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Susanta Kumar Bardhan

A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH

Dr. Susanta Kumar Bardhan

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10/2B, Ramanath Majumdar Street Kolkata - 700 009

A Phonological Study of Chakma and English By Dr. Susanta Kumar Bardhan

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To My Mother Late Gopali Bardhan Date:- 12.12.09

Mr. L. B. Chakma Planning & Development Officer

Message

When I was the Arts & Culture of Officer, CADC, I used to talk to Dr. Susanta Kumar Bardhan regarding the linguistic systems of Chakma. He took the special interest in doing research in this language. I am now very happy to learn that his book A Phonological Study of Chakma and English is going to be published. This book, it is hoped will add a new dimension to the study of Chakma which is a less studied language and will draw the linguists to work on this language. Moreover, it will be useful to the language experts/teachers involved in the teaching of Chakma and English to the Chakma students.

Sd.
L. B. Chakma
Planning & Development Officer
CADC
Kamalanagar

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This book is the revised version of my thesis as a part of my M. Phil degree at Central Institute of English and Foreign Languages (CIEFL) (at present English and Foreign Language University, Hyderabad).

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Susanta Kumar Bardhan Suri, Birbhum

PREFACE

The present study entitled A Phonological Study of Chakma and English has been carried out within the framework of generative phonology. Chakma is an Indo-Aryan tribal language. No scientific linguistic study of this language has been undertaken so far to the best of my knowledge. As this is the first phonological study of Chakma, we begin with establishing the basic rudiments of Chakma phonology.

Chapter 1 of this study deals with the historical and socio-cultural background of Chakma tribe, the present status of Chakma as a language, and with whatever little work that has been done on Chakma language on the basis of traditional grammar. Here we also discuss the aim of the present study as well as the theoretical framework adopted for this study. We say that though the generative phonology has already reached a sophisticated level after the emergence of the Optimality Theory (Prince and Smolensky 1993 and Archangeli and Longendoen 1997), in our preliminary study we shall mainly try to find out the phonemes, the basic syllable template and some phonotactic constraints of Chakma.

Chapter 2 establishes the consonants of Chakma. By applying the principles of phonemic analysis to the linguistic data from Chakma we have tried to establish the distinctive consonant phonemes of Chakma. It has been found that in Chakma there are twenty-four consonant phonemes. Out of these twenty-four consonants, twelve are plosives, four are affricates, one is fricative, two are liquids, three are nasals, and two are semi-vowels.

Chapter 3 deals with the vowels of Chakma. Here also we have applied the principles of phonemic analysis to the linguistic data from Chakma in order to establish the vowel phonemes of

Chakma. Our analysis of the data in the light of these phonological principles has concluded that there are fourteen vowel phonemes in Chakma. Of these seven are pure vowels and seven are diphthongs.

Chapter 4 concentrates on establishing the syllable types of Chakma phonology. As this is a preliminary study, we have restricted our analysis of the syllable structure to only the monosyllabic, monomorphemic words of Chakma. The minimal and the maximal syllable templates have been established for all the monosyllabic, monomorphemic words of Chakma. Some phonotactic constraints operating on the syllable structure of Chakma have been explored/analysed in this chapter.

In Chapter 5 we make a comparative study between Chakma and English in terms of their phonemes and syllable structure. This comparison highlights the influence of Chakma sound system on English spoken by Chakma speakers. This Chapter concludes with a brief discussion on what could be the possible pedagogical implications of this study.

CONTENTS

ACKNOWLEDGEMENTS	Page
PREFACE	
CHAPTER 1: INTRODUCTION	11-21
1.1 The tribe	
1.2 The language and the script	
1.3 Aims and scope of the present study	
1.4 Salient comments of previous writers on Chakma	
1.5 Theoretical framework	
1.6 Conclusion	
CHAPTER 2: CONSONANTS OF CHAKMA	22-42
2.1 Introduction	
2.2 Plosives or stops	
2.3 Affricates	
2.4 Fricative	
2.5 Lateral	
2.6 Flap	
2.7 Nasals	
2.8 Semi-vowels	
2.9 Conclusion	
CHAPTER 3: VOWELS OF CHAKMA	43-62
3.1 Introduction	
3.2 Pure vowels of Chakma	
3.2.1 Front vowels	
3.2.2 Back vowels	
3.3 Diphthongs of Chakma	
3.4 Conclusion	

CHAPTER 4: SYLLABLE STRUCTURE OF C	ARLESTRUCTUR	E OF CHAKMA	63-78
------------------------------------	--------------	-------------	-------

- 4.1 Introduction
- 4.2 Syllable types of Chakma
- 4.3 Minimal and maximal syllable templates of Chakma
- 4.4 Phonotactic constraints of Chakma
- 4.5 Some other rules of Chakma phonology
- 6 Conclusion

CHAPTER 5: CHAKMA AND ENGLISH - A PHONOLOGI-

CAL COMPARISON

80-101

- 5.1 Introduction
- 5.2 Consonants of Chakma and English
- 5.3 Vowels of Chakma and English
- 5.4 Syllable structure of Chakma and English
- 5.5 Pedagogic implications
- 5.6 Conclusion

BIBLIOGRAPHY

102

CHAPTER 1 INTRODUCTION

1.1 The tribe

Chakmas are believed "to have descended from King Abhirath of *Sakhya* dynasty" (Singh 1994: 202). The majority of the Chakmas, however, do not accept it. The well-accepted notion is that they are Mongoloids (as their physical structure has affinity with that of Mongoloids). They migrated from their original homeland Aracan (a province in Mongolia) to the Eastern part of the Indian subcontinent. Hutchinson (1978) supports this view by saying:

The tribe is known as Thek by the Burmese and TuiThek by the Kukis ... the Chakmas are undoubtedly of Aracanese origin. (Hutchinson 1978: 21)

Talukdar (1988) comments in the same vein:

The word CHAWNGMA or SAWNGMA or CHAKMA or CHUKMA means the people of Tsak or Thek clan who are progenies of Burmese race. (Talukdar 1988: 6)

Their folklores and *Genghulies* (folksongs) uphold the same idea regarding their origin and homeland. However, scholars and historians (Lewin 1870, Sattar 1966, Grierson 1967, Hunter 1973, Chaudhury 1980, Chakma 1984, 1987, 1988, Chakma 1985, Chakma 1989, Dewan 1993, Khisa 1996, Majumdar 1997 and Bhattacharya 2000) differ in their opinions regarding the origin and background of the tribe and as a consequence, we do not have a clear cut scientific idea about them.

The Chakma tribe at present dominates the Chittagong Hill Tract (CHT) of Bangladesh, different parts of north—eastern India—south—western part of Mizoram, Northern and Southern districts of Tripura (these are adjacent to CHT), Tirap, Changlang, Subanuri and Lohit districts of Arunachal Pradesh, Karby-Anglong district of Assam

and the Eastern part of Mre yanmar. The total number of Chakma residing in these parts is around nine lakhs.

However, it is interesting to note that Chakmas are at present classified into three major groups or sections namely, Anokkya, Tongchongya and Dainnak, though within the tribal structure of society the are no distinguishable and clear cut caste divisions. As we are already aware that Chakmas used to live in the Arakan and Burma regions at least five hundred years upto the first half of the fourteenth century. But after that time they shifted to the surroundings of Chittagong Hill Tracts. The group of Chakmas who migrated from the Western part of Arakan province is known as Anokkya (in the Arakanese language the word Anok means a little west). Tengchongya section remained in the Arakan region as the word tong in the Arakanese language means hill). Another group of Chakmas known as Dainak used to serve the Arakanese army. The word dainnak in the Arakamnese language means soldier with shield. Broadly speaking, the Anokkyas are at present known as Chakmas.

In addition, within the Chakma societal system there are different small sub groups or subsections which are called in Chakma language *Gozas* and *Gutthhis*. Goza is some clans of Chakma people living under the control of a *dewan* or local landlord. Each of the clans within a goza is known as Gutthi. Roughly, there are forty Gozas and anoe hundred and thirty three Gtthuis among the present Chakna community living in different place as mentioned above (for details discussion on this readers are requested to refer to the books on Chakna listed in the bibliography.

It must be mentioned here that the jurisdiction of Chakma Autonomous District Council (CADC) established in 1972 on the basis of Sixth Schedule of the *Constitution of India* covers only the south-western part of Mizoram and the total population within

its jurisdiction is 32,506 according to the 2002 census report of Local Administration Department, CADC. The linguistic data for this phonological study of Chakma have been collected from the natives of the CADC area.

1.2 The language and the script

We begin our discussion on Chakma language by quoting what several researchers have to say about its status as a language. Grierson (1967: 321) says:

...in the Chakma Chief's circle situated in the country round the Karnaphuli river, a broken dialect of Bengali, peculiar to the locality, and of a very curious character, is spoken. It is called Chakma and is based on South-Eastern Bengali, but has undergone so much transformation that it is almost worthy of the dignity of being classed as a separate language ... Chakma is spoken by about 20, 000 people.

Hutchinson (1978: 18) says:

Chakma is a dialect of Bengali written in corrupt Burmese character.

Bechert (1979: 111) says:

Their (Chakmas') language is a peculiar dialect of Bengali.

Talukdar (1994: 46), on the contrary, says:

...It is obvious that Burmese and Chakma have no similarity. However, even with Bengali though there are some clear similarities in words like 'Aaju' (grandfather), quite a few words like Aalak (high) show that the roots of the two languages are quite different and it is difficult to accept that one has evolved from the other.

Chakma (1994: 7) says:

Although Chakma language and Bengali language have attained similarity and mutual intelligibility, one of them cannot be called the dialect of the other. This similarity or intelligibility has certainly and inevitably occurred mainly due to co-existence or living in geographical contiguity for a long time. But in fact, these two languages do not belong to common ancestry.

In spite of the existing debate on the status of Chakma as a language or a dialect, it is presently accepted as a language, so far as the linguistic and non-linguistic (social, political) factors are concerned. This is supported by Singh (1994: 202) who says:

They (Chakmas) speak Chakma, an Indo-Aryan tribal language, among themselves.

Despite the fact that Chakma is used as mother tongue by a huge number of people and has its own full fiedged script, very small number of literary works are found in it. *Rajmala* (history of Tripura), *Agartara*, *Genghulies* (folksongs), *Talik Sastras*, etc., are worthy of mention among the few Chakma literary/non-literary works written so far using the Chakma script. Most of the literary/non-literary works written by Chakma people are published even today using Bengali sc. ipt (Singh 1994). While talking about Chakma script, Grierson (1967: 321) says:

Chakma script is written in an alphabet which allowing for its cursive forms, is almost identical with the Khamer character, which was formerly in use in Combodia, Laos, Amam, Siam, and at least, the southern part of Burma. The Khamer alphabet is, in its own turn, the same as that which was current in the south of India in the sixth and seventh centuries. Burmese character is derived from it, but a much more corrupted form than the Chakma.

In course of his discussion on the characteristics of Chakma script, Chakma (1989) observes that the Chakma script is simpler than that of the other Indian scripts. He also agrees with Grierson (1967) regarding the origin of this script. The comment made by Majumdar (1997: 228) on Chakma script deserves a mention here:

...the Chakma script is basically of the ancient Indian Brahmi script. If we pay more attention to the style and character of the Chakma script then we will find that this script resembles mostly the ancient Southern Indian Brahmi script like Pallavi script or the present Tamil and Malayalam script, which originated from the Pallavi scripts.

Up to the middle part of 1990s only the Chakma Vaidvas (ayurvedic practitioners) used Chakma script for keeping records of the symptoms of the diseases and medicines. But afterwards the scenario has changed considerably in some parts of Chakma residing areas. The demand made by the Chakmas of Tripura, before the State Government of Tripura, for the introduction of Chakma as a separate subject at the primary level is a hallmark in the history of the development of the Chakma language. Again, until 1994-95 all the primary and middle schools (up to Class VII) under CADC used Bengali as the medium of instruction. Chakma students were taught Bengali and English and not Chakma at all. From 1994-95 onwards District School Education Board under CADC has introduced the teaching of Chakma from the primary to the middle school level and has made English a medium of instruction. Even a charitable crganization Sishu Karuna Sangha (situated in Kolkata), which is engaged in the development of the Chakma tribe, has introduced Chakma at the primary level in the school run by it.

The awareness of the linguistic right among the natives and the use of Chakma in the academic field have evidently increased to a great extent. Coupled with this, the financial and other supports from the State Government of Tripura and the CADC authority for its development have created congenial atmosphere for the enrichment of both the language and the linguistic community.

1.3 Aims and scope of the present study

No scientific linguistic study of Chakma before the present attempt to deal with some preliminary phonological study on this tribal language of eastern India has been done so far to the best of my knowledge. Some traditional grammarians and language experts (Chakma 1986, Chakma 1988, Talukdar 1994, etc.) have ventured to analyse this virgin language but their analyses and comments are solely based on traditional grammar and linguistics. In the light of the fact that CADC authority is at present endeavouring to develop this language by introducing it in the academic field and by planning to use it in the official works the present phonological study on it based on standard generative linguistics has been undertaken. As this is the first preliminary study of Chakma phonology, it solely aims at

- (a) finding out the basic phonological components in terms of consonants and vowels of Chakma,
- (b) establishing the syllable structure and some phonotactic constraints based on syllable structure of Chakma, and
- (c) making a comparative study of Chakma and English at the segmental level and suggesting pedagogic implications of this analysis.

It is hoped that an understanding of the similarities and differences between the sound patterns of Chakma and English will be of immense help to the innovative teachers of English who are aware of the problems and principles of teaching English as a second language, especially in the Indian context.

1.4 Salient comments of previous writers on Chakma

It has already been mentioned that no scientific study of this language has been done so far. In the books written on the social, political and economic aspects of the tribes of North-East India and CHT,

sporadic comments on Chakma along with other Indian tribal languages have been made. We also find that some traditional language experts have given a cursory look at this language and have written a page or two on some of its characteristic features. Some of the important works on Chakma are cited below in order to understand and concretize what has been said about this language. Grierson (1967: 321) says,

... in the Chakma Chief's circle situated in the country round the Karnaphuli river, a broken dialect of Bengali, peculiar to the locality, and of a very curious character, is spoken. It is called Chakma and is based on South-Eastern Bengali, but has undergone so much transformation that it is almost worthy of the dignity of being classed as a separate language ... Chakma is spoken by about 20,000 people.

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Chakma (1994:7) says,

Although Chakma language and Bengali language have attained similarity and mutual intelligibility, one of them cannot be called the dialect of the other. This similarity or intelligibility has certainly and inevitably occurred mainly due to co-existence or living in geographical contiguity for a long time. But in fact, these two languages do not belong to common ancestry.

Majumdar (1997: 208) says,

...it (Chakma) contains a huge store of words which are originally belonging to Sanskrit, Pali, Prakrit, etc. of Old Indo-Aryan (OlA) languages as well as Bengali, Assamese, Hindi, etc. of the New Indo-Aryan (NIA) languages. Moreover, many Chakma words are identical in use with the Tibeto-Burman and the Tibeto-Chinese languages, such as Arakenese or Burmese, Ahom, Thai, Kadai, Bodo, Tripuri, etc. In case of grammatical character the Chakma language also retains a distinct affinity with both the linguistic groups as mentioned above.

The famous philologist Chatterjee (1926) in his *Origin and Development of Bengali Language* has, while describing Bengali, occassionally analysed some inflections of Chakma. He, however, has not done an in depth study on this language. Sattar (1966) has shown the use of many Arabic and French words in Chakma. Chakma (1986) has written a Chakma grammar named *Naba Chandra Paththam Changma Byakaran* but it is totally based on traditional grammar and he has not said anything about the phonological aspect of Chakma.

1.5 Theoretical framework

It is evident from the works cited in section 1.4 that all the work done so far on Chakma is the result of surface limited knowledge and observation. The present study is an attempt to do a rigorous scientific study in order to establish the phonemes, the syllable structure and the phonotactic constraints of Chakma within the framework of generative phonology. Generative phonology as a

part of generative linguistics deals with the different complex phonological phenomena taking place within a given language and aims at establishing the principles that help the native speaker develop his internal grammar. To put it differently, researches in modern generative linguistics are undertaken with a view to concretize the Chomskyan concept of Universal Grammar (UG). The Principle and Parameter theory tells us that human languages are similar or even identical at the underlying structure because they develop from a common core

Generative phonology aims to answer which phonological representations and rules have developed from the UG in an individual as a result of exposure to the language of his environment. It aims to analyse how these phonological rules apply to compute the phonetic representations of the sounds of a language.

Following the path of Chomsky and Halle (1968) generative phonology has branched out into different areas like the natural phonology (Stampe 1979), the auto-segmental phonology (Kahn 1976, Goldsmith 1979, Clements and Keyser 1983, McCarthy 1985,) the lexical phonology (Kiparsky 1982, 1985, Mohanan 1982), the non-lexical prosodic phonology (Selkirk 1980, Aronoff and Sridhar 1983), the dependency phonology (Durand 1986, 1987 Selkirk 1988), the harmonic phonology (Goldsmith 1989, 1993, Wiltshire 1992), the optimality theory (Prince and Smolensky 1993, Archangeli and Langendoen 1997, Kager 1999), etc. Thus, it is a fact that generative phonology has already reached a sophisticated level of linguistic analysis.

Since the present research is a preliminary study of so far undiscovered Chakma phonology, we shall restrict ourselves to establishing the phonemes, the basic syllable structure and some phonotactic constraints of Chakma.

In order to deal with the phonological system of a language we need to follow some techniques of observation of linguistic data of that language. Kelly and Local (1989) have used the general term for phonological observation: Analytic Impressionistic Observation. This term suggests that all observation has analytic aspects and the observation and the eventual records concern the linguist's detailed subjective impression of the spoken language material they are working on. The analytic impressionistic observation is of five kinds:

i. Kinaesthetic awareness

It concerns itself with the organic movements of speech production. In employing it in observation a linguist consciously attempts to construe the heard material as audible vocal gestures.

ii. Analytic parametric listening

It states that phonetic observation begins by listening to speech in terms of independently varying auditory and movement parameters and a linguist needs to listen to the features of laryngeal and glottal behaviour independently of co-occurring oral articulatory concomitants of particular auditory sensation.

iii. Reference listening

A linguist, here, has to employ reference categories e.g. initiation type, phonation type etc. of various kinds provided by an institutionalized general phonetic and phonological theory.

iv. Relativistic listening

It mainly states that the internal relating of auditory complexes identified as vocoid portions assists a linguist in making more precise observations and helps him identify small differences. It also helps him to find out the relationship of any given sound complex to other similar complexes in the same language.

v. Holistic listening

A linguist, here, has to try to attend to auditory features characterising whole stretches of utterances. In other words, a linguist attempts to listen in terms of attending closely to the details of the overall characteristics of longer stretches of the material.

In this study we have not done the instrumental analysis of the native speakers' utterances. On the basis of simply listening to the native speakers' utterances as well as my knowledge of Chakma the linguistic data on Chakma have been collected and observed for this phonological study. Thus, for this study we have followed the phonological techniques like analytic parametric listening, reference listening and relativistic listening.

1.6 Conclusion

In this chapter we have discussed the geographical area occupied by the Chakma tribe, the script and some history of Chakma, aims and scope of the present study in the background of the previous work done on Chakma and the theoretical framework used for this study. In the next Chapter we shall try to establish the consonant sounds of Chakma phonology.

CHAPTER 2 CONSONANTS OF CHAKMA

2.1 Introduction

In this Chapter we shall try to establish and describe (with examples) the Chakma consonant sounds and their allophonic variants, if any. In order to do this we shall take the help of the five principles of phonemic analysis (Hockett 1963)¹. These are discussed below:

i. The principle of contrastive distribution:

If two sounds in a given language occur in an identical environment and the substitution of one with the other brings about the change in meaning, these two sounds are said to be in contrastive distribution and they belong to different phonemes. For example, in English the sounds /t/ and /d/ contrast with each other. This can be seen in the existence of the minimal pairs like [tip] and [dip] etc. where the substitution of /t/ and /d/ brings about a change in the meaning. We can, therefore, say that they are in constrastive distribution and belong to different phonemes.

ii. The principle of complementary distribution:

This principle states that if two sounds of a particular language occur in mutually exclusive environment, they are said to be in complementary distribution. However, mere complementation is not in itself enough to assign two sounds to a single phoneme. In English, for example, the initial [p] is in complementation with all six final stops [p, t, k, b, d, g]. In order to decide the phonemic relation between initial [p] and other final stops in English we have to bring in the next principle i.e. the Principle of phonetic similarity.

iii. The principle of phonetic similarity:

This principle involves the assumption that if a phoneme is represented in two of more environments, there will be high degree of phonetic

Hockett (1963) talks about four fundamental principles of phonemic analysis as he has combined the first two principles mentioned here. These are also known as discovery procedure in the structuralist paradigm.

similarity among the allophones involved. Thus English initial [p] is obviously more similar to final [p] than to any other final stops. This similarity accompanied by the complementation leads almost all analysis to conclude that the two allophones represent the same phoneme /p/.

This principle also states that if two sounds have no phonetic similarity, then they are likely to belong to two different phonemes. Let us consider English sounds /h/ and /ŋ/. They have almost no phonetic property in common. /h/ is voiceless glottal fricative and /ŋ/ is voiced velar nasal. Therefore, though they are in complementary distribution in English, they are not considered to be allophones of the same phoneme.

iv. The principle of pattern congruity:

According to this principle, there is usually a pattern in the way sounds are organized in a language. For example, if a language has a pattern where voiceless phonemes contrast with voiced phonemes, then this contrast would be present through all the sounds of the language. In a given language sounds /p/ and /b/, /k/ and /g/ and /s/ and /z/ are established as different phonemes with the help of minimal pairs. But if in the same language there are no minimal pairs for sounds like /t/ and /d/, then on the basis of the principle of pattern congruity we can hypothesize that /t/ and /d/ should also be different phonemes.

v. The principle of economy:

This principle states that the smaller the number of phonemes in a language, the better it is. If a language is analyzed in terms of thirty phonemes according to one theory/phonologist and the same language is analyzed in terms of twenty-eight phonemes by another theory/phonologist, the latter analysis is considered as the better one. But it is the most vague principle of phonemic analysis.

By scientifically applying these principles of phonemic analysis to the linguistic data from Chakma we find that there are twenty-four consonants in Chakma. On the basis of listening to and the analysis of the native speakers' utterances we have classified the Chakma consonants into six broad categories. These are: plosives, fricatives, affricates, liquids nasals and semi-vowels as shown in Table 1 below.

Table 1: Consonant Chart of Chakma²

	Bilabial	Dental	Alveolar	Post- Alveolar	Palato Alveolar	Palatal	Velar	Glottal
	VL VD	VLVD	VLVD	VLVD	VLVD	VL VD	VL VD	VL VD
Plosive	p b ph bh	ţ d ţh dh					k g kh gh	
Fricative								lı
Affricate						čj		
						čh jh		
Lateral			1					
Flap				r				
Nasal	m		n .				ŋ	
Semi- Vowel	w					j	(w)	

VL = Voiceless VD = Voiced

In this context, we must also refer to Majumdar (1997) who has discussed the sounds of Chakma. He has classified Chakma consonants on the basis of the place of articulation into seven categories. These are labial, dental, alveolar, alveo-palatal, palatal, velar and glottal. The sounds belonging to these categories, according to Majumdar (1997), are as follows:

i. Labial — Pa, Ba, Ma
ii. Dental — Ta, Tha, Da,
iii. Alveolar — Ra, La, Ja

² We do not find any palato-alveolar sounds in Chakma.

- iv. Alveo palatal Cha, Sha, Sa, Ya
- v. Palatal Ya
- vi. Velar ka, Ga, nga.
- vii. Glottal kha, Gha, Ha,

Majumdar (1997) has further classified Chakma Consonants on the basis of the manner of articulation into five categories. There are: plosive, fricative, slite, grave and affricate. The sounds that come under these respective categories are stated below:

(2)

- i. Plosive Ga, Da,
- ii. Slit Ha, Pa, ka,
- iii. Grave Sha, Sa, and
- iv. Affricate (a) Palatal affricate Cha, and (b) Alveolar affricate Chha

(The transcription is that of Majumdar (1997). He has not mentioned any sound against fricative.

In the following sections we shall try to establish the consonants of Chakma as shown in the Table 1 with the help of the principles of phonemic analysis mentioned above. In order to describe the consonants of Chakma three term labels are used to indicate the state of the vocal cords, the place of articulation and the manner of articulation. An attempt has also been made to state the distribution and allophonic variations (if any) of each sound.

2.2 Plosives or stops

In Chakma there are twelve plosive sounds as these are produced by the complete closure of the oral cavity and sudden release of the air stream. If we classify the plosives of Chakma according to their place of articulation, we find that there are three types of plosives in Chakma. These are:

A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH

- a. Bilabial plosives / p, ph, b, bh/
- b. Dental plosives /t, th, d, dh/
- c. Velar plosives /k, kh, g, gh/

Let us now see how we can establish each of these sounds as phonemes on the basis of the principle of contrastive distribution discussed above.

2.2.1 Bilabial plosives

A. Description:

26

As stated earlier there are four types of bilabial plosives in Chakma. These are /p/, /ph/, /b/ and /bh/. The description in terms of three term labels for each of these plosives is as follows:

/p/ is a voiceless unaspirated bilabial plosive. /ph/ is a voiceless aspirated bilabial plosive. /b/ is a voiced unaspirated bilabial plosive. /bh/ is a voiced aspirated bilabial plosive.

The phonemic status of each of these plosives in Chakma can be established with the help of the following minimal pairs that exist in the language.

(3)(a) i. paŋ	'(I) get '	(b) i.	pak	'cooking'
ii. phaŋ	'invitation'	ii.	phak	ʻgapʻ
iii. baŋ	'left'	iii.	bak	'swath'
iv. bhaŋ	'drug'	iv.	bhak	'share'
(c) i. daba	'hubble bubble'	(d) i.	∫ap	'snake'
ii. dabha	'dowry',	ii.	Saph	'clear'

The data in (3) show that all the four bilabial plosives form minimal

pairs in Chakma. The substitution of one bilabial plosive with the other brings a change in the meaning of the word. Thus, we can safely conclude following the principle of contrastive distribution that these four sounds are in contrastive distribution and so belong to different phonemes of Chakma.

B. Distrbution:

The sounds /p/ and /ph/ occur in all the three positions in Chakma. The sounds /b/ and /hb/ occur only word initially and medially in Chakma and they do not occur in the word final position. Consider, for example, the data given below in (4) and (5).

(4)(a) i. poran	'life'	(b) i.	phul	'flower'
ii. pun	'rump'	ii.	phol	'fruit'
iii. pigire	'ant'	iii.	pheja	'straw'
iv. hoppor	'trap'	iv.	laphphan	'the profit'
v. gopje	'(he)' talked	l" v.	ničphol	'barren'
vi. ţɒţpɒr	'active'	vi.	hojophphul	'a kind of
				ear ring'
vii. lap	'step'	vii.	toroph	'side'
viii.gop	'story'	viii.	tariph	'praise'
ix.dap	'vanity'	ix.	laph	'profit'
(5)(a) i. bæk	'all'	(b) i.	bhaluk	'many'
ii. buk	'chest'	ii.	bhaţ	'rice'
iii. bol	'support'	iii.	bhul	'wrong'
iv. aba:	'air'	iv.	ubho	'a kind of
				weeds'
v. gabur	'young' (mo	le) v.	∫ibhε	'that one'
vi. nabiţ	'barber'	vi.	gobhin	'deep'

2.2.2 Dental plosives

A. Description:

In Chakma we find four types of dental plosives. These are $/\frac{t}{r}$, $/\frac{t}{r}$ h, d and dh. The description of each of the dental plosives is given below:

/t/ is a voiceless unaspirated dental plosive. /th/ is a voiceless aspirated dental plosive /d/ is a voiced unaspirated dental plosive /dh/ is a voiced aspirated dental plosive.

Now consider the data given in (6) to determine their phonemic status in Chakma:

It can be observed from the data in (6) that the dental plosives like the bilabial plosives have voicing and aspiration in contrastive distribution. Thus, on the basis of the principle of contrastive distribution we can state that these four dental plosives in Chakma are separate phonemes.

B. Distribution:

The sounds /t/ and /th/ occur in all the three positions in Chakma. The sounds /d/ and /dh/ occur only in the word initial and medial positions in Chakma and both of the sounds like the voiced bilabial plosives do not occur word finally. This is illustrated through the data given in (7) and (8).

(7)(a) i.	ţin	'three'	(b) i.	thagur	'god'
ii.	ţɒgɒţ	'frequent'	ii.	ţhal	'plate'
iii.	ţam	'cashew nut'	iii.	ţhu	'out of order'
iv.	pokţa:	'fat (male)'	iv.	guththe	'brain'
V.	∫iţţi	'child'	v.	maththan	'the field'
vi.	maţţol	'drunkard'	vi.	piţhţhimi	'earth'
vi.	aţ	'hard'	vii.	moth	ʻpagoda'
vii.	paţ	ʻjute'	viii.	ghoţh	'water pot'
ix.	moroţ	'male'.	ix.	aţh	'eight
(8) (a) ;	dighol	'long'	(b) ;	dhun	'white'
	-	_		dhup	
ii.	din	'day'	11.	dhεl	'loose'
iii.	daţ	'tooth'	iii.	dhogi	'beautiful'
iv.	idi	'trap'	iv.	lεdha:	'weak`
v.	lεda:	'harsh'	v.	badhi	'short'
vi.	todεk	'parrot'	vi.	qodha:	'dam'

2.2.3 Velar plosives

A. Description:

We find that Chakma has four velar plosive sounds. These are /k/, /kh/, /g/ and /gh/. The description of each of the Chakma velar plosives is given below.

/k/ is a voiceless unaspirated velar plosive. /kh/ is a voiceless aspirated velar plosive. /g/ is a voiced unaspirated velar plosive. /gh/ is a voiced aspirated velar plosive.

Let us now consider the minimal pairs given in (9).

30 A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH

(c) i.	gaţ	'pit'	(d)	i.	gor	'fort'
ii.	ghaţ	'bank'		ii.	ghor	'house'
(e) i.	phagara	'cheat'		ii.	phaghara:	'hoe'

The minimal pairs of (9) indicate that the velar plosives are in contrastive distribution and thus they belong to different phonemes in Chakma.

B. Distribution:

The sounds /k/ and /kh/ occur only word medially and finally in Chakma. They do not occur word initially. The sounds /g/ and /gh/ occur only in the word initial and medial positions and do not occur in the word final position. The examples In this respect are given below in (10) and (11).

(10)(a)	i mokke	'maize'	(b) i.	pokkho	'formight'
	ii. hakka:	'uncle'	ii.	bhakkha:	'system'
	iii. pokți	'fat (female)	' iii.	∫okhkhun	'eyes'
	iv. ∫pdpk	'ray'	iv.	makh 'ten	th month of
				loca	al Calendar'
	v. palok	'fostering'	v.	∫ukh	'happiness'
	vi. magoro	k 'spider'	vii.	dukh	'suffering'
(11)(a)) i. gel	'abusive wo	ord'(b)i.	ghonoda	'veil'
	ii. gumor	'private'	iL	ghiluk	'brain of
					an insect'
	iii. gojen	'lord'	iii.	gham	'sweat'
	iv. bigidi	ʻjoke'	iv.	doghin	'south'
	v. magana	ı: 'polish'	v.	beghena	'tadpole'
	vi. agač	'sky'	vi.	daghil	'submitting'

In the present and previous two sections we have dealt with the bilabial, dental and velar plosives of Chakma. We have established

their phonemic status and distributions in Chakma. In the present work we do not find any significant allophonic variants of all kinds of plosives discussed above. In the next section we shall deal with the affricates of Chakma.

2.3 Affricates

A. Description:

In Chakma we find four types of affricate sound /c/, /ch/, /j/ and /jh/ as these are produced with the stricture of complete closure and slow release. These four affricates of Chakma can be described as follows:

/c/ is a voiceless unaspirated palatal affricate. /ch/ is a voiceless aspirated palatal affricate. /j/ is a voiced unaspirated palatal affricate. /jh/ is a voiced aspirated palatal affricate.

To illustrate their phonemic status in Chakma let us now consider the date given in (12).

(12)(a) i. mad	'month'	(b) i.	bač	'smell'
ii. mad	ch 'fish'	ii.	bačh	'bamboo'
(c) i. j̇̃pr	'fever'	(d) i.	aji	'laugh'
ii. jho	r 'rain'	ii.	aj̃hi	'eighty'

From the analysis of the above data we find that the sounds $/\check{c}/, /\check{c}h/, /\check{j}/$ and $/\check{j}h/$ are in contrastive distribution and thus they are different phonemes in Chakma.

B. Distribution:

The sounds /c/ and /ch occur only word medially and finally but not word initially in Chakma. The sounds /j/ and /jh/ occur only word

initially and medially but not word finally. The examples for these are given below in (13) and (14):

_		`				
(3) (a)) i.	paŋ	'(I) get '	(b) i	. pak	'cooking'
	ii.	phaŋ	'invitation'	i	i. phak	ʻgapʻ
(4.5)						
(13)(a)) i.	manuč	ćun 'men' (b)	i.	mačhčhun	ı 'fishes'
			'completely'		-	
	iii.	dæč	'the country'	iii.	dočhčhan	'ten
						(definite)'
	iv.	duč	'guilt'	iv.	hečh	'hair'
	v.	bhač	'fold'	V.	gačh	'tree'
	vi.	læč	'tail'	vi.	ţeičh 'tv	wenty three'
(14)/6	١:	~a1	Scientificano (1.)		~1	
(1+)(a			'aisturbance' (b		•	'shifting
			'yoke'	ii.	jhimiţ	'lighting'
			cold'	iii.	jhεlεŋ	'scarcity'
	iv.	lĩji	'holy'	iv.	aɟȟi	'eighty
	V.	haj̇̃or	'diit'	V.	aj̃ha:	'hope'
	vi.	hajja	'raw'		bojhor	'year'.

Note that in Chakma affricate $/\tilde{c}/$ does not occur word initially and occurs in other positions as shown above while fricative $/\int$ occurs only word initially as illustrated in (15).

(15)	i. ∫egar	'many'
	ii. ∫ara	'end'
	iii. ∫ɒra:	'streamlet'
	iv. ∫obon	'dream'
	v. ∫uroni	'memory'

³In Bardhan (1999) I considered the sounds /c̄/ and/ʃ/ as different phonemes in Chakrm I am indebted to Prof. B. A Prabhakarbabu, Centre for Phonetics and Spoken English, The English and Foreign Lanuages University, Hyderabad for helping me to decide the present conclusion.

Thus these two sounds are in complementary distribution in Chakma³. Notice further that these two sounds have phonetic similarity as the three-term description of these sounds, given below, suggest that they differ only in manner of articulation.

/c/ is a voiceless palatal affricate.

/ʃ/ is a voiceless palato alveolar/palatal fricative.

Following the principles of complementary distribution and phonetic similarity we argue that /c/ and /f/ are allophones of the same phoneme in Chakma. As occurrence of /f/ is unique i.e. word initial position, it cannot be a phoneme in Chakma. Therefore, /c/ is the phoneme and it becomes /f/ in the word initial position (we do not elaborate this further for the lack of space).

2.4 Fricative

In Chakma there are no bilabial, dental and alveolar fricative sounds. Chakma has only two fricative sounds. These are /ʃ / and /h/. During their articulation two speech organs are brought together and held sufficiently close together for the escaping of air stream to produce a strong friction. In the previous section we dealt with palato-alveolar fricative /ʃ/ and argued that this sound is an allophone of the phoneme /c/. Now the remaining fricative /h/ is described in the following section.

2.4.1 Glottal Fricative

A. Description:

In Chakma there is only one glottal fricative sound /h/. The sound /h/ can be described as a voiceless glottal fricative. Let us now consider the data in (16) where /h/ forms minimal pairs with other sounds of Chakma.

A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH (16)(a)i ham 'work' (b) i hora 'strict' "" show 'sweets' "" fame 'stroop

(10)(a)L	mann	WOIK	(0) :.	iibia	Saret
ii.	gham	'sweats'	ii.	∫ora	'streamlet'
(c) i.	hogora	'stale'	(d) i.	∫ohor	'town'
ii.	bpgpra	'toothless'	ii.	bohor	'breadth'

(e) i. hem 'split bamboo' ii.pem '(I) shall get'

The minimal pairs in (16) suggest that \ln/\ln is in contrastive distribution with other sounds like $\ln/\ln/\ln/\ln/\ln/\ln$ and $\ln/\ln/\ln$ tc. in Chakma. Thus \ln/\ln can be considered as a distinctive phoneme of Chakma.

B. Distribution:

The sound /h/ occurs only word initially and medially in Chakma as illustrated by examples in (17):

(17) i.	hobor	'news'
ii.	haron	'cause'
iii.	huduk	'porcupine
iv.	hoč	'itching'
v.	յiŋhani	'life'
vi.	behup	'inconvenient'
vii.	ďρμο	ʻlake'
viii.	pohor	'a part of the day'

We have seen that the /h/ in Chakma word initially and medially as shown in the above data. On the basis of the observation on the Chakma data, we see that the fricative sound /h/ becomes voice glottal fricative /ħ/ when it occurs intervocalically. Notice that is other positions where this sound occurs it is always /h/. Thi observation suggests that /h/ and /ħ/ are in complementar distribution in this language and they are allophones of the sam phoneme. Now the inevitable question is which one is the phonem

and which one is the allophone of that phoneme. If we observe critically, we find that in a particular fixed environment (here in the intervocalic position)/fi/occurs and/h/occurs in all other positions as stated above. We can, therefore, conclude that /h/ is the phoneme in the language and /fi/ is the allophone of the phoneme /h/.

2.5 Lateral

A. Description:

In Chakma there is one lateral phoneme /l/. It is called lateral as it is articulated with the stricture of partial closure with the air escaping from both sides of the tongue. The sound /l/ can be described as a voiced alveolar lateral.

To establish the phonemic status of /l/ in Chakma sound system consider the minimal pairs given below:

(18)(a)	i.	lak	'reach'	(b)	i.	læk	'row'
	ii.	bak	'swath'		ii.	næk	'husband'.
(c)	i.	lεi	'whim'	(d)	i.	hola	'frying'
	i	bhei	'brother'		ii.	hoba	'crow'
(e)	i.	∫ol	'rice'	(f)	i.	mɛl	'throwing'
	ii.	∫okh	'eye'		ii.	mer	'beating'

The minimal pairs in (18) suggest that the sound /l/ contrasts with other sounds like /k/, /kh/, /b/, /h/ and /r/, etc. in Chakma. Thus it can be concluded that the sound /l/ is a distinctive sound or a phoneme of Chakma.

B. Distribution:

The sound /I/ occurs in all the three positions in Chakma as shown in the data given below:

(19)	i.	ludi	'creeper'
•	ii.	lagha	'light'
	iii.	limu	'lemon'
	iv.	boli	'strong'
	v.	pollem	'first'
	vi.	mala	'garland'
	vii.	padol	'thin'
		labad	'change'
	ix	ril	'red'

This lateral phoneme of Chakma does not have any allophonic variants.

2.6 Flap

A. Description:

In Chakma there is only one flap sound /r/. The sound /r/ can be described as a voiced post-alveolar flap. Let us consider the following minimal pairs contrasting /r/ with other sounds of Chakma.

(20) (a) i.	roŋ	'colour'	(b)	i.	rana	'widower'
ii.	dpŋ	'extra'		ii.	bana	'only'
(c) i.	∫ara	'finished'	(d)	i.	bera	'fence'
ii.	∫ana	'looking'		ii.	bεla	'violin'
(e) i.	jεr	'back'	(f)	i.	thor	'rank'
ii.	j̃εp	'pocket'		ii.	thok	'cheat'

In the above minimal pairs we find that the sound/r/contrasts with other sounds like l/, p/, n/ and k/, etc. in Chakma. Thus, the sound/r/can be identified as a separate phoneme of Chakma.

B. Distribution:

The sound/r/occurs in all the three positions in Chakma as illustrated in the data given in (21) and does not show any allophonic variants

to the best of my knowledge.

(21)	i.	reţ	'night'
	ii.	ranjuni	'rainbow'
	iii.	rani	'widow'
	iv.	uriŋ	'deer'
	v.	larei	'battle'
	vi.	phoron	'shifting'
	vii.	∫εgar	'huge'
,	viii.	bægor	'of all'

So far we have discussed Chakma plosives, affricates, fricative, flap and lateral sounds. The next section attempts to deal with the nasals of Chakma.

2.7 Nasals

A. Description

In Chakma there are three types of nasals during the production of which the soft palate is lowered and the air stream is allowed to escape through the nasal cavity. These are /m/, /n/ and /n/. The three nasals can be described as follows:

```
/m/ is a voiced bilabial nasal.
/n/ is a voiced alveolar nasal.
/ŋ/ is a voiced velar nasal.
```

Now consider the following minimal pairs from Chakma:

(d) i. ham (c) i. bena: 'plait' 'work' bεŋa: 'bent' ii. han 'blind' ii. 'violin' haŋ '(I) eat' bεla iii. iii. (e) i. 'beetle leaf' pan '(I) get' ii. paŋ ііі. pal 'group'

The data in (22) depict that the three nasals of Chakma are in contrastive distribution with each other and with other sounds of Chakma. Thus, they can be identified as separate phonemes of Chakma.

B. Distribution:

38

In Chakma the sounds/m/ and /n/ occurs in all the three positions when the sound /ŋ/ occurs only word medially and finally but not initially. To illustrate this following data are given below in (23), (24) and (25).

(23)	i.	manek	'gem'		
į.	ii.	mɒgɒda	'dead'		
·	iii.	maj̃hi	'fly'		
	iv.	jamei	'son-in-law'		
	V.	ţumi	'you (plural)'		
	vi.	dɒma	'piece'		
	vii. dam		'price'		
	viii.	bodam	'ground nut'		
	ix.	jam	'black fruit'		
(24)		niguč nadin	'fine' (in texture)' 'grandson'		
		nanu ∫ona	'maternal grandmother' 'gold'		
	•	3	3		

'(he) obeys'

v.	manε	'(he) obeys'		
vi.	thogana	'searching'		
vii.	dan	'gift'		
vii.	bon	'forest'		
viii.	∫obon	'dream'		
(25) i.	dangu	'gentleman (address)'		
ii.	∫aŋma	'Chakma'		
iii.	ghoŋoḍa	'cover'		
iv.	∫iriŋ	'tiny'		
V.	bjoŋ	'a wooden cylinder in		
		handloom'		
vi.	gaŋ	'river'		

In addition to the above discussed nasals, there are two more nasals in Chakma. These are:

 $/\eta$ / is a voiced palatal nasal. /n/ is a voiced dental nasal.

These nasal sounds, however, occur in specific environments. These are as follows. /n/ occurs when followed by a palatal consonant and /n/ occurs when followed by a dental consonant as exemplified in (26) and (27). Note that these sounds always occur in the middle position of polysyllabic words and also function as the coda of the syllables in which they occur.

(26)	i. anjon	'torture' -
(- /	ii. ron j on	'a name'
	iii. ∫ɒɲčɒi	'savings'
	iv. tຼເກັງນາງ	'curved'

(27) i. mondor 'spell'
ii. purnendu 'a name'
iii. undur 'rat'
iv. \anto 'calm'

Note that these two nasals do not contrast each other and they differ with alveolar nasal /n/ in place of articulation. They are also in complementary distribution with alveolar nasal, as it does not occur before palato-alveolar and dental consonants. Again, if the native speaker is asked to pronounce words having dental/palato-alveolar nasals with pause in the syllable boundaries, they replace these nasals with alveolar nasal. These observation and analysis testify that the sounds /p/ and /n/ are the allophonic variants of the phoneme /n/. Thus, the phoneme /n/ is realized as /p/ and /n/ when followed by palato-alveolar and dental nasal respectively and as /n/ in other positions.

In this section we find that in Chakma there are three nasal phonemes: /m/, /n/ and /n/ and /n/ and /n/ are the allophonic variants of the phoneme /n/. In the next section we shall discuss the semi-vowels of Chakma.

2. 8 Semi-vowels

A. Description:

In Chakma there are two semi-vowels. There are /j/ and /w/. The semi-vowels can be described as follows:

/j/ is a voiced palatal semi-vowel. /w/ is a voiced labio-velar semi-vowel.

Let us now consider the data given in (28).

(28)(a) i.	jεţ	'end'	(b) i.	joţ	'here'
ii.	reţ	'night'	ii.	woţ	'in that
					place'
(c) i.	wor	'cover'	(d) i.	joo	'this'
ii.	por	'pond'	ii.	woo	'that'
	-		iii.	boo	'newly married
					women'

The above data indicate that the semi-vowels /j/ and /w/ contrast with each other and also with other sounds of Chakma. So it can safely be concluded that the two sounds /j/ and /w/ belong to different phonemes in Chakma.

B. Distribution:

Both /j/ and /w/ occur w0ord initially and medially but not finally as exemplified in (29) and (30).

- · · · · 1	() ()	
(29) i.	jomai	'in the mean time'
ii.	jouriŋ	' rein deer'
iii.	jεŋ	'a kind of insect'
iv.	pjok	'finished'
v.	mjeţ	'time'
vi.	∫jok	'very swift'
(30) i.	wor	'melicious looking'
ii.	wia	'a kind of worship'
iii.	waŋ	'a big kite'
iv.	dwoo	'feather'
v.	nwoo	'new'
vi.	ſwoth	'taste'
	J "	

Semi vowels of Chakma do not have any allophonic variants so far as our observation goes.

2.9 Conclusion

To summarize this chapter we find that the Chakma consonant system consists of twenty-four distinctive consonant sounds. On the basis of the analysis done with the help of the principles of phonemic analysis we could identify twelve plosives, one fricative, four affricates, one lateral, one flap, three nasals and two semi-vowels. We have also shows the allophone(s) of /c/. /h/ and /n/ as dealt with in sections 2.3, 2.4.1 and 2.7.

Armed with the insights developed in the present chapter, In the next chapter we will attempt to deal with the vowel sounds of Chakma in detail and establish their phonemic status and allophonic variation if any.

CHAPTER 3 VOWELS OF CHAKMA

3.1 Introduction

In the last Chapter we have dealt with the distinctive consonant sounds of Chakma. In order to do that we had to use the principles of phonemic analysis. The present Chapter is devoted to the establishment of the vowel sounds of Chakma by meticulously applying the principles of phonemic analysis to the linguistic data from Chakma. Vowels are generally divided into two broad categories – pure vowels or monophthongs and vowel glides or diphthongs. In the following sections we shall try to describe and analyse the Chakma vowels with reference to the cardinal vowel scale. We shall describe the vowels using the three term labels. For the description of vowel sounds we describe the height of the tongue, the part of the tongue and the position of the lips.

In the following sections we shall try to establish the vowel sounds of Chakma as shown in the Figure 1 with the help of the principles of phonemic analysis mentioned above. In order to describe the vowels of Chakma three term labels are used to indicate the part of the tongue, the height of the tongue and the position of the lips. An attempt has also been made to state the distribution of each sound.

3.2 Pure vowels of Chakma

In Chakma there are seven pure vowels. Of these three are front vowels /I/, / ϵ /, / ϵ / and /a/ and three back vowels /D/, /o/ and / u/ as shown in Figure I.

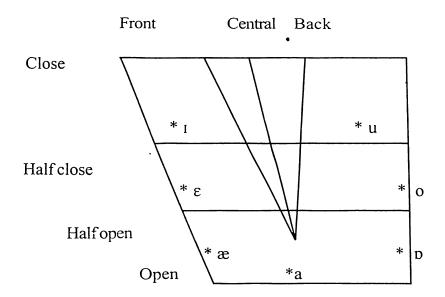


Figure 1: Pure Vowels of Chakma

These are discussed in the following sections.

3.2.1 Front vowels

The description and analysis of the three front vowels /1/, $/\epsilon/$, $/\epsilon/$ and /a/ of Chakma are as follows:

3. 2.1.1 Front vowel /1/

A. Description:

For the production of the vowel /1/ the front part of the tongue is raised to a height between half close and close position. The lips are always unrounded. The tongue position of the vowel /1/ is shown in Figure 1. Let us now consider the following data.

(1)(a) i.	рıţ	'bile'	(b)	i.	ıl	'satisfaction'
ii.	pæţ	'belly'		ii.	εl	'green'
(c) ii.	dık	'insect'	(d)	i.	halı	'empty'
ii.	dok	'dove'		ii.	hala	'deaf'
(e) i.	ţıl	'a kind o	foil seed	l'ii	. ţal	'huge'

The data in (1) indicate that the vowel /1/ forms minimal pairs with vowels like /æ/, /o/ and /a/, etc., in Chakma. We can therefore safely conclude that the vowel /1/ is a distinctive phoneme in Chakma.

B. Distribution:

The vowel /ı/ occurs word initially, medially and finally in Chakma as illustrated by the data given in (2).

ıdı	'here'
. ıŋ∫ε	'envy'
. ıţ	'brick'
. mıde	'sweet'
. bi j u	'festival'
. hijhu	'something'
. madı	'soil'
. duri	'rope'
. garı	'cart'
	ıţ mıde biju hijhu madı durı

3.2.1.2 Front vowel /ε/

A. Description:

The Chakma vowel $/\varepsilon$ / is produced by raising the front part of the tongue to a height between half-open and half-close position. The lips are always unrounded during the production of this vowel. The tongue position of the vowel $/\varepsilon$ / is shown in Figure 1. We shall now consider the following data in order to find out the phonemic status of $/\varepsilon$ / in Chakma.

```
'(I) shall come'(b) i. pɛk
                                                  'bird
(3)
     (a) i. εm
                     'heat'
                                     ii. pak
                                                  'cooking'
             um
                     'fat belly'
                                   (d) i. pher
                                                  'adjustment'
     (c) i. mek
                     'a tribal group' ii. phor
                                                  'feather'
         ii. mpk
         i. tare
                     'him'
     (e)
                     'bundle'
         ii.
             tarı
```

The minimal pairs in (3) show that the sound $/\epsilon$ and other vowels like $/\upsilon$, $/\iota$, $/\iota$, and $/\iota$, etc., are in contrastive distribution and thus $/\epsilon$ can be treated as a separate phoneme in Chakma.

B. Distribution:

The vowel /ɛ/ occurs word initially, medially and finally in Chakma. Consider, for example, the following data.

(4)	i.	εra	'meat'
	ii.	εrana	'peeling'
	iii.	εdhogε	'in this manner'
	iv.	rukkeŋ	'meeting place of two hills'
	V.	ţεk	'tum'
	vi.	pedala	'portmanteau'
	vii.	εčjε	'(he) came'
	viii.	pıj̃ε	'husband of father's sister'
	ix.	gorιjε	'doer'

3.2.1.3 Front vowel /æ/

A. Description:

During the production of the Chakma vowel /æ/ the front part of the tongue is raised to a height between open and half open position and the lips are always unrounded. The tongue position of the vowel /æ/ is shown below. Let us now consider the following minimal pairs.

- (5)(a) i. næk 'husband'. (b) i. bæk 'all' ii. nak 'nose' ii. buk 'chest'
 - (c) i. tæ 'he' (d) i. anæ '(he) brings' ii. to 'your(singular)' ii. anı '(we) bring'

In the data given in (5) we find that the vowel /æ/ is in contrast with vowels like /a/, /u/, /p/, /I/, etc., in Chakma and thus, it can be treated as a distinctive vowel sound in Chakma.

B. Distribution:

The Chakma vowel /æ/ occurs in all the three positions as shown in the data given below.

i. 'one' (6) æk '(we) shall come' ii. æbn iii. æjonor '(I) am coming'. iv. bæl 'sun' v. pæk 'mud'. vi. jærædı 'afterwards' 'before' vii. agæ 'upland' agæræ viii. '(he) does' ix. gpræ

3.2.1.4 Front vowel /a/

A. Description:

The Chakma vowels /a/ is produced by raising the front part of the tongue to the open position. During articulation of /a/ the jaws are wide and the lips are neutrally open. The tongue position of the vowel /a/ is shown n Figure I. Now we shall consider the data given in (7):

(7)(a)	i.	ač '(you	(singular))	(b)	i.	mar	'(you
(,)(,)		•	cough'	` '			(singular)) beat'
	ï.	εč	'today'		ii.	mer	'beating'
(c)	i.	jal	'net'	(c)	į.	bar	'week day'
` '	ii.	jıl	'tongue'	• •	ii.	bor	'big'
(e)	i.	ma	'mother'				
	ii.	mp	'my'				

We notice that in the above minimal pairs the Chakma vowel /a/is in contrastive distribution with other Chakma vowels like /e/i./i. and /b/i. Thus, the vowel /a/i. can be identified as a phoneme of Chakma.

B. Distribution:

The vowel /a/ occurs in all the three positions in Chakma. Consider, for example, the data given in (8).

i.	amok	'astonished'
ii.	am	'mango'
iii.	amı	'we'
iv.	gač	'grass'
v.	dap	'wish'
vi.	janor	'(I) am going'
vii.	pla	'Tom cat'
viii.	ţhana	'staying'
ix.	mala	'garland'
	iii. iv. v. vi. vii. viii.	ii. am iii. amı iv. gač v. dap vi. jaŋpr vii. pla viii. ţhana

So far we have dealt with the front vowels of Chakma and fornd that there are four front vowel phonemes in this language. In the next section we shall deal with the back vowels of this language.

3.2.2 Back vowels

There are three back vowels /p/, /o/ and /u/ in Chakma. These are discussed in following sections one by one.

3.2.2.1 Back vowel /p/

A. Description:

During the production of the Chakma vowel/p/ the back part of the tongue is raised to a height between open and half-open position and the lips are slightly rounded. The tongue position of Chakma vowel/p/ is presented in Figure I. The examples in (9) can be considered to decide its phonemic status in Chakma.

The above examples show that the vowel /p/ is in contrast with other vowels like /a/, /o/, /I/, /aI/, etc. in Chakma. Thus, /p/ can be identified as a phoneme in Chakma.

B. Distribution:

The vowel/p/occurs word initially, medially and finally as shown in the data given below in (10)

vi.	janor	'(I) am looking'
vii.	gaba	'wild ox'
viii.	gprp	'(you (plural)) do
ix.	maj̇̃o	'fish's'

3.2.2.2 Back vowel /o/

A. Description:

During the articulation of Chakma vowel /o/ the back part of the tongue is raised to a height between half-open and half-close position and the lips are always rounded. The tongue position of Chakma vowel /o/ is shown in the Figure I. Let us now consider the data given in (11).

We observe in (11) that in Chakma vowel /o/ forms minimal pairs with other vowels like /ı/,/u/,/p/,/a/, etc., and contrasts with each of them. Thus, the above fact suggests that the vowel /o/ belongs to a separate phoneme in Chakma.

B. Distribution:

In Chakma vowel /o/ occurs in the word initial, medial and final positions. Consider, for example, the data given below.

		•
(12) i.	olı	'female cats'
ii.	olıp	'lazy'
iii.	oluţ	'turmeric'
iv.	thagol	'hacksaw'
v.	horolı	'said'

vi. hogil 'cuckoo'
vii. ubho 'a kind of weed'
viii pwo 'son'

viii. pwo 'son' ix. milebwo 'the girl'

3.2.2.3 Back vowel /u/

A. Description:

Chakma vowel /u/ is produced with the back part of the tongue which is raised to a height between half close and close position. During the articulation of the vowel /u/ the lips are rounded. The tongue position of Chakma vowel /u/ is shown in the Figure I. We shall now consider the data given in (13).

(13) (a) i. uju	'high'	(b) i. um	'heat'
ii. a j u	'grandfather'	ii. em	'(I) shall come'
(c) i. tun	'tools used	(d) i. huju	'arum'
	for weaving'		
ii. ţon	'curry'.	ii. huj	ı 'piece'

It is observed from the data in (13) that in the minimal pairs substitution of /u/ with other vowels like /a/, /e/, /o/ and /i/, etc., brings about a change in the meaning of the words. Thus, in Chakma the vowel /u/ contrasts with other vowels and can be identified as a separate phoneme of Chakma.

B. Distribution:

The vowel /u/ occurs in all the three positions in Chakma as shown below in (14).

(14) i. unıč 'nineteen' ii. udur 'rat' iii. uth 'camel'

iv.	huduk	'porcupine'
v.	buččε	'the old man'
vi.	hugur	'dog'
vii.	hudu	'where'
viii.	hıju	'something'
ix.	goru	'cow'

So far we have established Chakma pure vowels with help of the principles phonemic analysis and their distributions in the language. We have found that Chakma has seven distinctive pure vowels and these vowels occur in all the positions i.e., word initially, medially and finally. In the following section we shall deal with the allophonic variations, if any, of these vowels.

3.2.3 Allophonic variation

In the previous two sections we have dealt with the phonemic status and distribution of pure voweis of Chakma. The present section attempts to study the allophonic variation⁴ of these vowels in the language.

It has been that in the vowel system of Chakma length is not distinctive or phonemic All the pure vowels are length neutral. However, all the vowels ($/\text{I}/, /\epsilon/, /\epsilon/, /a/, /p/, /o/$ and /U/) are perceived as longer ones ($/\text{II}/, /\epsilon\epsilon/, /\epsilon\epsilon/,$

In Bardhan (1999) the allophonic varination of the vowels of Chakma has not been dealt with. The observatio and analysis of the data have led the persent resarcher to look into this aspect of this language.

the word final positions⁵ as shown in (15). In all other positions these vowels are perceived as short ones. This observation suggests that long counterparts are allophones of these vowels i.e., these long counterparts are phonetically realized in the Chakma in the specified position mentioned here.

(15)	i.	hu	'what'
	ii.	horolii	'sand'
	iii.	ţææ	's/he'
	iv.	agææ	'before'
	V.	mılee	ʻgiri'
	vi.	pιlεε	'big pot'
	vii.	maa	'mother'
	viii.	∫araa	'end'
	ix.	mpp	'mire'
	X.	aadag	'wiid ox'
•	xi.	pwoo	'son'
	xii.	nwoo	'new'
	xii.	muu	'mouth'
	xiv.	híj̇́uu	'something'

3.2.4 Distinctive feature chart of the pure vowels of Chakma

In the previous two sections we have looked at the pure vowel phonemes and their allophonic variations. This section attempts to represent these vowels in terms of distinctive features. We present the distinctive feature chart for all the vowels of Chakma in (16). Following Uffmann (2005), we use the feature [open] (in addition to other features like [high], [low], [back], etc.) mainly to distinguish between /æ/ and /a/. Since all the vowels of Chakma are quality insensitive, we do not show the length as a distinctive feature.

While dealing with these vowels in the previous sections we have not shown this length marking in case of word final position also. It was done in order to show their phonemic status only.

(16)	/1/	/u/	/ε/	/o/	/æ/	/a/	/a/
High	+	÷	-	-	-	_	_
Low	, -	_	_	-	+	+	+
Back	_	+	-	+	-	+	_
Open	_	_	_	_	_	_	+

3.3 Diphthongs of Chakma

In the previous sections we have discussed the individual vowel phonemes of Chakma. In Chakma there are also some phonemic combinations as found in other languages. These are produced by the homogeneous articulatory movement or by the progressive dissolution of articulatory complex. Diphthongs or vowel glides are the result of such phonological evolution and are therefore, interpreted as unitary phonemes. Chakma has seven distinctive diphthongs. These are /ɛɪ/, /aɪ/, /pɪ/, /oɪ/, /uɪ/, /aɛ/ and /pɛ/ as shown in Figure 3.

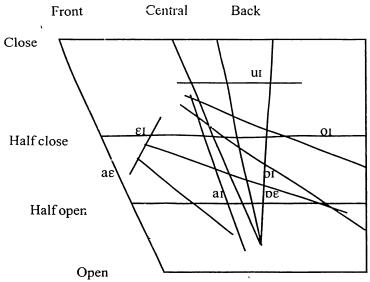


Figure 3: Diphthongs of Chakma

3.3.1 Diphthong/EI/

A. Description:

The Chakma diphthong/ ϵI / can be described as a glide, which begins near the front unrounded between half open and half close position and moves in the direction of front unrounded between half close and close position. The the tongue position of Chakma diphthong/ ϵI / has been represented in Figure 2. The following minimal pairs illustrate the phonemic status of the diphthong/ ϵI / in Chakma.

The data in (16) illustrate the contrast between $/ \epsilon_{\rm I}/$ and other vowels like /p/, $/\alpha e/$, /pi/ and /g/, etc. in Chakma. It is now evident that the diphthong $/ \epsilon_{\rm I}/$ can be treated as a distinctive phoneme of Chakma.

B. Distribution:

The diphthong / ει/ occurs in all the three-positions in Chakma as ehibited through the data given below:

(17)	i. eiţ	'elephant'
` '	ii. EIl	border of the land'
	iii. Eıgun	'these'
	iv. peıl	'border'
	v. gειjε	'singer'
	vi. heıje	'one who eats'
	vii. ∫εı	'ash'
	viii. ∫ere11	'a kind of insect'
	ix. bebei	'grandmother'

3.3.2 Diphthong /ai/

A. Description:

The Chakma diphthong ai/ can be described as a vowel glide which begins from the front unrounded open position and moves in the direction of the front unrounded between half close and close position. The tongue position of Chakma diphthong/ai/ is shown in Figure 2. Now consider the data given below:

The above data show that diphthong /ai/ is in contrastive distribution with other vowels like /i/, /p/, / ϵ i/, etc. and thus, it can be considered as a distinctive phoneme of Chakma,

B. Distribution:

Diphthong /ai/ occurs in all the three positions in Chakma. Let us now consider, for example, the data given below:

(19)	i.	aılom	'continuous'
	ii.	aıpana	'able to do quickly'.
	iii.	aıan	'the income'
	iv.	jaijukkol	'equipment'
	v.	haıde	'that is eaten'
	vi.	haikki	'very near'
	vii.	gurigarai	'doing completely'
7	⁄iii.	laı	'for'
	ix.	daı	'burden'

3.3.3 Diphthong /DI/

A. Description:

The Chakma diphthong/DI/can be described as a vowel glide which begins near the back rounded between open and half open position and moves in the direction of the front, unrounded between half close and close position. The tongue position of the Chakma diphthong/DI/ is shown in Figure 2. In order to establish the phonemic status of this diphthong let us now look at the data in (20):

(20)(a)	i.	ĭŒĘ	'triumph'	(b) i.	hoi	'(he) speaks'
	ii.	ďĎ	'(you (plural)) g	o' ii.	hı	'what'
(c)	i.	ıal	'(he) takes'	(d) i.	bhoi	'fear'
	ii.	lει	'childish whim'	ii.	bhai	'bleating'

The data given in (20) explain that the diphthong $/p_I/$ is a pheneme in Chakma as it contrasts with other vowels like /p/, /I/, $/e_I/$ and /æ/, etc.

B. Distribution:

The diphthong /pi/ occurs in all the three positions in Chakma. Consider, for example, the data given below:

(21) i.	DI	'all right'
ii.	pılen	'possibly'
iii.	poija :	'money'
iv.	mpıde	'flour'
v.	j̇̃ɒij̇̃ɒgar	'glory'
vi.	loı	'destruction'
vii.	∫omoi	'time'
viii.	ıalad	'ring'

3.3.4 Diphthong/oi/

A. Description:

The Chakma diphthong/oi/can be described as a vowel glide which takes its origin from the back rounded between half open and half close position and moves in the direction of the front unrounded between half close and close position. The tongue position of the diphthong/oi/ is shown in the Figure 2. Let us now consider the following data.

(22)(a)	i.	poıdhe	'step' (b)	i.	moı	'stairs'
	ii.	pιdhε	'bread'	ii.	ma	'mother'
(c)	i.	loi	'with' (d)	i.	poı	'plantain leaf'
	ïL	lo	'blood'	ii.	рει	'(we) get'

It is found in the data in (22) that in Chakma the diphthong $/o_I/i_S$ in contrastive distribution with other vowels like /I/, /o/ and $/\varepsilon_I/$, etc. and it can be classified as a phoneme of Chakma.

B. Distribution:

The diphthong/oi/occurs in all the three positions in Chakma as shown in the examples given in (23):

i.	10	'that'
ii.	oigun	'those'
	οιjε	'It has been'
iv.	boier	ʻair'
	- -	'(they) took'
	••	'a section of the Chakmas'
		ʻplum'
viii.	∫oroi	'sparrow'
ix.	bonoi	'brother-in-law'
	ii. iii. iv. v. vi. vii. viii.	ii. orgun iii. orje iv. borer v. borer vi. dornak vii. boror viii. ∫oror

3.3.5 Diphthong/ui/

A. Description:

The Chakma diphthong/ui/can be described as a vowel glide which begins from the back rounded between half close and close position and moves in the direction of the front unrounded between half close and close position. The tongue position of the diphthong/ui/ is shown in the Figure 2. We shall now consider the following data.

(24)(a)	i.	rui	'cotton mattress'(b	o) i. gui	ʻiguana'
	ii.	ro	'sound'	ii. gaı	'alone'
(c)	i.	mui	'J' (d) i. jui	'jasmine'
	ii.	moı	'ladder'	ii. ϶ε	'that '

We find from the data given in (24) that the diphthong /uɪ/ contrasts with other vowels like /p/, /aɪ/, /oɪ/ and /ɛ/ etc. and thus, it can be realized as a separate phoneme of Chakma.

B. Distribution:

The Chakma diphthong /uɪ/ occurs in all the three positions as illustrated through the data given below:

(25)	i.	uıgun	'white ants'
•	ii.	uio	'there'
	iii	guɪgun	'iguanas'
	iv.	duı	'two'
	v.	ţuı	'you(singular)'
	vi.	hui	'a kind of disease'

3.3.6 Diphthong /ae/6

A. Description:

The Chakma diphthong/aɛ/can be described as a vowel glide which begins from the front unrounded open position and moves in the direction of the front unrounded between half close and half open

position. The tongue position of the diphthong /aɛ/ is shown in the Figure 2. Let us now consider the following data.

It is evident from the observation of the data given in (26) that the diphthong /a ϵ / contrasts with other vowels like / τ /, / τ / and / ϵ / etc. and thus, it can be realized as a separate phoneme of Chakma.

B. Distribution:

The Chakma diphthong /aɛ/ occurs in all the three positions as illustrated through the data given below:

(27)	i. ae	'(s/he) comes'
	ii. aeo	'an exclamatory sound'
	iii. gaε	'iguanas'
	iv. rae	'judgement'
	v. thae	'(s/he) stays'
	vi. ∫aε	'(s/he) sees'

The Chakma diphthongs /aɛ/and/dɛ/ described in the present section and next section respectively are not used so frequently in the language. These are mostly found to occur in *derived* words as shown in the examples given during discussion.

3.3.7 Diphthong/DE/

A. Description:

The Chakma diphthong /pɛ/ can be described as a vowel glide which begins from the back rounded between open and half open position and moves in the direction of the front unrounded between half open and half close position. The tongue position of the diphthong /pɛ/ is shown in the Figure 2. We shall now consider the following data from Chakma

(28)	(a) i.	rpe	'cotton mattress' (b)	i. gpe	'iguana'
	ii.	rp	'sound'		ii. gaı	'alone'
	(c) i.	mpe	'I' (d)	i. jde	'jasmine'
	ii.	moı	'ladder'		ii. ǯε	'that '

We find from the data given in (28) that the diphthong $/p\epsilon$ / contrasts with other vowels like /p/, /ai/, /oi/ and $/\epsilon$ / etc. and thus, it can be realized as a separate phoneme of Chakma.

B. Distribution:

The Chakma diphthong /pɛ/ occurs in all the three positions as illustrated through the data given below:

(29)	i. de	'yes'
	ii. pena	'mirror'
	iii. hɒɛdja	'a kind of fruit'
	iv. gpena	'ornament'
	v. thoe	'(s/he) keeps'
	vi. dhpe	'(s/he) wash'

3.4 Conclusion

In this Chapter we have discussed the distinctive vowel sounds of Chakma and we have found that there are fourteen distinctive vowel sounds in Chakma. Out of these, seven are pure vowels and seven are diphthongs. We have also looked at the distribution of these vowels and found that all the vowels of Chakma occur in all the positions of words. In addition, we have attempted to study the allophonic variation of the pure vowels of this language.

In Chapter 2 and the present chapter we have established the phonemic status of the consonants and vowels of Chakma. We have also looked at their distribution and allophonic variations. In the next chapter we will attempt to deal with the syllable structure of Chakma and other related phenomena.

CHAPTER 4 SYLLABLE STRUCTURE OF CHAKMA

4.1 Introduction

Though the term syllable did not appear in the monumental work Sound Pattern of English (Chomsky and Halle 1968), the structural linguistics and thereafter generative linguistics have greatly attested the syllable as an essential and fundamental unit in phonological as well as morphological analyses of a given language. A syllable is not a sound but an abstract unit of prosodic organization through which a language expresses much of its phonology. Sounds/ segments of a language are organized for the formation of the next higher unit i.e. the syllable by following certain phonotactic constraints (which govern the possible sound sequence) and/or phonological processes that take syllable as their domain of application. Now why does phonology need the concept of syllable? The concept of syllable is very important in the phonological theory for several reasons. Firstly, when we look at the lexicon of a language, we find that words are formed by certain organizational principles. For example, in English there are no words beginning with the sound sequence /kn-/ and so an Englishman cannot pronounce the monosyllabic word knut /knu:t/. In order to pronounce it he would most likely introduce a schwa and pronounce the word as /konu:t/. Such phonotactic constraints tend to apply at the level of the syllable structure of a given language. This is one of the major reasons behind the importance of syllable in phonology.

Secondly, the phonological rules are often simply and insightfully stated if they refer to the syllable structure. For example, the aspiration rule of English can be expressed easily in terms of syllable. We know that in English the voiceless plosives /p/, /t/ and /k/ are

aspirated if they occur in the accented syllable initial position of the word. Consider, for example, the following words given in (1).

(1)	a. tension	['tʰenʃn]
` '	b. attract	[ð'tʰrækt]
	c. representation	[ri prezdn'theisn]

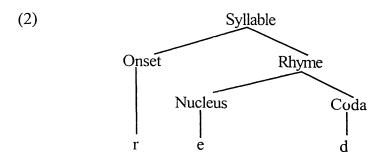
Notice that the aspirated plosive occurs at different positions within a word. But if we parse these words into syllables, we see that the aspirated [th] occurs only in the syllable initial position. Hence the terms *syllable*, *syllable initial*, *syllable final*, etc. help us express the phonological rules explicitly.

Finally, several phonological processes are best interpreted as methods to ensure that string of phonological segments is parsable into syllable. Let us illustrate this point with an example from English. In English the sound sequences /rt/, /It/, and /mθ/ (e.g. cart, belt, warmth) are possible final clusters but the sound sequences /tr/, /tI/ and /ŏm/ are not possible final clusters. The English word rhythm / riðm/ sounds very much like /□rIðm/ through the epenthesis of a schwa. The alternation of rhythm/riðm/ and rhythmic /□rIðmIk/ can be explained as follows: in /riðmIk/ each segment can be assigned to a syllable /rið-mI k/. But since the string /ðm/ is not a possible coda of English, /m/ in the underlying /riðm/ will be left stranded. Without the notion of syllable it is difficult to understand why languages should have rules to insert schwa out of nowhere in a quite specific phonological environment.

In general term, a syllable consists of one segment i.e. speech sound or more. It has an obligatory component, which is usually a vowel. A syllable also has the optional component, which is a consonant. Consonants may precede or follow the vowel of the syllable. The structure of the syllable can be stated as (C) V (C), which means

that consonantal elements are marginal or optional and vowel is the obligatory constituent of a syllable.

Within the generative phonology the obligatory vowel element forms the *nucleus* (N) of a syllable. The optional consonantal element, which may precede the nucleus, is called *onset* (O). The optional consonantal element, which may follow the nucleus, is called *coda* (C). Nucleus plus coda form the *rhyme* (R) of a syllable. This core syllable internal structure is exemplified below by taking the English word *red* as an example.



Since nucleus is the core of the syllable it is not surprising that the syllable is constituted outward from this core. The following core syllable building rules help us assign the syllable structure to any sequence of sounds in any language.

(3) RuleA: Associate a vowel to the nucleus node.

Rule B: Associate a prevocalic consonant to the onset

node.

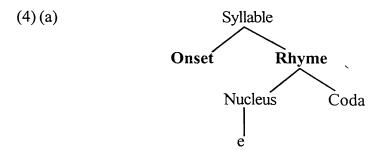
Rule C: Associate a postvocalic consonant to the coda

node.

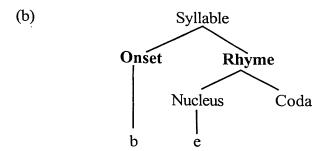
Let us now apply these rules to build the syllable structure of the English word *bell*.

Cha. B.-5

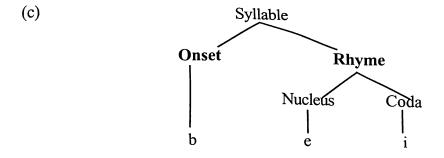
By application of the Rule (3A) we can arrive at the following structure:



By application of Rule (3B) we get the structure:

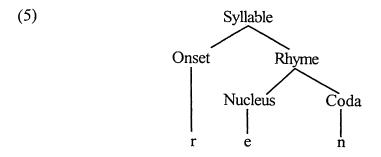


By the application of Rule (3C) we get the syllable structure:



Grammars of all the languages have the first two rules (Rule 3A and Rule 3B). In a few languages like Senufo and Hawaiian these are the only rules of syllabification. Hence their syllable inventory is limited to [V, CV] structures. Most languages, however, augment their stock of syllables to [V, CV, VC and CVC] with the help of these three rules.

Then there are languages like English, Polish, Sanskrit, etc., which have a complex syilable structure with more consonants in the onset and/or coda positions. We, therefore, need additional rules for syllabification in such languages. If we were to apply the rules given in (3) to the English word, *trend* we would be able to construct the syllable internal structure as in (5).



The structure in (5) leaves the initial and the final sounds stranded. In order to augment the initial and the final sound, we would need to apply the following rules:

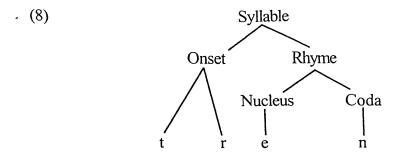
(6) Rule A: Associate additional prévocalic consonants to the onset position following the sonority sequencing principle.

Rule B: Associate additional postvocalic consonants to the coda position following the sonority sequencing principle.

The sonority sequencing principle as stipulated by Clements (1990) requires onsets to rise in sonority towards the nucleus and coda to fall in sonority from the nucleus. The sonority scale (Kenstowicz 1994:254-5) that ranks the entire class of speech sounds has vowels as the most sonorant and voiceless stops as the least sonorant sounds.

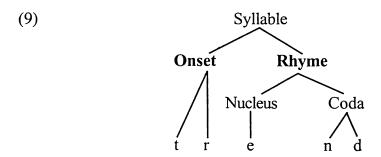
(7) vowels - most sonorant glides liquids nasals obstruents - least sonorant

Following Rule (6A) we can now add the additional unsyllabified prevocalic consonant /t/ in the word trend to the onset position prior to /r/ as the obstruent is less sonorant than the liquid /r/. The cluster /tr -/, therefore, follows the sonority sequencing principle.



Similarly, Rule (6B) will attach the additional consonant /d/ to the coda position. Since the consonant /d/ is an obstruent, it is less sonorous than the nasal sound /n/. It will, therefore, be attached after the nasal sound. The cluster /-nd/ also follows the sonority

sequencing principle which states that codas fall in sonority. The word *trend* can be syllabified as in (9) following the application of rules (3) and (6).



Syllables built with the help of rules (3) and (6) are considered *Core Syllables* and these rules are called *Core Syllable Building Rules*. In the rest of this Chapter, we shall mainly try to find out (a) the core syllable structures of Chakma, (b) some phonotactic constraints on the syllable structure of Chakma and (c) try to establish the minimal and maximal syllable template for only the monosyllabic monomorphemic words of Chakma.

4.2 Syllable types of Chakma

In this section we shall concentrate on establishing the different syllable types, which exist in only the monosyllabic monomorphemic words of Chakma. With the help of the symbols v and c representing the vowel and the consonant respectively, we can analyse the structure of different kinds of syllables that exist in the monosyllabic monomorphemic words of Chakma. The table below lists all and only the possible syllable types in the monosyllabic monomorphemic words of Chakma.

 Table 1: Types of Syllable in Chakma

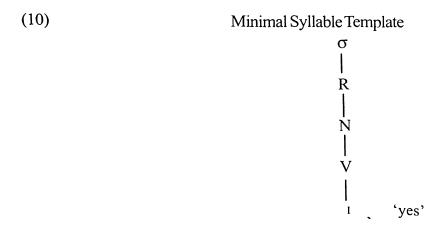
Syllable Types		Example
Type i	V	ı 'yes'
Type ii	VV	i. aı 'come (Imperati singular)' ii. ɒɪ 'is' iii. uı 'white ant'
Type iii	CV	i. hı 'what' ii. tæ 'he' iii. jı 'daughter'
Type iv	CVV	i. haı '(he) eats' ii. l vı '(he) taken' iii. tuı 'you (singular)'
Гуре v	УC	i. ιl 'satisfaction' ii. εl 'green' iii. uţ 'heat'
Type vi	VVC	i. ει <u>t</u> 'elephant' ii. ειl 'ridge'
Type vii	CVC	i. bæk 'all' ii.∫ıl 'stone' iii. mɒr 'mine'

Type viii	CVVC	i. baak 'swathe' ii. d̞ɛɪl 'race' iii ∫aaŋ '(I) see'
Type ix	CCV	i. dwo 'feather' ' ii. hwo 'mist' iii. j̃jε 'alive'
Туре х	CCVC	i. ∫jok 'very swift' ii. mjɛt 'time' iii. ∫woth 'taste'
Type xi	CCVVC	i. hwaač 'easy' ii. bwaal 'a kind of fish' iii. ∫waar 'slap'

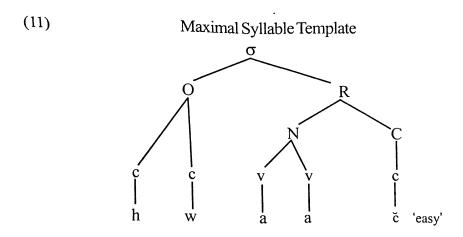
A careful look at different types of Chakma syllable reveals that at the most two consonants can occur in the beginning of a syllable and one in the end. It is also evident that v is the obligatory and c the optional element of the syllable. With the help of the parenthesis (which is used to indicate optionality) we can indicate the optional element and arrive at the core syllable structure of a typical Chakma syllable, which is of the kind: (C)(C) V(V)(C). This proves that in Chakma syllable there can be zero to two consonants in the beginning and zero to one in the end. The nucleus can be either long or short.

4.3 Minimal and maximal syllable templates of Chakma

Having discussed the different syllable types available in Chakma we shall now move on to establish the minimal and maximal syllable templates of the monosyllabic monomorphemic words of Chakma. On the basis of the possible syllable types listed in Table 1 the minimal syllable and, therefore, the minimal word of Chakma seems to be dominated by a non-branching nucleus. Thus, for example, the syllable structure of a minimal word of Chakma such as /1/ 'yes' will be represented as in (9)

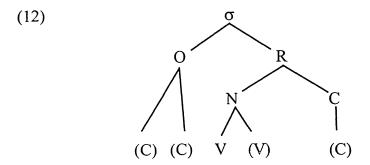


Similarly, the maximal syllable template for the monosyllabic monomorphemic words of Chakma as illustrated by /hwaːc/ 'easy' could be represented as in (11).



A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH

In order to capture all and only the monosyllabic monomorphemic words of Chakma we can combine both the minimal and maximal syllable templates and represent the combination as in (12).

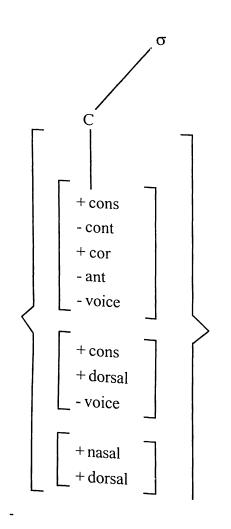


4.4 Phonotactic constraints of Chakma

A great many phonotactic constraints in a particular language will tend to apply at the level of syllable structure and the scientific analysis of these constraints functioning in a language helps us understand how the words and morphemes are constrained to take particular fixed shapes. Here, we shall have a preliminary discussion on some phonotactic constraints operating on the syllable structure of monosyllabic monomorphemic words of Chakma.

In the section 4.2 we have seen that Chakma permits up to two consonants to begin a syllable and one consonant to end it. However, there are certain constraints on the types of segments, which can occupy the onset and/or the coda positions. Chakma allows all the consonants in the syllable initial position of the monosyllabic, monomorphemic words except /k/, /kh/, /č/, /čh/ and /ŋ/. This can be captured by formulating the constraint given in (13).

LE STRUCTURE OF CHAKMA



that all the initial consonant clusters of Chakma ad /w/ as their second element. We do not find as or fricatives coming together to form a clussequences of two consonant clusters as $C_1 C_2$ ag the vertical axis and C_2 along the horizontal

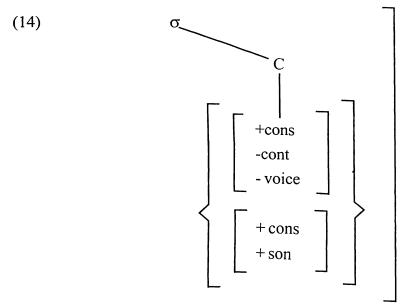
A PHONOLOGICAL ST CHAKMA AND EN

 Table 2: Chakma Onsets

	j	W
p	+	+
p ph b	-	-
b	+	+
bh	-	-
ţ	+	+
ţh	-	-
d	+	+
dh	-	_
g	+	+
gh	-	-
ť	+	+
<u>j́</u> j́h <u>∫</u>	_	-
S	+	+
h	+	+
1	+	+
I	+	+
m	+	+
n	+	+

n section 4.2 we have also seen that in llows only a single consonant. There a

kind of consonant can occur in the coda position. All the voiced plosives and affricates, fricatives /ʃ / and /h/ and semi-vowels /j/ and /w/ are not allowed in the coda position. To put it differently, only the voiceless plosives and affricates, liquids and nasals are allowed in the coda position. This can be represented by formulating the constraint as in (14).



This phonotactic constraint suggests that the sound sequence \underline{V} b, \underline{V} g, \underline{V} j, \underline{V} j, \underline{V} w, etc. are not allowed in Chakma.

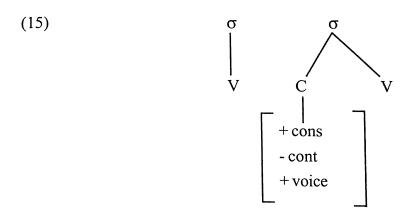
4.5 Some other rules of Chakma phonology

Though we have restricted our analysis to the syllable structure of monosyllabic, monomorphemic words of Chakma and some phonotactic constraints on it, we find some glaring and crucial facts related with the polysyllabic words of Chakma.

In Chakma the voiceless plosives and affricates never occur in the

A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH

intervocalic (v - v) position. So in the case of VCV sound sequences the c will always be a voiced consonant as established in (15).



Chakma words with intervocalic voiced plosives and affricates are given below as examples in (16).

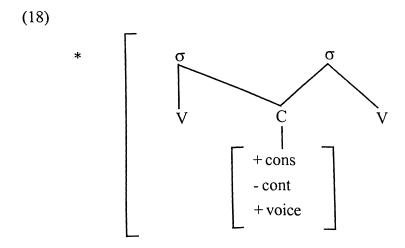
(16) i. lud ı 'reaper'
ii. æbɒ '(we) shall come'
iii. æjær '(he) is coming'
iv. hɛg a: 'blunt'
v. pa:dha:: 'he-goat'.

However, whenever the voiceless plosives and affricates form a part of the geminated consonant, they retain their voicelessness. Consider, for example, the data given below:

78 SYLLABLE STRUCTURE OF CHAKMA

(17)	i. pa:kkε	(It) has become ripe'
()	ii. poththom	'first'
	iii. gpčče	'really'
	iv ma:ttol	'drunkard'
	y ha:ppon	'(they) cut (past)'.

The phenomenon of gemination in Chakma can be stated in terms of constraints as in (18).



4.6 Conclusion

In this chapter our discussion on the syllable structure of Chakma has been done on the basis of the analysis of only the monosyllabic monomorphemic words of Chakma. Here we have found that Chakma like many other languages shares some common principles of Universal Grammar (UG) regarding the syllable structure. We see that Chakma has simple syllable structures. We have also proposed the minimal and maximal syllable templates of monosyllabic

A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH

monomorphemic words of Chakma and discussed the phonotactic constraints functioning on the syllable structures of Chakma. As this was not a detailed study on the syllable structure of Chakma, we have restricted our study within a smaller circle of Chakma phonology.

In the next chapter we shall make a comparative study between Chakma and English at the level of phonemes and syllable structure. Moreover, a section will be devoted to the pedagogical implication of the present study.

79

CHAPTER 5 CHAKMA AND ENGLISH—APHONOLOGICAL COMPARISON

5.1 Introduction

In the last three Chapters we have tried to describe the consonants and the vowels of Chakma, the syllable structure and some phonotactic constraints of Chakma phonology. In this chapter we shall try to do a comparative analysis of Chakma phonology with that of English. Such a study, it is hoped, will highlight the areas of ease and difficulty in the learning of English by the speakers of Chakma. Some remedial measures will also be suggested in order to help the innovative teachers of English in the Chakma region. It is hoped that such steps would help the students overcome difficulties in the pronunciation of English to a large extent.

5.2 Consonants of Chakma and English

For the sake of convenience we shall group (as we did in Chapter 2) the consonants according to their manner of articulation. Both English and Chakma have plosives, fricatives, affricates, liquids, nasals and semi-vowels.

5.2.1 Plosives of Chakma and English

We find that there are three pairs of distinctive plosive sounds /p, b/, /t, d/ and /k, g/ in English whereas in Chakma there are twelve distinctive plosive sounds (as shown in Table 1.)

Both Chakma and English have the bilabials /p, b/ and velars /k, g/. As a result, Chakma speakers generally do not have any problem with these sounds in the pronunciation of English words like pin, bin, napkin, impeach, combat, lobby, map, shop, king, gun, bulky, begging, back, neck, etc. However, something very

CHAKMA AND ENGLISH - A PHONOLOGICAL COMPARISON

interesting happens in Chakma. Chakma speakers do not use /k/ in the initial position of root words (1a). In their unconscious English speech the initial /k/ is always replaced by /h/. This, however, does not happen when they consciously read English prose or poem. Consider, for example, the data given below where /k/ is replaced by /h/.

(1)	(a) English Words		Pronounced by Chakma Speakers
	i.	college	/hɒlɛč(/
	ii.	care	/hear/
	iii.	cup	/hp:p/
	iv.	call(n)	/hol/
	v.	coach	/hoč/
	vi.	carbon	/hp:rbpn/
	vii.	canteen	/hæntın/
	viii.	council	/haunčıl/
	ix.	can	/hæn/
	X.	company	/hompp:nj/

(Other phonological changes taking place in these words shall be discussed later). Notice how /k/ is pronounced in non-initial position as illustrated in (b).

A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH

(b)	English Words		Pronounced by Chakma
(0)	Liie	311011 11 00	Speakers
	i.	marking	/ma:rkɪŋ/
	ii.	sunken	/ʃa:ŋkɛn/
	iii.	bulky	/ba:lkı/
	iv.	monkey	/ma:ŋkı/
	V.	income	/ınka:m/

Unlike English, Chakma has four dental plosives /t, th, d, and dh/. There are no alveolar plosives in Chakma. As a result, the Chakma speakers of English replace the English alveolar plosives /t/ and /d/ with the Chakma dental plosives /t/ and /d/ respectively. The following examples illustrate this phenomenon.

(2) Engli	sh words	Pronounced by Chakma Speakers
i.	tin	/t̯In/
ii.	top	/top/
iii.	seventy	/∫εbhεnt̞ı/
iv.	mat	/mæt/
v.	bat	/bæt/
vi.	dock	/dɒk/
vii.	den	/den/
viii.	golden	/golden/
ix.	adding	/ædiŋ/
x.	body	/bpdı/

CHAKMA AND ENGLISH - A PHONOLOGICAL COMPARISON

In Bardhan's (1999) discussion on phonotactic constraints on Chakma, we have stated that in Chakma voiced plosives never occur in the word final and/or syllable final positions. The influence of this constraint is perceived when the Chakma speakers pronounce voiceless counterparts of the voiced plosives occurring in final position. Consider, for example, the following words:

(3)	<u>En</u>	glish Words	Pronounced by
			Chakma Speakers
	i.	bad	/bæt/
	ii.	loud	/laut/
	iii.	madness	/mætneč/
	iv.	mob	/mpp/
	v.	rub	/ra:p/
	vi.	jobless	/jopleč(/
	vii.	dog	/dɒk/
1	viii.	bag	/bæk/
	ix.	egg	/εk/
	X.	chagrin	/∫ækrın/

Another phonotactic constraint of Chakma states that the voicieless plosives never occur in the intervocalic position. If they do, they are always geminated. As a result, English words with intervocalic voiceless plosives are mispronounced as stated below:

A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH

(4)	En	glish Words	Pronounced by
()	===	B	Chakma Speakers
	i.	happy	/hæppı/
	ii.	lapping	/læppɪŋ/
	iii.	batting	/bæţţıŋ/
	iv.	putting	/putt_iŋ/
	V.	city	/Sıţţı/
	vi.	looking	/lukkıŋ/
	vii.	mocking	/mpkkiŋ/
	viii.	lucky	/la:kkı/

5.2.2 Affricates of Chakma and English

In English there are two affricates $/t\int$ and /d3 but in Chakma there are four affricates /c, /ch, //, and /h. However, unlike English, the Chakma /c and /c never occur initially. We, therefore, find that in place of the initial $/t\int$ in English. Chakma speakers use the fricative $/\int$. Consider the following examples:

(5) English Words		Pronounced by
		Chakma Speakers
i.	chilly	/ʃɪlɪ/
ii.	chalk	/∫ p k/
iii.	chin	/ ʃ ɪn/
iv.	chip	/ ʃ ɪp/
V.	chit	/ ∫ ι <u>t</u> /
vi.	chap	/ ʃ æp/
vii.	chain	/∫en/
viii.	check	/ʃek/

CHAKMA AND ENGLISH - A PHONOLOGICAL COMPARISON

The word medial (except intervocalic) and final /tʃ/ is not a problem for the Chakma speakers e.g. *lecture*, *juncture matchless*, *batch*, *ditch*, etc. are pronounced as in English. Again due to the influence of the phonotactic constraint stating that in the intervocalic position voiceless affricates never occur and if they do, they will be geminated, the English intervocalic /tʃ/ is pronounced by the Chakma speakers as a geminated /c/. The following data illustrate this phenomenon.

(6) English Words	Pronounced by
	Chakma Speakers
i. hatching	/hæččiŋ/
ii. teaching	/t̪ɪččɪŋ/
iii. touching	/t̪aččɪŋ/
iv. matching	/mæččiŋ/
v. kitchen	/kıččen/

Chakma speakers can pronounce the voiced affricate /d³/ in syllable initial position (i.e. word initial and medial positions). Words like *joke, danger, soldiers judging*, etc. do not pose a problem to them. However, when it comes to the word and/or syllable final position again there is a problem. In such a position Chakma speakers use the voiceless affricate /tʃ/. This is because in Chakma there is a phonotactic constraint (stated earlier in Chapter 4) which disallows that voiced affricates occur in the word and/or syllable final position. We, therefore, find that Chakma speakers use voiceless affricate in the pronunciation of English words having /d/ in coda position. Consider, for example, the data given below:

(7) English Words		Pronounced by
() ====		Chakma Speakers
i.	ridge	/rɪč/
ii.	gauge	/geč/
iii.	page	/peč/
	judgement	/ja¹čmenţ/
v.	management	/mænečmen <u>t</u> /

5.2.3 Fricatives of Chakma and English

In Chakma there are only one distinctive fricative sound /h/ whereas in English there are nine fricative sounds. It is necessary to mention that another fricative sound / \int / is the allophonic variation of affricate sound / \check{c} /. It is, therefore, quite obvious that Chakma speakers of English face great problem in pronouncing all the fricative sounds of English except / \int / and /h/. Let us see how Chakma English is influenced by the English fricatives.

The Chakma speakers of English cannot pronounce the labio-dental fricatives /f/ and /v/ and therefore replace them with either of the Chakma bilabial plosives /ph/ and /bh/ according to the phonotactic rules of Chakma phonology (discussed earlier in Chapter 4). Consider for example, the data given below:

(8) Eng	lish Words	Pronounced by
_		Chakma Speakers
i. 	fan	/phæn/
ii. 	fin	/phɪn/
111.	laughing	/la:phph1ŋ/
IV.	office	/pphphič/

CHAKMA AND ENGLISH - A PHONOLOGICAL

		COMPARISON
v.	deaf	/deph/
vi.	life	/laiph/
vii.	van	/bhæn/ ·
viii.	very	/bheri/
ix.	heaven	/hebhen/
X.	level	/lebhel/
xi.	live	/lɪph/
xii.	move	/muph/

In English spoken by the Chakma speakers we find that the English fricatives θ and θ are replaced by either of the Chakma dental plosives θ and θ following the phonological principles of Chakma. The following examples illustrate this phenomenon:

(9) English Words		Pronounced by Chakma Speakers
i.	thin	/thin/
ii.	thatch	/t̪hæč/
iii.	nothing	/na:thɪŋ/
iv.	lethal	/leththa:l/
v.	panther	/pæntha:r/
vi.	path	/pa:th/
vii.	than	/dæn/
viii.	them	/d̯ɛm/
ix.	mother	/ma:d̞a:r/
x.	fathom	/phædom/
xi.	bathe	/bɛt̞/
xii.	wreathe	/rɪt̪h/

Again both Chakma and English have the fricative /ʃ/. But in Chakma /ʃ/ occurs word initially and so Chakma speakers do not have any problem with English words like *shop*, *shock*, *she*, etc. But when it occurs word medially or finally in English words, it is pronounced as /č/. This is illustrated in (10).

(10)	Eng	glish Words	Pronounced by
(,			Chakma Speakers
		•	
	i.	listen	/lıčen/
	ii.	fashion	/phæččæn/
	iii.	push	/puč/
	iv.	bush	/buč/

We know that the fricative /s/ does not exist in Chakma. Chakma speakers, therefore, cannot distinguish between the English phonemes /s/ and /ʃ/ in the word initial position. The contrast between the following pairs is, therefore, lost.

(11)	English Words	<u>Pronounced by</u> <u>Chakma Speakers</u>		
	/s/	/S/		
	i. sip	ship	/ʃɪp/	
	ii. sun	shun	/ʃa:n/	
	iii. see	she	/ ʃ ɪ/	
	iv. sake	shake	/∫εk/	
	v. so	show	/ ʃo /	

Similarly, the medial and final /s/ of English is replaced by the affricate /č/ in Chakma English. Consider the examples given below:

CHAKMA AND ENGLISH - A PHONOLOGICAL COMPARISON

89

English Words Pronounced by (12)Chakma Speakers i. /næčti/ nasty /mɪččɪŋ/ ii. missing /rænčæk/ iii. ransack /ıŋlıč/ iv. English /meč/ V. mess

Chakma speakers of English cannot pronounce the fricatives /z/ and /ʒ/ and, therefore, replace them in the word or syllable initial position by the affricate /ʒ/ and in the syllable coda or word final position by the affricate /č/.

(13) English Words		Pronounced by
		Chakma Speakers
i.	Z00	/ j u/
ii.	zeal	/j1l/ .
iii.	bazar	/ba:ja:r/
iv.	lazy	/lej̃ı/
v.	fees	/phɪč/
vi.	seize	/∫ıč/
vii.	gique	/jık/
viii.	measure	/mɛੱja:r/
ix.	leisure	/lǐja:r/
X.	barrage	/ˈbægɛč/

As Chakma and English both have the fricative sound /h/, Chakma speakers do not have any problems with pronouncing /h/ in the English words like *hen*, *house*, *behave*, etc.

5.2.4 Liquids of Chakma and English

In English there is a post-alveolar frictionless continuant /r/. While the flap [r] as an allophonic variant of English /r/, occurs in the intervocalic position in words like *very, marry*, etc., in general, Chakma speakers of English do not have any problems with English /r/.

In R.P of England /r/ never occurs word finally and before a consonant. Whereas in Chakma/r/ is pronounced in all the positions. In Chakma English, therefore, /r/ occurs in all the positions as illustrated in the following examples:

(14) English W	ords Pronounced by
	Chakma Speakers
i. bar	/ba:r/
ii. for	/phor/
iii. margin	/ma:rੱjın/
iv. shorten	/ʃɒrrt̯ɛn/
v. barking	/ba:rkɪŋ/

As Chakma and English both have the lateral sound /l/, Chakma speakers of English can pronounce /l/ in English words like *lull*, *let*, *lack*, *pull*, *bull*, etc.

5.2.5 Nasals of Chakma and English

In both Chakma and English there are three nasal phonemes /m/, /n/ and /N/. Therefore, Chakma speakers of English do not face problem in pronouncing these sounds.

5.2.6 Semi-vowels of Chakma and English

Both English and Chakma have the semi-vowels/w/ and/j/. Due to this Chakma speakers can pronounce English words like *will*, *with*, *dwell*, *you*, *young dew*, etc. with ease.

5.3 Vowels of Chakma and English

In this section we shall discuss the similarities and differences between Chakma and English vowel systems and the influence of these on the learning of English by Chakma speakers.

In the RP of England there are twenty distinctive vowel sounds (see Gimson 1962, Jones 1950 & 1956). Twelve of these are pure vowels and eight are diphthongs. We have already established in the previous section that in Chakma seven are pure vowels. A detailed discussion on how the Chakma pure vowel system influences the English speech of Chakma speakers is given below:

According to the part of the tongue used for the production of the vowel sounds pure vowels can be divided into three categories front, central and back. English has all the three kinds of pure vowels but Chakma, as we have already discussed above, has only front and back vowels. Let us now see in the following sections how Chakma pure vowels influence Chakma English.

5.3.1 Front vowels of Chakma and English

English has two distinctive front high vowels/i/ and/i:/ but Chakma has only one front high vowel/i/. Hence Chakma speakers of English cannot make a distinction between the English vowels/i/ and/i:/ in the pronunciation of the following pairs of words (We give the transcription of English words as produced by the Chakma learners of English in (16-21).):

A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH

		CHARMA ANL	ENGLISH
(16)	Engli	sh Words	Pronounced by
			Chakma Speakers
	(a)	i. it	/ɪ t /
		ii. eat	/ɪt/
	(b)	i. bin	/bin/
		ii. bean	/bin/
	(c)	i. dim	/dim/
		ii. deem	/dim/
	(d)	i. sick	/ʃık/
		ii. seek	/ʃɪk/
	(e)	i. fill	/phɪl/
		ii. feel	/phil/

However, the English front vowels /e/ and /æ/ and the Chakma front vowels /e/ and /æ/ are more or less similar and therefore, the Chakma speakers of English do not have much problem with these vowels in the words like *bet*, *bat*, *pet*, *pat*, etc.

3.2 Back vowels of Chakma and English

English has two distinctive high back vowels /u/ and /u:/ but Chakma has only one high back vowel /u/. The distinction between the two vowels is, therefore, lost in the speech of Chakma speakers. This is illustrated in the pairs given in (17).

(17) English Words	Pronounced by
(a) i. full	Chakma Speakers /phul/
ii. foul (b) i. pull	/phul/
ii. pool (c) i. lose	/pul/ /pul/
ii. loose	/luč/ /luč/

Again both Chakma and English have the same back vowel /p/ and therefore, Chakma speakers have no difficulty in pronouncing the vowel /p/ in words like *hot*, *shot*, etc. It is also observed that back vowel /p:/ which exists in English is not found in Chakma and generally, it is replaced by back vowel /p/ in Chakma-English as shown in the words given below:

(18) English Words		Pronounced by
		Chakma Speakers
i.	all	/pl/
ii.	ought	/pt/
iii.	dawn	/don/
iv.	pall	/pol/
v.	law	/lɒ/
vi.	saw	∫ α⁄

However, in some cases, Chakma speakers replace the English vowel /o:/ either with front open vowel /a/ or with back low vowel /o/ as shown in the following examples:

(19) English Words		Pronounced by
		Chakma Speakers
i.	war	/war/
ii.	walk	/wak/
iii.	warn	/warn/
iv.	water	/wattar
V.	watch	/wač/
vi.	road	/rot្/
vii.	four	/phor/
viii.	bore	/bor/
ix.	more	/mor/

Chakma front open vowel/a/ and English back open vowel/a:/are more or less of the same quality. Therefore, Chakma speakers of English do not have problem with English vowel/a:/in the words like bar, parlour, darker, etc.

3.3 Central vowels of English

A remarkable difference between Chakma and English vowel systems is that Chakma does not have any central vowels whereas English has three distinctive central vowels/\(\Lambda\)/,/3:/and/\(\partia\)/. Chakma speakers, therefore, face great difficulties in pronouncing these vowels. They generally replace the vowels/\(\Lambda\)/ and /3:/ with the vowel/a/. Consider, for example, the data given below:

(20)	E	nglish Words	Pronounced by
			Chakma Speakers
	i.	uncle	/aŋkul/
	ii.	but	/bat/
1	ііі.	sun	/
j	iv.	young	/jaŋ/
	v.	earning	/arnıŋ/
•	vi.	journey	/jarnı/
1	∕ii.	serving	/∫arbhıŋ/
v	iii.	burning	/barnıŋ/

The weak central vowel / ŏ/ of English is replaced by different vowels in Chakma English. There does not seem to be any uniform pattern in the use of this vowel. Sometimes it is pronounced as /æ/, sometimes, as /a/, and sometimes as /p/. Consider, for example, the data given below:

CHAKMA AND ENGLISH - A PHONOLOGICAL COMPARISON

		0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
(21) English Words		Pronounced by
		Chakma Speakers
i.	about	/æbaut/
ii.	ago	/ægo/
iii.	human	/hjumæn/
iv.	famous	/phɛmač/
v.	figure	/phɪgar/
vi.	ruler	/rular/
vii.	tomato	/t̪omat̪o/
viii.	potato	/potato/

5.3.2 Diphthongs of Chakma and English

Chakma diphthongs /ai/ and /pi/ are, to a great extent similar to the English diphthongs /ai/ and /pi/ respectively. Therefore, Chakma speakers of English can pronounce these diphthongs in the words like *lie*, my, deny, rival, boy, toy, annoy, etc.

On the other hand, though the Chakma diphthong /ɛɪ/ is very similar to the English diphthong /ɛɪ/, in Chakma English /ɛɪ/ is often replaced by the Chakma vowel /ɛ/ as illustrated in the following examples:

(21) English Words		Pronounced by
		Chakma Speakers
i.	late	/let/
ii.	sale	/sel/
ii.	main	/men/
iv.	take	/t̞ɛk/
V.	negate	/nɪgɛt̪/
vi.	lady	/ledi/
⁄ii.	maintain	/menten/
iii.	relay	/rılɛ/
	i. ii. iii. iv. v. vi. vii.	ii. sale iii. main iv. take v. negate vi. lady rii. maintain

Similarly, Chakma speakers cannot pronounce the English diphthong ∂u and therefore, replace it with the Chakma pure vowel o in the pronunciation of words like:

(22) <u>E</u> 1	nglish Words	Pronounced by
		Chakma Speakers
i.	go	/go/ `
ii.	low	/lo/
iii.	role	/rol/
iv.	show	/ʃo/
V.	borrow	/boro/
vi.	moment	/moment/
vii.	lonely	/lonlı/
viii.	window	/windo/

Again, though the diphthong/au/does not exist in Chakma, Chakma speakers of English, in general, can pronounce it with ease in words like *shout*, *loud*, *cow. allow*, etc.

Another important difference between Chakma and English vowel systems is that in English there are three centring diphthongs /e∂/, /I∂/ and /u∂/ whereas these do not exist in Chakma. Chakma speakers, therefore, face difficulties in pronouncing these sounds. In Chakma English the diphthong /e∂/ is realized as /ɛa/; /I∂/ is realized as two separate vowels /I/ and /a:/ which in turn form the nuclei of two different syllables and /u∂/ is realized as either /u/ or as /u/ and /o/ or as /I/ and /o/ or as /u/ and /a:/. The data illustrating these are given below:

CHAKMA AND ENGLISH - A PHONOLOGICAL COMPARISON

(23)) English Words		Pronounced by
			Chakma Speakers
	(a)	i. there	/dear/
		ii. pair	/pear/
		iii. layer	/lear/
		iv. repair	/rɪpɛar/
		v. daring	/dearin/
	(b)	i. ear	/ıar/
		ii. peer	/pıar/
		iii. sheer	/∫ıar/
		iv. severe	/∫ıbhıar/
		v. idea	/aɪd̪ɪa/
	(c)	i. tour	/dur/
		ii. moor	/mur/
		iii. poor	/puor/
		iv. pure	/pior/
		v. sure	/∫ıor/
		vi. endure	/endior/
		vii. security	/ʃɪgjurɪd̪ɪ/
		viii. virtuous	/bharčuač/

5.4 Syllable structure of Chakma and English

In In this section we shall look into the syllable structure of the monomorphemic, monosyllabic English borrowings of Chakma. We know that the linguistic system of native language is extended to the foreign structures (phonological, morphological and syntactic). The core syllable structure of monomorphemic, monosyllabic words of English is (C) (C) (C) (V) (V) (C) (C) (C) (C). It indicates that English does allow complex consonant clusters in the both onset and coda positions. The monomorphemic, monosyllabic English Words which have entered into Chakma are adapted to the system of syllable structure of Chakma.

Cha. B.-7

Due to the existence of only two consonant cluster in the syllable initial position and no cluster in the syllable final position, Chakma speakers have problems in pronouncing English words with complex onsets (other than c + j or c + w sequences) and complex codas. Words with complex onsets are generally simplified by inserting a vowel. Chakma, as pointed out earlier, forms syllable initial clusters only with /j/ and /w/. Hence, English words with clusters are simplified as illustrated below:

(24)	English Words	Pronounced by Chakma Speakers
i. iii. iv. v. vi. vii. viii. ix.	glass draw try dry play snow school stretch	/gɛlaːč/ /doro/ /t̞ɪraɪ/ /d̞ɪraɪ/ /pɪlɛ/ /ʃono/ /ɪčkul/ /ɪčt̞ɛrɛč/
X.	slip straight	/ʃılıp/ /ıčţereţ/

In case of English syllables with complex coda the Chakma speakers either drop the consonant(s) or insert a vowel and form a new syllable. Consider for example, the data given below:

(25) English Words	Pronounced by
•	Chakma Speakers
L kept	/ kεp/
ii. touched	/t̪ a:c̆ /
iii. task	/t̪ a:c /
iv. last	/l̈aːč/ or /laːt̪ /
v. _{texts}	/t̪eĕ /or /t̞ek/̈
- vi. hand	/ĥæn/
vii. gent	/j en/

CHAKMA AND ENGLISH - A PHONOLOGICAL COMPARISON

		001111111001
viii.	scent	/∫en/
ix.	bold	/bol/
X.	told	/tol/

5.5 Pedagogical implications

In the previous sections of this Chapter through a comparative study between the consonants, the vowels and the syllable structure of Chakma and English we have tried to explore, though not in detail, the areas of ease and difficulty in the learning of English by the Chakma speakers. To put it differently, we have observed the influence of Chakma sound system on English spoken by Chakma speakers. Though the present study is not an exhaustive and comprehensive one, it throws, at least, a glimpse of light on the so far little discovered chunk of the second language learning. It helps us understand and predict the possible areas of errors in English used by Chakma speakers.

The major areas of differences that exist between the sound system of Chakma and that of English, it is expected, will help the English teachers from the Chakma region (who are properly trained in linguistics and pedagogy) derive strategies for tackling the problem faced by Chakma learners. It should be noted here that the English teachers need training in linguistics and pedagogy for the successful utilization of such study. Some suggestions can be made for the teacher to evolve a scientific plan for the presentation of teaching materials before the Chakma learners of English so that they can overcome the major areas of difficulties in pronunciation to a large extent, if not fully. These are given below:

(1) Teacher should take care of the correct pronunciation of the alveolar plosives /t/ and /d/ as in the words like *tall*, *dall*, *sit*, *seed*, etc.

- (2) Correct pronunciation of /k/ and /tS/ at the word initial position should be taken care of.
- (3) Teacher should help the Chakma learners pronounce the intervocalic voiceless plosives /p/, /t/ and /k/ and voiceless affricate /t / as in the words like *happy, hoping, writing, fitting, picking, bucking, reaching, butcher,* etc.
- (4) Teacher should pronounce the English fricatives: f/, f/,
- (5) English vowels and diphthongs should be given correct length. The distinction between /I/ and /i:/ and between /u/ and /u:/ should be emphasized in the pronunciation of pairs such as:

i. fill feel
ii. nill kneel
iii. pull pool

- (6) Teacher should guide the learners to correctly pronounce the vowel /c:/ as in the words *law, caught, ///* as in the words *son, ten, /3:/* as in the words *turn, serve* and the weak vowel /∂/ as in *about, figure*, etc.
- (7) Moreover, the diphthongs /ðu/, /eð/, /Ið/ and /uð/ are problematic for Chakma speakers and so they should be guided to pronounce these diphthong with proper length as in words like *low, so, there, more, cheer, peer, during, cure*, etc. It is worthy to mention that the Chakma learners can pronounce the diphthong /eɪ/, in isolation, but not in the words like *make, day*, etc. Hence, they need proper guidance on the part of the teacher to use it correctly.
- (8) We have seen that Chakma speakers cannot correctly

pronounce the English words having the syllables with complex onsets and/or complex codas e.g. strong, play, strengths, burnt, etc. Teacher should present such words in a scientific teaching-learning situation, so that Chakma learner can get impetus to practice them.

The areas of difficulties and suggestions illustrated here are not the only ones, but are some out of the huge number of them.

Again, this study can also help the course designers and material producers in focussing on the areas that might be difficult for the Chakma learners. In this way the theory of applied linguistics can be enriched with the help of the insights drawn from such phonological study.

It should be repeated here that in spite of the limited range of this study, it will certainly add to the enrichment of theoretical phonology. With the help of the analysis done here more experiments can be carried out to evaluate the universality of the phonological theories already established.

5.6 Conclusion

In this Chapter we have tried to show the impact of the Chakma sound system on English spoken by Chakma speakers and its pedagogic implications. On the whole, this study is a beginning of the study of a vast area of Chakma phonology. In this work we have been able to explore only the segmental aspect of Chakma phonology in some detail. More research needs to be done in other areas of Chakma phonology. Moreover, the entire syntactic analysis of Chakma has remained untouched by the linguists. It can, therefore, be said in the conclusion that ample scope is there for studying this tribal language and such linguistic study may be a step towards the concretization of the hypothetical UG

BIBLIOGRAPHY

Anderson, J. (1969). "Syllable or Non-syllable Phonology." *JL5*: 136-142.

Anderson, J. and C. Ewen (1987). *Principles of Dependency Phonology*. Cambridge University Press, Cambridge.

Anderson, S. R. (1974). *The Organization of Phonology*. Academic Press, New York.

Anderson, S. R. (1976). "Nasal Consonants and Internal Structure of Segments". In *Language* 52: 326-344.

Anderson, S. R. (1985). *Phonology in the Twentieth Century*. Cambridge University Press, Cambridge.

Archangeli, D. and D.T. Langendoen (eds.) (1997). *Optimality Theory: An Overview*. Blackwell, Massachusetts.

Aronoff, M. (1976). Word Formation in Generative Grammar. MIT Press, Cambridge, Massachusetts.

Aronoff, M. and S. N. Sridhar. (1983). "Morphological Levels in English and Kanada, or Atarizing Reagan" In J. Richardson, M. Mark and A.Chukerman (eds.). *Parasession on the Interplay of Phonology, Morphology and Syntax. CLS 19.* CLS, Chicago. 16-35.

Balasubramanian, T. (1981). A Textbook of English Phonetics for Indian Students. Macmillan India Ltd., Madras.

Bansal, R. K. and J. B. Harrison (1983). Spoken English for

India. Orient

Longman, Madras.

Bardhan, S. K. (1999). *A* Phonological Study of Chakma and English. (M. Phil. Dissertation). CIEFL, Hyderabad.

Presented in 32nd All India Cxonference of Dravidian Linguists, Warangal.

on English Loan Words of Chakma'. *Journal of the Department of English of Burdwan University XV*: 71-83.

————(2008). 'Vowels of Chakma'. *Indian Linguistics* 69:29-41.

Bechert, H. (1979). "Chakmas". In Dhirrasekhara (ed.) Encyclopedia of Buddhism. Govt. of Sri Lanka, Colombo.

Berger, S. B. and M. Halle (1989). "Why Phonology is Different." *Linguistic Inquiry* 20: 57-70.

Bhattacharya, S. (2000). "Introducing the Chakmas: A Nation in the Offing." *Social Perspectives* 28: 149-166.

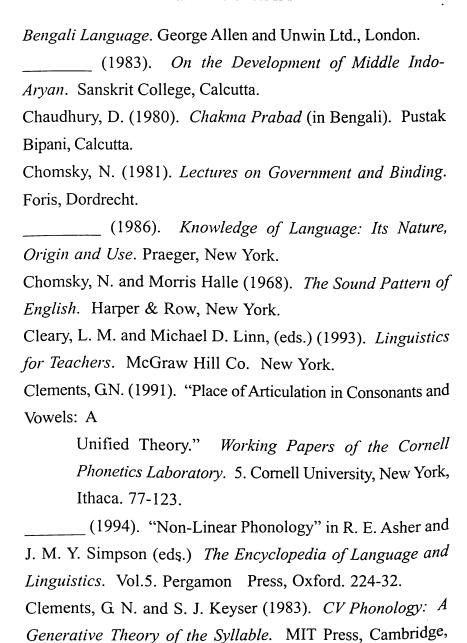
Blevins, J. (1995). "The Syllable in Phonological Theory." In J. A. Goldsmith (ed.). *The Handbook of Phonological Theory*. Blackwell, Oxford. 206-244.

Bloomfield, L. (1933). *Language*. Allen and Unwin, London. Catford, J. C. (1977). *Fundamental Problems in Phonetics*. Edinburgh University Press, Edinburgh.

A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH

104

Catford, J. C. (1988). Practical Introduction to Phonetics.
Clarendon Press, Oxford.
Chakma, C. R. (1984). Chakma Kadha Bhandal (Chakma-
Bengali dictionary). Pustak Bipani, Calcutta.
(1986). Naba Chandra Paththam Changma
Byakaran (in Bengali).
Pustak Bipani, Calcutta.
(1987). Chakmas-in-Ages: Ancient Period (in
Bengali). Pustak Bipani, Calcutta.
(1988). Chakmas-in-Ages: Medieval Period (in
Bengali). Pustak Bipani, Calcutta.
Chakma, N. (1989). Chakma Bhasa O Sanskriti Prasanga (in
Bengali). Tripura Tribal Cultural Research Institute, Agartala.
(undated). A Short Profile of Chakma Language,
Literature and Culture. CBSA Publication, Agartala.
(1994). "Highlights of Chakma Language and Literature".
In Souvenir. North-Eastern Literary Conference, Agartala.
Chakma, P. B. (1993). Chakma Dictionary. Arts and Culture
Department, CADC, Kamalanagar.
Chakma, S. (1985) Chakma Parichiti (in Bengali). Tribal
Institute, Rangamati.
(1988). Parbatya Chattagramer Upajatya Bhasa
(in Bengali). Tribal Institute, Rangamati.
Chatterjee, S. K. (1926). The Origin and Development of



Massachussetts.

A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH

106

Cowan, W. and J. Rakusan (1985). *Source Book for Linguistics*. John Benjamins, Philadelphia.

Dewan, A. K. (1993). *Chakma Jatir Itihas Bichar* (in Bengal). Bodhicharya Sabha, Calcutta.

Durand, J. (1986). French Liaison, Floating Segments and Other Matters in Dependency Framework. In J. Durand (ed.). *Dependency and Non-Linear Phonology*. Croom Helm, London. 161-201.

Durand, J. (1987) .On the Phonological Status of Glides: The Evidence from Malay." In J. Anderson and J. Durand (eds.). *The Explorations in Dependency Phonology*. Foris, Dordrecht. 79-108.

_____ (1990). Generative and Non-Linear Phonology. Longman, London.

Durand, J. and F. Katamba (eds.) (1995). Frontiers of Phonology: Atoms, Structures, Derivations. Longman, London. Eliezer, J. (1995). The Logical Structure of Phonological Representation. M.Phil. dissertation (unpublished). CIEFL, Hyderabad.

Fudge, E. (1966). "The Nature of Phonological Primes." *JL3*: 1-37.

(1969).	"Syllables" . <i>JL5</i> : 253-257.
(1987).	"Branching Structure within the Syllable."
JL23: 259-277.	

Gosh, T. (1996). Aspects of Vowel Phonology in Bangla and Bangla English. M.Phil. dissertation (unpublished). CIEFL, Hyderabad.

Gimson, A. C. (1980). An Introduction to the Pronunciation of English (3rd Edn.). Edward Arnold, London.

Goldsmith, J. A. (1979). Autosegmental Phonology. Garland, New York.

_____(1989). "Licensing, Inalterability, and Harmonic Rule Application". In R. Graczyk, B. Music and C. Wiltshire, (eds.). Papers from the 25th Annual Regional Meeting of the Chicago Linguistic Society. Chicago Linguistic Society, Chicago.

_____ (1990). Autosegmental and Metrical Phonology. Blackwell, Oxford.

(1993). "Harmonic Phonology". In J. A. Goldsmith (ed.). The Last Phonological Rule: Reflections on Constraints and Derivations. Chicago University, Chicago. 21-60.

Grierson, G. A. (1967). Linguistic Survey of India. Vol.V, Part I. Motilal

Banarsidas, Delhi. (Reprint).

_____ (1987). Languages of North-Eastern India. Vol.I and II. Gian Publishing House, Delhi.

Gussenhoven, C. and H. Jacobs (1998). *Understanding Phonology*. Edward Arnold, London.

Halle, M. (1962). "Phonology in Generative Grammar". Word

18: 54-72.

Halle, M. and G. N. Clements (1983). Problem Book in Phonology. MIT Press, Cambridge.

Hockett, C. P. (1963). A Course in Modern Linguistics. Macmillan, New York.

Hooper, J. (1976). An Introduction to Natural Generative Phonology. Academic Press, New York.

Hunter, W. W. (1973). A Statistical Account of Bengal. D.K. Publishing House, Delhi. (Reprint).

Hutchinson, S. R. H. (1978). *Chittagong Hill Tracts*. Vivek. Delhi. (Reprint).

James, C. (1980). Contrastive Analysis. Longman, Essen.

Jensen, J. T. (1993). *English Phonology*. John Benjamin Publishing Co., Amsterdom.

Jones, D. (1962). *The Phoneme: Its Nature and Use* (2nd Edn.). Cambridge University Press, Cambridge.

____ (1977). English Pronouncing Dictionary. (14th Edn.). Dent, London.

Kahn, D. (1976). *Syllable Based Generalization in English Phonology*. Ph.D.dissertation. MIT Press, Cambridge, Massachusetts. Distributed by IULC.

Katamba, F. (1993). Morphology. Macmillan, London.

Kaye, J. (1990). "Coda Licensing." Phonology 7: 301-330.

Kelly, J. and J. Local (1989). Doing Phonology. Manchester

University Press. Manchester, New York.

Kenstowicz, M. (1994). *Phonology in Generative Grammar*. Blackwell, Cambridge.

Kenstowicz, M and C. Kisseberth (1979). Generative Phonology: Description and Theory. Academic Press, New York.

Khisa, P. (1996). *Parbatya Chattagramer Samasya* (in Bengali). Sahitya Prakash, Dhaka.

Kiparsky, P. (1982a). "From Cyclic Phonology to Lexical Phonology." In H. V. Hulst and N. Smith (eds.). *The Structure of Phonological Representation Part I.* Foris, Dordrecht.

_____(1982b). Explanation in Phonology. Foris, Dordrecht. _____(1985). "Some Consequences of Lexical Phonology". In C. Ewen and J. Anderson (eds.). Phonology Yearbook 2: 85-138.

Ladefoged, P. (1975). A Course in Phonetics. Harcourt Brace Jovanovich Inc., New York.

Ladefoged, P. and J. Maddieson (1996). The Sounds of World's Languages. Blackwell, Oxford.

Lass, R. (1984). *Phonology*. Cambridge University Press, Cambridge.

Lewin, T.H. (1870). Wild Races in South-Eastern India. Firma KLM Pvt. Ltd., Calcutta.

_____ (1977). A Fly on the Wheel. Tribal Research Institute,

110

Aizawl. (Reprint).

Lyons, J. (1979). *Introduction to Theoretical Linguistics*. Cambridge University Press, Cambridge.

Mazumdar, P. (1997). *The Chakmas of Tripura*. Tripura Tribal Cultural Research Institute and Museum, Agartala.

McCarthy, J (1985). Formal Problems in Semitic Phonology and Morphology. Garland, New York.

Mohanan, K. P. (1982). *Lexical Phonology*. Ph.D. dissertation. MIT, Massachusetts. Reproduced by IULC.

Mohanan, P. and T. Mohanan (1994). "Lexical Phonology of the Consonant System in Malayalam". In *LI.15*: 575-602.

O'Connor, J. D. (1971). Advanced Phonetic Reader. Cambridge University Press, Cambridge.

University Press, Cambridge. (1980). Better English Pronunciation Cambridge.

Paulose, V. D. (1997). A Comparative Study of Sound Change in Sibilants in Assamese, English and Malayalam and its Pedagogical Implications. M.Phil. dissertation (unpublished). CIEFL, Hyderabad.

Pesetsky, D. (1979). Russian Morphology and Lexical Theory. Ms. MIT, Cambridge. Massachusetts.

Prince, A. S. and P. Smolensky (1993). *Optimality Theory:* Constraint Interaction in Generative Grammar. Ms. Rutgers University and University of Colorado, Boulder.

Ramsaran, S. (ed.) (1990). Studies in the Pronunciation of English. Routledge, London, New York.

Robins, R. H. (1964). *General Linguistics: An Introductory Survey*. Longman, London.

Roca, J. (1994). Generative Phonology. Routledge, London.

Sattar, A. (1966). *Arannya Janapade* (in Bengali). B Abdul Brothers and Co., Dhaka.

Selkirk, E. (1980a). "Prosodic Domains in Phonology: Sanskrit Revised" In M. Aronoff and M. L. Kean (eds.). *Juncture*. CA: Anmalibri, Saratogo. 107-129.

_____(1980b). "The Role of Prosodic Categories in English Word Stress". In *LI* 11: 563-603.

_____(1988).. Dependency, Place and the Notion 'Tier'. Ms. Amherst University of Massachusetts, Amherst.

Sharma, D. D. (1998). *Tribal Languages: Ladhakh-1* (Part one). Mittal Publications, New Delhi.

Spencer, A. (1992). Morphological Theory. Blackwell, Oxford.

_____ (1996). Phonology: Theory and Description. Blackwell, Oxford.

Stampe, D. (1979). A Dissertation on Natural Phonology. Garland, New York.

Sundar, V. M. (1993). *Vowel Length in Tamil and English*. M.Phil. dissertation (unpublished). CIEFL, Hyderabad.

Talukdar, S. P. (1988). *The Chakmas: Life and Struggle*. Gian Publishing House, Delhi.

112 A PHONOLOGICAL STUDY OF CHAKMA AND ENGLISH

(1994). Chakmas: An Embattled Tribe. Uppal Publishing House, New Delhi.

Uffman, C-(2005), "Optimal Geometries". In Van ostendorp, Mand Van de Weijer(eds.). *The Internal Organization of Phonological Segments*. Berlin, Mouton de Gruyter.

Verma, S. K. and N. Krishnaswamy (1989). *Modern Linguistics:* An Introduction OUP, Madras.

Wiltshire, C. (1992). Syllabification and Rule Application in Harmonic Phonology: Ph.D. dissertation. Chicago University, Chicago.

-0-



