CHAPTER II

Syllable Structure Rules

2.1 Overview: This chapter will show that certain phonological processes apply in a specific manner to words in IE to generate a string of uniquely structured syllables. These processes can be seen in (i) treating orthography as underlying representation (henceforth UR), (ii) assuming a strength hierarchy among syllables and in (iii) applying a set of ordered rules constrained by the strength hierarchy to the UR. Of these, the syllable strength hierarchy will be argued to be a principle of Universal Grammar that applies to IE also. These processes will be shown to affect the assignment of stress and the assignment of phonetic representation (henceforth PR) to a given string.

As stated in the conclusion of Chapter I, all instances of IE in this chapter will be taken from only one of its varieties, namely Maithili speakers' English (henceforth ME), for purposes of clarity of exposition. Nevertheless, it will be clear in Chapter III where we analyze data from other varieties of IE that the kind of analysis proposed for IE in this chapter has its parallels in other varieties of IE too.

Section 2.2 of this chapter presents evidence in
support of certain phonological processes of the analysis to be undertaken here. Section 2.3 examines the validity of proposing orthography as the UR in ME. The hypothesis of the syllable strength hierarchy is presented in Section 2.4. Section 2.5 proposes rules that apply to the underlying structure of syllables. The advantages of this analysis are shown in Section 2.6 where it is claimed that the analysis presented in this chapter is adequate to predict and explain certain facts of IE phonology at a minimal cost.

2.2.1 Conspiracies in ME: It has been shown earlier in Chapter I that the pronunciation of a word like minister differs between ME and AE/BE. This difference can be attributed to variation in the analysis of the word medial consonant cluster. Whereas AE syllabifies -st- as the onset, ME syllabifies the cluster into the coda and the onset of adjacent syllables. It is argued that this difference in the configuration of heavy and light syllables accounts for the difference in the placement of stress in AE/BE and ME.

2.2.2 Beyond Consonant Cluster: Differences in pronunciation are also found in words where consonant clusters are not involved. Such differences can be seen in the pronunciation of words like available, develop or
mulligatawny and the like. At times the PRs of these words differ to the extent of causing mutual unintelligibility. Bansal (1969) found that develop pronounced as əd̪ɛvləp by a group of IE speakers was understood by some BE speakers as əd̪ɛvləp. I feel IE speakers have similar difficulties in understanding typical AE/BE pronunciations of English words. AE and ME PRs of some English words are given below:

(1) Word  AE/BE  ME²

develop  divələp  dəvləp
available  ævələbl  ðævləebul
mulligatawny  məlɪgtəunii  məlligeto{,uni

AE/BE has only one closed syllable, word-finally in develop (see Hornby (1974))² ME PR shows two closed syllables in each in develop and available. ME PRs also show elision of vowels in these words. Normally no elision is witnessed in these words in native varieties. The realization of the initial and antepenultimate vowels in mulligatawny also differs between AE/BE and ME even-though there does not appear to be a significant difference in syllable quantity and stress pattern.

It may be observed that the penultimate vowel in develop retains its quality and quantity in the AE/BE PR
whereas in ME it has been elided. I will show in Chapter IV that vowel elision is a low level phenomenon in IE but such an elision is preceded by the reduction of the length of the vowel if it is long. I will show in this chapter that the process of reduction has applied to the penultimate syllable in *develop* and to the antepenultimate in *available* and *mulligatawny*.

I have already argued in 1.6.7.5 of Chapter I (and also some argument to this effect will be presented in 2.5.3.2 of the present chapter) that the prosodic pattern, i.e., stress, accent, etc., of a word is a consequence of the syllable-structure pattern of that word. Therefore differences of vowel length and consequent differences of syllable structure between ME and AE/BE in *available* or *develop* also cause prosodic differences between them. ME has primary stress on the initial syllable in *develop* and on the penultimate in *available*. AE/BE has it on the penultimate and antepenultimate syllables respectively in these words. The initial syllable in *develop* gets some degree of stress in ME whereas it is stressless in AE/BE.

In view of these differences it appears significant to ask what rules "conspire" in ME to create syllable structures so radically different from syllable structures of these words in native varieties.
2.2.3 **Surface facts**: Such conspiracies for AE are clearly indicated by /æs/ in (1). In *mulligatawny* \( u \) and \( i \) are realized as short. \( e \) in the antepenultimate syllable of this word is short, but it is long in the initial and penultimate syllables of *available*. Similarly I will show in Section 2.3.3 of the present chapter that the initial \( e \) of *develop* is the only vowel in this word that is generated long by syllable structure rules. But this vowel also loses its length optionally through a low-level process in AE.

The *ay* sequence generates a long vowel in *mulligatawny* but the *ai* sequence fails to do so in *available* in AE. In fact, it will be shown that *ai* is first reduced by the syllable structure rules and then elided in the \( A_3 \) of the word in the same manner as *e* in the penultimate syllable of *develop*.

The word-final vowel corresponding to \( X \) in spelling is tensed in *mulligatawny* but the word-final vowel corresponding to *e* in spelling is elided in *available*. Whereas all other vowels are tensed word finally in AE, *e* never occurs in this position in the PA of AE or AB/BS words.

Interestingly enough, whereas elision of final *e* in *available* seems to create a cluster of \(+\) + obstruent \(+\) + lateral \(^7\) consonants inducing a vowel apenthesi...
(i.e., \(\text{[\text{avlaabul}_7}\)), the same kind of cluster is often created in available by dropping ai (hence \(\text{[\text{vl-}_7}\)) in ME.

In brief it would seem necessary to assume a derivation of the following kind of words in (1) to arrive at their observed PRs in ME:

(2) mulligatawny available develop
mulligatawny aavalaabul d\text{evelop}
mulligeto\text{onii} \text{avlaabul} d\text{evelop} \text{PR

The basis for assuming the derivations as in (2) are the following:

(i) Some orthographic symbols or sequences of symbols are realized as long vowels, such as a in the initial and the penultimate syllables of available, and some are realized as short such as i and u in mulligatawny.

(ii) Some syllables, such as the antepenultimate in mulligatawny, appear to reduce in weight in a certain context. At times, as in the case of ai in available and the penultimate e in develop, they are also elided.

(iii) Some kind of spelling convention and context sensitive rules appear to be in operation in ME. The elision of
the word final e in available appears to be an instance of spelling convention. The non-lengthened realization of a in the antepenultimate syllable of mulligatawny and the lengthening of a in the initial and the penultimate syllables of available on the other hand appear to be context sensitive phenomena. Similarly clusters of certain consonants appear to be possible word medially, such as [ - vl- ] in [ æwleebul ] and [ dévl- j, but not finally so that [ æwleebl ] becomes [ æwleebul ].

As we go along it will be seen that through processes of the kind mentioned above, such as tensing, reduction, elision, etc., ME conspires to ensure strings of alternating heavy and light syllables wherever possible.

2.2.4 Manifestations of Intuition: In brief, we shall argue for the following as the manifestations of ME speakers' intuition:

(i) Orthography as UR: Orthographic representation will be argued to be the UR for ME. It will be argued that given the orthographic representation of a word, everything else is predictable by rule.
(ii) **Syllable Strength Hierarchy**: The grammar will be shown to recognise a hierarchy of syllables according to which certain kinds of syllables will appear to be stronger than syllables of certain other kinds. This hierarchy will be shown to be of phonological significance in predicting the reduction (and deletion) of one of two adjacent heavy syllables.

(iii) **A System of Ordered Rules**: It will be argued that rules apply in an ordered fashion to simplify consonant clusters and to add to or reduce the weight of syllables. The application of these rules will be shown to be constrained by the hypothesis of Syllable Strength Hierarchy (henceforth SSH).

2.3 **Orthography as UR**

2.3.1 **Abstractness of UR**: Standard generative phonology maintains that "phonological phenomena are predictable from grammatical representations by a system of ordered rules" (Bresnan (1972)). This approach to the phonology of natural languages assumes that language (any language) has both idiosyncratic and systematic features. The lexicon projects the idiosyncratic, unpredictable aspects. To this projection, then, rules apply to assign systematic predictable features. Hence it may be the case that one idiosyncratic unit has several
systematic rule governed variants. Thus one UR may have several PRs.

In terms of language-learning it means that a language-learner acquires a knowledge of lexical items and "internalizes a system of rules" (SPE; p. 3). Fowler's (1979) experiments support this hypothesis. The results of these experiments indicate that what seems to be constantly going on in language acquisition is an operation where systematic and predictable aspects are mapped on to the unsystematic and unpredictable aspects. This seems to be implied also by the innate abstracting capacity of a child we referred to in Chapter I. Hence, a grammar, in order to be "a description of the speakers' competence (SPE; p. 3)" must begin where the speaker begins.

The theory of grammar then seems to demand that all and only predictable aspects should form part of the UR. All other features must follow in a predictable way through general rules. By their nature then URs of this kind are bound to be abstract. In the following paragraphs we are going to argue for such a UR by assigning definite specifications to orthographic symbols.
2.3.2 **SPE and Orthography**: SPE seriously considered the idea of proposing in general URs which are very close to conventional orthography (p. 48). Yet it stopped short of adopting orthography as UR, perhaps due to its own limitations: "One might inquire whether this proposal is not after all correct for the URs. We have considered this possibility quite seriously and it has something to recommend it. We reject it, however, for two reasons. First, the solution with final e (for predicting stress in giraffe) is not highly valued in terms of the general measure of evaluation (i.e., complexity measure), second, we have not been able to find a simple system of rules that give required results in detail under this assumption" (p. 51).

Within the theoretical framework of the present study, SPE's objections against adopting orthography as UR do not appear to be valid for ME for reasons given below. Psycholinguistic factors that seem to cause orthographic symbols to take phonetic values in IE have already been discussed in Chapter I.

2.3.3 **Evidence**: Some evidence for adopting orthography as UR for ME can be the following:

(1) **Spelling Pronunciation**: It seems likely that orthographic symbols are interpreted by an ME speaker in
the same manner for both familiar and unfamiliar words. Bansal (1969) and many other researchers referred to in Chapter I have called this process spelling pronunciation. Well known examples of this phenomenon in NS (and other varieties of IN) are the realization of \( h \) in the RAe of \textit{what} and other \textit{wh} words or the realization of the initial vowel as tense in \textit{vehicle} and \textit{deter}. The rules we formulate later in this chapter would be further proof of this.

(ii) **Spelling Notation:** English orthography is often used by all NS speakers to transcribe Maithili words and names and in this the NS Community as a whole shows remarkable conformity. Hindustani transcription is made use of extensively in the notebooks and manuals prepared by the Indian army for its non-commissioned cadres. This transcription is easily understood all over the country across language backgrounds. In this system the Roman alphabet is used for representing Hindustani and the actual pronunciation in this system closely corresponds with spelling.

(iii) **Phonemic Range:** Bansal (1967) lists 40 phonemes for NS which are represented in orthography by the twenty-six letters of the English alphabet. As far as vowels are concerned they find orthographic representation in
the five vowel letters, $\text{a}$, $\text{e}$, $\text{i}$, $\text{o}$ and $\text{u}$ and two semi-vowel letters $\text{y}$ and $\text{w}$. Bansal lists 16 to 20 realizational possibilities of these letters in GIE.

This, however, does not mean that there are only five or seven vowel phenomes in IE. That is a structuralist question redundant in a generative framework like the present. It could be said within the structuralist framework that there are three plural morphemes (or allomorphs) in English. Within generative framework it is said that there is only one plural morpheme which is realized in different ways depending upon its phonological contexts.

Similarly it is being claimed here that the ME lexicon need not have more than five vowels from which different kinds of vowel sounds may be realized in different contexts. Thus many (vowel) letters will have a phonemic range predictable from their contexts (see Appa Rao (1978)). It may be the case that orthographic $\text{a}$ is realized as $\text{e}_7$, $\text{e}_7$, $\text{æ}_7$, $\text{æ}_7$, or $\text{o}_7$ but it does not seem to be an accident that it is never realized as $\text{i}_7$ or $\text{u}_7$, etc. Perhaps this is another instance of limited arbitrariness in languages. Therefore it does not appear possible to predict whether $\text{a}$ or $\text{o}$ of the alphabet would occur in
the context e t. Theoretically, all the five vowel letters may occur there. But once the lexicon specifies it as cat, the rules should be able to predict its precise realization. In other words it is being suggested that the variant phonological correlates of orthographic symbols are predictable by rules in ME.

(iv) Recoverability: Just as one orthographic symbol may have several phonological realizations, one phonological realization depending upon its context may be traced to more than one symbol. Two vowel symbols may neutralize and thus both a and e can have the surface [e] or both i and e can have [i]. But in a great majority of cases ME speakers seem to be able to trace the vowel in the PR to its UR in a new lexical item too.

One of the criteria for proposing something as a UR is its unique recoverability. This criterion seems to be met by orthography in ME. Some support for this hypothesis comes also from the experiments of Fowler (1979) with American children's recognition of English spelling patterns in nonsense words. It has already been suggested in Chapter I, that IE may have similarities with child and pidgin languages.
On the basis of evidence presented above it seems possible to treat orthography as UK in AE. But the most crucial evidence seem to be the Eds of AE words themselves which can be derived in a simple manner if we assume a particularly specified orthography as their Eds. Such specifications are given below.

Character of Specification: Gupta (1920) and Premalatha (1975) have demonstrated that in IE vowels alternate between their full form and reduced form and that reduced forms do not necessarily centralize to /ɛ/, as they do in AE/BE. This observation holds good for AE also which will be clear from instances given later in this chapter. It appears that a change in vowel quantity is not synonymous with a change in its quality in IE. For example a does not necessarily lose its distinct quality when it is reduced. There are, however, contexts in which it is generated as /ɛ/, losing both its quantity and quality. Some examples of these realizations are given below:

(3) a. personal /ˈpɜrsənəl_7 b. anaphora /ənəˈfərərə_7
vulgar /ˈvʌlɡər_7 oklahoma /ˈɔklaˌhɑmə_7
vatican /vəˈtɛkən_7 anatomy /ænəˈtəmii_7

/ɛ/ is reduced in quantity in the final syllable of
all words in (3a) and in the antepenultimate syllable of all words in (3b). Yet the quality of reduced \( a \) in all words in (3) is not alike. Since quantity rather than quality of vowels seems to affect the syllable structure and consequent rhythm significantly, the specification of the PR quality of vowels in the UR will be only tentative. Rules for assigning the precise vowel quality to PRs seem to be a low level phenomenon. Such rules for IE have been given in Appa Rao (1978). We shall not discuss these rules in the present study.

The specifications given below crucially assume certain vowels to be short and others to be long underlyingly as was suggested in Chapter I. These vowels will, thus, be seen to make certain syllables light and others heavy. It is, therefore, assumed that Paninian aphorisms\(^5\) of laghu and guru (i.e., light and heavy) for Sanskrit and other Indian languages apply to IE as well and there are only two kinds of syllables in IE from the point of view of their weight: light and heavy.\(^6\) The alternation between short and long vowels will be shown to be rule governed and will also be shown to create strings of alternating heavy and light syllables which cause the typical ME rhythm.

Phonetic specifications of underlying vowels for ME are given below:
2.3.4.1 UR of a: The UR of a in ME is (4):

(4) a = 

+ Syllabic
- High
+ Low
- Round
- Back
+ Long

The claim in (4) is crucially about the length of a. Some evidence to support this claim is given below:

Lehiste (1970) suggests "other factors being equal a high vowel is shorter than a low vowel. It is quite probable that the difference in vowel length according to degree of opening is physiologically conditioned and thus constitutes a phonetic universal. The length of low vowels is due to the greater extent of the articulatory movements involved in their production." ME also seems to follow this universal tendency and a being a low vowel is specified as \( + \) long.7

Secondly, a is always realized long in monosyllabic words in ME, e.g., car, cat, call, etc. Finally, a does not generally lose its length in ME even when it precedes a consonant cluster as in chivalrous, fantastic, etc.
2.3.4.2 UR of Ω: UR of Ω in ME is specified as (5):

(5) Ω = [+ Syllabic
- High
+ low
+ Round
+ Back
+ Long]

Our claim for length specified in (5) is based on the following evidence:

Being a [+ low [- High] vowel like a, Ω is [+ long] according to Lehiste's phonetic universal cited earlier. Ω is mostly long in monosyllabic words such as fort, cost, fog, hot, etc., Like a, Ω also does not generally lose its length before a cluster of consonants as for example in export, report, etc., Contexts in which Ω reduces in length can be predicted by rules to be proposed later.

2.3.4.3 UR of e: UR of e in ME is given in (6):

(6) e = [+ Syllabic
- High
- Low
- Back
- Round
+ Long]
The underlying length of \( a \) in most varieties (including ME) of IE appears to be uncertain, perhaps because of its [-High,-Low] character. Yet empirically desirable results seem to follow from specifying it \( [-long] \) in the UR for ME. Some evidence for this assumption is as follows.

Being [-High, -low] its intrinsic duration is longer than that of \( [+\text{High}] \) vowels.

Generally there is no perceptible difference between the length of \( \text{pen} \) \( [\text{peen}] \) and \( \text{pain} \) \( [\text{peen}] \) in ME. It can occupy the foot-initial position in the middle of a word without the aid of a tensing rule such as \( \text{ephemeral} \), \( \text{monongahela} \) and \( \text{périphéral} \) in ME. Before clusters \( a \) generally loses its length in ME hence \( \text{test} \) \( [\text{test}] \) and \( \text{taste} \) \( [\text{test}] \) are identical in ME. Other short realizations of \( a \) are also rule governed.

2.3.4.4 UR of \( i \): ME \( i \) is underlyingly specified as (7):

\[
(7) \quad i = \begin{cases} +\text{Syllabic} \\ +\text{High} \\ -\text{Low} \\ -\text{Back} \\ -\text{Round} \\ -\text{Long} \end{cases}
\]
The following evidence supports (7):

Being a $\l + \text{High}_7$ vowel it is likely to be short. ME speakers realize it as short in monosyllabic words such as pin, bin, etc. It appears to require a lengthening rule to acquire the foot-initial position word medially as in political, edition, etc., in ME. Its tense alternants are generated by rules.

2.3.4.5 Orthographic $u$ in ME can be specified underlyingly as (8)

$$u = \begin{array}{c}
\text{+ Syllabic} \\
\text{+ High} \\
\text{+ Round} \\
\text{+ Back} \\
\text{- Low} \\
\text{- Long}
\end{array}$$

Some evidence for length in (8) is the following:

Being a $\l + \text{High}_7$ vowel, it is likely to be intrinsically short. Monosyllabic words with $u$ have a short vowel as in truth $\l \text{truth}_7$, put $\l \text{put}_7$, etc., in ME. $u$ cannot occupy the foot initial position without the aid of a tensing rule. Consider, for example, the stress on executive versus hallucinatory where a morphological rule assigns length and primary stress to $u$ in executive in ME.
Apart from the five orthographic symbols mentioned earlier, two more, y and w, known as semi-vowels, have vocalic functions in ME also. w, however, is not realized independently as a vowel. Occurring with any of the five mentioned above it makes the accompanying vowel tense as in crow, chew, or mulligatawny, etc.

y is realized as both /i/ and /ai/ in ME and its variant realizations appear to be lexically governed.

As stated earlier, the vowels that are interpreted to be long will have double representations and the vowels that are interpreted to be short will have single ones. This convention is being followed with a view to showing the length alternation and consequent changes in syllable structure clearly.

2.3.5 Vowel + Vowel Sequence: If long vowels are to have a double representation then a decision regarding the notational convention with respect to orthographic V+V sequence seems to be called for. That is, we have to decide upon the two possible representations of words like Bazaar or Careen. The possible representations are:
(9) Bazaar          Careen
   a. baazaaaar      caareeeeen
   b. baazaar        caareen

(9a) is a faithful representation of URs assuming the representation given in (4) to (8) above. But this notation, apart from being cumbersome, gives a false impression that some ME syllables can also be super heavy. Clearly, we need to modify such a representation.

(9b) appears to be notationally more convenient but it gives a false impression too. It seems to say that there is no difference in the underlying structures of the two syllables of Bazaar or Careen. Clearly, we need to modify this too.

A good way to solve this problem seems to be to order the rules in such a manner that they are sensitive to the distinction between words with a double-vowel sequence in spelling and words without such a sequence.

It will be shown in Section 2.5 in a discussion of Spelling Rules that apart from certain suffixes (like -ous, -ion, ial, etc.) double vowel sequences
like *aa, *ee, *ie, *ai, *oo, *ea*, etc., occur in spelling to generate a long vowel where otherwise a short vowel is the norm. This becomes obvious from a comparison of the PRs of the two sets of words given in (10) below:

\[
\begin{align*}
\text{(10) a. cater} & \quad \text{\[K\ddot{a}t\ddot{e}r\_7\]} \\
& \quad \text{b. careen} \quad \text{\[K\ddot{a}r\ddot{e}n\_7\]} \\
& \quad \text{major} \quad \text{\[m\acute{e}j\acute{a}r\_7\]} \\
& \quad \text{bazaar} \quad \text{\[b\ddot{a}z\ddot{a}r\_7\]} \\
& \quad \text{satan} \quad \text{\[s\acute{a}t\acute{a}n\_7\]} \\
& \quad \text{maroon} \quad \text{\[m\ddot{a}r\ddot{u}n\_7\]} \\
& \quad \text{basin} \quad \text{\[b\acute{e}\acute{s}i\acute{n}\_7\]} \\
& \quad \text{achieve} \quad \text{\[\acute{a}k\acute{c}i\acute{i}v\_7\]} \\
\end{align*}
\]

It is clear that the difference between the final syllables of (10a) and (10b) is significant and this difference must be shown in the phonological derivations of these words.

We shall present arguments in 2.5.3.2 of this chapter to prove that double-vowel sequence in spelling is a lexical rule to generate a long vowel where otherwise a short one is the norm. Such lexical rules can be ordered to apply before other rules apply. Such an application would automatically generate a long vowel and assign a structure to the final syllable of words with a double vowel sequence and fail to do so to words without such a sequence. The derivation given below should make the point clear.
This seems to be a good way to capture the distinction between syllables with a double vowel sequence and syllables without such a sequence. A rule for this purpose and arguments in support of such a rule would be given in Section 2.5.3 in this chapter.

2.4 Syllable Strength Hierarchy: The derivations in (11), however, indicate that there are different kinds of light and heavy syllables in ME. For example, assuming that the word final consonant usually does not add to the weight of its syllable (see Hayes (1981)), the final syllable is light in both basin and satan in the PR. But there is a difference in the way they have been derived. Whereas the final syllable in basin is interpreted inherently light and derived as such in ME, the final syllable in satan is interpreted inherently long but is derived as a light syllable by a subsequent rule.

Derivations in (11) show that there is such a
distinction also among other kinds of heavy syllables and that they behave differently from one another. For example, of the two inherently heavy syllables in *satan*, the final reduces perhaps to relieve the clash. But when the final is heavy because of a spelling rule such as in *careen*, it is not the final now but the initial that has to reduce. Inherently heavy syllables reduce in cases of clash with syllables heavy due to the presence of consonant clusters also. The reduction of the initial syllable in *corrupt* is an example of this phenomenon. In fact even a syllable made heavy by a lexical rule may reduce in case of clash with a syllable heavy due to consonant cluster, but the latter itself never reduces as may be seen in the case of words like *certain* in ME.

Thus ME appears to have three kinds of heavy syllables as listed below:

**Heavy Syllables in ME:**

(12) (i) Syllables heavy due to consonant cluster which may be called closed syllables such as the final in *corrupt*;

(ii) Syllables heavy due to vowel + vowel sequence, such as the final in *careen*; and

(iii) Syllables heavy due to vowels interpreted to be long such as in *satan*. 
Heavy syllables mentioned in (12) seem to be in a hierarchical relationship. Their hierarchical relationship can be stated as follows:

(12 i) is stronger than (12 iii), e.g. corrupt
(12 ii) is stronger than (12 iii), e.g. careen
(12 i) is stronger than (12 ii), e.g. certain

The hierarchy indicated above seems to embody two very natural phenomena in language. Firstly, according to Schane (1972), this hierarchy seems to suggest that "if there must be clusters consonant clusters will be more tolerable than vowel clusters."

Secondly, it seems to say that languages generally do not prefer consonant deletion. The consonant is retained perhaps because of, as Fowler (1979) suggests, its "heavier functional load." Deleting a consonant may confuse the meaning and obstruct the process of communication. The only other option for the speaker seems to be to reduce the length of the vowel if it clashes with the closed syllable. Hence, whereas the initial syllable does not reduce in monománia, it does in monòngabëla in ME.

It seems possible to suggest then that Syllable Strength Hierarchy (SSH) is a principle of Universal
Grammar whose exact manifestation may change from language to language. The Syllable Strength Hierarchy for ME can be formalized as follows:

(13) **English Syllable Strength Hierarchy (SSH)**

(i) \( \hat{VC} > (ii) \hat{VV} > (iii) VV \)

The phonological effect of the hierarchy mentioned in (13) can be formalized through an algorithm in (14). The algorithm is the following:

(14) **Reduceability Principle (RP)**

Reduceability of a heavy syllable is the converse of its position on the Syllable Strength Hierarchy.

In other words (14) says that the strongest syllable is the least reducible and so on. It is because of this algorithm that the rules seem to create the observed prosodic and structural patterns in *cater, careen* and *monongahela*. These universal principles, SSH and RP, will be seen to be crucial to the phonology of ME. Their presence can be legitimately expected in other natural languages too. An important function of these universal principles seems to be to ensure structural and prosodic harmony in a given string by removing situations of clash. In ME these principles
constrain the application of various rules which will be given in the following section.

2.5 Rules: The English language presents an ME speaker with different kinds of familiar and unfamiliar sequences of syllables. Given the underlying specification of orthographic symbols as proposed in Section 2.3 an ME speaker comes across a string of heavy syllables such as Tatamagouchi or purgatory or sometimes a string of light syllables such as vicinity or municipal, etc. This kind of all heavy or light syllables seem not to be highly preferred in natural languages as we have already seen in Chapter I. Hence languages conspire through rules to alter the underlying structure and as far as possible create strings of alternating heavy and light syllables on their preferred patterns. Hence, languages have phonological rules that reduce or add to the weight of syllables, that change, elide, insert, permute, or assimilate segments or their features, etc., in a string.

In the present section we shall look at rules that alter the underlying weight of syllables and thus create a string of heavy and light syllables that is fed to the stress rules.
Kinds of Rules: It has been said in Chapter I that a learner will learn new items or rules only when they appear to him as markedly different from the ones he knows and/or when he feels compelled to learn them. In all other cases he would abstract the new items too in terms of the existing ones.

This latter phenomenon seems to have overtaken orthography in ME. It has already acquired, it seems, the phonetic character of the orthography of Indian languages. Yet we have seen that marked orthographic conventions have been retained and they apply lexically to realize, for example, surface variants of Y. It would appear that different kinds of realizations of Y as \( \overline{y} \) as in you, or \( \overline{i} \) as vicinity, or \( \overline{ai} \) as in signify in ME are mostly identical with its realizations in AE/BE. In other words, what appear to be lexically marked conventions in English (AE/BE) seem to have survived nearly intact in ME also.

A similar situation exists in the rule component as well. Some rules that can only be provided lexically appear to have been retained by the grammar of ME. Elsewhere rules from the first language phonology of the ME speaker seem to apply to the given strings. Rules of the latter kind are however triggered only by the
contextual configurations of syllables and require no lexical information whatsoever. Thus the ME rule component can be divided into two broad categories; (i) Lexical and (ii) Contextual.

2.5.2 Order of Rules: It is a fact of language that exceptions, sub-regularities, morphological priorities or lexically marked alternations like go~went pose a special kind of difficulty for the language-learner. These items have to be learnt in a special manner, if at all, and can be so confusing, SPE feels, that a child does not develop a UR until fairly late in the course of language learning (pp. 48-50). By then he may be thought to have mastered all the exceptions to regular rules.

The learner, in a way, seems to know that exceptions override the rules. Thus it appears to be a fact of natural languages that all idiosyncratic rules that do not follow from the normal applicational course of grammar are closer to the UR than all regular phonological rules.

ME rules will also be shown to apply in this order. The rule component, as we saw above (2.5.1), can be divided into two categories in ME. By its nature the lexical category seems to precede the rules of
contextual category, the criterion being most to least arbitrary. The rules proposed in this section for ME are the following:

(i) Lexical Rules 2.5.3

(ii) Contextual Rules 2.5.4

2.5.3 **Lexical Rules**

2.5.3.1 **Morphological Rules** (MPR): Most arbitrary and the first of the rules to apply to the UR in ME are some lexical conventions sensitive to certain kinds of morphological information. Irrespective of anything else, these conventions apply to interpret the syllabic and prosodic structures of certain derivational suffixes listed in the lexicon. For purposes of descriptive convenience, these interpretive conventions will henceforth be called Morphological (Projection) Rules (MPR).

2.5.2 **Morphology in ME**: There is evidence for saying that ME speakers are aware of derivational morphology. The most crucial evidence for the presence of morphological component in ME phonology comes from the following data:
<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>bótany</td>
<td>botánical</td>
</tr>
<tr>
<td>politics</td>
<td>political</td>
</tr>
<tr>
<td>énemy</td>
<td>inimical</td>
</tr>
<tr>
<td>démon</td>
<td>demonical</td>
</tr>
<tr>
<td>irony</td>
<td>irónica</td>
</tr>
<tr>
<td>títan</td>
<td>titánica</td>
</tr>
<tr>
<td>édit</td>
<td>edición</td>
</tr>
<tr>
<td></td>
<td>batallón</td>
</tr>
<tr>
<td></td>
<td>chambó</td>
</tr>
<tr>
<td></td>
<td>dominión</td>
</tr>
<tr>
<td></td>
<td>unión</td>
</tr>
<tr>
<td>rebel</td>
<td>rebellión</td>
</tr>
<tr>
<td>árab</td>
<td>árabe</td>
</tr>
<tr>
<td>permit</td>
<td>permisión</td>
</tr>
<tr>
<td>inhibit</td>
<td>inhibición</td>
</tr>
<tr>
<td>profess</td>
<td>profesión</td>
</tr>
<tr>
<td>divine</td>
<td>divinación</td>
</tr>
<tr>
<td>équal</td>
<td>equalidad</td>
</tr>
<tr>
<td>active</td>
<td>actividad</td>
</tr>
<tr>
<td>passive</td>
<td>passividad</td>
</tr>
<tr>
<td>repeat</td>
<td>repetitivo</td>
</tr>
<tr>
<td>attribute</td>
<td>atributivo</td>
</tr>
<tr>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>générate</td>
<td>générative</td>
</tr>
<tr>
<td>audit</td>
<td>auditory</td>
</tr>
<tr>
<td>matter</td>
<td>matériel</td>
</tr>
<tr>
<td>industry</td>
<td>industriel</td>
</tr>
<tr>
<td>engine</td>
<td>ingénieur</td>
</tr>
<tr>
<td>(b) person</td>
<td>personal</td>
</tr>
<tr>
<td>dialect</td>
<td>dialectal</td>
</tr>
<tr>
<td>rigor</td>
<td>rigoureux</td>
</tr>
<tr>
<td>décor</td>
<td>décorous</td>
</tr>
<tr>
<td>sulfur</td>
<td>sulfurique</td>
</tr>
<tr>
<td>peril</td>
<td>périsol</td>
</tr>
<tr>
<td></td>
<td>fantastique</td>
</tr>
<tr>
<td></td>
<td>chivalrous</td>
</tr>
</tbody>
</table>

Certain facts that emerge clearly from the data in (15) are: (i) structural and prosodic facts of (15) can not be explained and accounted for economically without assuming a morphological component; (ii) some morphemes like those in (15a) affect the structural and prosodic contours of words significantly; and (iii) certain other morphemes like those in (15b) do not seem to have any structure changing effect.

Suffixes that have a phonological structure
changing effect and thus need to have a special phonological status are the following:

(16)  

i. -able: `approchável, `enviável

ii. -ogy: phonology, psychology, sociology

iii. -ity: activity, passivity, university

iv. -tive: repetitive, attributive, relative

v. -ory: promissory, primary, artillery

vi. -(t)ion/ian: edition, rebellion, arabian

vii. -ial: material, industrial

viii. -ical: ironical, inimical

ix. -eer/ier/ere/ear/ior/ious, etc: engineer, cavalier, sincere, appear, superior, serious, nuclear, precarious, etc.

Within (16) there are two kinds of suffixes. There are suffixes of the kind of (16i) to (16iv) which have a long vowel in the initial position and which, necessarily, therefore, take main word-stress in ME. Then there are suffixes in (16v) to (16ix) where the vowels are interpreted short and which demand a long vowel and main-word stress on the syllable immediately preceding them.
In all, the suffixal facts of ME phonology fall into three categories: (i) there are suffixes like -ic, -al, -ous which are interpreted as light syllables. Suffixes of this kind, as mentioned in (15b), do not have a fixed word-stress, (ii) then there are suffixes like -ity, and others mentioned in (16i-iv) where the suffix initial vowel is interpreted long and consequently assigned main word-stress; and finally (iii) there are suffixes like -ory and others mentioned in (16v-ix) where the vowels are interpreted short and which demand a long vowel in the syllable immediately preceding them.

It is not difficult to handle such suffix particular phonological facts. The morphological component of the lexicon can be legitimately expected to generate them with their idiosyncratic structural and prosodic features (see Selkirk (1980)). Thus, for example, -ity or -ory, etc., will be generated in the following manner by the morphological component of the lexicon.

(17) a. -ity → िनि
    -itive → ितिव

b. -ory → ऱ ऱ ऱ
    -ian → ऱ ऱ ऱ

The morphological component will supply only such information which is idiosyncratic. No prosodic structure, therefore, needs to be given for suffixes -ity and -itive at this stage since the stress rules (to be presented in Chapter III) for ME would automatically assign it the main word-stress.

Prosodic structure, however, needs to be given for suffixes -ory and -ian since they change the structure of the adjoining syllable in the stem and necessarily demand main stress on the same in ME. Similar projections can be proposed for other suffixes also where suffixes will be generated by the morphological component with their idiosyncratic structures. By a later rule the phonological component may be required to remove any anomalies such as a situation of clash that may have been caused in the stem by suffixation.

The process can be seen in the derivations given below:

\[(18) \text{[rep.et]_7 } \text{[itive]_7 } \text{[equal]_7 } \text{[ity]_7 } \]  
\[\text{iti } \text{iti } \text{[Kwaaliiti] } \text{[Interpretive Rules]} \]  
\[\text{[rep.et]_7 } \text{iti } \text{[Kwaliiti]} \text{[Other Rules]} \]  
\[\text{[rep.et]_7 } \text{[Kwaliiti]} \text{[PR]} \]
Other rules that affect the structures of the given strings will be presented later in this chapter.

Similar derivations can be assumed for words that have suffixes such as in (17b) which are generated with short vowels and which demand a heavy syllable and main-stress elsewhere. Some derivations of this kind are given below:

(19) \[
\begin{array}{cccc}
\text{audit}^{7} & \text{ory}^{7} & \text{inhibit}^{7} & \text{ory}^{7} \\
\end{array}
\]

\[
\begin{array}{cccc}
\text{adiitory} & \text{iitori} & \text{inhibitorii} & \text{inhibitorii} \\
\end{array}
\]

Derivations for other words in (15) and (16) and elsewhere with suffixes will follow in the manner exemplified above.

Derivations given in (18) and (19) above imply that morphology is purely interpretive in ME. Morphological component of the lexicon applies rules as to interpret the syllable structure and, if required, the prosodic structure of suffixes. We have not examined the behaviour of inflexional suffixes like -er, -est, etc., but they
seem to be instances of productive word formation processes in ME and in other varieties of OE rather than interpretive like a number of suffixes given above in this section. In such a case derivational suffixes like -ity, -itive, -ory, etc., would be listed in the lexicon along with their structures, and phonological rules would apply to account only for the consequences of affixation wherever required. The bifurcation of morphological rules into interpretive and productive rules as suggested here is similar to the proposal in Aronoff (1976).

It may have been observed that a number of suffixal facts of ME as stated in (15) and (16) above are similar to those in AE/BE. For example, -ative, -utive might be argued to have a long vowel suffix initially in these native varieties as well though they do not have main word-stress here. Similarly, -ian, -ial such as in Arabian or colonial demand heavy syllable and main-stress immediately preceding them in AE/BE as well. But unlike ME they do not require the syllable preceding -ical -(t)ion, etc., also to be heavy though they also assign main word stress to the syllable immediately preceding those suffixes.

It has been said in Chapter I that a learner learns only those items from a new language which are
markedly different from their counterparts already in his grammar and which he feels compelled to learn. From this point of view it appears crucial to ask whether so many suffixes do really appear phonologically marked to the ME speaker and whether he feels compelled to learn their phonologically peculiar behaviour.

Some of the suffixal facts of phonology may be imagined to have been retained through community awareness of their phonological peculiarity. A very good example of this kind of survival in ME, and in almost all other varieties of IE, is the structure of the suffix -ory. Suffixes like -ian, -ial demand tensing in AE/BE also. ME seems to have merely extended it to -ion, -ical, -eer and other suffixes mentioned in (16) above.

Whereas the structures of suffixes like -ity and -itive in ME phonology appear to be purely arbitrary, the grouping of -ic with suffixes like -ous and -al in ME (see (15)) can be treated as a result of overgeneralization common in second language phonology. The most economic way to account for the phonological behaviour of all these suffixes seems to be through a morphological projection of the kind suggested in (17) above.11
5.3.2 **Spelling Rules (SPR):** There is another class of words mentioned briefly in Section 2.3.5 earlier that requires the application of a lexical rule to create a part of its syllable structure. Some more words of this kind are given below:

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>(20) appeal</td>
<td>achieve</td>
<td>árab</td>
</tr>
<tr>
<td>bazáár</td>
<td>baroque</td>
<td>básico</td>
</tr>
<tr>
<td>maróón</td>
<td>brocáde</td>
<td>cancel</td>
</tr>
<tr>
<td>buffóon</td>
<td>cájole</td>
<td>común</td>
</tr>
<tr>
<td>balálon</td>
<td>cómbine</td>
<td>déter</td>
</tr>
<tr>
<td>careén</td>
<td>complète</td>
<td>doctor</td>
</tr>
<tr>
<td>detalín</td>
<td>devise</td>
<td>matter</td>
</tr>
<tr>
<td>derail</td>
<td>decide</td>
<td>scholar</td>
</tr>
<tr>
<td>discréet</td>
<td>devóte</td>
<td>vulgar</td>
</tr>
<tr>
<td>lampóón</td>
<td>extréme</td>
<td>wanton</td>
</tr>
<tr>
<td>maintain</td>
<td>machine</td>
<td>appear</td>
</tr>
<tr>
<td>monsoon</td>
<td>obscéne</td>
<td>medullar</td>
</tr>
<tr>
<td>céterwaul</td>
<td>obscure</td>
<td>similar</td>
</tr>
<tr>
<td></td>
<td>presume</td>
<td>cerebèllar</td>
</tr>
<tr>
<td></td>
<td>police</td>
<td>principal</td>
</tr>
<tr>
<td></td>
<td>reptile</td>
<td>haliçarnássus</td>
</tr>
<tr>
<td></td>
<td>régime</td>
<td></td>
</tr>
<tr>
<td></td>
<td>antelope</td>
<td></td>
</tr>
</tbody>
</table>
The final syllable in all words of Columns I and II in (20) is heavy because of a long vowel in it. On the other hand the final syllable in Column III is light because it has a short vowel in the syllable.

2.1 **Convention:** It has been said in Chapter I that English orthography, as originally intended, appears to be considerably systematic if we regard it as a system to be used by readers who know the language. Therefore it does not show regular vowel and stress alternations which are predictable by rule. But things that do not seem to follow in this manner from rules are shown by explicit and specific orthographic conventions. It can be said then that words in Column III of (20) such as...
arab, or doctor are instances of normal orthographic conventions where the pronunciation may be said to follow a rule that the final syllable in English words is generally light.

Considered from this point of view, the orthographic conventions witnessed in Columns I and II of (20) appear to be two manifestations of a convention by which the language does not allow underlyingly long vowels to reduce as in anecdote and appeal or by which it does not allow short vowels to remain short as in achieve or execute. Compare the final syllables of these words with final syllables in arab and americam or basic and halicarnassus.

Thus these conventions, double vowel cluster and word final e, from this point of view, appear to play a crucial role in the language. Commenting on the word final -e, SPE notes that "The investigation of the word-final vowel in English reveals that there is a peculiar gap in the pattern... Of the six simple vocalic nuclei that can appear in the final position, only i, e, u, o and ə do in fact appear. There are no examples with e as the final vowel..." (p. 45). It is just possible that e is not pronounced in this position because it has an important phonological function to perform:
to prevent a UR long vowel from reducing or a UR short vowel from remaining reduced. Thus is being used as a lexical diacritic and this is so even in English as a second language as seen from data in (20). A similar situation has already been witnessed in the case of double vowel clusters in Section 2.3.5 above in this chapter.

Lexical conventions of this kind can be called spelling rules (SPR) since the only phonological motivation for them is a convention of spelling which marks an unusual situation in an unusual manner. Not only the motivation, but the mode of application of these spelling conventions also appears to be arbitrary since they generally scan only the final syllable to ascertain the presence of a particular kind of configurations of vowels. Even then these lexical conventions are thought to have the effect of a phonological rule since they affect the structure of a syllable and hence the rhythm of a word.

5.3.2.2 A Rule: SPR can be formalized in the following manner:

(21) SPR

a. \( V \rightarrow VV / \rightarrow c_o \ 'e' \ _7 \)

b. "e" \( \rightarrow \phi / \rightarrow _7 \)

c. \( VV \rightarrow \hat{V}V / \rightarrow c_o \ _7 \)
The three cases of SPR stated above would apply in the suggested order. Case (1a) applies to words like divine, debate, depûte, denote, delete, etc., to generate a long vowel in the final syllable. Once the word final e has done its job of doubling the preceding vowel, it is deleted. This effect is obtained by ordering the e deletion rule as case 'b' to apply after case 'a'. Case 'c' of the SPR applies to create a heavy syllable on vowel + vowel sequence in the spelling. Case 'c' would assign such a structure also to double vowel sequences generated by case 'a' of the SPR. Thus, depending upon a particular kind of configuration of vowels in the word-final position, the SPR applies to create a heavy syllable. The application of case 'a' of the SPR necessarily entails the application of cases 'b' and 'c'. Case 'b' can not apply without the application of case 'a'. Case 'c' however does not presuppose or entail such a compulsory application of other subcases.

Depending upon its non-application the final syllable of a word reduces, some times vacuously. Final syllable reduction, therefore, appears to be the elsewhere complement of Rule (21) SPR and would apply only after SPR has failed to apply and can be called SPR (detensing).

Some derivations with SPR are given below:
(22) major repeat divine repetitive

iitiv

MPR

line

SPR Case 'a'
in

SPR Case 'b'
êat in

SPR Case 'c'
or

Final Syllable Reduction (SPR, detensing)

major repeat divine repetitive Interpretive Rule

major repeat divine repetitive Other Rules

mejor riplit divdín repepetitiv PR

Derivations for other words in (20) will follow along the lines suggested here. & SPR is not without exceptions in ME. Some exceptions to the SPR are given below:

(23) a. Exceptions to SPR (tensing): promise, office, magazine, imagine, service, determine, etc.,

b. Exceptions to SPR (detensing): aristocrat, democrat, etc.,

Rules from MPR to SPR (detensing) are in fact a set of lexical conventions that assign syllable structures only to a certain part of a given string. MPR applies to interpret the structure of certain suffixes and SPR
(tensing) and SPR (detensing) in that order assign structures only to the word final syllable.

Rules of the contextual component being given below interpret the underlying structure of the rest of the string and remove structural anomalies, if any, to create as far as possible a pattern of syllable structures preferred in ME.

2.5.4 Contextual Rules: It was said in Section 1.6.3 of Chapter I that arbitrariness of languages is restricted to only some of the structural patterns possible in any language. Such restrictions on arbitrariness can be said to be due to the fact that languages conspire through different kinds of rules to create structures of the preferred kind. Hence if a string in its UR has structures not compatible with the preferred pattern for the language in that context, then rules may be motivated to restructure it. That is, if a word has two heavy syllables in its UR and the language wants only one of the two syllables to remain heavy then the language will motivate a rule by which to reduce one of the two heavy syllables and create the preferred pattern as, for example, given below:
Vowel reductions in (24) clearly appear to be the consequences of the contextual incongruities of their URs. ME does not seem to prefer two or more heavy syllables adjacent to each other. Therefore it reduces the initial syllable in *corrupt* and *monongahela*, for example. Reduction can not apply to a syllable heavy due to consonant cluster in ME because such syllables are higher on the SSH mentioned in (13) above. Hence the weight of the final syllable in *corrupt* and the pre-antepenultimate syllable in *monongahela* is maintained. A similar restructuring applies to some syllables in other words also in (24) and thus the language obtains a maximally possible preferred pattern of light and heavy syllables in given strings.

Sometimes such restructurings may also apply to a consonant cluster if the context of the cluster is incompatible with the structural patterns of the speaker's first language phonology. Thus the structure of words like *school* and *able*, for example, is necessarily changed in ME as shown below:
(25) school able UR
skool aabl SPR
iskool aabul Other Rules
iskeul eebul PR

The initial sk cluster and the final bl cluster are in contexts where an ME speaker finds them marked. Hence, these clusters are restructured to shift their contextual patterns.

Since these rules apply to a syllable, to change its structure, only in view of its context, we can call these rules contextual rules. In other words information for the application of these rules is present in the context of a syllable in a given string rather than lexically provided as seems to be the case with the lexical rules. Contextual rules, as we saw in (24) and (25) above, appear to be of great generality and it will be seen that the only constraint on these rules is the one mentioned as the Reduceability Principle (14) above.

Contextual rules will apply after lexical rules. The rules to be proposed within the contextual component are the following and they apply in the order shown:

(i) Cluster Simplification Rules (CSR)
(ii) Contextual Reduction Rule (CRR)
Arguments for this order of application of rules will be presented at the end of this section.

2.5.4.1 Cluster Simplification Rules (CSR): Given a choice, as was pointed out in Section 1.6.3.2 of Chapter I, ME prefers closed syllables. This preference appears to be the consequence of a syllabification principle in natural languages proposed for English by Kahn (1976):

(26) Kahn's Syllabification Principle: Medial clusters in English simply obey the constraint that they must be analysable into a possible (word) final cluster followed by a possible (word) initial cluster.

Kahn's syllabification principle can legitimately be thought of as belonging to UG. Depending upon language specific constraints on word final and initial clusters, this principle would distribute the word-medial cluster into onsets and codas of adjacent syllables. Syllabification of word-medial consonants in this manner is of consequence for phonological processes like stress assignment.

In the following words, for example, both ME and AE/BE have identical stress patterns, probably because of identical syllabification of word medial clusters:
Both AE/BE and ME disallow $\text{+_sonorant}_7$
$\text{+_obstruent}_7$ clusters word initially and hence the
medial sequence in amalgam and other words in (27) is
distributed so as to create a penultimate closed syllable.
Due to the stress rules of ME (see Chapter III) and AE
the penultimate closed syllable gets the main word-stress.

4.1.1 ME Initial Cluster: But ME has fewer initial and final
cluster possibilities than AE/BE. We have already seen
a consequence of this difference in the syllabification of
the word medial cluster in a word like minister where ME
distributes the medial $\text{-st-}$ cluster in such a manner
as to create a closed penultimate syllable whereas AE/BE
keep both non-final syllables in this word open by
assigning $\text{-st-}$ to the initial position of the final
syllable.

As we have just seen, some of the initial clusters

<table>
<thead>
<tr>
<th>Word</th>
<th>AE/BE</th>
<th>ME</th>
</tr>
</thead>
<tbody>
<tr>
<td>amalgam</td>
<td>a.mál.gam</td>
<td>a.mál.gam</td>
</tr>
<tr>
<td>attorney</td>
<td>a.tór.ney</td>
<td>a.tór.ney</td>
</tr>
<tr>
<td>agenda</td>
<td>a.gén.da</td>
<td>a.gén.da</td>
</tr>
<tr>
<td>dialectal</td>
<td>di.léc.tal</td>
<td>di.léc.tal</td>
</tr>
<tr>
<td>incidental</td>
<td>in.ci.dén.tal</td>
<td>in.ci.dén.tal</td>
</tr>
</tbody>
</table>
possible in AE/BE do not seem to be possible in ME. 

Maximal onset clusters for AE/BE and ME are given below:

(28) a. AE/BE Maximal Onset Cluster:

\[
S \begin{cases}
\text{+ Stop} \\
\text{Voice}
\end{cases} \begin{cases}
\text{liquids} \\
\text{glides}
\end{cases}
\]

b. ME Maximal Onset Cluster:

\[
\left( + \text{obstruent} \right) \begin{cases}
\text{liquids} \\
\text{glides}
\end{cases}
\]

A consequence of this difference in onset possibilities can be seen in the syllabification and consequent stress pattern of the following words with medial clusters.\(^{16}\)

(29) \begin{tabular}{lcc}
Word & AE/BE & ME \\
minister & mi.ni.ster & mi.nis.ter \\
phlogiston & phló.gi.ston & phlo.gis.ton \\
astonish & a.stó.nish & 'as.tó.nish \\
industry & in.du.stry & in.dús.try \\
orchestra & ór.ke.stra & ór.kés.tra \\
\end{tabular}

Vowel epenthesis before words like school \(\text{/iskuul/}\) noted by Bansal (1969) and others in many varieties of IE (also in ME) appears to be a consequence of this constraint upon initial clusters. Whenever faced with a \( S \left( + \text{stop} \right) \) cluster word initially, speakers of these varieties of IE
have no vowel preceding this cluster so that $s$ of the cluster could be syllabified as the final element of the first syllable. In such a case the speaker has only two options: either to insert a vowel between $s$ and $t$ and have an open syllable word initially or insert a vowel preceding the cluster and have a closed syllable there. Punjabi and certain other North Indian speakers of English prefer inserting a vowel between the cluster so that \textit{school} becomes $\backslash s\text{\textkml}u\text{\textl}_{7}$ (Bansal (1969)). ME speakers (as also Oriya, Bengali, Assamese and Nepali English speakers) prefer vowel epenthesis preceding the word initial $s$ $\backslash+$ \textit{obstruent}_{7} cluster so that \textit{school} becomes $\backslash\text{i\textkml}u\text{\textl}_{7}$. Whereas in the case of Punjabi speakers, etc., the inserted vowel is generally $\backslash\@_{7}$, the inserted vowel in ME generally $\backslash\text{i}_{7}$ or $\backslash\text{e}_{7}$. Some instances of epenthesis of this kind in ME are given below:

(30) | Word | PR |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scandinavian</td>
<td>$\backslash \text{\textesk\textm\textd\textn\texti\textn\texte\textv\texti\textn\textt}_{7}$</td>
</tr>
<tr>
<td>Scholastic</td>
<td>$\backslash \text{\textesk\texto\textl\textk\textm\texta\textx\textt\texti\textk}_{7}$</td>
</tr>
<tr>
<td>sturdy</td>
<td>$\backslash \text{\textest\textt\texta\textr\textd\texti\texti}_{7}$</td>
</tr>
<tr>
<td>student</td>
<td>$\backslash \text{\textest\textt\textu\textd\textt\texte\textn\textt}_{7}$</td>
</tr>
<tr>
<td>stupendous</td>
<td>$\backslash \text{\textest\textt\textu\textp\texte\textn\textd\texte\texts}_{7}$</td>
</tr>
<tr>
<td>scarcity</td>
<td>$\backslash \text{\textesk\texta\textr\textsi\textt\texti\texti}_{7}$</td>
</tr>
<tr>
<td>stevedors</td>
<td>$\backslash \text{\textest\textt\texti\textv(\texte)\textd\texto\textr}_{7}$</td>
</tr>
<tr>
<td>sporadic</td>
<td>$\backslash \text{\textesk\texto\textp\textr\texta\textd\texti\textk}_{7}$</td>
</tr>
</tbody>
</table>
ME resorts to this device in order to simplify an impossible consonant cluster word-initially. Therefore, this kind of vowel epenthesis can be called word initial cluster simplification. The rule is formulated as below:

(31) Cluster Simplification Rule (Initial)

\[
\emptyset \rightarrow V \quad /\text{word} \quad \text{[+obstruent]} \quad \text{[+obstruent]}
\]

Some derivations exemplifying Rule (31) are given below:

(32) stimulate  stimulaat  estimulaat  éstimuleët  
     stupendous  stupeendas  stupeendæs  èstupéndæs  
     \[\hat{a}a\]  \[\hat{a}a\]  \[\hat{a}a\]  \[\hat{a}a\]  
     [UR]  [MPR]  [Interpretive Rules]  [Other Rules]  [PR]

Rule (30) appears to be quite a natural rule.
\( \square + \) obstruent_7 \( \square + \) obstruent_7 are disallowed word-initially in many languages and in AE/BE also. \( S\square + \) obstruent_7 cluster, however, appears initially in AE/BE and in some Indian languages also as an exception. ME irons out the exception and generalizes the rule. Such generalizations are attested in many second-language, child-language and pidgin-language varieties.

5.4.1.2 ME Final Cluster: English orthography presents an ME speaker with the following sequences word-finally:

(33) a. \( \square + \) son_7 \( \square + \) obst._7 = import, spoilt, lamp.
    b. \( \square + \) obst._7 \( \square + \) obst._7 = test, cats, fact, shift.
    c. \( \square + \) obst._7 \( [+ \) son \( ]^{+ \) liquid \( ] = cattle, uncle, tackle, cable.\)

The sequence of consonants in (33c) is an impossible sequence in Maithili and the syllabification rules do not permit such an impossible structure in Maithili or in ME. The word-final e of cable and other words in (33c) may be considered to have been elided already by the application of SPR ordered before CSR. Thus there is no vowel left in the string after l of bl which can form a syllable with l as its initial member. The only way left for ME speakers (also for speakers of other varieties of IE (see Bansal (1969)) is to insert a vowel after or before l.
Since ME prefers closed syllables the vowel here is inserted before \( \text{umlaut} \).\(^{17}\) Hence words with a cluster of the kind in (33c) are restructured in ME. Some words that are restructured in this manner are given in (34) below:

\[
\begin{align*}
\text{Word} & \quad \text{PR syllable} \\
& \quad \underline{\text{sile\-ebul\(_{7}\)}} \\
& \quad \text{remarkable} \\
& \quad \underline{\text{rim\-arke\-ebul\(_{7}\)}} \\
& \quad \text{resemble} \\
& \quad \underline{\text{riz\-embul\(_{7}\)}} \\
& \quad \text{resettle} \\
& \quad \underline{\text{rise\-etil\(_{7}\)}} \\
& \quad \text{uncle} \\
& \quad \underline{\text{\text{'enkil\(_{7}\)}}}
\end{align*}
\]

The inserted vowel, as (34) shows, is either \( \underline{i\(_{7}\)} \) or \( \underline{u\(_{7}\)} \) in ME and also in other varieties of IE. Occasionally \( \underline{\text{\text{\text{\text{\text{\text{'ao}}}}}}\(_{7}\)} \) is also heard in this position. Words in (33c) and (34) are restructured as such a sequence of consonants is not syllabifiable for an ME speaker. Hence, the process simplifying this cluster may be called (word) final cluster simplification rule. Such a rule is formulated below:

\[
\text{(35) Final Cluster Simplification Rule (CSR (Final \_))}
\]

\[
\emptyset \rightarrow \begin{cases} \\
V / \underline{\text{+ obst.\_}} & \underline{\text{+ liquid\_\_word}} \\
\underline{\text{low}} & \\
\underline{\text{long}}
\end{cases}
\]

The rule will be referred to henceforth as
CSR (final). This rule says: insert a vowel between an obstruent and liquid if such a cluster occurs word-finally. Some derivations with CSR (final) are being given below:

(36) Scramble UR

\[ \underline{\text{skraamb}} \quad \text{MPR} \]
\[ \underline{\text{ekraamb}} \quad \text{SPR} \]
\[ \underline{\text{ekaraambul}} \quad \text{CSR (Initial)} \]
\[ \underline{\text{ekstraambul}} \quad \text{CSR (final)} \]
\[ \underline{\text{ekstraambul}} \quad \text{PR} \]

Derivations for other words will also follow along the lines of derivation given above. It may be observed that Rule (35) is a kind of rule frequently attested in second-language, child-language and pidgin-language varieties.

4.1.3 To sum up, I have now proposed two cluster simplification rules which are the first set of rules to apply within the component of contextual rules. These are CSR (initial) and CSR (final).

In a framework like the present where orthography is being proposed as the UR, we should also examine the effect of geminate consonants on the syllable structure of ME words. An ME speaker comes across geminate consonants in orthography in *mississippi* and many other words.
SPE (pp. 46-7) found that geminate consonants often behaved like consonant clusters and representing them as such in the UR can help explain a lot of apparently arbitrary phenomena like word-final stress on harass or the realization of y as $\breve{\text{V}}$ such as in cunning, etc.

It seems, however, that in ME and other varieties of IE consonantal length is not specified by syllable structure rules and the presence of geminate consonants in spelling does not affect stress assignment to words. I will show in Chapter IV that gemination is a low level phenomenon which crucially depends upon the position of a consonant with respect to the stressed vowel and upon the tempo of speech.

Thus there are only two rules that apply to consonant clusters and affect the syllable structure of words at the phonological level in ME. There does not seem to be a significant case for mutual ordering between these rules though CSR itself is ordered after MPR and SPR and before another contextual rule which will be discussed below.

2.5.4.2 Contextual Reduction Rule

4.4.2.1 Relieving the Clash: We have seen just now that ME simplifies some word-initial and word-final consonant
clusters in English orthography. In the same manner the language also does not allow many heavy syllables to be adjacent to each other. The obvious reason for such an intolerance seems to be the fact that adjacent heavy syllables create what Prince (1983) calls a situation of clash in violation of the constraint of eurhythmicity in natural languages (see 1.6.3.1 in Chapter I). The point may become clear if we examine the following words where all syllables are interpreted as heavy but only some of them continue to retain their weight before being fed to the stress rules:

$(37)$ a. **Word** | **Input to Stress Rules** | b. **Word** | **Input to Stress Rules**
---|---|---|---
adapt | adaapt | aroma | arooma
achieve | aciev | arena | areena
bazaar | bazaar | rhododendron | roododeendron
collapse | kolaaps | oklahoma | ooklahooma
devote | devoot | monongahela | monoongaheela
erase | eraaz | available | aaavaaabul

Lexical and interpretive rules together would specify all the syllables of words given in $(37)$ as heavy. If all syllables are retained heavy they would create an extremely marked kind of structure, which, as it was said in 1.6 earlier, would lead to a marked kind of rhythm.
Languages do not seem to prefer such a structural and prosodic situation. They often conspire through several kinds of rules to reduce certain heavy syllables and to effect the preferred kind of structural and prosodic patterns. In the case of words in (37a) the initial syllable such as in adapt reduces as it is weaker than the heavy final syllable on the SSH (13). The initial syllable in monongahela can also be reduced by invoking the RP (14).

Whereas it is possible to reduce the initial syllables of words in (35a) by invoking the Reduceability Principle (RP as in (14)), no rule proposed so far would apply to reduce the initial syllable of arena or america, or to reduce the antepenultimate in oklahoma, monongahela or available. Instances of reduction of this kind appear to be triggered by the context of these heavy syllables for which we need to formulate a rule.

15.4.2.2 Ordering the Reduction Rule: Reduction rules in standard generate phonology are ordered after stress rules and the process of reduction is seen as a consequence of destressing or defooting (see SPE (p. 110) and Hayes (1981, Chapter 5)). I propose to deviate from this convention in the present study.

In the present study I am ordering the reduction
rule to apply before stress rules. There are two reasons for doing so.

Firstly, as Prince (1983) has argued, defooting rules (which are the metrical version of destressing rules (see Hayes (1981)) involve a "cumbersome" process of erasing a node of the prosodic tree, reducing the weight of the syllable dominated by the erased node, adjoining the reduced syllable to some other node of the prosodic tree and often relabeling of the prosodic tree. By ordering the reduction rule before stress rules, defooting and its consequences can be avoided.

Secondly, in the present study it has been assumed that orthography is the UR to which syllable structure rules apply to generate the input to stress rules. It has been argued (in Section 1.6 and 2.2) earlier that the prosodic structure of a word is dependent upon its syllable structure. Therefore, it is reasonable to assume that all syllable structure rules should precede stress rules. Hence, even though unorthodox, the reduction rule is being ordered here before stress rules.

4.2.3 Reduction in Maithili: Coming back to reduction facts it has been shown through examples in Section 2.5.4.2.1 above that reduction of the initial (heavy) syllable in adapt, avail and other words can be affected by invoking
SSH (13) and RP (14). But there are examples of reduction in *rhododendron*, *arena* and *available* in (37) that can not be predicted merely by invoking these principles. Reductions of this kind witnessed in these words do not always involve instances of clash between hierarchically ranked heavy syllables such as that between the first two syllables of *monongahela*. They also involve instances of clash such as that between the last three syllables of *monongahela* or *arena* where the clashing syllables occupy the same rank on the SSH (13). Clearly then it is not RP (14) that is in operation here. Rather it seems to be a matter of the context of the clashing syllables and the structural pattern preferred by the language.

Contextually triggered reductions of this kind are witnessed in Maithili also as the following words would show:

<table>
<thead>
<tr>
<th>(38)</th>
<th>UR</th>
<th>Reduction</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Paaraabaar</td>
<td>Paara baar</td>
<td>&quot;measure&quot;</td>
</tr>
<tr>
<td></td>
<td>Praasaadaadi</td>
<td>Praasaadaadi</td>
<td>&quot;places, etc.&quot;</td>
</tr>
<tr>
<td></td>
<td>kaaroobaar</td>
<td>kaaroobaar</td>
<td>&quot;business&quot;</td>
</tr>
<tr>
<td></td>
<td>kaanookaan</td>
<td>kaanookaan</td>
<td>&quot;ear to ear&quot;</td>
</tr>
<tr>
<td></td>
<td>shaakaahaari</td>
<td>shaakaahaari</td>
<td>&quot;vegetarian&quot;</td>
</tr>
<tr>
<td>UR</td>
<td>Reduction</td>
<td>Gloss</td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------</td>
<td>--------------</td>
<td></td>
</tr>
<tr>
<td>looha+aar</td>
<td>lohaar</td>
<td>&quot;ironsmith&quot;</td>
<td></td>
</tr>
<tr>
<td>soonaa+aar</td>
<td>sonaar</td>
<td>&quot;goldsmith&quot;</td>
<td></td>
</tr>
<tr>
<td>bataabar+aran</td>
<td>bataabaran</td>
<td>&quot;environment&quot;</td>
<td></td>
</tr>
<tr>
<td>meghaalay</td>
<td>meghaalay</td>
<td>&quot;abode of clouds&quot;</td>
<td></td>
</tr>
<tr>
<td>biir+indr</td>
<td>birender</td>
<td>&quot;King of the braves&quot;</td>
<td></td>
</tr>
<tr>
<td>Jaaranighaaraa</td>
<td>Jaranghaara</td>
<td>&quot;fuelwood store&quot;</td>
<td></td>
</tr>
</tbody>
</table>

One word each in (38a) and (38b) shows that heavy open syllables in the word final position reduce without exception in Maithili. Other words in (38a) show that the second syllable of the word reduces in length if it is between two heavy syllables where the following syllable is not the final open syllable. Words in (38b) show that the initial heavy syllable reduces in length if it is followed by the final closed heavy syllable or by the last heavy syllable of the string in the non-final position. It is possible that Maithili speakers apply these rules to their English as well.19

5.4.2.4 Reduction in ME: A consequence of such an extension can be seen in words like degree or drama where heavy syllables reduce in open final position to generate \(\text{degri_7}\) or \(\text{dma_7}\) respectively.

Other tendencies seen in the examples in (38) can
also be seen in ME as in words given in set (37) above and in set (39) below:

<table>
<thead>
<tr>
<th>(39)</th>
<th>Word</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>rhododendron</td>
<td>roododendron</td>
</tr>
<tr>
<td></td>
<td>oklahoma</td>
<td>ooklahooma</td>
</tr>
<tr>
<td></td>
<td>available</td>
<td>aavalabul</td>
</tr>
<tr>
<td></td>
<td>monotonous</td>
<td>moonotoonas</td>
</tr>
<tr>
<td></td>
<td>macaroni</td>
<td>maakarooni</td>
</tr>
<tr>
<td></td>
<td>ephemeral</td>
<td>eephemeerdl</td>
</tr>
<tr>
<td></td>
<td>asparagus</td>
<td>aasparaagus</td>
</tr>
<tr>
<td></td>
<td>approachable</td>
<td>aprocaabul</td>
</tr>
<tr>
<td></td>
<td>balalaika</td>
<td>baalalaika</td>
</tr>
<tr>
<td></td>
<td>comparative</td>
<td>koompareetiv</td>
</tr>
<tr>
<td></td>
<td>cerebellar</td>
<td>seerebeelar</td>
</tr>
<tr>
<td></td>
<td>chocolaty</td>
<td>cookolaati</td>
</tr>
<tr>
<td></td>
<td>economy</td>
<td>eekonoomi</td>
</tr>
<tr>
<td></td>
<td>economic</td>
<td>eekonoomik</td>
</tr>
</tbody>
</table>

Words in (39) indicate a very neat pattern of reduction in ME. The final syllables of these words are either already light or made light by SPR (detensing). Yet there are words in (39) where all the four syllables are heavy. The three non-final syllables in all the words above are heavy and are of comparable strength, creating situations of clash. But the language seems to motivate
a rule of reduction to relieve the situation of clash. The pattern of reduction in the words above is the following:

going from left to right, every second and fourth vowel reduces in the string, or going from right to left, final and antepenultimate vowels reduce. This kind of reduction pattern leads to the wide-spread occurrence of trochaic stress pattern preferred in ME.

Some derivations to show the pattern of reduction are given below:

(40) oklahoma balalaika UR
      _______ _______ MPR
            a        a SPR

ooklaahooma baalaalalaika Interpretive Rules
ooklahooma baalalaikaa Contextual Rules
ôoklahoómaa bàalaláikaa PR

Similar derivations can be given for other words in (39).

It should, however, be noted that all words in (39) are of a particular kind, they contain four syllables only with an alternating pattern of heavy syllables in the string. Whereas by and large it is true that ME
prefers an alternating pattern of heavy syllables, it is not always possible to effect such a structure beyond a particular kind of phonological context. It would run into two specific kinds of difficulties.

Firstly, for instance, it would be difficult to create such a structure in many words with odd numbers of syllables such as develop, cinema or tatamagouchi. In tatamagouchi, for instance, going from left to right, the second and the fourth heavy syllables will be reduced and we shall have *\text{tatamaagucii}_7\text{\[tataamaguucii\[}7. In either case we shall have an incorrect output for ME.

Secondly, it would not be possible to create such an alternating structure even in words containing an even number of syllables such as in america or automobile etc.

Clearly, reduction of a heavy syllable in ME is more sensitive to the context of that syllable than indicated by words in (39) and we need to look at ME reduction facts more carefully than we have done so far.

4.2.5 ME Reduction Facts: Reduction facts depending on the context of a syllable in ME can be stated in the following manner:
(41) a. The language resorts to reduction to relieve a situation of clash between adjacent heavy syllables.

b. The reduction of a clashing syllable in ME is subject to RP (14)

c. The final open heavy syllables necessarily reduce.

d. A clashing penultimate syllable does not reduce if it is followed by a short high vowel in a closed light syllable or a short one in the final open syllable.

e. The second, from left, of the clashing syllables also does not reduce if it is followed by a short high vowel in a light syllable.

f. Of the clashing syllables elsewhere the second from the left reduces.

Short high vowels are i and u. Some examples for (41a-f) are given in (42a-f):

(42) a. adapt, achieve, brocade, corrupt.

b. totality, automobile, monongahela.

c. america, aroma, attaches, archipelago.

d. factotum, asparagus, archipelago.

e. america, experiment, impediment.

f. sonorous, broccoli, Cephalous.
Reduction of heavy syllables in (42a) and (42b) except that of the final in monongahela can be predicted by invoking RP (14). Reduction elsewhere in (42) appears to be caused by the context of the reduced heavy syllable. A rule to predict such reductions can be formulated as follows:

(43) Contextual Reduction Rule (CRR)

i. The word-final open heavy syllable necessarily reduces.

ii. Going from left to right on the rest of the string the second of the clashing heavy syllables will not reduce iff

a. it precedes short high vowels; or
b. it precedes a short vowel in the word-final open syllable; if not,
c. the first of the clashing heavy syllables will reduce.

Rule (43) would henceforth be referred to as CRR. Provision (i) of the CRR causes the reduction of the final syllable in attachee. Provision (iia) prevents the reduction of the antepenultimate syllable in america, experiment and impediment and of the penultimate in factotum even when some of these syllables clash with
a closed syllable ranked highest on the SSH. Provision (iib) of the CRR prevents the reduction of the penultimate in monongahela, aroma, attachee and archipelago. Provision (iic) causes the reduction of the initial syllable in america, aroma and attachee and of the antepenultimate in monongahela and archipelago. Non-application of provision (ii) causes the reduction of the antepenultimate in totality and of the penultimate in sonorous and broccoli.

The CRR is adequate to account for the alternating reduction pattern of words such as oklahoma and others listed in (39) and for the reduction facts of other kinds of words such as develop or america mentioned earlier. Some derivations with the CRR are being given below:

(44) develop america oklahoma UR
     ______    ______   ______ MPR
     op      ka      a SPR (detensing)
     deevelop aameerika ooklaahooma Interpretive Rules
     develope ameerika ooklahooma CRR
     dévləp əməérika əoklaho'maa PR

Certain comments on derivations in (44) are called for. As the CRR stipulates, the penultimate in develop reduces as it is not followed by a short high vowel.
i or u, neither by a reduced one in the open final position.
Therefore the penultimate reduces. The CRR, thus, appears to be adequate enough to predict the reduction of heavy syllables to relieve the situations of clash in ME words.

2.5.4.2.6 *Excursus*: The application of a rule like CRR appears to be crucial to the derivation of a large variety of words in ME. In the following paragraphs we shall look at different kinds of words to show that the CRR is crucial to the syllable structure component of ME phonology.

Let us look at the following set of some tri-syllabic words from ME:

(45) a. bróccoli  b. aróma  c. ástónish
céphelous  aréna  ábdomen
sónorous  cinéma  fàctórum
hórizon  gheráo  invásion
mágnazine  attáchee  kängároo
viólàte  asylúm  ûmbrélá
áppear  édition  vòlcáne
dévelop  buffálo  álgébra

Representative derivations for words in (45) are given below:
The derivation of the observed PRs in words in (45) will follow the pattern exemplified for respective columns in (46). Note that in case of words like edition and invasion the initial heavy syllable will clash with a syllable made heavy by a lexical rule preceding the application of the CRR in which case, wherever possible, the initial will reduce according to RP (14).

CRR applies with a similar generality in a wide variety of tetrasyllabic words as indicated by the following examples from ME:

(47) a. américia          b. approachable          c. antecedent
      menómini              comparáte              ánticipáte
      arábían               cérébéllear           áutomobile
      allegóry              éphéméral            benevolént
      political             répetítive
      rebéllion             macaroní
      territory             oklahóma
      phonético             rhododéndron

Derivations applying CRR to words in (47) are given below:

\[
\begin{array}{cccc}
(48) & \text{menomini} & \text{cerebellar} & \text{antecedent} & \text{UR} \\
\hline
& & s & ar & s \\
\hline
\text{menoomini} & \text{seerebeelar} & \text{aantessedeent} & \text{MPR} & \text{Interpretive Rules} \\
\text{menoomini} & \text{seerebeelar} & \text{aantessedeent} & \text{CRR} \\
\text{menoominii} & \text{seeibeelar} & \text{antisident} & \text{PR} \\
\end{array}
\]

Derivations for other words in (47) would be carried out along the lines suggested in (48). In the case of derived words like political in (47a), MPR applies before the CRR to lengthen a short vowel and to assign it a structure to show that this is a syllable made heavy in the course of the derivation and, therefore, stronger on the SSH. Consequently, because of the clash, the initial syllable reduces.

A word like elaborate in (47c) does not follow directly from the application of the CRR. Following this rule the antepenult should reduce but it does not. There seem to be two reasons for this: (i) in a clash between e and a, e does not seem to retain the long vowel character as it is \(\_\text{-low}_\), and (ii) the penult in elaborate reduces because of the clash with a syllable made heavy.
by the SPR in the course of the derivation and hence stronger on the SSH. Following Prince (1983) the non-reduction of the antepenultimate syllable in elaborate can also be treated as an instance of "Forward Clash Override" which helps natural languages to anticipate the position of clash and make suitable adjustments in the structural and prosodic configurations to avoid it. In any case, such situations seem to be very rare and pose no serious challenge to an analysis with the CRR.

This claim seems to be supported also by the following ME polysyllabic words:

(49) a. archipelágo  
    coriolánus  
    monogenésis  
    mulligatáwny  
    tatamagouchi  
    winnipessáukee  
    monongahéla  

    b. casitankerous  
    monománia  
    casitankerós  
    Monongahela

Derivations are given in (50) below:

(50) a. archipelago  b. casitankerous  
    aarchipeelaago  
    aarcipeelaago  
    ñarcipeelaagoo    kaasitaankerës  
    kaasitaankerës  

    c o  k  ës  MPR  SPR  Interpretive Rules  CRR  PR
The penult in (50a) does not reduce as it precedes a short non-high vowel in the open final position whereas in (50b) the penult reduces as it is followed by a short non-high vowel in the final closed syllable. Thus it seems beyond doubt that CRR is adequate to predict the PR of different kinds of words in ME.

A number of words derived with suffixes listed in (15) and (16) earlier also trigger the application of CRR. Some derived words of this kind are given below:

(51) a. botánical  b. battáillion  c. arábían
    political        pavíllion        edición
    demónical       dominíon-        profesión
    phonológica     rebélion         rotation
    análítica        locación

d. totalíty        e. abysmal        f. relatiVe
    phonology       material         generative
    psychología     reversal         comparative

g. derogatóry
    inflammatóry
    preparatóry
    explanatóry

Representative derivations are given below:
Previous derivations show that CRR is a rule of great generality in ME. It simplifies the grammar of ME to the extent that words with both monomorphemic and polymorphemic structures can be derived with the same rule. This also indicates that phonologically a derived word in ME is treated like a new word and the CRR is applied to relieve the situations of clash in the derived words in the same way as in monomorphemic words.

This does not, however, mean that situations of clash are completely ironed out from ME by the CRR. There are contexts where the CRR is helpless and can not apply. Some instances of clash of this kind can be seen in the following ME words:

(53) a. asbestos  b. adversary  c. appendix
carpenter  magnanimous  anecdote
compulsion  industrial  detergent
fantastic  exemplary  dependent
Observe that the CRR can not reduce any of the clashing syllables here which is what the observed PRs indicate. The situation of clash can not be relieved in these words either because the clashing syllables are both closed ones, as in asbestos, barred from reduction by RP (14) and SSH (13), or because the reduction context observed elsewhere is not met as in magnanimous. Such sporadic instances of clash in the language can be attributed to the certain amount of arbitrariness found in all natural languages for which the rule component does not have to worry. It can be said, nevertheless, that the language conspires through rules to ensure a maximally alternating pattern of heavy and light syllables.

It can also be said that the CRR is motivated by a universal principal like "eurhythmicity" discussed in Chapter I. Seen in this light, the CRR provides a sound theoretical rationale for a phonological rule like "rhythm rule" in natural languages. Most crucially, it would be shown in Chapter III, the existence of a rule like CRR appears to be as adequate as defooting rules to account for the facts of the language and yet the CRR seems to be simpler than the defooting rules.

2.5.4.3 Ordering the Rules: The rules proposed in this section for ME fall into two components, as tabulated below:
(54) ME Syllable Structure Rules

a. Lexical Component
   i. Morphological Projection Rules (MPR)
   ii. Spelling Rules (SPR)

b. Contextual Component
   i. Cluster Simplification Rule (CSR (initial))
   ii. Cluster Simplification Rule (CSR (final))
   iii. Contextual Reduction Rule (CRR)

Rules in (54) have been given in the order in which they are required to apply. The principle assumed behind this kind of ordering is that marked rules (i.e., lexical in this case) precede unmarked (i.e., contextual) rules. This is intended to respect the overriding and exceptional nature of the former without compromising on the economy criterion in grammar.

Rules of the lexical component in (54a) account for some idiosyncratic facts of English as they are understood by ME speakers. Some of these idiosyncracies like the initial vowel of the suffixes -ity or -itive are peculiar to ME whereas some others like the initial tense vowel in the suffixes -ative or -itive are common to native varieties like AE/BE and ME. ME speakers seem to have retained these suffix-particular facts of phonology
through some kind of a community awareness of the suffixal peculiarities. Certain other kinds of idiosyncratic facts of English seem to have survived in ME in part due also to the fact that information about such idiosyncracies was available to the community in the form of orthographic conventions called SPR here. As already stated in Chapter I, the presence of such idiosyncracies is possible in a second language variety. The rule component of ME phonology then appears to have expanded under the pressure of the language use situation to accommodate these idiosyncracies.

Rules in (54b) apply across the board in ME, and are motivated by principles like phonological conspiracies, preferred structural and prosodic patterns, configurational clash and eurhythmicity, manifestations of which are also witnessed in the phonologies of other languages. Rules in (54b), therefore, are not morpheme or syllable specific. They are, rather, context specific. Presumably, these rules are not learnt by ME speakers the way they might be thought to learn MPR or SPR. Hence rules in (54b) which account for the bulk of segmental facts of ME can be assumed to follow from principles of Universal Grammar.

2.6 Summing up: This chapter began by saying that ME conspires through different processes to create a preferred syllable
structure out of some possible types. These conspiracies have been thought of as the language specific manifestation of universal processes. In the preceding sections of this chapter the existence of processes of this kind in ME has been traced. In tracing their existence we have made some unorthodox proposals. In particular we have proposed the following:

(55) a. **Abstract UR**: a proposal to have only a limited number of vowels (and consonants) in the UR which are mapped onto their various realizations in the PR by rules.

b. **Syllable Strength Hierarchy** (SSH): a proposal to recognize the distinction between heavy and light syllables generated in the UR (by the lexicon) and generated by rules (by derivational component).

c. **Rules**: different kinds of structure-changing rules all of which apply in a particular order.

2.6.1 **Cost**: From the following discussion it would appear that these proposals considerably enrich the grammar.

The assumed UR is very abstract. For sixteen vowels attested in the PR of ME (and nearly as many in IE (see Bansal and Harrison (1972)) only six (i.e., a, e, i, o, u and y)
are being proposed, underlyingly. Again, for five kinds of possible realizations of the orthographic \( \hat{a} \) such as \( \hat{\underline{a}}_7, \hat{\underline{e}}_7, \hat{\underline{\varepsilon}}_7, \hat{\underline{a}}_7, \hat{\underline{o}}_7 \) (see Appa Rao (1978)) only one \( \hat{a} \) is being proposed in the UR here. Other vowels proposed in the UR may also have realizations in the PR similar to those proposed for \( \hat{a} \). And yet these rules do not assign the precise PR quality to an underlying vowel. Another set of rules of the kind proposed in Appa Rao (1978) is assumed to do this job (also see SPE (pp. 180-181) for a distinction between rules governing the quality and quantity of vowels). Thus the grammar appears to be burdened with two sets of UR to PR mapping rules, one for the quantity and the other for the quality of the vowels.

The proposal of strength hierarchy among syllables is a consequence of recognizing different kinds of heavy and light syllables such as (i) inherently light or heavy and shown as such in the UR, (ii) light or heavy as the consequence of the application of a tensing/detensing rule, or (iii) light or heavy due to the application of syllabification rules to the consonant cluster. The standard approach has recognised only a two way distinction: light and heavy. This additional classification proposed here appears to be another burden on the grammar.
Rules have also been assumed to apply in a particular order. A consequence of this proposal is that the reduction rule applies before stress rules. This order of the application of rules may be accused of anticipating prosodic structures, and, hence, of being adhoc.

2.6.2 Gains: A natural question at this stage is whether the grammar enriched with the proposals listed in (53) gains in terms of economy, and descriptive and explanatory adequacies. And the answer, as the following paragraphs would show, is yes.

The cost to the grammar appears to be minimal in view of the gains that accrue. By assuming orthography as the U, the grammar makes a strong claim about the intuition of some second language speakers and explains, for instance, why the e in the penult of develop has little possibility of staying long when the same in the penult of cinema does so. By bringing in the kind of uniformity proposed in the UR here, the grammar does away with adhoc and yet abstract URs like / develop / and / cinema / seen in earlier 20 analyses of IE. Our proposals also make abstract and adhoc URs like / amelyoreyt / for ameliorate (Hayes (1981, Chapter V)) impossible. By avoiding adhoc URs, the present approach
(i) tries to explain the rationale behind the English orthography system and its consequences for the second language phonology;

(ii) makes correct predictions about vowel quantity in general and syllable weight in particular, some of which seem to hold good for AE/BE also; and

(iii) makes strong and correct claims about non-native speakers' intuitions some of which again appear to hold good for AE/BE as well.

Thus the cost of having an abstract UR is more than compensated for by removing all kinds of adhoc assumptions and arbitrariness from the grammar and by gaining in terms of economy and descriptive and explanatory power.

As for the SSH (13), the standard theory as in SE also assumes a three-way distinction without explicitly recognising it:

(i) inherently heavy [+ low] vowels such as in buffalo which behave differently from other vowels in the word final position;

(ii) heavy by rule such as the first of the two adjacent es in engineer; and

(iii) heavy because of being a closed syllable such as the penultimate in veranda.
The present approach explicitly recognizes this distinction and explains the difference in the phonological behaviour of different kinds of light and heavy syllables. Thus the proposal of SSH, in fact, relieves the burden of the grammar without in any way adding to it.

The rule component proposed here also appears to be the simplest. As attested in other second-language, child-language and pidgin-language varieties too, some lexical listing and exceptions are observed here also. MPR shows that morphology generates suffixes with their phonological structures. The MPR has been retained here only to explicate the intuition of a second language speaker. So with SPR too. The orthography could have used different symbols to show word-final heavy syllables and could have avoided these conventions. These rules, thus, help us explain why certain phonological patterns from the English phonology have stayed almost intact in ME whereas a large bulk of ME facts look similar to those of Maithili-phonology.

The unconventional ordering of rules, i.e., reduction rules preceding prosodic rules, also appears to be correct, if it is assumed that prosodic facts are consequences of segmental facts. As mentioned in Chapter I (1.6.3.3.2), the standard generative phonology assumes this to be the case in languages.
A significant gain on the part of the rules proposed here seems to be, as shown in 2.5.4.2.2 of this chapter, their success in eliminating the "cumbersome" apparatus of destressing in phonology.

2.6.3 Conclusion: It has been said in Chapter I that second-language learners retain only such features from the native speakers' phonology as may be marked and of which the second language speakers may be aware. We have seen that some of the features of the native phonology of English have been retained by ME speakers. Some instances of this class of features in ME are the phonological structures of some suffixes and structures created by a special set of spelling rules.

But by and large second-language learners abstract the structures of the second-language in terms of the first-language patterns already existing in their phonological systems. This seems to be the principal cause for naming a second-language variety after the speakers' first language so that there are varieties like ME, HE, TE, etc. We have seen in this chapter that a large bulk of ME structures is governed by rules that seem also to apply to similar words in Maithili. The converse of it is that structures not permitted in the phonology of Maithili are also disallowed in ME, an instance of which is the
exceptionless reduction of a heavy syllable in the open final position such as in degree $\tilde{\text{digr}}i$ in ME.

We have seen in this chapter that ME speakers perceive certain orthographic vowel symbols as generally long and some others as generally short. AE/BE speakers, according to SPE, do not attach such fixed values to orthographic symbols. This divergence in the perception of orthographic symbols appears to be a consequence of a process of simplification working in language-learning that motivates a ME speaker to learn as many items with as few rules as possible.

This seems to support the hypothesis of Chapter I that AE/BE speakers learn two sets of rules, one for speaking and the other for reading and writing their language. ME speakers, on the other hand, first learn the rules of reading and writing, and later extend the rules they learn for reading and writing to their speech. Thus whereas English orthography is only a convenient reading writing system for AE/BE (see SPE, pp. 48-50), the present analysis shows that this is virtually the UR in ME. Hence the difference between ME and AE/BE does not appear to be limited superficially only between their PRs, as claimed by earlier studies of IE, but more crucially between their URs. It should not surprise us
then if ME pronunciation differs radically from AE/BE pronunciation of a large number of words.

This phenomenon (of radical difference from the "standard" variety) is not unique to ME. It can be expected and observed in other second-language, child-language and pidgin-language varieties also. It will be shown in the following chapter that stress rules for different varieties of IE become considerably simpler, and in fact, it becomes possible to propose one set of stress rules for different varieties of IE if we presuppose the application of syllable structure rules of the kind proposed in this chapter to these varieties.
Notes

1. This syllabification of st is suggested by Kahn (1976) about which Hayes (1981) has doubts. If word-medial onsets can be argued to be a subset of word-initial onsets, then Kahn's analysis seems preferable to Hayes'.

2. Henceforth long vowels will be represented as a sequence of two short vowels in keeping with the assumption in metrical theory that long vowels ought to be represented as geminate (see Hayes (1981)).

3. Henceforth AE/BE pronunciation will mean the one given in Hornby (1974).

4. By standard generative phonology is meant the one which is exemplified in SPE and which with all its subsequent modifications adheres to the principles of abstract URs and ordered rules. Important among phonological theories opposed to the standard model is "Natural Generative Phonology". Stampe (1979), Hooper (1976), Venneman (1971) and Wheeler (1981) are among some important exponents of "Natural Generative Phonology". The kinds of theories that the two schools postulate for phonology have consequences for grammar and it has been found that "Natural Generative Phonology" fails to achieve explanatory adequacy and sometimes even gives up.
transparent generalizations throwing the burden of
description to the lexicon. Standard theory "on
the other hand in great many cases examined so far
makes the correct claims" (see Kisseberth and
Kenstowicz (1979, Chapter 6)). Hence the standard
model of phonology with its abstract UR and ordered rule
hypotheses is being adopted here. For further
discussion of their relative merits see King (1976),
and Chaudhary (forthcoming, b).

5. Panini (see Ballantyne (1891/1981), aph. 481-3)
   1.4.10 HrswaN laghu (short is light)
   1.4.11 SamYoge guru (with cluster heavy)
   1.4.12 deerghan cha (long too)

is a case of a long vowel with an extremetrical con-
sonant in Hindi. Ṛājīivy or ōakaás has main stress
word-finally not because the particular syllable is
superheavy, but because it is the final foot. In
case of words with two feet in Hindi and many other
north Indian languages the final foot generally gets
main word-stress. Thus there is no need for positing
any category other than those of heavy and light, at
least for syllables in a number of Indian languages.
7. See Kiparsky (1979) and Prince (1983) for a discussion of the concept of "clash" and its phonological significance.

8. Examples of the kind of \( \overline{g\,a\,v\,m\,e\,n\,t} \) or \( \overline{g\,o\,r\,m\,e\,n\,t} \) for government, as heard occasionally in ME, are rare.

9. We do not include inflexional morphology here as inflections do not seem to affect the structural and prosodic contours of given strings significantly (also see Premalatha (1978)).

10. Stress rules to be presented in Chapter III will show that ME and many other varieties of IE prefer stress on the word-final foot if it is branching or if it is the second of the two non-branching feet.

11. Vijaykrishnan (1978) and others have argued against a cyclic derivation of stress in derived words in IE. It seems that ME also does not require a cyclic derivation of stress in words of this kind.

12. Some exceptions will be listed later.

13. Since a word finally appears as a lexical diacritic to lengthen a (short) vowel as in cajole or machine, it is not interpreted to be long and represented as geminate as it could be if we go by its UR specification as given in (6) of the present chapter.
14. See Kiparsky (1973) for a discussion of "elsewhere" in phonology.

15. I also assume that similar lexical conventions apply to realizations of consonants in spelling such as to ch in chair /CeýYar_7 or chaos /KáAos_7. These conventions, however, will not be discussed here though they shall be assumed to have applied alongwith SPR.

16. Within (28), however, tl is an impossible onset cluster as an exception in both AE/BE and ME.

17. Other varieties of IE such as TE or MLYE which prefer open syllables also insert the vowel before 1 as in their syllable template 1 is a possible word-final consonant (see Vijaykrishnan (1982) and Mohanan (1982)).

18. The only liquid to occur in this context is 1. Further specification is not required as the occurrence of r will also be blocked in this cluster. The syllabic 'n' as in button never occurs in spelling as a part of a sequence of consonants. But the problem of syllabic 'm' as in communism remains.

19. We have not examined the ordering that obtains between reduction and stress in Maithili.

20. See the URs assumed for TE, HE and MLYE in respective studies mentioned in Chapter I.