settled.'
- te: " cukte pare 'The matter may be settled.'
- no:  " cukano hobe 'The matter will be settled.'

3.1.8 $\sqrt{baJ}$ (the stem of the verb 'to feel')

Forms from the stem 'baJ' are always found as forming

---

¹. Same as for $\sqrt{gho}$, (supra), e.g. golmal. (disturbance settle good). 'It is better that the disorder be settled.'
part of a Compound word with the word 'bhalo' (good) as Prefix. The forms of this stem never collocate with any other word in the language.

Although the forms are never found without the prefix 'bhalo', and although it gives always a compound form to express the translation of the verb 'to love', it is not without any reason that we choose to treat $\sqrt{\text{baj}}$ (to feel) and not $\sqrt{\text{bhalo baj}}$ ('to love') as stem.

Firstly, the word 'bhalo' is found functioning as an independent word as a nominal or adjectival form in the language.

Secondly, a verbal stem of this structure (i.e. CVCVCVC) is not found in the whole language, and the multi-syllabic structure is always found in the causative form.

Thirdly, at the phonological level, $\sqrt{\text{baj}}$ functions in CVC exactly the same way as a stem structure with an open vowel.

Fourthly, in addition to the use with 'bhalo', there existed in the language another form 'manda-baja' ('to hate'), in which 'manda' (bad) used to function in exactly the same way as 'bhalo' (good). Forms from 'manda baja' are obsolete at present in the standard Colloquial dialect, although it is found in some other dialects.\footnote{Indicative and imperative finite verbal forms, both causative and non-causative from this stem function as a full verb in all aspects, tenses,}

1. In middle and Old Bengali there are some other forms as well, formed in combination with the a word and the forms of this stem.
persons and grades. Forms from this stem also occur in sentences in the passive construction.

As non-finite forms too, forms from this stem function with all the non-finite endings.

Examples: (First Person).

Future ami bhalo-bajbo 'I will love.'
Present Simple ami bhalo-baji 'I love.'
Past Simple ami bhalo bālam 'I loved.'
Past Habitual ami bhalo bātām 'I used to love.'

Present Progressive ami bhalo bāchi 'I am loving.'
Past " ami bhalo bāchilam 'I was loving.'
Present Perfective ami bhalo bejechi 'I have loved.'
Past " ami bhalo bejechilam 'I had loved.'

3.2 Auxiliaries: their function, position and meaning.

3.2.0 Auxiliaries are four in number. Their stems are:

√ha (the stem of the verb 'to be'),

√ja / √gi (" " " " " " to go'),

√thak (" " " " " 'to stay', 'to live'),

√ach/√chi (" " " " " 'to be', 'to have').

Finite forms from these stems function in sentences as auxiliaries or operators in compound verbal forms and as simple independent full verbs.

An auxiliary form is always found as a finite verbal form in the third person, ordinary grade in all tenses and aspects, and occurs only in sentences of passive construction.
An auxiliary form forms part of a compound verb of Vb + A or Vb + 0 + A structure.

It has already been stated that an operator occurs in sentences of active construction, and is found in all persons, grades, senses and aspects.¹

\[ \text{As A in Vb + A and Vb + 0 + A} \]

3.2.1 \(\sqrt{\text{ho}}\) (the stem of the verb 'to be')

A non-finite form (either Vb in Vb + A or 0 in Vb + 0 + A) before auxiliary forms from \(\sqrt{\text{ho}}\) is in -a, -te, -le, -on or -no ending and never with -e ending.²

Thus:

\[
\begin{align*}
\text{tomar } & \text{ } \text{ dhaka } \text{ } \text{ jete } \text{ } \text{ hoe } \text{ } \text{ Vb + A} \\
\text{(your Dacca to go will be.)} \\
\text{'You will have to go to Dacca'.} \\
\text{ekdin } & \text{ } \text{ chobikhana } \text{ } \text{ dekhe } \text{ } \text{ phelle } \text{ } \text{ hoe } \text{ } \text{ Vb + 0 + A} \\
\text{(one day the picture having seen if it is)} \\
\text{'Let us see the picture one day'.}
\end{align*}
\]

3.2.2 \(\sqrt{\text{ach}}/\sqrt{\text{chi}}\) (the stem of the verb 'to be', 'to have')

A non-finite form (Vb in Vb + A or 0 in Vb + 0 + A) before an auxiliary form from \(\sqrt{\text{ach}}/\sqrt{\text{chi}}\) is with -a, -on or -no ending.³

\[
\begin{align*}
\text{e kotha } & \text{ } \text{ amar } \text{ } \text{ jona } \text{ } \text{ ache } \text{ } \text{ Vb + A} \\
\text{(this word my to hear is)} \\
\text{'I have heard this'.}
\end{align*}
\]

¹ See supra
² See operator below: § 3.3
³ See for other non-finite endings operators from \(\sqrt{\text{ach}}/\sqrt{\text{chi}}\) § 3.3.22
er por make koran pope sonano ache
(after this to mother the Koran having read to make hear is)

Vb + O + A

'After this I have to recite the holy Koran for mother'.

Non-finite forms from this stem are never found.

3.2.3 $\sqrt{\text{ja}/\sqrt{\text{gi}}}$ (the stem of the verb 'to go')

A non-finite form (Vb in Vb + A or O in Vb + O + A) before auxiliary forms from $\sqrt{\text{ja}/\sqrt{\text{gi}}}$ is with -a, -on or -no ending.¹

$e$ cabite amar ghor khola jae Vb + A
(this with key my room to open goes)

'You can open my room with this key'.

bochore ekbar ghorkhani khule dekha hoe Vb + O + A
(in a year once the room having opened to see is)

'The room is opened once a year.

3.2.4 $\sqrt{\text{thak}}$ (the stem of the verb 'to stay', 'to live')

A non-finite form (Vb in Vb + A or O in Vb + O + A) before auxiliary forms from $\sqrt{\text{thak}}$ is with -a, -on or -no endings.²

almarigulo khola thak Vb + A
(almiras to open let it remain

'Let the almirahas remain open',

¹ See for the non-finite forms in other endings, operators from $\sqrt{\text{ja}/\sqrt{\text{gi}}}$. § 3.3.15.
² See for other non-finite endings operators from $\sqrt{\text{thak}}$. § 3.3.9
jal khani chopic phela thaklo Vb + 0 + A
(the net having spread to drop remained)
'The fishing net remained spread'.

3.3 Operators: their function, position and meaning.
3.3.0 It is not possible to describe the function, position and meaning of those words which will be discussed as operators without taking into consideration those features of collocations and usage which bind them to specific forms of certain verbs.

The collocational relationships are illustrated below:

It is to be noted that a number of full verbs occur in the language which have in their finite forms - (i.e. stem + finite ending) identity with the finite forms of certain of the operators.

It should also be noted that the function and meaning of the non-finite verbal forms in -e, -a, -te, -le, etc. do not depend solely on the forms themselves but are also dependent upon the form and function of the operator or the auxiliary or both which follow.

It has been seen that two verbal forms from the same stem do not function as verb and operator. That is to say, collocational usage does not permit the use of two forms Vb + 0 from the same stem. When two forms from one stem occur successively they are treated as simple verbal forms, and not compound verbal forms. The non finite form in this case usually is with -le ending and in no other ending.  

1. de and ne are exceptions. See §§ 3.3.16 & 3.3.17.
phelle phelbo Vb + Vb
(If I want to throw I shall throw)
'I shall throw it away if I want to'.
gele jao Vb + Vb
(if you want to go go)
'Go! if you want to'

That these two verbal forms are two separate verbal phrases is distinguished by marked stress and intonation. The pause between these forms and the possibility of insertion of some forms of other word classes between them are the formal criteria for distinction. In the case of Vb + 0, or Vb + 0 + A the three forms behave like a single unit verbal piece. The phrase is marked by a major stress on the first form of the whole phrase, and syntactically there is no possibility of insertion of any other form within these two or three forms. This will be illustrated in the following discussion.

Examples are given to show the collocational possibilities of the verbs with a particular operator. A few forms are also listed at the end of the discussion of each operator.

It may also be recalled that a non-finite form before an auxiliary from √ ha is with -a, -te, -le, -no or -on ending and a non-finite form before an auxiliary from any of the three √ ja/ √ gi, √ ach/ √ chi and √ thak, is with -a, -on or -no ending.

A non-finite form before an operator is with -e, -le, -te or -a ending. A non finite form before a verb of structure Vb + Vb is with any of the non finite endings, -e, -le, -te,

1. The list is not meant to be exhaustive.
-a, -on, and -no.

Operators: in Vb + 0 and Vb + 0 + A structure.

3.3.1 $\sqrt{k\bar{a}r}$ (the stem of the verb 'to do')

Where a form from $\sqrt{k\bar{a}r}$ is an operator, the non-finite verb before it is with -a or -on ending.

Thus:

$\text{ami tar j\text{\text{e}} dekha k\bar{a}r} Vb-a + 0$

(I his with to see do)

'I see him'.

$\text{amar tar j\text{\text{e}} dekha k\bar{a}r h\bar{a} e} Vb-a + 0 + A$

(My his with to see to do is)

'I see him'.

Below are a few non-finite verbs in -a and -on ending which collocate as Vb plus the finite form from $\sqrt{k\bar{a}r}$ as operator.

(i) with -a ending: Vb-a + $Q\sqrt{k\bar{a}r}$

khela k\bar{a}ra (to play), dekh\bar{a} k\bar{a}ra (to see),

paka k\bar{a}ra (to finalize or to settle),

b\text{\text{a}}k\bar{a} k\bar{a}ra (to bend), dhawa k\bar{a}ra (to run after),

nawa k\bar{a}ra (to bathe), etc.

(ii) with -on ending: Vb-on + $Q\sqrt{k\bar{a}r}$

lepon k\bar{a}ra (to smear), lehon k\bar{a}ra (to lick), palon k\bar{a}ra (to obey), so\text{\text{\text{a}}}n k\bar{a}ra (to sulk, absorb) etc.

3.3.2 $\sqrt{p\bar{a}r}$ (the stem of the verb 'to drop', 'to fall').

With a form from $\sqrt{p\bar{a}r}$ as operator the non-finite verb before it is with -a or -e ending. Some verbs are found
with both -a and -e ending, while some others are either in -a or -e ending only.

\[
\text{tomar nam } \text{kata po} \text{rbe} \quad \text{Vb-a + 0}
\]
(your name to cut will fall)

'Your name will be struck off'.

\[
\text{Je } \text{c}o^\ddagger \text{kore ke} \text{te po} \text{rlo} \quad \text{Vb-e + 0}
\]
(he quickly having cut fell)

'He slipped away quickly'.

\[
\text{amra rup}^\ddagger \text{si i} \text{stejone nebe p}a^\ddagger \text{bo} \quad \text{Vb-e + 0}
\]
(we Rupshi at station having got down will fall)

'We shall get down at Rupshi Station'.

\[
\text{cor hate nate dhora po} \text{re gelo} \quad \text{Vb-a + 0 + A}
\]
(thief to hand to catch having fallen went)

'The thief was caught red-handed'.

\[
\text{Vb -a + Q/ p}^\ddagger \text{r}
\]

\[
\text{kata po} \text{r} \text{a (to slip away, to be struck off), chara po} \text{r} \text{a (to be deserted, to be let loose), b} \text{dha po} \text{r} \text{a (to be bound, to be hindered) mara po} \text{r} \text{a (to die, to suffer), dekha po} \text{r} \text{a (to be caught), dhaka po} \text{r} \text{a (to be concealed), capa po} \text{r} \text{a (to be suppressed, to be run over)}, \text{etc.}
\]

\[
\text{Vb -e + Q/ p}^\ddagger \text{r}
\]

\[
\text{kede po} \text{r} \text{a (to request), bhege po} \text{r} \text{a (to flee away), ke} \text{te po} \text{r} \text{a (to slip away), nebe po} \text{r} \text{a (to get down), lege po} \text{r} \text{a (to begin), phe} \text{te po} \text{r} \text{a (to burst), dhuke po} \text{r} \text{a (to enter), jhule po} \text{r} \text{a (to swing), c} \text{uye po} \text{r} \text{a (to ooze), juye po} \text{r} \text{a (to lie), nuye po} \text{r} \text{a (to bend), bo} \text{se po} \text{r} \text{a (to sit down), e} \text{se po} \text{r} \text{a (to come)}, \text{etc.}
\]
Vb -a, -e + √pọə

chita pọə (to sprinkle), chite pọə (to slip),
théka pọə (to be in difficulty), théke pọə (to be in difficulty, to be stuck), kαtα pọə (to be struck off), kete pọə (to slip away), ghura pọə (to wheel round), ghure pọə (to wheel round) etc.

3.3.3 √mor (the stem of the verb 'to die').

The non-finite form before a form from √mor as an operator is with -e ending, e.g.

ami khețe mori
(I having worked die) 'I work hard'

Vb -e + 0√mor

khețe mọra (to work hard), khele mọra (to play hard),
kọde mọra (to suffer), pọre mọra (to be involved), likhe mọra (to be exhausted by constant writing) etc.

3.3.4 √dhor (the stem of the verb 'to catch').

The non finite verb before an operator from the stem dhor is with -a and -e ending.

O kichudin dhore kagoje lekha dhorloche
(he for a few days in paper to write has caught)

'He has started writing in the paper for a few days'.

mukh khultei lokgulu oke chēke dhorlo
(mouth on opening the men him having scared caught)

'People caught hold of him as soon as he opened his mouth'.
Vb -a + 0 √dhór

lekha dhóræ (to start writing), jawa dhóræ (to start going), nöga dhóræ (to start moving), khela dhóræ (to start playing), jekha dhóræ (to start learning), etc.

Vb -e + 0 √dhór

doße dhóræ (to hold strongly), jorje dhóræ (to embrace), ṭene dhóræ (to hold tight), khule dhóræ (to spread wide open), ṭhese dhóræ (to hold tight), etc.

3.3.5 √boś (the stem of the verb 'to sit').

The non-finite form before an operator from the stem 'boś' is with -e ending.

tui purono pöga ṭob kheye bojechiJ (you old to read all having eaten seated)

'You have forgotten all the previous lessons'.

Vb -e + 0 √boś

kheye bośa (to forget, to spoil), gile bośa (to usurp), cepe bośa (to impose, to be a burden), ṭheke bośa (to be hindered), rege bośa (to get angry), bëke bośa (to be disagreeable) etc.

3.3.6 √par (the stem of the verb 'to be able to', 'can').

The non-finite verb before an operator from the stem √par is with -te and -le ending.

 tumi gele ekaj hote pare
 (you if you go this work to be can)

'This could be done if you go'.

Se ekbar gie dekhle parto
(he once having gone if he sees could)

'the could go once to see'

Vb -te + 0√par

hote para (to be), dekhte para (to tolerate, to see),
jete para (to be able to go), dhorte para (to be able to catch),
marte para (to be able to beat, kill), khete para (to be able
to eat), afte para (to be able to come), etc.

Vb -le + Q√par

dile --(better to give), gele --(better to go), khele --
(better to eat). Very few verbs occur as operator with
ending -le.¹

3.3.7 √mar (the stem of the verb 'to kill', 'to beat').

A non-finite verb before an operator from the stem
mar has endings -a and -e.

rat dupure tumi dorjae ṭoka marle
(at midnight you at the door knock beat)

'You knocked at the door at midnight'.

¹. See -le ending: § 3.4.6.

The non finite form from the stem par with -a ending
does not collocate with a non-finite form with -le ending
before it. Only finite forms from √par are used in this
context, e.g. dile paro, dile pari, dile pare etc. Hence
a dash has been used to denote the absence of non finite
form in -a ending, which is roughly equivalent to English
infinitive.
\textit{Vb \(-a + 0 \sqrt{\text{mar}} \)}

\*thela mara (to push), jata mara (to press), dhakka mara (to push), guta mara (to push).\*

\textit{Vb \(-e + 0 \sqrt{\text{mar}} \)}

\*pite mara (to beat severely), pije mara (to rub severely, to cause suffering), dhamke mara (to keep under threat).\*

\textbf{3.3.8} \(\sqrt{\text{lag}}\) (the stem of the verb 'to stick to', 'to begin' 'to cling')

A non-finite verb before an operator from the stem lag has -te ending.

\[\text{tar por j\textae k\textdle lagle} \]
(after that he to weep began)

'then he started weeping'.

\textit{Vb \(-te + 0 \sqrt{\text{lag}} \)}

\*jete laga (to be going), khete laga (to start eating), dekhte laga (to go on seeing), marte laga (to continue beating), gaite laga (to start singing), por\textte laga (to start or to continue reading), etc.\*

\textbf{3.3.9} \(\sqrt{\text{thak}}\) (the stem of the verb 'to stay', 'to remain').

A non-finite form before an operator from the stem 'thak’has \(-a, -e\) or \(-te\) ending.

\[\text{beikhani take tola thak} \]
(the book in the shelf to raise let it remain)

'Let the book remain there in the shelf'.

\[\text{lag} \]
(the stem of the verb ('to stick to', 'to begin' 'to cling')

A non-finite verb before an operator from the stem lag has -te ending.

\[\text{tar por j\textae k\textdle lagle} \]
(after that he to weep began)

'then he started weeping'.

\textit{Vb \(-te + 0 \sqrt{\text{lag}} \)}

\*jete laga (to be going), khete laga (to start eating), dekhte laga (to go on seeing), marte laga (to continue beating), gaite laga (to start singing), por\textte laga (to start or to continue reading), etc.\*

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A non-finite form before an operator from the stem 'thak’has \(-a, -e\) or \(-te\) ending.

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(the book in the shelf to raise let it remain)

'Let the book remain there in the shelf'.

\[\text{lag} \]
(the stem of the verb ('to stick to', 'to begin' 'to cling')

A non-finite verb before an operator from the stem lag has -te ending.

\[\text{tar por j\textae k\textdle lagle} \]
(after that he to weep began)

'then he started weeping'.

\textit{Vb \(-te + 0 \sqrt{\text{lag}} \)}

\*jete laga (to be going), khete laga (to start eating), dekhte laga (to go on seeing), marte laga (to continue beating), gaite laga (to start singing), por\textte laga (to start or to continue reading), etc.\*

\textbf{3.3.9} \(\sqrt{\text{thak}}\) (the stem of the verb 'to stay', 'to remain').

A non-finite form before an operator from the stem 'thak’has \(-a, -e\) or \(-te\) ending.

\[\text{beikhani take tola thak} \]
(the book in the shelf to raise let it remain)

'Let the book remain there in the shelf'.

\[\text{lag} \]
(the stem of the verb ('to stick to', 'to begin' 'to cling')

A non-finite verb before an operator from the stem lag has -te ending.

\[\text{tar por j\textae k\textdle lagle} \]
(after that he to weep began)

'then he started weeping'.

\textit{Vb \(-te + 0 \sqrt{\text{lag}} \)}

\*jete laga (to be going), khete laga (to start eating), dekhte laga (to go on seeing), marte laga (to continue beating), gaite laga (to start singing), por\textte laga (to start or to continue reading), etc.\*

\textbf{3.3.9} \(\sqrt{\text{thak}}\) (the stem of the verb 'to stay', 'to remain').

A non-finite form before an operator from the stem 'thak’has \(-a, -e\) or \(-te\) ending.

\[\text{beikhani take tola thak} \]
(the book in the shelf to raise let it remain)

'Let the book remain there in the shelf'.

\[\text{lag} \]
(the stem of the verb ('to stick to', 'to begin' 'to cling')

A non-finite verb before an operator from the stem lag has -te ending.

\[\text{tar por j\textae k\textdle lagle} \]
(after that he to weep began)

'then he started weeping'.

\textit{Vb \(-te + 0 \sqrt{\text{lag}} \)}

\*jete laga (to be going), khete laga (to start eating), dekhte laga (to go on seeing), marte laga (to continue beating), gaite laga (to start singing), por\textte laga (to start or to continue reading), etc.\*

\textbf{3.3.9} \(\sqrt{\text{thak}}\) (the stem of the verb 'to stay', 'to remain').

A non-finite form before an operator from the stem 'thak’has \(-a, -e\) or \(-te\) ending.

\[\text{beikhani take tola thak} \]
(the book in the shelf to raise let it remain)

'Let the book remain there in the shelf'.
We very often go there.

The girl will go on reading up to twelve at night.

Vb -a + 0 √thak

tola thaka (to remain raised), bādha thaka (to remain bound), aṭka thaka (to be confined), jana thaka (to become known) etc.

Vb -e + 0 √thak

gie thaka (to go frequently), ghumie thaka (to remain asleep), lege thaka (to stick to), bōše thaka (to remain seated, to sit idle), pōre thaka (to remain) etc.

Vb -te + 0 √thak

Junte thaka (to go on hearing), pōṭe thaka (to continue to read), jete thaka (to continue going), korte thaka (to start or to continue doing), likhte thaka (to start or continue writing) etc.

3.3.10 √dāpa (the stem of the verb 'to stand')

The non-finite verb before an operator from the stem 'dāpa' has ending -e.

'Vee stood up as soon as the teacher came in'.

1. This is a disyllabic form. See extended form (C)VCA - § 9.4.4.
Vb \(-e + 0\sqrt{\text{dāra}}\)

phire dārano (to stand back), ghure dārano (to turn back),
ghēfe dārano (to stand by the side), gie dārano (to stop),
thomke dārano (to stop suddenly) etc.

3.3.11 \(\sqrt{\text{phel}}\) (the stem of the verb 'to throw')

The non-finite verb before an operator from the stem phel has ending \(-e\).

\[
\text{tumi bāpikhana kine phelo (you the house having bought throw)}
\]

'Buy the house'

Vb \(-e + 0\sqrt{\text{phel}}\)

kine phela (to buy), kōre phela (to do, to complete),
dekhe phela (to happen to see), dhuye phela (to have washed),
keje phela (to cut), mere phela (to kill, to beat), kēde phela (to burst into tears),
heše phela (to laugh), mucho phela (to rub) kheye phela (to eat off) chīre phela (to tear off),
śārie phela (to remove), tule phela (to remove) etc.

3.3.12 \(\sqrt{\text{dekh}}\) (the stem of the verb 'to see')

The non-finite form before an operator from the stem dekh has ending \(-e\).

\[
\text{amti bhari misṭi kheye dekho (the mango very sweet having eaten see)}
\]

' the mango is very sweet, taste it!'
Vb  -e + O√^dekh

kheydekha (to taste), giedekha (to go), kore
dekha (to take chance), khujedekha (to search), tuledekha
(to have a look), takiedekha (to have a look), nie dekha (to
take chance), kheledekha (to attempt to play), ghaste dekha
(to search), khotiedekha (to take account, to look through) etc.

3.3.13  √-tol - (the stem of the verb 'to raise')

Very few verbs function as non-finite in non causative
forms where the operators are from the stem 'tol'. The forms from
this stem function as operators mainly with the non finite
verbs in causative forms. The non finite form has the -e ending.

bohukoste takedeke tollam
(much with difficulty him having called I raised)
'I awakened him with much difficulty'.

Vb  -e + O√^tol

dake tola (to awaken), kore tola (to do, to complete),
matietola (to cheer up), jagi tola (to put in motion),
khepiedekha (to madden, to provoke), ghami tola (to leave one
in difficulty, to perturb), etc.

3.3.14  √pa (the stem of the verb 'to get')

The non finite form before an operator from the stem
pa has ending -a or -te.

onekдин tomar đekha painį
(many days your to see I get not)
'I have not seen you for a long time'.

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Even now you will find some roses in the garden.

The non finite forms before an operator from √ja/√gi have -e ending.

If he goes on spending like this, he will be a street beggar within a short time.
harie jawa (to get lost), palie jawa (to flee away, to abscond),
die jawa (to give), likhe jawa (to write, to continue to write),
me jawa (to take) chuţe jawa (to rush, to run quickly) etc.

3.3.16 \( \sqrt{-de} \) (the stem of the verb 'to give')

The non-finite forms before an operator from \( \sqrt{-de} \)
have ending -a, -e or -te.

- rani bochore ąkbar dekha den
  (quin in a year once to see gives)

- rakhal goruduto ekjathe jure dilo
  (shepherd the two cows in one with making pair gave)

Vb -a + 0 \( \sqrt{-de} \)

- khawa dawa (to throw a party),
  dekha dawa (to come to the view),
  capa dawa (to suppress),
  jata dawa (to press),
  haţa dawa (to start walking),
  chiţa dawa (to spread, to spray),
  ţheka dawa (to give support),
  ţhala dawa (to push),
  dela dawa (to swing),
  tola dawa (to raise).

Vb -e + 0 \( \sqrt{-de} \)

- chuţe dawa (to throw),
  qheke dawa (to cover),
  keţe dawa (to cut),
  rekhe dawa (to keep),
  mere dawa (to beat, to win),
  cheţe dawa (to leave),
  qhele dawa (to pour),
  ţhele dawa (to push),
  phele dawa (to throw away),
  tule dawa (to remove, to shift),
  ţhie dawa (to abolish),
  ţhokie dawa (to cheat),
die dāwa (to give). 1

Vb -te + 0 √de

afste dāwa (to allow), ḍhukte dāwa (to allow entrance), thakte dāwa (to let live, to leave), mọrte dāwa (to let one die), khelte dāwa (to allow to play), poṛte dāwa (to send to school), bojte dāwa (to offer seat).

3.3.17 √ne (the stem of the verb 'to take')

The non-finite forms before an operator from √ne have ending -e or -te.

ora naite  gieche; colo amra e ɔbjore
(they to bathe have gone go we this free time

kheye ni.
(having eaten take.)

'They have gone to take a bath, let us have our meal in the meantime.'

ematro amra khete niechi
(this moment we to eat have taken)

'We have just started eating'.

Vb -e + 0 √ne

kheye nāwa (to eat), nie nāwa (to take), keje nāwa (to cut, to deduct), jeye nāwa (to have gone), tule nāwa (to take away), kepe nāwa (to snatch away), khaṭie nāwa (to get one work), ceye nāwa (to want), tuke nāwa (to note down), ẹne nāwa (to collect), dekhe nāwa (to see (threat) );

nie nāwa (to take) etc. 2

1. This verb takes as its non-finite verb before it from the same stem. takaṭa 'die dao' (pay the money).
2. This verb takes as its non-finite verb before it from the same stem takaṭa 'nie nao' (take the money).
Vb -te + 0 √ne

bojte nawa (to attempt to sit), uthte nawa (to attempt to get up), dhukte nawa (to attempt to enter), khelte nawa (to allow to play), etc.

3.3.18 √aʃ (the stem of the verb 'to come')

The non-finite forms before an operator from √aʃ have -e ending.

amra jomoy moto cole ajbo
(we time according to having started shall come)
'We shall come in time'.

Vb -e + 0 √aʃ

cole aʃa (to come), uth aʃa (to come away), dhore aʃa (to begin to burn, to stop), dekhe aʃa (to see), kheye aʃa (to eat), phurie aʃa (to be exhausted), kome aʃa (to lessen), nie aʃa (to bring), rekhe aʃa (to leave), cheye aʃa (to leave) etc.

3.3.19 √an (the stem of the verb 'to bring')

The non-finite form before an operator from the stem an has -e ending.

0 Job - bəpar guchie eneche
(he all affairs having winded brought)
'he has arranged everything'.

Vb -e + 0 √an

tule ana (to bring out), uthie ana (to pick out)
cine ana (to choose out), guṭie ana (to wind up), guchie ana (to arrange), ceye ana (to beg), etc.
### 3.3.20 $uṭh$ (the stem of the verb 'to get up')

The non-finite form before an operator from the stem $uṭh$ has -e or -te ending.

ami na janiei gie $uṭh$lam
(I not having informed having gone got up)

'I went (there) without information.'

nao ebar khete $uṭa$
(take now to eat get up)

'Well, come and have your meal now'.

Vb -e + 0 $uṭh$

gie $uṭa$ (to complete journey, to reach), jere $uṭa$
(to recover), kheye $uṭa$ (to finish eating), bōle $uṭa$ (to
start speaking), geye $uṭa$ (to start singing), die $uṭa$ (to
complete giving), june $uṭa$ (to be able to hear), jōle $uṭa$
(to burn out, to be furious), kāṭe $uṭa$ (to escape), kōre
$uṭa$ (to be able to complete). etc.

### 3.3.21 $ho$ (the stem of the verb 'to be')

The non-finite verb before an operator from $ho$ has -a (or in causative form -no) ending.

ami tomar jōrne bhebe bhebe
(I for you having thought having thought

jāra $hoi$
(finish am)

'I am much worried for you'.

Vb -a + 0 $ho$

jāra $howa$ (to be exhausted), paka $howa$ (to be mature,
to be confirmed), dekha $howa$ (to be seen, to meet). etc.
3.3.22 $\sqrt{\text{ach}} / \sqrt{\text{chi}}$ (the stem of the verb 'to be')$^1$

The non-finite verb before an operator from $\sqrt{\text{ach}} / \sqrt{\text{chi}}$ has -a or -e ending.

ami maschoek $\text{bo$^\text{a}$ achi}$
(I about six months to sit am)

'I am unemployed for about six months'.

tumi kar jonne $\text{bo$^\text{e}$ ache}$
(you whose for having seated are)

'Who are you waiting for?'

**Vb -a + 0 $\sqrt{\text{ach}} / \sqrt{\text{chi}}$**

$\text{bo$^\text{a}$}$ -- (to be unemployed), laga -- (to continue to cling), jaga -- (to remain awake), etc.

**Vb -e + 0 $\sqrt{\text{ach}} / \text{chi}$**$^2$

$\text{bo$^\text{e}$}$ -- (to wait), jege -- (to be awake), mete -- (to be absorbed), bhule -- (to forget), qube -- (to be occupied), jue -- (to lie down), jome -- (to be frozen), po$p^\text{e}$ -- (to be left behind, to lie down), ceye -- (to look forward), etc.

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1. See 'defective verb', § 3.1.1.
2. Non-finite forms are not found from the stem ach/chi. For all non-finite and other finite verbs than Simple Present and Past, forms from $\sqrt{\text{thak}}$ (the stem of the verb 'to remain') are substituted. See § 3.1.1.

There is no form from stem 'ach' equivalent to English, infinitive 'to be'. A dash is used in place of *'acha', which is a theoretical form.

3.4 The function, position and meaning of the non-finites:

3.4.0 The function, position and meaning of an auxiliary and an operator in a sentence have already been stated. In this section the function of non-finite forms as a whole with different non-finite endings will be very briefly discussed.

It has been seen that the verb in Vb + O, Vb + A, and Vb + O + A structure has certain non-finite endings, and O in Vb + O + A has certain non-finite endings. It is also to be noted that non-finite endings alone can not define and determine function or meaning of any non-finite verb, operator or auxiliary. It is the whole piece that is to be taken into consideration. Contextual and Collocational function are of major importance in describing any function or meaning of a non-finite or a finite verbal form or both. In determining an operator or an auxiliary it has been seen that certain forms collocate with certain forms, while certain others do not, and that certain non-finite forms have certain endings while certain others have quite different endings. A different function of different non-finite forms with different endings will be made clear in the following discussion.

   C.K.Ogden and Malinowski, The Problem of Meaning in Primitive Languages (Supplement I), London, 1949, pp.296-336
Non-finite endings: -a, -on, -no, -e, -te and -le.¹

A non-finite form with ending -a and -on is non-causative. With -no it is causative. Forms in endings -e, -te and -le can be either non-causative or causative.

3.4.1 Ending -a

A non-finite verbal form (Vb in Vb + A, Vb or 0 or both in Vb + 0 + A) with -a ending functions in sentences in passive construction, and (Vb in Vb + Vb, or Vb + 0) in sentences in active construction. When, however, more than one form is found in succession with -a ending they are treated as one single unit as a whole termed, double-form.²

Examples:

-ami tar jone dekha kori 'I see him' Vb + 0
-a+ .. (I his with to see do)

-amar tar jone dekha hoe 'I see him' Vb + A
-a+ .. (my his with to see is)

-amake dekha dite hoe 'I have to be seen'
-te+ .. (me to see to give is) Vb + 0 + A

-a+a+.. ami take dekha juna kori 'I take care of him'
(doubt) (I him to see to hear do) Vb + 0

-a+a+ ami lekha pora korte cai 'I want to study'
(double) (I to write to read to do want) Vb + 0 + Vb

1. There are also two endings, -ba, and -bar which has the characteristic feature of taking a particle with them in all sentence type. So they are better treated as a special case. On formal grounds they can be treated as compound particles and not as non-finite endings. See Ch. i. foot note on p. 31.
2. See Ch. 1 foot note on p. 49.
3.4.2 Ending -on

The function of a non-finite form with -on ending is similar to that of a form with ending -a. The form may be Vb in Vb + A, Vb + O and Vb + O + A and O in Vb + O + A. In Vb + O + A structure where one (Vb or 0) is with -on ending, the other verbal form can have any of the non-finite endings.

If two forms are in -on ending they are treated as a 'double form.' (supra)

Examples: (same as for -a)¹

It should be noted that the verbal form with endings -a, -on and -no may be represented by what is known as infinitives in English, e.g. jawa or jaon, 'to go'; koron, 'to do' jawano 'to cause to go', korano 'to cease to do' etc. And that a form with endings -a, -on or -no as the main verb usually takes a form from √kor or √ho as operators.

3.4.3 Ending -no

The use of the verbal forms in -no ending is very limited collocationally. It is found only with causative forms. A non-finite verbal form with -no ending functions exactly the same manner as a non-causative non-finite form with a ending, subject to the limitation of collocation. The non-finite verb before or after a form with -no ending has any non-finite ending.

Examples:
-no+.. amake ta dekhano hoe 'That is shown to me'
(me that to show is) Vb A

1. Forms with -on ending are specially used in dialects. See M.A.Hai, Nasals and Nasalization in Bengali., Dacca University, 1960
- no + .. take oṣud khawano dhari N Vb + O
(him medicine to cause to eat I catch)
'I cause him to take medicine'

-e + no + .. oke khaṭie newano hoe
(him having caused to work to cause to take is)

'He is made to work hard'

-no + -le + .. oṣud mejano thakle hoe Vb + O + A
(medicine to cause to mix if remain is)
'It is better if the medicine is mixed'

-no + te + .. oṣud mejano thakte hoe Vb + O + A
(medicine to cause to mix to remain is)
'The medicine should be mixed'

3.4.4 -e
Non-finite verbs with -e ending occurs only as Vb in Vb + O structure. Vb may be preceded by several non finite verbal forms with -te, le and -a. A form with ending -e is never found as Vb in Vb + A structure nor as 0 in Vb + 0 + A structure. Verbal form with -e in Vbof Vb + 0 or Vb + 0 + A structure may be represented by 'ing' form in English, e.g. nie eṣo (having brought come!) 'bring along!'

-e + .. amṭa kheye phelo Vb + 0
(the mango having eaten drop) 'eat the mango'

-e + .. take mere phelle Vb + 0
(him having killed drop) 'you are killing him'

-e + .. ekotha bole boṣečhi Vb + 0
(this word having said I have seated) Vb + 0
'I said this (uncautiously)'

1. Except when 0 in Vb + 0 + A is from √hə.
-te+e take dekhte pere uṭhlan Vb

(him to-see having been able raised)

'I managed to see him.'

-a+e je boka kheye jae Vb

(he to rebuke having eaten goes)

'He is rebuked.'

-te+e+e ami uṭhte gie pore jai Vb Vb

(I to get up having gone having fallen go)

'I fall down when I try to get up.'

When Vb is preceded by a form with -le ending it is found to be a different pattern. This point will be discussed with -le.

Note that the main verb with -e ending usually takes a form from √kor and √ho as operatives.

In Vb + 0 structure endings -e, -a, -te, -le are possible with Vb.

In Vb + A all the endings except -e are possible in Vb. i.e. a form with ending -e is not possible as Vb in Vb + A.

Just as in Vb + A so also in Vb + 0 + A, a form with ending -e is not possible as 0. That is, in a sentence of passive construction a form immediately before the auxiliary (Vb, in Vb + A, or 0 in Vb + 0 + A) can never have -e ending.

1. Note also the particles with -e : bole, koe, boṭe, hoe, etc.
2. See § 3.3.1 and 3.3.21.
3.4.5  -te

Non-finite verbs with -te ending occurs as Vb in all three structures; viz. Vb + A, Vb + 0, and Vb + 0 + A and also as 0 in Vb + 0 + A.

A non finite Vb in -te ending may be followed by several other non-finite verbal forms with endings -a, -e, -te and -le.

Vb in Vb + 0 + A with -te ending may be followed by any operator with any of the non-finite endings, except ending -e; and 0 in Vb + 0 + A with -te may be preceded by any verb with any of the non-finite endings except -le, (subject to the approval of the collocational usage).

Examples:

-te + .  ami  dekhte  pari 'I can see' Vb + 0
(I to see can )

-te + .  amar  dekhte  hoe 'I have to see' Vb + A
( my to see is)

e+-te + .  amake  boje  porate  hoe Vb + 0 + A
(to me having seated to fall is) 'I have to sit down'

-te +le + .  ami  oke  dekhte  parle  hoe Vb + 0 + A
( I him to see if I can is ) 'It is enough if I can see him'

-e+te+ - .  ami  boje  porate  pari Vb + 0 + Vb
( I having seated to drop can ) 'I can sit down'

-te + -e .  (Not possible)

-te+--te+  amake  belte  dite  hoe Vb + 0 + A
(me to say to give is) 'I have to allow to speak' or
'I have to be allowed to speak'
-te+ -le+ take some mete dharte parle hoe
(him time according to to catch if can is) Vb + O + A

'(I doubt) if (you) can catch him in time'.

-a + -te + amar dekha korte hoe Vb + O + A
(my to see to do is)

'I have to meet'

-e+ -te+ amake uthe popte hoe Vb + O + A
(to me having got up to fall is)

'I have to get up'

le+ -te+ (Not possible)

Vb can not have -e ending in Vb + O + A structure
where the non-finite verb 0 is with -e ending; and a verb as 0
can not have -e ending in Vb + O + A structure where the Vb
is with -le ending.

Vb and 0 in this structure can have any other
non finite ending.

3.4.6 -le

Non-finite verbs with -le ending occur as Vb in all
three structures, viz. Vb + O, Vb + A, and Vb + O + A and also
as 0 in Vb + O + A.

In Vb + O, Vb with -le may be preceded by several
other non-finite verbal forms with endings -a, -e, -te, but
not with ending -le. When, however, two verbal forms occur
with ending -le, they are found to be two different Vbs, or a
double form.

In Vb + O + A structure a form with -le occurs as
operator when Vb is found in -a, -e, -te.
Where the Vb form is with -le the operator can have any of the non-finite endings except -e.

In a three-form verb piece where the first Vb form is with ending -le and the second is with ending -te, -le, -a, the first form is an independent non-finite Vb and the second and the third together form a Vb + A structure; and where the second form has -te, -le, -e, the first form is an independent non-finite Vb and the second and the third together form a Vb + 0 structure, and Vb in Vb + 0 and Vb + A behave in the same manner as in the case of two form verbal piece of these structures.\(^1\)

Examples:

- le + .. ami dekhle pari Vb + 0
  (I if I see I can)
  'I may have a look'

- le + .. jaega\(\text{\textipa{a}}\) dekhle hoe Vb + A
  (the place if one sees is)
  'The place may be visited'

- le+a+ .. kha\(\text{\textipa{l}}\)i dekhle para jae Vb +Vb + A
  (the game if one sees to be able goes)
  'The game can be seen'

- a+-le+ .. ami kal bikele tar sone dekha dile pari Vb + 0 + 0
  (I tomorrow evening his with to see if one gives I can)
  'I'd better see him tomorrow evening'

---

1. That this is a different verb is recognized by the intonation and also by the pause, and by the possibility of inserting a particle or nominal form in between them.

2. Note: a non-finite form with -e ending occurs as Vb in Vb + 0, and with -a ending occurs as Vb in Vb + A. Supra
I can well go through the paper.

I'd better give you the book to go through.

You can look after the children.

even now you can study

'I doubt) if he allows visitors today'

'I can see the paper'

'Better to give the paper to see'

'You can see the fountain if you like'
The fountain might be visited.'

'I may see the fountain'.

'I may look after the children'.

'You must have your meal if you want to'.
PART TWO

CHAPTER 4  Texts

CHAPTER 5  Vowel articulations

CHAPTER 6  Consonantal Articulations
## Texts

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4.0 The Phonetic and phonological analyses have been separately marked by the use of a separate notation in each case.

Four different notations have been used in this thesis. They are:

1. Orthography,
2. Transliteration,
3. Phonetic transcription and
4. Phonological notations.

4.1 In Bengali as in other languages with a long literary tradition behind them, spelling and pronunciation are often not in accord.

4.2 The transliteration is an augmented romanized version of the spelling in the original characters, using consistently one letter or group of letters for each character of the Bengali alphabet.

4.3 In the phonetic transcription, the sounds of Bengali words are sought to be consistently represented by means of I. P. A notations, with a few exceptions, e.g. c, j and y. In I. P. A. c and j represent palatal plosives and palatal

---

1. There is another notation: reading transcription which neither translitrates nor phonetic but in between them. See p. 111.
fricative respectively, whereas, I have used them for palato
alveolar voiceless and voiced affricates. y has been
used for I.P.A. j. It may be noted that even the phonetic
transcription, however narrow it might be, does not record
actual speech events in any sense, but makes observations of
certain features of a speech and symbolizes them in symbols
whose values depend on the particular sets of relations, in
which they are used.¹

a stands for a neutral open vowel neither front nor
back.

The phonetic transcription is given in square
brackets to distinguish it from the systematic roman translit­
eration.

4.4. Phonological notation has been explained in the
course of the thesis and need not be detailed here.

4.2.0 Transliteration

The roman letters used in this thesis for translit­
erating Bengali characters are the same as those used by
H.M. Lambert in her 'Introduction to the Devanagari script'
with some modifications and additions.²

¹ Ibid.
² H.M. Lambert (Introduction to the Devanagari Script, Oxford
University Press, 1953. pp. 173-231) adopted the All India
Roman Alphabet system with some modifications and additions.
For comparison, the roman letters of the transliteration system used in the linguistic survey of India have also been shown by the side of the corresponding Bengali characters.

In quoting the titles of books and in citations from Bengali AIR transliteration has been used. Diacriticals have not always been used with proper names which are usually spelt without them.

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<th>4.2.1 Vowel Characters</th>
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2. Syllabic r 'occurs only in some Sanskrit loanwords'. See Lambert, op. cit. p. 176
### Bengali Consonant Characters

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<th>L.S.I. Transliteration</th>
<th>Symbol used</th>
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Each consonant character of the Bengali script represents a syllable consisting either of a vowel or of a consonant followed by the first vowel of the vowel series. This vowel is usually referred to as the inherent vowel. In referring to a consonant character of the Bengali syllabary,

---

1. The term 'inherent' is from English traditional grammars and used here for transcriptional purpose only.
the inherent vowel is represented by ə, the phonetic notation of which maybe represented by I.P.A. symbol [ə], e.g. နက բեք  [bok] 'rebuke'.

When, however, an inherent ə is not implied, it is indicated by the sign ḷ below the consonant. Thus က and not ကे, မ and not မ. The consonant ḷ without a following vowel is represented by the sign ḳ.

The character ḷ ye is referred to as antastha je, to distinguish it from ḷ je, referred to as vargiya je. The semi vowel ḷ is referred to as antastha ye and is represented in Bengali by a modified form of the character with a dot below it.

The character ḷ ve is referred to as antastha ɓe, to distinguish it from ɓe, referred to as vargiya ɓe. This character is found in only Sanskrit loan words.

4.2.4 Vowel characters are written in Bengali to represent syllables consisting of a vowel only, and vowel signs are added to consonant characters to represent syllables consisting of an initial consonant followed by one of the vowels in the series.

It has been said that the vowel ḷ ə is the 1. Sanskrit term 'halanta' 'ending in a consonant'.
inherent vowel of each of the consonant characters in the form in which they are given in the syllabary. It has no corresponding vowel sign. Vowel signs, corresponding to the other vowel characters are given below added to the consonant character क ke.

\[
\begin{array}{cccccc}
\text{का} & \text{कि} & \text{की} & \text{कु} & \text{कु} & \text{कुं} \\
\text{ka} & \text{ki} & \text{kii} & \text{ku} & \text{ku} & \text{kun} \\
\text{कृ} & \text{के} & \text{के} & \text{को} & \text{कौ} & \text{कौ} \\
\text{kr} & \text{ke} & \text{kei} & \text{ko} & \text{kò} & \text{kòu}
\end{array}
\]

Special forms of some of the characters with vowel signs:

\[
\begin{array}{cccccc}
\text{गु} & \text{रु} & \text{रुु} & \text{सु} & \text{हु} & \text{ह्र} \\
gu & ru & ruu & su & hu & hr
\end{array}
\]

4.2.5 The signs \(^1\) ओ \(^2\) ओ and \(^{\tilde{\gamma}}\) are marks added to characters to represent some modification of the syllable it represents. The ओ anusvare and the \(^{\tilde{\zeta}}\) cendra bindu represent nasalisation. The sign ओ anusvare \(^{\tilde{\gamma}}\) is written to the right of a character. The vowel of the syllable which the character represents is nasalized. In the transliteration of examples, in roman letters, the anusvare is transcribed as \(\eta\) where two alternative spellings \(\eta\) and \(^{\tilde{\gamma}}\) are used. \(\eta\) will be used for transliteration.

1. Lambert calls them 'modifiers'. See her book 'Introduction to the Devanagari Script'. p. 204.
4.2.6 The mark ć cendrēbindu is written above a character, the vowel of the syllable which the character represents is nasalized. In transliteration the sign ~ is written above the corresponding letter. Cendrēbindu added to characters:

\[ ā ā́ i ī́ ɯ ū ū́ ē ḗ \]

će cendrēbindu added to consonant character կ ke with vowel signs:

\[ կ կ̄ կի կա կի կու կու կր կրի կո կու \]
4.2.7 The sign visarga ू is written to the right of a character. This represents the voiced glottal fricative. In the transcription of examples, in roman letters, the sign ू 'visarga' is transcribed as ̀h (with a ̀ below the h) in order to distinguish it from ु́yमे h ऋ. visarga added to vowels and the consonant character न ke.

The signs enusvarə and visarga ू ू are also written with the inherent vowel े preceeding. Thus ू is written as ें and ू is written as ेh. This may be compared with ो and ऋ which are written as े and he respectively.

A set of examples is given below:
Consonant characters may be combined to represent two or more consonants which are to be realized consecutively, without an intervening vowel. Characters formed in this way are referred to in Bengali as 'yuktakṣere'.

A 'yuktakṣere' is transliterated in roman letters by a group of letters. Thus পল্টো, palṭao, পাল্টো pestao etc. In the transliteration the inherent vowel is written after a group of consonant letters under the same condition as after a single consonant letter. e.g. জন্ম jobde, and অন্ত astes.

2. For details, See Lambert, op.cit. Bengali Section, Ch.3.
4.5 Other notations

All punctuation marks are used as in English. e.g.

, : comma,
; : semi-colon,
. : full stop,
- : dash,
- : hyphen,
? : Note of interrogation,
! : Note of exclamation,
' ' : Inverted commas,
( ) : Round Brackets,
[ ] : Square Brackets.

Word for word renderings of English have been put within round brackets ( ), and idiomatic English translation within inverted commas '. ' ¹. Square brackets have consistently been used for phonetic transcription.²

The reading transcription is only used in Part One and is neither strictly phonetic, nor is it the regular roman transliteration but between the two.³

I have chosen this reading transcription because it enables the reader to identify the forms I am drawing attention to more easily than either of the other two would, by comparison with the same examples written in the Bengali orthography.

1. Infra.
2. Supra.
3. See Chapter I, footnote 1. p. 45
In the orthography the full stop is marked by an upright stroke of the same height as the upright stroke of a character, which is called ১৪ dāri.

4.6 Translation.

Word for word renderings have been given within round brackets in order that the forms or phrases be recognized, and then idiomatic English translations are given. It should be clearly understood that the meaning of a sentence is determined by the context of situation in which it is used by the participants.¹ So in translating Bengali sentences into English I have always kept in view the context of culture in which they are used.

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CHAPTER 5

Bengali Vowel Articulations

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CHAPTER 5
Bengali Vowel Articulations

5.0 In this section the vowel sounds of Bengali have been described in general phonetic terms and are symbolized in terms of the I.P.A. chart.

This discussion is divided into two sub-sections: simple vowel articulations and diphthongal articulations.

5.1 Simple vowel articulations

5.1.0 A comprehensive description of the vowel qualities in Bengali is not desired. A few typical monosyllabic and dissyllabic one word verbal sentences are selected for examples. Approximate tongue positions of the respective vowels are shown in a vowel diagram with reference to my pronunciation of the forms which are chosen from the whole range of the verbal scatter.

5.1.1 [i] represents a front unrounded vowel between close and half close. The height of the tongue is between close, and half-close, the front part of the tongue is highest, the lips are spread or neutral, the opening between the jaws is narrow. e.g. [piṭa] 'to beat', [piṭi] 'I beat'.

5.1.2 [e] represents a front unrounded vowel between half-close and half open. The height of the tongue is between
half-close and half-open, the front of the tongue is raised, the lips are slightly spread or neutral, the opening between the jaws is medium. e.g. [peʔa] (alternative pronunciation of [piɾa]), 'to beat', [kheli] 'I play'.

5.1.3 [a] represents a front unrounded vowel between half-open and open. The height of the tongue is between half-open and open and the front of the tongue is raised, the lips are slightly spread or neutral, the opening between the jaws is medium. e.g. [khala] 'to play'.

5.1.4 [a] represents an unrounded open vowel but neither front nor back. The height of the tongue is open, back of the front of the tongue is highest, the lips are neutral, the opening between the jaws is medium to wide. e.g. [kaɾa] 'to cut', [kaɾi] 'I cut'.

5.1.5 [o] represents a back rounded vowel between half-open and open. The height of the tongue is between open and half-open, the back of the tongue is highest, the lips are rounded, the opening between the jaws is medium. [bola] 'to say'.

5.1.6 [o] represents a back rounded vowel between half-close and half-open. The height of the tongue is between half-close and half-open, the back of the tongue is highest, the
lips are rounded, the opening between the jaws is medium.
e.g. [boli] 'I say', [tole] 'he raises'

5.1.7 [u] represents a back rounded vowel between close and half-close. The height of the tongue is between close and half-close, the back of the tongue is highest, the lips are rounded, the opening between the jaws is narrow. e.g. [tuli] 'I raise'

The total number of vowel symbols is seven. They are [i], [e], [ə], [a], [ɔ], [o], and [u].

Forms with different endings have different vocalic qualities in the stem syllables.

Diagram I will show the approximate tongue position of the vowels in the stem syllables of the forms in [-i] ending: [piṭi], [kheli],[kaṭi], [boli], [tuli]; and diagram II will show the approximate tongue position of the vowels in the stem syllables of the forms in [-a] ending: [piṭa] [peṭa], [khela], [kaṭa], [bola], [tola].

The cardinal vowels are underlined, Bengali vowels are shown in circles.

1. See for details Chapter 10.
1. [ami take roj akbar pitti]  
   (I him daily once beat)  
   'I give him a beating every day'.

2. [amra bikele kheli]  
   (we in the evening play)  
   'We play in the evening!

3. [ami nijhate gachti kat]  
   (I by whole hand the tree cut)  
   'I cut the tree down myself'.

4. [jono, golpoṭa abar boli]  
   (listen the story again I tell)  
   'listen, I shall tell the story again'.

5. [amiito oke ṣokale ḍeke tuli]  
   (It is me him in the morning having called raise)  
   'I am the one who wakes him up in the morning'.

6. [oke omone kore peta ucit hoeni]  
   (him such having done to beat proper is not)  
   'It was not right to beat him so hard'.

7. [rode khala ḥikna]  
   (in the sun to play right not)  
   'It is not good to play in the sun'.

8. [bhōta kaste die ki dhan kata jae?]  
   (blunt sickle with what rice to cut goes)  
   'You can not reap rice with a blunt sickle!'
9. [ki hobe kichui bala jaena]  
(what will be anything to say goes not)  
'No one can say what will happen'.

10. [tomar ghorkhani dokkhinmukho tola ucit chilo]  
(you the house southfacing to build proper was)  
'You should have built the house facing south'.

5.2 Diphthongal articulations

5.2.0 For the purposes of the verbal forms the term diphthong is justified at the phonetic level and is not required at other levels, because with the possible exception of the a few forms, diphthongs are

1. So far as I know, the diphthongs in Bengali have not been discussed at the structural level. Dr. S.K. Chatterji enumerates 25 diphthongs in Bengali. They are: iæ, ia, io, iu; ei, ea, eo, eu; ææ, æo; ai, ae, ao, au; œe, œa, œo; oi, oe, oa, ou; ui, ue, ua, uo. (See, "A Bengali phonetic Reader", .... p.20, § 48-50 and also Q.D.B.L. M.A. Hai (see his article on 'bāyla svar-dhvani o dhvenir byębê-hare' in 'Shahitya Patrika', winter number, 2nd vol. 1365 B.S., Published by the author, from the Dept. of Bengali, University of Dacca,) gave an exhaustive list of 30 diphthongs in Bengali. Among them 18 are 'regular' and 12 'irregular'. They are: (a) ii, iu, ei, eo, eu, æo, øy, ai, ao, au, ay, œo, œy, oo, ou, oi, oy, ui; (b) ia, ie, io, ea, eo, æa, œa, œe, œo, œe, œa, œu, œo, œu.

All these are stated at only the phonetic level. No statements have been made about the system at the structural level within any grammatical category.

2. These are [toula], [douga], [poucha], [thaorano], [autano] and [daarano].
observed only in a sequence where \( \varepsilon \varepsilon \) and \( \varepsilon \ V \) or two Vs occur adjacently. These sequences occur only within a single verbal form whose stem final is a V or \( \varepsilon \), and the ending begins with a V.

Thus, \([\text{ai}]\) in \([\text{khai}]\) and \([\text{ka\text{ṭ}ai}]\) is a diphthong in articulation. The morphological division of stem and ending of the forms respectively is \([\text{kha-}] + [-i]\) and \([\text{ka\text{ṭ}a-}] + [-i]\). The phonological structure of the two forms are CV-V and CVC-e-V respectively.

At the phonological level, therefore, two elements -VV or -eV will be set up for all diphthongs in a verbal form. But at that level every -VV or -eV sequence is not phonetically a diphthong. For example, for \([-\text{ie}]\) in \([\text{die}]\) and \([\text{ka\text{ṭ}ie}]\) -VV and -eV are stated but phonetic expression of the sequence \([-\text{ie}]\) in both the forms is not diphthongal in articulation.

At the phonological level a phonetic diphthong in a verbal form is different from a phonetic diphthong in other

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1. Interword -VV or -eV sequences either in two verbal forms occurring adjacently, or a verbal form and any other form coming before or after it, do not express a diphthongal articulation.

Thus in \([\text{tumi khete eJo}]\) 'come down to take your meal final \([-\varepsilon]\) in \([\text{khete}]\) which is a verbal form, forms the first part of the sequence and \([\ v\ e\ -]\) in \([\varepsilon\Jo]\) which is another verbal form, forms the second part of the sequence \([-\varepsilon\varepsilon\ -]\); and in \([\text{tumi dhaka eJo}]\) 'come to Dacca' \([-\varepsilon\ a\ -]\) in \([\varepsilon\\text{dhaka}]\) which is a nominal form, constitutes the first part and \([\ v\ e\ -]\) in \([\varepsilon\Jo]\) which is a verbal form, constitutes the second part of the sequence \([-\varepsilon\\varepsilon\ -]\). Neither of these two sequences \([-\varepsilon\varepsilon\ -]\) and \([-\varepsilon\ae\ -]\) is a diphthong in articulation.
In phonological formulae a -VV or -eV sequence in two morphologically different structures, i.e., stem and ending will be shown with a hyphen in between. Thus, [khae] will be shown as CV-V.

The total number of diphthongs found in Bengali verbal forms is fifteen. They are represented by the following symbols: [ii], [ei], [ai], [oi], [ui]; [ae], [ae], [au], [ae], [oe], [oe], [ao], [oo], [oo]; and [ou].

1. Different statements about the diphthongs in other word classes than verbal forms will be necessary. It is neither possible, nor desirable to make an overall statement about the V system in different word classes, as is evident from the examples cited.

Though the vowel qualities in nominal forms may be phonetically similar to those in verbal forms, the terms of the "V" systems require separate phonological statement. The "V" system set up on the basis of the maximum commutation in paradigms of verb forms do not hold good for the "V" systems of nominal structures or those of other grammatical categories established for the particular 'restricted language' of Bengali under description. - J.R. Firth. Forward: in M. A. Hai's A phonetic and phonological study of Nasals and Nasalization in Bengali, p.11.

2. [ou] as a phonetic diphthong falls in the same class as the others, but a different statement will be made at the phonological level. (see Footnote 2, p.11). Mention also [aw] or [aon] and [aotane].

Besides these 15 diphthongs enumerated here, there may occur with some speakers in 'rapid style' the following diphthongs in Bengali verbal forms: [ie] as in [die], [io] as in [dio], [eo] as in [kheo], [ue] as in [jue]; [oa] as [jowa], [aa] as in [dwa], [uo] as in [jwo]. In my usual pronunciation they are not found as diphthongs, but two vowels.
5.2.1 [ii] represents a diphthong in the articulation of which the tongue starts from a rather close front vowel [i] and moves in the direction of a close front vowel. e.g. [dii] 'I give', [nii] 'I take'.

5.2.2 [ei] represents a diphthong in the articulation of which the tongue starts from the position of a front vowel somewhere between a half-open and a half-close vowel and moves in the direction of a close front vowel [i]. e.g. [dei] 'I give' (alternative pronunciation of [dii]. [nei] 'I take' (alternative pronunciation of [nii]).

5.2.3 [ai] represents a diphthong in the articulation of which the tongue starts from the position of an open vowel midway between front and back, and moves in the direction of a close front vowel [i]. e.g. [khai] 'I eat', [pai] 'I get'.

5.2.4 [oi] represents a diphthong in the articulation of which the tongue starts from a vowel position somewhere between a half-open and a half-close rounded back vowel and moves in the direction of a close front vowel [i]. e.g. [boi] 'I bear'.

5.2.5 [ui] represents a diphthong in the articulation of which the tongue starts from the position of a close back vowel and moves in the direction of a close front vowel [i]. e.g. [sui] 'I sleep'.

Text

1. [ami roj take akṭi kore ḫaka dii ]
   (I daily him one with rupee give)
   'I pay him a rupee every day!'

2. [tomader laibreri-theke ami mafe dukhana]
   (your library - from I every month two
   boi nei]
   book take)
   'I borrow two books every month from your library'

3. [amra dine skbar khai ]
   (We in a day once eat )
   'We have one meal a day!'

4. [ami tomar boier bojha boi ]
   (I your of book burden carry)
   'I always have to carry your books!'

5. [ami dojtar pore jui]
   (I of ten after go to bed)
   'I don't go to bed until after ten!' 

5.2.6. [æe] represents a diphthong in the articulation of which the tongue starts from the position of a front vowel somewhere between open and half-open and moves in the direction of a front vowel between half-open and half-close. e.g [dæe] 'he gives', [næe] 'he takes'.

5.2.7 [æe] represents a diphthong in the articulation of which the tongue starts from the position of an open vowel
half-way between front and back and moves in the direction of a front vowel between half-open and half-close. e.g. [khae] 'he eats', [pae], he gets'.

5.2.8 [œ] represents a diphthong in the articulation of which the tongue starts from the position of a rounded back vowel between open and half-open and moves in the direction of a front vowel between half-open and half-close. e.g. [boe] 'he bears'.

5.2.9 [œ] represents a diphthong in the articulation of which the tongue starts from the position of a rounded back vowel between half-open and half-close and moves in the direction of a front vowel between half-open and half-close. e.g. [joe] 'he sleeps'.
1. [tarik chele bhalo, o roj alike kichu khabar dæe] (Traik boy good he daily to Ali some food gives)
'Tarik is a good boy, every day he gives Ali some of his food!

2. [ora gorib, ja pæ tai khæe] (They poor whatever get that eat)
'They are poor, they eat whatever they can get'.

3. [bhaggohiner bojha ke bæe ?] (of unfortunate burden who bear)
'Who carries the burden of unfortunate?!

'Who is to look after the poor?!

4. [je derite joe] (he late goes to bed)
'He goes to bed late!

5.2.10 [æœ] represents a diphthong in the articulation of which the tongue starts from the position of a front vowel between open and half-open and moves in the direction of a rounded back vowel between half-open and half-close.

e.g. [dæœ] 'you give', 'give!'
[næœ] 'you take', 'take!'
5.2.11  [ao] represents a diphthong in the articulation of which the tongue starts from the position of an open vowel between front and back and moves in the direction of a rounded back vowel between half-open and half-close.

  e.g.  [khao]  'you eat', 'eat!
  [pao]  'you get', 'get!

5.2.12  [oo] represents a diphthong in the articulation of which the tongue starts from the position of a rounded back vowel between open and half-open and moves in the direction of a rounded back vowel between half-open and half-close.

  e.g.  [boo]  'you bear', 'bear!

5.2.13  [oo] represents a diphthong in the articulation of which the tongue starts from the position of a rounded back vowel between half-open and half-close and moves in the direction of a rounded back vowel between half-open and half-close.

  e.g.  [joo]  'you sleep', 'sleep!

'The closing sound of the diphthong [oo] in [joo] is closer than the initiating one'.

Text

1. [taslim baba, oi kəloməta dəo ar ei boikhani nəo] (taslim father that the pen give and this the book take)
   'Taslim, dear, give me that pen and take this book!' 

2. [tumito kichui khelena, miştita aro ektu khao] (you something ate not the sweet and also a little eat)
   'You have hardly eaten anything; have a little more sweet'.

3. [snorthək kənə bojhaťa bəo] (Without meaning why the burden you carry).
   'Why do you put up with it?.'

4. [kəbita ma ōnek rat hoeche ebar loo] (kabita mother much night has become now go to bed)
   'Kabita, dear, it is late, go to bed now'. ' 
5.2.14 [ou] represents a diphthong in the articulation of which the tongue starts from the position of a rounded back vowel between half-open and half-close and moves in the direction of a rounded close back vowel [u]. e.g. [douṛa] 'run!'

5.2.15 [au] represents a diphthong in the articulation of which the tongue starts from the position of a neutral open vowel between front and back and moves in the direction of a rounded close back vowel [u] e.g. [auṭio] 'stir while boiling'.

Text. [ranna hoe] gele dutṭa auṭio]
(cooking having been gone the milk stir)
'Warm the milk after you have finished cooking'.

2. [loktar pechone douṛa]
(of the man behind run)
'run after that man'.

5.3 Nasalization of vowels in Bengali verbal forms

5.3.0 In the articulation of the vowels that have been described above, the soft palate is raised and the nasal passage is thus closed with the result that no air can pass through it. This closure of the nasal passage is designated
'velic closure'. ¹ If, however, there is no velic nor velar closure and the soft palate is lowered, the air can escape through both the nose and the mouth. The vowels that are pronounced in this way with the combined resonances of the nose and the mouth, are said to be nasalized.

5.3.1 In Bengali orthography a nasalized vowel is symbolized with a 'cendrabindu' (moon-dot) placed over the vowel itself where there is no consonant preceding it and over the consonant to which the vowel is affixed.

5.3.2 In our notation, the nasalized forms have been represented by the I.P.A. symbol ~ placed over the symbol of the sound which is nasalized. e.g. [kāpe] 'he trembles'; [khōre] 'he digs'.

5.3.3 All Bengali vowels are subject to nasalization process.² The nasalized forms are called 'ønunasiko' (accompanied by nasality) as distinguished from 'ønusvare' (nasal-after-sound) which includes consonantal nasals. For the articulation of the nasals there must be a closure in the oral cavity along with the lowering of the soft palate. The choice of the point at which the closure occurs makes the

¹ In contrast to velar closure, see K.L. Pike, Phonetics, p. 58
difference between a bilabial \([m]\), alveolar \([n]\), velar \([\eta]\) and other nasal sounds.

5.3.4 'ensusvare' does not occur in Bengali verbal forms except in a very few verbs, e.g. \([bh\text{am}]\), \([bh\text{am}ca]\), etc. 'break!' 'make faces at'.

5.3.5 Unlike certain other modern Indian languages, such as Urdu, Hindi or Gujerati, nasalization in Bengali does not

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1. The 'ensusvare' or nasalized vowel differs from the 'ensusvare' or nasal after sounds in the following respects: (i) The 'ensusvare' nasal after-sound is equivalent to a vowel plus one of the nasal alternants \([\eta], n, \eta, n, m\) or \(m\) necessitating a definite closure at some point in the oral cavity. (ii) The 'ensusvare' nasalizes the immediately preceding vowel, e.g. \([ro^\text{m}]\), 'colour', \([ba^\text{m}la]\) 'Bengali'. This nasalized vowel combined with the nasality accompanying the oral closure for the nasal after-sound makes the nasal component of the 'ensusvare' much greater in extent than that of a nasalized vowel (ensusvare). e.g. \([ba^\text{m}la]\) 'Bengali', \([b\text{aka}]\) 'to bend', \([b\text{aka}]\) 'to live'. (iii) The 'ensusvare' has the effect of imparting to the following voiced consonant a simultaneous homorganic nasal component (*) which accompanies or covers the whole of the voicing component, so that we have only a weak plosive release owing to the opening of the nasal passage throughout the period of the occlusion. In the case of the voiceless plosives, however, the nasal component accompanies only a portion of the closure. (*) For simultaneous components, see Z.S. Harris, Simultaneous components in Phonology, Language, vol. 20, No. 4, Oct.-Dec. 1944, pp. 181 - 245.

2. See § 6.2

3. See Firth's remarks on 'marathi' in this respect: 'In the matter of the nasализation difference in vowels, marathi is a special case. It has nothing like functional importance in Urdu, Hindi, or Gujerati.' -- Firth, 'Phonological Features of some Indian Languages', The Proceeding of the second International Congress of Phonetic Sciences, 1935. See also, B.N. Prasad, A Phonetic and Phonological Study of Bhojpuri, thesis submitted for the Degree of Ph.D., University of London, 1950.
distinguish one word from another. e.g. [haʃa], [hāʃa], 'to laugh'. Both the forms, one with nasalized vowel and another without it, are used as variants without causing any semantic difference. There are, however, about a hundred verbs written in the orthography with the 'cendrebhod', which are pronounced either with a nasalized vowel or with an oral vowel.

5.3.6 Nasalized vowels are also found in forms which include nasal consonants. In Bengali orthography there is no extra convention to indicate this nasalization of a vowel, which is due to the proximity of a nasal consonant.

Nasalization of a vowel due to its contact with a preceding or following nasal consonant is usually not as strong as the characteristic nasal tambép of independent nasalization of a vowel, i.e. without there being any nasal consonant before or after it.¹

Nasalization of a vowel preceded and followed by nas nasal consonants, e.g. [a] in [man] 'obey!' is usually as strong as an independent nasal vowel, e.g. [ā] in [kāpe] 'he

¹ M.A.Hai suggests the same. See Nasals and Nasalization in Bengali, pp.120-121. ss 134-137.
Dr. C. Ferguson and Münier Chowdhury, in an illuminating article entitled 'The Phonemes of Bengali', observe: the phonemic nasality of the S C B nasal vowels is relatively weak and at times may even be a kind of breathiness rather than nasality in the strict sense. Accordingly, it sometimes happens that the nasal quality of a phonemically oral vowel next to a nasal consonant is more striking phonetically than the nasal quality of a phonemically nasal vowel. (The phonemes of Bengali, ss 5; Language, 36, 1. 1960. p. 37)
My kymograph tracings appear to support Hai's statement.
shivers'. See kms. of [kāpe], 'he shivers' (No.1)
[nace] 'he dances' (No.2), [tāne] 'he pulls' (No.3),
[manke] 'he obey's' (No.4).

A nasal element with simultaneous aspiration is also a significant feature in some Bengali verbal forms. Forms with initial aspirated consonant followed by a nasalized vowel, or with initial aspirated nasalized vowel exhibit simultaneous components of aspiration and nasalization. e.g. [ghāte] 'he stirs' and [hāje] 'he laughs'.

5.3.7 For the phonological purposes, nasality is dealt with as a prosodic element of structure. In doing so the prosodic approach advocated by J.R. Firth, is applied.

The following examples will illustrate Bengali verbal forms with nasalized vowel.

[ı] [bida] 'I prick', [chiri] 'I tear'.
[œ] [kheci] 'tei pull', [phēki] 'I throw' [jēki] 'I bake'.
[ą] [khāca] 'to pull' [jēka] 'to bake'.
[ɔ] [sapa] 'to entrust'.
[œ] [goja] 'to thrust'.
[ʊ] [kūpi] 'I dig', [phūki] 'I blow (with mouth)'.

1. For simultaneous components see Z.S. Harris, 'Simultaneous Components in Phonology'. Language, 20, 4, 1944, pp.187-245.
2. See J.R. Firth, Introduction to Harley's Colloquial Hindustani p.XVI, 'on the combination of nasalization and aspiration'.
Text:  [pani ar bata] chapa keu ki bāce ]
(water and air without anyone what lives)
'No one can live without water and air'.

5.4  Duration.

5.4.0  Words of similar structure in Bengali may be differenti­ated by reference to several features or by reference to a single feature. In this latter case the differentiation may, for instance, be by different items in the consonant system or by different items in the vowel system. It may also be by the presence or absence of nasality, or by the presence or absence of aspiration, or by the presence or absence of voicing. Differentiation of words in this way does not include differentiation in terms of vowel length. In colloquial Bengali there are no 'pairs' of vowels, long and short. 'The quantity of Bengali vowels depends on the rhythm of the sense group.' At the phonological level therefore, quantity in terms of shortness and length will not be stated.

5.4.1  Although length is not distinctive, the measurable duration of a particular vowel in its various phonetic contexts varies according to the contexts themselves.

5.4.2  It has been observed that usually the vowel of a monosyllabic form pronounced in isolation, and the final vowel of a polysyllabic form are longer in duration than the

other vowels in polysyllabic form.¹

This can be seen in Km. tracings of [pa], 'get!'
(No.5), [pat] 'spread' (no.6), [pate] 'he spreads' (no.7).

In a diphthong the first element is longer.

5.4.3 In the phonetic transcription length marks will not
be shown for typographical convenience.²

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¹ Dr. S.K. Chatterji observes that 'Final syllables in
polysyllabic words, especially when the vowel is followed
by m, n, η, l or r' are slightly long when at the end of
a sense-group and before a pause'. (See 'A Bengali phonetic
Reader', p.22§ 55 ). It has been observed in this
thesis that the final syllable of a polysyllabic word
closed by any consonant is long in my pronunciation.
Kymographic evidence supports this.

² For a different convention see M.A. Hai, op.cit.
CHAPTER 6

Phonetic Description of the Bengali Consonantal Articulations

6.0 General Outline.
6.0.1 Places of articulation.
6.0.2 Manner of articulation.
6.0.3 Distinction of different Consonants.
6.1 Simple Consonantal articulations.
6.1.0 General Outline.
6.1.1 Plosive articulations.
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6.1.4 Sibilant articulations.
6.1.5 Nasal articulations.
6.1.6 Flap articulations.
6.2 Complex Consonantal articulations.
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CHAPTER 6

Consonants in Bengali verbal form.

6.0 The articulatory labels attached to certain consonant sounds are related to the findings of a number of palatograms of sentences having these sounds. In the phonetic descriptions of places of articulation, the terminology is related where possible to the palatograms by means of the grid in the pocket on the back cover as follows:

6.0.1 Places of Articulation.

1. Bilabial: Palatograms do not show any wipe off for bilabial articulations.

2. Dental: refers to an articulation showing a wipe off in zone 1. The wipe off may extend as far back as to cover the whole area of zone 3, and part of zone 4.

3. Alveolar (non-retroflex): refers to an articulation in which the wipe off shows a contact in zones 3 and 4. (The wipe off may occasionally extend as far forward as zone 2).

4. Post alveolar (retroflex): refers to an articulation in which the wipe off shows a contact in zone 4. The wipe off may extend as far back as to cover part of zone 5, and as far forward as to cover the whole area of zone 3.

5. Alveolo-palatal: refers to an articulation in which the wipe off shows a contact from zone 7 to 3.

6. Velar: refers to an articulation which shows contact in zone 7 or further back. The wipe off may extend as far forward as zone 4, on the two sides.

7. Glottal: Palatograms do not show any wipe off for glottal articulations.
The term *apical* is used to describe an articulation in which the contact is made by the tip or the tip and blade of the tongue.

The term *dorsal* is employed to describe a tip-down articulation in which the contact is made by the front of the tongue or the back of the tongue or both.

The term *labial* is applied to an articulation in which the contact is made by the two lips.

In Bengali the tip or tip and blade of the tongue make contact for dental and alveolar wipe offs. They are therefore *apical*.

In Bengali the tip of the tongue is down for all velar and alveolo-palatal contacts. They are therefore *dorsal*.

For a dental, an alveolar plosive, alveolar nasal, lateral, or a dorso-alveolar-palatal articulation the wipe off on the palate shows a complete contact.

For a tapped, flapped or a sibilant articulation the contact is incomplete.

6.0.2 Manner of articulations

Consonants are described under the following headings: plosive, flap, lateral, tap, sibilant and nasal.

Each is distinguished from the others. plosive, lateral, tap, flap and sibilant are labelled as non-nasal consonants.

During the articulation of a non-nasal consonant the
soft palate is raised and the passage through the nose is completely blocked and the air passes through the mouth. A non-nasal consonant has the resonance cavity and the escape cavity in the mouth.

For the articulation of a nasal consonant the soft palate remains in its lowered position and the passage through the mouth is completely blocked or obstructed at a certain point due to the close contact of the articulating organs and the out-going air passes through the nose. A nasal consonant has resonance cavities in the mouth and nose and the escape cavity in the nose.

During the articulation of a plosive consonant the air passage is completely blocked at a certain point by the articulating organs and on release the air escapes with plosion.

For the articulation of a lateral consonant, the air passage is partly obstructed by the contact of the tip and blade of the tongue and the air passes out on one or both sides of the tongue.

A tap consonant is formed by a single tap of the tip of the tongue.

For the articulation of a flapped consonant, the contact is not maintained for any appreciable time.

During the articulation of a sibilant consonant the tip of the tongue is narrowed towards the alveolar region in such a way that the out-going air passes with an audible friction.
6.0.3 Different classes of consonants

The different classes of consonants are clearly distinguished kynaesthetically. Kymograph tracings also show different pictures for different classes of consonants. For example, a form containing a nasal consonant produces a different picture in the km. tracing from a form containing a non-nasal consonant. In order to show this difference, a few kymograms with simultaneous nasal and mouth tracings of some one-word verbal sentences, beginning with different consonants, are cited.

(8) [mat], (9) [boj], (10) [lag], (11) [tol], (12) [jon]

Each of these kms. shows that there is a wave form on the N tracing, wherever there is a wave form on the M tracing, but the amplitude of the wave form varies considerably. These variations are of three types. The forms which begin with a nasal consonant show the greatest amplitude of the wave form. The forms which begin with a voiced consonant show lesser amplitude of wave form, and the forms which begin with a voiceless consonant shows the least amplitude of the wave form.

Kms. of [mat] (No.8), [boj] (No.9) and [lag] (No.10) show wave forms on the N tracing before X, a point chosen on M tracing for reference, which corresponds to the beginning of the vocalic articulation in the syllable. These forms involve
a nasal consonant, a voiced plosive and a lateral consonant articulation respectively. The greatest amplitude of wave forms in N tracing both before and after X is seen in the km. of [mat]. (No.8) The kms. of [tol] (No.11) and [Jon] (No.12) which involve a voiceless plosive and a sibilant consonantal articulation respectively, in the initial position do not show any wave form on the N line on the left of X.

This difference in the degree of amplitude of the wave form in the N tracing is characteristic feature associated with a form beginning with a nasal consonant, a form with a non-nasal voiced consonant, and a form with a non-nasal voiceless consonant respectively.

Similar differences in the degree of amplitude of the wave form in the N tracing are also observed in the kms. of the forms ending with different consonants. See the above kms. of (8) [mat], (9) [boJ], (10) [lag], (11) [tol], (12) [Jon]

The five forms respectively involve a voiceless plosive, a voiceless sibilant, a voiced plosive, a voiceless lateral, and a voiceless nasal consonant finally.

The point y corresponds to the end of the vocalic articulation. In the N tracing of the words [mat] (No.8) and [boJ] (No.9) there is no prominent waveform on the right of y.

Kms. of the forms [lag] (No.10), [tol] (No.11) and [Jon] (No.12)

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which respectively involve a final voiced plosive, a voiced lateral and a voiced nasal consonant articulation, show wave forms in the N tracing on the right of y. The degree of amplitude in the wave forms in N tracing is greater in the form which involve a nasal consonantal articulation (i.e. the form \([Jon]\)) than a form involving a voiced consonantal articulation (i.e. the form \([lag]\) or \([tol]\)). This highest degree of amplitude in the wave form in N tracing is a characteristic feature associated with nasal consonantal articulation in the final position. This helps us to distinguish a nasal consonant articulation from a non-nasal consonant\(^1\) in the final position.

Just as the difference between a nasal and a non-nasal consonantal articulation is observable in the kymograph tracings, so also the difference between a plosive and a non-plosive consonantal articulation can be seen in the kymograph tracings. Compare, for example, kms. of \([tol]\) (No.11), \([lag]\) (No.10) and \([Jon]\) (No.12) for an initial plosive, lateral and sibilant consonantal articulation respectively, and kms. of \([tol]\) (No.11), \([lag]\) (No.10), and \([boJ]\) (No.9) for final a lateral, plosive and sibilant articulation.

In the M tracing of \([Jon]\) (Km No.12) there is an

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1. It may also be noted that the smaller degree of amplitude that is seen in the N line in the case of a voiced plosive, lateral, tap and other voiced articulations, is significant in itself but not so important from the point of view of nasality and is associated with characteristic non-nasal voiced articulation. See J. Carrochan, 'A study in the phonology of an Igbo Speaker,' B.S.O.A.S, Vol.XII, part2, 1948, pp.417-26. See also R.H. Robins, 'Vowel nasality in Sundanese'- 'studies in linguistic analysis', special volume of the Philological Society, 1957, pp.97
upward displacement of the wave form to the left of X, which is a feature of the slow release of the fricative sound [ʃ-] in [Jon].

In the M tracings of [tol] (Km.No.11) and [boʃ] (Km.No.9) the sudden release of the plosive sounds [t-] and [b-] respectively in [tol] and [boʃ] is shown by slight disturbance.

The feature of lateral release of [l-] in the form [lag] (Km.No.10) is also seen at the point X, from where the amplitude in the wave form gradually increases, in the M tracing.

Features of the final articulations of [boʃ], [tol], [lag] and [mat] are also seen in the kymographs. In the M tracing of the km. of [boʃ] (No.9) the upward displacement in the wave form begins with the release. In the km. of [tol] (No.11) there is a gradual diminution in the amplitude of the wave form with lateral release. In the kms. of [mat] (No.8) and [lag] (No.10) the diminished wave form continues for only a few cycles.

The consonant articulations are either:

I. Simple consonantal articulation, or

II. Complex consonantal articulation.

6.1 Simple Consonantal articulations

6.1.0. Simple consonantal sounds are short in duration, and involve less energetic movements of the articulating organs than complex consonantal articulations. They can occur
initially, intervocally, and finally.

6.1.1 Simple Plosive Consonants

According to their place of articulation the plosive consonants in Bengali are discussed under five heads: velar, alveolo-palatal, post-alveolar (retroflex), dental and bilabial.¹

In order to show their differences the following palatograms of one-word verbal sentences beginning with different plosive consonants in initial position are cited:

Pm. No.1 [kɔm]
" No.2 [特派]
" No.3 [特派]
" No.4 [特派]
" No.5 [pa]

The Pm. (No.1) of the form [kɔm] shows a contact in the two corners of the back of the artificial palate. There is a tendency of linking the two bits of wipe off in the two corners on the centre of the back of the artificial palate. This shows that the back of the tongue is raised behind the hard palate but does not always reach the artificial palate.

¹ In traditional grammar books plosive consonants are arranged discussed under five 'vargas' or series: kenthye verge or velar series, talebye verge or palatal series, murchhanye verge or cerebral series, denthye verge or dental series, ogthye verge or bilabial series. I have used all these terms except 'palatal.' for which I use the term 'alveolo-palatal'.
to leave any impression, [k-] in [kom] is a velar articulation. pm. (No. 1) of [kom] may be compared with the pms. (Nos. 3 and 4) of [tip] and [tap] which do not show such tendency of linking the wipe offs on the two corners.

The pm. (No. 2) of the form [cip] shows a wipe off covering a wide area from zone 3 up to zone 7, leaving an unwiped area along the centre of the palate, which extends up to zone 5. In the articulation of [c-] in [cip] the tip of the tongue is down. [c-] in [cip] is an alveolopalatal articulation.

The pm. (No. 3) of the form [tip] shows a bow shaped wipe off covering a part of zone 4 and a part of zone 3. For the articulation of [t-] in [tip] the tip of the tongue makes contact. [t-] in [tip] is a post alveolar (retroflex) articulation.

The pm. (No. 4) of the form [tap] shows a wipe off covering the whole area from zone 1 to 3 and a portion on the left and right of zone 4. For the articulation of [t-] in [tap] the tip and blade of the tongue make contact. [t-] in [tap] is a dental articulation.

The pm. (No. 5) of [pa] does not show any wipe off. For the articulation of [p-] in [pa] the two lips make contact. [p-] in [pa] is a bilabial articulation.
Similar differences in the wipe offs are also observed in the pms. of the forms ending with different classes of plosive consonants.

See pms. of the forms:

pm. No.6. [pak]
pm. No.7 [kac]
pm. No.8 [pit]
pm. No.9 [pat]
pm. No.10 [map]

The pm. (No.6) of [pak] shows slight contact of the back of the tongue at the two ends of the base line of the artificial palate. The wipe off does not reach the third molar line. There is also a linking tendency of the two bits of wipe off of the two corners in the centre of the back of the palate.

The pm. (No.7) of [kac] shows a wipe off covering a wide area from zone 3 up to zone 7, leaving an unwiped area in the centre of the tongue. It shows the same feature as that of the form [cip] (pm. No.2).

The pm. (No.8) of [pit] shows a bow-shaped wipe off covering a part of zone 4 and part of zone 3. The wipe off shows almost similar feature to that of [tip] (pm. No.3).

The pm. (No.9) of [pat] shows a wipe off covering zones 1 to 3 and a part of zone 4 on the right and left of central zonal line. The wipe off shows similar feature to that of [tap] (pm. No.4).
The pm. (No.10) of [map] shows slight contact of the back of the tongue at the two ends of the base line of the artificial palate. This corresponds to the raising of the tongue for the vocalic articulation [a] before [-p].

[-k] in [pak], [-c] in [kac], [-t] in [pit], [-t] in [pat] and [-p] in [map] are respectively a velar, alveolo-palatal, post-alveolar (retroflex), dental and bilabial plosive consonants.

The plosive consonants are further distinguished by two features of voice and aspiration.

Following kms. with simultaneous mouth and larynx tracings of some one-word verbal sentences with different consonants in initial position are cited,

(13) [pake]  (14) [haṭe]
(15) [bujhe]  (16) [bhoge]

Each of these kms. shows that there is a wave form on the L tracing wherever there is a wave form on the M tracing but the amplitude of the wave forms varies considerably. The period of presence of prominent wave forms in the M tracing to the right of X corresponds with the vocalic articulation of the first syllable of the forms.

There are prominent wave forms in the L tracing to the left of X, of the tracings of the forms [bujhe] (No.15) and [bhoge] (No.16), parallel to the oral closure in the M tracing. There is no such prominent wave form to the left of
13. [pake]
14. [khaţe]
15. [buţhe]
16. [bhoge]
X in the L tracing of the forms [pake] (No. 13) and [khaṭe] (No. 14). The wave forms in the L tracing of [bujhe] (No. 15) and [bhoge] (No. 16) to the left of X parallel with the closure in the M tracing correspond to the vibration of the vocal cords during the consonantal articulation of syllable one of these forms. The absence of wave forms in the L tracing of kms. of [pake] (No. 13) and [khaṭe] (No. 14) to the left of X parallel with oral closure in the M tracing corresponds to the absence of vibration of the vocal cords during the period of articulation of the consonant in the first syllable of these forms.

There is a vertical displacement of the wave forms in M tracing to the left of X in the tracings of [pake] (No. 13) and [khaṭe] (No. 14) parallel to which there is no wave form in the L tracing. This displacement continues for a considerable period in the tracing of [khaṭe] (No. 14), which corresponds to the increased breath force in the voiceless articulation. The displacement of wave form in the M tracing before X, of the form [pake] (No. 13) does not continue for a considerable period but shows slight disturbance, which corresponds to the absence of increased breathforce in the voiceless articulation.

In the tracings of [bhoge] (No. 16) and [bujhe] (No. 15) where the prominent wave forms continue in the L tracing from before X, there is an upward displacement in the wave form in M tracing at the left of X, of the form [bhoge] (No. 16) which corresponds to the increased breathforce in the voiced articulation. In the tracings of [bujhe] (No. 15) there is no
such displacement in the M tracing, which corresponds to the absence of increased breathforce in the voiced articulation.

These different types of consonantal release of the forms [pake], [kha[e], [bujhe] and [bhoge] will be termed voiceless unaspirated, voiceless aspirated, voiced unaspirated and voiced aspirated respectively.

Similar differences in the wave forms are also observed in the kms. of the words ending with different consonants. See, for instance, the kms. of [pak] (No. 17) [daskh] (18), [bhog] (19) and [bujh] (20) which involve respectively, a voiceless unaspirated, a voiceless aspirated, a voiced unaspirated, and a voiced aspirated consonant. The point in the tracings corresponds with the ending of the vocalic articulation.

In the kms. of [pak] (No. 17) and [daskh] (No. 18) containing a final voiceless plosive articulation, the L tracing does not show any wave form beyond the point y, while in the kms. of [bhog] (No. 19) and [bujh] (No. 20) containing voiced plosive articulation the wave forms continue across point y in the L tracing.

There is an upward displacement of the wave forms to the right of Y in M tracings of the forms [daskh] (No. 18) and [bujh] (No. 20) containing aspirated plosive articulation. The voiced plosive in the final position, just as in the initial position, can be differentiated from the voiceless ones by the fact that they produce prominent wave forms in L tracing; and aspirated plosives from the unaspirated ones by the fact that
they show an upward displacement in the wave forms in tracing.

In Bengali verbal forms plosive consonants of all five series - velar, alveolo-palatal, retroflex, dental and bilabial occur in all three positions, initial, medial and final, as can be seen from the following examples.

(a) Initially

<table>
<thead>
<tr>
<th></th>
<th>voiceless unaspirated</th>
<th>voiceless aspirated</th>
<th>voiced unaspirated</th>
<th>voiced aspirated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Velar</td>
<td>[k-]</td>
<td>[kh-]</td>
<td>[g-]</td>
<td>[gh-]</td>
</tr>
<tr>
<td></td>
<td>[kaʈ]</td>
<td>[khaʈ]</td>
<td>[ga]</td>
<td>[gha]</td>
</tr>
<tr>
<td>Alveolo-palatal</td>
<td>[c-]</td>
<td>[ch-]</td>
<td>[j-]</td>
<td>[jh-]</td>
</tr>
<tr>
<td></td>
<td>[cap]</td>
<td>[chap]</td>
<td>[jɔp]</td>
<td>[jhu]</td>
</tr>
<tr>
<td>Retroflex</td>
<td>[t-]</td>
<td>[tʰ-]</td>
<td>[q-]</td>
<td>[qh-]</td>
</tr>
<tr>
<td></td>
<td>[tʰik]</td>
<td>[tʰek]</td>
<td>[qak]</td>
<td>[qhak]</td>
</tr>
<tr>
<td>Dental</td>
<td>[t-]</td>
<td>[th-]</td>
<td>[d-]</td>
<td>[dh-]</td>
</tr>
<tr>
<td></td>
<td>[tol]</td>
<td>[thak]</td>
<td>[dɔkh]</td>
<td>[dhɔɾ]</td>
</tr>
<tr>
<td>Bilabial</td>
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<td>[ph-]</td>
<td>[b-]</td>
<td>[bh-]</td>
</tr>
<tr>
<td></td>
<td>[pat]</td>
<td>[phæp]</td>
<td>[bo]</td>
<td>[bhab]</td>
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(b) Intervocically.

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<th>[-kh-]</th>
<th>[-g-]</th>
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<td>Velar</td>
<td>[pake]</td>
<td>[dämhe]</td>
<td>[jage]</td>
<td></td>
</tr>
<tr>
<td>Alveolo-</td>
<td>[-c-]</td>
<td>[-ch-]</td>
<td>[-j-]</td>
<td>[-jh-]</td>
</tr>
<tr>
<td>palatal</td>
<td>[kace]</td>
<td>[moche]</td>
<td>[baje]</td>
<td>[bøjhe]</td>
</tr>
<tr>
<td>Retroflex</td>
<td>[-t-]</td>
<td>[th-]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[pite]</td>
<td>[uṭhe]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dental</td>
<td>[-t-]</td>
<td>[-th-]</td>
<td>[-d-]</td>
<td>[-dh-]</td>
</tr>
<tr>
<td></td>
<td>[pate]</td>
<td>[mōthe]</td>
<td>[kāde]</td>
<td>[jādhe]</td>
</tr>
<tr>
<td>Bilabial</td>
<td>[-p-]</td>
<td>[-ph-]</td>
<td>[-b-]</td>
<td>[-bh-]</td>
</tr>
<tr>
<td></td>
<td>[mape]</td>
<td>[lōphe]</td>
<td>[qābe]</td>
<td>[nibhe]</td>
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</table>

(c) Finally

<table>
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<th>[-kh]</th>
<th>[-g]</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>velar</td>
<td>[pak]</td>
<td>[dākh]</td>
<td>[jag]</td>
<td></td>
</tr>
<tr>
<td>Alveolo-</td>
<td>[-c]</td>
<td>[-ch]</td>
<td>[-j]</td>
<td>[-jh]</td>
</tr>
<tr>
<td>palatal</td>
<td>[kāc]</td>
<td>[mōch]</td>
<td>[bāj]</td>
<td>[bājhe]</td>
</tr>
<tr>
<td>Retroflex</td>
<td>[-t]</td>
<td>[-th]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[piti]</td>
<td>[ōth]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dental</td>
<td>[-t]</td>
<td>[-th]</td>
<td>[-d]</td>
<td>[-dh]</td>
</tr>
<tr>
<td></td>
<td>[pat]</td>
<td>[mōth]</td>
<td>[kād]</td>
<td>[jādh]</td>
</tr>
<tr>
<td>Bilabial</td>
<td>[-p]</td>
<td></td>
<td>[-b]</td>
<td>[qāb]</td>
</tr>
</tbody>
</table>
(a) Initial plosives

The following plosive consonants occur initially:
[k-], [kh-], [g-], [gh-], [c-], [ch-] [j-], [jh-], [t-],
[th-], [q-], [qh-], [t-], [th-], [d-], [dh-], [p-], [ph-],
[b-], and [bh-].

Initial velar plosives are represented by the phonetic transcriptions: [k-], [kh-], [g-], [gh-].

For the articulation of [k-] in the example [kom] the back of the tongue is raised against the velum and on release the air passes with an audible plosion, the vocal cords do not vibrate. The tip of the tongue is down during the articulation.

The pm. (No.1) of the form [kom] shows a wipe off in the two corners of the back of the artificial palate, which does not extend up to the 3rd molar line. There is a tendency of linking the two wipe offs on the back of the artificial palate. The type of wipe off which is associated with a dorsal velar contact on the artificial palate is typical of initial [k-], medial [-k-] and final [-k]. See pm - of [kom] (No.1) and [pak] (No.6). In some pms. of the forms with initial [k-] the wipe off extends further forward on the two sides of the artificial palate so as to reach 1st molar line.

Km. of the form [kac] (No.3) shows that there is no wave form in the L tracing before the point X, and that there is a little disturbance to the left of X in the M tracing. These correspond to the voiceless unaspirated articulation of...
the syllable initial in the form.

For the articulation of [kh-] in the example [khabe] exhalation of breathforce is greater than for [k-] in [kome] and aspiration is heard during the release. The vocal cords do not vibrate during the initial closure and breathy release.

The pm. (No, 45) of the form [khabe] gives similar wipe off in the corners of the back of the artificial palate, which extends up to the 3rd molar line.

For the articulation of [g-] and [gh-] in the examples [gabe] and [ghame] the vocal cords vibrate, and the exhalation of breathforce is greater during the articulation of [gh-] in [ghame] than for [g-] in [gabe], and aspiration is heard during the release of the [gh-] in [ghame].

The pms. of the forms [gabe] and [ghame] show similar wipe offs to that of [khabe]. The tendency of linking is seen in all three pms. 1

Kms. of the forms [kace] (No. 34)[kha*te](No. 14), [gabe] (No. 35) and [ghame] (No. 36) can be compared.

In general phonetic terms [k-], [kh-], [g-] and [gh-] may be described as voiceless unaspirated, voiceless aspirated voiced unaspirated and voiced aspirated velar plosives respectively.

Initial alveolo-palatal plosives are represented by the phonetic transcriptions: [c-], [ch-], [j-], and [jh-]. They

1: Palatograms of [kom] and [khabe] can be taken as representative for initial velar articulation. Pms. with [g-] and [gh-] are not cited.
represent respectively an initial voiceless unaspirated, voiceless aspirated, voiced unaspirated and voiced aspirated alveolo-palatal affricated plosive consonant.

For the articulation of [c-] in [cape] the main body of the tongue is firmly fixed against the roof of the mouth, the air is compressed by pressure from the lungs and when the air is released it escapes from the mouth with an affricated plosion. The central part of the back of the front of the tongue does not reach the roof of the mouth. The tip of the tongue is down during the articulation.

The pms of the forms [cip] (No.2) shows a wipe off covering a wide area from zone 3 up to zone 7, leaving an unwiped area along the centre of the palate, which extends from zone 7 to 8. In traditional grammar books and in Bengali orthography the sound is regarded as 'talebye' or palatal. Some phoneticians have regarded these sounds as affricates, while others as plosives. I classify these sounds as alveolo-palatal plosives.

2. See J.R. Firth, Introduction to Harley's Colloquial Hindustani, p. XVI, and also T. Graham Bailey, Punjabi Phonetic Reader, p.XI. There he expressly remarks that these sounds [-c-], [-j-] are essentially different from the groups [-tj-], [-dz-] etc. See also Lambert, Marathi Language Course, p.10. S.M. Katre, The formation of Konkani §84, and Konkani phonetics, §15. Hornley, Grammar of the Goudian Language, p.7.
3. M.A. Hai, in his thesis did not accept the traditional terminology 'palatal' for this series. According to his classification these are 'dorso alveolar' sounds. See 'Nasals and Nasalization in Bengali', p.185. His pms show wipe offs further forward than those of mine.
The pm. of the form [jəpe] (No. 47) shows wipe off extending up to canine line; the pm. of the form [chape] (No. 46) shows a wipe off slightly more forward than for [cape] or [jəpe]; in the pm. of [jhume] (No. 48) the wipe off does not reach up to canine line. The tongue is retracted because of the presence of the following back vowel [-u]. With a following back vowel [c-] is more retracted and with a front vowel after it, it is more advanced. The initial [c-] in [cipe] which is followed by a front vowel [i] is slightly more advanced than the initial [c-] in [cume] which is followed by back vowel [-u-]. See pms. of [cipe] (No. 11) and [cume] (No. 12).

Kms. of the forms with initial [c-], [ch-], [j-] and [jh-] show similar features of voicing and voicelessness, aspiration and absence of aspiration. See kms. of [cillae] (No. 37), [chilae] (No. 38) and [jəpe] (No. 24). (p. 24, A).

**Initial retroflex plosive consonants** are represented by the phonetic transcriptions: [t-], [th-], [q-] and [qh-].

- [t-] represents a voiceless unaspirated retroflex plosive;
- [th-] represents a voiceless aspirated retroflex plosive;
- [q-] represents a voiced unaspirated retroflex plosive;
- [qh] represents a voiced aspirated retroflex plosive.

For the articulation of the retroflex plosive [t-] in the word [tip] the air passage is completely blocked by curling back the tip of the tongue and bringing it into contact at some point above the upper gum between the denti-alveolar and the pre-palatal zones. There is a hollow cavity in the mouth, and the air is released with an audible retroflexion.
The actual point of articulation depends on the position of \([\dot{t}]\) in the word and the nature of the adjoining vowels.

The pm. of \([\dot{t}i\text{p}](\text{No.}3)\) shows a wipe off covering a part of zone 4 and extending as far forward as to cover a part of zone 3. The pm. of \([t\text{o}k](\text{No.}13)\) shows a wipe off which covers part of zone 4 and extends slightly forward than canine line. The hollow cavity in the mouth cannot be recognized by seeing the palatograms only. It is distinctly noticeable at the level of perception. The pm. of \([q\text{a}k](\text{No.}50)\) shows a bow shaped wipe off which covers the whole of zone 4 and does not extend forward beyond the canine line.

The pm. of \([\text{thek}](\text{No.}49)\) shows a bow shaped wipe off which covers only zone 4.

The kms. of the forms with initial \([t\text{-}], [\text{th}-], [q-]\) and \([q\text{h}-]\) show similar features of voicing and aspiration and absence of them as for the other voiced, voiceless and aspirated, and unaspirated plosive consonant articulation. See Kms. of \([\dot{t}i\text{p}](\text{No.}40), [\text{thek}](\text{No.}41)\text{, and }[q\text{a}k\text{ae}](\text{No.}22)\).

In terms of place of articulation \([t\text{-]}, [\text{th}-], [q-]\) and \([q\text{h}-]\) of the forms cited above, may be termed as post alveolar.

1. It is observed in the present research that the dark quality in retroflex articulation is not so marked in Bengali as in other modern Indian languages. It is also observed that the retroflex apical contact in most utterances in Bengali is not so far back as the retroflex apical contact in other modern Indian languages. M.S. De Silva observed similar feature in Sinhalese. See Verbal piece in Colloquial Sinhalese: A Phonological Study. Thesis submitted for the degree M.A. in the University of London. 1957.
plosive, but since the posture of the tongue is different from the posture of the tongue for an alveolar consonantal articulation, I use the term 'retroflex' which is widely used in both traditional and modern descriptive linguistics.

Initial dental plosives consonants are represented by the phonetic transcriptions: [t-], [th-], [d-], [dh-].

[t-] represents a voiceless unaspirated dental plosive:
[th-] represents a voiceless aspirated dental plosive:
[d-] represents a voiced unaspirated dental plosive:
[dh-] represents a voiced aspirated dental plosive.

For the articulation of the dental plosive consonant [t-] in [tape] the tip and blade of the tongue is raised against the upper teeth and teeth-ridge.

The pms. of [tape] (No. 4), [thame] (No. 51), and [dome] (No. 52) show wipe offs covering an area from zone 1 to 3 and extended as far back as a part of zone 4.

The Kms. of the forms [tape] (No. 42), [thame] (No. 43), [daskhe] (No. 27), [dhore] (No. 44), show features of voicelessness and absence of aspiration for the initial articulation of the form [tape], voicelessness and aspiration for the initial articulation of the form [thame], voicing and absence of aspiration for the initial articulation of the form [dome].

and voicing and aspiration for the initial articulation of the form [dhobe].

**Initial bilabial plosive consonants** are represented by the phonetic transcription: [p-], [ph-], [b-], [bh-].

- [p-] represents a voiceless unaspirated bilabial plosive;
- [ph-] represents a voiceless aspirated bilabial plosive;
- [b-] represents a voiced unaspirated bilabial plosive;
- [bh-] represents a voiced aspirated bilabial plosive.

For the articulation of the bilabial plosive consonant [p-] in the form [pabe] the two lips are brought together and when the air is released it passes with a plosion.

A bilabial articulation does not show any wipe off on the artificial palate. See pms. of [pa](No. 5)(P.i5A)

Kms. of the forms [pake](No. 13) [bujhe] (No. 15)(P.i51A) and [bhoge](No. 16) show similar features of voicing and voicelessness and aspiration and absence of aspiration, as for other initial consonants.

I have two alternative pronunciations of [phole] and [bhole] which may be represented in the phonetic transcription as [∅ole] and [βole]. [∅-] and [β-] respectively represent bilabial voiceless fricative and bilabial voiced fricative in the articulation of which the lips are narrowed together and on release an audible weak friction is produced.¹

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¹ With some speakers, specially in East Bengal, [p-] and [∅-], and [b-] and [β-] are free variants.
The following plosive consonants occur intervocally: [-k-], [-kh-], [-g-], [-c-], [-ch-], [-j-], [-jh-], [-t-], [-th-], [-t-], [-th-], [-d-], [-dh-], [-p-], [-ph-], [-b-], [-bh-].

The movements made by the speech organs during the articulation of [-k-] in [çake], [-kh-] in [ðākhe], [-g-] in [jage], [-c-] in [kace], [-ch-] in [muche], [-j-] in [baje], [-jh-] in [buñhe], [-t-] in [kañe], [-th-] in [uðhe], [-t-] in [pate], [-th-] in [moñe], [-d-] in [kāde], [-dh-] in [Jadhe], [-p-] in [jope], [-ph-] in [luphe], [-b-] in [bhabe], [-bh-] in [nibhe], are similar to those which they make during the articulation of initial plosive consonants, e.g. [k-] in [kome], [c-] in [cipe], [t-] in [tip], [t-] in [tape], and [p-] in [pabe], except that an intervocalic consonant has greater force in articulation than an initial or final consonant.

Compare, for instance, palatograms of [moñe](No.53) and [thame](No.51), which show the same area of wipe off for the dental contact. Þms. of [kace](No.54), [cipe](No.2), [tip](No.3), and [piñe](No.21), may also be compared.

The intervocalic [-ch-] in [muchi] which is followed by the front vowel [-i] is more advanced than [-ch-] in [mocho] which is followed by the back vowel [o]. [muchi] and [cipe] show wipe offs in the same area. See Þms. of [muchi](No.18), [mocho](No.19) and [cipe](no.11). Same features are observable in the articulation of [buñhi] and [bojho].
16. [boki]
17. [boko]
18. [muchi]
19. [mocho]
The intervocalic \([-k-]\) in the forms \([boki]\) and \([paki]\) show a slightly more advanced wipe off than \([-k-]\) in \([boko]\). See pms. Nos. 16 and 17 of the forms \([boki]\) and \([boko]\).

Pms. of \([pati]\) and \([pato]\) do not show any difference in area of wipe offs.

An intervocalic \([-t-]\) has greater force and more retroflexion in its articulation than an initial \([t-]\) or a final \([-t]\). This can not be shown in palatogram.

With a following or preceding back vowel a \([t-]\) or \([-t]\) is more retracted and with a front vowel before or after it, it is more advanced.

Pms. of the words \([tip]\)(No.3) and \([pit]\)(no.8) show a similar bow shaped wipe off covering part of zone 4 and part of zone 3. Pm. of the word \([koto]\)(No.23) shows that the wipe off covers the whole area of zone 4 and part of zone 5, and it does not extend more forward than canine line.

The intervocalic \([-t-]\) of \([piti]\) which is both followed and preceded by the front vowel \([i]\) is more advanced than the initial \([t-]\) of \([tip]\) and is articulated as far forward as to have contact with a part of the denti alveolar zone, and incisor line. The maximum retroflexion in the series of these instances is shown in \([koto]\) which is both preceded and followed by a back vowel. See pm. of \([koto]\)(No.23). The wipe off for \([koto]\) covers a part of the pre-palatal and almost the whole of the post alveolar zone leaving only a small portion at the corner. Between a vowel which follows and a vowel which precedes \([-t-]\) the latter seems to have a greater
controlling effect upon the articulation contact than the former, e.g. when [i-] preceded and [-o] follows [-t-] (as in [piṭo], it is more advanced with its area of wipe off covering the whole of the alveolar zone and touching the lateral incisor line; on the other hand when [a] is used before and [i] after it (e.g. in [kaṭi] it is more retracted with its area of wipe off covering half of the post alveolar and half of the alveolar zones.

Kms. show features of differences as regards the aspirated and unaspirated and also the voiced and voiceless consonants, similar to those of the initial consonants.

(c) Final plosives

Plosive consonants that occur finally in a verbal form are 16 in number. They are [-k], [-kh], [-g], [-c], [-ch], [-j], [-jh], [-t], [-th], [-t], [-th], [-d], [-dh], [-p], and [-b].

In the articulation of a final plosive the articulating organs undergo similar organic movements as in the articulation of an initial plosive. The difference is that unaspirated plosive consonants are not released in final position.

The pm. of [pak] (No. 6) shows a similar wipe off as for [kom] (no. 1), the pm. of [mōth] (No. 56) shows similar wipe off
as for \[\text{thame}\](No.51). Similar wipe offs are observed in the case of an initial and a final alveolo-palatal and retroflex plosive consonant. See \(\text{pms} \) of \[\text{tip}\](No.3), \[\text{pit}\](No.8) and \[\text{cap}\](No.2)\[\text{kac}\](No.7).

Kms. show similar feature of voicing and aspiration in the utterance with different plosive consonant in the final position, to those in the initial or medial position. See kms. of \[\text{pak}\](No.17)\[\text{kac}\](No.33), \[\text{pit}\](No.45) and \[\text{pat}\](No.46)\[\text{bhog}\](No.19)\[\text{dəkhn}\](No.18)\[\text{bujh}\](No.20)\[\text{Jadh}\](No.47) These kms. show that for the final voiceless unaspirated plosive consonant the stop is of long duration, and for the voiced aspirated and unaspirated and voiceless aspirated consonantal articulation the stop is of short duration. Thus, to sum up, the following plosive consonants are found in verbal forms. The number of plosive consonants occur initially, intervocally and finally is 20, 17, and 15 respectively.

<table>
<thead>
<tr>
<th></th>
<th>Initially</th>
<th>Intervocally</th>
<th>Finally</th>
</tr>
</thead>
<tbody>
<tr>
<td>Velar</td>
<td>[k]-, [kh]-</td>
<td>[-k]-, [-kh]-</td>
<td>[-k], [-kh],</td>
</tr>
<tr>
<td></td>
<td>[g]-, [gh]-</td>
<td>[-g]-</td>
<td>[-g]</td>
</tr>
<tr>
<td>Alveolopalatal</td>
<td>[e]-, [ch]-</td>
<td>[-c]-, [-ch]-</td>
<td>[-c], [-ch],</td>
</tr>
<tr>
<td></td>
<td>[j]-, [jh]-</td>
<td>[-j]-, [-jh]-</td>
<td>[-j], [-jh],</td>
</tr>
<tr>
<td>Retroflex</td>
<td>[t]-, [th]-</td>
<td>[-t]-, [-th]-</td>
<td>[t], [-th]</td>
</tr>
<tr>
<td></td>
<td>[q]-, [qh]-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dental</td>
<td>[t]-, [th]-</td>
<td>[-t]-, [-th]-</td>
<td>[-t], [-th]</td>
</tr>
<tr>
<td></td>
<td>[d]-, [dh]-</td>
<td>[-d]-, [-dh]-</td>
<td>[-d], [-dh]</td>
</tr>
<tr>
<td>Bilabial</td>
<td>[p]-, [ph]-</td>
<td>[-p]-, [-ph]-</td>
<td>[-p]</td>
</tr>
<tr>
<td></td>
<td>[b]-, [bh]-</td>
<td>[-b]-, [-bh]-</td>
<td>[-b]</td>
</tr>
</tbody>
</table>
One voiced unaspirated alveolar lateral consonant represented by [l] occurs in all three positions, initial, intervocalic and final, as will be seen from the following examples.

Initially:     [l-] [loo] 'take!'
Intervocically: [-l-] [bole] 'he says'.
Finally:      [-l] [bol] 'say!'

For the articulation of [l-] in the example [loo] the tip and blade of the tongue touch the teethridge, in the middle of the mouth there is complete closure, and a passage is left on the right side of the tongue, the outgoing air passes out laterally on that side of the tongue. The vocal cords vibrate during the articulation.

The pm. of the word [loo] (No.24) shows a bow-shaped wipe off across zone 3, which extends on the left and right hand sides of the median line in zone 4. The gap of wipe off on the right-hand side of the palate suggests that the air passes on that side. The articulation is more advanced in [likhi]. The pm. of [likhi](No.25) shows wipe off extending up to zone 2.

The articulation is voiced. See km. of [loe] (No.48) [l-] may be termed as a voiced alveolar lateral consonant.

Movements of the speech organs during the articulation of [-l-] are similar to those for the initial [l-]. The pm. of [bolo] (No.27) shows that the wipe off is across zone 4 and
24. [loo]

25. [likhi]

26. [boli]

27. [bolo]
extends slightly forward than canine line.

For the articulation of [-l] in the form [bol] the contact is maintained for a comparatively longer duration than for the initial [l-] or intervocalic [-l-] in [loo] and [bole] respectively. At the level of perception it is found to be lax. Pm. of [bol] (No. 59) shows a wipe off covering part of zone 4 and part of zone 3. The wipe off shows that [-l] in [bol] is more lax in articulation than [l-] in [loo] or [-l-] in [bole].

[ l-] and [-l-] followed by a front vowel [i] is more advanced than [l-] and [-l-] followed by a back vowel [o] or [u]. See pms. [likhi](No. 25), [boli](No. 26) and [bolo](No. 27).

6.1.3 Alveolar tap consonant [r-], [-r-], and [-r].

One voiced unaspirated alveolar tap consonant represented by [r] occurs in all three positions, initial, intervocalic and final, as will be seen from the following examples:

Initially : [r-] [röe] 'he lives'.
Intervocally: [-r-] [pore] 'he wears'.
Finally : [-r] [por] 'wear!'

For the articulation of [r-] in the example [röe], the tip of the tongue is raised towards the teethridge, the main body of the tongue remains in its lowered position. The sound is produced with one or two taps of the tip of the tongue against the teethridge. Vocal cords vibrate during the articulation.
The pm. of the form [roe](No. 28) shows that the middle of the tip of the tongue does not touch behind the teeth ridge. The incomplete contact is in zone 4 where two bow shaped thin lines from the two sides come nearer but are not joined together. It shows that there is friction for initial [r-]. The articulation is voiced. See Km. of [roe](No. 49).

[r-] may be termed as a voiced tapped consonant.

A tapped [r] is represented by the symbol [_;] in the phonetic transcription, but for typographical convenience I consistently use [r].

Movements of the speech organs during the articulation of [-r-] in [pore] are similar to those for the initial [r-] of [roe], except that there is no friction as for the initial [r-]. The pm of [pore](No. 60) shows a bow shaped wipe off of complete contact across the canine line.

In the articulation of final [-r] of the form [por] movements of the speech organs are similar to those mentioned for the medial [-r-] in [pore] See pm. of [por](No. 61). The thin wipe offs meet together in zone 3.

Intervocalic [-r-] or final [r] differs from initial may [r-] in that intervocalic and final [r] have contact in central area but initial [r-] has no contact in central area.

[-r-] followed by a front vowel [i] is more advanced than [-r-] followed by a back vowel [o] or [u]. See pm. [pori] (No. 29), [poro](No. 30).
For phonological purposes lateral consonant and tap consonant will be treated under the heading Liquid consonant.

6.1.4 Sibilant consonant

One sibilant consonant occurs in all three positions - initial, medial and final.

(a) Initially: \[J-\] [Jape]
(b) Medially: \[-J-\] [boje]
(c) Finally: \[-J\] [bof]

(a) Initial Sibilant

For the articulation of \[J-\] in the example [Jape] the tip and the blade of the tongue is raised towards the hard palate just behind the teeth ridge, the main body of the tongue is raised towards the hard palate. The edge of the tongue forms contact on the sides. A narrow space is left between the teeth-ridge and the blade of the tongue, and the outgoing air passes with audible friction. The groove in the middle of the tongue is wide. The vocal cords do not vibrate.

The pm. of [Jape](No.31) shows a contact of the edges of the tongue on the sides, between the canine line and the 1st molar line. There is a wide absence of central contact. This is a fricative articulation.

Km. of [Jadh](No. 47) shows features of voiceless fricative articulation for the consonant of the form.

\[J-\] may shortly be termed as voiceless palato-alveolar sibilant.
Intervocalic and final sibilant.

Movements of the speech organs during the articulation of \([-J-]\) in \([bo\breve{e}]\) and \([-\breve{J}\) in \([b\breve{o}J]\) are similar to those for the initial \([J-]\) in \([Jape]\), as will be seen from the pms. of these words. See pms. of \([b\breve{o}Jo]\) (No.34) and \([b\breve{o}J]\) (No.33).

Kms. of the words show that the articulation is voiceless.

\([-\breve{J}-]\) preceded and followed by a close front vowel [i] has contact further forward than when preceded and followed by a back vowel. The pm. of \([mi\breve{ji}]\) (No.35) shows wipe off extending up to the canine line; the pm. of \([b\breve{o}Jo]\) (No.34) shows wipe off only just beyond the first molar line.

6.1.5 Nasal Consonants.

Like other consonants nasal consonants also occur in all three positions, initial, medial and final, as can be seen from the following examples:

(a) Initially: Medially: Finally:

\([n-]\) \([nabe]\) \([-n-]\) \([mame]\) \([-n\) \([man]\)  
\([m-]\) \([mape]\) \([-m-]\) \([kome]\) \([-m\) \([komm]\)  
\([-JQ-]\) \([bhaqe]\) \([-\eta-]\) \([bhane]\) \([-\eta\) \([bhan]\]
31. [jape]
32. [jobe]
33. [boʃ]
34. [boʃo]
35. [misi]
(a) Initial nasal consonants

Two nasal consonants occur initially. They are represented by the phonetic transcriptions \([n-]\) and \([m-]\).

For the articulation of \([n-]\) in the example \([nabe]\) the mouth passage is completely blocked by the contact of the tip and blade of the tongue against the alveolar region, the soft palate remains in its lowered position and the outgoing air passes through the nose with audible nasality.

The pm. of the form \([nabe]\)(No.36) shows a complete bow-shaped wipe off which extends from slightly below the 1st molar line to slightly above the lateral incisor line and covers part of zone 4 and part of zone 3. The type of wipe off associated with an apical contact in the alveolar region is found to be typical of initial \([n-]\), intervocalic \([-n-]\) and final \([-n]\). See pm. of \([ane]\)(No.37), and \([man]\) (No.38). In some pms. of the forms with initial \([n-]\) the wipe off extends further forward so as to cover the whole area of zone 3. See pm. of \([nibi]\)(No.39). The wipe off has touched the lateral incisor line but has not crossed it. In any case the contact is alveolar and not dental as is suggested in the traditional grammars by the label 'dantya na'.

M.A.Hai while giving an account of the alveolar nasal consonant in his own pronunciation, observes that \([n-]\) in \([nap]\) shows wider wipe off covering zone 2 and ascribes this to the tense articulation. For final \([-n]\) in \([man]\) and medial \([-n-]\) in \([mana]\) he has the same type of wipe offs
confined to zone 3, which 'touched lateral incisor line but had not crossed it.'

In my pronunciation [n] in all three positions, initial, intervocalic and final, gives the same type of wipe off covering a part of zone 4 and extending up to certain portions of zone 3. And although in some cases (with a following close front vowel [i], for example, [nibi]) the wipe off may touch the lateral incisor line it does not cross it. In any case it never extends up to zone 2.

As regards the tenseness or laxness in the articulation M.A. Hai suggests that [n-] in [nap] is tense and [-n] in [man] is lax and [-n-] in [mane] is more lax.²

At the level of perception, in my pronunciation, of the initial [n-] in [nabe] and final [-n] in [man], greater tenseness of the muscles is observed than intervocalic [-n-] in [ane]. This muscular tenseness or laxness can sometimes be shown to correlate in palatograms with a wider area of wipe off; cf. the pms. of [nibi](No. 39) and [ane](No. 37)

The km. of [nabe] shows that the articulation of the word as a whole is voiced, and that the amplitude is the greatest in the wave form on the N tracing during the period of closure.

In general phonetic terms [n-] may be described as a voiced apico-alveolar nasal consonant.

2. Ibid.
For the articulation of [m-] in the example [mape] the lips are closed and the outgoing air passes through the nose producing audible nasality.

The forms with [m-] do not show any wipe off on the artificial palate. [m-] may be described as a voiced bilabial nasal consonant.

Kms. of the forms beginning with a nasal consonant show that the onset of wave forms on the N tracing precedes in point of time the onset of wave forms in the M tracing. See kms. of [nace](No.2) and [mat](No.8). Maximum nasality, as seen in the greatest amplitude of the wave forms in the N tracing continues with the gradual diminution throughout the following open phase. It shows that the raising of the soft palate is not simultaneous with the release of the oral occlusion and nasality continues until the articulating organs have achieved a complete velic closure. Such a profile as this in the nasal tracing is considered typical of the initial nasal consonant articulation.

(b) Medial nasal consonants

Three nasal consonants are found in the medial position. They are represented by the phonetic transcriptions [-η-], [-n-], [-m-]. and

During the articulation of [-η-] in the example [bhaṇi] the mouth passage is completely blocked by the contact of the back of the tongue against the velum.

The pm. of [bhaṇi](No.40) shows contact in the two corners of the back of the artificial palate, which extend
laterally from the base line to the 2nd molar line. There is a tendency of linking the two bits of wipe off in the two corners on the middle of the hard palate. This shows that the back of the tongue is raised behind the hard palate but does not always reach the artificial palate to leave any wipe off in the middle.

The km. tracings of [bhañe](No.79) show that there is the highest amplitude of prominent wave form in the N tracing during the stop phase in the M tracing marked between the points X and Y, which correspond with vocalic closure for the medial velar nasal [-ŋ-].

This [-ŋ-] may be defined as a voiced velar nasal.

The movements of the speech organs during articulation of [-n-] and [-m-] are similar to those which they make during the articulation of initial nasal consonants, except that there is less muscular tenseness in the articulation of [ane] than [nabe]. Compare the pms. of [nabe](No.36) and [ane](No.37) (1934). They show almost the same area of apice alveolar contact for the initial [n-] and medial [-n-].

The kms. of [ane](No.79) and [jome](No.78) (Appendix) show similar feature of nasality and voicing.

2. M.A.Hai has wipe off on the pm. confined to zone 3, which correlate with lax articulation of [-n-] (See M.A.Hai, op.cit., 131).
(c) **Final nasal consonants**

The articulation of final [-ŋ] in [bhaŋ] shows similar phonetic features as have been observed in the case of [-ŋ] in [bhaŋi] except that the final [-ŋ] is not released orally and the contact is maintained while the air continues to escape through the nose. The pm. of [bhaŋ](No.41) shows two bits of wipe off in the two corners of the back of the artificial palate, which does not cross the 4th molar line. This correlates with the lax articulation. I also perceive that in the articulation of both final [-ŋ] in [bhaŋ] and medial [-ŋ] in [bhaŋi] there is muscular laxness.

In the articulation of final [-n] and [-m] the place and manner of articulation are same as for initial [n] and [m] with the difference that final [-n] and [-m] are not released orally.

The pm. of the form [man](No.38) shows a complete bow shaped wipe off across the canine line covering a part of zone 4 and part of zone 3. This shows that in the articulation of [-n], the tongue makes a contact which is similar to that of [n] in [nabe] or [-n] in [ane]. This type of wipe off illustrates an apical contact in alveolar region. The final [-n] also, may be defined in general phonetic terms, as a voiced apico-alveolar nasal.

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1. M.A. Hai, observes different features. For final [-ŋ] he has greater muscular tenseness than for intervocalic [-ŋ]. See M.A. Hai *op.cit.*, p.131. (pm.3,5,6.)

2. Supra.
Kms. of [bhaŋ] (No. 66), [Jon] (No. 12), and [jom] (No. 67)
show greater amplitude on N tracing during the stop-phase in
the M tracing.

Thus, to sum up, the following are the simple nasal
consonants: Initially: [n-], [m-], intervocalically: [-ŋ-],
[-n-], [-m-], finally: [-ŋ], [-n], [-m].

6.1.6 The Flapped Consonant: [ɾ]

Bengali verbal forms have an unaspirated voiced
flapped sound represented by [ɾ]. This occurs in intervocalic
and final positions. This is a non-fricative flapped sound
in the articulation of which the tip of the tongue curls back
and flaps forward, to touch behind the teethridge, and then
moves down and lies flat. The movement starts with lateral
contraction of the tongue which is drawn back and ends with
the fore part spread out when it flaps down and lies flat. The
soft palate is raised and the vocal cords vibrate from the
beginning.

The pm. No. 42 of [pɔɾe] shows a fairly wide band of
wipe off from slightly below the second molar line up to the

1. An aspirated flapped sound [-ɾh-] is also observed in the
pronunciation of some speakers, which can be taken as dia-
tlectal variation. Example: [kak ra kaɾhe] 'The crow caws'.
Usual pronunciation of speakers is [kaɾe]. See S.K. Chatterji,

2. See the description of the Tamil retroflex flapped d in
Firth's Tamil phonetics in Appendix to Arden's Tamil
Grammar, p. viii and xv. See also, W.S. Allen, Some Phonologi-
cal characteristics of Rajasthani, B.S.O.A.S., 1957, xx, § 3.
canine line, thus covering the whole area of zones 4 and 5 and a part of zone 6 on the two sides of the median line. The pm. (No. 43) of [pɔɾ⁹] shows a more thin wipe off covering only the whole of zone 4. In none of the pms., there are clean wipe offs of a complete contact. There are marks of curled-back tongue-tip coming forward from the upward position. That is, in the wipe offs there are signs of brushing off the chalk from the artificial palate. The small patching of wipe offs show that the curled-back tongue-tip touches at that point.

In both the pms. the main area of contact is within zone 5 and 4, which shows that the contact is post alveolar.

Palatograms of the utterances involving final [-ʐ] show wipe offs of similar nature covering an area between the second molar line and the canine line.

An intervocalic [-ʐ-] has greater force and more retroflexion in its articulation than final [-ʐ]. This can not be shown in pm., but can be observed at the perception level.

In general phonetic terms [-ʐ-] and [-ʐ] are described as voiced apico-post alveolar-retroflex flapped consonants.

Km. of the word [pɔɾe] (No. 50) shows that the articulation is voiced and unaspirated.

It has been seen that the retroflex voiceless consonants [ɻ] and [ɻʰ] occur in all three positions, initially, intervocally, and finally and retroflex voiced consonants [ɻ-] and [ɻʰ-] occur only word initially and never intervocally or finally. The flapped consonant [ɾ] occurs medially

and finally in a word and never initially in the same environment. Aspirated flapped [ṭh] is not found in Bengali verbal forms.

The retroflexion and dark colouring of the articulation are an important feature in the pronunciation of the flapped consonant. This phonetic colouration of the syllable consisting of [-q-] or [-γ] requires phonologically the setting up of retroflexion as a prosodic element of structure. And in doing so such syllables are included as being similar, considering the distributional restriction and positional variation, to those with other retroflex articulations, e.g. [t], [ṭh], [q], [qh].

6.2 Complex Consonantal articulations.

6.2.0 Combinations of two adjacent consonants, I propose to divide into two types: Interword and Intraword Combinations.

6.2.1 Interword Combinations

Whenever two consonants occur adjacently at the junction of two words in a phrase the combination is interword, e.g. [-qb-] in [je paq boe] 'he carries jute', [-tr] in [je bhat radhe] 'she cooks food'.

There are interword consonant sequences at the external junction of a verbal form and a form in other word classes, i.e. a non-verbal form preceding or following it.

Where the final consonant of the preceding form in
other word classes and the initial consonant of the first form of the verbal piece constitute a consonant sequence, it is called preverbal interword consonant sequence.¹

Thus, we have [je paq bee] 'he carries jute'. Here [b-] which constitutes the initial consonant of the verbal form [boe] forms the second part of the -CG- sequence at the external junction where the first -C- is a [-q] the final consonant of the non-verbal form [paq]. The sequence is [-qb-].

Where a finite verbal form preceded another word and the final C of the verbal form makes the initial component of the -CC- sequence and the initial C- of the following word forms the second component, it forms a post verbal interword consonantal sequence.

Thus, in [col baqi] 'let us go home', [-lb-] form a consonant sequence at the external junction. The final consonant [-l] in the verbal form [col] forms the initial component and the initial consonant [b-] of [baqi] which is a nominal form, forms the final component.

In both preverbal and post-verbal consonant sequences, aspirated voiced retroflex plosive [-qh-] as the first component and the velar nasal [-ŋ-] and the retroflex flapped [-ɾ-] as the second component do not occur. In addition, in

post-verbal interword sequences the velar aspirated voiced plosive [-gh] and the bilabial aspirated voiceless and voiced plosive [-ph] and [bh] do not occur as the initial component. Any other consonant can occur as either of the components.

In post verbal -CC- sequences a conjunct consonant as the final component can occur. This is found with some rare Sanskrit tatsama or English loan words as a post verbal form, e.g. [je jak skule] 'let him go to school'. [jak klanti] 'let all fatigues be relieved'. Consonants in all other sequences are simple and never conjunct.

It should be noted that there are no interword sequences between different verbal forms (i.e. between two non-finites or a non-finite and finite) in a single verbal piece in a non-emphatic simple sentence where the finite verbal form usually occurs at the sentence final position, for final syllables of non-finite verbal forms are always open. e.g. [nouko khani dekte dekte cole gelo] 'the boat passed along quickly'.

But in a Compound verbal sentence where the two finite verbal forms occur adjacently, or in an emphatic style where a non-finite verbal form follows the finite verbal form, there are consonant sequences at the external junction of the two verbal forms. The final consonant of the first form and the initial consonant of the following form constitute a consonant sequence.

Thus, in [col jai] 'let us go' [-lj] form a consonant sequence at the external junction of the finite verbal forms

1. See §3.0.2.2. Footnote 1 on p. 39.
\[ [\text{col}] \text{ and } [\text{jai}], \text{ and in } [\text{dãg gie}] \text{ 'go and see'} [-gg-] \text{ form a -CC- sequence at the external junction of the finite and non-finite verbal forms } [\text{dãg}] \text{ and } [\text{gie}] \text{ respectively.}

In these consonantal sequences in the junction of the two verbal forms, finite and finite, or non-finite and finite, the distribution of consonants is similar to that of post verbal interword sequences, except that there is no possibility of a conjunct consonant occurring as the second component. The statements for type two (post verbal sequences) hold good for this type of sequences.

For phonological purposes interword -CC- sequences will be written with a space between them. e.g. in [jak rekhe] 'let him leave it and go' the consonant sequence will be written as - C C - in the generalized phonological formulae.

6.2.2. Intraword consonantal combinations

Whenever two consonants occur adjacently within a verbal form they make an intraword consonantal combination. e.g. [-qb-] in [Je gachṭi kaqbe] 'he will cut the tree'.

Combinations of consonants within a verbal form are never found in the initial position, nor they are found in the morphological abstraction, which I call ending. They occur either in the stem final position or at the junction of the stem and ending, or in the case of reduplicated forms at the junction of the two stem syllables.

These combinations of consonant are of the following
types:

Within Morpheme:

(i) Consonant clusters within the structure of the stem.
(ii) Consonant sequences in the junction of the stem syllables in the reduplicated forms.

At Morpheme boundary:

(i) Consonant sequences in the stem and ending junction of the forms whose stem final and ending initial elements are C.
(ii) Geminated clusters in the stem and ending junction of the forms, whose stem syllables are open and the ending initial consonant is [-ch-].

6.2.2.1 Consonant Clusters within the structure of the stem.

Clusters are defined as a consonant group occurring in the dissyllabic stem patterns CVCCο- and VCCο-only.

A cluster as a whole or a part of it is characterized by voicing or voicelessness, aspiration or absence of it in articulation. Clusters are marked -CC- in the phonological formulae. Thus, [-mp-] in [kampae] 'he bites' is a cluster phonologically marked as -CC- in the generalized structure CVCCο-V. The stem-ending division is shown in the formula with a hyphen.

In Bengali orthography usually these clusters are represented by ligatures, and occasionally by placing a
'hesente' sign below the first consonant.

In transliteration the ligature will be marked with a bracket over the symbols representing the cluster. Where 'hesente' is used in orthography the hesente sign below the first consonant in the cluster is used consistently. Thus, [ul†ae] is transliterated as ul†ae or ul†ae.

Clusters are divided into two groups: Homorganic and heterorganic.

6.2.2.1.1 Homorganic clusters.

They form the following patterns:

1. Plosive Plosive.
2. Liquid Liquid.

1. Unaspirated voiceless velar plosives [-kk-] - [dhakkae]
2. Unaspirated voiced palato-alveolar plosives [-jj-] - [ajjae]
3. Unaspirated voiced alveolar laterals [-ll-] - [cillae].
4. Retroflex nasal and retroflex voiced plosive [-ŋŋ-] - [khorŋŋae].

The articulation of [dhakkae] and [cillae] show that these homorganic clusters are realized with greater energy and force of exhalation than simple consonant and that the contact is maintained without any change in position for a longer duration before it is released. Kms. of the words [dhakkae] (No.21) and [qakae](No.22) and [cillae](No.37) and [chilae](No.38)
show that for the simple consonant \([-k]\) in \([qakae]\) and \([-l]\) in \([chilae]\) the tongue is held for a shorter duration than for the homorganic cluster \([-kk]\) and \([-ll]\) in \([dhakkae]\) and \([cillae]\) respectively. In articulating these homorganic clusters, the muscular tension and the firmer contact of the articulating organs are observed. The palatogram of \([cillae]\) gives overlapping wipe offs of the contact of the alveolo-palatal plosive and lateral. The palatograms of \([mille]\)(No.63) and \([mile]\)(No.62) can be compared. These pms. show different wipe offs for the homorganic long lateral and the simple lateral articulations. This indicates that \([-ll]\) has a more tense contact than \([-l\].

6.2.2.1.2 Heterorganic clusters.

Heterorganic consonant clusters within the stem in the dissyllabic stem patterns CVC\(\bar{e}\)- and VCC\(\bar{e}\)- form the following patterns:

1. Plosive plosive
2. Plosive Liquid
3. Plosive Sibilant
4. Plosive Nasal
5. Liquid Plosive
6. Liquid Sibilant
7. Liquid Nasal
8. Sibilant plosive
9. Sibilant Liquid
10. Nasal plosive
11. Nasal Liquid
12. Nasal Sibilant
13. Nasal Nasal

They are listed below with examples.
PLEASE TURN OVER
<table>
<thead>
<tr>
<th>1. Plosive plosive</th>
<th>Voiceless throughout</th>
<th>voiced voiceless</th>
<th>voiced throughout</th>
<th>voiceless voiced</th>
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<td>[-ck-]</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>[mockae]</td>
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</tr>
<tr>
<td>(ii) &quot; Retroflex</td>
<td>[-ct-]</td>
<td>-</td>
<td>[pîjrae]</td>
<td>[-cîr-]</td>
</tr>
<tr>
<td>[kocîae]</td>
<td>[achîrae]</td>
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<td></td>
<td></td>
</tr>
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<td>[-rk-]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>[moţkae]</td>
<td>[bhîrkae]</td>
<td></td>
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<tr>
<td>(iv) &quot; Bilabial</td>
<td>-</td>
<td>[-rp-]</td>
<td>-</td>
<td>-</td>
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<tr>
<td>[tôrapae]</td>
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<tr>
<td>(v) Dental Velar</td>
<td>[-tk-]</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>[âtkae]</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>[ tôpkae]</td>
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</tr>
<tr>
<td>(vii) Alveolo-palatal</td>
<td>[-pc-]</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>[kôpca]</td>
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</tr>
<tr>
<td>(viii) &quot; Retroflex</td>
<td>[-pî-]</td>
<td>-</td>
<td>[-br-]</td>
<td>[-pr-]</td>
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<td>[ghâbîrae]</td>
<td>[cîpîrae]</td>
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<td>[-gr-]</td>
<td>[-kr-]</td>
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<td>[bigîrae]</td>
<td>[åkîrae]</td>
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<td>[-tr-]</td>
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<td>[hatrae]</td>
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* See para two on page 423.*
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<tr>
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<td>-</td>
<td>[jl-]</td>
<td>[-cl-]</td>
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<td>-</td>
<td>[-jr-]</td>
<td>-</td>
</tr>
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<td>-</td>
<td>[-dl-]</td>
<td>[-tl-]</td>
</tr>
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<td>-</td>
<td>[-dr-]</td>
<td>[tr-]</td>
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<td>-</td>
<td>[-br¬]</td>
<td>[bhrabrae]</td>
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<tr>
<td>(iii) Tap Dental</td>
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<td>-</td>
<td>[--r-] [<em>bortaе</em>]</td>
</tr>
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<td>(iv) Tap Alveolo-palatal</td>
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<tr>
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### 8. Sibilant Plosive

| (i) Palato-alveolar Velar | [ʃk-] | - | - | - |
| (ii) Retroflex Retroflex | [-t̚-] | [-ʃr̚-] | - | - |
| (iii) Alveolar [-st-] Dental | - | - | - | - |

### 9. Sibilant Liquid

| (i) Palato-alveolar Lateral | - | [ʃl-] | - | - |
| (ii) Palato-alveolar Tap | - | [-ʃr̚-] | - | - |

### 10. Nasal plosive

| (i) Bilabial Velar | - | [mk-] | - | - |
| (ii) ” Alveolo-Palatal | - | [-mc-] | [-mj-] | - |
| ” | - | [kamcae] | [somjae] | - |
| ” | - | [-mjh-] | [somjhae] | - |
| (iii) ” Retroflex | - | [-nt-] | [-mŋ-] | - |
| (iv) Alveolar Velar | - | [-nk-] | - | - |

<p>| | | | | |
| | | | | |</p>
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<th>(v) Velar - Alveo-palatal</th>
<th>-</th>
<th>[-ŋc-]</th>
<th>[bʰaŋca]</th>
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<tbody>
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<td>(vi) Velar Retroflex</td>
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<td>[-ŋɾ-]</td>
<td>[-ŋɾae]</td>
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<td>-</td>
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<td>[ʃamlae]</td>
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<td>-</td>
<td>[-ŋɾ-]</td>
<td>[cumrae]</td>
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<tr>
<td>(ii) &quot;ap</td>
<td>-</td>
<td>-</td>
<td>[-ŋɾ-]</td>
<td>[cumrae]</td>
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<td>[hanʃlae]</td>
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<td>[dʰomʃae]</td>
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<td>[-nʃae]</td>
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<tr>
<td>(iii) Velar Palato-alveolar</td>
<td>-</td>
<td>[-nʃ-]</td>
<td>[-nʃae]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13. Nasal - Nasal</td>
<td>-</td>
<td>-</td>
<td>[-nʃ-]</td>
<td>[-nʃae]</td>
<td>-</td>
</tr>
<tr>
<td>(i) Alveolar Bilabial</td>
<td>-</td>
<td>-</td>
<td>[-nʃ-]</td>
<td>[-nʃae]</td>
<td>-</td>
</tr>
</tbody>
</table>
There are no Sibilant Nasal patterns of combination in these types of cluster.

Clusters that do not involve a nasal consonant may be wholly or in part voiced or voiceless and aspirated or unaspirated in articulation. With a few exceptions, almost any unaspirated Plosive, Liquid and Sibilant may form either of the two components, but their combination possibilities are restricted.

During the articulation of a consonantal cluster the position of contact for the second component of the cluster is taken up by the articulatory organs simultaneously with the release of the position of contact for the first component.

1."In the articulation of the sequences of -pt- (as in nepta: wrap), -fk- (as in mōka: crack fingers), the first consonant like 'halanta consonant' of skt is not followed by a vowel and is not fully exploded either. The contact is first made at one place and before it is released the articulatory organs abruptly take positions for the following consonant. This according to the Indian grammarians may be termed Abhinidhana" (See M.A.Hai, *op.cit.*, §127).

"The pratisakhyas and the carayania siksa describe the phenomenon of incomplete articulation, which has been generally called "Abhinidhana". The phenomenon as described in the Rg. Prat (VI.5) consists in the repressing or obscur- ing of a plosive...before another plosive or a pause. The sound displaying this phenomenon is said to be pressed (piditah), quite weakened (sannatarah) and lacking in breath and voice (hinas vasanadah). The term commonly used for this phenomenon is Abhinidhana, which etymologically means "adjacent imposition"...According to both the Rg. and the Atharva pratisakhyas, and the carayaniy siksa, a plosive followed by another plosive underwent Abhinidhana; thus in arvagdevah, g before d was said to be obscurely pronounced; similarly, d before bh in maruddbih... In the actual pronunciation of the language there was a tendency to explode a plosive incompletely before another plosive, as the English do in words like "act", "employ", "begged". (See Siddheswar Varma, *Critical Studies in the phonetic observations of Indian Grammarians*, p.137,ff.)
Where the articulations concerned involve stop consonants the speech organs have energetic movements. The articulatory organs are held high for a longer duration. This longer duration in the stop phase is observable in the km. tracings. See km. for [mockae] (No.23). This km. can be compared with the kms. of [kace](No.34) and [qakaе](No.22) which involve simple consonantal articulation. Duration for [-ck-] in [mockae] is 28 c.s., for [-c-] in [nace] is 16 c.s. and [-k-] in [qakaе] is 13 c.s. These kms. also show that the articulation is voiceless during the stop phase.

Clusters involving nasal consonants are of three types -NC-, -CN- and -NN-. In all three types the articulation is heterorganic. These clusters are all characterized by absence of breathiness in articulation. Where the second -C- element is voiced the whole cluster is characterized by voicing, where the second -C~ is a voiceless consonant, the later part of the closure for the cluster is voiceless.

See km. of [jœmjaе](No.53) and [khamcaе](No.54). (Appendix) In -NC- clusters nasality partially affects the preceding vocalic articulation. See km. of [kamпæe](No.68) and [cimпæe] (Appendix). In the nasal tracings of [kamпæe] and [jамлæe] there is a greater amplitude of wave forms during the period of closure, which dies down gradually during the later part of the closure in the mouth tracing. These feeble wave forms in the N tracing during the later part of the closure is associated with the non-nasal voiced consonantal articulation [-r-] and [-l
respectively. In the case of [cim^ae] and [comkae] the amplitude during the later part of the closure in the nasal tracing is minimal.

The consonant of the -NC- clusters where N is a bilabial nasal [m], is a plosive other than bilabial, that is, [-k-], [-c-], [-j-], [-t-], [-r-]; liquid [-r-]; and sibilant [-j-].

In -NN- cluster, the initial -N- is alveolar nasal consonant and the final -N- is bilabial nasal consonant. The soft palate is lowered not only during the closure for the articulation of the cluster but also from the preceding vocalic articulation to the following vowel. See km. of [jonmae](No. 70). The articulation as a whole is voiced.

6.2.2.2 Reduplicated stem sequences

Reduplicated stem sequences involve the verbal forms in trisyllabic stem pattern CV/CVCe-. These types of verbal form have all the characteristics of dissyllabic stem patterns where the feature of the linking of stem and ending is syllabic. Thus the generalized structure of the form [pitpitae] is CV/CVCe-V. The stem and ending division is shown by a hyphen.

Usually syllable one as a whole or a part of it is repeated or chimed. That is to say, there is a regular relation between the two Vs, and between the first and the third C's and between the second and the fourth C's in the structure. If the Os and Vs involved in the structure are
numbered as $c_1 \ V_1 \ c_2 \ c_3 \ v_2 \ c_4 \ e$. $v_2$ and $c_4$ are found identical with $v_1$ and $c_2$; $c_1$ and $c_3$ may or may not always be identical. Thus, in $[pi \ pi \ ae]$, $c_1$ and $c_3$, and $c_2$ and $c_4$, and the two $v$s are the same. That is, syllable one as a whole is repeated. In $[culbulae]$ the two $v$s and $c_2$ and $c_4$ in the two syllables are the same but $c_1$ is a $[c-]$ and $c_3$ is a $[-b-]$. There is no particular rule controlling this distribution of $c_1$ and $c_3$ where they are not the same, but there are restrictions as to the churning of the two syllables. For convenience, forms in this pattern are referred to as reduplicated forms.

The sequences of the two $c$ elements involve $c_2$ and $c_3$ that is, the final $c$ of the initial syllable and the initial $c$ of syllable two. It has been seen that the final consonantal element of the initial syllable is invariably the same as the final $c$ element of syllable two and that it forms the first part of the $-c'c-$ sequence, but the second $c$ element in the sequence is not always the same as initial $c$ element of the syllable one. This sequence is, to some extent, similar to that of an interword consonant sequences on the one hand, and intraword consonant clusters within the morpheme of stem on the other. These are better treated as reduplicated stem sequences rather than clusters. It has also been seen that the syllable one is always closed, and never open, and the initial consonant of the second syllable is pronounced without release of the preceding consonantal articulation. That is to say, the articulating organ take position simultaneously for the second consonant before the release of the first.
These sequences involve the following patterns:

1. Plosive Plosive
2. Plosive Liquid
3. Plosive Nasal
4. Liquid Plosive
5. Liquid Sibilant
6. Liquid Nasal
7. Sibilant Plosive
8. Sibilant Nasal
9. Nasal Plosive
10. Nasal Sibilant
11. Nasal Nasal

There is no plosive-sibilant, sibilant liquid, or nasal liquid combination in this type of sequence. They are listed below with examples:

<table>
<thead>
<tr>
<th></th>
<th>Voiceless throughout</th>
<th>Voiced Voiceless</th>
<th>Voiced throughout</th>
<th>Voiceless Voiced</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Plosive Plosive</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Dental Bilabial</td>
<td>[-tp-]</td>
<td>-</td>
<td>-</td>
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<tr>
<td></td>
<td>[pətpətie]</td>
<td></td>
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<tr>
<td>(ii) Retroflex Bilabial</td>
<td>[-tp-]</td>
<td></td>
<td>[-yp-]</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>[pitpiə]</td>
<td></td>
<td>[phərpəriə]</td>
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<tr>
<td>(iii) Velar</td>
<td>[-tk-]</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>[kətkətie]</td>
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<td></td>
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<tr>
<td>2. Plosive Liquid</td>
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<tr>
<td></td>
<td>Velar</td>
<td>Lateral</td>
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<tr>
<td></td>
<td>[-kl-]</td>
<td>[liklikie]</td>
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<tr>
<td>3. Plosive Nasal</td>
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<tr>
<td>Retroflex</td>
<td></td>
<td></td>
<td>[-tm-]</td>
<td>[mitmitie]</td>
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<tr>
<td>Bilabial</td>
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<tr>
<td>4. Liquid Plosive</td>
<td></td>
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<td></td>
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<tr>
<td>(i)Lateral Velar</td>
<td>[-lk-]</td>
<td></td>
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<tr>
<td></td>
<td>[kolkolie]</td>
<td></td>
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<tr>
<td>(ii)Lateral Alveolo palatal</td>
<td>[-lc-]</td>
<td></td>
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<tr>
<td></td>
<td>[culculie]</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(iii)Lateral Bilabial</td>
<td>[-lch-]</td>
<td>[-lb-]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[cholcholie]</td>
<td>[culbulie]</td>
<td></td>
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<tr>
<td>(iv)Tap Dental</td>
<td>[-rt-]</td>
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<td></td>
<td>[tortorie]</td>
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<tr>
<td>(v)Tap Alveolo palatal</td>
<td>[-rjh-]</td>
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<td></td>
<td></td>
<td>[-jhirjhirie]</td>
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<tr>
<td>5. Liquid Sibilant</td>
<td></td>
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<tr>
<td>Tap palatoalveolar</td>
<td>[-rf-]</td>
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<td>[sirfirie]</td>
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<tr>
<td>6. Liquid Nasal</td>
<td></td>
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<tr>
<td>(i)Lateral Bilabial</td>
<td>[-lm-]</td>
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<tr>
<td></td>
<td>[jhilmilie]</td>
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<tr>
<td>(ii) Tap</td>
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<tr>
<td>Bilabial</td>
<td>-</td>
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<tr>
<td>7. Sibilant-</td>
<td>-</td>
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</tr>
<tr>
<td>Plosive</td>
<td>-</td>
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<tr>
<td>Palato-alveolar-Velar</td>
<td>-</td>
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<tr>
<td>8. Sibilant-</td>
<td>-</td>
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<td></td>
</tr>
<tr>
<td>Nasal</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palato-alveolar-Bilabial</td>
<td>-</td>
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<td></td>
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<tr>
<td>9. Nasal - Plosive</td>
<td>-</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(i) Alveolar Velar</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>10. Nasal Sibilant</td>
<td>-</td>
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<td></td>
</tr>
<tr>
<td>Alveolar Palato-alveolar</td>
<td>-</td>
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<td></td>
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<tr>
<td>11. Nasal - Nasal</td>
<td>-</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Alveolar Bilabial</td>
<td>-</td>
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</tbody>
</table>

|                                                                 |
| (ii) Tap Bilabial                                               |
| 7. Sibilant-Plosive                                            |
| Palato-alveolar-Velar                                          |
| 8. Sibilant-Nasal                                              |
| Palato-alveolar-Bilabial                                       |
| 9. Nasal - Plosive                                             |
| (i) Alveolar Velar                                             |
| (ii)"Alveolo-palatal                                          |
| (iii)"Retroflex                                               |
| (iv) "Bilabial                                                |
| (v) Bilabial-Alveolar palatal                                  |
| 10. Nasal Sibilant                                             |
| Alveolar Palato-alveolar                                       |
| 11. Nasal - Nasal                                              |
| Alveolar Bilabial                                              |
One characteristic feature of the sequences of this type is that the second consonant is either breathy or non-breathy in articulation. A sequence as a whole or a part of it is voiced or voiceless. The articulation concerned is always non-homorganic. The combination possibilities are open, except that the velar nasal [-ŋ-] and retroflex flapped [-ɾ-] do not occur as the second component of the -C/C- sequence.

Sequences in reduplicated stem involving nasal consonants are of three types: -N/C-, -C/N- and -N/N-. The articulation is always non-homorganic. Bilabial and alveolar nasal consonants [-m-] and [-n-] are found as -N- in -N/C-, and -C- is a term in the plosive and sibilant system. Where the post nasal element is voiced the articulation is voiced throughout, and where it is voiceless, the first part of the closure is voiceless. Where the post nasal plosive articulation is aspirated, the aspiration is observed during the plosive release.

See, for example, the kms. of [ˈtʊntʊnde](No.55) and [ˈjɔmʒʊmіɛ](No.56) (appendix)

In a -C/N- sequence plosive, liquid and sibilant constitute the first component, and -N- is a bilabial and alveolar consonant. The articulation as a whole is non-breathy. Where the pre-nasal consonant is voiced, voicing is maintained throughout the whole period of closure. Nasality affects the following vowel articulation. Where the pre-nasal consonant is voiceless the first part of the closure is voiceless.
Like the -NN- cluster in the disyllabic stem pattern, -N/N- in a reduplicated stem is a non-homorganic sequence, the articulation being an alveolar nasal followed by a bilabial nasal consonant. The whole sequence is non-breathy and voiced. In this case nasality is a feature not only of the whole of -N/N- sequence, but of the whole word which extends right from the preceding syllable to the following syllable.

See km. of [minminæ](No. 71) (appendix)

For phonological purposes this sequence will be marked by an oblique bar in between the two Cs, thus [piptiţie] will be denoted in the generalized formula as CVC/CVCο V.

6.2.2.3 **Consonant sequences in the stem and ending junction of the forms whose stem-final and ending initial elements are C.**

Stem-ending consonant sequences are found in the junction of the forms whose stem-final and ending initial elements are a C. These are found only with the monosyllabic stem patterns CVο- and VC-.

Four consonants [-ch-], [-t-], [-b-], and [-l-] are found as initial consonants of the endings which concerns these sequences.

It is important to note that structurally clusters and sequences are different. Thus, the articulations of the consonantal combinations [-bl-] in [bhabli] and [choblie] are
phonetically similar to each other. But [-l-] in [bhabli] is one of the four ending initial consonants [-ch-], [-t-], [-b-] and [-l-], whereas [-l-] in [choblie] is one of the final components of -CC- clusters, where as many as 55 clusters are possible.

Another point of distinction is that the sequence [-bl-] in the form [bhabli] where two -CC- components are stated form part of two grammatical structures, namely, stem and ending. And the linking feature of these two structures, stem and ending is never syllabic.

In the form [choblie], where the -CC- cluster is stated, [-bl-] is always a part of the disyllabic stem-structure, and the stem and ending linking feature in this case is always syllabic.

For phonological purposes stem-ending division will be shown by a hyphen between them.

Thus, the morphological divisions of the stem and ending of the two forms [bhabli] and [choblie] can phonologically be shown as .CVC-CV and CVCC-V respectively.

6.2.2.3.1.

Homorganic stem-ending sequences.

Homorganic stem-ending sequences form the following phonetic patterns.
## Plosive-Plosive

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Alveolo-palatal affricated plosive</td>
<td>[-cch-]</td>
</tr>
<tr>
<td>2.</td>
<td>Dental</td>
<td>[-tt-]</td>
</tr>
<tr>
<td>3.</td>
<td>Bilabial</td>
<td>[-bb-]</td>
</tr>
</tbody>
</table>

## Liquid Liquid

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>4.</td>
<td>Alveolar lateral</td>
<td>[-ll-]</td>
</tr>
</tbody>
</table>

## Nasal Plosive

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>5.</td>
<td>Bilabial nasal plosive</td>
<td>[-mb-]</td>
</tr>
<tr>
<td>6.</td>
<td>Dental nasal plosive</td>
<td>[-nt-]</td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>[-cch-]</td>
<td>[kacche]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[pocche]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[bucche]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[becche]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[bhicche]</td>
</tr>
<tr>
<td>2.</td>
<td>[-tt-]</td>
<td>[patte]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[motte]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[potte]</td>
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<tr>
<td></td>
<td></td>
<td>[jutte]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[jitte]</td>
</tr>
<tr>
<td>3.</td>
<td>[-bb-]</td>
<td>[jøbbe]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[mabbe]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[qubbe]</td>
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<tr>
<td></td>
<td></td>
<td>[nibbe]</td>
</tr>
</tbody>
</table>
These homorganic consonant sequences are realized with greater energy and force of exhalation than simple consonants. The contact is maintained without any change in position for a longer duration before it is released. The articulating organs have a firm contact and the muscular tension is observed during the articulation.

The km. tracings of [kacche] (No. 57) [patte] (No. 58) [jobbe] (No. 26) show that the closure is for a longer duration. These kms. can be compared with those of [kace] (No. 34) [pate] (No. 7) [jope] (No. 24). The period of closure for a simple consonant in the forms [kace], [pate], and [jope] is shorter (13 c/s) than the corresponding closure for the consonant sequences in the forms [kacche], [patte] and [jobbe] (17,20 c/s).

In the articulation of [-cch-] sequence in [kacche] the whole of the tongue is held tight against the roof of the mouth.
and the tip of the tongue is down and when the air is released it comes out with affrication. The articulation is aspirated. (Appendix)

In the km. of [kacche](No. 57) the larynx tracing does not show any wave form during the closure in the mouth tracing. There is an upward displacement in the wave form in the M tracing with the release.

See pm. of [kacche](No. 66). The wipe off shows contact for the whole of zone 4 and part of zone 3.

For the articulation of [-tt-] sequence in [patte] the tip and blade of the tongue touch the teeth and the teeth-ridge. The articulation is unaspirated and voiceless throughout.

See km. of [patte](No. 58) (Appendix) (Appendix) (Appendix)

The pm. of [patte](No. 65) shows a wipe off extending from zone 1 well into zone 4. The wipe off of [pate] is not so broad and does not extend into zone 4 in the left and right zones.

In the articulation of the sequence [-bb-] in [jobbe] the lips are closed and held for a considerable period. Vocal cords vibrate all through.

See km. of [jobbe](No. 26) (Appendix). The prominent wave forms are seen throughout the period of closure in the Larynx tracing.

Palatograms do not show any wipe off for the bilabial articulations.

In the articulation of [-ll-] sequence in [mille] the contact is maintained by the tip and blade of the tongue with the teeth ridge, the air is released on both sides of the tongue. The articulation is voiced all through.

The km. of [mille] shows in complete closure in the mouth
tracing. Prominent wave forms in the L tracing are seen all through. See km. of [cillae](No.37)\textsuperscript{(appendix)}

The pm. of [mille](No.63)\textsuperscript{(appendix)} shows a bow shaped wipe off from the middle of zone 2 to the beginning of zone 4.

For the articulation of bilabial homorganic sequence [-mb-] in the form [jombe] the lips are closed and held together for a longer duration than for a simple [-m-] or [-b-] in the forms [jome] and [jabe] respectively. The articulation as a whole is voiced. The soft palate is in its lowered position during the first part of the oral closure.

See km. of [jombe](No.72)\textsuperscript{(appendix)}. This km. shows the greatest amplitude of wave forms in N tracing during the first part of the closure in the M tracing, and dying down gradually towards the last part of the closure.

In the articulation of [-nt-] in the form [mante] the tip and blade of the tongue are held against the teeth-ridge for a longer period than for a simple [-n-] or [-t-] in the forms [mane] and [mate] respectively.

The km. of the form [mante](No.73)\textsuperscript{(appendix)} shows features of prominent nasality during the first part of the oral closure in the M tracing and absence of nasality and voicing during the later part of the oral closure. This km. may be compared with those of [mane](No.78)\textsuperscript{(appendix)} and [mate](No.74)\textsuperscript{(appendix)}.

Pm. of the form [mante](No.67)\textsuperscript{(appendix)} shows wipe off from zone 1-3.
Heterorganic Consonant sequences in the junction of stem and ending of the monosyllabic stem patterns CVC- and VC are of the following phonetic patterns:

1. Plosive Plosive
2. Plosive Liquid
3. Liquid Plosive
4. Liquid Liquid
5. Sibilant Plosive
6. Sibilant Liquid
7. Nasal Plosive

They are listed below with examples.
<table>
<thead>
<tr>
<th>1. Plosive Blosive</th>
<th>Voiceless voiceless throughout</th>
<th>Voiced voiceless throughout</th>
<th>Voiced voiced</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) velar Alveolo-palatal</td>
<td>[-kch-]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(ii) Velar - Dental</td>
<td>[-kt-]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(iii) Velar - Bilabial</td>
<td>-</td>
<td>-</td>
<td>[-gb-]</td>
</tr>
<tr>
<td>(iv) Alveolo-palatal - Dental</td>
<td>[-ct-]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(v) &quot;</td>
<td>[-cht-]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(vi) Alveolar Fricative - Dental</td>
<td>[-st-]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(vii) Alveolo-palatal - Bilabial</td>
<td>-</td>
<td>-</td>
<td>[-jb-]</td>
</tr>
</tbody>
</table>

- pakche
- dekche
- jakche
- pakte
- dekте
- jakте
- pagbe
- degbe
- jagbe
- kactе
- mactе
- buctе
- mochte
- kaste
- mastе
- bustе
- mostе
- kajbe
- mojbe
- bujbe
| (viii) Retroflex Alveolo-palatal | [-tch-] | [kaťche] [piťche] [uťche] |
| (ix) Retroflex Dental | [-t-] | [kaťte] [piťte] [uťte] |
| (x) Retroflex Bilabial | [-db-] | [kaqbе] [piqbе] [uqbе] |
| (xi) Retroflex flap-Alveolo palatal | [-rч-] | [порче] [барче] [урче] |
| (xii) Retroflex-flap Dental | [-r-] | [порте] [барте] [урте] |
| (xiii) Retroflex-flap Bilabial | [-rb-] | [порбе] [барбе] [урбе] |
| (xiv) Dental Alveolo palatal | [-tch-] | [патче] [мотче] [гатче] |
| (xv) " " | [-dch-] | [садче] [кадче] [бедче] |
| (xvi) Dental Bilabial | [ -db- ] | [ padbe ] [ modbe ] [ gadbe ] |
| (xvi) Bilabial Alveo- palatal | [ -pch- ] | [ jopche ] [ djupche ] [ nipche ] |
| (xviii) Bilabial - Dental | [ -pt- ] | [ joppte ] [ djupte ] [ nippte ] |

2. Plosive - Liquid

<p>| (i) Velar Lateral | [ -kl- ] | [ pakle ] [ dekle ] |
| (ii) Velar - Velar fricative Lateral | [ -xl- ] | [ dexle ] [ raxle ] |
| (iii) Velar - Lateral | [ -gl- ] | [ jagle ] [ ragle ] |
| (iv) Alveolo- palatal - Lateral | [ -cl- ] | [ kacle ] [ rocle ] [ bacle ] |
| (v) &quot; &quot; | [ -chl- ] | [ muchle ] [ gochle ] |
| (vi) Alveolo-palatal Lateral | [-jl-] | [bajle] |
| (vii) &quot; &quot; | [-jhl-] | [bujhle] |
| (viii) Retroflex lateral | [-tl-] | [katle] |
| (ix) Retroflex flap lateral | [-pl-] | [pople] |
| (x) Dental Lateral | [-tl-] | [patle] |
| (xi) &quot; &quot; | [-dl-] | [jadle] |
| (xii) Bilabial Lateral | [-pl-] | [jople] |
| (xiii) &quot; &quot; | [-bl-] | [quble] |</p>
<table>
<thead>
<tr>
<th>Liquid Plosive</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Lateral-Alveolo-palatal</td>
<td>[-lch-]</td>
<td>[tulche]</td>
<td>[khelche]</td>
</tr>
<tr>
<td>(ii) &quot;Dental</td>
<td>[-lt-]</td>
<td>[tulte]</td>
<td>[khelte]</td>
</tr>
<tr>
<td>(iii) &quot;Bilabial</td>
<td>[-lb-]</td>
<td>[tulbe]</td>
<td>[khelbe]</td>
</tr>
<tr>
<td>(iv) Tap-Alveolo-palatal</td>
<td>[-rch-]</td>
<td>[korche]</td>
<td>[parche]</td>
</tr>
<tr>
<td>(v) &quot;Dental</td>
<td>[-rt-]</td>
<td>[korte]</td>
<td>[parte]</td>
</tr>
<tr>
<td>(vi) &quot;Bilabial</td>
<td>[-rb-]</td>
<td>[korbe]</td>
<td>[parbe]</td>
</tr>
</tbody>
</table>

4. Liquid

<table>
<thead>
<tr>
<th>Liquid Liquid</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Tap-Lateral</td>
<td>[-rl-]</td>
<td>[korle]</td>
<td>[parle]</td>
</tr>
</tbody>
</table>

5. Sibilant Plosive

<table>
<thead>
<tr>
<th>Sibilant Plosive</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) palato Alveolo-Alveolo-palatal</td>
<td>[-Sch-]</td>
<td>[bosche]</td>
<td>[afache]</td>
</tr>
<tr>
<td>Category</td>
<td>Example</td>
<td>IPA</td>
<td>Pronunciation</td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------</td>
<td>-----------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Dental</td>
<td>[-st-]</td>
<td>[bstə]</td>
<td>[bəstə]</td>
</tr>
<tr>
<td>Bialbial</td>
<td>[-ʒb-]</td>
<td>[bʒə]</td>
<td>[bəʒə]</td>
</tr>
<tr>
<td>Alveolar-lateral</td>
<td>[-ʃl-]</td>
<td>[boslə]</td>
<td>[bəslə]</td>
</tr>
<tr>
<td>Alveolar-palatal</td>
<td>[-mch-]</td>
<td>[kəmche]</td>
<td>[kəmche]</td>
</tr>
<tr>
<td>Alveolar-palatal</td>
<td>[-mt-]</td>
<td>[kəmtə]</td>
<td>[kəmtə]</td>
</tr>
<tr>
<td>Alveolar-palatal</td>
<td>[-nch-]</td>
<td>[janche]</td>
<td>[janche]</td>
</tr>
<tr>
<td>Alveolar-palatal</td>
<td>[-nb-]</td>
<td>[janbe]</td>
<td>[janbe]</td>
</tr>
<tr>
<td>Alveolar-palatal</td>
<td>[-ŋch-]</td>
<td>[bhanche]</td>
<td>[bhanche]</td>
</tr>
<tr>
<td>Alveolar-palatal</td>
<td>[-ŋt-]</td>
<td>[bhanṭe]</td>
<td>[bhanṭe]</td>
</tr>
<tr>
<td>Alveolar-palatal</td>
<td>[-ŋb-]</td>
<td>[bhanbe]</td>
<td>[bhanbe]</td>
</tr>
</tbody>
</table>

1. *Note on pronunciation.*
<table>
<thead>
<tr>
<th>Nasal Liquid</th>
<th>Bilabial Lateral</th>
<th>Alveolar Lateral</th>
<th>Velar Lateral</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i)</td>
<td>[-ml-]</td>
<td>[-nl-]</td>
<td>[-ql-]</td>
</tr>
<tr>
<td>(ii)</td>
<td></td>
<td>[-nl-]</td>
<td></td>
</tr>
<tr>
<td>(iii)</td>
<td>[-nl-]</td>
<td></td>
<td>[-ql-]</td>
</tr>
</tbody>
</table>

It should be noted that the articulation with [-ch-] ending is always characterized by breathy release. Where the initial component of the sequence is a fricative the articulation is characterized by slight aspiration. Articulations of all other sequences are characterized by absence of breathiness.

Where the second C element is a bilabial voiced plosive [-b-] the sequence as a whole is characterized by voicing and absence of aspiration. Where the second C element is a voiced alveolar lateral and the first C element is a voiced consonant, the articulation is voiced throughout, and where the first C element is voiceless the articulation is partly voiceless and partly voiced. Where the second C element is an alveolo-palatal voiceless aspirated plosive or dental voiceless unaspirated plosive and the first C element is one of
voiced [-t-], [-d-], [-r-], [-l-], [-m-], [-n-], [-η-], the articulation is voiced followed by voicelessness. Everywhere else, where the second C element is a dental voiceless unaspirated plosive the articulation as a whole is voiceless and the release is always unaspirated; and where the second C element is an alveolo-palatal voiceless aspirated plosive the articulation as a whole is voiceless and the release is always aspirated. ¹

See kms. of [degbe](No. 32) [jagle](No. 59) [pakle](No. 60) [jopte](No. 25).

The forms [korche], [korte] and [korle] have alternative realizations, respectively [kocche], [kotte] and [kolle] with some speakers. In the pronunciation of [korche], [korte] and [korle] two distinctly consonantal realizations are observed. In the alternative pronunciation, on the other hand, the tongue is not released after the first consonant of the sequence but is held tight for a considerable period of duration and the articulation is geminated. Thus we have [kocche], [kotte] and [kolle].

Pms. of the forms [korche](No. 68) [korte](No. 69) and [korle](No. 70) may be compared with those of [kocche](No. 71) [kotte](No. 72) and [kolle](No. 73).

Kms. of [korche](No. 63) and [korte](No. 61) may be compared with those of [kocche](No. 64) and [kotte](No. 62). They show different pictures.
The forms [kacte], [bācte] and [bucte] also have alternative pronunciations as [kaste], [bāste] and [buste]. In the articulation of [-ct-] sequence in the forms [kacte], [bācte] and [bucte], there is a release of air after [-c-] when the tongue moves from alveolar region to further forward and the tip is raised to touch the upper teeth. This release can be termed an anaptyctic vowel. 

In the articulation of the alternative form [kaste], the tip of the tongue is raised against the alveolar region and the air is released with friction. The articulation observed is a voiceless alveolar fricative. The tip of the tongue moves forward after that for the dental contact. The articulation of the sequence as a whole [-st-] is a tip up articulation, whereas in the case of [-ct-] in [kacte] the tip of the tongue is down during the first part of the closure, and it moves towards dental region giving rise to an anaptyctic vowel (e).

Heterorganic stem-ending sequences involving a nasal consonant are of only one type, e.g. -NC-. It is never a -CN- or an -NN-. The first element can be any of the three nasal consonants, bilabial [-m-], alveolar [-n-] and velar [-ŋ-], the second element being any one of [-ch-], [-t-], [-b-] and [-l-].

In -NC- sequences where the final element is a voiced
bilabial plosive [-b-] or a voiced alveolar lateral [-l-], the 
sequence as a whole is voiced. Where the final element is a 
voiceless dental plosive [-t-], or a voiceless alveolo-palatal 
plosive [-ch-] the articulation of the sequence is partly 
voiced and partly voiceless. With [-ch-] as the -C- element the 
release of the sequence is aspirated, elsewhere it is unaspir- 
ated. Nasality is not observed during the whole period of 
closure. The soft palate is raised during the later part of 
the oral closure.

In the pm. of the form [katle] [-tl-] sequence gives a 
wider wipe off covering an area from the first molar line 
extending as far as lateral incisor line. The form as a whole 
is characterized by retroflexion. See pm. of [katle](No.76)^(Appendix)
Compare this with pm. (No.57) of [patle] in which the wipe off 
COVERS zone 4 only.

See kms. of [jombe](No.72) and [mante](No.73)^(Appendix)
Pms. of the form [mante](No.67) shows wipe off covering 
an area from zone 1 to a part of zone 4.

Pm. of the form [manle](No.55) gives a different wipe off 
in the artificial palate. The wipe off covers part of zone 4 
and 3 and extends no further.

Pm. of the form [manbe](No.58) shows a wipe off extending 
upto the lateral incisor line.

In the articulation of [bhanche] there is movement of the 
body of the tongue from a velar articulation extending as far 
forward as zone 7 to a Palatal articulation in leaving an area 
in zones 5, 6 and 7 unwiped. See pm. of [bhanche](No.44)^(Appendix)
In -SP- sequences, where the -P- element is a voiced bilabial plosive [-b-], the sequence as a whole is voiced.

*Appendix*

See km. of [bozbe](No. 51). Pm. of [bozbe] shows palate alveolar contact. With [-ch-], [-t-] and [-l-] as second element the sibilant is a voiceless fricative.

See km. of [bozte](No. 52) *Appendix*

See pms. of [bojche](No. 77) [bozte](No. 78) and [bojle](No. 79) *Appendix*

6.2.2.4 Geminated clusters in the stem and ending junction.

There is a long consonantal articulation in the junction of the forms where the morphological stem syllable is open and the ending initial is the voiceless alveolo-palatal aspirated plosive [-ch-]. Thus, in the pronunciation of the forms [kacche] and [khacche] phonetically [-cche] is identical. But the structures of the two forms are different. The generalized structures of the forms whose morphological division is shown by a hyphen, are CVC-CV and CV-^pCV respectively. This characteristic feature of the second form (i.e. [khacche]), which I call geminated junction, is marked with a raised g over the initial -C- of the ending structure. e.g. [khacche] phonologically represented as CV-^pCV.

This feature of geminated junction is observed where the ending begins with an alveolo-palatal plosive [-ch-] in those grammatical forms of some CV- stem verbs as well as in all the polysyllabic (extended and non-extended disyllabic and
reduplicated trisyllabic) stem-patterns whether or not the stem pattern has already a consonant cluster (as in (C)VCCe- stem patterns) or a consonant sequence (as in the reduplicated stem pattern CVC/CVCe-).

Some examples are given with their phonological structures:

[khacche] CVg-CV
[kaṭacche] CVCe-g-CV
[uṭhacche] VCg-CV
[khawacche] CVg-CV
[kamṇacche] CVCCe-g-CV
[ulṭacche] VCg-CV
[pitpiṭacche] CVC/CVCe-g-CV

These geminated forms may be compared with the non-geminated forms with ending initiated by a voiced bilabial plosive [b-]. Thus,

[khabe] CV-CV
[kaṭabe] CVCe-CV
[uṭhabe] VCe-CV
[khawabe] CVe-CV
[kamṇabe] CVCCe-CV
[ulṭabe] VCg-CV
[pitpiṭabe] CVC/CVCe-CV

In the articulation of [cch-] in the form [khacche] the tongue is held for a period of longer duration than for [ch-] in [ache].
Kms. of [khacche](No. 30) and [khete](No. 29) may be compared. In the km. of [khacche] the period of closure shows 16 c/s., and the corresponding period of closure in the km. of [khete] shows 12 c/s.

Pms. of [khacche] shows similar wipe off as [kacche]. see pm [kacche](No. 66)(Appendix)
At the phonological level economy can be achieved by following certain means of abstraction.

Whenever two C elements are stated adjacently within a verbal form, they are either

(i) marked with a bracket over them in the generalized structure as \(-\tilde{C}C-\) with the implication that the consonants are within the morphological abstraction of a dissyllabic stem \((\tilde{C})VCCe^*\); or

(ii) marked with an oblique bar between them in the generalized structure as \(-C/C-\) the implication of which is that the two consonants are within the morphological abstraction of a reduplicated stem pattern \(CVCO/\tilde{C}VCo-\); or

(iii) they are marked with a hyphen in between them in the generalized structure as \(-C-C-\) with the implication that the two Cs belong to the two different morphological entities, stem and ending, that is to say, they occur at the junction of morphological abstractions stem and ending; or

(iv) marked with a small raised g over the right hand side of the hyphen which marks the stem-ending division in the generalized structure as \(-^gC-\) with the implication that the linking feature of stem and ending in the forms whose stem syllable is open and ending syllable is initiated by \([-ch-]\) is geminated.
PART THREE

THE PHONOLOGY

CHAPTER 7 ELEMENTS OF THE PHONOLOGICAL ANALYSIS.
CHAPTER 8 ENDING STRUCTURES.
CHAPTER 9 STEM STRUCTURES: THE V AND e ELEMENTS.
CHAPTER 10 VOWEL HARMONY
CHAPTER 11 THE C ELEMENTS OF STRUCTURES.
CHAPTER 7

The Elements of Phonological Analysis.

7.0 General Outline.

7.1 The Syllable Structure.

7.1.1 Syllable Division.

7.2 V, e and C elements of structure.

7.2.0 General outline.

7.2.1 V units.

7.2.3 C units.

7.3 Prosodic Elements of Structure.

7.3.0 General outline.

7.3.1 Prosodies of the syllable as a whole: y, w, n.

7.3.2 V̅ and V̅ prosodies.

7.3.3 h and h̄ prosodies.

7.3.4 r and r̄ prosodies.

7.3.5 n and n̄ prosodies.

7.3.6 Junction prosodies.

7.3.6.1 y and w prosodies.

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CHAPTER 7

The elements of the phonological analysis.

7.0 The phonological analysis is stated by means of certain elements which are set up for this purpose. These elements are word, syllable, phonematic units and prosodic features. All these elements are elements of the phonological analysis and must not be confused with elements established at another level of statement, e.g. phonetic or grammatical level, though the phonological elements may correspond to some elements established at other levels.

The word has status primarily as a unit of grammatical structure. And the verb as a word class category is delimited and defined through such syntactical criteria as place and order in the sentence, through colligational relations of agreement, and concord of tense, person and grade with the nominal, and where the verbal piece contains more than one unit through the relations between the units of the verbal piece in those syntactical constructions. However, since every word is characterized by phonological and phonetic features, the verb form, though primarily a grammatical element, is also recognized as having phonological status as an element in the phonological analysis. The structure of the form is described in terms of syllables and prosodic features.

The syllable has status at both phonological and phonetic levels. The phonetic syllable and the phonological
syllable do not always correspond exactly. The structure of the phonological syllable is stated in terms of phonematic units and prosodic features.

Phonematic units are phonological elements having phonetic exponents which may be referred to a given place in the syllable. Phonematic units are of two kinds. Consonantal units and vocalic units, which will be referred to as C and V units. There is, in addition, a phonological syllabic unit which may be referred to as schwa unit throughout this analysis.

Prosodic features are phonological elements having phonetic exponents which either extend over more than one place in the structure or have implications over more than one place in the structure in that they delimit a structure from preceding and following structures. Prosodic features may be stated for a word as a whole or some part or parts of a word, for a syllable as a whole or some part or parts of a syllable.

1. Phonematic units can not be identified with the usual 'phonemes' set up to handle the phonological analysis of other kind. (See W.S. Allen, B.S.O.A.S. Vol.16, 1954, p.556), nor are prosodic features to be equated with the suprasegmental phonemes of 'phonemic phonological analysis'. There will be, of course, some similarity between the phonetic exponents of these two pairs of phonological categories, but since the systems of which they are members are different any attempt to make one to one identifications is bound to be misleading.

7.1 The Syllable Structure

The structure of the syllable will be described in terms of systems appropriate to the phonematic units and in terms of systems appropriate to the prosodic features, and in terms of two places, initial and final. Different statements are made for the systems, whether prosodic or phonematic, which are stated for these places. 1

Every syllable has a nucleus which consists of a V i.e. the syllable nucleus is always characterized by a vocalic articulation. 2 At the phonological level of abstraction the syllable nucleus is stated either as V, a term in a vowel system, or as e a term in a syllabic system. The generalized structures in colloquial Bengali verbal form are eight in number. A syllable may comprise this nucleus alone or a nucleus that is preceded and/or followed by a C unit. The eight types of syllables found are: V, CV, e, Cə, VC, eC, CVC and CəC.

Thus it will be seen that every syllable has a V or e unit but not every syllable has a C unit.

1. This is in marked contrast with a 'phonemic' phonological analyses in which one overall system is set up. For example, in such an analysis two phones not in complementary distribution at one point in the structures are assigned to two different phonemes and this distribution is maintained even at those points in the structure where no contrasts exists and the two phones are in complementary distribution. The treatment adopted in this thesis, however, would set up different systems for the two places of the structures. It is polysystemic, whereas the phonemic treatment is monosystemic.

2. In my dialect, however, syllabic consonantal articulation is also found.
So far as the verbal piece is concerned, e and Ce are restricted to the final syllable of the dissyllabic (extended and non-extended), and trisyllabic stem and eC to the first syllable of the ending. The rest have no such restrictions. e can not be an element of structure in the first syllable of the verbal form.

7.1.1 Syllable Division

Initial C- belongs to the same syllable whose nucleus is the following -V or -e. The final -C belongs to the same syllable whose nucleus is the preceding V- or e-. Every intermediate single C belongs to the same syllable with the following -V or -e. Where two adjacent -CC- elements are stated, the first C belongs to the syllable whose nucleus is the preceding V- or e-, and the second to the syllable whose nucleus is the following -V or -e. This point is illustrated in the following examples.

[ultabe] VC | Ce | CV
[khawabe] CV | e | CV
[kamrae] CV | Ce | V
[kaṭif] CV | CeC |
Where two $V$ elements or $e$ and $V$ or $V$ and $e$ or two $e$ elements are stated adjacently in any generalized structure, such abstraction represent two syllables in each case. \(^1\) e.g.

\[
\begin{align*}
[khae] & \quad CV \mid V \\
[ka\text{ṭ}ae] & \quad CV \mid C \varepsilon \mid V \\
[kha\text{ʃ}] & \quad CV \mid eC \\
[ka\text{ṭ}a\text{ʃ}] & \quad CV \mid C \varepsilon \mid eC
\end{align*}
\]

It will be seen that the phonological syllable division cuts across the morphological abstraction made as stem and ending. Thus, in the generalized structure CVCV of the form $[ka\text{ṭ}e]$ 'he cuts' the morphological division of stem and ending is CVC-V, but phonologically syllables are divided as $CV \mid CV$.

7.2 $V$, $e$ and $C$ elements of structure.

7.2.0 A generalized statement of the maximum number of $V$ and $C$ units set up in this thesis will be made here. A detailed statement of $V$ and $C$ systems required to be stated where $V$, $e$ and $C$ are elements of structure will be made in the following chapters in which each stem or ending structures will be handled separately. \(^2\)

---

1. Their phonetic exponents may sometimes be a single vowel or a diphthongal articulation. e.g. $[ka\text{ṭ}a\text{ʃ}]$ CVC-eC. See \(^8\) and also \(^{10.4}\) for phonetic exponents of the forms in endings $[-i\text{ʃ}]$ $[-uk]$ etc.

2. This has been studied from a multi-structural point of view. cf. In his theory J.R. Firth considers language from a multi structural stand point when he talks of 'structures' in the plural. See for instance, 'Structural Linguistics', T.P.S., 1956, p. 89 ff.
Prosodic and syllabic systems will also be generalized in this chapter. The detailed prosodic features of the stem and endings require separate treatment in particular chapters concerned, rather than in this generalized statement.

7.2.1 V Units

Three V units representing three grades of openness is stated in the present thesis. They are:

- ι the close unit,
- ε the mid unit, and
- α the open unit.

In reading the phonological formulae these three symbols may be read as the Iota, the Epsilon, and the Alpha unit respectively.

The phonetic qualities, such as, frontness and backness, liprounding and unrounding, are stated as exponents of syllable prosodies and not as characteristics of the vocalic articulation alone. Being stated prosodically for the syllable as a whole these qualities are equally characteristics of the consonantal articulations as well.

V systems are set up for the first syllable of the stem and for all the syllables of the endings, except where the initial element of the ending structure is α-

The vocalic qualities observed in syllables for which ι is stated as an element of structure include closeness.

Examples: C₁C₁: [piṭi] 'I beat',
[tuli] 'I raise'.
The vocalic qualities in syllables for which ε is stated as an element of structure include from half-closeness to half-openness.

Examples:
\[ C\epsilon C- \quad [\text{petu}] \quad 'to beat' \]
\[ [\text{tola}] \quad 'to raise'. \]

The vocalic qualities in syllables for which α is stated as an element of structure include from half-openness to openness.

Examples: \[ C\alpha C- \quad [\text{dakha}] \quad 'to see' \]
\[ [\text{bola}] \quad 'to say' \]
\[ [\text{kata}] \quad 'to cut'. \]

The vocalic qualities observed in syllables for which \( \iota, \varepsilon \) or α is stated as an element of structure can be shown on a vowel diagram with reference to Cardinal vowel qualities.
The vocalic qualities in syllables of which e, ε or α is an element of structure can be plotted in range , , and respectively.

One syllabic unit e is stated for the second syllable of the dissyllabic stem and also for the initial syllable of the ending. Unlike V, e does not belong to the system of commutable terms for the vowels, and as such has a different linguistic value. The vocalic qualities in syllables for which e is stated as an element of structure include closeness, half-closeness, half-openness or openness. These qualities may be stated in terms of the place of the syllable in the form. And therefore, it is convenient to refer to e as syllabic.

Examples: CVC-εC [kaṭiʃ], [kaṭun], [kaṭuk], [kaṭen].

CVCe-V [kaṭai].

CVCe-CV [kaṭabe], [kaṭate].

CVCe-εCV [kaṭieche].

A word has to be said about the syllabic e. Schwa has been treated at two different levels - phonological and grammatical - in two different meanings. It has distinctly different functions and status at different levels. The use of this therefore must not be confused.

At the grammatical level e is part of a morphological structure stem or ending. It occurs at the stem final syllable in the dissyllabic and trisyllabic stem, and ending initial in
the monosyllabic, dissyllabic and trisyllabic ending, and has a grammatical status at that level. The implication of e at the grammatical level is that the structure belongs to a particular category. A monosyllabic stem is always found without a e, e occurs only in a dissyllabic (extended and non-extended) and a trisyllabic (reduplicated) stem. That is to say, so far as the morphological stem abstraction is concerned e never occurs in the stem of a non-causative verbal form, whereas it always occurs in the stem of a causative verbal form. This is one of the formal criteria by which distinction could be made between an active and a causative verbal form.

At the phonological level schwa in the stem structure stands for syllabic articulation, the phonetic realization of which is restricted to (i) an open vowel, halfway between front and back, without lip-rounding, or (ii) close front without lip-rounding according to the environment and relation of the following V or e element of structure. This is shown in the chapter dealing with vowel harmony. Its restriction to the dissyllabic stem pattern and trisyllabic stem pattern of the reduplicated form is also of phonological relevance.

Similarly, e in the ending structure also has two meanings at the two different levels. At the grammatical level e occurs in the ending initial position and never any other position. It occurs in monosyllabic structure -e© which is the only monosyllabic structure constituted of two elements e and © in that order; all the other monosyllabic ending structures

1. See Chapter 10.
are either open, as -V, -CV, or closed as -CVC or -VC. It also occurs in the initial position of dissyllabic and trisyllabic ending structures whose initial element is not a C. It is as such a determinator of the morphological ending abstraction at that level. The phonetic expression of e in the ending structure has five alternatives: (i) front unrounded close vowel [i], (ii) front unrounded half-close vowel [e], (iii) back rounded close vowel [u], (iv) back rounded half-close vowel [o], or (v) nil. In ending structure e has no phonetic expression of a neutral open vowel [a]. And as such it has a different linguistic value than V as a system at the phonological level.

Since the phonetic exponent of e is open neutral, close front, close back, half-close front, half-close back vowel or nil according to the vocalic articulation of the following syllable, and according to its place in the structure of the form, it is convenient to refer to e as a syllabic. The relation between the open neutral vowel and close front or half-close front, or close back or half close back vowel or nil is treated in terms of the alternative phonetic exponents of a single phonological category. The exponent of e is stated in relation to the place of the syllable in the word. The features of openness or closeness, frontness or backness have been treated prosodically, and are clearly brought out in the phonological section.

1. In many cases, some words with e and V ending show two alternatives Pronunciations which may be transcribed as EENJ and EENJ, e.g. [dækken] and [dækken]. For pronunciation of other forms.
7.2.3 C Units

Four C sub systems are stated in this thesis. They are
1. Plosive,
2. Liquid,
3. Sibilant, and

In order to state the phonological implications of these terms it is necessary to refer to some of the prosodic features characterizing the syllables in which the terms in these sub-systems are elements of structure. The prosodic features referred to here will be discussed in details in the following section.

1. Plosive Sub-system.

Four terms b, d, j and g are stated for the plosive sub-system. Each is a C element of structure in syllables characterized by h or \( \overline{h} \) and v or \( \overline{v} \) prosody. Of these terms b is the bilabial unit, d is the apical unit, and g is the dorsal unit.

Examples:

Bilabial b unit [pete] 'he beats'
[bole] 'he says'

---

2. Infra. § 7.3.
3. See for phonetic implication of h and \( \overline{h} \), v and \( \overline{v} \) and r and \( \overline{r} \) Prosodies, § 7.3.2-4 (infra)
Two terms $l$ and $r$ constitute the Liquid Sub-system. Each is a C element of structure in $\bar{h}^{-1}$ and $v$ syllables. Of these two terms $l$ is the lateral unit and $r$ is the tap unit. Both $l$ and $r$ are apical units.

Lateral unit $l$ - [lekhe] 'he writes'.

Tap unit $r$ - [rakhe] 'he keeps'.

3. Sibilant sub-system

$s$ constitute the sibilant sub-system. It is a C element of structure in syllables characterized by $\bar{h}$ and $v$ or $\bar{v}$ prosodies; $s$ is an apical unit.

Example: Apical unit $s$ - [lekhe] 'he learns'.

1. $h/\bar{h}$ prosodics are not the only prosodics characterizing C-initial syllables. But it is convenient to distinguish between the four sub-systems in this way with reference to the $h/\bar{h}$ prosodies on the one hand and number of terms stated for each sub-system on the other.
Three terms $m$, $n$, $\eta$ constitute the nasal sub-system. Each is a C element of structure in $\overline{h}$ and $v$ syllables. $m$ and $n$ are elements of structure in the syllable in all positions, whereas $\eta$ is restricted in so far as it is not found in word initial position. Of these three terms constituting the nasal sub-system, $m$ is the bilabial unit, $n$ is the apical unit and $\eta$ is the dorsal unit.

Examples:

Bilabial unit $m$ \([\text{mare}] \ 'he kills'\)
Apical " $n$ \([\text{nace}] \ 'he dances'\)
Dorsal " $\eta$ \([\text{bhaqe}] \ 'he breaks'\)

Labial, Apical, Dorsal, Plosive, Liquid, Sibilant and Nasal - are all phonological terms.

In making the above phonological statement of C - sub-system and the terms in this sub-system, such phonetic characteristics as breathiness and absence of breathiness, voicing and absence of voicing, retroflexion and absence of retroflexion etc. which are traditionally attributed to the consonants, are abstracted and stated in terms of prosodies characterizing the syllable or a group of syllables.

7.3 Prosodic elements of Structure.

7.3.0 In order to focus attention on the phonological features the following prosodies will be stated.

1. See Chapter 6
(i) Prosodies of the syllable as a whole:
  y, w, and  

(ii) Prosodies of the syllable initial or final:
  \( v, \) non-\( v, \) h / non - h, r / non - r and  
  n / non-n.

(iii) Prosodies of junction:
  y, w and absence of these; and g- and non-g.

\( y^- \) Prosody has the phonetic implication of frontness and absence of liprounding in articulation.

\( w^- \) Prosody has the phonetic implication of backness and presence of liprounding in articulation.

\( y \) Prosody has the phonetic implication of openness and absence of liprounding, neither front nor back in articulation.

\( v^- \) Prosody has the phonetic implication of voicing in articulation.

Non-\( v^- \) Prosody has the phonetic implication of absence of voicing in articulation.

\( h^- \) Prosody has the phonetic implication of breathiness in articulation.

Non- \( h^- \) Prosody has the phonetic implication of absence of breathiness in articulation.

\( r^- \) Prosody has the phonetic implication of retro -
  flexion in articulation.

Non-\( r^- \) Prosody has the phonetic implication of absence of retroflexion in articulation.
n- Prosody has the phonetic implication of nasality in articulation.

Non-n- Prosody has the phonetic implication of absence of nasality in articulation.

g- Prosody has the phonetic implication of gemination in articulation.

non-g- Prosody has the phonetic implication of absence of gemination in articulation.

For notational clarity and typographical economy non-v, non-h, non-r, non-n and non-g prosodies will be denoted by leaving them unmarked. When, however, it is necessary to show contrast they will be denoted with a bar over them.

All the prosodies stated for syllable as a whole, syllable initial, syllable final or junction will be denoted by superscript \( n/n \), \( v/v \), \( h/h \), and \( r/r \), over the syllable where they are stated as an element of structure. y, w or g prosody stated for junction is denoted by superscript y, w, or g over the junction where it is stated as an element of structure.

The following examples will illustrate this.

\( y: yCV yCV \mid \text{[ke} \text{\c{e}] 'having cut'} \)

\( w: wCV yCV \mid \text{[ku} \text{\c{e}] 'having cut'} \)

\( v: vCV yCV \mid \text{[ba} \text{\c{e}] 'he distributes'} \)

\( h: hCV yCV \mid \text{[kha} \text{\c{e}] 'he works'} \)

\( r: rCV yCV \mid \text{[tane] 'he pulls'} \)

\( n: nCV yCV \mid \text{[nace] 'he dances'} \)
More than one prosodic feature stated for a syllable or any part of it will be denoted by superscript notation side by side, except where n prosody is stated as an element of structure. n prosody is always accompanied by v prosody and never by \( \overline{v} \) prosody. For notational economy, therefore nv prosodies will always be denoted by a superscript n and leaving v unmarked. Elsewhere the double or treble prosodies will be marked.

Examples:

\[ \begin{align*}
\text{vho}_C V & \ y_C V & [\text{bhabe}] & '\text{he thinks!}' \\
\text{vhr}_C V & \ y_C V & [\text{dake}] & '\text{he calls!}' \\
\text{vhr}_y C & \ y_C V & [\text{heke}] & '\text{he is held up!}' \\
\text{vhr}_w C & \ y_C V & [\text{dhuке}] & '\text{he enters!}' \\
\text{vno}_C V & \ y_C V & [\text{nace}] & '\text{he dances!}'
\end{align*} \]

The phonetic significance of these prosodic characteristics will now be discussed in detail.

\[ \text{7.3.1 } y, w, v - \text{Prosodies.} \]

It has been observed that the syllable is characterized by (i) frontness and absence of lip rounding, (ii) backness and presence of liprounding or (iii) openness and absence of liprounding, frontness and backness.\(^1\) These three features I

\[ \text{1. These features of frontness and backness etc. are not only characteristic of the vowels, but also of the consonants.} \]
propose to call \( y \), \( w \), and \( x \) prosodies respectively.

Of these phonetic criteria, liprounding and absence of liprounding are observed at the level of perception. In order to illustrate further the criteria of frontness, backness and openness in quality I cite some palatographic evidences and discuss the relevant feature in them. Observations of these phonetic qualities can be made through pms. which show certain characteristic correlations with the stating of \( y \)- prosody on the one hand and non-\( y \) (i.e. \( w \) or \( x \)) prosody on the other, or \( w \)- prosody on the one hand and non-\( w \) (i.e. \( y \) or \( x \)) prosody on the other. This will be illustrated with reference to the following pms.

\begin{align*}
\text{pm\#. No. 39. [nibi]} & \quad YCVCV \\
\text{pm. No. 36 [nabe]} & \quad \wp CVCV \\
\text{pm. No. 81 [nobo]} & \quad \wp CVCV
\end{align*}

The stem syllable in all three forms involves an apical articulation. In [nibi] it is \( y \) prosodic, in [nobo] \( w \) prosodic and in [nabe] \( x \) prosodic.

The \( \text{pm.} \) of [nibi] shows a wipe off covering a part of zone 4 and the whole of zone 3. The wipe off reaches as far forward as lateral incisor line. In \( \text{pm.} \) of [nabe] the wipe off covers a part of zone 4 and a part of zone 3. The \( \text{pm.} \) of [nobo] shows a wipe off covering mainly zone 4 and extends a little further forward than canine line.

\( \text{pm.} \) 39 indicates that during the pronunciation of [nibi] the apical contact between the tip and blade of the
tongue and the artificial palate reached as far forward as the lateral incisor line. This correlate with the stating of y prosody as an element of structure for the stem syllable in [nibi].

Pm. 36 indicates that during the pronunciation of [nabe] the apical contact between the tip and blade of the tongue and the artificial palate reached as far forward as middle of zone 3, and no further. This correlate with the stating of w prosody as an element of structure for the stem syllable in [nabe].

Pm. 81 indicates that the contact of the tip and blade of the tongue reaches a little further forward than the canine line but does not extend so far forward as the middle of zone 3. This correlate with the stating of w prosody as an element of structure for the stem syllable in [nobo].

The vocalic qualities observed in syllables characterized by y, w and v prosodies may be shown thus:

| YCVC- | vCVC- | WCVC- | YCV| | vCVC- | WCVC- |
|-------|-------|-------|-----| |-----|-------|
| Close | [i]   | [u]   | [pit] | [ku|t] |
| Mid   | [e]   | [o]   | [pet] | [kot] |
|       | [æ]   | [o]   | [dækh] | [bol] |
| Open  | [a]   |       |       | [kat] |

7.3.2 y and v prosodies.

These prosodies are stated for all syllables.

Where yvis stated as an element of structure, the consonantal articulation of the syllable for which it is
stated are characterized by voicing. Where $\bar{v}$ is stated as an element of structure the articulations are voiceless.

These phonetic criteria characterizing the syllables for which $v$ and $\bar{v}$ prosodies are stated, will be illustrated with reference to the following kms.

Km. $\underline{24}$ [jope]
Km. $\underline{25}$ [jopte]
Km. $\underline{26}$ [jobbe].

These kms. provide simultaneous mouth (M) and Larynx (L tracings.

It will be seen that there are prominent wave forms in the L tracing of the word [jobbe] parallel to the closure in the M tracing. In the L tracings of the words [jope] and [jopte] there are no prominent wave forms parallel to the closure phase. The wave forms in the L tracing of km. of [jobbe], parallel with the closure in M tracing correspond to the vibration of the vocal cords during the closure for the stop articulations of syllable 2 of these forms.

The absence of prominent wave forms in the L tracings of the forms [jope] and [jopte] during the closure in the M tracings corresponds to the absence of vibration of the vocal cords during the stop phase of the consonantal articulations of syllable 2.

For this feature of voicing as in [jobbe], $v$ prosody is stated as an element of structure for syllable 2. For the feature of absence of voicing in [jope] and [jopte] $\bar{v}$ prosody is stated as an element of structure for syllable 2.
Both $v$- and $\bar{v}$- prosodic syllables are $h$ or $\bar{h}$ prosodic.¹

These prosodies are stated for both stem syllable initial and final and also for ending syllables. The Consonantal articulation of the syllable for which $v$ or $\bar{v}$ is stated as a prosody, is characterized by voicing or absence of voicing in articulation.

Where $v$ is stated as an element of structure in the ending syllable initial the consonantal complex as a whole is characterized by voicing.² This justifies for $v$ or $\bar{v}$ as an abstraction.

Thus, $C \bar{V} C - [\text{ka} \bar{t} \text{e}]$

$C V C - [\text{ka} \delta \text{be}]$

The complex is characterized by $h/\bar{h}$ prosody as well.

e.g. $V \bar{h} C - [\text{u} \delta \text{the}]$ 'he gets up'

$V C - [\text{u} \delta \text{be}]$ 'he will get up'.

7.3.3 $h$ and $\bar{h}$ prosodies.

Where $h$ is stated as an element of structure, the articulation of the syllable for which it is stated, is characterized by breathiness. Where $\bar{h}$ is stated as an element of structure the articulation of the syllable for which it is stated, is characterized by absence of breathiness.

---

¹ Infra. See § 7.3.3.
² These characteristics are dealt with in detail in Chapter 11.
The phonetic criteria characterizing the syllables for which \( h \) and \( \bar{h} \) prosodies are stated, will be discussed with reference to the following kms.

Km. No. 27 \[d\acute{a}khe\]
Km. No. 28 \[dekte\]

These Kymograms provide Mouth tracings. In the km. No. 27 there is an upward displacement at the beginning of the second group of prominent wave forms which correspond to the vocalic articulation of the second syllable. This upward displacement corresponds to the increased breathforce in the second syllable of the form \[d\acute{a}khe\] and correlates with the stating of \( h \) prosody as an element of structure of the second syllable of the form.

No upward displacements are observed in the M tracings of the kms. of the word \[dekte\] at the beginning of the second set of prominent wave forms, which correspond to the absence of aspiration in the articulation of the forms. This feature of absence of breathiness in articulation correlates with the setting up of \( \bar{h} \) prosody as an element of structure of the second syllable.

The glottal fricative \([h]\) is not generalized in terms of a C element of structure. Aspiration is stated as a prosody of the syllable as a whole.
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<td>27</td>
<td>28</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>[dēkhe]</td>
<td>[dekte]</td>
<td>[khete]</td>
<td>[khashe]</td>
</tr>
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</table>
Aspirate [h] is considered as just a manner of initiating or terminating a vowel, e.g. [hoe], where [h] has no distinctive function but only serves to add a stress breath glide while the vocal cords are being drawn near together for the following vowel. In such cases the onset of the breath flow and the on set of the glottal vibration are consecutive.

For phonological purposes therefore, it is not treated as a separate phonematic element. The aspiration and non-aspiration are a property of the syllable as a whole and not of a consonant or vowel as such.

The glottal fricative [h] differs from the consonants generalized in terms of C as follows:

1. [h] has a more limited distribution than the consonants generalized in terms of C. For instance, (i) [h] occurs only initially, and never occurs intervocalically nor finally in a verbal form. (ii) h system in VC-stem structure excludes close front and back vowels.

Examples.

- [hale] [hote] [hate]
- [hoe] [hafe]
- [hane]
- [hare]
- [hage]

1. About h-colouring of the vowels in Hindustani, See Firth’s Introduction to Harley’s Colloquial Hindustani, pp.XV-XVI.
2. Such examples as [koh], [gah], [roh], [boh], [noh], [bah] and [nah] are used only in poetry and standard literary prose. (See also M.A.Hai, Thesis, p.127) Also in poetic use the distribution is limited to a preceding [ə] and [a]. [h] does however occur in final and in medial positions in other word classes. e.g. [uh], [ah], [jah], [bah], etc.
2. It is convenient to make an economic and consistent statement of the differences, such as between [hase] and [ase] and between [hane] and [ane], by treating aspiration in terms of a prosodic element of structure rather than by setting up a different phonematic unit. Being treated prosodically then, aspiration is stated as an exponent of h-prosody, observed in the first syllable in the examples cited above.

V initial stem syllables are, then, either h or h prosodic in structure, e.g.

\[ \tilde{h}V^{-} \] [hase], 'he laughs'  [hane] 'he strikes'
\[ h\tilde{V}^{-} \] [hote] 'he retreats'.
\[ \tilde{h}V^{-} \] [ase] 'he comes'  [ane] 'he brings'.
\[ u\tilde{he} \] 'he gets up.'

In forms of VC- stem structure h prosodic syllables include e and a units and h prosodic syllables i and a, e.g.\[ hV_{2}C^{-} \] V/wC- [heli], [hoti], \( \nu\alpha C^{-} \) [hane];
\[ \tilde{h}V_{2}C^{-} \] \( \nu\omega C^{-} \) [uthe], \( \nu\alpha C^{-} \) [ane].

h and h prosodies are stated both for C and V initial syllables, e.g.

\[ hC^{-} \] [kha\( \tilde{e} \)] 'he works!'
\[ hV^{-} \] [hane] 'he strikes!'
\[ \tilde{h}C^{-} \] [kate] 'he cuts!'
\[ \tilde{h}V^{-} \] [ane] 'he brings!'
h and \( \overline{h} \) as prosodies are stated for stem structures whose initial and final element is a P. For ending structures, however, h and \( \overline{h} \) is stated for the structure whose initial element is C- or \( \varepsilon \)C-.

In the ending structures h prosodic syllables are always voiceless, \( \overline{h} \) prosodic syllables are either voiced or voiceless. e.g. -C- [k\( \text{a} \text{t} \text{c} \text{h} \text{e} \)], -C- [k\( \text{a} \text{t} \text{t} \text{e} \)], -C- [k\( \text{a} \text{q} \text{b} \text{e} \)].

In the stem structures both initial and non-initial consonantal articulations in both h and \( \overline{h} \) syllables are either voiced or voiceless. Vocalic articulations in both h and \( \overline{h} \) syllables are voiced.

Thus,

\[
\begin{align*}
\text{ vh } & C- [k\text{h}\text{a}\text{t}\text{e}] \quad \text{'he works'}.
\text{ vh } & C- [k\text{a}\text{t}\text{e}] \quad \text{'he cuts'}.
\text{ vh } & C- [g\text{a}\text{l}\text{e}] \quad \text{'he strains'}.
\text{ vh } & C- [g\text{h}\text{a}\text{t}\text{e}] \quad \text{'it decreases'}. \\
\end{align*}
\]

Notice that some forms of certain verbs require h prosody as an element of structure, whereas other forms of the verbs do not. e.g. \( H \text{C- [u}\text{t}\text{h}\text{e}] \quad \text{'he gets up'}.
\text{ \( \overline{h} \) -C- [u}\text{t}\text{t}\text{e}] \quad \text{'you used to get up'}. \\

This justifies the abstraction of h as a prosody.

7.3.4 r and \( \overline{r} \) prosodies.

These prosodies are stated only for syllables whose initial or final C element of structure is the apical plosive unit d. Where r is stated as a prosodic element of structure.
the apical plosive articulation is retroflex, the area of contact being zone 5-3. Where \( \text{r} \) is stated as a prosodic element of structure the apical plosive articulation is dental, and is not characterized by dark quality associated with retroflexion, the area of contact being zones 4-1.

\( \text{r} \) and \( \overline{\text{r}} \) prosodies are stated for both C- initial and-\( \text{C}[^{\#}] \) final syllables. Retroflexion and absence of Retroflexion are not the features of the consonantal articulation alone, but are the features of the syllable as a whole. Where \( \text{r} \) is an element of structure the articulations in the syllable as a whole is characterized by \( \text{r} \)-Colouring. The presence or absence of \( \text{r} \) - colouring is observed at the level of perception.

During the apical contact in \( \text{r} \) - syllables the tip of the tongue curls back giving a dark quality to the whole utterance. Palatograms also provide evidence for the apical contact which correlate with the stating of \( \text{r} \) prosody.

The following pms. are cited in order to illustrate the apical contact in \( \text{r} \) and \( \overline{\text{r}} \) syllables:

Pm. No.13 [\( \text{\textregistered} \text{ tok} \)]

Pm. No. 4 [\( \text{tap} \)]

The wipe off in zones 4 and 3 in Pm. No.13 corresponds to a retracted tongue-tip-up contact against the artificial palatal, and correlate with the stating of \( \text{r} \)-prosody for the stem syllable of [\( \text{\textregistered} \text{ tok} \)].

It The wipe off in zones 4-1 in Pm. No.4. corresponds to the fronter (dental) tongue-tip-contact in the artificial
13. [tok]

4. [tap]
palate and correlates with the stating of \( \bar{r} \) prosody for the stem syllable of the form \[ tap \].

\( r/\bar{r} \) prosody is stated for the syllable where the phonematic unit \( d \) is stated as an element of structure. \( r/\bar{r} \) prosodies are stated only for the stem initial or final and never for the ending. Where \( r \) is stated as an element of structure in any stem syllable initial, dark quality characterizes the syllable.\(^1\) Where \( r- \) is stated as an element of structure in stem syllable final, the \( r- \) colouring characterizes the following syllable if the ending is a \(-V-\) or \(-\mathbb{A}\) initial structure. In case of \( C- \) initial ending the \( r- \) quality characterizes the following consonantal and vocalic articulations if the ending initial consonantal articulation is voiced bilabial plosive \([-b-]\) or lateral \([-l-]\). e.g. \([k\bar{aq}be], [k\bar{a}l\check{e}]\). In other cases, \( r- \) colouring does not affect the following syllable. This dark quality in articulation culminates in a retroflex apical contact in which the tip of the tongue curls upwards.

\(^1\) It is observed in this thesis that the dark quality in articulation characterizing \( r- \) prosodic syllables is not so distinct in Bengali as in other modern Indian languages, and that the retroflex apical contact in most utterances in Bengali is not so far back as the retroflex apical contact in other modern Indian languages, such as Hindi, Marathi, etc. (See B.N. Prasad, Phonetics and Phonology of Bhujpur; Ph.D. Thesis, University of London, 1950, and R.K. Rastogi, Nasals and Nasalization in Hindi, M.A. Thesis, University of London, 1960.). M.S. De Silva in his Thesis observes the same features in Sinhalese, as in Bengali. (See M.S. De Silva, The Verbal Piece in Colloquial Sinhalese, 'A Phonological Study', Thesis submitted for the degree of M.A., University of London, 1958).
r and \( \overline{r} \) prosodic syllables may be further characterized by either voicing or voicelessness, aspiration or absence of aspiration. That is, both \( r \) and \( \overline{r} \) are elements of structures in stem initial syllables with hv, \( \overline{hv} \), \( h\overline{v} \) or \( \overline{hv} \), and in stem final syllables with \( \overline{hv} \), \( h\overline{v} \), \( \overline{hv} \) occur. \( r\overline{hv} \)-syllables are not found in stem final position.

Thus,

\[
\begin{align*}
\overline{r}hv -C- & \quad [\text{ka}^\text{\textth e}] \\
rhv -C- & \quad [\text{u}\text{\textth e}] \\
r\overline{hv} -C- & \quad [\text{ka}\text{\textdq be}] \\
\overline{rhv} -C- & \quad [\text{pate}] \\
\overline{rhv} -C- & \quad [\text{k}\text{\textad e}] \\
r\overline{hv} -C- & \quad [\text{mo}\text{\textthe}] \\
\overline{rhv} -C- & \quad [\text{Jadhe}] \\
\end{align*}
\]

7.3.5 \( n \) and \( \overline{n} \) prosodies.

Where \( n \) is stated as an element of structure, the articulation of the syllable for which it is stated, is characterized by nasality. Where \( \overline{n} \) is stated as an element of structure the articulation of the syllable for which it is stated, is characterized by absence of nasality.

This phonetic criteria characterizing the syllables for which \( n \) and \( \overline{n} \) prosodies are stated, will be discussed with reference to the following kms.
These k.ms. provide simultaneous nasal (N) and Mouth (M) tracings.

The km. of [nace] shows prominent wave forms on the N line before X, and they continue until before the closure after the vocalic articulation of the first syllable. The km. of [käpe] shows prominent wave form from the point X and up to the end of vocalic articulation. The km. of [kace] does not show such prominent wave forms on the N line.

Presence of higher amplitude in the wave form on the N line of the forms [nace] and [käpe] correspond to the nasality in the articulation and absence of higher amplitude of the wave forms on the N line of the form [kace] corresponds to the absence of nasality in the articulation.

For these features of nasality in the articulations of [nace] and [käpe] n prosody is stated as an element of structure. For the features of absence of nasality, as in the case of [kace] n prosody is stated as an element of structure.

It should be noted that n prosodic syllables are always v prosodic and never v prosodic and n prosodic syllables may either be v or v prosodic. n and v are therefore mutually exclusive.
7.3.6. **Prosodies of Junction.**

It has been shown that the palatal semi-vowel \( \text{\textipa{y}} \) and \( \text{\textipa{w}} \) represent I.P.A. palatal semi-vowel \( \text{\textipa{j}} \) and I.P.A. labio velar semi-vowel \( \text{\textipa{w}} \). I have consistently used \( \text{\textipa{y}} \) instead of \( \text{\textipa{j}} \) as \( \text{\textipa{j}} \) has been used for I.P.A. \( \text{\textipa{dʒ}} \).
labio-velar semi vowel [w] are not generalized in terms of C-elements of structure. [y] and [w] are stated as exponents of palatal type of linking and labio velar type of linking respectively, which are prosodies of junctions.

7.3.6.1  [y] and [w]

Palatal type of linking (denoted by y) and labio-velar type of linking (denoted by w) which are prosodies of junction characterize the linking feature of stem and ending of the forms in CV + V structure, and the linking feature of the stem syllables in dissyllabic stem structures CVe-.

Thus:

\[
\begin{array}{l|l}
\text{y} & \text{[-e] (Non-finite) ending:} \\
\text{y: CV -V} & \\
\text{[diye]} & \text{'having given'.} \\
\text{[kheye]} & \text{'having eaten'.} \\
\text{[Juyo]} & \text{'having lived'.} \\
\text{[boye]} & \text{'having carried'.} \\
\end{array}
\]

\[
\begin{array}{l|l}
\text{[-o] (Imp.Future) ending:} \\
\text{[-o]} (Imp.Future) ending: \\
\text{[diyo]} & \text{'give!'} \\
\text{[khey\textsc{\textsmaller{o}}} & \text{'eat!'} \\
\text{[Juyo]} & \text{'lie!'} \\
\text{[boyo]} & \text{'carry!'} \\
\end{array}
\]

\[
\begin{array}{l|l}
\text{y} & \text{[-ech] ending} \\
\text{CV -\textsc{\textsmaller{o}}CV} & \\
\text{[diyeche]} & \text{'he has given'.} \\
\text{[kheyeche]} & \text{'he has eaten'.} \\
\text{[Juyeche]} & \text{'he has lied'.} \\
\text{[boyeche]} & \text{'he has carried.'} \\
\end{array}
\]
<table>
<thead>
<tr>
<th>CVW - V</th>
<th>daawa</th>
<th>'to give'.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>khawa</td>
<td>'to eat'.</td>
</tr>
<tr>
<td></td>
<td>jowa</td>
<td>'to lie'.</td>
</tr>
<tr>
<td></td>
<td>bowa</td>
<td>'to carry'.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CVW e-Ø</th>
<th>daawa</th>
<th>'cause to give.'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>khawa</td>
<td>'cause to eat.'</td>
</tr>
<tr>
<td></td>
<td>jowa</td>
<td>'cause to lie.'</td>
</tr>
<tr>
<td></td>
<td>bowa</td>
<td>'cause to carry'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CVY e-V</th>
<th>diyie</th>
<th>'having caused to give'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>khayie</td>
<td>'having caused to eat'</td>
</tr>
<tr>
<td></td>
<td>jowye</td>
<td>'having caused to lie'</td>
</tr>
<tr>
<td></td>
<td>bowye</td>
<td>'having caused to carry'</td>
</tr>
</tbody>
</table>

Forms in [-eche] ending and Imp. Future [-o] ending show similar feature to those in [-e] ending (non-finite) given above.

<table>
<thead>
<tr>
<th>CVW e - V</th>
<th>daawae</th>
<th>'he causes to give'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>khawae</td>
<td>'he causes to eat'</td>
</tr>
<tr>
<td></td>
<td>jowae</td>
<td>'he causes to lie'</td>
</tr>
<tr>
<td></td>
<td>bowae</td>
<td>'he causes to carry'</td>
</tr>
</tbody>
</table>
Forms in [-o] (indicative) ending and -e initial endings show the same feature.

The junction of this structure is also characterized by the absence of these prosodies (i.e. y and w)

CV - V: indicative [-e] ending / indicative [-o] ending
Imperative present [-o] ending

[dae] 'he gives'  [dæo] 'give!'  
[khae] 'he eats'  [khae] 'eat!'  
[joe] 'he lies'  [joo] 'lie!'  
[bœ] 'he carries' [boo] 'carry!'

So far as the feature of the stem and ending junction of the CV + V structure is concerned, it can be stated as one of the three types:

CV_y V, CV_w V, CV-V.

So far as the linking feature of the two syllables of the dissyllabic stem structure CV-e- is concerned y or w prosody is stated as a feature between the junction of the two syllables of the stem and not in the junction of stem and ending. In this pattern, however, only y or w prosody is found, their absence is not found as a feature of the linking of the two stem syllables in the forms of a dissyllabic extended stem structure.

y prosody in the junction of the two syllables of the stem structures CV_y e- concerns only the forms in endings non-finite [e], imp, future [-o] and indicative [-che]. The forms

1. Alternative pronunciation [dao].
2. cf. close forms in vowel harmony, see Chapter 10.
in all the other endings whether or not initiated by a V, are w- prosodic in stem structure CV\(^w\) e\(^-\)2

Thus, ([-e] non-finite ending)

\begin{align*}
\text{CV } y & \text{ - } V \\
[\text{diyie}] & \text{ 'having caused to give'} \\
[\text{khayie}] & \text{ 'having caused to eat'} \\
[\text{Juuyie}] & \text{ 'having caused to lie'} \\
[\text{boyie}] & \text{ 'having caused to carry'} \\
\end{align*}

( [-e] indicative ending)

\begin{align*}
\text{CV } w & \text{ - } V \\
[\text{dawae}] & \text{ 'he causes to give'} \\
[\text{khawae}] & \text{ 'he causes to eat'} \\
[\text{Jowae}] & \text{ 'he causes to lie'} \\
[\text{bowae}] & \text{ 'he causes to carry'} \\
\end{align*}

\begin{align*}
\text{CV } w & \text{ - } C- \\
[\text{dawate}] & \text{ 'you used to cause to give'} \\
[\text{khawate}] & \text{ 'you used to cause to eat'} \\
[\text{Jowate}] & \text{ 'you used to cause to lie'} \\
[\text{bowate}] & \text{ 'you used to cause to carry'} \\
\end{align*}

In function, the palatal and labio-velar semi vowels differ considerably from the consonants generalized in terms of C\text{-}element of structure. For instance, forms where junction

\begin{itemize}
\item is characterized by y prosody \(\text{are}\) in [-e] (non-finite), [-o] (Imp., Future) and [-eche] (indicative) endings. And forms whose
\item junction is characterized by \(\text{W- prosody}\) \(\text{are}\) in [a] ending. That
\end{itemize}

1. cf. close forms in vowel harmony. C\text{.10}.  
2. cf. open forms in vowel harmony. C\text{.10}.  

is, in y prosody, syllable one is characterized by frontness or backness and syllable two is also characterized by frontness or backness; and where the junction is w-prosodic, syllable one is characterized by frontness or backness and syllable two is always open neither front nor back. Phonetic expression of the syllable one of the stem structure CV- where y is stated as prosody of the junction, is never opener than half-close; and where w is stated as prosody of the junction, is never more close than half-close. Thus this junction prosody of palatalization and closeness in the stem syllable (and stem syllable one in the case of dissyllabic stem structure CVe-)\(^1\), and prosody of labio-velarization and openness in the stem-syllable\(^2\) are mutually exclusive. The stem syllable is closer in forms whose junction prosody is y and the stem syllable is opener in forms whose junction prosody is w-. The ending syllable in close forms of this structure is half-close in both y- and w- prosodies; the ending syllable is open forms is open neither back nor front in w prosody. These mutual exclusiveness testifies to the validity of handling [y] and [w] in terms of prosodies.

In the dissyllabic stem-structure of the extended forms y or w prosody is stated in the junction of syllable one and two, and not between stem and ending. Where y is stated as prosody of the junction of the syllables one and two, the forms are close forms, and are in endings [-eche]

---

1. Infra (next paragraph.)
2. Stem syllable one in the forms of dissyllabic stem pattern CVe-. 
Where *w* is stated as prosody of the junction of the syllables one and two the forms are open forms and are in all the other endings (than those three mentioned above), initiated with a *V* or *C*.  

7.3.6.2  \( g \) and \( \bar{g} \) prosodies.

\( g \) - prosody has the phonetic implication of gemination. Where \( g \) is stated as an element of structure, the consonantal articulation following the syllable for which it is stated is characterized by length. Thus [khacche] 'he is eating'.

non-\( g \) prosody has the phonetic implication of absence of gemination. Where non-\( g \) prosody is stated as an element of structure, the consonantal articulation following the syllable for which it is stated is not characterized by gemination. Thus [khete] 'you used to eat'.

\( g \) - prosody is stated only where the structure of the stem syllable is open and the ending initiates with [ch-].

\( g \) - prosody is stated as an element of structure in the junction of monosyllabic stem structure CV- and all the dissyllabic and trisyllabic stem structures. So far as the CV stem structure is concerned \( g \) prosody is stated where the *V* element of the stem syllable is close unit \( \top \), or open unit \( \alpha \). In all the other stem structures the quality of the vocalic articulation of the stem syllable preceding \( g \) - prosodic junction is open neutral neither front nor back. e.g.

[kaṭacche] 'he is causing to cut'.

1. See Chapter 10.
Duration for the geminated junction is longer than the non-geminated junction. See Kms. of [khacche] (No.30) and [khete] (No.29). The duration of the closure in km. of [khacche] is 17 c.s. and that of [khete] is 13 c.s. ¹

¹ See § 6.2.2.4.
CHAPTER 8

8.0  General Outline.
8.1  Prosodies stated for the ending structure.
8.2  Elements of Phonological structure in ending syllables.
8.3  Table showing the structural patterns of the endings.
8.4  Table showing different C elements of the structural pattern of the endings.
8.5  The Phonological formulae showing the Prosodies of the syllables with examples and grammatical meaning.
8.6  V system in the ending.
8.0 The verbal forms will be described in terms of stems and endings. Stems and endings are grammatical abstractions and hence are unpronounceable. But they are phonologically justifiable. A particular stem can be generalized as $S$ and all the endings required to be stated can be listed with that stem. Similarly, an ending can be generalized as $E$ and all the statable stems with that ending can be listed in details. Thus, in [pitte], [kupte], [dekte], [tolte], [kahte], [bolte], for instance, one can generalize the common ending [-te] as $E$ and make different statement for the stems. Similarly, it is possible to generalize the common stem structure as $S$ and make different statements for the endings, in, as for instance, [pitte], [pitle], [pikebe], [pičhe].

Stems are unlimited in number, but not so the endings. All verbal forms must have one of the limited number of endings. Certain phonological features which characterize the stem structures do not extend to the ending structures; certain phonological features which characterize the ending structures do not characterize the stem. There are again certain features which bind stem and ending together. That is there are features which characterize stem and ending junction.

Endings are either monosyllabic, disyllabic or trisyllabic in structure. They are either C- initial or V-or
e-initial and either -C final or -V final. The generalized ending structures stated for the verb are ten in number. They are:

(i) Monosyllabic ending structures:

(a) C-initial: -CV, -CVC

(b) V-initial: V

(c) e-initial: -eC

(ii) Disyllabic ending structures:

(a) C-initial: CVCV, CVCVC

(b) eV-initial: eCV, eCVC

(iii) Trisyllabic ending structures:

e-initial: eCVCVC

eCVCV.

The following examples will illustrate some of the endings for which these structures are stated.

- CV

[kaṭche] 'he is cutting!'

[kaṭbe] 'he will cut,'

[kaṭte] 'you used to cut!

[kaṭle] 'you cut!

- CVC

[kaṭtam] 'I used to cut!'

[kaṭlam] 'I cut!'

[kaṭchiʃ] 'you are cutting!

- V

[kaṭi] 'I cut!

[kaṭe] 'he cuts!'

[kaṭo] 'you cut!'

[kaṭa] 'to cut!'
8.1 Prosodies stated for the ending structure

(1) Prosodies of the syllable as a whole:

\[ y, \ w \text{ and } \} \text{ prosodies} \]
2. Prosodies of the syllable initial and syllable final.

(i) \( v \) and \( \bar{v} \) prosodies.
(ii) \( h \) and \( \bar{h} \) prosodies.
(iii) \( n \) and \( \bar{n} \) prosodies.

The phonetic significance of these prosodies have been stated in the previous chapter. They will not be repeated here.

\( h \) and \( \bar{h} \) prosodies are stated for the ending initial syllable where the ending initial element is \( C \). Where the initial element of the ending is \( \emptyset \) the second syllable of the dissyllabic and trisyllabic ending structures is always \( h \) prosodic. \( h \) and \( \bar{h} \) prosodies are not stated for the final syllable of polysyllabic endings. \( n \) and \( \bar{n} \) prosodies are stated as an element of structure where the final syllable of the ending is closed, and also for the monosyllabic ending \(-CV\). \(-CV\) is the only open ending structure for which \( n \) and \( \bar{n} \) prosodies are stated.

Where \( n \) is stated as an element of structure the final \( C \) element of the ending is one of the two nasal units \( n \) and \( m \). \( C \) in \(-CV\) ending structure where \( n \) prosody is stated is \( n \) unit. Where \( \bar{n} \) prosody is stated as an element of structure the final \( C \) element of the ending is sibilant unit \( s \) in all structures except \(-\emptyset C\), where the final \( C \) is a three term system of \( S \), \( P \) and \( N \).

The generalized statement of endings is made in terms of \( V \) (for the vowel system) and \( \emptyset \) (for the syllabic system). A general statement of the \( V \) units required in this thesis was made in the previous chapter while dealing with \( C \) and \( V \).
elements of structure. That statement is applicable to both stems and endings.

It is not, however, possible to make such a general statement of the syllabic elements of structure commonly applicable to stems and endings, for the syllabic systems are set up on their phonological relations within any given structure. The syllabic in the ending is a single term system of $e$, which may be read in the formulae as the 'syllabic unit'. One of its phonetic implications is syllabicity.

8.2 Elements of Phonological Structure in ending syllables.

It is important to note that C system in stem syllables is different from that of the ending syllables.

C unit in the stem syllable initial and stem syllable final consists of $P_{4}, L_{2}, S_{1}, N_{2} / N_{3}$. In the stem syllable $h/h$, $v/\bar{v}$, $r/\bar{r}$ and $n/\bar{n}$ prosodies are recognised.

Initial and final C elements of the ending are restricted to $P_{3}, L_{1}$ and $N_{1}$ (for the initial), $P_{1}, S_{1}$ and $N_{2}$ (for the final), and only $h/\bar{h}$, $v/\bar{v}$ and $n/\bar{n}$ prosodies are stated for ending syllables. $r/\bar{r}$ prosodies are not stated as elements of structure in the ending.

Only $P$, $L$ and $N$ are stated for the C element of structure in the ending initial position. $P$ is a three term system in ending initial position. The three phonematic units, $h$, $d$ and $i$ constitute the initial $P$ in the ending structure. For the ending initial where $P$ is stated as an element of structure, $h/\bar{h}$ and $v/\bar{v}$ prosodies are stated.
In the structure where the phonematic unit \( b \) is stated in the ending initial position, the syllable is always characterised by voicing. In (C) VC- stem structure the whole \(-C-C-\) sequence is \( v\bar{v} \) prosodic. Where \( d \) or \( j \) is stated as a phonematic unit in the ending initial position, the whole sequence is \( \bar{v} \) prosodic. Where \( d \) is stated the \(-C-C-\) sequence is always \( h \) prosodic and where \( j \) is stated the \(-C-C-\) sequence is always \( h \) prosodic.

One phonematic unit \( l \) constitutes \( L \) in ending initial position.

Where \( l \) is a phonematic unit the \(-C-C-\) sequence is characterized either by voicing all through, or the first part is characterized by \( \bar{v} \) and the second part by \( v \) prosody. \( L \)-syllables in the ending are always \( v\bar{v} \) prosodic.

Thus:

\[
\begin{align*}
\text{hv} & : -C - C- & [kaqbe] & \text{‘you/he will cut’}. \\
\text{hv} & : -C - C- & [jobbe] & \text{‘you/he will mutter’}. \\
\text{hv} & : -C - C- & [kætte] & \text{‘you used to cut’}. \\
\text{hv} & : -C - C- & [jopte] & \text{‘you used to mutter’}. \\
\text{hv} & : -C - C- & [kætche] & \text{‘he is cutting’}. \\
\text{hv} & : -C - C- & [jopche] & \text{‘he is muttering’}. \\
\text{vv} & : -C - C- & [kætle] & \text{‘you cut’}. \\
\text{vv} & : -C - C- & [kædle] & \text{‘you cried’}.
\end{align*}
\]

The unit \( n \) constitutes \( N \) in ending initial position. This ending functions as a non-finite ending and is used with stem structures whose final element is a \(-e\), that is, with all disyllabic and trisyllabic stem structures.

\( l \). This justifies our taking \( v/\bar{v} \) as a prosody of structure.
Thus: \(n\) CVC\(_n\) - CV \([\text{ka}\text{tano}]\) 'to cause to cut'.
\n\(n\) CV\(_n\) - CV \([\text{khawano}]\) 'to feed'.
\n\(n\) CVCC\(_n\) - CV \([\text{cim} \text{tano}]\) 'to pinch'.

Plosive unit \(i\) constitutes \(C_1\) of dissyllabic and trisyllabic ending structures. The syllable is always \(h\) prosodic. Liquid unit \(l\) constitutes the \(C_2\) in those structures, and the syllable is \(\overline{vh}\) prosodic.

In the final position of ending structure three \(C\) elements \(P\), \(S\) and \(N\) are stated. \(P\) is a single term system of \(g\) in the ending final position and it is always characterized by \(\overline{v}\overline{h}\) prosodies. \(S\) is a single term system only in ending final position, and is characterized by \(\overline{vh}\). \(N\) is a two term system in ending final position, \(n\) and \(m\). They are characterized by \(v\overline{h}\) prosodies. The phonematic units stated for ending final position, the plosive unit \(g\), sibilant unit with \(s\), nasal unit \(m\) are not stated as \(C\) elements of structure in ending initial position; and the plosive units \(b\), \(d\), \(j\) and liquid unit \(l\) are not stated as \(C\)-element of structure in ending final position. They are in this sense mutually exclusive, so far as distribution is concerned. The nasal unit \(n\) is stated as \(C\) element of structure in both ending initial and final position.

This is where the structural statement about the stem differs from that of the ending structure.

\[P_1 : g : -C^{\overline{vh}} \quad [\text{ka}\text{tuk}]\]

1. Choosing the numbers to show these distinctions is a purely arbitrary device. The numbers are used in this way for convenient reference of the different Cs in the whole ending structure.
This is clear, then, from the above discussion that all C units stated for the stem structure are not statable in the ending structure, but all the C units stated for the ending structure are statable in stem structure.

It is important to note that aspiration is a syllable marker in Bengali verbal forms. There can be only one aspirated syllable in the whole ending where it contains alveolo-palatal plosive consonant [-ch]. In the whole of the stem also there can not be more than one aspirated consonant. In any verbal form, except some reduplicated forms, the maximum number of aspirated syllables found is two. Where the ending has a [-ch-] in it. Everywhere else a verbal form can not have more than one aspirated syllable. If stem syllable initial is aspirated stem syllable final is never aspirated, and vice versa. Thus,

\[ S_1 : \text{s} \quad \overline{v} \overline{h} \quad [\text{kati}] \]

\[ N_2 : \text{n} \quad \overline{v} \overline{h} \quad [\text{katon}] \]

\[ : \text{m} \quad \overline{v} \overline{h} \quad [\text{katalam}] \]

\[ h_{CV} \overline{h} \, C-V \quad [\text{kate}], \quad \overline{h}_{CV} \, h \, C-V \quad [\text{dakhe}] \]

1. [-chi], [-che], [-cho], [-echi], [-ech], [-echo], [-chili], [-chile], [-chilo], [-chilen], [chilam]; [-echili], [-echile], [-echilo], [-echilen], and [-echilam] are the endings where aspiration is observed.
In reduplicated forms, however, where the stem syllable is repeated, a maximum of three aspirated syllables are possible in a verb.

\[ h \overline{h}_V C-V \quad [h\text{ate}], \quad \overline{h}_V V C-V \quad [u\text{the}] \]

\[ \overline{h}_C V h C-e \quad h C V \quad [\text{mekheche}] , \]
\[ h \quad h \quad C V-e \quad C V \quad [\text{kheyche}] , \]
\[ h \quad C V C- \quad C V \quad [\text{khatche}] . \]

8.3. Table showing structural patterns of the endings.

<table>
<thead>
<tr>
<th></th>
<th>Trisyllabic endings</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>-e C V C V₂C</td>
</tr>
<tr>
<td>II</td>
<td>-e C V C V₂</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Disyllabic endings</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>-C V C V₂C</td>
</tr>
<tr>
<td>II</td>
<td>-C V C V₂</td>
</tr>
<tr>
<td>III</td>
<td>-e C V₂C₂</td>
</tr>
<tr>
<td>IV</td>
<td>-e C V₂</td>
</tr>
</tbody>
</table>
### Monosyllabic endings

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>$-c_v c_2$</td>
</tr>
<tr>
<td>II</td>
<td>$-c_3 v_2$</td>
</tr>
<tr>
<td>III</td>
<td>$-c_3$</td>
</tr>
<tr>
<td>IV</td>
<td>$-v_3$</td>
</tr>
</tbody>
</table>

### 8.4. Table showing different C elements of the structural pattern of the endings.

1. **Trisyllabic Endings.**

| I | $-c_v c_v c_2$ | $-c_p v_l v_2 n_2$ |
| II | $-c_v c_v c_2$ | $-c_p v_l v_2$ |

2. **Dissyllabic Endings**

<p>| I | $-c_v c_v c_2$ | $-p_v l v_2 n_2$ |
| II | $-c_v c_v c_2$ | $-p_v l v_2$ |
| III | $-c_v c_v c_2$ | $-c_p v n$ |
| IV | $-c_v c_v c_2$ | $-c_p v s$ |
| IV | $-e c_v c_2$ | $-e p v_2$ |</p>
<table>
<thead>
<tr>
<th></th>
<th>3. Monosyllabic Endings</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>-C₂V₂C₂</td>
</tr>
<tr>
<td></td>
<td>-P₂VS</td>
</tr>
<tr>
<td></td>
<td>-P₃V₂N₂</td>
</tr>
<tr>
<td></td>
<td>(-P₂V₂N₂)</td>
</tr>
<tr>
<td></td>
<td>(-P₂VN)</td>
</tr>
<tr>
<td></td>
<td>-L V₂N₂</td>
</tr>
<tr>
<td>II</td>
<td>-C₃V₂</td>
</tr>
<tr>
<td></td>
<td>-P₃V₂</td>
</tr>
<tr>
<td></td>
<td>-L V₂</td>
</tr>
<tr>
<td></td>
<td>-N V</td>
</tr>
<tr>
<td>III</td>
<td>-eC₃</td>
</tr>
<tr>
<td></td>
<td>-eS</td>
</tr>
<tr>
<td></td>
<td>-eP</td>
</tr>
<tr>
<td></td>
<td>-eN</td>
</tr>
<tr>
<td>IV</td>
<td>-V₃</td>
</tr>
<tr>
<td></td>
<td>-V₃</td>
</tr>
</tbody>
</table>
8.5. The Phonological formulae showing the prosodies of the syllables with examples and grammatical meaning.

1. Trisyllabic ending.

| I. | -e P V L V N2 | y v vh v v n | [bolechilam] | Perfective Past, 1st pers. |
|    |               | -e i t l-n    |    |                       |
| II. | -e P V L V 2  | y v vh v y v  | [bolechili] | " 3rd Fam. |
|     |              | -e i t l    |    |                       |
|     |              | y v vh v y v | [bolechile] | " 2nd Ord. |
|     |              | -e i t l    |    |                       |
|     |              | y v vh w v v | [bolechilo] | " 3rd F/O |
|     |              | -e i t l    |    |                       |

2. Dissyllabic ending.

| I. | -P V L V N2 | y v vh v v n | [bolechilen] | Progressive Past 3rd/2nd Hon. |
|    |             | -i t l-n      |    |                         |
|     |             | y v vh v v n  | [bolechilam] | " 1st pers. |
|     |             | -i t l-n      |    |                         |
| II. | -P V L V 2  | y v vh v y v  | [bolechili] | " 2nd Fam. |
|     |              | -i t l    |    |                       |
|     |              | y v vh v y v | [bolechile] | " 2nd Ord. |
|     |              | -i t l    |    |                       |
|     |              | y v vh w v v | [bolechilo] | " 3rd F/O |
|     |              | -i t l    |    |                       |
| III. | -e P V N   | y y v h n   | [bolechen] | Reflect 3/2 Hon. Present |
|     |              | -e i l-n    |    |                       |
|     | -e P V S    | y y v h v h  | [bolechif] | " 2nd Fam. |
|     |              | -e i t s    |    |                       |

1. For some speakers there are dialectal variations of these forms in the first person: e.g. [bolechilam], [bolechilum], [bolchilem], [bolchilum], [bollem], [bollum], [boltem], and [boltum].
<table>
<thead>
<tr>
<th>IV</th>
<th>-o P V₂</th>
<th>y yvh</th>
<th>[bolechi]</th>
<th>&quot; 1st Pers.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>-e iε</td>
<td></td>
<td>&quot; 3rd Ord.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>y yvh</td>
<td>[boleche]</td>
<td>&quot; 2nd Ord.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-e iε</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>y wvh</td>
<td>[bolecho]</td>
<td></td>
</tr>
</tbody>
</table>

### Monosyllabic

<table>
<thead>
<tr>
<th>I.</th>
<th>-P₂V S</th>
<th>yvh vh</th>
<th>[boltiʃ]</th>
<th>Habitual Past, 2nd Familiar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>- dt s</td>
<td></td>
<td>Habitual Past, 2nd Familiar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>y vh vh</td>
<td>[bolchiʃ]</td>
<td>Progressive Present 2nd Fam.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- i vs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>yvh n</td>
<td>[bolten]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- den</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>yvh n</td>
<td>[bolchen]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- j en</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>yvh n</td>
<td>[bolben]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- ben</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- lam</td>
<td>[bolam]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Simple Past 1st Pers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>yv n</td>
<td>[bollen]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- l en</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II.</th>
<th>-P₃V₂</th>
<th>yvh</th>
<th>[bolbi]</th>
<th>Fut. 2nd Fam.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>- b</td>
<td></td>
<td>&quot; 2nd and 3rd Ord.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>yvh</td>
<td>[bolbe]</td>
<td>&quot; 1st pers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- bε</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>wvh</td>
<td>[bolbo]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- bε</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. See foot-note at p. 271
<table>
<thead>
<tr>
<th>Column</th>
<th>Romanysis</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>L V₂</td>
<td>yv iē</td>
<td>bolche</td>
</tr>
<tr>
<td></td>
<td>wv iē</td>
<td>bolcho</td>
</tr>
<tr>
<td></td>
<td>yv dē</td>
<td>bolte</td>
</tr>
<tr>
<td></td>
<td>wv dē</td>
<td>bolto</td>
</tr>
<tr>
<td>-N V</td>
<td>wnv nē</td>
<td>bolano</td>
</tr>
</tbody>
</table>

| III    | y vh eē    | bolis   |
|        | w vh eē    | boluk   |
|        | w n eē     | bolun   |
|        | y n eē     | bolen   |
|        | w n eē     | bolon   |

| IV, V₃ | y ṭ       | boli    |
|        | y eē      | bole₁   |
|        | y eē      | bole₁   |

1. See Chapter 10

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8.6 It will be seen from the above table that in all the formulae of the ending structures, except -eC, the final syllable of the ending whose final element is m unit is always p prosodic, and where the final element is n unit the syllable is y prosodic.

There is no w prosodic syllable in ending structures -eCVCVC, -CVCVC, -eCVC, and -CVC. The syllables in these structures are all y prosodic except where the ending final element is m unit. There the final syllable is p prosodic.

Two units, close and mid constitute the final V of the ending structures, -eCVCV, -CVCV, -eCV and -CV. t is in y prosodic syllable and ε is in y and w syllables. Where the final C in ending structures CVC, eCVC, CVCVC and eCVCVC is s unit, the final V is t unit in y prosodic syllable and where it is n unit the V is ε unit in y prosodic syllable and where it is m unit the V is a unit in p prosodic syllable.

Monosyllabic ending structure V is a three term system of close, mid and open. t is in y syllable ε is in both y and w prosodic syllable and a is in p prosodic syllable.

1. See Chapter 10 for phonetic expression of the forms in endings [-e] (non-finite), [-e] (indicative) and [-e] (imperative present), and [-o] (imperative future).
## CHAPTER 9

### STEM STRUCTURES

<table>
<thead>
<tr>
<th>9.0</th>
<th>General outline.</th>
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<tbody>
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<td>9.1</td>
<td>Different stem structures.</td>
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<tr>
<td>9.2</td>
<td>Prosodies stated for stem syllables.</td>
</tr>
<tr>
<td>9.3</td>
<td>ə element of structure in stem final syllable.</td>
</tr>
<tr>
<td>9.4</td>
<td>V element of structure in stem initial syllable.</td>
</tr>
<tr>
<td>9.4.0</td>
<td>Summary of Table showing the structural patterns of the stems and endings.</td>
</tr>
</tbody>
</table>

| 9.4.1 | Stem structure CVC- |
| 9.4.2 | Stem structure VC- |
| 9.4.3 | Stem structure CV- |
| 9.4.4 | Stem structure CVCe- |
| 9.4.5 | Stem structure VCe- |
| 9.4.6 | Stem structure CVe- |
| 9.4.7 | Stem structure CVCCe- |
| 9.4.8 | Stem structure VCCe- |
9.0

Here a statement of the structure required to be set up for the stem and junction will be made. Stem and junction are taken together in order to focus attention on the phonological correspondences and differences between different grammatical categories.

The syllables in the whole structures are stem syllables and ending syllables. The linking feature of the stem and ending is referred to as junction. Stems and endings are grammatical abstractions. The phonological statement will be made on the basis of phonetic observations, and in doing so the utterance as a whole has been taken into consideration, and not any segment. For stems are unpronounceable.

9.1 Stems are either C initial or V initial and either C final, V final or e final. Stems are monosyllabic, dissyllabic or tri-syllabic. Following are the generalized stem structures:

Monosyllabic: CVC-, VC- and CV-.

These monosyllabic stems will also be called radical stems.

1. For Gram. Categories See Ch. I - III.
2. Stems and endings are treated separately, for endings are limited in number but not so are the stems.
3. There is also a stem structure V whose indicative forms are found only in Simple Past tense and Imperative form in the Present tense. They are [elam], [ele], [elen], [eli], [elo] and [ae]. This structure is not included among the generalized structures.
4. CVC-, VC- and CV- stem patterns I term 'Radical Stem', CVCe-, VCe- and CV- stem patterns I term 'Extended Stem'. Radical stem patterns are monosyllabic, extended stem patterns are dissyllabic. There are two other dissyllabic stem patterns CVCCe- and VCCe- which are not 'extended' in the sense CVCe-, VCe- and CVe- stem patterns are extended.
Dissyllabic: CVC©-, VC©- and CV©- these will be called extended stems; and CVCC©-, and VCC©- these will be called non-extended stems.

Trisyllabic: Trisyllabic stems CVC/CVC© are found only in the reduplicated forms.

The following examples will illustrate the different stems structures. For the purpose of illustration forms with ending [-lam] are taken.

Stem structure CVC- [bojalam] 'I sat'.

Stem structure VC- [analam] 'I brought'.

" " " CV- [khelam] 'I ate'.

" " " CVCe- [bojalam] 'I caused (some one) seated'.

" " " VC©- [analam] 'I made some one bring'.

" " " CV©- [khawalam] 'I fed'.

" " " CVCCA- [kampalam] 'I bit'.

" " " VCC©- [acralam] 'I brushed (hair)'.

" " " CVC/CVC©-[piptalam] 'I winked'.

A Bengali verbal form can have a maximum of six syllables in reduplicated forms, and five syllables in forms of other stem structures. e.g. [piṭiechilam].

For phonological statement the stem structures will be treated under the heads: CVC-, VC-, and CV-, CVCe-, VC©, CVCC©-, VCC©-, and CVC/CVC©.

Monosyllabic (or radical) stem patterns CVC-, VC- and CV- are restricted to non-causative verbs; extended disyllabic stem patterns CVCe-, VC©- and CV©- to causative verbs and

I. For details about e, see Ch. 7. Elements of phonological analysis.

For phonological statement the stem structures will be treated under the heads: CVC-, VC-, and CV-, CVCe-, VC©, CVCC©-, VCC©-, and CVC/CVC©.

Monosyllabic (or radical) stem patterns CVC-, VC- and CV- are restricted to non-causative verbs; extended disyllabic stem patterns CVCe-, VC©- and CV©- to causative verbs and

I. For details about e, see Ch. 7. Elements of phonological analysis.
the dissyllabic stem patterns CVCC©- and VCC©- and reduplicated stem pattern CVC/CVC©- function both in causative and non-causative.

The vocalic element that is observable in the second syllable in all dissyllabic (extended and non-extended) stems and the third syllable of in reduplicated stems is syllabic and represented by © (schwa).

In the following phonological statement 'junction' will be used to denote the linking feature of the stem and ending. In the forms of the monosyllabic stem patterns the first syllable of the form is referred to as stem syllable, in the dissyllabic stem patterns the first two syllables of the forms will be referred to as stem syllable one, and stem syllable two, and in the trisyllabic stem patterns the first three syllables of forms will be referred to as stem syllable one, two and three respectively.

Thus, in the form [kaṭe] first syllable is referred to as stem syllable and the second syllable as the ending syllable. The junction is shown by a hyphen in between the stem and ending, as CVC-V. In the form [kaṭae], the first two syllables are stem syllables one and two respectively and the junction is between stem syllable two and ending, as CVC©-V. In the form [piṭpiṭae] the first three syllables are stem syllable one, two and three respectively and the junction is between the stem-syllable three and the ending as CVC/CVC©-V.

A common phonematic structure for all forms of any given scatter can be stated for the stem. The phonological differences between these forms include differences in the
vowel element as well as differences in the prosodic elements of the stem.

Thus, in the forms [kətə] and [kətə] of the same scatter, for instance, two phonematic units -ə- and -ɛ- respectively are stated in the generalized stem structure CVC-. The stem syllable of the form [kətə] is ə prosodic and that of [kətə] is ɛ prosodic.

9.2 In order to focus attention on the phonological features distinguishing one grammatical form from another the following prosodies will be stated:

\[
y, \quad w, \quad ə
\]

Phonetic qualities such as frontness and backness, lip-rounding and unrounding are stated as exponents of the whole syllable, and not characteristic of the vocalic or consonantal articulations alone. Being stated prosodically for the syllable as a whole these qualities refer to V and C phonematic units in their combinations in syllables.

It has already been said that it is not possible to state where one syllable ends and another begins, and the relevant observations are made by taking whole utterances which are chosen as comparable. As \( y, w \) and \( ə \) prosodies characterize both C initial and V initial syllables, I will not discuss here the C- elements of structure in details. The generalized term C is used where a C element is to be stated.

As \( y, w \) or \( ə \) prosodies characterizes every syllable,

---

1. Phonetic implications of these prosodic markers are discussed in Ch. 7 dealing with elements of phonological analysis.
and as every syllable involves a V or a ə element of structure
I propose to state the V and ə system in detail of the verbs
chosen for the present discussion. Verbs of different stem
structures will be chosen with finite endings [-i], [-e], [-o],
[-che] and [-te] and imperative future [-o], and non-finite [-e]
and [-a]. Forms with non-finite [-a] are not found in dissyllabic
stem structures. Forms with ending structure -CV are chosen for
the all the dissyllabic stem structures and for the monosyllabic
stem structure CV-, in order to show relation with the stem-
syllable and the ending structure -CV.

9.3 ə element of structure in the stem syllable.

One syllable unit ə is stated in the second syllable of
all dissyllabic stem structures and in the third syllable of
reduplicated stems. The syllable where ə is stated as an element
of structure is either v prosodic or y prosodic. The phonetic
expression of ə in syllable two in the forms in stem structures,
CVCə-, VCə-, CVə-, CVCCə-, and VCCə- or in syllable three of
CVC/CVCCə- structure is either an open neutral vowel neither
front nor back, or a front vowel between half-close and half-
open.

9.4 V element of structures.

All stems include in their structures a V element. A
statement of the system subsumed under V can be made in terms
of three categories relating to degree of openness. The number
of V units required for the present statement is three, viz.,
ι the close unit, ε the mid unit, α the open unit. These
three are stated as the maximum number of units for the stem syllable whose nucleus is generalized as V. All the vowel qualities observed in the utterance can be stated in terms of these three categories.

Thus: \[ CV_3 C \]

\[
\begin{align*}
C_1 C & \quad + \quad [\text{-}\text{i}] \quad [\text{pi}\text{ṭi}] \quad '\text{beat}'.
+ \quad [\text{-}\text{i}] \quad [\text{tuli}] \quad 'I \text{ raise}'.
C\in C & \quad + \quad [\text{-}\text{i}] \quad [\text{dekhi}] \quad 'I \text{ see}'.
+ \quad [\text{-}\text{e}] \quad [\text{tole}] \quad '\text{he raises}'.
C\in C & \quad + \quad [\text{-}\text{e}] \quad [\text{da\text{khe}] \quad '\text{he sees}'.
+ \quad [\text{-}\text{e}] \quad [\text{ka\text{ṭe}] \quad '\text{he cuts}'.
+ \quad [\text{-}\text{e}] \quad [\text{bole}] \quad '\text{he says}'.
\end{align*}
\]

For convenience of phonological statement (i) structural patterns of stems and endings will be shown in tabular form, and then (ii) the prosodies of the stem syllables and of junction with phonematic units of the V element of structure will be set out together with some forms in phonetic transcription for every structure separately, in order to show the phonological correspondence and differences between forms of the verbal scatter belonging to each stem structure.
### Summary of the structural patterns of the stems and endings.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>y/w/o CV₂C + y/w/o V₃</td>
<td></td>
</tr>
<tr>
<td>II.</td>
<td>y/w/o V₃C + y/w/o V₃</td>
<td></td>
</tr>
<tr>
<td>III.</td>
<td>y/w/CV₂ + y/w/ V₂CV</td>
<td></td>
</tr>
<tr>
<td>IV.</td>
<td>y/w/o CV₂Ce + y/w/ V₂</td>
<td></td>
</tr>
<tr>
<td>V.</td>
<td>y/w/o V₂Ce + y/w/ V₂</td>
<td></td>
</tr>
<tr>
<td>VI.</td>
<td>y/w/o CV₂Ce- + y/w/ V₂</td>
<td></td>
</tr>
<tr>
<td>VII.</td>
<td>y/w/o CV₂CCe- + y/w/ V₂</td>
<td></td>
</tr>
<tr>
<td>VIII.</td>
<td>y/w/ V₂CCe- + y/w/ V₂Y</td>
<td></td>
</tr>
</tbody>
</table>

### Notes:
- CV₃: Complex vowel structure
- V₃: Vowel structure
- CV: Consonant + Vowel
- Y: Accent mark
- Ce: Certain endings or structures
- Ce-: Certain endings or structures with -
Table showing the partial phonological formulae of the stem structure CVC- with different endings.

<table>
<thead>
<tr>
<th>CV Y/w/</th>
<th>[-i]</th>
<th>[-e]</th>
<th>[-e]</th>
<th>[-e]</th>
<th>[-a]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CcC-</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>2. CcC-</td>
<td>w</td>
<td>w</td>
<td>w</td>
<td>w</td>
<td>w</td>
</tr>
<tr>
<td>3. Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>4. CcC-</td>
<td>w</td>
<td>w</td>
<td>w</td>
<td>w</td>
<td>w</td>
</tr>
<tr>
<td>5. CcC-</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

1. See I in the previous table.
2. Alternative pronunciation [piʃ], [pito] and [pita].
3. These differences in the stem syllable of the forms with phonetically similar but grammatically different endings are discussed in details in the following chapter on vowel harmony.

See also footnotes on page

1a. [pi]: Simple present, 1st person.
1b. [-e]: Non-finite.
1c. [-o]: Imperative future, 2nd person, ordinary grade.
1d. [-e]: Simple present, 3rd person, ordinary grade.
1e. [-o]: Simple present, 2nd person, ordinary grade.
1f. [-a]: Non-finite.
It will be seen from the formulae set out in the table above that the stem syllable of the forms with all the endings is characterized by \( y \) or \( v \) prosody. In categories where the phonological features of the stem syllable correspond, \( y \) involves a three term system, vize, close unit, mid unit and open unit.

The syllable where \( y \) is stated is characterized by a front quality between half-close and half-open and absence of lip-rounding in articulation, and where \( w \) is stated is characterized by a front quality between close and half-close and lip-rounding in articulation. The syllable where \( \varepsilon \) is stated is characterized by a back quality between half-close and half-open and absence of lip-rounding in articulation, where \( \varphi \) is stated is characterized by a front quality between close and half-close and half-open, and where \( \iota \) is stated is characterized by a back quality between half-close and half-open without lip-rounding.

The vocalic qualities observed in the stem syllable can be shown in the following vowel diagram with reference to the pronunciation of the forms [pit], [tuli], [kheli], [boli].
Table showing atom structure $V_3C^-$

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>$w$</td>
<td>$w$</td>
<td>$w$</td>
<td>$w$</td>
<td>$w$</td>
<td>$w$</td>
</tr>
<tr>
<td></td>
<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
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</tr>
<tr>
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<td>$y$</td>
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<td>$y$</td>
</tr>
<tr>
<td></td>
<td>$c^-$</td>
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<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
</tr>
<tr>
<td>3.</td>
<td>$w$</td>
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<td>$w$</td>
<td>$w$</td>
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</tr>
<tr>
<td></td>
<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
</tr>
<tr>
<td>4.</td>
<td>$a$</td>
<td>$y$</td>
<td>$y$</td>
<td>$y$</td>
<td>$y$</td>
<td>$y$</td>
</tr>
<tr>
<td></td>
<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
<td>$c^-$</td>
</tr>
</tbody>
</table>

1. See II in Table on page 282.
2. Alternative Pronunciation [utha].
All three V units, close, mid, open are stated for the generalized V in stem pattern VC-. The close unit involves only the back rounded vowel.

It will be seen from the examples set up above that the vowel units i, e and a of the VC- stem pattern do not show any phonetic peculiarities other than those associated with those of the CVC- stem patterns. The stem syllables of the forms in all the endings are characterized by y, w or o prosody. The syllable where i unit is stated is always w prosodic and never y prosodic. Other two units, e and a are in both y and w prosodic syllable. a unit is also stated in y prosodic syllable.

The vocalic qualities of the stem syllables of the forms given above of VC-stem structure are similar to those in the CVC- stem structure with different endings.

<table>
<thead>
<tr>
<th>9.4.3</th>
<th>y/w/o. CV- Stem structure.</th>
</tr>
</thead>
</table>

Table showing the partial phonological formulae of the stem and junction with different endings.

|---|------|------|------|------|--------|------|
| 1. | Y & C<sub>t</sub> | Y & C<sub>t</sub> | Y & C<sub>a</sub> | Y & C<sub>a</sub> | Y & C<sub>o</sub> | Y & C<sub>o</sub>
| 2. | W & C<sub>t</sub> | W & C<sub>t</sub> | W & C<sub>a</sub> | W & C<sub>a</sub> | W & C<sub>o</sub> | W & C<sub>o</sub>
| 3. | W & C<sub>e</sub> | W & C<sub>e</sub> | W & C<sub>a</sub> | W & C<sub>a</sub> | W & C<sub>o</sub> | W & C<sub>o</sub>
| 4. | W & C<sub>a</sub> | W & C<sub>a</sub> | W & C<sub>a</sub> | W & C<sub>a</sub> | W & C<sub>o</sub> | W & C<sub>o</sub>

1 2. See note 122 on page 287
All three V units, close, mid and open ɪ, ɛ and ɑ are stated for the stem syllable in CV- stem structure. The close unit involves both front unrounded and back rounded vowels; the mid unit involves both front unrounded and back rounded vowels between half-close and half-open; the open unit involves front unrounded vowel between half-open and open, back rounded vowel between half-open and open, and open neutral unrounded vowel which is neither front nor back.

1. See III in Table on page
2. Forms with endings [-che] and [-te] are used in this and all subsequent sections. They are introduced in order to show ɡ and non-ɡ prosodic junction with -CV ending structures. Forms in these ending structures are not found relevant in establishing V unit of structures in the stem initial syllable, hence they are not used in sections I and II.
3. Alternative pronunciation [dei].
4. Alternative pronunciation [dɑ].
table that the forms of the scatters 2, 3 and 4 in column two and three with [-e] and [-o] ending, and all the forms in columns six and seven in [-a] and [-che] endings involve a junction prosody which has been denoted in the formulae by placing the prosodic symbol y, w, or g after the syllable. These prosodies are stated for the junction and these symbols are placed in this position because the articulation concerned is the linking feature between the stem and ending. The characteristic feature of y, w or g prosody cannot be ascribed to any particular syllables as such, but may be considered as a feature of what binds the stem and ending together; hence the symbol is placed between the stem and ending. So far as g prosody is concerned, it has been found that the consonantal articulation involved is the ending initial consonant. It may be said, therefore, that where g prosody is stated the long consonantal articulation is in the syllable that follows, and hence g is placed between the two syllables in question. To say that y-, w or g is a prosody of such and such a syllable is for convenience. It is in fact a prosody of a piece of two syllables. It has already been mentioned that g prosody is stated for the junction of the structure where the ending is initiated by [-ch] and the stem syllable is open.

So far as the junction of CV- stem structure is concerned g prosody is stated with only t, and w units and never with e unit in the preceding syllable. And for the form of the scatter 3, y prosody is stated as a prosody of the junction where the ending initial is a C (whether or not [-ch]). That is
The junction of y prosody is stated for all the forms of the scatter whose stem syllable is mid and w prosodic, so far as the forms with the ending structure -CV is concerned. In the junction of the forms of scatters 2 and 4, with ending nonfinite [-e], and imperative future [-o] y prosody is stated. w- prosody is stated for all the forms of the scatters with [-a] ending.

Phonetically each of the vowels [i], [u], [o] and [a] of the forms [dii], [sui], [boi], [pai] form the starting point of the diphthong which moves in the direction of [i]; [a], [o] [o] [a] of the forms [dæe] [sæe], [bæe] and [pæe] forms the starting point of the diphthong which moves in the direction of [e]; [æ], [o], [æ], and [a] of the forms [dæo] [sæo] [bæo] and [pæo] form the starting point of the diphthong which moves in the direction of [o]. These diphthongs are described in Chapter 4.

\[\begin{array}{cccccccc}
9.4.4 & CV \rangle Co \rangle
\end{array}\]

\[
\begin{array}{cccccccc}
\end{array}
\]

1. See note 1, p. 290
2. See note 2, p. 290
The formulae are self explanatory and need not be detailed here. It will be seen that the stem syllable of the forms with all the endings in either y, w, or α prosodic Syllable two, where e is stated as an element of structure, is α or y prosodic or ηg- prosodic. Where the ending is non-finite [-e] or imperative future [-o] the second syllable is y prosodic, everywhere else it is α prosodic. Where the ending is [-ch] initial of the ending structure -CV the junction is also characterized by g prosody.

The vocalic qualities of the stem syllable one are similar to those shown in connection with the statement of the CVC- stem structure and need not be repeated here. The vocalic qualities observed in syllable two of the forms where y or α is stated as an element of structure are shown in the following vowel diagram with reference to my pronunciation of the forms

1. See IV in table on page 282
2. Forms with endings [-che] and [-te] of the -CV ending structure are used in this and subsequent sections, in order to show the junction prosodies.
3. Alternative pronunciation pitai [pi' t'ai] pitui [pi' tui] petui [pe'tui]
4. " " " " pitae [pi'tae] pitoe [pi'toe] pe' toe
5. " " " " pitao [pi'tao] pito [pi'to] pe'too
6. " " " " pitacche [pi'tacche] pitucche
7. " " " " pitate [pi'tate] pitate
9.4.5 $\gamma/w/\omega$

<table>
<thead>
<tr>
<th>[-i]</th>
<th>[-e]</th>
<th>[-o]</th>
<th>[-che]</th>
<th>[-te]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>$\alpha$</td>
<td>$\in\text{Ce}$</td>
<td>$y$</td>
<td>$w$</td>
</tr>
<tr>
<td>2.</td>
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<td>$\alpha\in\text{Ce}$</td>
<td>$\alpha\in\text{Ce}$</td>
<td>$\alpha\in\text{Ce}$</td>
</tr>
<tr>
<td>3.</td>
<td>$\alpha\in\text{Ce}$</td>
<td>$\alpha\in\text{Ce}$</td>
<td>$\alpha\in\text{Ce}$</td>
<td>$\alpha\in\text{Ce}$</td>
</tr>
<tr>
<td>4.</td>
<td>$\alpha\in\text{Ce}$</td>
<td>$\alpha\in\text{Ce}$</td>
<td>$\alpha\in\text{Ce}$</td>
<td>$\alpha\in\text{Ce}$</td>
</tr>
</tbody>
</table>

1. See V in table on page 282.
1. [othai] [uthie] [uthio] [othae] [othao] [othacche] [othate]
2. [anai] [anie] [anio] [anae] [anao] [anacche] [anate]
3. [halai] [helie] [helio] [halae] [halao] [halacche] [halate]
4. [hotai] [hotie] [hotio] [hotae] [hotao] [hotacche] [hotate]

The forms of these structures do not show any difference from those in structure CVCe-. Forms in this structure exclude i in y prosody in the stem syllable one. All three units y, e and a are stated for the stem syllable one. i is in w, e in y and w and a in y, w and o prosodic syllable.

1. Alternative pronunciation [uthai] [uthai] [othui]
2. " " [uthae]
3. " " [uthao] [uthoo] [othoo]
4. " " [uthacche] [uthocche] [uthecche]
5. " " [uthate] [uthote]
<table>
<thead>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>y o</td>
<td>y y y</td>
<td>y y y</td>
<td>y o</td>
<td>y o</td>
</tr>
<tr>
<td></td>
<td>C e-</td>
<td>C e-</td>
<td>C e-</td>
<td>C e-</td>
<td>C e-</td>
</tr>
<tr>
<td>2.</td>
<td>y w o</td>
<td>y y y</td>
<td>y y y</td>
<td>y w o</td>
<td>y w o</td>
</tr>
<tr>
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<td>C e-</td>
<td>C e-</td>
<td>C e-</td>
<td>C e-</td>
</tr>
<tr>
<td>3.</td>
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<td>y y y</td>
<td>y y y</td>
<td>y w o</td>
<td>y w o</td>
</tr>
<tr>
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<td>C e-</td>
<td>C e-</td>
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<td>C e-</td>
</tr>
<tr>
<td>4.</td>
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<td>w y y</td>
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<tr>
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<td>C e-</td>
<td>C e-</td>
<td>C e-</td>
<td>C e-</td>
</tr>
<tr>
<td>5.</td>
<td>W w o</td>
<td>W y y</td>
<td>W y y</td>
<td>W w o</td>
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</tr>
<tr>
<td></td>
<td>C e-</td>
<td>C e-</td>
<td>C e-</td>
<td>C e-</td>
<td>C e-</td>
</tr>
</tbody>
</table>

1. jiai] [jiyie][jiyio] [jiae] [jiao] [jiacche] [jiate]
2. [dawai][diyie][diyio] [dawae] [dawao] [dawacche][dawate]
3. [pawai] [payie][payio] [powae] [pawao] [pawacche][pawate]
4. [bowai][boyie][boyio] [bowae] [bowao] [bowacche][bowate]
5. [Jowai][Juyie][Juyio] [Jowae] [Jowao] [Jowacche][Jowate]

1. See VI on table on page 282
2. Alternative pronunciation [jiui]
3. " " [jioe]
4. " " [jioo]
5. " " [jiucche]
6. " " [jiute]
Forms in this structure exclude $e$ in $y$ prosody in the stem syllable one. There is a linking feature between the stem syllable one and two in the forms of all the scatters except $j_i$.

In all the forms with endings non-finite [-e] and imperative future [-o] this linking of the two syllable is $y$ prosodic, everywhere else it is $w$ prosodic. The junction prosody of stem and ending is similar to that of the CVCe- or VCe- stem structure. All three units $t$, $s$ and $a$ are stated for the stem syllable one. $t$ is in $y/w$, $s$ is in $w$ and $a$ is in $y$, $w$ or $p$ prosodic syllable.

$y/w/p$ 9.4.7 (C)VCCe

<table>
<thead>
<tr>
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</thead>
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<tr>
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<td>$y_{\tilde{\sigma}}$</td>
<td>$y_{\tilde{\sigma}}$</td>
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<tr>
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<td>$C_tCCe-$</td>
<td>$C_tCCe-$</td>
<td>$C_tCCe-$</td>
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<td>$C_tCCe-$</td>
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<td>$C_tCCe-$</td>
<td>$C_tCCe-$</td>
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<td>$C_tCCe-$</td>
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</tr>
<tr>
<td>$y_{\tilde{\sigma}}$</td>
<td>$y_{\tilde{\sigma}}$</td>
<td>$y_{\tilde{\sigma}}$</td>
<td>$y_{\tilde{\sigma}}$</td>
<td>$y_{\tilde{\sigma}}$</td>
<td>$y_{\tilde{\sigma}}$</td>
<td>$y_{\tilde{\sigma}}$</td>
</tr>
<tr>
<td>$C_tCCe-$</td>
<td>$C_tCCe-$</td>
<td>$C_tCCe-$</td>
<td>$C_tCCe-$</td>
<td>$C_tCCe-$</td>
<td>$C_tCCe-$</td>
<td>$C_tCCe-$</td>
</tr>
</tbody>
</table>

1. In columns 2 and 3 forms of $j_i$ scatter are $y$ prosodic in the linking of two syllables.
2. See VII table on page 182.
The stem syllable one is characterized by \textit{y}, \textit{w} or \textit{o} prosody; where the forms are with non-finite [-e] or imperative future [-o] stem syllable two is characterized by \textit{y} prosody everywhere else it is characterized by \textit{o} prosody. Forms with [-che] have \textit{g} prosodic junction. All three V units \textit{t}, \textit{e} and \textit{a} are stated for the stem syllable one. In the forms with non-finite [-e] and imperative future [-o] each of \textit{t}, \textit{e} units in the stem syllable one is in \textit{y} and \textit{w} prosody. \textit{a} is in \textit{o} prosody. Everywhere else \textit{t} is in \textit{y} prosodic and \textit{e} is in \textit{w} prosodic and \textit{a} is in \textit{y}, \textit{w} and \textit{o} prosodic syllables.

\[\text{w/o}\]

9.4.8 \( \text{VCCe}^{-1} \)

<p>| | | | | | | | |</p>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>( \text{\textit{y}} )</td>
<td>( \text{\textit{e}} )</td>
<td>( \text{\textit{a}} )</td>
<td>( \text{\textit{y}} )</td>
<td>( \text{\textit{e}} )</td>
<td>( \text{\textit{a}} )</td>
<td>( \text{\textit{y}} )</td>
</tr>
<tr>
<td>2</td>
<td>( \text{\textit{w}} )</td>
<td>( \text{\textit{y}} )</td>
<td>( \text{\textit{e}} )</td>
<td>( \text{\textit{w}} )</td>
<td>( \text{\textit{y}} )</td>
<td>( \text{\textit{e}} )</td>
<td>( \text{\textit{w}} )</td>
</tr>
<tr>
<td></td>
<td>( \text{\textit{o}} )</td>
<td>( \text{\textit{v}} )</td>
<td>( \text{\textit{u}} )</td>
<td>( \text{\textit{v}} )</td>
<td>( \text{\textit{u}} )</td>
<td>( \text{\textit{v}} )</td>
<td>( \text{\textit{v}} )</td>
</tr>
</tbody>
</table>

1. See VIII table on page 232
1. [aťkai] [aťkie] [aťkio] [aťkae] [aťkao] [aťkacche][aťkate]
2. [utraï] [utraie] [utraio] [utrae] [utrao] [utraacche][utraate]

The stem syllable one is characterized by υ or ω prosody. Forms in this structure do not include all three V elements. They only include υ in ω syllable and α in υ syllable. Imperative forms with [-o] (future) and non-finite forms with [-e] do not show any difference in the qualities from those in the forms with other endings. In all other respects these forms are similar to forms in CVCCε- structure.

As forms of reduplicated stem structure CVC/CVCε- do not show peculiarities other than those mentioned in connection with the forms of CVCε- structure they are not exemplified.
CHAPTER 10

VOWEL HARMONY

10.0 General Outline
10.1 CVC- Stem structure
10.2 VC- Stem structure
10.3 CV- Stem structure
10.4 CVCe- Stem structure
10.5 CVce- stem structure
10.6 CVCCce- stem structure
10.0 'Vowel harmony' has been defined by Bengali grammarians including S.K. Chatterji as 'the alteration of a vowel through the influence of a preceding or following vowel'.¹ It will be made clear in the course of this discussion that vowel harmony can not be treated purely on the basis of phonetic sequences and that a vowel is not 'changed' through the influence of another vowel.

It has been observed that a phonological approach to the problem would be more appropriate. M.A. Hai in his thesis,² brought out some of the interrelations in the phonetic sequences in terms of phonology. But so far has tried to deal with this relation of vowel sequences in terms of vowel harmony at the phonological level which in its turn is related to grammatical statement.

The interrelation of stem and ending involves considering the grammatical implications. An attempt to neglect the grammatical and structural implications and to make an overall statement based only on phonetic evidence and segmental contrasts may lead to an over simplified and uneconomic statement which may not be able to bring out the full functional

1. S.K. Chatterji, Marlborough's Bengali Self-Taught, 1927, p.112
relevance of the phonological features of vowel harmony.

Since the phonological and grammatical facts of a language show a kind of interdependence, to treat phonology without reference to grammar will result in a concealment of part of a most important set of structural facts pertinent to phonology.

In this section a systematic investigation into the problem of vowel harmony in the Bengali verbal forms is made and a solution in terms of prosodic analysis is suggested.

There are certain verbal forms in Bengali which from a number of points of view are listed as members of the scatter of a single verb. Within this scatter not only do endings differ but there are certain differences to be noted in the phonetic forms of the stem. At the phonological level the structure of the stem does not change in the sense that it remains CVC- or CV- etc., but notable phonetic differences within the limits of the structures are apparent.

A closer examination will show that this diversity of stem forms can be brought into some sort of order if the interrelation between stem vowel and ending vowel is systematized.


This does not mean, however, that grammar is pre-requisite to phonology. No level of analysis is pre-requisite to any other; each is interdependent of but congruent with others, and in analysing the language the finding at one level are of assistance in making statements at another level. - See J.R. Firth, "Technique of Semantics, Papers in Linguistics, (1934-1951), pp.7-33.
in terms of vowel harmony. The implication of such a term is
that the vowel elements have some inter-dependence, which will
be described and formulated. The vowel of the stem syllable
shows a 'harmony' in quality with different endings. That is
to say, in certain forms the two vowels of the two syllables
are interdependent and interrelated. This regular dependence
of vowels of one syllable on that of the other in the verbal
forms is treated in terms of vowel harmony. Vowel harmony
will be stated in terms of closeness and openness which are
associated with each other. It is not, however, possible to
describe all the phenomena in one system. A number of variet­
ies are found which lead to the necessity for a polystemic
statement.

The examples are chosen to show the salient feature of
related vowel harmony. Different sorts of relation will be
illustrated by using examples of one word verbal sentences.

The data considered here are entirely drawn from the
verbal forms. For clarity and consistency the terms vowel and
consonant are used throughout as phonetic terms. In phonologi­
cal statement V and C are used.

1. See for some of the notable prosodic studies in vowel
harmony in various languages:
(i) F.R. Palmer, "Openness in Tigre": A Problem in Prosodic
(ii) J. Carnochan, 'Vowel harmony in Igbo', African
(iii) R. K. Sprigg, 'Vowel harmony in Lhasa Tibetan:
Prosodic analysis applied to interrelated vocalic features

2. See J. R. Firth, 'Personality and Language in Society',
Papers in Linguistics, 1934-1951. Oxford University Press,
Much of what I shall say is at one or other of the levels, grammatical, phonological or phonetic. For, 'it is by means of the silent and unpronounceable abstractions of phonology that one can relate the ever changing phonetic detail of the speech stream to the grammatical statement.'

Elements of structure established at the phonological level are of two kinds, phonematic and prosodic. Phonological analysis recognises three V units, close unit, mid unit and open unit. Backness and rounding, frontness and unrounding, or absence of backness and frontness and lip rounding of the vowel sound in pronunciation are considered together with the rounding or unrounding of the consonant articulation, where there is one, and stated phonologically as a prosody of the syllable, and symbolized as /, y, or o. Vowel harmony will be treated under sections:

(i) monosyllabic stem structures: CVC-, VC- and CV-

(ii) Dissyllabic stem structures: (C)VCe-,

Examples are chosen to cover the full range of vowel sequences possible in forms of all stem structures plus endings of all possible structures: -V, -CV, -CVC, -eCV, -eC. The forms used for examples are with the following endings:

2. Since the forms in structures VCe- and VCe- show similar vowel harmony respectively to those in CVCe- and CVCe- structures they are not examplified in order to avoid repetition. For the same reason forms in reduplicated stem structures are also not given.
For the indicative forms:

- V: [-i], [-e], [-o]
- CV: [-li], [-le], [-lo].
- CVC: [-lam].
- CV: [-che].

For the imperative forms:

- V: [-o], [-o].
- SC: [-i], [-uk].
- :

For the non-finite forms:

- V: [-e], [-a].
- CV: [-le], [-te], [-no].
- VC: [-on].

As regards vowel harmony, it can be said that Bengali verbal forms do not show any peculiarities other than those mentioned here. Any Bengali verbal form can be fitted into one of the patterns.

10.1 Monosyllabic Stem-structure: CVC-

The verbal forms used for example in CVC- stem structure belong to the following stems {pi}- {khel}- {kat}- {bol}- and {tol}.

In considering the phonetic characteristics of the

1. Endings [-chi], [-che], [-cho] [-bi] [-be] and [-bo] are included for the examples in CV- stem structures. See §10.3
2. [-a] is used with the forms of the stem structures CVC-, VC- and CV-; [-no] is used with the forms of the stem structures CVCe-, VCe-, CVCe-, CVCCe-, VCCe and CVC/CVCe-. See §10.1 - 10.6.
vowels observed in the different scatters set out below it will be seen that a total of seven vowels must be recognised at the phonetic level. But in no single set of forms, (read vertically) is the maximum of five different vowels exceeded, sometimes they are less. The phonetic values assigned to these vowels are described in Chapter 5.

<table>
<thead>
<tr>
<th>Front</th>
<th>Central</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td>[i]</td>
<td></td>
<td>[u]</td>
</tr>
<tr>
<td>[e]</td>
<td></td>
<td>[o]</td>
</tr>
<tr>
<td>[ə]</td>
<td></td>
<td>[ɔ]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[a]</td>
</tr>
</tbody>
</table>

The following are the forms of structure CVC- with endings of different structures. Read horizontally the different forms on the same line of each list belong to the scatter of one same verb.

(a) Indicative forms

<table>
<thead>
<tr>
<th>(i) CVC + V</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>[-i] ending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. [i] - [i] [piṭi]</td>
<td>[-o] - [e] [peṭe]</td>
<td>[e]-[o] [peṭo]</td>
</tr>
<tr>
<td>2. [e]- [i] [kheli]</td>
<td>[-u] - [e] [khele]</td>
<td>[a]-[o] [khealo]</td>
</tr>
<tr>
<td>3. [a]- [i] [kaṭi]</td>
<td>[a]- [e] [kaṭe]</td>
<td>[a]-[o] [kaṭo]</td>
</tr>
<tr>
<td>4. [o]- [i] [boli]</td>
<td>[o]- [e] [bole]</td>
<td>[ɔ]-[o] [bolo]</td>
</tr>
<tr>
<td>5. [u]- [i] [tuli]</td>
<td>[o]- [e] [tole]</td>
<td>[o]-[o] [tolo]</td>
</tr>
</tbody>
</table>

Forms with ending [-i] show vowel sequences similar to those with ending [-i]; forms with ending [-en] are similar to those in [-e]; forms with [-on] are similar to those in [-o].

(ii) CVC + CV

<table>
<thead>
<tr>
<th>[-li] ending</th>
<th>[-le] ending</th>
<th>[-lo] ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>[i]-[i]</td>
<td>[i]-[e]</td>
<td>[i]-[o]</td>
</tr>
<tr>
<td>[e]-[i]</td>
<td>[e]-[e]</td>
<td>[e]-[o]</td>
</tr>
<tr>
<td>[a]-[i]</td>
<td>[a]-[e]</td>
<td>[a]-[o]</td>
</tr>
<tr>
<td>[o]-[i]</td>
<td>[o]-[e]</td>
<td>[o]-[o]</td>
</tr>
<tr>
<td>[u]-[i]</td>
<td>[u]-[e]</td>
<td>[u]-[o]</td>
</tr>
</tbody>
</table>

Forms in endings [-chi], [-chif], [-chili], [-chile], [-chilo], [-chilen], [-chilam] [-tif], [-bi] show vowel sequences similar to those in [-li].

Forms with endings [-che], [-chen], [-te], [-ten], [-be], [-ben], [-len] are similar to those in [-le].

Forms with endings [-cho], [-to], [-bo] are similar to those in [-lo].
<table>
<thead>
<tr>
<th>(iii) CVC + CVC</th>
<th>(iv) CVC + eCV</th>
</tr>
</thead>
<tbody>
<tr>
<td>[-lam] ending</td>
<td>[-eche] ending</td>
</tr>
<tr>
<td>1. [e]-[a] [peṭlam]</td>
<td>[i]-[e] [piṭeche]</td>
</tr>
<tr>
<td>2. [a]-[a] [khättam]</td>
<td>[e]-[e] [kheleche]</td>
</tr>
<tr>
<td>3. [a]-[a] [katṭlam]</td>
<td>[e]-[e] [keṭeche]</td>
</tr>
<tr>
<td>4. [o]-[a] [bollam]</td>
<td>[o]-[e] [boleche]</td>
</tr>
<tr>
<td>5. [o]-[a] [tollam]</td>
<td>[u]-[e] [tuleche]</td>
</tr>
</tbody>
</table>

Forms with [-tam] are similar to those with [-lam] ; forms with [-echi] [-echi], [-echo] [-echen] [-echilam] [-echili] [echile] [echilo] [echilen] are similar to those with [-eche].

1. There are a few verbal scatters which show alternative forms for some speakers. e.g. bec- and kuṭ- and chut- with [-lam] ending have the forms [beclam] and [beclam]; [kuṭlam] and [koṭlam] [chuṭlam] and [choṭlam]. The alternative forms such as [beclam] and [kuṭlam] and [chuṭlam] are not included with the examples.

In all other respects forms of the scatters are similar to the verbs of khel- and tol- cited here.

2. The form has an alternative pronunciation [piṭlam]
(c) Imperative forms

(i) CVC + ź

(ii) CVC + źC

(-i.) ending  [-uk] ending

1. [pet]²  [i]-[i] [pići]  [i] -[u] [pićuk]
2. [khal]  [e]-[i] [kheći]  [e] -[u] [khećuk]
3. [kač]  [a]-[i] [kaći]  [a] -[u] [kaćuk]
4. [bol]  [o]-[i] [boći]  [o] -[u] [boluk]
5. [tol]  [u]-[i] [tulić]  [u] -[u] [tuluk]

Forms with [-un] are similar to those with [-uk].

(iii) CVC + V³

[-o] ending (Present)  [o-] ending (future)

1. [e]-[o]  [peto]  [i]-[o]  [pićo]
2. [a]-[o]  [khalo]  [e]-[o]  [kheło]
3. [a]-[o]  [kačo]  [e]-[o]  [kačo]
4. [o]-[o]  [bolo]  [o]-[o]  [bolo]
5. [o]-[o]  [tolo]  [u]-[o]  [tulo]

It will be seen that the present imperative forms with
[ -o] are similar to the indicative with [ -o].⁴  (supra)

1. Although these forms in ź ending are monosyllabic and thus
display no vowel harmony relation as between the two syllables of the forms in other endings, they show same five vowel differences of [e], [a], [a], [o] and [o], in the stem syllable and are therefore included in the examples.
2. The alternative pronunciation of this form is [pić]·
3. Imperative forms are found in present and future tenses.
Forms in both tenses are found in [-o] ending. But the stem syllable shows different features in different 'tense-endings For the present purpose the two groups will be separated by naming them as 'present' and 'future'.
4. See Chapter 1.
(C) Non-finite forms

(i) CVC + V

[-e] ending  
[-a] ending

1. [i]-[e]  [piṭe]  [e]-[a]  [peṭa]
2. [e]-[e]  [khele]  [a]-[a]  [kaṭa]
3. [e]-[e]  [keṭe]  [o]-[a]  [bola]
4. [o]-[e]  [bole]  [o]-[a]  [tola]

(ii) CVC + CV

[-le] ending  
[-te] ending

1. [i]-[e]  [piṭle]  [i]-[e]  [piṭte]
2. [e]-[e]  [khelle]  [e]-[e]  [kelte]
3. [a]-[e]  [kaṭle]  [a]-[e]  [kaṭte]
4. [o]-[e]  [bolle]  [o]-[e]  [bolte]
5. [u]-[e]  [tulle]  [u]-[e]  [ulte]

It will be seen that the indicative forms in endings [-le] and [-te] are similar to the non-finite forms in [-le] and [-te].

(iii) CVC + VC

[-on] ending

1. [e]-[o]  [peṭon]
2. [a]-[o]  [kaṭon]
3. [o]-[o]  [bolon]
4. [o]-[o]  [tolon]

1. The alternative form of [peṭa] is [piṭa]
2. See § 3.4.5 and 3.4.6
3. The alternative form of [peṭon] is [piṭon].
When the patterns of stem + ending vowels are examined, it is seen that there is no contrast relationship of frontness or backness with backness throughout a form. That is, no prosodic interrelation of rounded-rounded or unrounded-unrounded can be stated between the ending syllable and the stem syllable in terms of \( y \), \( w \), or \( \alpha \). For example, in \([\text{pe} \text{t} \text{o}]\) the stem syllable is \( y \) prosodic and the ending syllable is \( w \) prosodic. In \([\text{t} \text{u} \text{l} \text{i}]\) the stem syllable is \( w \) prosodic and ending syllable is \( y \) prosodic. In \([\text{k} \text{a} \text{t} \text{i}]\) and \([\text{k} \text{a} \text{t} \text{o}]\) the stem syllable is \( \alpha \) prosodic and the ending syllable is \( y \) and \( w \) prosodic respectively.

It will also be seen from the examples that every verbal scatter shows forms with a closer vowel and with a more open vowel in the stem though the vowel in the ending is the same. For instance, in the scatter of the verb \([\text{b} \text{o} \text{l} \text{e}], \ [\text{b} \text{o} \text{l} \text{e}], \ [\text{b} \text{o} \text{l} \text{o}]\) \([\text{b} \text{o} \text{l} \text{o}]\) the sequences are \([\text{o}-\text{e}], \ [\text{o}-\text{e}], \ [\text{e}-\text{o}]\) and \([\text{o}-\text{o}]\).

A twofold relationship, close-close, and open-open can be stated for the two syllables of the stem and ending of some of the verbal forms. That is, an interrelation is stateable in terms of degree of closeness and openness between the two syllables: where the vowel of the ending is close rather than open there is closeness in the stem, and where the vowel of the ending is open rather than close there is openness in the vowel of the stem syllable. For example, forms in \([\text{i}]\) ending and \([\text{a}]\) ending may be compared: \([\text{pi} \text{t} \text{i}], \ [\text{k} \text{h} \text{e} \text{l} \text{i}], \ [\text{k} \text{a} \text{t} \text{i}], \ [\text{b} \text{o} \text{l} \text{i}], \ [\text{t} \text{u} \text{l} \text{i}]; \ [\text{p} \text{e} \text{t} \text{a}] \ [\text{k} \text{h} \text{\text{a}l} \text{a}], \ [\text{k} \text{a} \text{t} \text{a}], \ [\text{b} \text{o} \text{l} \text{a}], \ [\text{t} \text{o} \text{l} \text{a}]\). But

1. See for phonetic implications of \( y \), \( w \) and \( \alpha \) prosodics Chapter 7.
this statement can not be given as a rule for some other verbal forms, for instance non-finite and indicative forms in [-e] ending, indicative and imperative forms in [-o] ending. e.g. [peṭe], [khałe], [kāṭe], [bōle], [tōle] (indicative); [piṭe], [khele], [keṭe] [bōle] and [tule] (non-finite); [peṭo], [kh.lo], [kāṭo], [bolo] and [tolo] (indicative); and [piṭo], [khelo], [keṭo], [bolo], and [tulo] (Imperative future).

It seems, therefore, clear that an overall vowel harmony statement can not properly be made solely on the basis of phonetic sequences. Interrelations between ending syllables and stem syllables can be shown as a set of systems in which phonetic, phonological and grammatical consideration will play a part.¹

(a) Indicative forms:

Forms whose ending structure is -V

In the forms where the ending is [i], five vowels are possible in the stem syllable: [i], [e], [a], [o], [u].

In the forms where the ending is [e] and [o], five vowels are possible in the stem syllable [e], [a], [o], and [o].

¹ Supra.
In other words the interrelation is concerned with (a) close forms and (b) open forms.¹

With the close vowel [i] in the ending, forms of different scatters exhibit [i], [e], [a], [o] and [u] in the stem syllable, and with the half-close vowel [-e] or [o] in the ending they exhibit [e], [æ], [a], [o], and [o]. That is, where the vowel of the ending is close there is closeness in the stem, and where the vowel of the ending is half-close there is openness in the stem.

The forms in [-i] ending that exhibit closeness in the stem syllable will be referred to as close forms and the forms in [-e] and [-o] endings that exhibit openness in the stem syllable will be referred to as open forms.

In close forms where the second syllable is close in y-prosody, the first syllable is close mid and open in all three prosodies, y, w, p.

In each of y and w prosodic syllable the vowel in the stem has two qualities between close and half-close, and between half-close and half-open and in p-prosodic syllable the vowel in the stem syllable is open neither front nor back.

The vowel qualities in y- and w- syllables are never more open than between half-close and half-open. That is, the maximum

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¹ These are prosodic terms and are employed for the statement of the forms as a whole in terms of vowel harmony. J.Carnochan uses the term 'raising' and 'lowering' for his treatment (see his vowel harmony in Igbo, African language studies, I, 1960, p.156); R.K.Sprigg uses 'open piece' and 'close piece' (see his vowel harmony in Dhasa Tibetan: B.S.O.A.S. XXIV, I, 1961).
degree of openness in y- and w- syllable in close forms is between half-close and half-open.

In open forms where the vowel of the second syllable is mid in y- or w- prosody, the first syllable is mid and open in all three prosodies, y, w, and φ.

In each of y and w prosodic syllable the vowel in the stem syllable has two qualities between half-close and half-open and between half-open and open, and in φ-prosodic syllable the vowel in the stem syllable is open neither front nor back.

The vowel qualities in y- and w- syllables are never closer than between half-close and half-open. That is, the maximum degree of closeness in y- and w- syllable in open forms is half-close.

The vowel qualities are shown in the following vowel diagrams.

**Close forms**

Front

Central

Back

Front

Back

y/w CV₂C - y

[piṭi]
[tuli]
[kheli]
[boli]
II
Both close and open forms

Front
Central
Back

Front Back

CV C - y/w

[kati] [ka-te] [ka-to]

III
Open forms

Front
Central
Back

Front Back

CV C - y/w

CV2C - y/w

[pe-te] [to-ple]
[kha-le] [bole]
[pe-to] [tolo]
[kha-lo] [bolo]
It will be seen that except for some alternative forms, 'close-forms' have maximum degree of openness between half-close and half-open, and 'open forms' have maximum degree of closeness between half-close and half-open, vowel qualities in the stem syllable both in \( y \) and \( w \) prosodies.

\( \text{CVC}+\text{CV} \)

It will be seen from the examples, that in the forms of the scatters in endings \([-li], [-le], \) and \([-lo] \) five vowels: \([i], [e], [a], [o], \) and \([u] \) are possible in the stem syllable. That is, these forms exhibit same phonetic characteristic as in the forms in \([i] \) ending. These forms, therefore, are treated as close forms. This statement will hold good for all the forms of the scatter whose ending structure is \(-CV\).

In each of \( y \) and \( w \) prosodic syllable the vowel in the stem syllable has two qualities, close and half-close, and in \( o \) prosodic syllable the vowel in the stem syllable is open neither front nor back.

The maximum degree of openness in \( y \) and \( w \) prosodic syllables is between half-close and half-open.

That is, where the ending is of \(-CV\) structure the forms have only one sort of vowel harmony relation. No change in the vowel of the stem is observed in the forms with different vowels in the ending structure \(-CV\). The vowel in the stem-
syllable does not alter whether the vowel in the ending syllable is close front, half-close front, or half-close back.

Qualities of vowels in \( Y \) and \( W \) prosodic syllable in the forms of CVC + CV ending structure are similar to those in [i] ending-forms.

CVC + CVC

A different statement is required for the forms in [-lam] ending. The forms in [-lam] ending show five different vowels in the stem syllable: [e], [æ], [a], [ɔ], and [o].

In \( Y \) and \( W \) syllables the vowel in the stem syllable have two qualities, between half-close and half-open and between half-open and open, in \( Y \) syllable the vowel in the stem syllable has one quality, i.e. open neither back nor front.

The maximum degree of closeness in \( Y \) and \( W \) syllables is between half-close and half-open. The forms in this ending, therefore, will be referred to as open forms.

The vowel qualities in different syllables are similar to those shown in vowel diagram II and III for the open forms in [ɔ] and [o] endings.

It will be seen that the 'open forms' in [-e] or [o] ending are in the same system as the open form in [-lam] ending; and that the 'close forms' in [-i] ending are in the same system as the close form in [-li], [-le] and [-lo] endings.

This shows that the forms in ending whose structure is -CV and -CVC form two groups, close forms and open forms in terms of vowel harmony in the same system as those whose

1. Supra
ending structure is -V, with the difference that in close forms whose ending structure is -V, it has [i] in the second syllable, and in close forms whose ending structure is -CV, it has [i], [e] and [o] in the second syllable; and that in open forms whose ending structure is -V, it has [e] or [o] in the second syllable, and in open forms whose ending structure is -CVC, it has [a] in the second syllable.

That is to say a relation between the two syllables of the forms whose structures are CVC-CV, or CVC-CVC can be stated that where a -C-C- sequence of stem and ending occurs the form is either close or open. The open forms have invariably the ending structure -CVC, the close forms have -CV and -CVC both. But the vowel in the ending syllable of the open form is always [a] in the open forms, and [-i], [e] or [o] in the close forms.

CVC + eCV

In the forms where the ending is [-eche] four vowels are possible in the stem syllable: [i], [e], [o] [u].

Thus in each of \( Y \) and \( W \) prosodic syllable the vowel in the stem syllable has two qualities, close and half-close. The most important point to be noted is that there is no \( \nu \) prosodic syllable in the form of the scatter where the vowel of the stem syllable is open neither front nor back in other endings, both in 'close forms' and 'open forms.'

The vowel qualities in \( Y \) and \( W \) syllables are never more open than between half-close and half-open. This is the maximum
degree of openness even for the verb of the scatter where open syllable in \( v \) prosody of the close forms in \([-i]\) ending is stated. Thus, \([ka^i]\) has maximum openness in the stem syllable, whereas in \([-eche]\) ending the scatter gives the form \([keteche]\), where the maximum openness of the vowel of the stem syllable is between half-close and half-open. That is to say, in close forms where four vowel differences are found there are two degrees of openness in each of \( V \) and \( W \) syllables where the maximum degree of openness is between half-close and half-open.

The vowel qualities of these forms are shown in the diagram below: with reference to my pronunciation of the forms \([pite]\), \([khele]\), \([kte]\), \([bole]\), \([tule]\).
(b) Imperative forms

In the forms where the ending is 0 or [-o] (Present) five vowels [e], [ə], [a], [ɔ], and [o] are possible in the stem-syllable.

It will be noted that the monosyllabic forms in 0 ending show the same five vowel differences in the stem syllable as the forms in ending [-o] (Present). Hence they are included in the examples, though there can be no vowel harmony statement for these forms.

In the forms where the ending is [-iʃ] or [-uk] five vowel differences are possible: [i], [e], [a], [o], [u].

In the forms where the ending is [-o] (Future) four vowels [i], [e], [o] and [u] are possible in the stem syllable.

The forms in [-iʃ] and [-uk] endings exhibit closeness in the stem syllable and will be referred to as 'close forms', and the forms in endings 0 and [-o] (Present) exhibit openness in the stem syllable and may be referred to as 'open forms'.

In close forms where the second syllable is close in y or w- prosody, the first syllable is close, mid and open in all three prosodies, y, w and ə.

In each of y and w- prosodic syllable the vowel in the stem syllable has two qualities, between close and half-close, and between half-close and half-open, and in ə prosodic syllable the vowel in the stem syllable is open neither back nor front.

The vowel qualities are never opener than between half-
close and half-open in y and w syllables.

In open forms where the second syllable is mid in w prosody, the first syllable is mid and open in all three prosodies, y, w and o.

In each of y and w prosodic syllables the vowel in the stem syllable has two qualities, between half-close and half-open, and between half-open and open, and in o prosodic syllable the vowel in the stem syllable has an open quality neither front nor back.

Imperative open forms show same vowel harmony relation as indicative open forms whose ending structure is -V; and imperative close forms show same vowel harmony relation as indicative close-forms whose ending structure is -V.

In the forms where the ending is [-o] (Future) four vowels [i], [e], [o] and [u] are possible. These are close forms where the second syllable is mid in w prosody the first syllable is close and mid in y and w prosodies. There is no form exhibiting a o-prosodic stem syllable.

The vowel qualities in y and w syllables are never more open than between half-close and half-open. This is the maximum degree of openness even for the most open syllable in o-prosodic syllable of a close form in ending [-iJ] or [-uk]. Thus, [kaʃiʃ] or [kaʃuk] has maximum openness in the stem syllable, whereas in [keɾo], maximum openness is between half-close and half-open. That is to say, where four vowel alternances are found in close forms. There are two degrees of openness in each of y and w syllables where the maximum degree
of openness is halfway between half-close and half-open.

It is interesting to note that the imperative forms in ending [-o] (Future) show similar feature as the indicative forms in [-eche] ending.

(c) Non-finite forms:

In the non-finite forms where the ending is [-e] four vowels [i], [e], [o] and [u] are possible in the stem syllable.

In the forms where the ending is [-a] or [-on] five vowels [e], [æ], [a], [o] and [o] are possible:

The forms ending [-e] exhibit closeness in the stem syllable, and will be referred to as close forms. The forms in endings [-a] and [-on] exhibit openness in the stem syllable and will be referred to as open forms.

In close forms where the vowel of the second syllable in y prosody is half-close, the first syllable in y and w prosodies is close and mid. The scatters have no forms exhibiting a φ prosodic stem-syllable.

The vowel qualities in y and w syllables are never more open than between half-close and half-open. This is the maximum degree of openness even for the syllable in the form [kete] of the scatter kat-. These non-finite forms in [-e] ending may be compared with the imperative forms in [o](Future) ending and indicative forms in [-che] ending. All these forms are close forms exhibiting four vowel alternances in the stem syllable. They may be contrasted with the indicative forms in [e] ending, where the forms are open form.

In these close forms vowels are found in two degrees of closeness in each of y and w syllables where the maximum
degree of openness is half-close.

The open forms whose ending structure is -V or -eC where the V is open in y prosody and e of -eC is in w prosody the vowel of the first syllable in y or w prosody has two qualities: between half-close and half-open and between half-open and open and in w prosodic syllable the vowel is open neither front nor back. The maximum degree of closeness in y and w syllables is between half-close and half-open in these open forms.

The non-finite forms in [-le] and [-te] endings show five vowel differences in the stem syllable: [i], [e], [a], [o] and [u]. These forms show exactly the same phonetic alternances as those in indicative [-le] ending. These are stated as close forms. A separate statement is not required for the non-finite close-forms of this category, as the statement made for the indicative close forms whose ending structure is -CV holds good for these.

The above statement can be summarised as follows:

Vowel harmony cannot be stated purely on the basis of phonetic succession, but an interrelation between the second syllable and the first syllable can be shown. The inter-relation of the system is concerned with
(a) the close forms of verb, and
(b) the open forms of verb.

In both close forms and open forms there are two degrees of openness in each of y and w syllables, and one degree in w syllable.
In close forms the degree of openness is never more open than between half-close and half-open, and in open forms degree of closeness is never closer than between half-close and half-open in both y and w syllables.

Close forms form two categories: (i) those exhibiting five vowels, \([i], [e], [a], [o], \) and \([u]\) in the stem-syllable, and (ii) those exhibiting four vowels \([i], [e], [o]\) and \([u]\) in the stem syllable.

Open forms exhibit five vowels, \([e], [æ], [a], [ɔ] \) and \([o]\) in the stem syllable.

It will be seen that the vowel \([a]\) falls in one category of close forms and in open forms. One category of close forms does not show \([a]\) in the stem syllable.

Each of indicative, imperative and non-finite forms is either an open form or a close form of either kind.

Indicative close forms whose ending structure is \(-V\) show five vowel alternances in the stem syllable where \(V\) in ending syllable is close unit in y prosody. The stem syllable has two degrees of openness in \(y\) and \(w\) prosodies, and one degree of openness in \(u\) - prosody.

Indicative open forms whose ending structure is \(-V\) show five vowel alternances in the stem syllable where the ending is mid in \(y\) and \(w\) syllable. The stem syllable has two degrees of openness in \(y\) and \(w\) prosodies and one degree of openness in \(u\) - prosody.

1. In alternative forms \([piːtə]\) and \([chuːtə]\) the vowel quality is close in both \(y\) and \(w\) syllables.
Indicative forms whose ending structure is -eCV are always close forms. They show four vowel alternances in the initial stem syllable where the ending syllable is e in y prosody. The stem syllable has two degrees of openness in y and w prosodies. There is no o - prosodic syllable in the stem in the forms with this ending structure.

Indicative close forms whose ending structure is -CV(C) show five different vowel alternances in the stem syllable where the second syllable is close in y prosody or mid in y or w prosody. The stem syllable has two degrees of openness in y and w prosodies and one degree of openness in o prosody.

Indicative open forms whose ending structures is -CV(C) show five different vowel alternances in the stem syllable where the second syllable is open in o prosody. The stem syllable has two degrees of openness in y and w prosodies, and openness in o prosody.

These can be formulated thus:
Indicative forms

CVC- stem structure + V ending structure

Close forms

1. First syllable: [i],[e],[a],[o],[u].  Second syllable: [i]

Close forms

2. First syllable: [i],[e],[a],[o],[u].  Second syllable: [e]/[o]

Open forms

CVC+CVC

3. First syllable: [i],[e],[a],[u].  Second syllable: [e]

CVC CV(C)

4. First syllable: [i],[e],[a],[o],[u].  Second syllable: [i]/[e]/[o]

1. See Indicative forms with ending [-i] on page 303.
2. See Indicative forms with ending [-e] and [-o] on page 303.
3. See Indicative forms with ending [-eche] on page 305.
4. See Indicative forms with ending [-le] on page 304 and also for [-e], [-o].
Imperative close forms whose ending structure is V show four vowel alternances in the stem syllable where the ending syllable is mid in w prosody. The stem syllable has two degrees of openness in y and w prosodies. There is no prosodic syllable in the stem of the forms with this ending structure.

Imperative open forms whose ending structure is V show five vowel alternances in the stem syllable where the ending syllable is mid in w prosody. The stem syllable has two degrees of openness in y and w prosodies, and one degree of openness in \( \nu \) - prosody.

The imperative close forms are in future tense and the imperative open forms are in present tense.

Imperative forms whose ending structure is \(-aeC\) are all close forms. They show five vowel alternances in the stem syllable where the ending syllable is \( e \) in y and w prosodies. The stem syllable has two degrees of openness in y and w prosodies and one degree of openness in \( \nu \) - prosody.

These can be formulated thus:

\[
\begin{align*}
\text{open forms} & \quad [e], [\omega], [a], [o], [o] \quad [a] \\
\text{Imperative close forms} & \quad \text{V}\, CV_2C-C\alpha C \\
\text{Imperative open forms} & \quad \text{V}\, CV_1C-C\alpha C
\end{align*}
\]

1. See Indicative forms with ending \([-lam]\) on page 305.
2. The alternative forms \([pit\omega]\) and \([chu\omega]\) are considered in future imperative close forms in \([-o]\) ending.
Imperative forms

CVC + V:  

<table>
<thead>
<tr>
<th>First syllable</th>
<th>Second syllable</th>
<th>close forms:</th>
<th>open forms:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[i],[e],[o],[u]</td>
<td>[o]</td>
<td>close y/w w</td>
<td>open y/w w</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CV₂C-ε</td>
<td>CV₂C-ε</td>
</tr>
</tbody>
</table>

CVC + eC:  

<table>
<thead>
<tr>
<th>close forms:</th>
<th>open forms:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[i],[e],[a],[o],[u],[i]/[u]</td>
<td>close y/w y/w</td>
</tr>
<tr>
<td></td>
<td>CV₂C-eC</td>
</tr>
<tr>
<td></td>
<td>close y/w y/w</td>
</tr>
<tr>
<td></td>
<td>CV₁C-eC</td>
</tr>
</tbody>
</table>

Non-finite close forms whose ending structure is V, show four vowel alternances in the stem syllable where the ending syllable is mid in y prosody. The stem syllable has two degrees of openness in y and w prosodies. There is no prosodic syllable in the stem of the forms with this ending structure.

Non-finite open forms whose ending structure is V, show five vowel differences in the stem syllable where the ending

1. See Future Imperative forms with ending [-o] on page 306.
2. See Present Imperative forms with ending [-o] on page 306.
3. See Imperative forms with endings [-i] and [-uk] on page 306.
syllable is open in \( ^{\circ} \) prosody. The stem syllable has two degrees of openness in \( y \) and \( w \) prosodies and one in \( ^{\circ} \) prosody.

Non-finite open forms whose ending structure is \(-oC\), show five vowel alternances in the stem syllable where the ending syllable is mid in \( w \) prosody. The stem syllable has two degrees of openness in \( y \) and \( w \) prosodies and one degree of openness in \( ^{\circ} \) prosody.

Non-finite forms whose ending structure is \(-CV\) are all close forms. They show five vowel differences in the stem syllable where the ending syllable is mid in \( y \) prosody. The stem syllable has two degrees of openness in \( y \) and \( w \) prosodies and one degree of openness in \( ^{\circ} \) prosody.

These can be formulated thus:

Non-finite forms

\[
\begin{array}{ll}
\text{CVC + V :} & \text{First syllable} & \text{Second syllable} \\
\text{close forms:} & \{i], [e], [o], [u] & \{e, close \\
\text{open forms:} & \{e], [w], [a], [o], [o] & \{a, open \}
\end{array}
\]

1. The alternative forms \([pi\text{\'}a], [chu\text{\'}a]\) and \([pi\text{\'}on], [chu\text{\'}on]\) have close vowel in the stem syllable in both \( y \) and \( w \)-prosodies.
2. See Non-finite forms with \([-e]\) on page 367.
3. See Non-finite forms with \([-a]\) on page 367.
This phonetic relation stated in terms of phonology can be related to different grammatical categories with cross reference to the particular ending structures of the close forms and open forms.

Indicative forms in simple present tense, first person are close forms. They exhibit five vowel alternances in the stem syllable, [i], [e], [a], [o] and [u]. Forms in simple present, 3rd person and second person, ordinary grade are open forms exhibiting five vowel alternances [e], [a], [o], and [o] in the stem syllable of the forms of different scatters. Forms in present and past perfect tenses in all persons and grades are close forms that exhibit four vowels, [i], [e] [o] and [u] in the stem syllable of forms of different scatters.

1. See Non-finite forms with [-on] on page 367.
2. See Non-finite forms with [-le] and [-te] on page 367.
Forms in simple past and habitual past in 2nd and 3rd persons in all grades, and in future and present progressive and past progressive tenses in all persons and grades, are close forms which exhibit five vowel alternances, [i], [e], [a], [o] and [u] in the stem syllable. Forms in simple past and habitual past in 1st person are open forms that exhibit five vowel alternances [e], [æ], [a] [ɔ] and [o] in the stem syllable of forms of different scatters.

Imperative forms in future tense, 2nd person, ordinary grade are close forms that exhibit four vowel alternances, [i], [e], [o] and [u] in the stem syllable. Forms in present and future tenses, 2nd person honorific and familiar grade, third person ordinary and honorific grade are close forms that show five vowels [i], [e], [a], [o] and [u] in the stem syllable of CVC- structure. Forms in present tense, second person ordinary grade are open forms exhibiting [e], [æ], [a] [ɔ] and [o] in the stem syllable of the verbs of different scatters.

Non-finite forms with ending [-e] are close forms which exhibit four vowel alternances [i], [e], [o] and [u] in the stem syllable. Forms with [-le] and [-te] endings are close forms and they exhibit five vowel alternances, [i], [e], [a] [ɔ], and [u]. Forms with [-a] and [-no] endings are open forms. They exhibit five vowels in the stem syllable of the forms of different scatters, [e], [æ], [a], [ɔ], and [o].

Now I propose to set out in tabulated form the phonological formulae for the stem and ending syllables, together
Table of the phonological formulae for the stem and ending syllables of CVC- stem structure.

(a) Indicative forms

<table>
<thead>
<tr>
<th></th>
<th>Close forms</th>
<th>Open forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>-V</td>
<td>-CV</td>
<td>-CV</td>
</tr>
<tr>
<td>[-i-]ing</td>
<td>[-li]</td>
<td>[-le]</td>
</tr>
<tr>
<td>[-lo]</td>
<td>[-echi]</td>
<td>[-e]</td>
</tr>
<tr>
<td>[-o]</td>
<td>[-lam]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[CV₂C⁻]</td>
<td>y/w y</td>
<td>y/w y</td>
<td>y/w w</td>
<td>y/w y</td>
<td>y/w w</td>
<td>y/w y</td>
</tr>
<tr>
<td></td>
<td>CV₂C⁻</td>
<td>CV₂C⁻</td>
<td>CV₂C⁻</td>
<td>CV₂C⁻</td>
<td>CV₂C⁻</td>
<td>CV₂C⁻</td>
</tr>
<tr>
<td></td>
<td>[-o]</td>
<td>[-lam]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. close      open      open      open      open      open

2. close      close      close      close      close      open      open
close      close      close      close      close      open      open
close      close      close      close      close      open      open

3. close      close      close      close      close      open      open
close      close      close      close      close      open      open
Scatter

1. [piṭi]  [piṭli]  [piṭle]  [piṭlo]  [piṭeche]  [pete]  [pe]  
2. [kheli]  [khelli]  [khelle]  [khello]  [kheleche]  [khale]  [ke]  
3. [boli]  [bolli]  [bolle]  [bollo]  [bolechi]  [bole]  [bo]  
4. [tuli]  [tulli]  [tulle]  [tullo]  [tuleche]  [tole]  [to]  
5. [kati]  [katli]  [katle]  [katlo]  [keteche]  [kate]  [ka]  

(c) Imperative forms

<table>
<thead>
<tr>
<th>Close forms</th>
<th>Open forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>-eC</td>
<td>V</td>
</tr>
<tr>
<td>close y/w CV2C-ε</td>
<td>close y/w CV2C-ε</td>
</tr>
<tr>
<td>1. y close C+C-ε</td>
<td>y close C+C-ε</td>
</tr>
<tr>
<td>2. y close C+C-ε</td>
<td>y close C+C-ε</td>
</tr>
<tr>
<td>3. y close C+C-ε</td>
<td>y close C+C-ε</td>
</tr>
<tr>
<td>4. y close C+C-ε</td>
<td>y close C+C-ε</td>
</tr>
<tr>
<td>5. y close C+C-ε</td>
<td>y close C+C-ε</td>
</tr>
<tr>
<td></td>
<td>[piṭiʃ]</td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
</tr>
<tr>
<td>2.</td>
<td>[kheliʃ]</td>
</tr>
<tr>
<td>4.</td>
<td>[bolʃ]</td>
</tr>
<tr>
<td>5.</td>
<td>[tulʃ]</td>
</tr>
</tbody>
</table>

3. [katiʃ] | [kaṭuk] | [kaṭun] | [keṭo] | [kaṭo] |

(c) Non-finite forms

<table>
<thead>
<tr>
<th>CLOSE FORMS</th>
<th>OPEN FORMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>CV</td>
</tr>
<tr>
<td>[-e]</td>
<td>[-le]</td>
</tr>
<tr>
<td>y/w</td>
<td>y</td>
</tr>
<tr>
<td>CV₂C-є</td>
<td>CV₂C-є</td>
</tr>
</tbody>
</table>

1. close | close | close | open | open |
| y | y | y | y | y |
| CєC-є | CєC-є | CєC-є | CєC-є | CєC-є |
| close | close | close | open | open |
| y | y | y | y | y |
| CєC-є | CєC-є | CєC-є | CєC-є | CєC-є |
| close | close | close | open | open |
| w | y | w | y | w |
| CєC-є | CєC-є | CєC-є | CєC-є | CєC-є |

3. close | close | close | open | open |
| y | y | y | y | y |
| CєC-є | CєC-є | CєC-є | CєC-є | CєC-є |
10.2 VC- Stem Structure

Forms in VC- stem structure show similar features to those in CVC- stem pattern with different endings, except that there is no form with close front vowel [i] in the stem syllable.

The statement made for the forms in CVC- stem structure is valid for the forms in VC- stem structures except that both close forms and open forms show only one quality of vowel in the stem syllable in y prosody. Thus, in close form [heli], [e] in the stem syllable, in y prosody is the only vowel in forms in [i] ending; and in open form [hale], [a] in the stem syllable in y prosody is the only vowel in forms in [e] ending.

1. See M.A.Hai, op.cit.p.60ff. He has two scatters an- and ùth- for his examples. I have chosen hel-, ho- , an- , and ùth- as I have treated aspiration as a prosody and therefore structurally they are all VC- for me. The stem syllable of first two is h- prosodic and last two h prosodic. Thus [hale], [ho-te] are HVC-V and [ane], and [u-the] are HVC-V in structure.

2. See examples below.
The maximum degree of openness in $y$ and $w$ syllables is similar to those mentioned about the forms in stem structure $CVC- + \varepsilon$

This will be clear from the following examples.

(a) Indicative forms

<table>
<thead>
<tr>
<th>[-i] ending</th>
<th>[-e] ending</th>
<th>[-o] ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>[heli]</td>
<td>[hæle]</td>
<td>[hælo]</td>
</tr>
<tr>
<td>[ani]</td>
<td>[ane]</td>
<td>[ano]</td>
</tr>
<tr>
<td>[hoṭi]</td>
<td>[hoṭe]</td>
<td>[hoṭo]</td>
</tr>
<tr>
<td>[uthi]</td>
<td>[oṭhe]</td>
<td>[oṭho]</td>
</tr>
<tr>
<td>[-li] ending</td>
<td>[-le] ending</td>
<td>[-lo] ending</td>
</tr>
<tr>
<td>[helli]</td>
<td>[helle]</td>
<td>[hello]</td>
</tr>
<tr>
<td>[anli]</td>
<td>[anle]</td>
<td>[anlo]</td>
</tr>
<tr>
<td>[hoṭli]</td>
<td>[hoṭle]</td>
<td>[hoṭlo]</td>
</tr>
<tr>
<td>[utli]</td>
<td>[uṭle]</td>
<td>[uṭlo]</td>
</tr>
<tr>
<td>[-lam] ending</td>
<td>[-eche] ending</td>
<td></td>
</tr>
<tr>
<td>[həllam]</td>
<td>[heleche]</td>
<td></td>
</tr>
<tr>
<td>[anlam]</td>
<td>[eneche]</td>
<td></td>
</tr>
<tr>
<td>[hoṭlam]</td>
<td>[hoṭche]</td>
<td></td>
</tr>
<tr>
<td>[oṭlam]</td>
<td>[uṭche]</td>
<td></td>
</tr>
</tbody>
</table>

(b) Imperative forms

<table>
<thead>
<tr>
<th>[-iʃ] ending</th>
<th>[-uk] ending</th>
<th><a href="present">-o</a></th>
<th><a href="future">-o</a> ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>[heliʃ]</td>
<td>[heluk]</td>
<td>[hælo]</td>
<td>[helo]</td>
</tr>
<tr>
<td>[aniʃ]</td>
<td>[anuk]</td>
<td>[ano]</td>
<td>[eno]</td>
</tr>
<tr>
<td>[hoṭiʃ]</td>
<td>[hoṭuk]</td>
<td>[hoṭo]</td>
<td>[hoṭo]</td>
</tr>
<tr>
<td>[uthiʃ]</td>
<td>[uṭhuk]</td>
<td>[oṭho]</td>
<td>[uṭho]</td>
</tr>
</tbody>
</table>

1. Alternative pronunciation is [uṭhe]
2. Alternative forms of M.A. Hai, (op. cit., § 50, p. 61) are in two groups here.
Non-finite forms

[-e] ending [-a] ending [-le]/[-te] ending [-on] ending

[hele] [ha\(\text{a}\)] [helle] [helte] [ha\(\text{lon}\)]
[ene] [ana] [anele] [ante] [anon]
[ho\(\text{te}\)] [ho\(\text{ta}\)] [ho\(\text{tle}\)] [ho\(\text{tte}\)] [ho\(\text{ton}\)]
[u\(\text{the}\)] [o\(\text{tha}\)] [utle] [utte] [u\(\text{thon}\)]

Indicative forms with ending [-i] show four vowel alternances, [e], [a], [o] and [u]; and forms with ending [-e] and [-o] show four vowel alternances, [e], [a], [o], [o]. Forms with [-i] are close forms and forms with [-e] and [-o] are open forms.

Forms with endings [-li], [-le] and [-lo] show four vowel alternances [e], [a], [o] and [u] in the stem syllable. They are close forms. Forms with [-lam] ending show four vowels in the stem syllable, [e], [a], [o] and [o]. They are open forms.

Forms with [-che] show three vowel alternances in the stem syllable of different forms, [e], [o] and [u]. These are close forms.

In this stem structure also indicative close forms are of two categories: (i) those exhibiting four vowel differences [e], [a], [o] and [u] in the stem syllable and (ii) those exhibiting three vowel differences, [e], [o], and [u] in the stem syllable.

1. Alternative form is [u\(\text{tha}\)]
2. Alternative form is [u\(\text{thon}\)]
Indicative open forms have four vowel alternances [a], [ə], [o] and [o].

Indicative close forms whose ending structure is - in y prosody the stem syllable has two degrees of openness in w prosody and one degree in each of y and o prosodies.

Indicative open forms whose ending structure is -V, show four vowel alternances in the stem syllable where the ending syllable is mid in y and w syllable. The stem syllable has two degrees of openness in w prosody and one degree in each of y and o prosodies.

Indicative close forms whose ending structure is -CV show four vowel alternances, where the ending syllable is close in w prosody, mid in y/w prosodies and open in o prosody.

Indicative open forms whose ending structure is -CVC show four vowel alternances where the ending syllable is open unit in o prosody. The stem syllable has two degrees of openness in w prosody and one degree in each of y and o prosodies.

Indicative close forms whose ending structure is -eCV and e is in y prosodic syllable, the stem syllable has two degrees of openness in w prosody and one degree in y prosody.

These can be formulated thus:
Indicative forms

VC- stem structure + V ending structure

First syllable

Close forms.¹ [e], [a], [o], [u].

Second syllable

[i]

Open forms:²

[a], [a], [o], [o] [e]/[o]

VC + CV

Close forms³ [e], [a] [o], [u]

[i]/[e]/[o]

1. See indicative forms with [ -i ] on page 333.
2. See indicative forms with [ -e ] and [ -o ] on page 333.
3. See indicative forms with [ -li ], [ -le ] and [ -lo ] on page 333.
VC + CVC

open forms: 1  
[ø], [a], [o], [o]  
[a]  

open  

\[
\begin{array}{c}
\text{y/w/y} \\
V_1C - C\alpha C
\end{array}
\]

VC + eCV

Close forms: 2  
[e] [o] [u]  
[e]  

close  

\[
\begin{array}{c}
\text{y/w/y/y} \\
V_1C-e\alpha C
\end{array}
\]

Imperative forms where the endings are [iʃ] and [uk] exhibit four vowels in the stem syllable, [e], [a], [o] and [u] they are close forms. Forms whose ending is [-o] (Present) exhibit four vowels in the stem syllable, [ø], [a], [o] and [o]. They are open forms. Imperative forms with [-o](future) exhibit three vowels in the stem syllable [e], [o] and [u]. They are close forms.

Imperative close forms in this structure too form two categories: (i) those exhibiting four vowel alternances, [e] [a], [o] and [u] and (ii) those exhibiting three vowel

1. See indicative forms with [-lam] on page 333.
2. See indicative forms with [-eche] on page 333.
alternances [e], [o] and [u].

Imperative close forms whose ending structure is -eC, and the second syllable is \(^v\) or \(^w\) prosodic have two degrees of openness in \(^w\) prosody and one degree in each of \(^y\) and \(^p\) prosodies in the stem syllable.

Imperative close forms whose ending structure is -V and the syllable is mid in \(^w\) prosody, have two degrees of openness in \(^w\) prosody and one degree in \(^y\) prosody in the stem syllable.

Imperative open forms whose ending structure is -V and the syllable two of the form is mid in \(^w\) prosody have three degrees of openness in \(^p\) prosody and one degree in \(^w\) prosody in the stem syllable.

These can be formulated thus:

Imperative forms

\[
\begin{array}{l}
\text{VC} + eC \\
\text{Close forms.}^1 \\
\text{First syllable} & \text{Second syllable} \\
\{e\}, \{a\}, \{o\}, \{u\} & \{i\}/\{u\} \\
\end{array}
\]

\[
\begin{array}{c}
\text{close} \\
y/w \\
V_1 C - eC \\
\end{array}
\]

\[
\begin{array}{c}
\text{close} \\
y/w \\
V_1 C - eC \\
\end{array}
\]

\[
\begin{array}{c}
\text{close} \\
y/w \\
V_1 C - eC \\
\end{array}
\]

\[
\begin{array}{c}
\text{close} \\
y/w \\
V_1 C - eC \\
\end{array}
\]

1. See imperative forms with [-iš] and [-uk] on page 333.
Non-finite close forms are of two categories: (i) those exhibiting three vowel alternances in the stem syllable, [e], [o] and [u] and (ii) those exhibiting four vowel alternances [e], [a] [o] and [u].

Non-finite open forms exhibit four vowels in the stem syllable [ə], [a], [ɔ] and [o].

Non-finite close forms whose ending structure is V in y prosody the stem syllable has two degrees of openness in w prosody and one degree in y prosody.

Non-finite close forms whose ending structure is -CV and unit ¯ in y prosody constitute V in ending structure, the

1. See imperative forms with [-o](future) on page 333.
2. See imperative forms with [-o] (present) on page 333.
stem syllable has two degrees of openness in $^w$ prosody and one
degree in each of $^y$ and $^{\alpha}$ prosodies.

Non-finite open forms whose ending structure is $^-V$ or
$-\varepsilon C$, and $^-V$ is a single term system of $^{\alpha}$ in $^{\alpha}$ prosody and $-\varepsilon$ in $\varepsilon C$ structure is in $^w$ prosody, the stem syllable has two degrees
of openness in $^w$ prosody and one degree in each of $^y$ and $^{\alpha}$
prosodies.

These can be formulated thus:

Non-finite forms

\[
\begin{array}{ccc}
VC + V & \text{First syllable} & \text{Second syllable} \\
\text{Close forms:} & [e], [o], [u] & [e] \\
& [e] & [e] \\
& \text{close} & \text{close} \\
& y/w \quad y & V_1 C - \varepsilon \\
& w \quad y & V_1 C - \varepsilon \\
& \text{open forms:} & [a], [a], [o], [o] & [a] \\
& [a] & [a] \\
& \text{open} & \text{open} \\
& y/w/\varepsilon \quad \varepsilon & V_1 C - \alpha \\
& w \quad \varepsilon & V_1 C - \alpha \\
\end{array}
\]

1. See non-finite forms with $[-e]$ on page 334.
2. See non-finite forms with $[-a]$ on page 334.
Same statements as for the different forms in CVC- stem structure with different ending structures, can be made about the relation of different grammatical categories with the close forms and open forms of VC- stem structure with corresponding endings. They are not included here in order to avoid repetition.

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1. See non-finite forms with [-le]/[-te] on page 334.
2. See non-finite forms with [-on] on page 334.
Table of the phonological formulae for the stem and ending syllables of CV stem structure

(a) Indicative forms

<table>
<thead>
<tr>
<th></th>
<th>CLOSE FORMS</th>
<th>OPEN FORMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-V</td>
<td>-CV</td>
</tr>
<tr>
<td>y/w y</td>
<td>y/w y</td>
<td>y/w y</td>
</tr>
<tr>
<td>V₁C-i</td>
<td>V₁C-C₁</td>
<td>V₁C-C₁</td>
</tr>
<tr>
<td>w y</td>
<td>w y</td>
<td>w y</td>
</tr>
<tr>
<td>V₁C-i</td>
<td>V₁C-C₁</td>
<td>V₁C-C₁</td>
</tr>
</tbody>
</table>

1. close y        | close y     | close y    | close y    | close y     | open y      | open y      | open y     |
| y ∈ C-i         | y ∈ C-C₁    | y ∈ C-C₁   | y ∈ C-C₁   | y ∈ C-Cₑ    | αC ∈ Cₑ     | αC ∈ Cₑ     | αC-C₀C     |
2. close y        | close y     | close y    | close y    | close y     | open y      | open y      | open y     |
| y ∈ C-i         | y ∈ C-C₁    | y ∈ C-C₁   | y ∈ C-C₁   | y ∈ C-Cₑ    | αC ∈ Cₑ     | αC ∈ Cₑ     | αC-C₀C     |
3. close y        | close y     | close y    | close y    | close y     | open y      | open y      | open y     |
| y ∈ C-i         | y ∈ C-C₁    | y ∈ C-C₁   | y ∈ C-C₁   | y ∈ C-Cₑ    | αC ∈ Cₑ     | αC ∈ Cₑ     | αC-C₀C     |
4. close y        | close y     | close y    | close y    | close y     | open y      | open y      | open y     |
| y ∈ C-i         | y ∈ C-C₁    | y ∈ C-C₁   | y ∈ C-C₁   | y ∈ C-Cₑ    | αC ∈ Cₑ     | αC ∈ Cₑ     | αC-C₀C     |

1. [heli] [helli] [helle] [hello] [heleche] [haele] [halo] [haillam]
2. [hoti] [hotti] [hotle] [hotlo] [hoteche] [hote] [hoto] [hotlam]
3. [uthi] [utli] [utle] [utlo] [uteche] [othe] [otho] [otlam]
4. [ani] [anli] [anle] [anlo] [eneche] [ane] [ano] [anlam]
(b) Imperative forms

<table>
<thead>
<tr>
<th></th>
<th>CLOSE FORMS</th>
<th>OPEN FORMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>-eC [-iʃ]</td>
<td>y/w -y- $V_1$C-øC</td>
<td>y/w -y- $V_1$C-øC</td>
</tr>
<tr>
<td>[-uk]</td>
<td>y/w -y- $V_1$C-øC</td>
<td>y/w -y- $V_1$C-øC</td>
</tr>
<tr>
<td>[-o]future</td>
<td>y/w -y- $V_1$C-øC</td>
<td>y/w -y- $V_1$C-øC</td>
</tr>
<tr>
<td>[-o]present</td>
<td>y/w -y- $V_1$C-øC</td>
<td>y/w -y- $V_1$C-øC</td>
</tr>
</tbody>
</table>

1. close $\in C$ -øC
2. close $\in C$ -øC
3. close $\in C$ -øC
4. open $\in C$ -øC

<table>
<thead>
<tr>
<th></th>
<th>[heliʃ]</th>
<th>[heluk]</th>
<th>[helo]</th>
<th>[helo]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. [heliʃ]</td>
<td>[heluk]</td>
<td>[helo]</td>
<td>[helo]</td>
<td>[helo]</td>
</tr>
<tr>
<td>2. [hotiʃ]</td>
<td>[hotuk]</td>
<td>[hoto]</td>
<td>[hoto]</td>
<td>[hoto]</td>
</tr>
<tr>
<td>3. [anil]</td>
<td>[anuk]</td>
<td>[ano]</td>
<td>[ano]</td>
<td>[ano]</td>
</tr>
<tr>
<td>4. [uthiʃ]</td>
<td>[uthuk]</td>
<td>[utho]</td>
<td>[utho]</td>
<td>[utho]</td>
</tr>
</tbody>
</table>
(c) Non-finite forms

<table>
<thead>
<tr>
<th>CLOSE FORMS</th>
<th>OPEN FORMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>-V</td>
<td>-CV</td>
</tr>
<tr>
<td>[-e]</td>
<td>[-le]</td>
</tr>
<tr>
<td>y/w</td>
<td>V₁C-ε</td>
</tr>
<tr>
<td>w</td>
<td>V₁C-ε</td>
</tr>
</tbody>
</table>

1. Close
   y ∈ C-ε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε

2. open
   y ∈ C-ε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε

3. y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε
   y ∈ C-Cε

4. [hele] [helle] [helte] [hela] [hailon]
   [hotle] [hotte] [hota] [hoton]
   [utle] [utte] [otha] [othon]
   [ene] [anle] [ante] [ana] [anon]
Unlike CVC- stem structure, forms in CV stem structure show examples of four vowel alternances with different endings. Forms in this structure involve phonetic diphthongal articulation in some categories. That is to say, where the stem syllable is open and ending is -V, some of the forms in CV- stem structure give phonetic expression of a diphthong. It has already been stated\(^1\) that diphthongal articulations are structurally a combination of \(\text{V} + \text{V}\) or \(\text{e} + \text{V}\).\(^2\)

The forms in this structure also involve a junction prosody: \(y\), \(w\), or \(g\) in some categories.\(^3\)

This will be made clear in the course of the discussion. The following forms of CV- stem structure with endings of different structures are given for example.

(a) Indicative forms

(i) \(\text{CV} + \text{V}\)

\([\text{-i}]\) ending \([\text{-e}]\) ending \([\text{-o}]\) ending

1. \([i]-[i]\) \([\text{di}]\) \([\text{æ}]-[\text{e}]\) \([\text{dæe}]\) \([\text{æ}]-[\text{o}]\) \([\text{dæo}]\)
2. \([a]-[i]\) \([\text{pai}]\) \([\text{a}]-[\text{e}]\) \([\text{pae}]\) \([\text{a}]-[\text{o}]\) \([\text{pao}]\)
3. \([o]-[i]\) \([\text{boi}]\) \([\text{o}]-[\text{e}]\) \([\text{boe}]\) \([\text{ɔ}]-[\text{o}]\) \([\text{boo}]\)
4. \([u]-[i]\) \([\text{jui}]\) \([\text{o}]-[\text{e}]\) \([\text{jo}]\) \([\text{o}]-[\text{o}]\) \([\text{jo}o]\)

---

\(^1\) See §5.2.
\(^2\) There are only two diphthongal articulations, e.g., in \([\text{doura}]\) and \([\text{aorqa}]\) for which a V can be stated. Everywhere else a phonetic diphthong is to be understood as a combination of two \(\text{V}\) or a \(\text{e} + \text{V}\) element.

\(^3\) See Junction- prosodies, §7.3.6

\(^4\) Forms with \([\text{-en}]\) do not show any vowel sequence. They have the phonetic expression of the vowel of the stem, and show same four vowel differences in the stem syllable as the forms with \([\text{-e}]\) e.g. \([\text{dan}]\), \([\text{pan}]\), \([\text{bon}]\), \([\text{jon}]\).

\(^5\) Alternative form \([\text{dei}]\)

\(^6\) Alternative form \([\text{dao}]\)
(ii) \( CV + CV \)

[-li] ending \[-le] ending \[-lo] ending

1. [i]-[i] [dili] [i]-[e] [dile] [i]-[o] [dilo]
2. [e]-[i] [peli] [e]-[e] [pele] [e]-[o] [pele]
3. [o]-[i] [boyli] [o]-[e] [boyle] [o]-[o] [boyle]
4. [u]-[i] [Juli] [u]-[e] [Jule] [u]-[o] [Julo]

Forms in ending [-tiJ] show vowel sequences similar to those in [-li].

Forms in ending [-te] [-ten] show vowel sequences similar to those in [-le].

Forms in ending [-to] show vowel sequences similar to those in [-lo].

[-chi] ending \[-che] ending \[-cho] ending

1. [i]-[i] [dicchi] [i]-[e] [dicche] [i]-[o] [diccho]
2. [a]-[i] [pacchi] [a]-[e] [pacche] [a]-[o] [paccho]
3. [o]-[i] [boychi] [o]-[e] [boyche] [o]-[o] [boycho]
4. [u]-[i] [Jucchi] [u]-[e] [Jucche] [u]-[o] [Juccho]

[-bi] ending \[-be] ending \[-bo] ending

1. [i]-[i] [dibi] [e]-[e] [dibe] [e]-[o] [dibe]
2. [a]-[i] [pabi] [a]-[e] [pabe] [a]-[o] [pabe]
3. [o]-[i] [boybi] [o]-[e] [boybe] [o]-[o] [boybe]
4. [u]-[i] [Jubi] [u]-[e] [Jube] [u]-[o] [Jube]

1. Alternative pronunciation is [debe]
2. Alternative pronunciation is [Jobe]
3. Alternative pronunciation [debo]/[dobo]
4. Alternative pronunciation [Jobo]
Note that unlike forms in CVC-stem structures some forms in CV-structure e.g. forms in [-ch-] and [-b-] endings do not show vowel sequences similar to those in ending [-l-].

(iii) CV + CVC

[-lam] ending

[i]-[a] [dilam]
[e]-[a] [pelam]
[o]-[a] [boylam]
[u]-[a] [julam]

(iv) CV + eCV

[-eche] ending

[i]-[e] [dieche]
[e]-[e] [peyeche]
[o]-[e] [boyeche]
[u]-[e] [juyeyeche]

Forms in [-lam] are similar to those in [-lam]
Forms in [echi], [echij], [echo], [echen], [echilam] [echili], [echile], [echilo], [echilen] are similar to those in [-eche].

(b) Imperative forms

(i) CV + Ø  (ii) CV + eC

[e] [de]  [-iʃ] ending  [-uk] ending
[a] [pa]  [i] - [diʃ]  [i]  [dik]
[o] [bo]  [a] - [paʃ]  [a]  [pak]
[o] [jo]  [o] - [boʃ]  [o]  [bok]
[u] - [juʃ]  [u]  [juk]

1. It will be seen that the forms in this stem structure with endings [-iʃ], [-uk] and [-un] have the phonetic expression of the vowel of the stem and show same pur vowel differences in the stem syllable as the forms in ending [-i]. Although these forms do not show phonetically two vowel sequences and although no vowel harmony statement for these forms can be made they are included in the examples for comparison and contrast with the forms in other endings.

2. cf. [boʃ] with [boʃ]. The former is CVC + Ø, the latter is CV + eC structurally.

3. Alternative pronunciation is [dek].
Forms in [un] ending are similar to those in [-uk].

(iii) CV + V

[-o] ending (Present)       [-o] ending (Future)
1. [ə]-[o] [dəo]           [i]-[o] [dio]
2. [a]-[o] [pao]           [e]-[o] [peyo]
3. [o]-[o] [boo]           [o]-[o] [boyo]
4. [u]-[o] [joo]

(C) Non-finite forms

(i) CV + V

[-e] ending       [-a] ending
1. [i]-[e] [die]    [ə]-[a] [daəwa]
2. [e]-[e] [peye]   [a]-[a] [pawa]
3. [o]-[e] [boye]   [o]-[a] [bowa]
4. [u]-[e] [suye]   [o]-[a] [sowa]

(iii) CV + CV

[-le] ending       [-te] ending
[i]-[e] [dile]      [i]-[e] [dite]
[e]-[e] [pele]      [e]-[e] [pete]
[o]-[e] [boyle]     [o]-[e] [boyte]
[u]-[e] [jule]      [u]-[e] [jute]

(iv) CV + EC

[-on] ending
[ə]-[o] [daən]
[a]-[o] [paon]
[o]-[o] [boon]
[o]-[o] [soon]

1. Alternative form [dao]
It will be seen from the above examples that the forms in different endings in this stem structure involve complicated vowel sequences and junction features, although a separate statement will have to be made, a similar though not exactly identical relation, as for the forms in CVC- stem structures of close forms and open forms can be stated for the forms in this structure. With the close vowel [i] in the ending forms of different scatters exhibit [i], [a], [o] and [u], in the stem syllable and with the half-close vowel [-e] or [-o] in the ending they exhibit [æ], [a], [o] and [o]. Forms in ending [-i] are close forms and forms in ending [-e] or [-o] are open forms.

In close forms where the second syllable is close in \( y \) prosody the first syllable is close, mid and open in all three prosodies, \( y \), \( w \), and \( \nu \). In \( y \) prosodic syllable the vowel in the stem syllable has one quality between close and half-close, and in \( w \) prosodic syllable the vowel in the stem syllable has two qualities, between close and half-close and between half-close and half-open, and in \( \nu \) prosodic syllable the vowel in the stem syllable is open neither front nor back.

In open forms where the vowel of the second syllable is mid in \( y \) or \( w \) prosody, the first syllable is mid, and open in all three prosodies, \( y \), \( w \), and \( \nu \). In \( y \) prosodic syllable the vowel in the stem has one quality
between half-open and open, and in \( w \) prosodic syllable the vowel in the stem syllable has two qualities - between half-close and half-open and between half-open and open; and in \( \alpha \) prosodic syllable the vowel in the stem syllable is open neither front nor back.

Vowel qualities of the close forms and open forms are the same as for the forms in CVC- or VC stem structure in the corresponding ending, except in the case of the forms of the scatter di- where the vowel in the stem syllable in the close form is between close and half-close, and in the open form is between half-open and open.

Phonetically each of the vowels \([i], [a], [o], [u]\) of the forms \([dii], [pai], [boi] \) and \([Jui] \) forms the starting point of the diphthong which moves in the direction of \([i]\); each of the vowels \([æ], [a], [o], \) and \([o]\) of the forms \([dæe] \) \([pae], [boe] \) and \([Joe] \) forms the starting point of the diphthong which moves in the direction of \([e]\); and each of the vowels \([æ], [a], [o] \) and \([o]\) of the forms \([dæo], [pao], [boo] \) and \([Joo] \) forms the starting point of the diphthong which moves in the direction of \([o]\). \(^1\)

\[CV + CV, -CVC\]

In the forms of the scatters in endings \([-li]\), \([-le]\) and \([-lo] \) four vowels: \([i], [e], [o] \) and \([u]\) are possible in the stem syllable. The forms in endings \([-li]\), \([-le]\) and \([-lo]\)

\(^1\) See Diagram on page under §5.2
are close forms. Unlike the forms in CVC- stem structure forms in [-lam] ending in this structure exhibit four vowel alternances [i], [e], [o] and [u] in the stem syllable. All forms in ending [-lam] are close forms. All the forms in endings [-li], [-le] [-lo] and [-lam] have same four vowel differences in the stem syllable as the forms of the CVC- stem structure in[-eche]ending except that the first syllable is mid in \textsuperscript{w} prosody the junction is \textsuperscript{y} prosodic in this structure.\textsuperscript{1}

In each of \textsuperscript{y} and \textsuperscript{w} prosodic syllables the vowel in the stem syllable has two qualities, between close and half-close and between half-close and half-open. The maximum degree of openness in \textsuperscript{y} and \textsuperscript{w} prosodic syllables is between half-close and half-open. One important point to be noted is that there is no \textsuperscript{w} prosodic syllable in the form of the scatter where the vowel of the stem syllable is open neither front nor back in the forms with other endings, both in 'close forms' and 'open forms.'\textsuperscript{2}

The forms in endings [-chi], [-che] and [-cho] show four vowels in the stem syllable: [i], [a], [o] and [u]. In addition the forms of the scatters di- pa- and ju- show a feature of geminated junction\textsuperscript{3} and the forms of the scatters bo- show a feature of palatalization in the junction. That is, in the linking feature of stem and ending of the forms from \textsuperscript{\sqrt{d}}i \textsuperscript{\sqrt{p}}a and \textsuperscript{\sqrt{j}}u with ending whose initial consonant is

\textsuperscript{1} See Prosodies of junction \textsuperscript{7.3.6}.
\textsuperscript{2} e.g. In the forms with the endings [-i], [-e], [-o] discussed cf. forms in CVC- stem structure in [-eche] ending.
\textsuperscript{3} See Prosodies of junction \textsuperscript{7.3.6} See also \textsuperscript{11.2.4}
palatoalveolar voiceless aspirated plosive [-ch-] there is a long consonantal articulation. This feature of geminated junction is treated prosodically and is denoted by a raised \( \hat{\gamma} \) in the formulae. In the linking feature of stem and ending of the forms from \( \sqrt{\text{bo}} \) with ending initiated by [-ch-] there is a \( \gamma \) glide or palatalization. This feature of palatalization in the junction is treated prosodically and is denoted by a raised \( \gamma \) in the formulae. It should be noted that \( \gamma \) has also been employed as a prosodic symbol for the prosody of the syllable as a whole. But this \( \gamma \) prosody of the stem and ending junction is different from the \( \gamma \) prosody of the syllable as a whole.  

These forms show exactly the same four vowel differences as the forms in [i] ending. They are close forms. In these forms where the second syllable is close or mid in \( \gamma \) or \( \nu \) prosodies, the first syllable is close, mid and open in all three prosodies, \( \gamma \), \( \nu \), and \( \kappa \). Where the \( V \) in first syllable is close unit in \( \gamma/\nu \) prosody or open in \( \kappa \) prosody the junction is \( \hat{\gamma} \) prosodic, and where \( V \) of the first syllable is mid unit in \( \nu \) prosody the junction is \( \gamma \) prosodic.

The forms in endings [bi], [-be] and [-bo] exhibit four different vowels, [i], [a], [o] and [u] in the stem syllable. They show similar vowel alternances as forms of different scatter in ending [-i], except that in the junction of the forms of the scatter bo- there is a \( \gamma \) feature. They are close forms. In the forms where the second syllable is close or mid in \( \gamma \) or \( \nu \) prosody, the first syllable is close, mid or

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1. See for details Chapter 9.
open in all three prosodies, \( \ddagger \), \( \wedge \) and \( \ddagger \), where the first syllable is mid in \( \wedge \) prosody, the junction is \( \ddagger \) prosodic.

**CV + eCV**

Forms in [\(-eche\)] ending show four vowel alternances [\( i \)], [\( e \)], [\( o \)] and [\( u \)], in the stem syllable of the forms of different scatters. In addition they all have a feature of palatalization in the junction. They are close forms. These forms have the same four vowel alternances in the stem syllable as the forms in [\(-le\)], [\(-li\)] [\(-lo\)] or [\(-lam\)] ending. In each of \( \ddagger \) and \( \wedge \) prosodic syllable the vowel in the stem syllable has two qualities, between close and half-close and between half-close and half-open. The maximum degree of openness in \( \ddagger \) and \( \wedge \) prosodic syllables is between half-close and half-open. There is no \( \wedge \) prosodic syllable in the forms of the scatter where the vowel of the stem syllable is open neither front nor back in other endings. Where the second syllable is mid in \( \ddagger \) prosody the first syllable is close and mid in \( \ddagger \) and \( \wedge \) prosodics. The stem and ending linking feature of the forms in this ending is \( \ddagger \) prosodic. These forms in [\(-eche\)] ending differ from the forms in [\(-li\)], [\(-le\)], [\(-lo\)] or [\(-lam\)] ending in that the forms in [\(-eche\)] of all the scatters show \( \ddagger \) feature in the junction whereas in the forms with endings [\(-li\)], [\(-le\)] [\(-lo\)] and [\(-lam\)] show \( \ddagger \) feature in the junction in the forms of the scatter bo only.

It is important to note that there is a remarkable variation in the vowel qualities of the stem syllable of the
forms of the scatter di- with different endings. In close forms where the ending is [-i] the vowel of the stem syllable is between close and half-close (as in [dii] ). In open form where the ending is [-e] or [-o] the vowel of the stem syllable is between half-open and open (as in [daae] and [daoo]). In the alternative pronunciation of the close form in [-i] ending the vowel of the stem syllable is between half-close and half-open (as in [dei] ), and in the alternative pronunciation of the open form in ending [-o] the vowel of the stem syllable is open neither front nor back (as in [dao]). In one alternative pronunciation of the form in ending [-be] and [-bo] the vowel of the stem syllable is between half-close and half-open (as in [debe], [debo]). There is yet another alternative pronunciation of the form with [-bo] ending as [dobo] where the vowel in stem syllable is between half-close and half-open back characterized by rounding.

(b) Imperative forms

In the forms where the ending is Ø four vowels [e], [a], [o] and [o] are possible, in the forms in endings [-i] and [-uk] four vowels [i], [a], [o] and [u] are possible. It will be seen from the examples that the forms in endings Ø, [-i] and [-uk] do not show phonetically two vowel sequences and thus no vowel harmony relation can be stated. But it is interesting to note that these monosyllabic forms in endings which are from Ø, show four vowel differences in the stem syllable different the forms in any ending; and forms in endings [-i] and [-uk]
show same vowel differences in the stem syllables as the indicative forms in [-i]. The forms in Ø ending are open forms and those in ending [i] and [-uk] are close forms. In open forms the syllable is mid and open in all three prosodies Y, W and ø. In Y prosodic syllable the vowel has a quality between half-close and half-open and in W prosodic syllable the vowel has two qualities, between half-close and half-open and between half-open and open. In ø syllable the vowel is a central open one neither front nor back. In close forms (i.e., forms in [-i]) and [-uk] the syllable is close mid, and open in all three prosodies, Y, W and ø. In Y syllable the vowel has a quality between close and half close, and in W syllable the vowel has two qualities, between half-close and half-open and between half-open and open, and in ø syllable the vowel is a central open neither front nor back.

In the forms where the ending is [-o] (present), four vowel differences are possible in the stem syllable: [u], [a] [o] and [o] and in the forms where the ending is [-o] (future) four vowel differences are possible in the stem syllable: [i] [e], [o] and [u]. The forms in ending [-o] (present) are open forms and those in [-o] (future) are close forms.

In open forms where the second syllable is mid in W prosody, the first syllable is mid and open in all three prosodies, Y, W and ø. In Y prosodic syllable the vowel has a quality between half-open and open and in W prosodic syllable the vowel has two qualities, between half-close and half-open and between half-open and open. In ø prosodic syllable
the vowel is a central open, neither front nor back.

Open forms in [-o](present) show identical features to the indicative forms in [-o] ending.

In close forms where the second syllable is mid in \(w\) prosody, the first syllable is close and mid in \(y\) and \(w\) prosodies. In each of \(y\) and \(w\) prosodic syllables the vowel has two qualities, between close and half-close and half-close and half-open. These close forms do not have any \(\textcircled{o}\) prosodic stem syllable.

In addition, these close-forms in [-o](future) exhibit a linking feature of palatalization in the stem and ending junction. These forms show identical feature to the indicative forms in [-eche].

Phonetically each of the vowels \([\textcircled{a}], [a], [o]\) and \([o]\) forms the starting point of the diphthong which moves in the direction of \([o]\).\footnote{1}

(c) Non-finite forms

In the non-finite forms where the ending is [-e] four vowel differences: \([i], [e], [o]\) and \([u]\) are possible in the stem syllable. The forms in [-e] exhibit closeness in the stem syllable and are, therefore, close forms. In these forms where the second syllable is mid in \(y\) prosody, the first syllable is close and mid in \(y\) and \(w\) prosodies.

The scatters have no form exhibiting \(\textcircled{o}\).

\footnote{1}{See § 5.2. They are similar to those in indicative forms in [-o] ending. (Supra).}
prosodic stem syllable. The vowel qualities are never more open than between half-close and half-open. This is the maximum degree of openness even for the syllable in the form \[ pəxe \] of the scatter pa-\. These forms also exhibit \( \gamma \) prosodic junction feature.

These non-finite forms in \[-e\] ending may be compared with the imperative forms in ending \[-o\] (future) and also with the indicative forms in \[-eche\]. They all show identical vowel harmony relation.

The forms in \[-a\] and \[-on\] endings show four different vowels in the stem syllable: \[ a, e, o \] and \[ o \]. They are open forms. In these forms where the vowel of the second syllable is \[ a \] or \[ o \] the first syllable is mid and open in all three prosodies \( \gamma, w \) and \( \nu \). The vowel quality in \( \gamma \) prosodic syllable is between half-open and open, and in \( \nu \) prosodic syllable is open neutral neither front nor back. In \( w \) prosodic syllable the vowel has two qualities, between half-close and half-open and between half-open and open. In addition these forms show a \( w \) prosodic feature in the stem ending junction.\(^1\)

Note that it is only in these forms in the monosyllabic stem structures where \( w \) is stated as prosody of stem ending junction.

The non-finite forms in \[-le\] and \[-te\] endings show four vowel differences in the stem syllable: \[ i, e, o \] and \[ u \]. These forms show exactly the same phonetic alternances \[^1\] See prosodies of junction \( § 7.3.6 \)
as those in indicative [-le] ending. These are stated as close forms. The statement made for the indicative forms will hold good for these non-finite forms.

The above statement can be summarised as follows:

Just as in the case of the forms in CVC- stem structure so also in the case of the forms in CV- stem structure vowel harmony cannot be stated purely on the basis of phonetic sequences, but an interrelation between the second and the first syllable can be shown. In addition, in the forms of this structure prosodic feature in the stem-ending junction is also to be taken into consideration. The interrelation of the system is concerned with (a) the close forms of verb and (b) the open forms of verb.

In close forms the degree of openness is never more open than between half-close and half-open, and in open forms degree of closeness is never more close than between half-close and half-open in both \( \nu \) and \( \nuw \) syllables.

Unlike forms in CVC- structure close forms in this structure form five categories and open forms three categories.

**Close forms.**

i) Forms exhibiting vowels: \([i], [a], [o] \) and \([u]\) in the stem syllable indicative forms in \([-i]\) ending and forms in \([-i\nu]\) ending.

ii) Forms exhibiting vowels \([i], [a], [o] \) and \([u]\) in the stem syllable and showing \( \nu \) feature in the stem-ending junction of the forms of the scatter bo- (indicative forms in \([-b-]\) ending).
iii) Forms exhibiting vowels [:i:], [a], [o] and [u] in the stem syllable and showing $^g$ prosodic feature in the junction of the forms of the scatters di- pa- and ju- and $^y$ prosodic feature in the forms of the scatters bo- (indicative forms with [-ch] ending).

iv) Forms exhibiting vowels [:i:], [e], [o] and [u] in the stem syllable and showing $^y$ feature in the junction of the forms of the scatter bo- (indicative forms in [-li] and [-lam] endings, and non-finite forms in [-te] and [-le] endings).

v) Forms exhibiting vowels [i], [e], [o] and [u] in the stem syllable and showing $^y$ feature in the junction of the forms of all the other scatters than di- (indicative forms in [-eche] ending, imperative forms in [-o](future) and non-finite forms in [-e]).

Open forms:

(i) Forms exhibiting four vowels: [:a:], [a], [o], and [o] in the stem syllable (indicative forms in ending [-o] imperative forms in [-o] (Present) $^f$.

(ii) Forms exhibiting four vowels: [:a:], [a], [o], [o] in the stem syllable and showing $^w$ prosodic feature in the junction (non-finite forms in [-a] and [-on]).

(iii) Forms showing four vowels: [e], [a], [o], and [o] in the stem syllable (imperative forms in Ø ending).

It will be seen that vowel [a] in the stem syllable is exhibited in three categories of close forms (i, ii, iii), and all
categories of open forms. Two categories of close forms do not show [a] in the stem syllable. [i] and [u] are absent in the stem syllable of open forms. [e] in the stem syllable is shown in two categories of close forms (iv and v) and one category of open form (iii).

Each of indicative, imperative and non-finite forms is either an open form or a close form of any kind.

Indicative close forms whose ending structure is -V, show four vowel alternances in the stem syllable where the ending syllable is close in y prosody. The stem syllable has two degrees of openness in w prosody, and one degree of openness in each of y and x prosodies.

Indicative open forms whose ending structure is -V, show four vowel alternances in the stem syllable where the ending syllable is mid in y and w prosodies. The stem syllable in each of y and x prosodies has one degree of openness and in w prosody two degrees of openness.

Indicative close forms whose ending structure is CV(C) show two kinds of four different vowel alternances in the stem syllable.
i) Those whose ending initial C is [-l-] and the second syllable is close in \( \hat{y} \), open in \( \hat{\nu} \), and mid in \( \hat{y} \) and \( \hat{w} \) prosodies. The stem syllable has two degrees of openness in \( \hat{y} \) and \( \hat{w} \) prosodies. There is no \( \hat{v} \) prosodic syllable in the stem in the forms with this ending structure. The junction of the form whose stem syllable is mid in \( \hat{w} \) prosody is \( \hat{y} \) prosodic.

ii) Those whose ending initial C is [ch-] or [b-] and the second syllable is close in \( \hat{y} \) and mid in \( \hat{y} \) and \( \hat{w} \) prosodies. The stem syllable has two degrees of openness in \( \hat{w} \) prosody, one degree of openness in each of \( \hat{y} \) and \( \hat{v} \) prosody. The junction of the form whose stem syllable is mid in \( \hat{w} \) prosody is \( \hat{y} \) prosodic.

Indicative forms whose ending structure is \( -eCV \) show initial four vowel alternances in the stem syllable where the ending \( \hat{v} \) syllable is in \( \hat{y} \) prosody. The stem syllable has two degrees of openness in \( \hat{y} \) and \( \hat{w} \) prosodies. There is no \( \hat{v} \) prosodic syllable in the stem in the forms in this ending structure. The vowel alternances and the prosodic features in the forms in \( -eCV \) ending structure are similar to those in the forms in \( -CV(C) \) ending structure whose initial C is [-l-], except that the forms whose generalized structure is \( CV-eCV \) show a junction prosody \( \hat{y} \) in the forms of all the scatters except di-, and the forms whose generalized structure is \( CV-CV(C) \) show a junction prosody \( \hat{y} \) in only the forms of the scatter bo-. 
It will be clear from the above statement that in the stem structure CV- the indicative forms with endings [-e] and [-o] are open forms and the forms with all the other endings are close forms.

This shows that the statement about vowel harmony cannot be made without referring to the interrelation of the stem-ending junction. This interdependence of relation of the vowel sequences of stem and ending with the junction prosody relates to the statement of relevance of open form or close form in terms of vowel harmony. That is to say, vowel harmony can not be stated purely on the basis of vowel sequences of stem and ending but the relation between the two morphological sections (stem + ending) should also be considered.

### Indicative Forms

<table>
<thead>
<tr>
<th>CV + V</th>
<th>First syllable</th>
<th>Second syllable</th>
<th>Formulae</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>[i] close</td>
</tr>
</tbody>
</table>
| Close forms: | [i],[a],[o],[u] | [i] close | \[
|            | \[i\], [i] close | \[
|            | \[w\] close | y/x \[CV_1 - i\] |
|            | \[w\] close | y/x \[CV_2 - i\] |
| Open forms: | [a],[a],[o],[o] | [e]/[o] open | \[
|            | \[e\]/[e] open | \[
|            | \[w\] open | y/w \[CV_1 - o\] |
|            | \[w\] open | y/w \[CV_2 - o\] |

1. See indicative forms with [-i] on page 345.
2. See indicative forms with [-e] and [-o] on page 345.
CV + CV(C)

Close forms:1 [i], [e], [o], [u]. [i]/[e]/[o]/[a]

\[
\begin{align*}
&\text{CV}_2 - C i / C \in / C_w C \\
&\text{CV}_1 - C i / C \in / C_w C \\
&\text{CV}_1 - C i / C \in / C_w C
\end{align*}
\]

Close forms (ii) [i],[a],[o],[u]. [i]/[e]/[o]

\[
\begin{align*}
&\text{CV}_1 - C i / C \in / C_w C \\
&\text{CV}_1 - C i / C \in / C_w C \\
\end{align*}
\]

Close forms (iii) [i],[a],[o],[u]. [i]/[e]/[o]

\[
\begin{align*}
&\text{CV}_1 - C i / C \in / C_w C \\
&\text{CV}_1 - C i / C \in / C_w C \\
\end{align*}
\]

CV + eCV

Close form 4 [i], [e], [o], [u] [e]

\[
\begin{align*}
&\text{CV}_2 - e C \in / C_w C
\end{align*}
\]

1. See indicative forms with ending [-li],[-le],[-lo] and [-lam] on page 346-347.
2. See indicative forms with [-bi],[-be] and [-bo] on page 346.
3. See indicative forms with [-chi],[che] and [-cho] on page 346.
4. See indicative forms with [-eche] on page 347.
Imperative forms

Imperative close forms whose ending structure is V, show four vowel alternances in the stem syllable where the ending syllable is mid in \( w \) prosody. The stem syllable has two degrees of openness in \( y \) and \( w \) prosodies. The junction is \( y \) prosodic in forms of all the scatters.

Imperative open forms whose ending structure is -V, show four vowel alternances in the stem syllable where the ending syllable is mid in \( w \) prosody. The stem syllable has two degrees of openness in \( w \) prosody and one degree of openness in each of \( y \) and \( o \) prosodies. The junction is \( w \) prosodic in the forms of all the scatters.

These can be formulated thus:

\[
\begin{array}{ccc}
CV + V & \text{first syllable} & \text{Second syllable} \\
\text{close forms:}^1 & [i], [e], [o], [u]. & [o] \\
\text{open forms:}^2 & [a], [a], [o], [o] & [o]
\end{array}
\]

\[
\begin{array}{ccc}
\text{close} & y/w & y/w \\
CV_2 - & w & \in
\end{array}
\]

\[
\begin{array}{ccc}
\text{open} & y/o & w \\
CV_1 - & w & \in
\end{array}
\]

Non-finite forms

Non-finite close forms whose ending structures is -V,

1. See imperative forms with \([-o]\) (future) on page 348
2. See imperative forms with \([-o]\) (present) on page 348
show four vowel alternances in the stem syllable where the ending syllable is mid in \( ^y \) prosody. The stem syllable has two degrees of openness in each of \( ^y \) and \( ^w \) prosodies. The junction is \( ^y \) prosodic in forms of all the scatters.

Non-finite open forms whose ending structure is \(-V\) or \(-ec\) show four vowel alternances in the stem syllable where the ending syllable is open in \( ^o \) prosody or mid in \( ^w \) prosody. The stem syllable has two degrees of openness in \( ^w \) prosody and one degree of openness in each of \( ^y \) and \( ^o \) prosodies. The junction is \( ^w \) prosodic in forms of all the scatters.

Non-finite close forms whose ending structure is \(-CV\), show four vowel alternances in the stem syllable where the ending syllable is mid in \( ^y \) prosody. The stem syllable has two degrees of openness in each of \( ^y \) and \( ^w \) prosodies. The junction is \( ^y \) prosodic in the forms of all the scatters.

These can be formulated thus:

<table>
<thead>
<tr>
<th>CV +V</th>
<th>First syllable</th>
<th>Second syllable</th>
<th>Formulae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close forms: 1 [i],[e],[o],[u]</td>
<td>[e] ( \frac{\text{close}}{y/w} \frac{y}{y} \frac{CV}{2} )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open forms: 2 [a],[a],[o],[o]</td>
<td>[a] ( \frac{\text{open}}{y/o} \frac{w}{y} \frac{CV}{1 - \alpha} )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1. See non-finite forms with \([-e]\) on page 348
2. See non-finite forms with \([-a]\) on page 348
Indicative forms in simple present tense, 1st person are close form exhibiting four vowel alternances, [i], [a], [o] and [u] in the stem syllable. Forms in simple present tense, 2nd person ordinary grade and 3rd person ordinary and familiar grade are open forms which exhibit four vowels in the stem syllable of forms of different scatters. [a], [o] and [o]. Forms in simple past tense in all persons and grades are close forms exhibiting four vowels in the stem syllable [i], [e] [o] and [u]. Forms in present and past progressive tenses in all persons and grades are close forms exhibiting

---

1. See non-finite forms with [-le] and [-te] on page 348
2. See non-finite forms with [-on] on page 348
four vowels [i], [a], [o] and [u]. Forms in future tense in all persons and grades are close forms exhibiting four vowels in the stem syllable [i], [a], [o] and [u]. Forms in present and past perfect tenses, in all persons and tenses are close forms exhibiting four vowel alternances in the stem-syllable [i], [e], [o] and [u].

Imperative forms in present tense, 2nd person ordinary grade are open forms exhibiting four vowels [i], [a], [o] and [o] in the stem syllable. Forms in future tense 2nd person ordinary grade are close forms, exhibiting four vowel alternances in the stem syllable [i], [e], [o] and [u].

Non-finite forms with [-e], [-le] and [-te] are close forms which exhibit four vowel alternances in the stem syllable, [i], [e], [o] and [u]. Forms with [-a] and [-on] are close forms exhibiting four vowels [o], [a], [o] and [o] in the stem syllable.

The phonological formulae for the stem and ending syllables of CV- stem structures are set out below in tabulated form.
II. Table of the phonological formulae for the stem and ending syllables of CV- stem structure.
(a) Indicative forms

<table>
<thead>
<tr>
<th>-V</th>
<th>CLOSED F</th>
</tr>
</thead>
<tbody>
<tr>
<td>-CV</td>
<td></td>
</tr>
<tr>
<td>y/w y CV -t</td>
<td>y/w y CV -t</td>
</tr>
<tr>
<td>w CV -t</td>
<td>w CV -t</td>
</tr>
<tr>
<td>close</td>
<td>close</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>O R M S</th>
<th>OPEN FORMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>-cVC</td>
<td>-cCV</td>
</tr>
<tr>
<td>[li]</td>
<td>[be]</td>
</tr>
<tr>
<td>y/w y CV -t</td>
<td>y/w y CV -t</td>
</tr>
<tr>
<td>w CV -t</td>
<td>w CV -t</td>
</tr>
<tr>
<td>close</td>
<td>close</td>
</tr>
</tbody>
</table>

1. [dii] [dili] [dile] [dilo] [dicchi] [dicche] [diccho] [dibi] [dibe] [dibo] [dilam] [dieche] [dae] [dao]
2. [pai] [pelii] [pele] [pele] [pacchi] [pacchi] [paccho] [pabi] [pabe] [pabo] [pelam] [peyeche] [pae] [pao]
### Imperative Forms

<table>
<thead>
<tr>
<th>Close form</th>
<th>Open form</th>
<th>Close Form</th>
<th>Open Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>-V</td>
<td>-V</td>
<td>-CV</td>
<td>-V</td>
</tr>
</tbody>
</table>

#### Future and Present

<table>
<thead>
<tr>
<th>Close form</th>
<th>Open form</th>
<th>Close Form</th>
<th>Open Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>[-o]</td>
<td>[-o]</td>
<td>[-e] [-le] [-te]</td>
<td>[-a] [on]</td>
</tr>
</tbody>
</table>

#### Close and Open

<table>
<thead>
<tr>
<th>Close form</th>
<th>Open form</th>
<th>Close Form</th>
<th>Open Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>y/w</td>
<td>w CV₂ - ε</td>
<td>y/w CV₂ - ε</td>
<td>y/w CV₂ - ε</td>
</tr>
<tr>
<td>w CV₁ - ε</td>
<td>w CV₁ - ε</td>
<td>w CV₁ - ε</td>
<td>w CV₁ - ε</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Close form</th>
<th>Open form</th>
<th>Close Form</th>
<th>Open Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>close</td>
<td>open</td>
<td>close</td>
<td>open</td>
</tr>
</tbody>
</table>

1. [dio] [dwo] [dye] [dile] [dite] [dawa] dəon
2. [peyo] [pao] [peye] [pale] [pete] [pawa] [paon]
10.4 CVCe - Stem Structure

(a) Indicative forms

(i) CVCe + V

[-i] ending

1. [e]-[i] [petai]  
2. [œ]-[i] [khaalai]  
3. [a]-[i] [katai]  
4. [o]-[i] [bolai]  
5. [œ]-[i] [tolai]

[-e] ending

1. [e]-[e] [petae]  
2. [œ]-[e] [khaale]  
3. [a]-[e] [katae]  
4. [o]-[e] [bole]  
5. [œ]-[e] [tole]

[-o] ending

1. [e]-[o] [petao]  
2. [œ]-[o] [khaalo]  
3. [a]-[o] [katao]  
4. [o]-[o] [bolo]  
5. [œ]-[o] [tolo]

(ii) CVCe + CV [-li] ending

1. [e]-[i] [petali]  
2. [œ]-[i] [khalali]  
3. [a]-[i] [katali]  
4. [o]-[i] [bolali]  
5. [œ]-[i] [tolali]

[-le] ending

1. [e]-[e] [petale]  
2. [œ]-[e] [kHALale]  
3. [a]-[e] [katale]  
4. [o]-[e] [bole]  
5. [œ]-[e] [tole]

1. Alternative pronunciation is [piṭai]

2. " " [piṭae]  
3. " " [piṭao]  
4. " " [piṭali]  
5. " " [piṭale]
[-lo] ending
1. [e]-[o] [petaloc] 1
2. [æ]-[o] [khalalo]
3. [a]-[o] [kaṭalo]
4. [ɔ]-[o] [bolalo]
5. [o]-[o] [tolalo]

Forms with [-chi], [-che], [-cho], [bi], [be], and [bo] show similar vowel sequence as those with [-li], [-le], and [-lo].

(iii) CVCe + CVC

[-lam] ending
1. [e]-[a] [petalam] 2
2. [æ]-[a] [khalalam]
3. [a]-[a] [kaṭalam]
4. [ɔ]-[a] [bolalam]
5. [o]-[a] [tolalam]

(iv) CVCe + eCV

[-echi] ending
1. [i]-[e] [piṭieche]
2. [e]-[e] [khelieche]
3. [a]-[e] [kaṭieche]
4. [o]-[e] [boleche]
5. [u]-[e] [tulieche]

Forms with endings [-tam] show similar vowel sequences to those with [-lam] ending. Forms with endings [-echi], [-echo], [-echiʃ], [-echen], [-echilam], [-echili], [-echile], [-echilo] and [-echilen] are similar to those with [-echi].

1. Alternative pronunciation is [piṭalo]
2. " " " [piṭalam]
(b) Imperative Forms

(i) CVCe + Ø ending

1. [e]-[a] [peṭa] 2
2. [ə]-[a] [khaḷa]
3. [a]-[a] [kaṭa]
4. [ɔ]-[a] [bola]
5. [o]-[a] [tola]

(ii) CVCe + eC

[[-iʃ] ending  [-uk] ending
1. [e]-[a][peṭaʃ] 3  [e] [peṭak] 4
2. [ə]-[a][khaḷaʃ]  [ə] [khaḷak]
3. [a]-[a][kaṭaʃ]  [a] [kaṭak]
4. [ɔ]-[a][bolaʃ]  [ɔ] [bolak]
5. [o]-[a][tolaʃ]  [o] [tolak]

Forms with [-un] ending are similar to those with [-uk]

(iii) CVCe + V

[-o] (Present) ending  [-o] (future) ending
1. [e]-[o] [peṭao] 5  [i]-[o] [piṭio]
2. [ə]-[o] [khaḷao]
3. [a]-[o] [kaṭao]
4. [ɔ]-[o] [bolaο]
5. [o]-[o] [tolaο]

It will be seen that the present imperative forms with [-o] are similar to the indicative forms with [-o].

1. Imperative forms with Ø, [-iʃ], [-uk] and [-un] do not show any vowel sequence with ending syllable. Phonetic expression of endings are nil in these forms.
2. Alternative pronunciation is [piṭa].
3. "  "  "  "  [piṭaʃ]
4. "  "  "  "  [piṭak]
5. "  "  "  "  [piṭao]
Forms with endings [-te] are similar to those with [-le]. Non-finite forms with [-le] and [-te] are similar to the indicative forms with [-le] and [-te]. Non-finite forms with [-e] show similar vowel sequences to the indicative forms with [-eche] and also imperative forms with [-o] (future).

It will be seen from the examples that all the forms in each of the categories, indicative, imperative and non-finite exhibit two types of vowel alternances in the stem syllable with different endings. Indicative forms with endings, [-i], [-e], [-iš], [-li] and [-chi], imperative forms with ø, [-iš], [-uk] and [-o] (Present), and non-finite forms with [-te] and [-no] exhibit five vowels, [e], [a], [a], [o] and [o] in the stem syllable; and indicative forms with ending [-eche],

<table>
<thead>
<tr>
<th>(i) CVC° + V</th>
<th>(ii) CVC° + CV</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>[-e] ending</td>
<td>[-le] ending</td>
<td>[-no] ending</td>
</tr>
<tr>
<td>[i]-[e] [pište]</td>
<td>[e]-[e] [pešale]</td>
<td>[e]-[o] [pešano]</td>
</tr>
<tr>
<td>[e]-[e] [keli]</td>
<td>[a]-[e] [kalaš]</td>
<td>[a]-[o] [kalašo]</td>
</tr>
<tr>
<td>[a]-[e] [kašie]</td>
<td>[e]-[e] [kašie]</td>
<td>[a]-[o] [kašie]</td>
</tr>
<tr>
<td>[a]-[e] [bolie]</td>
<td>[o]-[e] [bolie]</td>
<td>[o]-[o] [bolie]</td>
</tr>
<tr>
<td>[u]-[e] [tulie]</td>
<td>[o]-[e] [tulie]</td>
<td>[o]-[o] [tulie]</td>
</tr>
</tbody>
</table>

1. The ending [-no] occurs only in dissyllabic and trisyllabic forms. See ending structures, Chapter 8.
2. Alternative pronunciation [pišale]
3. Alternative pronunciation [pišano]
imperative forms with [-o] (future) and non-finite forms with [-e] exhibit five different vowels, [i], [e], [a], [o] and [u] in the stem syllable.

Forms that exhibit five vowels [e], [ə], [a], [o] and [o] are open forms and those that exhibit five vowels [i], [e] [a], [o] and [u] in the stem syllable are close forms. In other words, indicative forms with [-i], [-e], [-o], [-iʃ], [-li] and [-eche], imperative forms with ø, [-iʃ], [-uk] and [-o] (present) and non-finite forms with [-le] and [-no] are open forms; and indicative forms with [-eche], imperative forms with [-o] (future) and non-finite forms with [-e] are close forms. Open forms in CVCe- structure show similar vowel differences to those in CVC- stem structure, and close forms in CVCe- structure show similar vowel differences to those close forms in CVC- stem structure that exhibit five vowel alternances in the stem syllable.

Open forms have two degrees of openness in each of $^Y$ and $^W$ prosodic syllables which are never more close than half-close. Close forms have two degrees of openness in each of $^Y$ and $^W$ prosodic syllables, which are never more open than between half close and half open. Both open and close forms show vowel [ə] in the stem syllable. Vowel qualities observed in different forms are similar to those in open forms and close forms of the CVC- stem structure.

Indicative forms whose ending structure is -eCV are close forms, forms with endings of all other structures are open forms. Imperative forms whose ending structure is -V
are of two types: open and close; and forms with ending of other structures are open forms. Non-finite forms whose ending is -V are close forms, forms with endings of all other structures are open forms, so far as the forms in this extended stem structure CVC© are concerned.

These can be formulated thus:

Indicative form

(i) CVC© + V

First syllable third syllable

Open forms: [e], [a], [a], [o], [o]. [i]/[e]/[o]

(ii) CVC© + CV(C)

open forms: [e], [a], [a], [o], [o]. [i]/[e]/[o]/[a]

---

1. See indicative forms with endings [-i], [-e] and [-o] on p.
2. See indicative forms with endings [-li], [-le], [-lo] and [-lam] on page
(iii) CVCe-œCV

Close forms 1: [i], [e], [a], [o], [u]. [e]

y/w CV1Ce-œCV

y/ w CV2Ce-œCV

y/ w CV1Ce-œCV

Imperative forms

CVCe + V

Close forms 2: [i], [e], [a], [o], [u]. [œ]

y/w CV2Ce-œCV

y/w CV1Ce-œCV

Open forms 3: [œ], [ə], [a], [ɔ], [o] [œ]

y/w CV1Ce-œCV

y/w CV2Ce-œCV

1. See indicative forms with [-eche] on page
2. See imperative forms with [-œ](future) on page
3. See imperative forms with [-œ](present) on page
Non-finite forms

CVCo + V

close forms: 1 [i], [e], [a], [o], [u] : [e]

CVCo + CV

open forms: 2 [e], [a], [a], [a], [o] : [e]/[o]

It is important to note that so far as the causative verbs in CVCo- stem structure are concerned, indicative forms in present and past perfective tense in all persons and grades are close forms which exhibit five vowel alternances [i], [e], [a], [o] and [u] in the stem syllable of forms in different scatters. Forms in all other tenses, persons and grades are open forms which exhibit five vowel alternances in the stem syllable [e], [a], [a], [o] and [e].

Causative imperative forms in future tense, 2nd person, ordinary grade are close forms which exhibit five different vowels in the stem syllable [i], [e], [a], [o] and [u].

1. See Non-finite forms with [-e] on page
2. See Non-finite forms with [-le] and [-no] on page
Forms in all other tenses, persons and grades are open forms that exhibit five vowels [e], [ε], [a], [ɔ], and [o].

Causative Non-finite forms with [-e] are close forms which exhibit five vowels in the stem syllable, [i], [e], [a], [ɔ], [u]. All other non-finite forms are open forms which exhibit five vowels in the stem syllable, [e], [ε], [a], [ɔ] and [o].
Table of the phonological formulae for the stem
ending syllables of CVCe- stem structures

(a) Indicative forms

<table>
<thead>
<tr>
<th>Close forms</th>
<th>OPEN FORMS</th>
<th>CV</th>
<th>-CVc</th>
</tr>
</thead>
<tbody>
<tr>
<td>-eC©</td>
<td>[-i]</td>
<td>[-i]</td>
<td>[-i]</td>
</tr>
<tr>
<td>ending</td>
<td>ending</td>
<td>ending</td>
<td>ending</td>
</tr>
<tr>
<td>y/w</td>
<td>y/w</td>
<td>y/w</td>
<td>y/w</td>
</tr>
<tr>
<td>CV2C-e©</td>
<td>CV2C-t</td>
<td>CV2C-e</td>
<td>CV2C-e</td>
</tr>
<tr>
<td>close</td>
<td>open</td>
<td>open</td>
<td>open</td>
</tr>
<tr>
<td>1.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>2.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>3.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>4.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>5.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>CV1C-e©</td>
<td>CV1C-t</td>
<td>CV1C-e</td>
<td>CV1C-e</td>
</tr>
<tr>
<td>close</td>
<td>open</td>
<td>open</td>
<td>open</td>
</tr>
<tr>
<td>1.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>2.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>3.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>4.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>5.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Close forms</th>
<th>OPEN FORMS</th>
<th>CV</th>
<th>-CVc</th>
</tr>
</thead>
<tbody>
<tr>
<td>-eC©</td>
<td>[-i]</td>
<td>[-i]</td>
<td>[-i]</td>
</tr>
<tr>
<td>ending</td>
<td>ending</td>
<td>ending</td>
<td>ending</td>
</tr>
<tr>
<td>y/w</td>
<td>y/w</td>
<td>y/w</td>
<td>y/w</td>
</tr>
<tr>
<td>CV2C-e©</td>
<td>CV2C-t</td>
<td>CV2C-e</td>
<td>CV2C-e</td>
</tr>
<tr>
<td>close</td>
<td>open</td>
<td>open</td>
<td>open</td>
</tr>
<tr>
<td>1.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>2.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>3.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>4.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>5.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>CV1C-e©</td>
<td>CV1C-t</td>
<td>CV1C-e</td>
<td>CV1C-e</td>
</tr>
<tr>
<td>close</td>
<td>open</td>
<td>open</td>
<td>open</td>
</tr>
<tr>
<td>1.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>2.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>3.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>4.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
<tr>
<td>5.</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
<td>C©e©-C©</td>
</tr>
</tbody>
</table>

-piţiche [pêta] [pêta] [pêta] [pêta] [pêta] [pêta] [pêta]
-kiţiche [khal] [khal] [khal] [khal] [khal] [khal] [khal]
-boliţe [bol] [bol] [bol] [bol] [bol] [bol] [bol]
-tulite [tola] [tola] [tola] [tola] [tola] [tola] [tola]
-kaţiche [kaţ] [kaţ] [kaţ] [kaţ] [kaţ] [kaţ] [kaţ]
(b) Imperative

<table>
<thead>
<tr>
<th>Close Form</th>
<th>Open Forms</th>
<th>Close Form</th>
<th>OPEN FORMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>V</strong></td>
<td><strong>V</strong></td>
<td><strong>V</strong></td>
<td><strong>CV</strong></td>
</tr>
<tr>
<td>([-\text{o}]) Future ending (y/w) (y) (CV_2Ce-)</td>
<td>([-\text{o}]) Present ending (y/w) (\approx y) (CV_2Ce-)</td>
<td>([-\text{e}]) ending (y/w) (y) (CV_2Ce-)</td>
<td>([-\text{te}]) ending (y/w) (y) (CV_2Ce-)</td>
</tr>
<tr>
<td>close (y) (w)</td>
<td>open (y) (\approx w)</td>
<td>close (y) (y)</td>
<td>open (y) (y)</td>
</tr>
<tr>
<td>1. (\text{C}Ce-) close (y) (w)</td>
<td>(\text{C}Ce-) open (y) (\approx w)</td>
<td>(\text{C}Ce-) close (y) (y)</td>
<td>(\text{C}Ce-) open (y) (y)</td>
</tr>
<tr>
<td>2. (\text{C}Ce-) close (y) (w)</td>
<td>(\text{C}Ce-) open (\approx w)</td>
<td>(\text{C}Ce-) close (y) (y)</td>
<td>(\text{C}Ce-) open (y) (y)</td>
</tr>
<tr>
<td>3. (\text{C}Ce-) close (\approx w)</td>
<td>(\text{C}Ce-) open (\approx w)</td>
<td>(\text{C}Ce-) close (\approx y)</td>
<td>(\text{C}Ce-) open (\approx y)</td>
</tr>
<tr>
<td>4. (\text{C}Ce-) close (\approx w)</td>
<td>(\text{C}Ce-) open (\approx w)</td>
<td>(\text{C}Ce-) close (\approx y)</td>
<td>(\text{C}Ce-) open (\approx y)</td>
</tr>
<tr>
<td>5. (\text{C}Ce-) close (\approx w)</td>
<td>(\text{C}Ce-) open (\approx w)</td>
<td>(\text{C}Ce-) close (\approx y)</td>
<td>(\text{C}Ce-) open (\approx y)</td>
</tr>
<tr>
<td>(\text{C}Ce-) close (\approx w)</td>
<td>(\text{C}Ce-) open (\approx w)</td>
<td>(\text{C}Ce-) close (\approx y)</td>
<td>(\text{C}Ce-) open (\approx y)</td>
</tr>
</tbody>
</table>

(c) Non-finite

1. [pitio] [petao] [piṭie] [petate] [petale] [petano]
2. [khelio] [khalao] [khelie] [khalate] [khalale] [khalano]
3. [bolio] [bolao] [bolie] [bolate] [bolale] [bolano]
4. [tulio] [tolao] [tulie] [tolate] [tolale] [tolano]
5. [katio] [katao] [kaṭie] [kaṭate] [kaṭale] [kaṭano]
10.5 CVe- Stem Structure.

Unlike CV- stem structure, forms in CVe- stem structure show five vowel alternances with different endings. It has been already stated (upra) that in some categories the forms in stem structure CV- involve y or w prosody in the stem and ending junction. Forms in the stem structure CVe- involve y or w prosody in the linking of the two syllables of the stem. In addition, where the ending begins with [-ch-] forms in stem structure CVe-, like those in stem structure CV-, involve g prosody in the stem and junction.

The following forms in this structure with different endings are given for example.

(a) Indicative forms

(i) CVe + V

<table>
<thead>
<tr>
<th>Ending</th>
<th>Example 1</th>
<th>Example 2</th>
<th>Example 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>[-i]</td>
<td>[jiai]</td>
<td>[jiai]</td>
<td>[jiai]</td>
</tr>
<tr>
<td>[-e]</td>
<td>[dawai]</td>
<td>[dawai]</td>
<td>[dawai]</td>
</tr>
<tr>
<td>[-o]</td>
<td>[bowai]</td>
<td>[bowai]</td>
<td>[bowai]</td>
</tr>
</tbody>
</table>

1. So far as the vowel harmony is concerned, forms of VCe- stem structure do not show peculiarities other than those mentioned in connection with the forms of CVCe- stem structures. Hence they are not exemplified.

2. Forms with [-en] do not show any vowel sequence. Their phonetic expressions are similar to the stem syllable of the forms in [-e] ending, e.g. [jian], [dawan], [pawan], [bowan] [jowen]. Phonetic realization of e in -ee ending is nil in the forms of this structure.

3. Alternative form is [jiiui].
4. Alternative form is [jioe].
(ii) CVø + CV

<table>
<thead>
<tr>
<th>Ending</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[li]</td>
<td>[i][i] [jiali]</td>
<td>[i][i] [jiale]</td>
<td>[i][o] [jialo]</td>
</tr>
<tr>
<td>[-le]</td>
<td>[a][i] [dawali]</td>
<td>[a][i] [dawale]</td>
<td>[a][o] [dawalo]</td>
</tr>
<tr>
<td>[-lo]</td>
<td>[a][i] [pawali]</td>
<td>[a][i] [pawale]</td>
<td>[a][o] [pawalo]</td>
</tr>
<tr>
<td>[-lie]</td>
<td>[a][i] [bowali]</td>
<td>[a][i] [bowale]</td>
<td>[a][o] [bowalo]</td>
</tr>
<tr>
<td>[-lie]</td>
<td>[a][i] [jowali]</td>
<td>[a][i] [jowale]</td>
<td>[a][o] [jowalo]</td>
</tr>
</tbody>
</table>

Forms with [-chi], [-cho], [-bi], [-be], [-bo] are similar to those with [-li], [-le] and [-lo].

(iii) CVø + CVC

<table>
<thead>
<tr>
<th>Ending</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[-lam]</td>
<td>[i][a] [jialam]</td>
<td>[i][e] [jiyieche]</td>
<td>[i][e] [djyieche]</td>
<td>[i][e] [payieche]</td>
</tr>
<tr>
<td>[-che]</td>
<td>[a][a] [pawalam]</td>
<td>[a][e] [payalam]</td>
<td>[u][e] [juyalam]</td>
<td></td>
</tr>
</tbody>
</table>

Forms with [-tam] are similar to those with [-lam];
Forms with endings [-echi], [-echo], [-echen], [-echili], [-echile], [-echilo] [-echilen] and [-echilam] are similar to those with [-echi].

1. Alternative form is [jiali]
2. Alternative form is [jiale]
3. Alternative form is [jialo]
4. The junction of stem and ending is geminated in the forms of this structure with endings beginning with [-che]. e.g. [jiacchi], [dawacchi], [pawacchi], [bowacchi] and [jowachi] etc. But this does not affect the vowel harmony relation.
5. Alternative form is [jialam].
(b) **Imperative forms**

(i) **CVø + ø ending**

<table>
<thead>
<tr>
<th></th>
<th>[-i&quot;] ending</th>
<th>[-uk] ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>[jia]</td>
<td>[jia&quot;]</td>
<td>[jiak]</td>
</tr>
<tr>
<td>[dəwa]</td>
<td>[dəwa&quot;]</td>
<td>[dəwak]</td>
</tr>
<tr>
<td>[pawa]</td>
<td>[pawa&quot;]</td>
<td>[pawak]</td>
</tr>
<tr>
<td>[bəwa]</td>
<td>[bəwa&quot;]</td>
<td>[bəwak]</td>
</tr>
<tr>
<td>[ʃowa]</td>
<td>[ʃowa&quot;]</td>
<td>[ʃowak]</td>
</tr>
</tbody>
</table>

Forms with [-un] are similar to those with [-uk].

(ii) **CVø + eC ending**

<table>
<thead>
<tr>
<th></th>
<th>[-i&quot;] ending</th>
<th>[-uk] ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>[jia]</td>
<td>[jia&quot;]</td>
<td>[jiak]</td>
</tr>
<tr>
<td>[dəwa]</td>
<td>[dəwa&quot;]</td>
<td>[dəwak]</td>
</tr>
<tr>
<td>[pawa]</td>
<td>[pawa&quot;]</td>
<td>[pawak]</td>
</tr>
<tr>
<td>[bəwa]</td>
<td>[bəwa&quot;]</td>
<td>[bəwak]</td>
</tr>
<tr>
<td>[ʃowa]</td>
<td>[ʃowa&quot;]</td>
<td>[ʃowak]</td>
</tr>
</tbody>
</table>

Forms with [-un] are similar to those with [-uk].

(iii) **CVø + V**

<table>
<thead>
<tr>
<th></th>
<th>[-o] (Present) ending</th>
<th>[-o] (future) ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>[jiao]</td>
<td>[jiao]</td>
<td>[jiyio]</td>
</tr>
<tr>
<td>[dəwao]</td>
<td>[dəwao]</td>
<td>[diyio]</td>
</tr>
<tr>
<td>[pawao]</td>
<td>[pawao]</td>
<td>[payio]</td>
</tr>
<tr>
<td>[bəwao]</td>
<td>[bəwao]</td>
<td>[boyio]</td>
</tr>
<tr>
<td>[ʃowa]</td>
<td>[ʃowa]</td>
<td>[ʃuyio]</td>
</tr>
</tbody>
</table>

Imperative forms with [-o] (present) are similar to the indicative forms with [-o].

---

1. Alternative pronunciation is [jio].
2. Alternative pronunciation is [jio"]
3. Alternative pronunciation is [jiuk].
4. Alternative pronunciation is [jioo].
(C) Non-finite forms

(i) CVe + V              (ii) CVe + CV              (iii) CVC e + CV
[-e] ending             [-le] ending             [-no] ending
[i]-[e] [jiyie]         [i]-[e] [jiale]         [i]-[o] [jiano]
[i]-[e] [diyie]         [a]-[e] [dawale]        [a]-[o] [dawano]
[a]-[e] [payie]         [o]-[e] [pawale]        [o]-[o] [pawano]
[o]-[e] [boyie]         [o]-[e] [bowale]        [o]-[o] [bowano]
[u]-[e] [juyie]         [o]-[e] [jwale]         [a]-[o] [jwano]

Forms with [-te] are similar to those with [-le]. Non-finite forms with [-le] and [-te] are similar to the indicative forms with [-le] and [te] respectively. Non-finite forms with [-e] show similar vowel sequences to the indicative forms with [-eche]. Imperative forms with [-o] (future) have the same vowel alternances.

It will be seen from the examples that like CVCe-stem-structure, all the forms in each of the groups, indicative, imperative and non-finite exhibit two categories of vowel alternances in the stem syllable with different endings. Indicative forms with endings [-i], [-e], [-o], [-le], [-lam] imperative forms with ø, [-ij], [-uk] and [-o] (present), and non-finite forms in [-le] and [-no] show five vowels, [i], [a] [a], [o] and [o] in the stem syllable; and indicative forms with [-eche]; imperative forms with [-o] future and non-finite

1. Alternative pronunciation is [jiole]
2. Alternative pronunciation is [jiono]
forms with [-e] exhibit four different vowels, [i], [a], [o] and [u] in the stem syllable.

Forms that exhibit five vowels [i], [æ], [a], [o], and [o] are open forms and those that exhibit four vowels [i], [a], [o] and [u] are close forms. That is, indicative forms with ending structure whose initial element is e are close forms: indicative forms with other ending structures are all open forms. Imperative forms with [-o] future are close forms. Imperative forms with endings of other structures are open forms. Non-finite forms with ending [-e] are close forms, forms with endings of all other structures are open forms.

Open forms in CV- stem structures show four vowel alternances in the stem syllable, and open forms in CV_e- stem structure show five vowel alternances, prosody of the linking of the two stem syllables are always \( w \). Close forms in CV-stem structure show two categories of vowel alternances: those exhibiting [i], [a], [o], [u] (with different junction prosodies), and those exhibiting [i], [e], [o] and [u] (with different junction prosodies), but the close forms in CV_e- stem structures show four vowel alternances, [i], [a], [o], [u] in the stem syllable of forms of different scatters. Linking of the two stem syllables in close forms of CV_e- structure is always \( Y \) prosodic. This is one of the remarkable distinctions between the close forms and open forms of this stem structure, that the close forms always involve a \( Y \) prosody in the linking of the two stem syllables, whereas open forms always involve a \( W \) prosody in the linking of the two stem-syllables.
The maximum degree of closeness in the stem syllable of open forms is between close and half-close in \( \text{\textit{V}} \) prosodic syllable and between half-close and half-open in \( \text{\textit{W}} \) prosodic syllable.

The maximum degree of openness in the stem syllable of close forms is between close and half-close in \( \text{\textit{V}} \) prosodic syllable and between half-close and half-open in \( \text{\textit{W}} \) prosodic syllable.

Both the close forms and open forms exhibit \([a]\) in the stem syllable. This is in marked contrast with some of the close forms in CVC and CV- stem structures where four vowel alternances are exhibited in the stem syllable and \([a]\) is not shown.

The qualities of the vocalic articulations in the stem syllables are similar to those mentioned in the close forms or open forms of CVC- or CV- stem structures.

These can be formulated thus:

(a) Indicative forms

\[
\begin{array}{ll}
\text{CV}_0 + \text{V} & \text{First syllable} & \text{third syllable} \\
\text{open forms: } & [i], [\text{o}], [a], [\text{e}], [\text{e}] & [i]/[\text{e}]/[\text{o}]
\end{array}
\]

\[
\begin{array}{ll}
\text{y/} & y/ \\
\text{CV}_2 & -w- \\
\text{y/} & y/ \\
\text{CV}_1 & -w-
\end{array}
\]

1. See indicative forms with \([-i], [-e], [-o]\) on page 381.
CVo + CV(C)

open forms

[i], [a], [a], [o], [o]  
[i]/[e]/[o]/[a]

CVo + eCV

Close forms:  
[i], [a], [o], [u]  
[-e]

CVo + V

open forms:  
[i], [a], [a], [o], [o]  
[o]

1. See indicative forms with [-li], [-le], [-lo], aand [-lam] on page 381.
2. See indicative forms with [-eche] on page 381.
3. See imperative forms with [-o](present) on page 383.
Close forms: $^{1}$ [i], [a], [o], [u] [o] 383

\[\begin{align*}
\text{CV}_1 \theta - \varepsilon \\
\text{w} \quad \text{w}
\end{align*}\]

\[\begin{align*}
\text{CV}_2 \theta - \varepsilon \\
\text{w} \quad \text{w}
\end{align*}\]

(c) Non-finite forms

$\text{CV}_0 + V$

Close forms: $^{2}$ [i], [a], [o], [u] [e]

\[\begin{align*}
\text{CV}_1 \theta - \varepsilon \\
\text{w} \quad \text{w}
\end{align*}\]

\[\begin{align*}
\text{CV}_2 \theta - \varepsilon \\
\text{w} \quad \text{w}
\end{align*}\]

$\text{CV}_0 + \text{CV}$

Open forms: $^{3}$ [i], [æ], [a], [o], [o] [e]/[o]

\[\begin{align*}
\text{CV}_2 \theta - \text{C} \varepsilon \\
\text{w} \quad \text{w}
\end{align*}\]

\[\begin{align*}
\text{CV}_1 \theta - \text{C} \varepsilon \\
\text{w} \quad \text{w}
\end{align*}\]

Causative indicative forms in present and past perfective tenses in all persons and grades are close forms. They exhibit four vowel alternances in stem syllable of forms of different scatters. [i], [a], [o] and [u]. Forms in all other tenses, persons and grades are open forms which exhibit five vowel alternances in stem syllable [i, [æ], [a], [e] [o].

1. See imperative forms with [-o](future) on page 383
2. See Non-finite forms with [-e] on page 383
3. See Non-finite forms with [-le] and [-no] on page 384
Causative imperative forms in future tense, 2nd person ordinary grade are close forms exhibiting four vowel alternances [i], [a], [ɛ] and [u] in the stem syllable of different forms. Forms in other tenses and persons and grades are open forms which exhibit five vowels [i], [ʊ], [a], [ɔ] and [o] in the stem syllable.

Causative Non-finite forms with ending [-e] are close forms exhibiting four vowels in the stem syllable, [i], [a] [o] and [u]. Non-finite forms with other endings are open forms exhibiting [i], [ʊ], [a], [ɔ] and [o] in the stem syllable.
Table of the Phonological formulae for the stem and ending syllables of CVe stem structure.

(a) Indicative forms

<table>
<thead>
<tr>
<th>Close forms</th>
<th>OPEN FORMS</th>
<th>OPEN FORMS</th>
<th>OPEN FORMS</th>
<th>OPEN FORMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>- eCV</td>
<td>- V</td>
<td>- CV</td>
<td>- CVC</td>
<td></td>
</tr>
<tr>
<td>y/w CV1e-€CV2-t</td>
<td>y/w CV2-e</td>
<td>y/w CV2-€</td>
<td>y/w CV2-C</td>
<td>y/w CV2-€</td>
</tr>
<tr>
<td>w y CVe-€</td>
<td>y/w CV2-e</td>
<td>y/w CV2-€</td>
<td>y/w CV2-C</td>
<td>y/w CV2-€</td>
</tr>
<tr>
<td>close open</td>
<td>open open</td>
<td>open open</td>
<td>open open</td>
<td>open open</td>
</tr>
<tr>
<td>close open</td>
<td>open open</td>
<td>open open</td>
<td>open open</td>
<td>open open</td>
</tr>
<tr>
<td>2. y y y y y</td>
<td>y y y y y</td>
<td>y y y y y</td>
<td>y y y y y</td>
<td>y y y y y</td>
</tr>
<tr>
<td>Cte-€Cae-t</td>
<td>Cae-€ Cae-€</td>
<td>Cae-CaC</td>
<td>Cae-CaC</td>
<td>Cae-CaC</td>
</tr>
<tr>
<td>close open</td>
<td>open open</td>
<td>open open</td>
<td>open open</td>
<td>open open</td>
</tr>
<tr>
<td>3. Cte-€Cee-t</td>
<td>Cee-€ Cee-C</td>
<td>Cee-€ Cee-C</td>
<td>Cee-CaC</td>
<td>Cee-CaC</td>
</tr>
<tr>
<td>open</td>
<td>open</td>
<td>open</td>
<td>open</td>
<td>open</td>
</tr>
</tbody>
</table>
1. [jiyieche][jiai] [jiae] [jiao] [jiali] [jiale] [jialo] [jia] 
2. [diyieche][dawai][dawae][dawao][dewali][dewale] [dawalo] [daw] 
3. [boyeche] [bowai][bowae][bowao][bowali][bowale] [bowalo] [bow] 
4. [juyeche] [jowai][jowae][jowao][jowali][jowale] [jowalo] [jow] 
5. [payieche][pawai][pawae][pawao][pawali][pawale] [pawalo] [paw]
### (b) Imperative forms

<table>
<thead>
<tr>
<th>Close forms</th>
<th>Open forms</th>
<th>close forms</th>
<th>OPEN FORMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="future">-o</a> [end]</td>
<td><a href="pres">-o</a> [end]</td>
<td>[-e] [end]</td>
<td>[-le] [end]</td>
</tr>
<tr>
<td>y/w w w CVo-ε</td>
<td>y/w w w CVo-ε</td>
<td>y/w w y CVo-Cε</td>
<td>y/w w y CVo-Oε</td>
</tr>
<tr>
<td>w y w CVo-ε</td>
<td>w y w CVo-ε</td>
<td>w y w Cεo-ε</td>
<td>w y w Cεo-ε</td>
</tr>
<tr>
<td>y y w Cεo-ε</td>
<td>y w w Cεo-ε</td>
<td>y y y CVo-ε</td>
<td>y w w CVo-ε</td>
</tr>
<tr>
<td>y y w y CVo-ε</td>
<td>y y w y CVo-ε</td>
<td>y y y CVo-ε</td>
<td>y y y CVo-ε</td>
</tr>
</tbody>
</table>

### (c) Non-finite forms

[ji/yio] [jiao] [ji/yie] [ji/ale] [ji/ate] [ji/ano]
[di/yio] [da/wao] [di/yie] [da/wale] [da/wate] [da/wano]
[bo/yio] [bo/wao] [bo/yie] [bo/wale] [bo/wate] [bo/wano]
[ji/yio] [jo/wao] [ji/yie] [jo/wale] [jo/wate] [jo/wano]
[pa/yio] [pa/wao] [pa/yie] [pa/wale] [pa/wate] [pa/wano]
Forms in stem structures VCε-, CVCCε-, VCCε- and CVC/CVCE do not show peculiarities other than those mentioned in connection with the vowel harmony of the forms of CVCE- stem structure. The statement made for the forms in CVCE- stem structure is valid for the forms in these structures. Similar relation of close forms and open forms are found with different ending structures to those in structure CVCE-, except that the open forms in CVCE- stem structures show five vowel alternances [e], [æ], [a], [ɔ], and [o], whereas open forms in stem structure (C)VCCE- show five vowel alternances [i], [æ] [a], [ɔ] and [o]. In this respect these open forms show similar vowel differences as the forms in CVC- stem structure with ending [-lam]. In all other respects open forms and close forms of these stem structures are similar to those in CVCE- stem structure. At the grammatical level forms in stem structures CVC-, Vc and CV are non-causative forms. Forms in extended stem structures CVCE-, VCE- and CVε- are referred to as causative forms. Forms of the stem structures CVCCε- and VCCε- and CVC/CVCε- are different from the forms of monosyllabic non extended (radical) stem structures and disyllabic extended stem structures in that the forms of monosyllabic stem structures are always non-causative and forms of disyllabic extended stem structures are always causative verbs. Forms of the disyllabic stem structure CVCCε- and VCCε- and tri-syllabic stem structure CVC/CVCε function both as non-causative and causative.
Indicative forms, causative and non-causative, as the case may be, in the stem structures (C)VCCe- and CVC/CVCe- in present and past perfect tenses in all persons and grades are close forms which exhibit five vowel alternances [i], [e], [a] [o] and [u] in the stem syllable of the forms in different scatters. Indicative forms in all other tenses, persons and grades are open forms which exhibit five vowel alternances [i], [æ], [a], [o] and [u].

Imperative forms in these stem structures in future tense, 2nd person, ordinary grade are close forms which exhibit same five vowel alternances in the stem syllable as in the case of indicative close forms. Imperative forms in all other tenses, persons and grades are open forms that exhibit five vowel alternances in the stem syllable of different forms as in the case of indicative open forms in these structures.

Non-finite forms in these stem structures with ending [-e] are close forms. All other non-finite forms are open forms. Non-finite close forms and open forms exhibit similar vowel alternances to those in indicative or imperative forms in these structures.

It will be seen from the examples in different structures that unlike forms in CVC-, VC and CV stem structures, forms in CVCe-, VCe-, CVe-, CVCCe- and CVC/CVCe- stem structures have only one category of close forms and one category of open forms.
Some forms of stem structure CVCCe- with different endings are given below for examples.

10. 6 CVCCe stem structure

(a) Indicative forms

(1) CVCCe + V

[-i] ending

[i]-[i] [cimtai] [i]-[e] [cimtae]
[α]-[i] [bhāmpcai] [α]-[e] [bhāmpcae]
[a]-[i] [palṭai] [a]-[e] [palṭae]
[ɔ]-[i] [postai] [ɔ]-[e] [postae]
[o]-[i] [ṭhokrai] [o]-[e] [ṭhokrae]

[-o] ending

[i]-[o] [cimtao] [i]-[e] [cimtieche]
[α]-[o] [bhāmpcao] [e]-[e] [bhāmpcieche]
[a]-[o] [palṭao] [a]-[e] [palṭieche]
[ɔ]-[o] [postao] [ɔ]-[e] [postieche]
[o]-[o] [ṭhokrao] [u]-[e] [ṭhukrieche]

(ii) CVCCe + eCV

[-eche] ending

[i]-[e] [cimtieche]
[α]-[e] [bhāmpcieche]
[a]-[e] [palṭieche]
[ɔ]-[e] [postieche]
[u]-[e] [ṭhukrieche]

1. As the forms of the stem structures VCCe- do not show any difference in the vowel sequences of the stem syllable one and ending syllable, they will not be examplified. The statement about the forms of CVCCe- structure will hold good for the forms in this structure as well. For the same reason examples of reduplicated forms in CVC/CVCe- stem structure are not given.

2. Indicative forms with [-i], [-e], [-o] and [-eche] imperative forms with [-o] present and [-o] future non-finite forms with [-e] and [-no] are given here as representative.
(b) Imperative forms

(i) CVCCe + V

<table>
<thead>
<tr>
<th>Present ending</th>
<th>Future ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>[i]-[o] [cimt̪ao]</td>
<td>[i]-[e] [cimt̪ie]</td>
</tr>
<tr>
<td>[a]-[o] [bheqcao]</td>
<td>[e]-[e] [bheqcie]</td>
</tr>
<tr>
<td>[a]-[o] [palt̪ao]</td>
<td>[a]-[e] [palt̪ie]</td>
</tr>
<tr>
<td>[a]-[o] [postao]</td>
<td>[a]-[e] [postie]</td>
</tr>
<tr>
<td>[u]-[o] [ʔthokrao]</td>
<td>[u]-[e] [ʔthukrie]</td>
</tr>
</tbody>
</table>

(c) Non-finite forms

<table>
<thead>
<tr>
<th>Non-finite ending</th>
</tr>
</thead>
<tbody>
<tr>
<td>[-e] ending</td>
</tr>
<tr>
<td>[i]-[e] [cimt̪ie]</td>
</tr>
<tr>
<td>[e]-[e] [bheqcie]</td>
</tr>
<tr>
<td>[a]-[e] [palt̪ie]</td>
</tr>
<tr>
<td>[o]-[e] [postie]</td>
</tr>
<tr>
<td>[u]-[e] [ʔthukrie]</td>
</tr>
<tr>
<td>[-no] ending</td>
</tr>
<tr>
<td>[i]-[o] [cimt̪ano]</td>
</tr>
<tr>
<td>[a]-[o] [bheqcano]</td>
</tr>
<tr>
<td>[a]-[o] [palt̪ano]</td>
</tr>
<tr>
<td>[a]-[o] [postano]</td>
</tr>
<tr>
<td>[o]-[o] [ʔthokrano]</td>
</tr>
</tbody>
</table>

It will be seen from the examples above indicative forms with [-i], [-e] and [-o] show five vowel alternances in the stem syllable, [i], [a], [o] and [o]; and indicative forms with [-eche] ending exhibit five vowel alternances, [i], [e], [a], [o] and [u] in the stem syllable. Indicative forms with [-i], [-e], and [-a] are open forms and forms with [-eche] are close forms.

Imperative forms with [-o](present) exhibit same five
vowel alternances in the stem syllable as the indicative open forms stated above, and imperative forms with [-o] (future) show same five vowel differences in the stem syllable as the indicative close forms. Imperative forms with [-o] (Present) are open forms and with [-o] future are close forms.

Non-finite forms with [-e] show same five vowel alternances in the stem syllable as the indicative and imperative close forms in this structure, and non-finite forms with [-on] exhibit same five vowel alternances as the indicative and imperative open forms. Non-finite forms with [-e] are close forms and those with [-on] are open forms.

Open forms have two degrees of openness in each of ŷ and w prosodic syllables and one degree in o prosodic syllable. Close forms have two degrees of openness in each ŷ and w prosodic syllables which are never more open than between half-close and half-open; and one degree of openness in o prosodic syllable.

This can be formulated thus:

(a) Indicative forms

<table>
<thead>
<tr>
<th>First syllable</th>
<th>Third syllable</th>
</tr>
</thead>
<tbody>
<tr>
<td>open forms.¹</td>
<td>[i], [æ], [a], [o], [o]</td>
</tr>
<tr>
<td></td>
<td>y/w/œ</td>
</tr>
<tr>
<td></td>
<td>CV₂ œ</td>
</tr>
<tr>
<td></td>
<td>i/ε</td>
</tr>
<tr>
<td></td>
<td>CV₁ œ</td>
</tr>
</tbody>
</table>

¹. See indicative forms with endings [-i] [-e], and [-o] on p.
(b) Imperative forms:

Close forms:  
\[
\begin{align*}
\text{[i]}, \text{[e]}, \text{[a]}, \text{[o]}, \text{[u]} & \quad \text{[e]} \\
y/w & \sim -y- w \\
CV_2 CC= & \quad \varepsilon \\
CV_1 CC= & \quad \varepsilon
\end{align*}
\]

Open forms:  
\[
\begin{align*}
\text{[i]}, \text{[e]}, \text{[a]}, \text{[o]}, \text{[u]} & \quad \text{[e]} \\
y/w/\nu & \sim w \\
CV_2 CC= & \quad \varepsilon \\
CV_1 CC= & \quad \varepsilon
\end{align*}
\]

(c) Non-finite forms

Close forms:  
\[
\begin{align*}
\text{[i]}, \text{[e]}, \text{[a]}, \text{[o]}, \text{[u]} & \quad \text{[e]} \\
y/w & \sim w \\
CV_2 CC= & \quad \varepsilon \\
CV_1 CC= & \quad \varepsilon
\end{align*}
\]

1. See indicative forms with [-eche] on page 395
2. See imperative forms with [-o] (future) on page 396
3. See imperative forms with [-o] (Present) on page 396
4. See Non-finite forms with [-e] on page 396
open forms: \[ [i], [\omega], [a], [\varepsilon], [u] \quad [o] \]

1. See Non-finite forms with [-no] on page 396
Table of Phonological formulae for the stem and ending syllables of CVCCo- stem structure.

(a) Indicative forms

<table>
<thead>
<tr>
<th>OPEN FORMS</th>
<th>FORMS</th>
<th>Close Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V</td>
<td>-eCV</td>
</tr>
<tr>
<td>[-i] ending</td>
<td>[-e] ending</td>
<td>[-o] ending</td>
</tr>
<tr>
<td>y/w CV CCc-o</td>
<td>y/w/CV CCc-o</td>
<td>y/w/CV CCc-o</td>
</tr>
<tr>
<td>CV CCc-o</td>
<td>CV CCc-o</td>
<td>CV CCc-o</td>
</tr>
</tbody>
</table>

1. y CCc-o       y CCc-o       y CCc-o y CCc-o y CCc-o
2. y CCc-o       y CCc-o       y CCc-o y CCc-o y CCc-o
3. y CCc-o       y CCc-o       y CCc-o y CCc-o y CCc-o
4. y CCc-o       y CCc-o       y CCc-o y CCc-o y CCc-o
5. y CCc-o       y CCc-o       y CCc-o y CCc-o y CCc-o

1. [cimţai] [cimţae] [cimţao] [cimţieche]
2. [bhegačai] [bhegačae] [bhegačao] [bhegeieche]
3. [paltai] [paltae] [paltao] [paltieche]
4. [postai] [postae] [postao] [postieche]
5. [thokraic] [thokrae] [thokrao] [thukrieche]

1. It will be seen that forms and formulae of the verbs of No. 3 are not shown separately as was done in the case of other structures.
### Imperative forms

<table>
<thead>
<tr>
<th>OPEN FORMS</th>
<th>CLOSE FORMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
</tbody>
</table>

### Non-finite forms

<table>
<thead>
<tr>
<th>OPEN FORMS</th>
<th>CLOSE FORMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
</tbody>
</table>

- **[cimtac]**
- **[bheqca]**
- **[paltac]**
- **[postac]**
- **[thokra]**
It will have been clear from the above discussion that an interrelation between the vowel of the stem syllable and that of the ending syllable can be shown in terms of vowel harmony. Vowel harmony statement is not made merely on the phonetic sequences of the two syllables. For some of the categories feature of junction and intervening C element of structure have also been taken into account.\footnote{See for instance, forms of the scatter pa- with [-le] and [-be], ([pele], [pabe]). on page Compare also, for example, imperative forms with [-o] (Present) and [-o] (future).} Forms are grouped in two categories, close forms and open forms which have variable vowel differences in the stem syllable according to the nature of different endings. The statement of vowel harmony relation is also related to the statement of grammatical categories with reference to the ending of different structures.
CHAPTER II.

C Element of Structure

11.0 Stem Syllable initial C-.

11.0.1 CVC- Stem Structure.

11.0.2 CV- Stem Structure.

11.0.3 CVC©- and VŒ- Stem Structures.

11.0.4 CVCC©- and CVC/CVC©- Stem Structures.

11.1 Stem syllable final -C.

11.1.1 CVC- Stem Structure

CVC + V.
CVC + Ø.
CVC + C-.

11.1.2 VC- Stem Structure.

11.2 -GC- clusters in CVCC© and VCC©- stem structures.

11.3 -C/C- sequences in CVC/CVC©- stem structure.

11.4 Geminated Junction in stem structures:
CV-, (C)VŒ-, (C)VC©- and CVC/CVC©-.
CHAPTER 11.

ELEMENT OF STRUCTURE

11.0 Stem Syllable initial C-

Monosyllabic stems.

11.0.1 CVC- stem structure

So far as initial C- of CVC- stems is concerned, all the four systems, Plosive, Liquid, Sibilant and Nasal are stated as the C element of structure in stem syllable initial. Thus we have PVC, LVC, SVC, and NVC.

Initial Plosive system,

P in PVC- stem structures is a four term phonematic system. Any of the four units, b, d, j or g is possible in syllables for which the initial prosodic system \( v/\overline{v} \), \( h/\overline{h} \) can be stated. Syllables where d is stated as a unit of structure require further to be distinguished in terms of the r/F prosodic system.

A plosive initial stem syllable may then be:

1. Non-voiced and non-breathy \( P_{IVC} \) phonetic exponents of which are absence of voicing before the release and voiceless release without aspiration. (See km. of [pake] (No.13)

2. Non-voiced and breathy \( P_{IVC} \) phonetic exponents of which are absence of voicing before release and voiceless
release with aspiration. (See km. No.14 of [khaṭe])

3. Voiced and non-breathy $v\overline{h}P_{4}VC$- phonetic exponents of which are voicing before the release and voiced release without aspiration. (See km. No.15 of [bujhe]).

4. Voiced and breathy $v\overline{h}P_{4}VC$- phonetic exponents of which are voicing before the release and voiced release with aspiration. (See km. No.16 of [bhoge]).

Initial non-plosive system.

The two phonematic units $l$ and $r$ constitute the L-sub-system. They are both C-elements of structure in $v\overline{h}$ syllables.

$S$ in SVC-stem structure is a single term system in $v\overline{h}$ syllables.

Two phonematic units $m$ and $n$ constitute the N-sub system. They are both C-elements of structure in $v\overline{h}$ syllables.

These are exemplified in tabular form below. The examples chosen cover the full range of possibilities of verbal forms in so far as the initial C-element of structure is concerned. The non-finite verbal forms in [-a] have been given together with the translation equivalent of the English infinitive form.
Table of initial C- of CVC- stems

<table>
<thead>
<tr>
<th>PLOSIVE SYSTEM</th>
<th>( \overline{\text{vh}}_{\text{CVC-}} )</th>
<th>( \text{vh}_{\text{CVC-}} )</th>
<th>( \overline{\text{vh}}_{\text{CVC-}} )</th>
<th>( \text{vh}_{\text{CVC-}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>[paka]</td>
<td>[phaṭa]</td>
<td>[baja]</td>
<td>[bhaba]</td>
</tr>
<tr>
<td>d</td>
<td>'to ripen'</td>
<td>'to split'</td>
<td>'to nag'</td>
<td>'to think'</td>
</tr>
<tr>
<td>r</td>
<td>[tola]</td>
<td>[thaka]</td>
<td>[dakha]</td>
<td>[dhora]</td>
</tr>
<tr>
<td>g</td>
<td>[ṭana]</td>
<td>[ṭḥaka]</td>
<td>[ṭqaka]</td>
<td>[ṭḥaka]</td>
</tr>
<tr>
<td>i</td>
<td>[capa]</td>
<td>[chapa]</td>
<td>[jopa]</td>
<td>[jhola]</td>
</tr>
<tr>
<td>k</td>
<td>[kaṭa]</td>
<td>[khaṭa]</td>
<td>[gona]</td>
<td>[ghoṭa]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NON-PLOSIVE SYSTEM</th>
<th>( \overline{\text{vh}}_{\text{CVC-}} )</th>
<th>( \text{vh}_{\text{CVC-}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>l</td>
<td>-</td>
<td>[lekha]</td>
</tr>
<tr>
<td>r</td>
<td>-</td>
<td>[rakha]</td>
</tr>
<tr>
<td>s</td>
<td>[jekha]</td>
<td>-</td>
</tr>
<tr>
<td>m</td>
<td>-</td>
<td>[maja]</td>
</tr>
<tr>
<td>n</td>
<td>-</td>
<td>[naca]</td>
</tr>
</tbody>
</table>

It will be seen from the table above that a two term system of \( v/\overline{v} \) is relevant for L-, S-, N- subsystems but \( h/\overline{h} \) is not relevant.
A very limited number of forms is found with stem structure CV-. These do not show very different patterns from forms of the CVC- stem structure, so far as the initial C- is concerned. One exception is that where the phonematic unit is \( \dddot{d} \), no \( r \) prosodic structure is found.

### Initial Consonants of CV- stems

<table>
<thead>
<tr>
<th>Initial</th>
<th>( \dddot{v}h ) CV-</th>
<th>( \dddot{v}h ) CV-</th>
<th>( \dddot{v}h ) CV-</th>
<th>( \dddot{v}h ) CV-</th>
</tr>
</thead>
<tbody>
<tr>
<td>( b )</td>
<td>[pawa] 'to get'</td>
<td>-</td>
<td>[b( \dddot{w}a )] 'to carry'</td>
<td>-</td>
</tr>
<tr>
<td>( d )</td>
<td>-</td>
<td>[thowa] 'to keep'</td>
<td>[d( \dddot{w}a )] 'to give'</td>
<td>[d( \dddot{h}o)wa] 'to wash'</td>
</tr>
<tr>
<td>( l )</td>
<td>[cowa] 'to ooze'</td>
<td>[chowa] 'to touch'</td>
<td>[jowa] 'to go'</td>
<td>-</td>
</tr>
<tr>
<td>( g )</td>
<td>[kowa] 'to tell'</td>
<td>[khawa] 'to eat'</td>
<td>[gawa] 'to sing'</td>
<td>-</td>
</tr>
<tr>
<td>( l )</td>
<td>-</td>
<td>-</td>
<td>[l( \dddot{w}a )] 'to take'</td>
<td>-</td>
</tr>
<tr>
<td>( r )</td>
<td>-</td>
<td>-</td>
<td>[rowa] 'to plant'</td>
<td>-</td>
</tr>
<tr>
<td>( s )</td>
<td>[sowa] 'to lie down'</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>( n )</td>
<td>-</td>
<td>-</td>
<td>[nawa] 'to bathe'</td>
<td>-</td>
</tr>
</tbody>
</table>

1. Alternative pronunciation [ch\( \dddot{o}\)wa].
Dissyllabic and reduplicated stems

11.0.3 Extended stem structures: CVCe- and CVe-

Dissyllabic stem structures CVCe- and CVe- are regarded as extensions from the monosyllabic stem structures CVC- and CV- respectively. Thus, for the non-finite forms:

Non-extended: CVC- [kaṭa] 'to cut' (Non-Causative)
Extended : CVCe- [kaṭano] 'to cause to cut' (Causative)

Non-extended: CV- [nawa] 'to have a bath' (Non-Causative)
Extended : CVe- [nawano] 'to cause to have a bath' (Causative)

There are a few verbs which have stems similar to extended stem structures with no non-extended structures in their formal scatter. e.g.

CVCe- : [laṭhano] 'to beat'
CVe- : [miyano] 'to vanish (crisp)'

At the phonological level these structures, though they do not have any non-extended structures will be treated as extended structures.

Since the vast majority of the forms in these dissyllabic structures are extended, initial C- system is exactly identical

---

1. Forms from extended stem structure are regarded as causative forms and those from non-extended structure are non-causative. For causative and non-causative forms see § 1.20.
to the one mentioned for non-extended monosyllabic stem structures CVC- and CV-.

11.0.4 Non-extended stem structures: CVCCε-, CVC/CVCε-

Forms in non-extended dissyllabic stem structures, CVCCε- are non-reduplicated, and in non-extended trisyllabic stem structures are reduplicated. Thus, for the non-finite forms:

Dissyllabic : CVCCε- [cimţano] 'to pinch'

Trisyllabic : CVC/CVCε- [ghorghorano] 'to make rattling sound'.

So far as the initial C- system is concerned, the sub-systems P VCCε-, L VCCε-, S VCCε-, N VCCε- : PVC/CVCε LVC/CVCε-, SVC/CVCε-, NVC/CVCε- of the dissyllabic and trisyllabic stem structures C VCCε- and CVC/CVCε-, are exactly identical with the sub-systems of the initial C- in (C)VC- stem structures.

A few examples are given below for illustration.
<table>
<thead>
<tr>
<th>CVCCe-</th>
<th>( \overline{v}h ) C-</th>
<th>( \overline{v}h ) C-</th>
<th>( \overline{v}h ) C-</th>
<th>( v ) C-</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>[pichlano] 'to slip'</td>
<td>[ph(\text{\text{&quot;}})klano] 'to slip'</td>
<td>[bodlano] 'to change'</td>
<td>[bh(\text{\text{&quot;}})lpkano] 'to be puzzled'</td>
</tr>
<tr>
<td>d</td>
<td>[torpano] 'to jump over'</td>
<td>[thetlano] 'to bruise'</td>
<td>[dabrano] 'to chase'</td>
<td>[dh(\text{\text{&quot;}})mkano] 'to threaten'</td>
</tr>
<tr>
<td>r</td>
<td>[(\text{\text{&quot;}})tpkano] 'to scale'</td>
<td>[(\text{\text{&quot;}})thokrano] 'to tap'</td>
<td>[(\text{\text{&quot;}})omlano] 'to bite'</td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>[cim(\text{\text{&quot;}})tano] 'to pinch'</td>
<td>[chitkano] 'to scatter'</td>
<td>[janmano] 'to take birth'</td>
<td>[jhol(\text{\text{&quot;}})jano] 'to dazzle'</td>
</tr>
<tr>
<td>g</td>
<td>[kampano] 'to bite'</td>
<td>[khamcano] 'to pinch'</td>
<td>[gorjano] 'to roar'</td>
<td>[gh(\text{\text{&quot;}})mprano] 'to groan'</td>
</tr>
<tr>
<td>h</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>s</td>
<td>[j(\text{\text{&quot;}})mjhano] 'to explain'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>m</td>
<td></td>
<td></td>
<td>[moc(\text{\text{&quot;}})pano] 'to twist'</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td></td>
<td></td>
<td>[normano] 'to soften'</td>
<td></td>
</tr>
<tr>
<td>CVC/CVCa</td>
<td>$\bar{\nu}h$ C-</td>
<td>$\bar{\nu}h$ C-</td>
<td>$\bar{\nu}h$ C-</td>
<td>$\bar{\nu}h$ C-</td>
</tr>
<tr>
<td>----------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>b</td>
<td>[pitpitano]</td>
<td>[phorphorano]</td>
<td>[bipbipano]</td>
<td>[bho bho fano]</td>
</tr>
<tr>
<td></td>
<td>'to wink'</td>
<td>'to show off'</td>
<td>'to mutter'</td>
<td>'to gable'</td>
</tr>
<tr>
<td>d</td>
<td>[torbopano]</td>
<td>[thomthomano]</td>
<td>[domdomano]</td>
<td>[dhorphorano]</td>
</tr>
<tr>
<td></td>
<td>'to show off'</td>
<td>'to be moody'</td>
<td>'to make noise while moving'</td>
<td></td>
</tr>
<tr>
<td>r</td>
<td>[tipitano]</td>
<td>[thokthokano]</td>
<td>-</td>
<td>[dhekhekano]</td>
</tr>
<tr>
<td></td>
<td>'to drizzle'</td>
<td>'to knock'</td>
<td></td>
<td>'to sound'</td>
</tr>
<tr>
<td>i</td>
<td>[culbulano]</td>
<td>[cholcholano]</td>
<td>[joljolano]</td>
<td>[jhomjhomano]</td>
</tr>
<tr>
<td></td>
<td>'to look within and without'</td>
<td>'to look like weeping'</td>
<td>'to shine'</td>
<td>'to make jingling sound'</td>
</tr>
<tr>
<td>g</td>
<td>[kolkolano]</td>
<td>[khomkhomano]</td>
<td>[gongonano]</td>
<td>[ghenghenano]</td>
</tr>
<tr>
<td></td>
<td>'to look angrily'</td>
<td>'to snob'</td>
<td>'to mutter'</td>
<td>'to repeat'</td>
</tr>
<tr>
<td>l</td>
<td>[utputano]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'to tumble about'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r</td>
<td>[rocoano]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'to paint'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>s</td>
<td>[sonsonano]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'to make noise (of the wind)'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>m</td>
<td>[mitmitano]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'to wink'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>[nisnianono]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>'to feel uneasy'</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11.1 Final -C systems of the stem syllable.

11.1.1 i. CVC- stem structure

The system of final -C is different from the system of initial C- in both phonematic and prosodic units. All the four sub-systems, P, L, S, N are stated for -C in final position as in initial position. There are certain phonetic and phonological differences in the system of the final -C from the initial C-. Flapped [-ɾ] and velar nasal consonant [-ŋ] occur in final position. Flapped [-ɾ] is located under the retroflex plosive series, and [-ŋ] as a velar unit under N. No verbal forms with a final [-gh], [-ɖ], [-ɖh], or [-bh] have been found. Thus we have,

\[ \text{CVP}_4, \text{CVL}_2, \text{CVS}_1, \text{CVN}_3. \]

There is a complicated prosodic interrelation between the stem final -C and the ending initial -C-. In the forms of some categories the stem final -C is \( \text{H} \) prosodic while in others \( \overline{\text{H}} \) prosodic, in some it is \( \text{V} \) prosodic while in certain others it is \( \overline{\text{V}} \) prosodic.

Examples:
- \( -\text{C-}^\text{vh} \) [mothe] 'he kneads'.
- \( -\text{C-}^\overline{\text{vh}} \) [motte] 'you used to knead'.
- \( -\text{C-}^\text{vh} \) [modbe] 'you/he will knead'.

This prosodic interrelation between the stem-final -C- and the ending initial -C- justifies the abstraction of
and $h/\overline{h}$ as prosodies. This also shows that a different statement is required for the junction of the stem and ending. Hence the discussion about final -C will be made under separate sections:

(a) forms in -V ending, (b) -C- ending.

(a) Vowel initial ending.

Examples are given in [-a] ending with the translation equivalent to English infinitive form

<table>
<thead>
<tr>
<th></th>
<th>CVC-$\overline{v}h$ V</th>
<th>CVC-$\overline{v}h$ V</th>
<th>CVC-$\overline{v}h$ V</th>
<th>CVC-$\overline{v}h$ V</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>[jopa] 'to mutter'</td>
<td>[lopha] 'to pick'</td>
<td>[doba] 'to sink'</td>
<td>-</td>
</tr>
<tr>
<td>d</td>
<td>[pata] 'to spread'</td>
<td>[mōtha] 'to knead'</td>
<td>[kāda] 'to cry'</td>
<td>[jadha] 'to offer'</td>
</tr>
<tr>
<td></td>
<td>[kaṭa] 'to cut'</td>
<td>-</td>
<td>[pōra] 'to road'</td>
<td>-</td>
</tr>
<tr>
<td>i</td>
<td>[kaca] 'to wash'</td>
<td>[mocha] 'to wipe'</td>
<td>[maja] 'to rub'</td>
<td>[bojha] 'to realise'</td>
</tr>
<tr>
<td>g</td>
<td>[paka] 'to ripen'</td>
<td>[dākha] 'to see'</td>
<td>[jaga] 'to wake up'</td>
<td>-</td>
</tr>
</tbody>
</table>

1. Forms with [-th] as the final -C element of structure is not found in CVC- stem structure. [-th] is, however, found as final -C in VC- and CVCe (extended) stem structures, e.g. [uṭha] 'to get up', [paṭha] 'send' (Infra).
It will be seen from the above table that four term system of $v/\overline{v}$, $h/\overline{h}$ is relevant for -P and two term system of $v/\overline{v}$ is relevant for the -L, -S and -N sub-systems.

(b) Zero ending forms

-P in CVP structure in zero-ending forms is $h/\overline{h}$ and $v/\overline{v}$ prosodic. Thus we have $\text{CVP}_4^{v/\overline{v}, h/\overline{h}}$, $\text{CVL}_2^{\overline{v} h}$, $\text{CVS}^{\overline{v} h}$, $\text{CVN}_3^{\overline{v} h}$

<table>
<thead>
<tr>
<th></th>
<th>CVC-$\overline{v} h$ $\emptyset$</th>
<th>CVC-$\overline{v} h$</th>
<th>CVC-$\overline{h} v$</th>
<th>CVC-$\overline{h} v$</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>[jop] 'mutter!'</td>
<td>[jop] $\overline{lo\phi}_1$ 'pick!'</td>
<td>[jop] $\overline{lo\phi}_1$ 'pick!'</td>
<td>[jop] [mutter] 'sink!'</td>
</tr>
<tr>
<td>d</td>
<td>[pat] 'spread'</td>
<td>[mōt] $\overline{2}$ 'knead!'</td>
<td>[kōt] [pick] 'pick!'</td>
<td>[kōt] 'pick!'</td>
</tr>
<tr>
<td>l</td>
<td></td>
<td>[bol] 'tell!'</td>
<td>[bol] 'tell!'</td>
<td>[bol] 'tell!'</td>
</tr>
<tr>
<td>s</td>
<td></td>
<td>[boj] 'sit!'</td>
<td>[boj] 'sit!'</td>
<td>[boj] 'sit!'</td>
</tr>
<tr>
<td>m</td>
<td></td>
<td>[jom] 'freeze'</td>
<td>[jom] 'freeze'</td>
<td>[jom] 'freeze'</td>
</tr>
<tr>
<td>n</td>
<td></td>
<td>[jan] 'know'</td>
<td>[jan] 'know'</td>
<td>[jan] 'know'</td>
</tr>
<tr>
<td>h</td>
<td></td>
<td>[bha] 'break'</td>
<td>[bha] 'break'</td>
<td>[bha] 'break'</td>
</tr>
</tbody>
</table>

1, 2, 3, 4, 5, 6. Alternative pronunciation.
It will be seen from the above examples that \( h/\overline{h} \) prosodies are only relevant in alternative pronunciation.

(c) C Initial ending

Forms whose stem final element is a -C and ending initial is a -C, involve an interesting prosodic system in the stem-ending -CC- sequence. It has already been stated that the initial -C- of the ending structure is a two term subsystem, P and L, and that three phonematic units labial, apical and dorsal constitute the plosive sub-system and one unit L constitutes the liquid sub-system. -C-C- sequences of stem and ending form the following patterns:

- P-P-, -S-P-, -L-P-, -N-P-; -P-L-, -S-L-, -L-L-, and -N-L-.

Where the ending initial -C- is [ð]- the whole -C-C-sequence is voiced and never aspirated with any -C- element of structure in the stem final position. (See km.26 of [jobbe].

Where the ending initial -C- is [t]- and the stem final -C- is P or S the sequence as a whole is voiceless and where the stem final C is -L- or -N- the first part of the sequence is voiced and the later part is voiceless and in all cases the sequence is characterized by non-breathy release in articulation. (See km.28 of [dekte]).

Where the ending initial -C- is [ð]- in and the stem final -C- is P or S the sequence as a whole is voiceless and where the stem final C is -L- or -N- the first part of the sequence is voiced and the later part is voiceless and in all cases the sequence is characterized by breathy release in articulation.
(See km. 57 of [kacche].

Where the ending initial C is [-l-] the -C-C- sequence gives two patterns: with voiceless P or S in the stem final position the sequence is voiceless voiced and with voiced plosive, liquid or nasal in the stem final position the sequence as a whole is voiced. (See km. 60 pf [pakle]).

Where both the C- elements in -C-C- sequence are either any of the plosive units b in vh prosodies, d in vh prosodies, j in vh prosodies or Liquid unit l in vh prosodies, or the first C is nasal unit m and the second C is plosive unit b or the first C is a nasal unit n and the second C is plosive unit d, the sequence as a whole is homorganic in articulation. Thus, homorganic stem-ending sequences are:

- P-P-  \( \text{vh} \)  \( \text{b-b} \)  [jobbe],  \( \text{d-d} \)  [patte],  \( \text{j-j} \)  [kacche]

- L-L-  \( \text{vh} \)  \( \text{l-l} \)  [mille]

- N-P-  \( \text{vh} \)  \( \text{m-b} \)  [jombe],  and \( \text{n-t} \)  [mante].

It is to be noted that except in a very few verbs cited below, the same consonant is not repeated in a stem syllable of a verbal form.

1. In nominal and adjectival forms the same consonant is repeated in intervocalic and final positions, e.g. [kaka]'uncle [kaku]'scream', [kak]'crow', [caca]'uncle'[cac]'lac'[mama]'uncle'[nana]'grandfather', [dada]'grandfather'[baba]'father' [caci],[kaki],[mami],[phupho]'aunt',[nani],[dadi]',grandmother' [taju]'pony', [tute]'sulphate of copper'[juju]'bugbear' [pepe]'papaya fruit'[pap]'sin'[bob]'dumb'[lal]'read', [gac]'hearseness'[coc]'hump'[nun]'salt'[nona]'salty' [mom]'wax', [mem]'English lady', [noni]'cream'[thuthu]'sputum'[phupha]'uncle'[phuphi]'aunt',[dhudhu]'blazing as fire'[dhadhah]'puzzle'.

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1. In nominal and adjectival forms the same consonant is repeated in intervocalic and final positions, e.g. [kaka]'uncle [kaku]'scream', [kak]'crow', [caca]'uncle'[cac]'lac'[mama]'uncle'[nana]'grandfather', [dada]'grandfather'[baba]'father' [caci],[kaki],[mami],[phupho]'aunt',[nani],[dadi]',grandmother' [taju]'pony', [tute]'sulphate of copper'[juju]'bugbear' [pepe]'papaya fruit'[pap]'sin'[bob]'dumb'[lal]'read', [gac]'hearseness'[coc]'hump'[nun]'salt'[nona]'salty' [mom]'wax', [mem]'English lady', [noni]'cream'[thuthu]'sputum'[phupha]'uncle'[phuphi]'aunt',[dhudhu]'blazing as fire'[dhadhah]'puzzle'.

---
[kôkano] 'to groan', [căca] 'to scrape',
[căccano] 'to speak aloud',
[taţa] 'to be heard',
[taţano] 'to be inflamed',
[tuţa] 'to break',
[lojsa] 'to suck, to soak',
[lojsano] 'to threaten',
[lalano] 'to instigate',
[lula] 'to be softened'.

In a stem syllable, an aspirated consonant occurs only in one place, initially or finally, that is to say, if the stem initial consonant is aspirated the stem-final consonant is unaspirated and vice versa.

Non-repetition of same consonant and non-repetition of aspiration in the same syllable distinguish Bengali verbal forms from the forms in other word classes.

The following examples will illustrate this:

(Forms whose two e elements of the junction express one prosodic characteristic, e.g. v v v, will be listed under 'uniform' and those expressing more than one prosodic characteristics, e.g. v v v v v, will be listed under 'non-uniform')
<table>
<thead>
<tr>
<th></th>
<th>UNIFORM</th>
<th>NON-UNIFORM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VH CVC-CV</td>
<td>VH CVC-CV</td>
</tr>
<tr>
<td><strong>R</strong></td>
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</tr>
<tr>
<td>b+</td>
<td>[jobbe]</td>
<td>[joppe]</td>
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<tr>
<td></td>
<td>'he will mutter'</td>
<td>'you used to mutter'</td>
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<tr>
<td></td>
<td>[lubbe]</td>
<td>[lupte]</td>
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<td>'he will pick'</td>
<td>You used to pick</td>
</tr>
<tr>
<td>d+</td>
<td>[pađbe]</td>
<td>[patte]</td>
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<tr>
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<td>'he will spread'</td>
<td>'you used to spread'</td>
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<tr>
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<td>[modbe]</td>
<td>[motte]</td>
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<tr>
<td></td>
<td>'he will knead'</td>
<td>'you used to knead'</td>
</tr>
<tr>
<td>d+</td>
<td>[kaqbe]</td>
<td>[kaqte]</td>
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<tr>
<td></td>
<td>'he will cut'</td>
<td>'you used to cut'</td>
</tr>
<tr>
<td>i+</td>
<td>[kaqbe]</td>
<td>[kacte]</td>
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<td>'he will wash'</td>
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<tr>
<td></td>
<td>[mujbe]</td>
<td>[mucte]</td>
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<td>'he will wipe'</td>
<td>'you used to wipe'</td>
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<tr>
<td></td>
<td>[majbe]</td>
<td>[macote]</td>
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<td>'he will rub'</td>
<td>'you used to rub'</td>
</tr>
<tr>
<td>⬇+</td>
<td>[bujbe]</td>
<td>[bucte]</td>
</tr>
<tr>
<td></td>
<td>'he will understand'</td>
<td>'you used to understand'</td>
</tr>
</tbody>
</table>

- The table shows the uniform and non-uniform forms for various verbs with different phonetic representations.
<table>
<thead>
<tr>
<th>NON-PLOSIVE</th>
<th>PLOSIVE</th>
<th>PLOSIVE + PLOSIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>g+</td>
<td>[pagbe]</td>
<td>'It will ripen'</td>
</tr>
<tr>
<td></td>
<td>[pakte]</td>
<td>'you used to ripen'</td>
</tr>
<tr>
<td></td>
<td>[pakche]</td>
<td>'it is ripening'</td>
</tr>
<tr>
<td></td>
<td>[degbe]</td>
<td>'he will see'</td>
</tr>
<tr>
<td></td>
<td>[dekte]</td>
<td>'you used to see'</td>
</tr>
<tr>
<td></td>
<td>[dekte]</td>
<td>dekche</td>
</tr>
<tr>
<td></td>
<td>[jagbe]</td>
<td>'he will wake'</td>
</tr>
<tr>
<td></td>
<td>[jakte]</td>
<td>'you used to wake'</td>
</tr>
<tr>
<td></td>
<td>[jakche]</td>
<td>'he is waking'</td>
</tr>
<tr>
<td>s+</td>
<td>[bo be]</td>
<td>'he will sit'</td>
</tr>
<tr>
<td></td>
<td>[bojbe]</td>
<td>'you used to sit'</td>
</tr>
<tr>
<td></td>
<td>[bojche]</td>
<td>'he is sitting'</td>
</tr>
<tr>
<td>l+</td>
<td>[bolbe]</td>
<td>'he will say'</td>
</tr>
<tr>
<td></td>
<td>[bolte]</td>
<td>'you used to say'</td>
</tr>
<tr>
<td></td>
<td>[bolche]</td>
<td>'he is telling'</td>
</tr>
<tr>
<td>r+</td>
<td>[korbe]</td>
<td>'he will do'</td>
</tr>
<tr>
<td></td>
<td>[korte]</td>
<td>'you used to do'</td>
</tr>
<tr>
<td></td>
<td>[korche]</td>
<td>'he is doing'</td>
</tr>
<tr>
<td>n+</td>
<td>[jombe]</td>
<td>'he will freeze'</td>
</tr>
<tr>
<td></td>
<td>[jomte]</td>
<td>'you used to freeze'</td>
</tr>
<tr>
<td></td>
<td>[jomche]</td>
<td>'he is freezing'</td>
</tr>
<tr>
<td>j+</td>
<td>[janbe]</td>
<td>'he will know'</td>
</tr>
<tr>
<td></td>
<td>[jante]</td>
<td>'you used to know'</td>
</tr>
<tr>
<td></td>
<td>[janche]</td>
<td>'he is knowing'</td>
</tr>
<tr>
<td></td>
<td>[bhanbe]</td>
<td>'he will break'</td>
</tr>
<tr>
<td></td>
<td>[bhanche]</td>
<td>'you used to break'</td>
</tr>
<tr>
<td></td>
<td>[bhanche]</td>
<td>'he is breaking'</td>
</tr>
<tr>
<td></td>
<td>Uniform</td>
<td>non-uniform</td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
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</tr>
<tr>
<td></td>
<td>v</td>
<td>vv</td>
</tr>
<tr>
<td></td>
<td>CVC-CV</td>
<td>CVC-CV</td>
</tr>
<tr>
<td><strong>b</strong></td>
<td>[ quickly]</td>
<td>'you sank'</td>
</tr>
<tr>
<td><strong>d</strong></td>
<td>[ quickly]</td>
<td>'you cried'</td>
</tr>
<tr>
<td><strong>g</strong></td>
<td>[ quickly]</td>
<td>'you offered'</td>
</tr>
<tr>
<td><strong>k</strong></td>
<td>[ quickly]</td>
<td>'you read'</td>
</tr>
<tr>
<td><strong>p</strong></td>
<td>[ quickly]</td>
<td>'you rang'</td>
</tr>
<tr>
<td><strong>b</strong></td>
<td>[ quickly]</td>
<td>'you understood'</td>
</tr>
<tr>
<td><strong>b</strong></td>
<td>[ quickly]</td>
<td>'you woke up'</td>
</tr>
<tr>
<td><strong>b</strong></td>
<td>[ quickly]</td>
<td>'you told'</td>
</tr>
<tr>
<td><strong>b</strong></td>
<td>[ quickly]</td>
<td>'you did'</td>
</tr>
<tr>
<td><strong>b</strong></td>
<td>[ quickly]</td>
<td>'you were frozen'</td>
</tr>
<tr>
<td><strong>b</strong></td>
<td>[ quickly]</td>
<td>'you knew'</td>
</tr>
<tr>
<td><strong>b</strong></td>
<td>[ quickly]</td>
<td>'you broke'</td>
</tr>
</tbody>
</table>
11.1.2 VC- Stem structure

A very limited number of verbs are found in this structure. These do not show very different pattern from the CVC- stem structure, so far as the final -C is concerned. Just as the final -C of CVC- stem structure so also -C of VC- stem structure is a four term system, -P-, -L-, -S-, -N-. The linking feature of the stem and ending show exactly similar characteristics as that of the CVC- stem structure. The system appropriate to this structure are limited in various ways. So far as the -P element is concerned, labial unit b is absent, of the three units d, i, g, d is always r prosodic and never r prosodic. vh prosodic structure is not found. That is to say, no forms with final [-p], [-ph], [-b], [-bh], [-t], [-th], [-d], [-dh] or [-gh], [-jh], [-q], [-q] occur. One phonematic unit n constitutes N in VN- structure. That is no forms with final [-m] or [-η] are found.

Forms of this stem structure are found with final [-k], [-g], [-c], [-ch], [-t], [-th], [-r], and [-n].

Examples: 
[āka], 'to draw', [haga] 'to have motion!
[hāca] 'to sneeze', [ocha] 'to distil',
[haṭa] 'to walk', [oṭha] 'to get up',
[oṛa] 'to fly', [aṣa] 'to come',
[hara] 'to loose', [hāla] 'to nod',
[ana] 'to bring'.
11.2 -\( \text{CC} \)- clusters

CV\( \text{CC} \)- and V\( \text{CC} \)- stem structures.

The sub-systems of the dissyllabic structure (C)VC\( \text{CC} \)- provide an interesting study as regards the combination of the inter-vocalic consonant clusters.

Where both the C elements are either plosive unit ʻ or plosive unit \( \ddot{\text{j}} \) in \( \text{vh} \) prosodies or liquid unit \( \ddot{\text{l}} \) in \( \text{vh} \) prosodies, the nasal unit cluster as a whole is geminated. Where first C element is \( \ddot{\text{n}} \) unit and the second C is plosive unit ʻ in \( \text{r} \) prosody, the cluster as a whole is in \( \text{vhr} \) prosodies and homorganic in articulation.

Thus, geminated and homorganic -\( \text{CC} \)- clusters are

\[
\begin{align*}
\text{-PP-} & \quad \text{gg} \text{vh} \quad [\text{dhakkano}] \\
\text{-LL-} & \quad \text{ll} \text{vh} \quad [\text{cillano}] \quad \text{to plant}', \\
\text{-NP-} & \quad \text{nd} \text{vhr} \quad [\text{khonqano}] \quad \text{to cancel}',
\end{align*}
\]

Everywhere else the cluster is heterorganic. Heterorganic consonant clusters within the stem in dissyllabic stem structure (C)VC\( \text{CC} \)- form the following patterns.

\[
\begin{align*}
\text{-PP-} & \quad \text{PL-} \quad \text{PS-} \quad \text{PN-} \\
\text{LP-} & \quad \text{LS-} \quad \text{LN-} \\
\text{SP-} & \quad \text{SL-} \\
\text{NP-} & \quad \text{NL-} \quad \text{NS-} \quad \text{NN-}
\end{align*}
\]
There is no -SN- patterns of combination in this type of clusters.

One characteristic feature of these clusters in this structure is that none is characterized by breathy release except the following three forms: [ach\textsuperscript{r}ano], [pach\textsuperscript{r}ano] and [omj\textsuperscript{r}ano].

In -NC- clusters nasality affects the preceding vocalic articulation.

Where N is a labial unit \textipa{m} in -NP- clusters, C- is any of the three units \textipa{d}, \textipa{i}, \textipa{g} other than labial unit \textipa{b}.

In -NN- cluster the initial -N- is \textipa{n} unit and the final -N- is \textipa{m} unit.

Almost any unaspirated Plosive, \textipa{L}iquid, or \textipa{S}ibilant may form one of the two components, of -CC- clusters, but their combination possibilities are restricted.

The prosodic characteristic of the clusters is either uniform, i.e. a cluster as a whole is voiced or voiceless, or non-uniform, i.e. a cluster is characterized by voicelessness and voicing, or by voicing and voicelessness.

1. They are not shown in the following table.
## Dissyllabic Stem Structure (C)VCCe-

<table>
<thead>
<tr>
<th>Uniform</th>
<th>Non-uniform</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \overline{\nu} \overline{-CC} )</td>
<td>( \overline{\nu} \overline{-CC} )</td>
</tr>
</tbody>
</table>

### Plosive + Plosive

- **-bd-**
  - \([\text{jhap}t\text{ano}]\)
  - 'to clasp'
  - \([\text{ghap}r\text{ano}]\)
  - 'to bewilder'
  - \([\text{kap}r\text{ano}]\)
  - 'to pat'
- **-bi-**
  - \([\text{k}o\text{p}c\text{ano}]\)
  - 'to recite'
  - \(\text{like a parrot}\)
- **-bg-**
  - \([\text{topkano}]\)
  - 'to scale'
- **-d-**
  - \([\text{atkano}]\)
  - 'to start'
  - \(\text{with sudden fright}\)
- **-dg-**
  - \([\text{at}k\text{ano}]\)
  - 'to stop'
- **-id-**
  - \([\text{koc}t\text{ano}]\)
  - 'to knead'
- **-ig-**
  - \([\text{mockano}]\)
  - 'to be wrenched'
- **-dd-**
  - \([\text{khedrano}]\)
  - 'to drive away'
- **-gd-**
  - \([\text{bigp}r\text{ano}]\)
  - 'to vitiate'
- **-db-**
  - \([\text{t}\text{orp}r\text{ano}]\)
  - 'to jump'

### Plosive + Glide

- **-jd-**
  - \([\text{koc}t\text{ano}]\)
  - 'to knead'
- **-ig-**
  - \([\text{mockano}]\)
  - 'to twist'
- **-gd-**
  - \([\text{bigp}r\text{ano}]\)
  - 'to catch an object'
- **-db-**
  - \([\text{t}\text{orp}r\text{ano}]\)
  - 'to jump'
<table>
<thead>
<tr>
<th>PLOSIVE + NON-PLOSIVE</th>
<th>Uniform</th>
<th>non-uniform</th>
</tr>
</thead>
<tbody>
<tr>
<td>-bl-</td>
<td>-v</td>
<td>-v</td>
</tr>
<tr>
<td></td>
<td>-CC-</td>
<td>-CC-</td>
</tr>
<tr>
<td></td>
<td>[choblano]</td>
<td>'to bite'</td>
</tr>
<tr>
<td></td>
<td>[phæbrano]</td>
<td>'to be frightened'</td>
</tr>
<tr>
<td></td>
<td>[bodlano]</td>
<td>'to change'</td>
</tr>
<tr>
<td></td>
<td>[Jatlano]</td>
<td>'to soak in oil'</td>
</tr>
<tr>
<td>-br-</td>
<td>-v</td>
<td>-v</td>
</tr>
<tr>
<td>-dl-</td>
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<td>-CC-</td>
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<td></td>
<td>[Jodrano]</td>
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<td>'to itch'</td>
</tr>
<tr>
<td></td>
<td>[koelano]</td>
<td>'to rub'</td>
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<td>-dr-</td>
<td>-v</td>
<td>-v</td>
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<td></td>
<td>-CC-</td>
<td>-CC-</td>
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<td>-CC-</td>
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<td></td>
<td>[thokrano]</td>
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<td>-v</td>
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<td>-CC-</td>
<td>-CC-</td>
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<td></td>
<td>[coklano]</td>
<td>'to dazzle'</td>
</tr>
<tr>
<td></td>
<td>[lognano]</td>
<td>'to fix date for marriage'</td>
</tr>
<tr>
<td>-gn-</td>
<td>-v</td>
<td>-v</td>
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<tr>
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<td>-CC-</td>
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<tr>
<td>NON - PLOSIVE + PLOSIVE</td>
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<td>non-uniform</td>
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<tr>
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<td>---------</td>
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<tr>
<td>-ri-</td>
<td>[gorjano]</td>
<td>'to roar'</td>
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<td>-ld-</td>
<td>[phoskano]</td>
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<td>[musgano]</td>
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<td>-nd-</td>
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</tr>
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<td>-me-</td>
<td>[somjano]</td>
<td>'to explain'</td>
</tr>
<tr>
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</tr>
<tr>
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<td>-nc-</td>
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</tr>
<tr>
<td>-nd-</td>
<td>[nimgano]</td>
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<table>
<thead>
<tr>
<th>NON-PLOSIVE</th>
<th>Uniform ( -\overline{v} -\overline{c}c- )</th>
<th>non-uniform ( -\overline{V} -\overline{c}c- )</th>
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<tbody>
<tr>
<td>-ls-</td>
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<tr>
<td></td>
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</tr>
<tr>
<td>-rs-</td>
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<td>[orJano]</td>
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<td></td>
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<td>'to devolve on'</td>
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<td>(as a moustache)</td>
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<td>-mr-</td>
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</tr>
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<td>(water)</td>
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<tr>
<td>-ηl-</td>
<td>[dorJano]</td>
<td>[cimJano]</td>
</tr>
<tr>
<td></td>
<td>'to bite'</td>
<td>'to become tough'</td>
</tr>
<tr>
<td>-ms-</td>
<td></td>
<td>[khunJano]</td>
</tr>
<tr>
<td></td>
<td>[khunJano]</td>
<td>'to soh in anger'</td>
</tr>
<tr>
<td>-ns-</td>
<td>[jorJano]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>'to take birth'</td>
<td></td>
</tr>
<tr>
<td>-ηs-</td>
<td>[jorJano]</td>
<td></td>
</tr>
<tr>
<td>-nm-</td>
<td>[jorJano]</td>
<td></td>
</tr>
</tbody>
</table>
The -C/C- sequences of reduplicated stem pattern CVC/CVCe- may be classified as follows:

- P/P- , -P/L- , -P/N-
- L/P- , -L/S- , -L/N-
- S/P- , -S/N-
- N/P- , -N/S- , -N/N-

There are no -P/S-, -S/L- and -N/L- sequences in this pattern.

The combination possibilities are open, except that the velar nasal \([\eta]\) and flapped \([\varrho]\) do not occur as the second component of a -C/C- sequence. In reduplicated form same consonant is never repeated in a stem syllable. And the articulation concerned is always non-homorganic. The second component of the -C/C- sequence is a stem initial -C- and has all the characteristic features of a stem initial C-.

The three phonematic units, m n and ñ, constitute -N- and -C- is a term in the plosive and sibilant systems, in -N/C- sequence. Where the post nasal element is voiced the articulation is voiced throughout, and where it is voiceless, the sequence is characterized by voicelessness and voice. In -C/N- sequence P, L and S constitute the first element and m and n constitute the second. Where the pre-nasal element is voiced, voicing is maintained throughout the whole period of closure. Nasality affects the following vowel articulation. Where the pre-nasal C element is voiceless, the first part of the closure is voiceless. Like the -NN- cluster in the

1. Supra.
dissyllabic stem structure (C)VCCο- the unit n constitutes the first element and m the second in -N/N- sequence in reduplicated forms. The whole sequence is voiced and the release is non-breathy.

The sequence -P/P-, -L/P-, -S/P- or -N/P- may be characterized by h/\bar{h} prosody in addition to v/\bar{v} prosody. Sequences of other structures are all characterized by non-breathy release. This will be clear from the following examples.\footnote{The reduplicated forms are repetition of the same action, or echoing sound. Translations for isolated forms are not always possible.}
<table>
<thead>
<tr>
<th>Non-Plosive + Non-Plosive</th>
<th>Non-Plosive + Non-Plosive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Uniform</td>
<td>Uniform</td>
</tr>
</tbody>
</table>

[Diagram with various symbols and annotations]
One important point is to be noted about clusters and sequences where -N- is stated as an element of structure. -NC structure is stated for all three types: -CC- clusters in dissyllabic stem structure (C)VCCe-, sequences in stem and ending junction in monosyllabic stem structures (C)VC- and stem sequences in trisylabic reduplicated stem structure CVC/CVCe-

-NN- and -CN- patterns are stated only in -CC- clusters of dissyllabic stem structure (C)VCCe- and in -C/C- sequence in reduplicated stem structure CVC/CVCe-

These can be grouped thus:

1. -CC- clusters in (C)VCCe- : -NC-, -NN-, -CN-
2. -C/C- sequences in CVC/CVCe- : -N/C-, -N/N-, -C/N-
3. -C- stem and ending sequences in (C)VC- : -N-C-

-C- in -NC- clusters can be P, L, S in reduplicated stems -C- in -NC- sequences is P and S; and in stem-ending sequences -C- in -N-C- is P and L.

-N- in -NC- clusters, -N/C- reduplicated stem sequences, and -N-C- stem ending sequences, can be any of the three nasal units m, n and ŋ.

-NN- in both -NN- clusters and -N/N- reduplicated stem sequences is a combination of the two nasal units n and m respectively.

-C- in -CN- clusters is P and L, and in -C/N- reduplicated stem sequences -C- is P, L and S.

Any of the two nasal units m and n constitutes -N- in -CN- clusters, and the labial unit m constitutes -N- in -C/N-.
reduplicated stem sequence.

11.4 Geminated junction in Stem Structures CV-, (C)VC\textcircled{e}-, (C)VC\textcircled{c}e- and CVC/CVC\textcircled{e}

Where the stem ends in -V or -\textcircled{e} and the ending begins with [-ch-] the stem-ending linking feature is characterized by gemination, that is, there is in the junction closure of long duration, coupled with voicelessness and breathy release. This feature of gemination is abstracted as a prosody of junction and is denoted by a raised \textcircled{e} in the formulae.\footnote{1} Thus, the generalized formula of form [khacche] is CV \textcircled{e} CV and not CVC-CV. The system appropriate to the junction of this structure is limited, and is therefore, different from the systems appropriate to the -C-C- (stem + ending) sequence of monosyllabic stem structure (C)VC-,-CC- cluster of dissyllabic stem structure (C)VC\textcircled{c}e- or -C-C- sequence of trisyllabic (reduplicated) stem structure, CVC/CVC\textcircled{e}-. Final -C- in (C)VC- stem structure is an open system,\footnote{2} [-ch-] never occurs in -CC- clusters of (C)VC\textcircled{c}e- stem structure,\footnote{3} and two homorganic consonants do not occur in -C/C- sequence of a reduplicated form. This feature of gemination is consistently observed in the junction of the forms in certain scatters of CV- stem structure and in all the polysyllabic stem structures: (C)VC\textcircled{e}-, CV\textcircled{e}-, (C)VC\textcircled{c}e- and CVC/CVC\textcircled{e}- where the ending is [-ch-].

\footnote{1}{Sec 7.3.2}\footnote{2}{See 6.2.2.2}\footnote{3}{See 6.2.2.1}\footnote{4}{See 6.2.2.2}
Examples:

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>CV - CV</td>
<td>[khacche]</td>
</tr>
<tr>
<td>CVCe- CV</td>
<td>[kaṭacche]</td>
</tr>
<tr>
<td>eVCe- CV</td>
<td>[uṭhacche]</td>
</tr>
<tr>
<td>CVσ- CV</td>
<td>[khawacche]</td>
</tr>
<tr>
<td>CVCCe- CV</td>
<td>[kamṭacche]</td>
</tr>
<tr>
<td>VCCe- CV</td>
<td>[ulṭacche]</td>
</tr>
<tr>
<td>CVC/CVCe- CV</td>
<td>[pitpitacche]</td>
</tr>
</tbody>
</table>
Conclusion.

My aim has been to attempt to state and discuss the phonology of the verbal piece in Colloquial Bengali recognizing the interrelation of stems and endings separately. The Phonological structures have been given in terms of C and V and prosodic elements, and systems have been established for particular place in structure both with regard to the stems and the endings. For some verbs the phonematic structure of the stem has been considered as constant throughout the scatter of the forms of those verbs, and phonetic differences observed in the stems have been treated as exponents of prosodic elements of the stems. For the stems of other verbs however, two phonematic structures have been given differing from one another in the V element, although certain phonetic differences in the scatter of the forms have been for these verbs too treated as exponents of prosodic elements. This treatment suggests a subclassification of verbs in Bengali (which is not always evident from the orthography) into two classes (i) those with one phonematic stem and (ii) those with two. These differences have been presented in the thesis but the implications of such an interpretation have not been explicitly stated.

By taking account of the verbal form as a whole an adequate statement can be made particularly with regard to the abstraction of stem and ending junction prosodies and of vowel harmony.

Throughout, phonetic and phonological features of the
verbal forms have been examined with reference to certain grammatical categories, such as finite and non-finite, causative and non-causative, and tense, grade and person. Any discussion of the phonology of other grammatical pieces, e.g. the nominal piece, would be relatable to a different set of grammatical categories, including, for example, number and gender, which have had no place in this analysis of the verbal piece. Even a cursory look at nominal pieces suggests that the phonology would be stated within a very different grammatical framework, and with different phonematic and prosodic systems from those given here. In fact those given here have relevance as a whole only for the verbal piece in Bengali and contribute to the meaning of 'verbal piece' in the analysis of that language.
APPENDICES

1. The Bengali Verbs
2. Text of Recordings
3. Bibliography
4. Palatograms & Kymograms
1. Bengali Verbal Forms

<table>
<thead>
<tr>
<th>Bengali</th>
<th>Pronunciation</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>ersane</td>
<td>[ərʃəno]</td>
<td>To happen</td>
</tr>
<tr>
<td>auṭane</td>
<td>[auṭano]</td>
<td>to stir round (while boiling)</td>
</tr>
<tr>
<td>aoṭane</td>
<td>[aoṭano]</td>
<td></td>
</tr>
<tr>
<td>aoṇane</td>
<td>[aọṇano]</td>
<td>to read, to recite.</td>
</tr>
<tr>
<td>akṛpane</td>
<td>[ākṛano]</td>
<td>to clasp with the arms, to catch to (an object) like a hook.</td>
</tr>
<tr>
<td>āka</td>
<td>[āka]</td>
<td>To mark, to draw.</td>
</tr>
<tr>
<td>aglana</td>
<td>[aglano]</td>
<td>to watch, to keep from harm or loss.</td>
</tr>
<tr>
<td>aṛelane</td>
<td>[aṛelano]</td>
<td>to touch with fingers.</td>
</tr>
<tr>
<td>āca</td>
<td>[āca]</td>
<td>to guess.</td>
</tr>
<tr>
<td>ācane</td>
<td>[ācano]</td>
<td>to wash the mouth after meal.</td>
</tr>
<tr>
<td>achi</td>
<td>[achi]</td>
<td>I am.</td>
</tr>
<tr>
<td>āṣepane</td>
<td>[āṣepano]</td>
<td>to scratch, to tear.</td>
</tr>
<tr>
<td>aṣepane</td>
<td>[āṣepano]</td>
<td>to throw down violently, to beat against the ground.</td>
</tr>
<tr>
<td>ajepane</td>
<td>[ajepano]</td>
<td>to empty, to clear of content.</td>
</tr>
<tr>
<td>ajjane</td>
<td>[ajjano]</td>
<td>to plant, to sow.</td>
</tr>
<tr>
<td>aṭekanes</td>
<td>[aṭkano]</td>
<td>to confine, to prevent from escaping.</td>
</tr>
<tr>
<td>āṭa</td>
<td>[āṭa]</td>
<td>to stick</td>
</tr>
<tr>
<td>āṭekane</td>
<td>[āṭkano]</td>
<td>to start with sudden fright.</td>
</tr>
<tr>
<td>āṭkano</td>
<td>[āṭkano]</td>
<td></td>
</tr>
<tr>
<td>ana</td>
<td>[ana]</td>
<td>to bring, to fetch.</td>
</tr>
</tbody>
</table>

1. Bengali verbal forms are given with non-finite ending [-a] or [-no] with the translation equivalent to English infinitive. Where infinitive forms are found with both [-a] and [-no], forms with only [-a] are given, and forms with [-no] are given where there are no forms with [-a].

2. Verbal forms from /āch do not function as non-finite. See Defective verbs § 3.
apesane  [apʃano]  to throw down with violence,  
to beat anything repeatedly.
asa  [aʃa]  to come.
ásañə  [ãʃano]  to disentangle, untwist or pick out.  
(as the strands of hemp or flax)
ukşano  [ukʃano]  to pass away (as time), to get loose  
or be detached from the string while flying (said of a paper kite)
ukheşanə  [ukhʃano]  to soak in molasses a sugar.
okeşano  [okhʃano]  to pull up by the roots.
ugerane  [ugrano]  to vomit.
ugerone  [ugrono]
ogerane  [ograno]
uglanə  [uglano]  to be sick.
uglone  [uglono]  to spring up, to arise
ugane  [ugano]  to spring up, to arise
ugone  [ugono]  to spring up, to arise
ughərane  [ugrano]  to uncover, to undress.
ucelane  [ucľano]  to move, to shake.
ūcelane  [ūčlanə]  to toss about.
ocelane  [očlanə]
ūćane  [ūćano]  to raise up, to lift.
oćane  [očano]
ūčha  [ūčha]  to shake, to toss about in a  
parching vessel, or frying pan.
očha  [očha]
učha  [učha]  to shake, to toss about in a  
parching vessel, or frying pan.
ocha  [ocha]
uchərane  [uchraŋo]  to vomit
ochərane  [ochraŋo]
uchelane  [achlano]  to overflow
uchane  [uchano]  to throw off the thatching of a  
house
ujane  [ujano]  to go against the stream
ujlane  [ujlano]  to shake, to agitate.
<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>utkano</td>
<td>to search.</td>
</tr>
<tr>
<td>uθkano</td>
<td></td>
</tr>
<tr>
<td>uθha</td>
<td>to rise.</td>
</tr>
<tr>
<td>oθha</td>
<td></td>
</tr>
<tr>
<td>uθa</td>
<td>to fly.</td>
</tr>
<tr>
<td>oθa</td>
<td></td>
</tr>
<tr>
<td>utrano</td>
<td>to come down, to cross over.</td>
</tr>
<tr>
<td>otrano</td>
<td></td>
</tr>
<tr>
<td>utrano</td>
<td></td>
</tr>
<tr>
<td>utlano</td>
<td>to swell up when boiled as a liquid, milk etc.</td>
</tr>
<tr>
<td>una</td>
<td>to melt, to dissolve.</td>
</tr>
<tr>
<td>upcano</td>
<td>to overflow.</td>
</tr>
<tr>
<td>upcono</td>
<td></td>
</tr>
<tr>
<td>upmana</td>
<td>to pull up by the roots.</td>
</tr>
<tr>
<td>ubmana</td>
<td></td>
</tr>
<tr>
<td>upra</td>
<td>to be plentiful, to be surplus.</td>
</tr>
<tr>
<td>ubra</td>
<td></td>
</tr>
<tr>
<td>ubla</td>
<td>to boil.</td>
</tr>
<tr>
<td>uba</td>
<td>to evaporate.</td>
</tr>
<tr>
<td>ubrono</td>
<td>to unload (as boat).</td>
</tr>
<tr>
<td>ubrano</td>
<td></td>
</tr>
<tr>
<td>ura</td>
<td>to alight.</td>
</tr>
<tr>
<td>urjono</td>
<td>to leak, to admit rainwater (said of a roof.</td>
</tr>
<tr>
<td>uskane</td>
<td>to stir (as fire), to advance (as the wick of an oil lamp).</td>
</tr>
<tr>
<td>ula</td>
<td>to come down.</td>
</tr>
<tr>
<td>ola</td>
<td></td>
</tr>
<tr>
<td>ultano</td>
<td>to turn upside down.</td>
</tr>
<tr>
<td>ultano</td>
<td></td>
</tr>
<tr>
<td>uljono</td>
<td>to be elated with joy.</td>
</tr>
<tr>
<td>uljano</td>
<td></td>
</tr>
<tr>
<td>egono</td>
<td>to proceed.</td>
</tr>
<tr>
<td>egono</td>
<td></td>
</tr>
</tbody>
</table>
erane ) [erano] to relinquish, to evade.
erone ) [erono]
elane [elano] to unloose.
ogane [ojano] to serve a mill or pedal with grain while it is working.
kokane ) [kokano] to groan.
kokane )
kecane [kocano] to shoot forth.
kecetano [kocetano] to knead.
kecalane [koccalane] to rub.
keta [keta] to fade.
kepecane [kopecalane] to begin to imitate (human voice) as a
kerja [kerja] to do.
elane [kelano] to sprout.
kelkelane [kelkelano] to ripple, to chirp.
keltane [koeltane] to exude serum or thin matter (said of wound or sore of flesh).
kesa [kosa] to work out (as a mathematical sum) to test gold etc., on the touchstone, to tighten.
keoya [kowa] to speak.
kara [kara] to cleanse finely, (as rice).
kada [kada] to cry.
kaca [kaca] to wash.
kachane [kachane] to draw near.
kat [kata] to cut.
kar [kar] to snatch away.
katerane ) [katerane] to moan.
ktrane )
kamezan [kamzane] to bite.
kamanə [kamano] to shave.
kina ) [kina] to buy.
kena ) [kana]
kilane [kilano] to beat with the fist.
kūkarenə ) [kōkrano] to wrinkle, to shrink.
kōkarenə )
kūcane ) [kūcana] to chip.
kūcane ) [kucano]
kuťa ) [kuťa] to pound, to cut.
kōta ) [kōta]
kurane ) [kurano] to pick up.
kurone ) [kurono]
kumane [kunano] to feel or to give twinging pain.
korane [korano] to scrape.
kulane ) [kulano] to suffice, to be adequate.
kulone ) [kulono]
kusane [kusano] to rough-hew as timber.
kūckono ) [kōckano] to shrink.
kēka [kēka] to draw or sweep from the floor etc. with the hand.
kelanə [kelano] to strip the bark or skin off.
kōcane ) [kōcana] to plait so as to form the front-luck of the loin-cloth.
kōcane ) [kōcano]
kōpā [kōpā] to dig.
kōta ) [kōta] to strain in order to void the bowels.
kotha ) [kotha]
kotkane [kotkane] to thump.
kūda ) [kūda] to turn in a lathe, to scrape.
kōda ) [kōda] kuda ) [kuda] koda ) [koda]
kopane ) [kopano] to use or work with a digging instrument.
koğane [koʃano] to shave (wood or metals) so as to make them taper off at each end like a shuttle.

khoŋkhoŋane [khoŋkhoŋano] to make a scratching.

khonqane [khoŋqane] to cancel.

khetane [khɔtane] to calculate.

khera [khoɾa] to be over-parched or over-fried.

khesa [khɔsə] to fall off.

khaoya [khəwa] to eat.

khața [khața] to labour, to invest.

khapa [khapa] to unite, to become adjusted.

khabelane [khablano] to seize between the thumb and all the fingers repeatedly.

khamcane [khamcano] to seize between the thumb and all the fingers, to clutch with the nails.

khicca ) [khicca] to pull.

khọca ) [khọca]

khicəpane [khicəpano] to be jumbled.

khimcane [khimcane] to clutch with the nails.

khilane [khilano] to turn an arch.

khucəpane) [khucəpano] to stir up (as a fire).

khocəpane) [khocəpano]

khoćane ) [kocano] to pierce.

khọja ) [khọja] to seek for,

khuṭerane [kuṭrano] to scratch up.

khūṭa ) [kuṭa] to pick up (small articles) with the fingers or the beak.

khọṭa ) [kuṭa]

khuṭane [kuṭano] to make attempt to stand on legs (as a newly born calf does).
<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>kho^a</td>
<td>to dig.</td>
</tr>
<tr>
<td>khokane</td>
<td>to hawk or cough for the purpose of expectoration.</td>
</tr>
<tr>
<td>khukekhukane</td>
<td>to cough, to wheeze in the throat</td>
</tr>
<tr>
<td>khujelane</td>
<td>to itch.</td>
</tr>
<tr>
<td>khoda</td>
<td>to dig.</td>
</tr>
<tr>
<td>khoyane</td>
<td>to waste.</td>
</tr>
<tr>
<td>khola</td>
<td>to open.</td>
</tr>
<tr>
<td>khusa</td>
<td>to cough slightly.</td>
</tr>
<tr>
<td>khusa</td>
<td>to thrust (a thing) among a number of other things.</td>
</tr>
<tr>
<td>khe^jran©</td>
<td>to strike or thrash with a broom.</td>
</tr>
<tr>
<td>khekan©</td>
<td>to importune.</td>
</tr>
<tr>
<td>khokano</td>
<td>to speak in an ill-natured manner.</td>
</tr>
<tr>
<td>khed^an©</td>
<td>to drive away.</td>
</tr>
<tr>
<td>khedan©</td>
<td>to drive away.</td>
</tr>
<tr>
<td>khepa</td>
<td>to go mad.</td>
</tr>
<tr>
<td>khela</td>
<td>to play.</td>
</tr>
<tr>
<td>g©gan©</td>
<td>to complain in a dissatisfied manner.</td>
</tr>
<tr>
<td>g©cha</td>
<td>to receive anything delivered in trust.</td>
</tr>
<tr>
<td>g©jano</td>
<td>to shoot out.</td>
</tr>
<tr>
<td>g©jgojano</td>
<td>to mutter dissatisfaction.</td>
</tr>
<tr>
<td>gera</td>
<td>to make.</td>
</tr>
<tr>
<td>gorgorano</td>
<td>to rattle.</td>
</tr>
<tr>
<td>gona</td>
<td>to count.</td>
</tr>
<tr>
<td>gotano</td>
<td>to give in trust.</td>
</tr>
<tr>
<td>gorjane</td>
<td>[gorjano]</td>
</tr>
<tr>
<td>gela</td>
<td>[gola]</td>
</tr>
<tr>
<td>gallane</td>
<td>[gollano]</td>
</tr>
<tr>
<td>gebepane</td>
<td>[gobepano]</td>
</tr>
<tr>
<td>gesgesane</td>
<td>[gosgosano]</td>
</tr>
<tr>
<td>gaoya</td>
<td>[gawa]</td>
</tr>
<tr>
<td>gaja</td>
<td>[gaja]</td>
</tr>
<tr>
<td>gatane</td>
<td>[gatano]</td>
</tr>
<tr>
<td>gata</td>
<td>[gata]</td>
</tr>
<tr>
<td>gatha</td>
<td>[gatha]</td>
</tr>
<tr>
<td>gachane</td>
<td>[gachano]</td>
</tr>
<tr>
<td>gara</td>
<td>[gara]</td>
</tr>
<tr>
<td>gada</td>
<td>[gada]</td>
</tr>
<tr>
<td>gabane</td>
<td>[gabano]</td>
</tr>
<tr>
<td>gala</td>
<td>[gala]</td>
</tr>
<tr>
<td>gila</td>
<td>[gila]</td>
</tr>
<tr>
<td>gela</td>
<td>[gela]</td>
</tr>
<tr>
<td>guchane</td>
<td>[guchano]</td>
</tr>
<tr>
<td>gochane</td>
<td>[gochano]</td>
</tr>
<tr>
<td>gujrapane</td>
<td>[gujrapano]</td>
</tr>
<tr>
<td>gujarana</td>
<td>[gujarana]</td>
</tr>
<tr>
<td>goja</td>
<td>[goja]</td>
</tr>
<tr>
<td>gujana</td>
<td>[gurano]</td>
</tr>
<tr>
<td>gujone</td>
<td>[guronono]</td>
</tr>
<tr>
<td>gujone</td>
<td>[gurono]</td>
</tr>
<tr>
<td>gujone</td>
<td>[gurono]</td>
</tr>
<tr>
<td>Word</td>
<td>Meaning</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>gumranə</td>
<td>[gumrano] to murmur.</td>
</tr>
<tr>
<td>gumana</td>
<td>[gumano] to be heated an emit a smell of mouldiness (as hay does when stacked before it is dry.)</td>
</tr>
<tr>
<td>gola</td>
<td>[gola] to dissolve in a liquid.</td>
</tr>
<tr>
<td>gutane</td>
<td>[gutano] to push.</td>
</tr>
<tr>
<td>gutonə</td>
<td>[gutono]</td>
</tr>
<tr>
<td>gunagunanə</td>
<td>[gunagunano] to buzz.</td>
</tr>
<tr>
<td>guțane</td>
<td>[guțano] to roll up.</td>
</tr>
<tr>
<td>gēja</td>
<td>[gēja] to foam.</td>
</tr>
<tr>
<td>gēthene</td>
<td>[gēthono] to tie a knot.</td>
</tr>
<tr>
<td>gēthane</td>
<td>[gēthano]</td>
</tr>
<tr>
<td>geņane</td>
<td>[geņano] to groan.</td>
</tr>
<tr>
<td>gerane</td>
<td>[gerano] to tie a knot.</td>
</tr>
<tr>
<td>goŋrane</td>
<td>[goŋrano] to utter inarticulate sounds like the dumb.</td>
</tr>
<tr>
<td>goŋane</td>
<td>[goŋano]</td>
</tr>
<tr>
<td>goŋane</td>
<td>[goŋano] to cut the root of.</td>
</tr>
<tr>
<td>gōyane</td>
<td>[gōyano] to pass time.</td>
</tr>
<tr>
<td>gowane</td>
<td>[gowano]</td>
</tr>
<tr>
<td>ghēta</td>
<td>[ghēta] to happen.</td>
</tr>
<tr>
<td>ghenane</td>
<td>[ghēnano] to come up with.</td>
</tr>
<tr>
<td>ghēsa</td>
<td>[ghēsa] to grind, to rub.</td>
</tr>
<tr>
<td>ghēsa</td>
<td>[ghēsa] to grind, to rub.</td>
</tr>
<tr>
<td>ghāta</td>
<td>[ghāta] to stir.</td>
</tr>
<tr>
<td>ghata</td>
<td>[ghata] to decrease.</td>
</tr>
<tr>
<td>gharaṇe</td>
<td>[gharaṇo] to take upon one's shoulders.</td>
</tr>
<tr>
<td>ghabaraṇe</td>
<td>[ghabaraṇo] to be pleased, to bewilder.</td>
</tr>
<tr>
<td>ghama</td>
<td>[ghama] to perspire.</td>
</tr>
<tr>
<td>ghōta</td>
<td>[ghōta] to stir up.</td>
</tr>
</tbody>
</table>
ghuca  [ghuca]  to withdraw, to remove.
ghuneghunane  [ghunghunano]  to buzz.
ghumane  [ghumano]  to sleep.
ghora  [ghora]  to move.
gholane  [gholano]  to stir up.
ghusqene  [ghusqono]  to creep in, to cancel (as a writing).
ghusqane  [ghusqano]  to force in, to press in.
ghusanoe  [ghusano]  to strike with fist.
ghoja  [ghoja]  to declare.
ghusanoe  [ghusano]  to cause to retreat or fall back.
ghuskanoe  [ghuskano]  to thrust aside.
ghasa  [ghasa]  to rub, to approach.
gheqane  [ghagano]  to ask for anything urgently.
gheta  [gheta]  to fall short.
ghera  [ghera]  to enclose.
ghoqran  [ghoqreno]  to speak in a deep and hoarse sound.
cokanesane  [cokjano]  to dazzle.
cemekane  [cemkano]  to emit a sudden flash of light.
cotekane  [cotkano]  to knead.
ceta  [cota]  to be irritated.
cera  [cota]  to get upon.
cera  [cora]  to graze.
cela  [cola]  to go.
celkane  [colkano]  to move with a wave like motion (said of liquids carried in a vessel).
ceta  [cota]  to plough.
coaña  [cawa]  to ask, to want.
<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>cāca</td>
<td>to pare off the surface, to scrape.</td>
</tr>
<tr>
<td>cācha</td>
<td></td>
</tr>
<tr>
<td>caka</td>
<td>to taste.</td>
</tr>
<tr>
<td>cakha</td>
<td></td>
</tr>
<tr>
<td>caga</td>
<td>to rise.</td>
</tr>
<tr>
<td>catā</td>
<td>to lick.</td>
</tr>
<tr>
<td>capo̱ano</td>
<td>to smite or beat with the open hand, to slap, to tap.</td>
</tr>
<tr>
<td>capa</td>
<td>to mount, to suppress.</td>
</tr>
<tr>
<td>capane</td>
<td>to lay upon, to load.</td>
</tr>
<tr>
<td>cabane</td>
<td>to chew.</td>
</tr>
<tr>
<td>carane</td>
<td>to spread or cover evenly.</td>
</tr>
<tr>
<td>cip̹ane</td>
<td>to squeeze, to wring.</td>
</tr>
<tr>
<td>cip̹kane</td>
<td>to cause a throbbing sensation.</td>
</tr>
<tr>
<td>cip̹a</td>
<td>to crack, to split.</td>
</tr>
<tr>
<td>cina</td>
<td>to know.</td>
</tr>
<tr>
<td>cena</td>
<td></td>
</tr>
<tr>
<td>cipa</td>
<td>to press.</td>
</tr>
<tr>
<td>cime̱aṉe</td>
<td>to pinch.</td>
</tr>
<tr>
<td>cime̱paṉe</td>
<td>to stick closely.</td>
</tr>
<tr>
<td>cira</td>
<td>to tear.</td>
</tr>
<tr>
<td>cera</td>
<td></td>
</tr>
<tr>
<td>cibane</td>
<td>to chew.</td>
</tr>
<tr>
<td>cúca</td>
<td>to strip off with fingers.</td>
</tr>
<tr>
<td>cúya</td>
<td>to burn away.</td>
</tr>
<tr>
<td>cuka</td>
<td>to be settled.</td>
</tr>
<tr>
<td>co̱̱ano</td>
<td>to strike.</td>
</tr>
<tr>
<td>cuna</td>
<td>to choose.</td>
</tr>
<tr>
<td>cup̹a̱a</td>
<td>to imbibe moisture.</td>
</tr>
<tr>
<td>cup̹esa</td>
<td></td>
</tr>
</tbody>
</table>
cupanë [cupano] to cut thin.
cubane [cubano] to immerse, to dip.
cablanë [coblano] to bite suddenly.
cumpane [cumpano] to stroke the tail of (an animal to induce it to work).
cumane [cumano] to kiss.
cuya [cuwa] to ooze out, to leak.
cura [cura] to grind, to pound.
culëkane [culkano] to itch, to scratch.
copa [cosa] to suck.
ceta [casta] to wake, to come to senses.
celanë [calano] to chip (wood).
cuka [cuka] to err, to be adjusted.
cokhanë [cokhano] to sharpen.
cotane [cotano] to strike, to rebuke.
che ka [choka] to draw.
chetëkane [chetkano] to shed out.
chaya [chawa] to thatch.
chákka [chakka] to strain, to filtrate.
cháta [chata] to clip, to crop.
cháda [chada] to tie the hind legs of a cow at the time of milking.
cháta [chatá] to plaster a mud wall or plinth with new mud.
chapä [chapä] to quit, to abandon.
chana [chana] to knead.
chapa [chapa] to print.
chala [chala] to skin.
<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>chícpano</td>
<td>to drag.</td>
</tr>
<tr>
<td>chícpano</td>
<td>to empty of water, to bale out or in.</td>
</tr>
<tr>
<td>chícpano</td>
<td>to tear.</td>
</tr>
<tr>
<td>chícpano</td>
<td>to link together.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to be spattered.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to sprinkle.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to snatch.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to cover.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to peel.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to wash the privities with water after voiding the bowels.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to touch.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to run.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to throw.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to dye.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to peel.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to sear, to roast in a frying pan.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to bite suddenly.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to wrap round.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to be born, to originate, to grow.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to mutter prayers to one's self.</td>
</tr>
<tr>
<td>chítkano</td>
<td>to gather.</td>
</tr>
<tr>
<td>jera</td>
<td>[jora]</td>
</tr>
<tr>
<td>jāka</td>
<td>[jāka]</td>
</tr>
<tr>
<td>jāta</td>
<td>[jāta]</td>
</tr>
<tr>
<td>jaga</td>
<td>[jaga]</td>
</tr>
<tr>
<td>jaca</td>
<td>[jaca]</td>
</tr>
<tr>
<td>jana</td>
<td>[jana]</td>
</tr>
<tr>
<td>japețane</td>
<td>[japțano]</td>
</tr>
<tr>
<td>jabțane</td>
<td>[jabțano]</td>
</tr>
<tr>
<td>jarane</td>
<td>[jarano]</td>
</tr>
<tr>
<td>jita</td>
<td>[jita]</td>
</tr>
<tr>
<td>jeta</td>
<td>[jeta]</td>
</tr>
<tr>
<td>jiyanē</td>
<td>[jiano]</td>
</tr>
<tr>
<td>jiranē</td>
<td>[jirano]</td>
</tr>
<tr>
<td>jota</td>
<td>[jota]</td>
</tr>
<tr>
<td>juranē</td>
<td>[jurano]</td>
</tr>
<tr>
<td>jōra</td>
<td>[jōra]</td>
</tr>
<tr>
<td>jutanē</td>
<td>[jutano]</td>
</tr>
<tr>
<td>jōka</td>
<td>[jōka]</td>
</tr>
<tr>
<td>jota</td>
<td>[jota]</td>
</tr>
<tr>
<td>jōla</td>
<td>[jōla]</td>
</tr>
<tr>
<td>jhora</td>
<td>[jhora]</td>
</tr>
<tr>
<td>jholṣa</td>
<td>[jholṣa]</td>
</tr>
<tr>
<td>jhākrano</td>
<td>[jhākrano]</td>
</tr>
<tr>
<td>jhākanē</td>
<td>[jhākanē]</td>
</tr>
<tr>
<td>jhațano</td>
<td>[jhațano]</td>
</tr>
<tr>
<td>Word</td>
<td>Translation</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>jhapano</td>
<td>to jump.</td>
</tr>
<tr>
<td>jhaqa</td>
<td>to thrash or beat out to rub off.</td>
</tr>
<tr>
<td>jhamerane</td>
<td>to distil.</td>
</tr>
<tr>
<td>jhalane</td>
<td>to mend or repair.</td>
</tr>
<tr>
<td>jhimane</td>
<td>to drowse.</td>
</tr>
<tr>
<td>jhuka</td>
<td>to hitch forward, to bend down.</td>
</tr>
<tr>
<td>jhija</td>
<td>to trickle.</td>
</tr>
<tr>
<td>jhura</td>
<td>to trickle.</td>
</tr>
<tr>
<td>jhora</td>
<td>to trickle.</td>
</tr>
<tr>
<td>jhula</td>
<td>to hang.</td>
</tr>
<tr>
<td>jhola</td>
<td>to hang.</td>
</tr>
<tr>
<td>jhetano</td>
<td>to sweep with a broom.</td>
</tr>
<tr>
<td>jhoro</td>
<td>to cut off.</td>
</tr>
<tr>
<td>tokano</td>
<td>to grow sour.</td>
</tr>
<tr>
<td>tonotonano</td>
<td>to shoot, to throb.</td>
</tr>
<tr>
<td>tonkano</td>
<td>to harden.</td>
</tr>
<tr>
<td>topano</td>
<td>to drop.</td>
</tr>
<tr>
<td>topkano</td>
<td>to leap over.</td>
</tr>
<tr>
<td>toltolano</td>
<td>to stagger.</td>
</tr>
<tr>
<td>tolmolano</td>
<td>to be tossed about or up and down.</td>
</tr>
<tr>
<td>tonkano</td>
<td>to be fregile.</td>
</tr>
<tr>
<td>taorano</td>
<td>to shrivel, to stumble.</td>
</tr>
<tr>
<td>taka</td>
<td>to stick together.</td>
</tr>
<tr>
<td>tanano</td>
<td>to hang.</td>
</tr>
<tr>
<td>tatano</td>
<td>to throb.</td>
</tr>
<tr>
<td>tanato</td>
<td>to draw.</td>
</tr>
<tr>
<td>talata</td>
<td>to make pretexts or excuses.</td>
</tr>
<tr>
<td>tiketikan</td>
<td>to tick, to chirp (as a house lizard).</td>
</tr>
</tbody>
</table>
\text{tika} \quad [\text{tika}] \quad \text{to last, to endure.}
\text{tēke} \quad [\text{tēka}]
\text{tēka} \quad [\text{tēka}]
\text{tēka} \quad [\text{tēka}]

\text{tipētipane} \quad [\text{tipētipānē}] \quad \text{to drizzle.}
\text{tēpa} \quad [\text{tēpa}]
\text{tēpa} \quad [\text{tēpa}]

\text{tuiyane} \quad [\text{tuiyānē}] \quad \text{to incite, to set on.}
\text{tuyane} \quad [\text{tuiyānē}]

\text{tōka} \quad [\text{tōka}] \quad \text{to winnow.}
\text{tōka} \quad [\text{tōka}] \quad \text{to write down.}
\text{tūta} \quad [\text{tūta}] \quad \text{to break.}
\text{tapanē} \quad [\text{topanē}] \quad \text{to drip.}
\text{tobane} \quad [\text{tobanē}] \quad \text{to send, to incite.}
\text{thēka} \quad [\text{thēkā}] \quad \text{to be deceived or cheated.}

\text{thokēthokane} \quad [\text{thokēthokanē}] \quad \text{to make sound like that of striking together two pieces of wood.}

\text{thonethonane} \quad [\text{thonēthonanē}] \quad \text{to ring, to clank.}
\text{thaorane} \quad [\text{thaorānē}] \quad \text{to consider, to determine.}
\text{thara} \quad [\text{thārā}] \quad \text{to make a sign or signal to hint.}
\text{thasa} \quad [\text{thasa}] \quad \text{to knead, to compress.}
\text{thikerane} \quad [\text{thikrānē}] \quad \text{to spread, to rebound.}

\text{thukēthukane} \quad [\text{thukēthukanē}] \quad \text{to tap, to knock.}
\text{thoka} \quad [\text{thoka}] \quad \text{to tap, to knock.}
\text{thusa} \quad [\text{thūsa}] \quad \text{to cram.}
\text{thufa} \quad [\text{thufā}]

\text{theke} \quad [\text{tēkākā}] \quad \text{to touch, to come into contact.}
\text{thehane} \quad [\text{thehānē}] \quad \text{to strike with bludgeon, to beat.}
\text{thela} \quad [\text{thēlā}] \quad \text{to push.}
\text{thesane} \quad [\text{thēsānē}] \quad \text{to lean, to recline against any object.}
thokerane       [ thokrano] to peck, to tap.
dogane} [dogano] to cut off the tops or ends of a
dogane)      )       ) plant.
dørane [dørano] to be in fear.
døla [døla] to knead, to rub.
døta [døta] to threaten, to frighten.
døørane [døørano] to stand, to wait.
døjane [døjano] to be about to ripen.
døka [døka] to call.
dølane [dølano] to cut off the branches.
døkørane [døkrano] to sob.
duba} [duba] to dive, to sink.
døba) [døba]
dølane [dølano] to throw clods.
dølskane [dølskano] to get loose, to decline as the
setting sun.
døla [døla] to fade and droop, to slope, to
decline as the setting sun.
døesa [døesa] to crouch down, to break off in
large pieces (as the bank of a
ger
døaka [døaka] to cover.
døala [døala] to pour out.
døipene} [døipono] to strike with the fist.
døipane) [døipano]
døelane [døelano] to throw clods or stones at.
døoka [døoka] to enter.
døula [døula] to nod, to doze.
døola [døola] to push or strike with the head,
døusane [døusane] to butt.
<p>| dhêkanë     | [dha$kano] | to shove to push.       |
| dhêjanë     | [dha$ano]  | to insinuate.           |
| dhêsanë     |           |                        |
| dhôra        | [dho$ra]  | to seek, to search.     |
| dhôyâ        | [dhoa]    | to carry.               |
| têrapâno    | [terpano] | to tie into a bundle or bundles. to leap over. |
| teranë       | [torano]  | to cause to pass over or cross. |
| telanë       | [tolano]  | to go or sink to the bottom. |
| taçyâne      | [tawano]  | to cause to be heated.   |
| takanë       | [takano]  | to open the eyes, to look. |
| tanâno       | [tanpano] | to keep for future use.  |
| tâpanë       | [tapano]  | to drive out.            |
| tatâne       | [tatano]  | to heat, to warm.        |
| tapanë       | [tapano]  | to heat, to warm.        |
| tasanë       | [tawano]  | to shuffle cards.        |
| titânë       | [titano]  | to become moistened.     |
| telanë       | [telano]  | to become oily or greasy, to make oily. |
| tiṣṭhanë     | [tisthano]| to stay.                |
| tçâ      | [toca]    | to break.               |
| totânë      | [totano]  | to praise, to applaud.   |
| tûpesanë    | [tupfano] | to shrivel, to be depressed. |
| turpanë      | [turpano] | to bore a hole, to sew the long stitches. |
| tola        | [tola]    | to weigh, to raise.      |
| tubçanë      | [tubçano] | to shrivel.              |
| toçâ        | [tojasa]  | to satisfy.              |
| têpano       | [tapano]  | to become crooked, or curved. |</p>
<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>toprano</td>
<td>to shrivel.</td>
</tr>
<tr>
<td>tobrano</td>
<td></td>
</tr>
<tr>
<td>toulano</td>
<td>to weigh.</td>
</tr>
<tr>
<td>thomkano</td>
<td>to be startled.</td>
</tr>
<tr>
<td>thorthorano</td>
<td>to tremble.</td>
</tr>
<tr>
<td>thaka</td>
<td>to be, to stay, to stop.</td>
</tr>
<tr>
<td>thappano</td>
<td>to slap, to pat.</td>
</tr>
<tr>
<td>thabfano</td>
<td></td>
</tr>
<tr>
<td>thama</td>
<td>to stop, to pause, to halt.</td>
</tr>
<tr>
<td>thafa</td>
<td>to knead.</td>
</tr>
<tr>
<td>thitano</td>
<td>to settle down.</td>
</tr>
<tr>
<td>thowa</td>
<td>to keep, to put.</td>
</tr>
<tr>
<td>thuka</td>
<td>to spit.</td>
</tr>
<tr>
<td>thoka</td>
<td></td>
</tr>
<tr>
<td>thora</td>
<td>to chop, to mince (as meat).</td>
</tr>
<tr>
<td>thubfano</td>
<td>to blunt, to bruise.</td>
</tr>
<tr>
<td>thurthurano</td>
<td>to tremble.</td>
</tr>
<tr>
<td>thora</td>
<td>to chop (as meat).</td>
</tr>
<tr>
<td>thetlano</td>
<td>to bruise.</td>
</tr>
<tr>
<td>theka</td>
<td>to be hindered.</td>
</tr>
<tr>
<td>thebbrano</td>
<td>to flatten.</td>
</tr>
<tr>
<td>thatano</td>
<td>to blunt, to dent.</td>
</tr>
<tr>
<td>thatano</td>
<td></td>
</tr>
<tr>
<td>thobfano</td>
<td>to fall flat on the face.</td>
</tr>
<tr>
<td>dogfa</td>
<td>to bite.</td>
</tr>
<tr>
<td>domkano</td>
<td>to sink, to fall off.</td>
</tr>
<tr>
<td>doma</td>
<td>to subside.</td>
</tr>
<tr>
<td>dorfano</td>
<td>to show.</td>
</tr>
<tr>
<td>dola</td>
<td>to rub, to knead.</td>
</tr>
</tbody>
</table>
dębkanę  [dębkano] to startle.
daoya  [dawa] to cut, to reap.
dąłane  [dąłano] to stand.
daga  [daga] to draw (lines).
dapanę  [dapano] to stamp violently.
daba  [daba] to press down.
dęyane  [dęyano] to tame.
dumąłane  [dumąłano] to fold, to twist.
doya  [dowa] to milk.
dola  [dola] to hang loosely, to swing.
dęoya  [dęoya] to give.
dekha  [dekha] to see.
dępłane  [dępłano] to run.
dhępęłane  [dhępęłano] to glitter.
dhępęłane  [dhępęłano] to writhe.
dhępęłane  [dhępęłano] to threaten.
dhera  [dhera] to catch.
dhosa  [dhosa] to give way.
dhosa  [dhosa] to give way.
dhoca  [dhoca] to go fast.
dhatana  [dhatano] to threaten.
dhakkanę  [dhakkanę] to push.
dhamasane  [dhamasane] to throw into disorder.
dhera  [dhera] to be indebted, to owe.
dhoka  [dhoka] to breath with difficulty, to palpitate (as with running or fear).
dhona  [dhona] to clean (cotton) with a bow.
<table>
<thead>
<tr>
<th>Word</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>dhoya</td>
<td>[dhowa]</td>
<td>to wash</td>
</tr>
<tr>
<td>dheyanə</td>
<td>[dheypəno]</td>
<td>to have a looseness of the bowels.</td>
</tr>
<tr>
<td>dheyanə</td>
<td>[dhəano]</td>
<td>to think upon.</td>
</tr>
<tr>
<td>nəkələnə</td>
<td>[nəkləno]</td>
<td>to copy.</td>
</tr>
<tr>
<td>nəyəkənə</td>
<td>[nəypkəno]</td>
<td>to drop and dangle repeatedly (as a baited hook in order to tempt a fish to gulp it).</td>
</tr>
<tr>
<td>nərə</td>
<td>[nəra]</td>
<td>to move.</td>
</tr>
<tr>
<td>nərə</td>
<td>[naɾa]</td>
<td>to move.</td>
</tr>
<tr>
<td>naoya</td>
<td>[nawə]</td>
<td>to bathe.</td>
</tr>
<tr>
<td>naca</td>
<td>[naca]</td>
<td>to dance.</td>
</tr>
<tr>
<td>naba</td>
<td>[naba]</td>
<td>to get down, to alight.</td>
</tr>
<tr>
<td>nama</td>
<td>[nama]</td>
<td>to get down, to alight.</td>
</tr>
<tr>
<td>nana</td>
<td>[naŋa]</td>
<td>to cross.</td>
</tr>
<tr>
<td>nalane</td>
<td>[nalano]</td>
<td>to drivel.</td>
</tr>
<tr>
<td>naʃa</td>
<td>[naʃa]</td>
<td>to destroy.</td>
</tr>
<tr>
<td>nibrənə</td>
<td>[nibrəno]</td>
<td>to wring out.</td>
</tr>
<tr>
<td>nikano</td>
<td></td>
<td>to smear or plaster with a solution of earth.</td>
</tr>
<tr>
<td>nikone</td>
<td></td>
<td>to smear or plaster with a solution of earth.</td>
</tr>
<tr>
<td>nikanecukane</td>
<td>[nikanocukano]</td>
<td>to plaster (a house) with a solution of earth and make it quite clean.</td>
</tr>
<tr>
<td>nibrənə</td>
<td>[nibrəno]</td>
<td>to be finished.</td>
</tr>
<tr>
<td>niba</td>
<td>[niba]</td>
<td>to extinguish.</td>
</tr>
<tr>
<td>nibha</td>
<td>[nibha]</td>
<td>to extinguish.</td>
</tr>
<tr>
<td>neba</td>
<td>[neba]</td>
<td>to extinguish.</td>
</tr>
<tr>
<td>nebha</td>
<td>[nebha]</td>
<td>to extinguish.</td>
</tr>
<tr>
<td>noya</td>
<td>[nowa]</td>
<td>to bend, to bow.</td>
</tr>
<tr>
<td>nemcnə</td>
<td>[nemcəno]</td>
<td>to walk as a lame.</td>
</tr>
<tr>
<td>nedane</td>
<td>[dədəno]</td>
<td>to give way (said of anything soft or flabby, as an undried mud wall or plaster).</td>
</tr>
</tbody>
</table>
nepa  [nepa]  to smear.
pečucha  [poucha]  to arrive at.
pečuchana  [pouchana]  to arrive at.
pecakane  [pockane]  to emit slightly.
pecpecano  [pocpocano]  to make the sound of slight splashing.
peca  [poca]  to rot.
petekane  [petekane]  to throw down.
petepetane  [petepetane]  to crackle.
peta  [peta]  to come to terms.
peta  [peta]  to read, to fall, to drop.
peta  [peta]  to wear.
peta  [peta]  to regret.
pay  [paya]  to get.
pakana  [pakana]  to capture.
paka  [paka]  to ripen, to become grey.
pakha  [pakha]  to wash.
pala  [pala]  to perceive, to guess.
pachherane  [pachherane]  to throw in wrestling.
pathanane  [pathanane]  to send.
papa  [papa]  to cast or lay down (as a mat), to pluck or gather (as fruits).
pata  [pata]  to spread.
pada  [pada]  to expel the wind backwards.
panane  [panane]  to send down milk to the nipples of the udder from a desire of giving milk (said of a cow or other animal).
pata  [pata]  to be able to do anything.
palatanane  [palatanane]  to turn.
pala [pala] to rear.
palane [palano] to escape, to run away.
piklane [piklano] 
pidha ] [pidha] to wear.
pindha ]
pichelane [pichlano] to slip.
pichane [pichano] fall back.
pifa ] [piña] to strike, to beat.
peta ]
pitopitano [pitpitano] to blink, to wink.
pisa ] [pija] to pound.
pesa [peja]
pota ] [pota] to bury.
pota ] [pota]
porā [porā] to burn.
puura [pura] to fill or to become filled.
pēkane [pēkano] to make muddy.
pēcane [pēcano] to screw, to twist.
pēja [pēja] to card (cotton, wool, etc.).
pērane [pērano] to grind.
pōca ] [pōca] to wipe.
pōcha ]
poyane [powano] to pass (as the night) to endure.
pora [pora] to load, to fill.
pōsa [poja] to tame.
phēla [phōla] to bear fruit.
phēnkane [phēnkano] to simmer with anger.
phēska [phēska] to become loose.
phāpa [phāpa] to swell.
phāsə [phāʃə] to become noosed.
phaṭələnə [phaṭələnə] to split, to burst.
phətə [phaʃə] to crack.
phəɾə [phəɾə] to tear.
phira ) [phira] to turn.
phera ) [phera]
phūkə [phūka] to blow with the mouth.
phōɾə ) [phōɾə] to pierce.
phōɾə ) [phōɾə]
phōpanə ) [phōpanə] to breath short, to sob.
phōpanə ) [phōpanə]
phūyanə ) [phūano] to blow with the mouth.
phūyanə ) [phūano]
phukəɾənə [phukrənə] to call aloud.
phətə [phətə] to boil, to open, to blossom.
phurənə [phurənə] to be exhausted.
phula ) [phula] to swell.
phola ) [phola]
phusələnə [phusələnə] to cajole.
phəkə [phəkə] to throw.
phətə [phətə] to stir, to heat.
phələ [phələ] to throw.
bəcəya [bəcəya] to carry, to blow, to flow.
bəka [bəka] to talk much.
bəte l [bəte] He is, it is.
bortənə [bortənə] to become, to happen.
bədələnə [bədələnə] to change.
bəɾəʃə [bəɾəʃə] to rain.

1. See Defective verbs § 3
<table>
<thead>
<tr>
<th>Verb</th>
<th>Pronunciation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>bola</td>
<td>[bola]</td>
<td>to speak.</td>
</tr>
<tr>
<td>besa</td>
<td>[bəsa]</td>
<td>to sit.</td>
</tr>
<tr>
<td>baoya</td>
<td>[baoya]</td>
<td>to drive (as a boat) to row.</td>
</tr>
<tr>
<td>bāka</td>
<td>[bāka]</td>
<td>to bend, to twist.</td>
</tr>
<tr>
<td>bāca</td>
<td>[bāca]</td>
<td>to live.</td>
</tr>
<tr>
<td>bāṭa</td>
<td>[bāṭa]</td>
<td>to pound, to distribute.</td>
</tr>
<tr>
<td>bāḍha</td>
<td>[bāḍha]</td>
<td>to bind.</td>
</tr>
<tr>
<td>bacha</td>
<td>[bacha]</td>
<td>to pick out, to select.</td>
</tr>
<tr>
<td>baja</td>
<td>[baja]</td>
<td>to sound (as a musical instrument) to strike (as a clock).</td>
</tr>
<tr>
<td>bāra</td>
<td>[bāra]</td>
<td>to grow, to increase.</td>
</tr>
<tr>
<td>badha</td>
<td>[badha]</td>
<td>to hinder, to prevent.</td>
</tr>
<tr>
<td>banano</td>
<td>[banano]</td>
<td>to build, to make.</td>
</tr>
<tr>
<td>basa 1</td>
<td>[basa]</td>
<td>to like (ill or well).</td>
</tr>
<tr>
<td>bīdha</td>
<td>[bīdha]</td>
<td>to pierce, to bore.</td>
</tr>
<tr>
<td>bikano</td>
<td>[bikano]</td>
<td>to sell, to have a demand for market.</td>
</tr>
<tr>
<td>bīgerano</td>
<td>[bīgerano]</td>
<td>to change, to vitiate.</td>
</tr>
<tr>
<td>bīgerane</td>
<td>[bīgerane]</td>
<td>to seek, to search.</td>
</tr>
<tr>
<td>bīcherane</td>
<td>[bīcherane]</td>
<td>to strew, to scatter.</td>
</tr>
<tr>
<td>bichane</td>
<td>[bichane]</td>
<td>to spread.</td>
</tr>
<tr>
<td>bīpēbīrane</td>
<td>[bīpēbīrane]</td>
<td>to mutter, to grumble.</td>
</tr>
<tr>
<td>binane</td>
<td>[binane]</td>
<td>to plait, or braid (as the hair).</td>
</tr>
<tr>
<td>biyane</td>
<td>[biyane]</td>
<td>to give birth to.</td>
</tr>
<tr>
<td>biyone</td>
<td>[biyone]</td>
<td>to give birth to.</td>
</tr>
<tr>
<td>bilane</td>
<td>[bilane]</td>
<td>to give away.</td>
</tr>
<tr>
<td>bilone</td>
<td>[bilone]</td>
<td>to give away.</td>
</tr>
<tr>
<td>biṣane</td>
<td>[biṣane]</td>
<td>to poison.</td>
</tr>
</tbody>
</table>

1. See Defective verbs § 3
<table>
<thead>
<tr>
<th>Verb</th>
<th>Audio</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>buja</td>
<td>[buja]</td>
<td>to be filled or filled up.</td>
</tr>
<tr>
<td>bojha</td>
<td>[bojha]</td>
<td>to understand, to know.</td>
</tr>
<tr>
<td>bojha</td>
<td>[bojha]</td>
<td>to understand, to know.</td>
</tr>
<tr>
<td>bupane</td>
<td>[bupano]</td>
<td>to drown, to dip, to become old.</td>
</tr>
<tr>
<td>bopane</td>
<td>[bopano]</td>
<td>to drown, to dip, to become old.</td>
</tr>
<tr>
<td>buna</td>
<td>[buna]</td>
<td>to sow.</td>
</tr>
<tr>
<td>bona</td>
<td>[bona]</td>
<td>to sow.</td>
</tr>
<tr>
<td>bulane</td>
<td>[bulano]</td>
<td>to rub, to stroke lightly over the surface of anything.</td>
</tr>
<tr>
<td>beca</td>
<td>[beca]</td>
<td>to sell.</td>
</tr>
<tr>
<td>bepa</td>
<td>[bepa]</td>
<td>to enclose, to surround.</td>
</tr>
<tr>
<td>bepana</td>
<td>[bepano]</td>
<td>to walk, to stroll.</td>
</tr>
<tr>
<td>bepona</td>
<td>[bepono]</td>
<td>to strike, to thrash.</td>
</tr>
<tr>
<td>bela</td>
<td>[bela]</td>
<td>to roll out (bread).</td>
</tr>
<tr>
<td>belane</td>
<td>[belan]</td>
<td>to roll out (bread).</td>
</tr>
<tr>
<td>bhaja</td>
<td>[bhaja]</td>
<td>to worship.</td>
</tr>
<tr>
<td>bhophkano</td>
<td>[bhophkano]</td>
<td>to be confounded.</td>
</tr>
<tr>
<td>bhophbophane</td>
<td>[bhophbophano]</td>
<td>to talk gibberish, to gabble.</td>
</tr>
<tr>
<td>bhera</td>
<td>[bhera]</td>
<td>to fill up, to load.</td>
</tr>
<tr>
<td>bhaja</td>
<td>[bhaja]</td>
<td>to fold, to plait.</td>
</tr>
<tr>
<td>bhrane</td>
<td>[bhrano]</td>
<td>to deceive, to speak or play false.</td>
</tr>
<tr>
<td>bhaga</td>
<td>[bhaga]</td>
<td>to flee to run away.</td>
</tr>
<tr>
<td>bha</td>
<td>[bha]</td>
<td>to break.</td>
</tr>
<tr>
<td>bha</td>
<td>[bha]</td>
<td>to break.</td>
</tr>
<tr>
<td>bhanana</td>
<td>[bhanana]</td>
<td>to husk in a mortar (as rice).</td>
</tr>
<tr>
<td>bhapa</td>
<td>[bhapa]</td>
<td>to emit steam or vapour.</td>
</tr>
<tr>
<td>bhaba</td>
<td>[bhaba]</td>
<td>to think.</td>
</tr>
<tr>
<td>bhasa</td>
<td>[bhasa]</td>
<td>to float.</td>
</tr>
<tr>
<td>Sanskrit Word</td>
<td>Pig Latin</td>
<td>English Translation</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
<td>---------------------</td>
</tr>
<tr>
<td>bhija</td>
<td>[bhija]</td>
<td>to get wetted.</td>
</tr>
<tr>
<td>bhiğa</td>
<td>[bhiɣa]</td>
<td>to come along side the shore (said of a boat) to draw near.</td>
</tr>
<tr>
<td>bhoga</td>
<td>[bhoga]</td>
<td>to suffer.</td>
</tr>
<tr>
<td>bhona</td>
<td>[bhona]</td>
<td>to scorch, to fry.</td>
</tr>
<tr>
<td>bhola</td>
<td>[bhola]</td>
<td>to forget.</td>
</tr>
<tr>
<td>bheŋcane</td>
<td>[bheŋcane]</td>
<td>to make faces.</td>
</tr>
<tr>
<td>bhe cane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bhekane</td>
<td>[bhekane]</td>
<td>to be confounded.</td>
</tr>
<tr>
<td>bheja</td>
<td>[bheja]</td>
<td>to send.</td>
</tr>
<tr>
<td>bhejane</td>
<td>[bhejane]</td>
<td>to shut, to close (doot etc.) without bolting.</td>
</tr>
<tr>
<td>bhetā</td>
<td>[bhetā]</td>
<td>to meet.</td>
</tr>
<tr>
<td>bheberane</td>
<td>[bheberane]</td>
<td>to be frightened or alarmed.</td>
</tr>
<tr>
<td>meoyane</td>
<td>[meoyane]</td>
<td>to churn.</td>
</tr>
<tr>
<td>mecekane</td>
<td>[mecekane]</td>
<td>to be wrenched or strained.</td>
</tr>
<tr>
<td>meja</td>
<td>[meja]</td>
<td>to immerse, to be absorbed.</td>
</tr>
<tr>
<td>majane</td>
<td>[majane]</td>
<td>to immerse, to ruin.</td>
</tr>
<tr>
<td>mešekane</td>
<td>[mešekane]</td>
<td>to snap or crack (as finger joint).</td>
</tr>
<tr>
<td>meta</td>
<td>[meta]</td>
<td>to churn, to knead.</td>
</tr>
<tr>
<td>metha</td>
<td>[metha]</td>
<td></td>
</tr>
<tr>
<td>mera</td>
<td>[mera]</td>
<td>to die.</td>
</tr>
<tr>
<td>mela</td>
<td>[mela]</td>
<td>to smear, to rub.</td>
</tr>
<tr>
<td>makha</td>
<td>[makha]</td>
<td>to smear, to knead.</td>
</tr>
<tr>
<td>maga</td>
<td>[maga]</td>
<td>to beg, to ask for.</td>
</tr>
<tr>
<td>manja</td>
<td>[manja]</td>
<td>to beg, to ask for.</td>
</tr>
<tr>
<td>maja</td>
<td>[maja]</td>
<td>to scour, to rub.</td>
</tr>
<tr>
<td>maŋa</td>
<td>[maŋa]</td>
<td>to pound, to bruise.</td>
</tr>
<tr>
<td>Word</td>
<td>Meaning</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>mata</td>
<td>to be stimulated, to be stirred up.</td>
<td></td>
</tr>
<tr>
<td>mathane</td>
<td>to get to the top of (a tree) to interfere.</td>
<td></td>
</tr>
<tr>
<td>mana</td>
<td>to mind, to obey.</td>
<td></td>
</tr>
<tr>
<td>mapa</td>
<td>to measure.</td>
<td></td>
</tr>
<tr>
<td>mara</td>
<td>to beat, to kill.</td>
<td></td>
</tr>
<tr>
<td>mičekane</td>
<td>to smile.</td>
<td></td>
</tr>
<tr>
<td>mita</td>
<td>to subside.</td>
<td></td>
</tr>
<tr>
<td>mila</td>
<td>to come in to contact, to meet.</td>
<td></td>
</tr>
<tr>
<td>mela</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mia</td>
<td>to mix.</td>
<td></td>
</tr>
<tr>
<td>meja</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mukhane</td>
<td>to turn the face towards.</td>
<td></td>
</tr>
<tr>
<td>mucane</td>
<td>to open slightly or partially.</td>
<td></td>
</tr>
<tr>
<td>mocpane</td>
<td>to twist.</td>
<td></td>
</tr>
<tr>
<td>mocha</td>
<td>to wipe, to blot out.</td>
<td></td>
</tr>
<tr>
<td>mufhane</td>
<td>to grasp with the hand.</td>
<td></td>
</tr>
<tr>
<td>mupa</td>
<td>to cover, to wrap.</td>
<td></td>
</tr>
<tr>
<td>mupane</td>
<td>to shave, to cut off.</td>
<td></td>
</tr>
<tr>
<td>muphane</td>
<td>to shave, to cut off.</td>
<td></td>
</tr>
<tr>
<td>muta</td>
<td>to pass urine.</td>
<td></td>
</tr>
<tr>
<td>mulane</td>
<td>to bargain, to buy.</td>
<td></td>
</tr>
<tr>
<td>jawa</td>
<td>to go.</td>
<td></td>
</tr>
<tr>
<td>jaça</td>
<td>to beg, to ask for.</td>
<td></td>
</tr>
<tr>
<td>juta</td>
<td>to come (to a person or place).</td>
<td></td>
</tr>
<tr>
<td>jofa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>jora</td>
<td></td>
<td></td>
</tr>
<tr>
<td>jopa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>jora</td>
<td>to join, to unite.</td>
<td></td>
</tr>
<tr>
<td>Word</td>
<td>Pronunciation</td>
<td>Meaning</td>
</tr>
<tr>
<td>----------</td>
<td>---------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>yūgane</td>
<td>[juːɡano]</td>
<td>to cool, to become cool.</td>
</tr>
<tr>
<td>yōta</td>
<td>[jota]</td>
<td>to yoke</td>
</tr>
<tr>
<td>yōka</td>
<td>[jōka]</td>
<td>to measure</td>
</tr>
<tr>
<td>yogane</td>
<td>[jogano]</td>
<td>to supply, to provide with.</td>
</tr>
<tr>
<td>rogāne</td>
<td>[rogano]</td>
<td>to rub</td>
</tr>
<tr>
<td>reca</td>
<td>[roca]</td>
<td>to make, to compose.</td>
</tr>
<tr>
<td>rota</td>
<td>[rota]</td>
<td>to be spread (as a rumour).</td>
</tr>
<tr>
<td>repa</td>
<td>[ropa]</td>
<td>to run</td>
</tr>
<tr>
<td>repētane</td>
<td>[repētano]</td>
<td>to cause to move or walk about constantly.</td>
</tr>
<tr>
<td>resane</td>
<td>[rojano]</td>
<td>to be damp or moist.</td>
</tr>
<tr>
<td>reōya</td>
<td>[rowa]</td>
<td>to be, to remain.</td>
</tr>
<tr>
<td>rādha</td>
<td>[rādha]</td>
<td>to cook</td>
</tr>
<tr>
<td>rakha</td>
<td>[rakha]</td>
<td>to keep</td>
</tr>
<tr>
<td>raga</td>
<td>[raga]</td>
<td>to become angry</td>
</tr>
<tr>
<td>raņane</td>
<td>[raņano]</td>
<td>to redden</td>
</tr>
<tr>
<td>roa</td>
<td>[roa]</td>
<td>to transplant, to plant.</td>
</tr>
<tr>
<td>roka</td>
<td>[roka]</td>
<td>to stop</td>
</tr>
<tr>
<td>rokha</td>
<td>[rokha]</td>
<td>to be ready to assault.</td>
</tr>
<tr>
<td>roca</td>
<td></td>
<td>to be angry.</td>
</tr>
<tr>
<td>ruca</td>
<td></td>
<td>to meet with one's haste.</td>
</tr>
<tr>
<td>rota</td>
<td>[rota]</td>
<td>to get annoyed.</td>
</tr>
<tr>
<td>rodha</td>
<td></td>
<td>to close, to obstruct.</td>
</tr>
<tr>
<td>ruṣa</td>
<td>[ruṣa]</td>
<td>to get angry.</td>
</tr>
<tr>
<td>leōya</td>
<td>[lowa]</td>
<td>to take, to receive.</td>
</tr>
<tr>
<td>legnane</td>
<td>[loglano]</td>
<td>to wait for marriage.</td>
</tr>
<tr>
<td>leṭekane</td>
<td>[lotkano]</td>
<td>to hang, to suspend.</td>
</tr>
<tr>
<td>leṟekane</td>
<td>[loṟkano]</td>
<td>to move a bait before a fish.</td>
</tr>
<tr>
<td>Verb</td>
<td>Pronunciation</td>
<td>Meaning</td>
</tr>
<tr>
<td>------------</td>
<td>---------------</td>
<td>----------------------------------------------</td>
</tr>
<tr>
<td>lēpa</td>
<td>[lēpa]</td>
<td>to fight.</td>
</tr>
<tr>
<td>lēptanē</td>
<td>[lēptanō]</td>
<td>to creep, to twine (as a creeper).</td>
</tr>
<tr>
<td>lēptanē</td>
<td>[lēptanō]</td>
<td>to fold up, to wrap together.</td>
</tr>
<tr>
<td>laga</td>
<td>[laga]</td>
<td>to be in contact with, to touch.</td>
</tr>
<tr>
<td>lārā</td>
<td>[lārā]</td>
<td>to stir, to move.</td>
</tr>
<tr>
<td>laphanē</td>
<td>[laphanō]</td>
<td>to jump.</td>
</tr>
<tr>
<td>lukane</td>
<td>[lukanō]</td>
<td>to conceal.</td>
</tr>
<tr>
<td>luṭeputanē</td>
<td>[luṭputanō]</td>
<td>to roll or tumble about.</td>
</tr>
<tr>
<td>luṭa</td>
<td>[luṭa]</td>
<td>to plunder.</td>
</tr>
<tr>
<td>loṭa</td>
<td>[loṭa]</td>
<td></td>
</tr>
<tr>
<td>luṭha</td>
<td>[luṭha]</td>
<td>to roll or tumble about.</td>
</tr>
<tr>
<td>lopha</td>
<td>[lopha]</td>
<td>to catch in the air (as a play ball).</td>
</tr>
<tr>
<td>lekha</td>
<td>[lekha]</td>
<td>to write.</td>
</tr>
<tr>
<td>lepa</td>
<td>[lepa]</td>
<td>to smear.</td>
</tr>
<tr>
<td>lelanē</td>
<td>[lelanō]</td>
<td>to set (a dog) upon.</td>
</tr>
<tr>
<td>leoya</td>
<td>[lewa]</td>
<td>to lick.</td>
</tr>
<tr>
<td>leṭekanē</td>
<td>[leṭkanō]</td>
<td>to slip off or away.</td>
</tr>
<tr>
<td>jana</td>
<td>[jana]</td>
<td>to sharpen (a knife).</td>
</tr>
<tr>
<td>japa</td>
<td>[japa]</td>
<td>to abuse, to curse.</td>
</tr>
<tr>
<td>jasana</td>
<td>[jasano]</td>
<td>to threaten.</td>
</tr>
<tr>
<td>jekha</td>
<td>[jekha]</td>
<td>to learn.</td>
</tr>
<tr>
<td>sija</td>
<td>[sija]</td>
<td>to be boiled, to boil.</td>
</tr>
<tr>
<td>sukane</td>
<td>[sukano]</td>
<td>to dry.</td>
</tr>
<tr>
<td>sōka</td>
<td>[sōka]</td>
<td>to smell.</td>
</tr>
<tr>
<td>sudheranē</td>
<td>[sudrano]</td>
<td>to cleanse, to purify.</td>
</tr>
<tr>
<td>sodheranē</td>
<td>[sodrano]</td>
<td></td>
</tr>
<tr>
<td>soṇa</td>
<td>[soṇa]</td>
<td>to smell.</td>
</tr>
<tr>
<td>Sodha</td>
<td>[Sodha]</td>
<td>to pay off.</td>
</tr>
<tr>
<td>Sudhane</td>
<td>[Sudhano]</td>
<td>to ask, to enquire.</td>
</tr>
<tr>
<td>Sodhano</td>
<td>[Sodhano]</td>
<td></td>
</tr>
<tr>
<td>Jona</td>
<td>[Jona]</td>
<td>to hear.</td>
</tr>
<tr>
<td>Julkano</td>
<td>[Julkano]</td>
<td>to kindle, to ignite.</td>
</tr>
<tr>
<td>Soga</td>
<td>[Soga]</td>
<td>to dry, to suck, to absorb.</td>
</tr>
<tr>
<td>Junlano</td>
<td>[Julano]</td>
<td>to ache.</td>
</tr>
<tr>
<td>Soya</td>
<td>[Sowa]</td>
<td>to sleep, to lie down.</td>
</tr>
<tr>
<td>se farkane</td>
<td>[Sotkano]</td>
<td>to run away, to steal off.</td>
</tr>
<tr>
<td>se farkane</td>
<td>[Sotkano]</td>
<td></td>
</tr>
<tr>
<td>seoya</td>
<td>[Sowa]</td>
<td>to endure.</td>
</tr>
<tr>
<td>seetane</td>
<td>[Sotano]</td>
<td>to ooze, to drip.</td>
</tr>
<tr>
<td>sajranane</td>
<td>[Sajrano]</td>
<td>to dress, to equip.</td>
</tr>
<tr>
<td>sata</td>
<td>[Sata]</td>
<td>to be rigid, to fasten.</td>
</tr>
<tr>
<td>saeterane</td>
<td>[Satrano]</td>
<td>to swim.</td>
</tr>
<tr>
<td>saitlane</td>
<td>[Saitlano]</td>
<td>to singe in oil or ghee.</td>
</tr>
<tr>
<td>sedhane</td>
<td>[Sedhono]</td>
<td>to go into, to enter.</td>
</tr>
<tr>
<td>saja</td>
<td>[Saja]</td>
<td>to dress.</td>
</tr>
<tr>
<td>sadha</td>
<td>[Sadha]</td>
<td>to perform, to solicit.</td>
</tr>
<tr>
<td>sapatane</td>
<td>[Saptno]</td>
<td>to fold, to grasp firmly.</td>
</tr>
<tr>
<td>sara</td>
<td>[Sara]</td>
<td>to repair.</td>
</tr>
<tr>
<td>siyane</td>
<td>[Siano]</td>
<td>to sew.</td>
</tr>
<tr>
<td>siyane</td>
<td>[Siano]</td>
<td></td>
</tr>
<tr>
<td>sopra</td>
<td>[Sopa]</td>
<td>to make over, to bestow.</td>
</tr>
<tr>
<td>sujha</td>
<td>[Sujha]</td>
<td>to listen, to understand.</td>
</tr>
<tr>
<td>sudhane</td>
<td>[Sudhano]</td>
<td>to ask, to interrogate.</td>
</tr>
<tr>
<td>se farkane</td>
<td>[Sotkano]</td>
<td>to turn up (as the nose in disgust).</td>
</tr>
<tr>
<td>se farkane</td>
<td>[Sotkano]</td>
<td></td>
</tr>
<tr>
<td>seka</td>
<td>[ʃ̪ɛka]</td>
<td>to bake (as bread).</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>---------------------</td>
</tr>
<tr>
<td>sēka</td>
<td>[ʃ̪ɛka]</td>
<td></td>
</tr>
<tr>
<td>seca</td>
<td>[ʃ̪ɛca]</td>
<td>to irrigate, to bale out (as water from a boat).</td>
</tr>
<tr>
<td>sōca</td>
<td>[ʃ̪œca]</td>
<td></td>
</tr>
<tr>
<td>hēoya</td>
<td>[howa]</td>
<td>to be, to become.</td>
</tr>
<tr>
<td>hēkečkane</td>
<td>[hœkœkane]</td>
<td>to be confounded.</td>
</tr>
<tr>
<td>hēta</td>
<td>[hœta]</td>
<td>to move backwards.</td>
</tr>
<tr>
<td>hērebeŋane</td>
<td>[hœrebeŋano]</td>
<td>to speak in a hurried and inarticulate manner.</td>
</tr>
<tr>
<td>kāka</td>
<td>[hāka]</td>
<td>to call aloud.</td>
</tr>
<tr>
<td>haka</td>
<td>[haka]</td>
<td></td>
</tr>
<tr>
<td>hāca</td>
<td>[hāca]</td>
<td>to sneeze.</td>
</tr>
<tr>
<td>hātkane</td>
<td>[hātkano]</td>
<td>to handle repeatedly, to seek for.</td>
</tr>
<tr>
<td>hāta</td>
<td>[hāta]</td>
<td>to walk.</td>
</tr>
<tr>
<td>hāpane</td>
<td>[hāpano]</td>
<td>to breath hard.</td>
</tr>
<tr>
<td>hāJa</td>
<td>[hāJa]</td>
<td>to laugh.</td>
</tr>
<tr>
<td>hafa</td>
<td>[hafa]</td>
<td></td>
</tr>
<tr>
<td>haga</td>
<td>[haga]</td>
<td>to ease one's self.</td>
</tr>
<tr>
<td>hajane</td>
<td>[hajano]</td>
<td>to rot in water.</td>
</tr>
<tr>
<td>hateŋano</td>
<td>[hatœŋano]</td>
<td>to feel one's way.</td>
</tr>
<tr>
<td>hatane</td>
<td>[hatano]</td>
<td>to secure or appropriate to one's self.</td>
</tr>
<tr>
<td>hana</td>
<td>[hana]</td>
<td>to strike.</td>
</tr>
<tr>
<td>hamelane</td>
<td>[hamelano]</td>
<td>to bleat as a calf.</td>
</tr>
<tr>
<td>hara</td>
<td>[hara]</td>
<td>to be defeated, to lose.</td>
</tr>
<tr>
<td>hedlane</td>
<td>[hedano]</td>
<td>to long for.</td>
</tr>
<tr>
<td>hela</td>
<td>[hela]</td>
<td>to slope, to wave to and fro.</td>
</tr>
<tr>
<td>horane</td>
<td>[hoŋano]</td>
<td>to gather, to form a crowd.</td>
</tr>
<tr>
<td>Grade</td>
<td>Person</td>
<td>Imperative</td>
</tr>
<tr>
<td>-------</td>
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</tr>
</tbody>
</table>

Translation is not meant to be literal.
<table>
<thead>
<tr>
<th>Grade</th>
<th>Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Head</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
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74. [kaete]
75. [kaete]
76. [katele]
77. [bo sche]
78. [boste]
79. [bo sle]
80. [bãc]  

81. [nobo]  

82. [khanda]
52. M L [boite]
53. M L [somjae]
54. M L [khamca]
55. M L [tuntwae]
56. M L [jhomjomie]
57. L [kacche] M
58. L [patte] M
59. L [jagle] M
60. L [pakle] M
61. L [korte] M