a dissertation in linguistics

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THEORETICAL IMPLICATIONS OF GOTHIC AND OLD ENGLISH PHONOLOGY

Richard J. Schmierer

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THEORETICAL IMPLICATIONS OF GOTHIC AND OLD ENGLISH PHONOLOGY

A Dissertation Presented
By
RICHARD JOSEPH SCHMIERER

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This work is dedicated to my father,

Edwin W. Schmierer
ABSTRACT

Theoretical Implications of Gothic and Old English Phonology

(September, 1977)

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The purpose of the present study is essentially twofold. First, it seeks to evaluate the theory of generative phonology by applying this theory to two well-studied phonological systems—that of Wulfilician Gothic, and that of Old English. The particular generative phonological theory being examined here is that theory which has come to be known as the standard theory, and which receives its most thorough statement in The Sound Pattern of English (Chomsky and Halle, 1968). In evaluating this theory through application to relevant linguistic data, the present study seeks to determine those aspects of this theory which require either revision or extension in the face of the phonological phenomena investigated here. The second aim of the present work is to provide additional insight into the workings of the phonological systems of Wulfilian Gothic and Old English.

The work is divided into four chapters. The introductory chapter examines certain aspects of the theory of generative phonology which are taken here to be essential to the scientific study of the sound systems of natural languages. These aspects of generative phonological
theory, such as the assumed generality of the operation of phonological processes, and the necessity for incorporating into phonological theory a means of evaluating alternate accounts of identical data, are examined here with reference to certain of the phonological processes from Gothic and Old English which are treated in depth in the body of this work.

Chapters two and three contain the respective analyses of the Gothic and Old English phonological systems. Given the uniformity and the high degree of thoroughness which characterizes the recorded Gothic language, sufficient detail is available to enable the detection and description of both the major and the minor phonological processes in the language. In the account of Old English, such detail is not available. Moreover, this account must necessarily restrict itself to a particular geographical and temporal dialect of the language. That dialect dealt with here is the Old English of the ninth century manuscript known as the Vespasian-Psalter and Hymns. While the thoroughness of the description of this language suffers to some extent from a lack of completeness of the linguistic corpus, enough data is available to allow significant insight into the workings of the language's phonological system to be made.

In Chapter four a number of issues in phonological theory which are relevant to the analyses developed in the previous two chapters are considered. Thus, the typological distinction between minor and major phonological processes is dealt with, and the significance of a similar distinction among the morphological rules is also treated. The
Naturalness Condition of Postal (1968) is discussed, with particular attention to the interaction of this condition with the occurrence in language of segmental length distinctions. The issues of phonological exceptionality and phonological abstractness are also studied. On the basis of the considerations made here, certain revisions and extensions of the standard theory of generative phonology are proposed.
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CHAPTER 1
INTRODUCTION

1.1. The Theory of Generative Phonology

The ability of linguistic science to account for observed phonological phenomena has been enhanced considerably by the development in the past half-century of the theory of generative phonology. Certain aspects of this theory were first promulgated in the 1930's by Trubetzkoy and others working within the Prague school of linguistics. Most prominent in this connection is the development of distinctive feature theory, which lies at the heart of the present theory of generative phonology. Advancements in the basic conceptions which have come to underlie generative phonological theory were made by Jakobson and Halle, especially in the 1950's. These aspects of the theory received their first explicit formulation in Halle's treatment of Russian phonology, published in 1959 under the title The Sound Pattern of Russian. During the 1960's work continued on the elaboration of generative phonological theory as outlined by Halle in his 1959 work, this research culminating in the appearance in 1968 of the now classic work The Sound Pattern of English (Chomsky and Halle). It is this work which provides the most thorough statement of the theory of generative phonology, and it is this statement of the theory which is generally viewed as the standard to be used in generative phonological description. For this reason, The Sound Pattern of English (hereinafter SPE) is utilized for both the formal and theoretical foundations of the phonological descriptions appearing in the present work.
While much of the discussion of the theory of generative phonology outlined in SPE has centered on certain formal aspects of this theory, it is, at a more fundamental level, the adoption of a particular viewpoint concerning the nature of phonological (and, in a broader sense, linguistic) systems which distinguishes SPE phonological theory from more traditional theories concerning the operation of such systems. This aspect of the SPE theory of generative phonology concerns the generality which is taken to characterize all aspects of phonological description. Most important in this connection with respect to the present work are those aspects of phonological generality which characterize phonological rules, both as regards their application and as regards their formulation.

1.1.1. The Generality of Phonological Rule Application

The concept of the generality of phonological rule application embodies the view that phonological rules (optimally, as discussed below) characterize a language as a whole. That is, in the unmarked case, phonological rules are taken to apply in all form classes in a language. Thus, a phonological rule is not to be restricted in its application to just those classes in which its presence is outwardly observed, unless such restriction is, at a "cost" in terms of the evaluation of the grammar in which the rule occurs (see 1.1.3), specifically required. To see the role which the generality of phonological rule application plays in the theory of generative phonology being adopted here, compare the two phonological processes of /o/-Raising in Old English and /i/-Lengthening in Gothic.
The Old English process of /ɔ/-Raising is observed in a single morphological class in the language—the class II weak verbs. In this class, underlying forms such as those in (1.1) occur:

(1.1) a. /hop + ɔ + on/
    b. /fand + ɔ + on/
    c. /los + ɔ + on/

Such forms appear phonetically, however, as the respective forms in (1.2):

(1.2) a. [hɔpiŋ] (= hopian: 'to hope')
    b. [fandiŋ] (= fandian: 'to try')
    c. [losiŋ] (= losian: 'to lose')

As such infinitival forms indicate, a process which raises, fronts, and unrounds morphophonemic /ɔ/ to phonetic [i] is required in the description of Old English phonology. This process, as discussed further in Chapter 3, receives the formulation in (1.3):

(1.3) /ɔ/-Raising:

\[
\begin{array}{c}
\begin{array}{c}
+ \text{syll} \\
+ \text{low} \\
- \text{stress}
\end{array} \\
\end{array} \quad \rightarrow \quad \begin{array}{c}
\begin{array}{c}
+ \text{high} \\
- \text{back} \\
- \text{round}
\end{array} \\
\end{array} \quad / \quad + \begin{array}{c}
\text{[+ syll]}
\end{array}
\]

The rule of Old English /ɔ/-Raising (1.3) is relevant to the concept of the generality of rule application in phonology on the basis of the fact that, as noted above, while the phenomenon of /ɔ/-Raising is well established in the second class of weak verbs in Old English, its effects are observed nowhere else in the language. This is so, however, not because /ɔ/-Raising fails to apply to strings which satisfy the structural description of the rule but which are not class II weak verbs, but rather because in no other morphological class in Old
English do forms which would be subject to this process arise. On the basis, then, of the generality of rule application in phonology, the claim is made that it is a fact about the Old English language, and not just about Old English class II weak verbs, that /s/ becomes [i] in the environment specified in (1.3).

By comparison, the process of /i/-Lengthening in Gothic is observed to affect only those forms which both satisfy the structural requirements of the rule and which are members of a particular morphological class in the language. Thus, in Gothic, /i/ becomes lengthened in word-final position, but such lengthening occurs only in the class I weak verbs in the language. For example, in the first class of Gothic weak verbs, second person singular imperative forms such as those in (1.4) are observed:

(1.4) a. [nasĨ] (= nasai: 'save')
    b. [sõkĨ] (= sõkei: 'seek')
    c. [mikilĨ] (= mikilei: 'praise')

Such surface forms arise, as discussed in depth in Chapter 2, from the respective morphophonemic forms in (1.5):

(1.5) a. /nas + i + ø/
    b. /sõk + i + ø/
    c. /mikil + i + ø/

As the phonetic values appearing in (1.4) indicate, a process which lengthens a word-final /i/ in the morphophonemic forms in (1.5) is required in the description of Gothic phonology. Such a process takes the form of the rule appearing in (1.6):
(1.6) /i/-Lengthening:

\[
\begin{align*}
+ \text{syll} & \rightarrow [+ \text{long}] / \quad \# \\
+ \text{high} & \\
- \text{back} & 
\end{align*}
\]

That the rule of /i/-Lengthening (1.6), motivated on the basis of the class I weak verb imperative forms appearing in (1.5)—the only class I weak verb forms in which the stem-extension /i/ which characterizes this verb class occurs word-finally—does not apply to word-final /i/'s in any lexical class other than in the class I weak verbs can be seen by examining such morphophonemic—phonetic correspondences as those of the masculine ja-stem nouns given in (1.7):

(1.7) a. /hari + 0/ → [hari] (= hari: 'army', a.s.)
    b. /asni + 0/ → [asni] (= asni: 'laborer', a.s.)
    c. /niθi + 0/ → [nibi] (= nibi: 'relative', a.s.)

and those of the strong verbs given in (1.8):

(1.8) a. /nēm + i/ → [nēmi] (= nēmi: 'take', 3rd s. opt. past)
    b. /bud + i/ → [budī] (= budī: 'offer', 3rd s. opt. past)
    c. /grip + i/ → [gripī] (= gripī: 'grasp', 3rd s. opt. past)

Such forms as those in (1.7) and (1.8) indicate, then, that the process which is responsible for lengthening the word-final /i/ in each of the class I weak verb imperative forms in (1.4) does not characterize the Gothic language as a whole. Consequently, the rule describing this process must carry a morphological as well as a phonological conditioning environment, as in (1.9):

(1.9) /i/-Lengthening (revised):

\[
\begin{align*}
+ \text{syll} & \rightarrow [+ \text{long}] / \quad \# \\
+ \text{high} & \\
- \text{back} & \{\text{class I weak verb}\}
\end{align*}
\]
Comparing the Old English process of /ɔ/-Raising (1.3) and the Gothic process of /i/-Lengthening (1.9), the role played in phonological description by the concept of the generality of phonological rule application becomes clear. Thus, in the case of both of these phonological processes, application of the process is observed only to forms in a single lexical class—-in the case of /ɔ/-Raising, the Old English class II weak verbs; in the case of /i/-Lengthening, the Gothic class I weak verbs. It is, however, only in the case of Old English /ɔ/-Raising that the process is *violated* nowhere in the language. This process, therefore, must apply—-albeit vacuously—-in all lexical classes in the language. This aspect of the application of the Old English rule of /ɔ/-Raising (1.3) is determined by the concept of the generality of rule application in phonology.

1.1.2. The Generality of Phonological Rule Formulation

The second aspect of the notion of phonological generality which characterizes the theory of generative phonology being employed in the present work concerns the generality of rule formulation. The nature of this type of phonological generality can be illustrated on the basis of the process known as Sievers' Law in Gothic (treated in detail in Chapter 2). Sievers' Law in Gothic is a process of glide formation, specifically, one in which /i/ becomes [j] if it occurs both after a stressed short syllable\(^3\) and before another /i/. The formulation of the process so described, given the segmental inventory of Gothic (see Chapter 2), takes the form of the rule appearing in (1.10):
(1.10) Sievers' Law in Gothic:

\[ [+\text{syll}] \quad [+\text{high}] \quad [-\text{back}] \quad \rightarrow \quad [-\text{syll}] / \quad C [\quad [+\text{syll}] \quad [+\text{stress}] \quad [+\text{segment}] \quad \rightarrow \quad [+\text{high}] \quad [-\text{back}] \quad \]

Sample derivations illustrating the operation of Sievers' Law in Gothic (1.10) are given in (1.11):

(1.11) a. \( /\text{nás} + i + \text{is}/ \quad \text{but} \quad /\text{soók} + i + \text{is}/ \)
\( \text{násjís} \quad ('\text{you (s.) save}') \quad  \text{sókeís} \quad ('\text{you (s.) seek}') \)

b. \( /\text{stóó} + i + \text{is}/ \quad \text{but} \quad /\text{nám} + i + \text{is}/ \)
\( \text{stójis} \quad ('\text{you (s.) judge}') \quad  \text{namneís} \quad ('\text{you (s.) name}') \)

c. \( /\text{síw} + i + \text{is}/ \quad \text{but} \quad /\text{míkil} + i + \text{is}/ \)
\( \text{siújís} \quad ('\text{you (s.) sew}') \quad  \text{míkileís} \quad ('\text{you (s.) praise}') \)

d. \( /\text{hári} + \text{is}/ \quad \text{but} \quad /\text{ásni} + \text{is}/ \)
\( \text{harjís} \quad ('\text{army}: \text{g.s.}) \quad  \text{asneís} \quad ('\text{laborer}: \text{g.s.}) \)

A number of aspects of the formulation of Sievers' Law in Gothic appearing in (1.10) are significant in connection with the concept of the generality of rule formulation in phonology. In dealing with such rule generality with respect to (1.10), considerations of two types must be made, those involving formal rule generality, and those involving substantive rule generality.

1.1.2.1. Formal Rule Generality in Phonology

In connection with the concept of formal rule generality in phonology and its application to the phonological rule appearing in (1.10), consider first the specification [+ syll] given for the segment undergoing...
the glide formation process defined by Sievers' Law. This specification is incorporated into the formulation in order to insure that it is the [+ high, - back] vowel /i/, and not just any [+ high, - back] segment in Gothic which undergoes Sievers' Law. Note, however, that the feature change defined by Sievers' Law is, as shown in (1.10), the desyllabification of that segment to which the rule applies. That is, those segments which are subject to Sievers' Law in Gothic receive, as a result of the operation of this process, a [- syll] feature specification. Consequently, Sievers' Law is, by its very nature, unable to affect in any observable way (i.e. in any but a vacuous way) a segment which is specified [- syll] prior to the operation of this process. Thus, using the specification [+ syll] for the segment undergoing Sievers' Law to block this process from applying to [- syll] segments is not necessary. It is one aspect of the concept of the generality of rule formulation in phonology which requires that such a formally redundant specification be eliminated from the formulation of the rule.

Similar considerations obtain with respect to the specification [+ syll] appearing with the additional specification [+ stress] in (1.10). The presence of the joint specification [+ syll, + stress] appearing in (1.10) is based on the fact that the position of the /i/ undergoing Sievers' Law is crucially related to the position of the stressed vowel in those strings to which Sievers' Law applies. Note, however, that given the mode of operation of the rule of Stress Assignment in Gothic (treated in Chapter 2)—namely that it places the
specification [+ stress] on the first stem-vowel in a lexical string, as illustrated in the forms in (1.11)—it is formally redundant to require that the stressed segment in the environmental specification for the process of Sievers' Law be both [+ stress] and [+ syll]. Such redundancy arises from the fact that the rule which assigns stress to lexical items in Gothic (Stress Assignment) assigns stress only to segments which bear the feature specification [+ syll] (i.e. stress is assigned only to vowels). Consequently, the specification [+ stress] alone is sufficient to delimit just those segments which satisfy the structural requirements of Sievers' Law in Gothic. Given such redundancy, in conjunction with the notion of the generality of rule formulation in phonology, the specification [+ syll] for this segment must be eliminated from the formulation of the rule.

As the two instances of formal redundancy of rule formulation in phonology examined above illustrate, such redundancy can arise either through inherent characteristics of the process being formulated (as in the case of the first of the redundant specifications considered), or it can arise as the result of the application of prior phonological processes to the lexical strings in the language (as in the latter case treated). In both types of cases, the concept of the generality of rule formulation in phonology requires that such formally redundant specifications be eliminated from the rule formulation.

1.1.2.2. Substantive Rule Generality in Phonology

The concept of substantive generality in the formulation of phonological rules is involved not with the formal operation of such rules,
but rather with the application of phonological rules to existing forms in the language in which the rules operate. To see the role that this concept plays in the task of constructing a phonological description, consider again the formulation of Sievers' Law in Gothic given in (1.10).

In connection with this formulation, note first the specification [+ high, - back] given for the segment which undergoes Sievers' Law in Gothic. The first of these specifications, [+ high], is incorporated into the rule for two reasons. First, the process of Sievers' Law is observed to apply only to /i/, a [+ high] vowel. Thus, specifying that a segment must be [+ high] to undergo Sievers' Law insures a correct input into the rule. In addition, the segment produced by Sievers' Law, [j], is likewise a [+ high] segment, and restricting the application of this process to [+ high] segments thus also insures a correct output from the rule.

Given the specification [+ high] for the segment undergoing Sievers' Law, and noting, as discussed above, that irrespective of the specification [+ syll] for this segment this process applies crucially only to vowels, the additional specification [- back] for this segment performs a single function, to block application of Sievers' Law to that segment which differs from /i/ only in its specification for the feature [back]. The segment so-defined is the vowel /u/. An examination of the lexical strings which occur in Gothic reveals, however, that in no form in the language does the segment /u/ occur in such an environment that, were it not specifically blocked from undergoing
Sievers' Law, it would satisfy the conditions for the operation of this process. Consequently, Sievers' Law in Gothic need not be formulated in such a way as to prohibit its application to the segment /u/, and the specification [- back] for the segment to which this process applies, included in the rule formulation solely for this purpose, is therefore superfluous. According to the notion of the generality of rule formulation in phonology, then, this specification must be eliminated.

The same considerations hold with respect to the specification [- back] for the segment appearing after the focus in the formulation of Sievers' Law in Gothic given in (1.10). This specification likewise appears only to prevent /u/ from triggering the operation of this process. But, again, in no form in the language does a /u/ occur in such a position that it would cause Sievers' Law to operate. Thus, this specification too must be eliminated from the formulation of Sievers' Law in Gothic appearing in (1.10).

In sum, then, on the basis of the above considerations the formulation of the process of Sievers' Law in Gothic given in (1.10) must be "generalized" to that formulation appearing in (1.12):

(1.12) Sievers' Law in Gothic (revised):

\[
 [+ \text{high}] \rightarrow [- \text{syll}] / C [+ \text{stress}] [+ \text{segment}] \rightarrow [+ \text{syll} \, + \text{high}]\]

The formulation of Sievers' Law in Gothic given in (1.12) incorporates both the formal and the substantive generalizations required of this process by the notion of the generality of rule formulation in phonology.
It is considerations such as those undertaken in this section, all of which are based upon the concept of phonological generality, which determine the exact nature of the rule formulations appearing in the phonological analyses developed in the present work.

1.1.3. The Evaluation Metric

The concept of phonological generality, while central to the task of phonological description in terms of the theory of generative phonology outlined in SPE, is not treated within this theory as a theoretical primitive. That is, the concept of phonological generality, as such, is neither defined nor explicitly discussed in SPE. Rather, the inclusion of this concept in SPE phonological theory derives from the adoption in SPE of a more fundamental theoretical tool, an evaluation metric. The incorporation into the theory of such a device is necessitated, argue Chomsky and Halle, on the grounds that provision must be made for choosing among the potentially infinite number of descriptions which can be constructed for any given phonological system. It is the evaluation metric which determines which of these descriptions is the most "highly-valued", and it is this most highly-valued description which is adopted by the language-acquirer as the "correct" account of the data with which he is presented.

As Chomsky and Halle note, the choice of a particular evaluation metric for phonological theory is an empirical matter. That is, it is the nature of the phonological systems of natural language which determines those aspects of such systems which are most highly-valued. The
evaluation metric adopted in the theory of generative phonology presented in SPE is that given in (1.13):

(1.13) The SPE Evaluation Metric:

The "value" of a sequence of rules is the reciprocal of the number of symbols in its minimal representation.

(Chomsky and Halle, 1968: 334)

Thus, in less formal terms:

The value of a rule, as a measure of the linguistically significant degree of generalization it achieves, increases as the number of features required to identify the contexts in which it applies decreases.

(Chomsky and Halle, 1968: 337)

It is on the basis of the inclusion of such an evaluation metric in SPE phonological theory that the concept of phonological generality comes to play a role in the construction of a phonological description. Thus, in the case of the generality of phonological rule application, it can be seen that a description which need not specify that a phonological process is restricted to a particular lexical class in the language is more highly-valued than a description which requires such specification. Likewise, in the case of the generality of rule formulation in phonology maximum generality corresponds, for both the formal and the substantive generality of rule formulation, with minimum specification, and for precisely this reason such generality represents the most highly-valued case of rule formulation.

In short, by including an evaluation metric in their theory of generative phonology, Chomsky and Halle have insured that this theory is empowered to assess the relative values of different descriptions
of particular phonological phenomena. As the discussion of the concept of phonological generality in the preceding sections has indicated, it is the specific nature of the evaluation metric incorporated by Chomsky and Halle into their formulation of the theory of generative phonology which defines within this theory the task of phonological description.

1.2. The Purpose of the Present Study

The application of generative phonological theory to the two languages treated in the present work is conducted with primarily two goals in mind. First, since the true test of a theory is to be found in its ability to account for relevant facts, each of the phonological investigations undertaken here amounts to a critical examination of the theory of generative phonology by determining its ability to handle the phonological facts which characterize the languages treated. Second, in addition to testing the theory through application to natural language phonological phenomena, the present inquiry into the nature of the phonological component of each of the languages studied also has the aim of determining in which areas the theory of generative phonology requires adjustment in the face of observed phonological phenomena.

This second aspect of the present investigation is conducted primarily in Chapter 4, where a number of issues in phonological theory are examined on the basis of the phonological analyses developed in Chapters 2 and 3. It is in Chapters 2 and 3, however, where the heart of the present linguistic investigation lies, for it is here that the viability
of the theory of generative phonology as a theory of phonological competence is truly tested.

1.3. The Languages Treated

The languages which serve as the objects of study here are, as indicated in the title of the present work, Gothic (specifically, Wulfilian Gothic, as discussed in Chapter 2) and Old English, both of which are members of the Germanic family of languages. The treatment given to the phonological component of Wulfilian Gothic is the more thorough of the two analyses undertaken. There are two reasons for this. First, the phonology of Wulfilian Gothic, as shown in Chapter 2, serves well to illustrate the general fact that a treatment of a phonological system in its entirety is the optimal means of gaining valid insights into the nature of the system being studied (see Chapter 4 and Demers and Cathey (1976) for a discussion of this issue). Thus, as the analysis of Gothic phonology presented in Chapter 2 illustrates, characteristics of all of the rule types found in the language provide important input in determining the exact nature of the Gothic phonological system. In addition, the analysis of Gothic phonology is the more thorough of the two analyses undertaken here because it is the Gothic language in whose study the author is more well-schooled. It is hoped that on the basis of this fact the analysis presented, in addition to being comprehensive, possesses a high degree of validity as well. This in itself would amount to no small achievement, since the phonology of Wulfilian Gothic remains an area
of considerable controversy among scholars of the language (see in this regard Vennemann (1971)).

The second phonological investigation undertaken in the present work, that of Old English, while not as all-encompassing as that of Wulfilian Gothic, treats fully certain important aspects of the phonological component of this language. Most significant in this respect are the rules dealing with the vocalic alternations observed in the language. This aspect of Old English phonology has taken on a considerable degree of theoretical importance, since it has recently become the focus of much attention and controversy among phonological theorists (see, for example, Keyser (1975) and Kiparsky and O'Neil (1976)).
Footnotes to Chapter 1

1 In the Germanic languages each class of weak verbs is characterized by a particular marker occurring between each verbal stem and the inflectional ending with which the stem appears. This marker is referred to as a "stem-extension," and in the class I weak verbs in Gothic has the value /i/, as shown in (1.5).  

2 Rules such as (1.9), which contain both a phonological and a morphological conditioning environment but which have no morphological significance (in a sense discussed in Chapter 4), will henceforth be referred to as "minor phonological rules." The nature and characteristics of such rules are treated in Chapter 4.  

3 Within the context of the present treatment of Gothic phonology, a "short syllable" is defined as a syllable containing exactly one segment after the first vowel of the syllable. This definition is reflected in the formulation of Sievers' Law in Gothic given in (1.10).  

4 The treatment of long vowels as vowel sequences in the present account of Gothic phonology, illustrated in the forms /sóók + i + is/ and /stóó + i + is/ in (1.11), is taken up in Chapter 2. For the present it is sufficient to note that the appearance of stress on both stem-vowels in such forms results from the fact that, underlyingly, such vowel sequences are single long vowels.  

5 Specifically, the Mercian dialect of Old English as recorded in the ninth century manuscript known as the Vespasian-Psalter and Hymns (see Chapter 3).
CHAPTER 2
THE PHONOLOGY OF WULFILIAN GOTHIC

2.1. Wulfilian Gothic

The material from the now extinct Gothic language which has been preserved stems essentially from three sources. The earliest and most complete corpus of the language appears in a translation of the Bible, undertaken by Wulfila, a Bishop of the Western Goths, in the foruth century A.D. Of this translation, approximately three-fourths of the New Testament and fragments of three chapters of the Old Testament book of Nehemiah have survived. In addition to Wulfila's translation of the Bible, a second important source of material from the Gothic language of this period has also been preserved. This corpus consists of fragments from a related document, a commentary associated with the translation of the Bible and known as the Skeireins. Although this document was not written by Wulfila himself, it dates from about the same period as the Wulfilian Bible. Taken together, these two sources provide the bulk of the available corpus of the language known as Wulfilian Gothic. The final significant body of data which remains from the Gothic language is a corpus of words, numerals, and phrases collected in Crimea by a Flemish envoy of Charles V in the sixteenth century, shortly before the language became extinct. This material, which is a record of the language referred to as Crimean Gothic, is not taken into consideration in the present treatment of Gothic phonology. Rather, this study restricts itself to the phonology of the West Gothic language of the fourth century A.D.—Wulfilian Gothic.
2.1.1. The Orthography of Wulfilian Gothic

The original manuscripts of Wulfila's translation of the Bible and the commentaries on this Bible known as the Skeireins were recorded using a modified Greek alphabet. For reasons of accessibility, however, these manuscripts have since been transliterated into an expanded Latin alphabet, and most of the research which has been done on this language has dealt with the Gothic corpus in its transliterated form. For such reasons, this approach is also adopted in the present treatment of Gothic phonology.

2.1.2. The Pronunciation of Wulfilian Gothic

Since the beginning of systematic linguistic investigation of the Gothic language (begun in the early nineteenth century), there has been considerable controversy concerning the phonetic values to be assigned to certain of the orthographic symbols appearing in the Gothic manuscripts. This controversy has centered on the interpretation of the vowels and digraphs appearing in the texts.

Because the scribes who recorded the Gothic manuscripts did not in general (see, however, the discussion of the digraph ei below) indicate a distinction between long and short vowels in the written texts, much discussion has been conducted concerning the existence of such a distinction in Wulfilian Gothic. Recently, Vennemann (1971) has added a number of new arguments in favor of the view that a distinction between long and short vowels is maintained in this language. Vennemann's arguments are based on facts of Gothic phonology, and show that unless such a distinction existed in Gothic at the time of Wulfila,
a number of phenomena which can be accounted for in a straightforward manner on the basis of vocalic length distinctions (corresponding, in fact, exactly to those which would be expected on the basis of etymological considerations) must, in the absence of phonetic length distinctions for vowels, be viewed as irregular and arbitrary occurrences. Even before Vennemann's phonological arguments in favor of vocalic length distinctions for Wulfilian Gothic appeared, the consensus among scholars was that such length distinctions must be assumed for the language. In the face of the additional evidence produced by Vennemann in favor of this view, the justification for this consensus has become even stronger. Thus, the view that a distinction between long and short vowels characterizes Wulfilian Gothic is adopted in the present treatment of Gothic phonology. Where this distinction is not represented in the orthography by means of a digraph (see the discussion of the digraph \textit{ei} below), it is rendered here in the standard manner—by placing a macron over a long vowel.

Perhaps the most disputed aspect of Gothic orthography concerns the phonetic value of each of the four digraphs \textit{ai}, \textit{au}, \textit{iu}, and \textit{ei} appearing in the Gothic manuscripts. In the earliest studies undertaken into the Gothic language, the two digraphs \textit{ai} and \textit{au} were generally interpreted as representing the diphthongs [aj] and [aw], respectively. This interpretation was based primarily on comparative evidence from other Germanic languages. Such values for the digraphs \textit{ai} and \textit{au} have, however, been critically re-examined and for the most part rejected in the present century. The impetus for such re-evaluation of the traditional
phonetic values assigned to these digraphs came primarily from two sources: (1) arguments concerning the internal consistency of the orthographic practices of the Gothic scribes; and, (2) consideration of words borrowed into Gothic from neighboring languages (mainly Greek) for which the phonetic value can be fairly well documented. Marchand (1973) gives an in-depth treatment of the facts bearing on this controversy, and shows that by far the bulk of the evidence leads to the view that the Germanic diphthongs $\ddagger [ai]$ and $\ddagger [aw]$ appear in a monophthongized form in Wulfilian Gothic. Thus, rendered orthographically as $\underline{ai}$ and $\underline{au}$, these entities have in Wulfilian Gothic the respective phonetic values $[\varepsilon]$ and $[\varepsilon]$

However, the digraphs $\underline{ai}$ and $\underline{au}$ are also used in the Gothic manuscripts to represent segments with the etymological values $\ddagger [\varepsilon]$ and $\ddagger [\delta]$, respectively. In the absence of any evidence that these segments had become lengthened by the time of Wulfilian Gothic, it must be assumed that $[\varepsilon]$ and $[\delta]$ were still the phonetic values of these segments in Gothic at the time of Wulfila. Those occurrences of $\underline{ai}$ and $\underline{au}$ in the Gothic texts which correspond to etymological short vowels are found in two environments: (1) certain instances of $\underline{ai}$ and $\underline{au}$ before either $\underline{r}$, $\underline{h}$, or $\underline{hw}$ (= $[hw]^\prime$), as in (2.1):

\begin{enumerate}
\item[(2.1)]
\begin{enumerate}
\item a. wair ('man'); taihun ('ten'); saihwan ('to see')
\item b. baurg ('city'); dauhter ('daughter');
\end{enumerate}
\end{enumerate}

and, (2) $\underline{ai}$ in the reduplicated syllable of the reduplicative strong verbs, as in (2.2):
(2.2) a. fāhan ('to catch'); faifān ('I caught')
b. slēpa ('to sleep'); saislēp ('I slept')
c. tēkan ('to touch'); taitōk ('I touched')

A macron will also be used, then, to distinguish such forms as those in (2.1) and (2.2), in which the digraphs ai and au have short phonetic values, from forms such as those in (2.3):

(2.3) a. stāins ('stone'); draībjan ('to drive'); āir ('early')
b. hāuhs ('high'); hāuṣjan ('to hear'); gāürs ('grieved')

in which these digraphs represent phonetic long vowels.

That leaves, then, the two digraphs iu and ei to be discussed. In most current treatments of Gothic phonology the former, iu, is interpreted phonetically at face value, as the sequence [iu]. Vennemann (1971), however, treats orthographic iu as phonetic [uí], but justifies this interpretation only in terms of considerations internal to his analysis of Gothic phonology.² There exists, however, no convincing evidence of a general nature that such a segment is to be found in Wulfilalian Gothic. Given such considerations, the phonetic value ascribed to the digraph iu in the present treatment of Gothic phonology is the standard one—[iu].

Finally, the latter of the two digraphs noted above, ei, is generally taken to represent a phonetic [ǐ], an interpretation about which there is essentially no disagreement among present scholars of the language. Such considerations lead, then, to the summary of the orthographic-phonetic correspondences adopted in the present treatment of the phonology of Wulfilalian Gothic presented in TABLE I:
## TABLE I: The Phonetic Values of the Gothic Orthographic Symbols

<table>
<thead>
<tr>
<th>Example</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>p = [p]</td>
<td>skip ('ship')</td>
</tr>
<tr>
<td>f = [φ]</td>
<td>afar ('after')</td>
</tr>
<tr>
<td>b = [b]</td>
<td>bagus ('tree')</td>
</tr>
<tr>
<td></td>
<td>lamb ('lamb')</td>
</tr>
<tr>
<td></td>
<td>[β] gibān ('to give')</td>
</tr>
<tr>
<td>m = [m]</td>
<td>fruma ('former')</td>
</tr>
<tr>
<td>t = [t]</td>
<td>tāūi ('deed')</td>
</tr>
<tr>
<td>p = [θ]</td>
<td>sneīban ('to cut')</td>
</tr>
<tr>
<td>d = [d]</td>
<td>dags ('day')</td>
</tr>
<tr>
<td></td>
<td>gazds ('thorn')</td>
</tr>
<tr>
<td></td>
<td>[δ] fadar ('father')</td>
</tr>
<tr>
<td>n = [n]</td>
<td>wein ('wine')</td>
</tr>
<tr>
<td>s = [s]</td>
<td>asans ('harvest')</td>
</tr>
<tr>
<td>z = [z]</td>
<td>razn ('house')</td>
</tr>
<tr>
<td>k = [k]</td>
<td>reiki ('kingdom')</td>
</tr>
<tr>
<td>x = [k]</td>
<td>Xristus ('Christ')</td>
</tr>
<tr>
<td>q = [kʰ]</td>
<td>qibān ('to speak')</td>
</tr>
<tr>
<td>h = [h]</td>
<td>hawi ('hay')</td>
</tr>
<tr>
<td>hw = [hʷ]</td>
<td>ahwa ('water')</td>
</tr>
<tr>
<td>g = [γ]</td>
<td>gawi ('area')</td>
</tr>
<tr>
<td></td>
<td>sigiś ('victory')</td>
</tr>
<tr>
<td></td>
<td>[x] dags ('day')</td>
</tr>
<tr>
<td>gg = [ŋ]</td>
<td>gaggan ('to go')</td>
</tr>
<tr>
<td>gk = [ŋk]</td>
<td>drigān ('to drink')</td>
</tr>
<tr>
<td>gq = [ŋkʷ]</td>
<td>sigān ('to sink')</td>
</tr>
<tr>
<td>l = [l]</td>
<td>aglo ('anguish')</td>
</tr>
<tr>
<td>r = [r]</td>
<td>harjīs ('army')</td>
</tr>
<tr>
<td>j = [j]</td>
<td>juk ('yoke')</td>
</tr>
<tr>
<td>w = [w]</td>
<td>waurstw ('work')</td>
</tr>
<tr>
<td>i = [i]</td>
<td>ibna ('level')</td>
</tr>
<tr>
<td>ei = [i̯]</td>
<td>marei ('sea')</td>
</tr>
<tr>
<td>u = [u]</td>
<td>kuni ('race')</td>
</tr>
<tr>
<td>û = [û]</td>
<td>fuls ('lazy')</td>
</tr>
<tr>
<td>ǣ = [ǭ]</td>
<td>jēr ('year')</td>
</tr>
<tr>
<td>ǭ = [ǭ]</td>
<td>hairtō ('heart')</td>
</tr>
<tr>
<td>ai = [ɛ]</td>
<td>airpa ('earth')</td>
</tr>
<tr>
<td>āi = [ɛ̯]</td>
<td>āiws ('time')</td>
</tr>
<tr>
<td>au = [o]</td>
<td>haurn ('horn')</td>
</tr>
<tr>
<td>āu = [ɔ̯]</td>
<td>hāusjan ('to hear')</td>
</tr>
<tr>
<td>a = [a]</td>
<td>hāban ('to have')</td>
</tr>
<tr>
<td>ā = [ā]</td>
<td>fāhan ('to catch')</td>
</tr>
</tbody>
</table>
2.1.3. The Distinctive Feature Specifications of the Gothic Segments

The distinctive feature specifications for each of the Gothic segments are given in TABLE II (p. 25). A number of the specifications appearing in this TABLE are, of course, redundant, such redundancy arising either on the basis of general phonological principles (such as that a specification [+] syll] implies a specification [+] son]) or on the basis of specific characteristics of Wulfilian Gothic (such as that the combined specifications [+] syll, + high, - back] imply the additional specification [- round], since the language does not contain the segment /y/). Such aspects of the Gothic distinctive feature system are, however, not at issue in the present treatment of the phonological component of the language. Rather, the specifications appearing in TABLE II are provided for expository purposes only. Thus, the distinctive feature specifications in TABLE II define (in part, see the discussion of the feature [long] below) the segments which function in the rules of Gothic phonology.
TABLE II: The Distinctive Feature Specifications of the Gothic Segments

|       | p | t | k | k̂ | b | d | γ | φ | β | θ | essages | s | z | h | ĥ | m | n | ̃ | l | r | j | w | i | u | e | o | e | c | a |
| syllabic |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| consonantal |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| high |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| back |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| low |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| anterior |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| coronal |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| round |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| voice |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| continuant |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| nasal |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| strident |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| sonorant |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

25
2.1.3.1. The Distinctive Feature \([\text{long}]\)

In addition to the distinctive features listed in TABLE II, the feature \([\text{long}]\) also plays a crucial role in the phonological system of Wulfilian Gothic. The distribution of this feature in the language is as follows. Each of the vowels /i/, /u/, /e/, /o/, and /a/ has both a \([+ \text{ long}]\) and a \([- \text{ long}]\) counterpart. The vowels /e/ and /o/, however, have only \([+ \text{ long}]\) values. As for the consonants, all exhibit \([- \text{ long}]\) values, and a \([\pm \text{ long}]\) distinction is crucial only for the obstruents /b/ and /d/ (see the discussion of the rule of Spirantization in 2.2.4.2), as illustrated in (2.4)\(_a\) and \(_b\), respectively:

\[
(2.4) \quad \begin{align*}
\text{a. } & \text{hab\_an ('to have'); rab\_bei ('master')}
\text{b. } & \text{bid\_jan ('to ask'); d\_add\_jan ('to suckle')}
\end{align*}
\]

Forms occur, however, such as those in (2.5):

\[
(2.5) \quad \begin{align*}
\text{a. } & \text{g\_aq\_iss ('agreement')}
\text{b. } & \text{a\_b\_han ('but')}
\text{c. } & \text{a\_t\_ta ('father')}
\text{d. } & \text{smak\_ka ('fig')}
\text{e. } & \text{sp\_in\_nen ('to spin')}
\text{f. } & \text{f\_ull\_nan ('to become full')}
\end{align*}
\]

which indicate the existence of a \([+ \text{ long}]\) counterpart for a number of other consonants in Wulfilian Gothic as well.

2.2. The Phonological System

2.2.1. Stress Assignment

The placement of stress in Wulfilian Gothic follows essentially the same pattern as that which characterizes late Proto-Germanic—the first vowel in each lexical stem receives lexical stress. Such
a pattern of stress assignment is revealed in all three major lexical classes in the language, as shown in (2.6):

(2.6) a. Nouns: 
   \[ \text{giba ('gift')} \]
   \[ \text{gáruni ('advice')} \]
   \[ \text{mela ('bushel')} \]

b. Verbs: 
   \[ \text{stójan ('to judge')} \]
   \[ \text{mikiljan ('to praise')} \]
   \[ \text{dúginan ('to begin')} \]

c. Adjectives: 
   \[ \text{gibands ('giving')} \]
   \[ \text{frúmists ('first')} \]

Such considerations lead, then, to the formulation of the rule of Stress Assignment in Wulfilian Gothic appearing in (2.7):

(2.7) Stress Assignment:

\[ [+ \text{ syll}] \rightarrow [+ \text{ stress}] / [\#C_o \quad \_\_\_] \text{ lexical stem} \]

2.2.2. Alternations between Glides and Vowels

2.2.2.1. The [i] - [j] Alternations

2.2.2.1.1. Syllabification

One aspect of the [i] - [j] alternations exhibited in Wulfilian Gothic involves a process of Syllabification. The operation of this process in Gothic is seen, for example, in the paradigm of the neuter ja-stem noun \text{reiki ('kingdom')}, which appears in (2.8):

(2.8) | Singular | Plural |
--- | --- | ---
Nom. | reiki | reikja |
Gen. | reikjís | reikjé |
Dat. | reikjá | reikjam |
Acc. | reiki | reikja |
Voc. | reiki | --- |
Two possible characterizations of the distribution of the [i]'s and [j]'s in the paradigm of reiki can be formulated, as in (2.9):

(2.9) a. /i/ becomes [j] before a vowel, or
    b. /j/ becomes [i] word-finally

As will be seen in considering the phenomenon of Glide Formation in Gothic, at which time such morphophonemic-phonetic pairs as those in (2.10) will be examined:

(2.10) a. /sōk + i + is/  -  [sōks]  (= sōkeis: 'you (s.) seek')
    b. /namn + i + is/  -  [namnis]  (= namneis: 'you (s.) name')

the alternation described in (2.9)a does not hold for the language as a whole. The latter of the two descriptions appearing in (2.9) does, however, characterize the entire corpus of Wulfilian Gothic, and it is on the basis of this fact that a process of Syllabification, as described in (2.9)b, is motivated for the language. This process receives the formulation appearing in (2.11):

(2.11) Syllabification:³

\[
\begin{array}{c}
\text{[- cons]} \\
\text{[+ high]} \\
\text{[- back]} \\
\end{array} \rightarrow [+ \text{ syll }] / \quad #
\]

Derivations illustrating the operation of Syllabification (2.11) in the paradigm of the noun reiki are given in (2.12):

(2.12) a. /rīkj + ə/  
    b. /rīkj + is/  

\[\text{reiki (a.s.)} \quad \text{reikjis (g.s.)}\]

The process of Syllabification formulated in (2.11), motivated on the basis of the [i] - [j] alternations exhibited in the paradigms of the Gothic neuter ja-stem nouns (such as reiki), also accounts for an identical pattern of alternation which characterizes the feminine
jō-stem nouns in Gothic. Thus, like the neuter ja-stem nouns, the
feminine jō-stem nouns exhibit a pattern of alternation between [i]
and [j] which is characterizable as: [i] occurs word-finally; [j]
occurs elsewhere. This fact is illustrated in the paradigm of the
feminine jō-stem noun bandi ('band'), given in (2.13)

(2.13)         Singular       Plural

Nom.       bandi           bandjōs
Gen.       bandjōs          bandjō
Dat.       bandjāi          bandjom
Acc.       bandja           bandjōs
Voc.       bandja           ---

As the derivations in (2.14) indicate:

(2.14) a. /bandj + 0/  b. /bandj + a/
       i         ---

bandi (n.s.)    bandja (a.s.)

Syllabification (2.11) accounts for the [i] - [j] alternations exhib-
it in the paradigm of bandi. In short, all alternations between [i]
and [j] in Wulfilian Gothic in which [i] occurs word-finally and [j]
occurring "elsewhere" are accounted for by the rule of Syllabification
(2.11).

2.2.2.1.2. Glide Formation

In addition to those alternations between [i] and [j] which are
characterizable as described above, and which are accounted for by the
rule of Syllabification formulated in (2.11), Wulfilian Gothic also
exhibits a pattern of alternation between [i] and [j] which is consid-
erably more complex. This pattern is found, for example, in the first
class of weak verbs in the language. As regards the alternations be-
tween [i] and [j] exhibited by members of this verb class, five verbal
root types, each containing a distinctive structural make-up, must be considered. These five crucial root types are as follows:

(i) Monosyllabic roots containing a long vowel and ending in at least one consonant, as in sökjan ('to seek');

(ii) Monosyllabic roots containing either a short or a long vowel and ending in at least two consonants, as in namnjan ('to name');

(iii) Monosyllabic roots containing a short vowel and ending in a single consonant, as in nasjan ('to save');

(iv) Monosyllabic roots containing a long vowel and ending in no consonants, as in stojan ('to judge');

(v) Polysyllabic roots, as in mikiljan ('to praise').

The present and past tense active paradigms for each of these verbs appear in TABLE III:
TABLE III: Gothic Class I Weak Verbs

<table>
<thead>
<tr>
<th>Infinitive:</th>
<th>sökjan</th>
<th>namnjan</th>
<th>nasjan</th>
<th>stōjan</th>
<th>mikiljan</th>
</tr>
</thead>
</table>

Present Tense

<table>
<thead>
<tr>
<th>Singular</th>
<th>1. sökja</th>
<th>namnja</th>
<th>nasja</th>
<th>stōja</th>
<th>mikilja</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. sökeis</td>
<td>namneis</td>
<td>nasjis</td>
<td>stōjis</td>
<td>mikileis</td>
</tr>
<tr>
<td></td>
<td>3. sökeiþ</td>
<td>namneiþ</td>
<td>nasjiþ</td>
<td>stōjiþ</td>
<td>mikileiþ</td>
</tr>
<tr>
<td>Dual</td>
<td>1. sökjós</td>
<td>namnjós</td>
<td>nasjós</td>
<td>stōjós</td>
<td>mikiljós</td>
</tr>
<tr>
<td></td>
<td>2. sökjats</td>
<td>namnjats</td>
<td>nasjats</td>
<td>stōjats</td>
<td>mikiljats</td>
</tr>
<tr>
<td>Plural</td>
<td>1. sökjam</td>
<td>namnjam</td>
<td>nasjam</td>
<td>stōjum</td>
<td>mikiljam</td>
</tr>
<tr>
<td></td>
<td>2. sökeiþ</td>
<td>namneiþ</td>
<td>nasjiþ</td>
<td>stōjiþ</td>
<td>mikileiþ</td>
</tr>
<tr>
<td></td>
<td>3. sökjand</td>
<td>namnjand</td>
<td>nasjand</td>
<td>stōjand</td>
<td>mikiljand</td>
</tr>
</tbody>
</table>

Past Tense

<table>
<thead>
<tr>
<th>Singular</th>
<th>1. sökidja</th>
<th>namnida</th>
<th>nasida</th>
<th>stāuida</th>
<th>mikilida</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. sökidēs</td>
<td>namnīdes</td>
<td>nasidēs</td>
<td>stāidēs</td>
<td>mikilidēs</td>
</tr>
<tr>
<td></td>
<td>3. sökidia</td>
<td>namnida</td>
<td>nasida</td>
<td>stāuida</td>
<td>mikilida</td>
</tr>
<tr>
<td>Dual</td>
<td>1. sökidēdū</td>
<td>namnīdēdū</td>
<td>nasidēdū</td>
<td>stāidēdū</td>
<td>mikilidēdū</td>
</tr>
<tr>
<td></td>
<td>2. sökidēduts</td>
<td>namnīdēduts</td>
<td>nasidēduts</td>
<td>stāidēduts</td>
<td>mikilidēduts</td>
</tr>
<tr>
<td>Plural</td>
<td>1. sökidēdum</td>
<td>namnīdēdum</td>
<td>nasidēdum</td>
<td>stāidēdum</td>
<td>mikilidēdum</td>
</tr>
<tr>
<td></td>
<td>2. sökidēdūb</td>
<td>namnīdēdūb</td>
<td>nasidēdūb</td>
<td>stāidēdūb</td>
<td>mikilidēdūb</td>
</tr>
<tr>
<td></td>
<td>3. sökidēdun</td>
<td>namnīdēdun</td>
<td>nasidēdun</td>
<td>stāidēdun</td>
<td>mikilidēdun</td>
</tr>
</tbody>
</table>
The structure of Gothic weak verbs is, just as in Proto-Germanic (see Chapter 1, footnote 1), of the form given in (2.15):

(2.15) Gothic weak verb structure:

/verbal stem + stem-extension + inflectional ending/

That is, unlike the Gothic (and Germanic) strong verbs, to whose stems inflectional endings are directly attached, the weak verbs contain an extra structural unit—a so-called "stem-extension" marker—between each verbal stem and the ending with which it occurs. In the first class of Gothic weak verbs this stem-extension is an /i/, and it is this /i/ which alternates between [i] and [j] in the paradigms in TABLE III.

In considering the alternations between [i] and [j] in the class I weak verb paradigms appearing in TABLE III, note first the past tense forms, in which the stem-extension /i/ never varies from its underlying value. Such behavior correlates with the fact that the inflectional endings in all of the past tense forms begin with a consonant, indicating that before a consonant underlying /i/ is left intact. In the present tense, on the other hand, all of the inflectional endings begin with a vowel. Here, based on the behavior of the stem-extension /i/ the verbs in TABLE III can be divided into two groups: (1) those in which this /i/ appears as [j] before all vowels, this group containing the verbs nasjan and stōjan; and, (2) those in which the stem-extension /i/ appears as [j] before all vowels except the vowel [i], this group containing the verbs sōkjan, namnjan, and mikiljan. Leaving aside the polysyllabic verb mikiljan for now, note first that two of the verbs, sōkjan
and stōjan, contain long stem-vowels, but they pattern differently with respect to the [i] - [j] alternations which each exhibits. Thus, sōkjan, containing a long stem-vowel and one stem-final consonant, patterns with namnjan, which contains a short stem-vowel and two stem-final consonants. Stōjan, on the other hand, containing a long stem-vowel and no stem-final consonants, patterns with nasjan, which contains a short stem-vowel and one stem-final consonant.

The appearance of such patterningsprompted Vennemann (1971), in connection with his analysis of Gothic phonology, to propose as a language universal the following interpretive principle:

(2.16) Interpretive Principle for Segment Length:

In languages with a length contrast, long segments (both consonants and vowels) are analyzed as bisegmental in phonological (and metrical) processes.

(Vennemann, 1971: 107)

Incorporating this principle into the present treatment of the Gothic phonological system, a basis is obtained for differentiating between the two groups of verbs noted above, as in (2.17):

(2.17) a. Sōkjan and namnjan, whose underlying forms, according to (2.16), now appear as /sook + i + an/ and /namn + i + an/, respectively, each contain two segments between the initial stem-vowel and the stem-extension /i/.

b. Nasjan and stōjan, analyzed, correspondingly, as /nas + i + an/ and /stoo + i + an/, respectively, each contain only one segment between the initial stem-vowel and the stem-extension /i/.

Thus, given the phonological treatment of long vowels embodied in (2.16), the alternations between [i] and [j] observed in the present tense forms appearing in TABLE III can be characterized as in (2.18):
(2.18) a. Morphophonemic /i/ becomes [j] when followed by a non-high vowel;

b. Morphophonemic /i/ becomes [j] if, when followed by a high vowel, it is at the same time preceded by a "short syllable" (i.e. a syllable containing a single segment after the first vowel in the syllable).

The first process described in (2.18) represents a fairly general process of Glide Formation. The second, much more restricted process by which /i/ becomes [j] described in (2.18) is, as noted in Chapter 1, that process in Wulfilian Gothic which corresponds to the Indo-European process known as Sievers' Law. These two phonological processes receive the respective formulations appearing in (2.19):

(2.19) a. Glide Formation:

\[ [+ \text{high}] \rightarrow [- \text{syll}] / [- \text{high}] \]

b. Sievers' Law in Gothic:

\[ [+ \text{high}] \rightarrow [- \text{syll}] / C [+ \text{syll}] [+ \text{segment}] \rightarrow [+ \text{high}] \]

As formulated in (2.19), however, the high degree of similarity between the Gothic phonological processes of Glide Formation and Sievers' Law is treated as accidental. Moreover, if the alternations between [i] and [j] exhibited in the class I weak verb paradigms in TABLE III—on the basis of which the processes formulated in (2.19) are motivated—are reconsidered, it becomes clear that the effect of the latter of these two rules—Sievers' Law—is to act as a restriction on the former—Glide Formation. This relationship between the two rules appearing in (2.19) can be formally captured by the use of the angled bracket
notation (SPE: 76-77) to incorporate the restrictive material contained in Sievers' Law (2.19)c into the formulation of Glide Formation. This revised formulation appears in (2.20):

(2.20) Glide Formation (revised):

$$\text{[+ high]} \rightarrow \text{[- syll]} / \text{a} \langle \text{C [+ syll]} [\text{+ seg}] \rangle b \langle \text{+ high} \rangle$$

|Condition: If b, then a|

Recall now that, throughout the above discussion of the process of Glide Formation, the pattern of alternation between [i] and [j] in the paradigm of the polysyllabic class I weak verb mikiljan was ignored. As the forms of this verb appearing in TABLE III show, this pattern of alternation is the same as that which characterizes the verbs sokjan and namnjan. That is, in the paradigm of mikiljan, for those forms in which the inflectional ending begins with the vowel /i/, the segment alternating between [i] and [j] appears on the surface as [i]. Such patterning is, however, contrary to that required by the rule of Glide Formation formulated in (2.20), since the alternating segment in the paradigm of mikiljan occurs immediately after a short syllable. As such forms indicate, then, there is another aspect of Gothic phonology which plays a crucial role in the operation of the process of Glide Formation. This is the placement of lexical stress in the language. As noted in 2.2.1, lexical stress in Gothic occurs on the first vowel in each lexical stem. This fact, coupled with the facts of the [i] - [j] alternations occurring in the paradigm of polysyllabic class I weak verbs such as mikiljan, indicates that Glide Formation in Gothic must
be constrained as in (2.21):

(2.21) Morphophonemic /i/ becomes [j] before /i/ only if it is immediately preceded by a stressed short syllable.

This aspect of the conditioning environment of the rule of Glide Formation is incorporated into the formulation of this rule in (2.22):

(2.22) Glide Formation (final version):

\[ [+\text{high}] \rightarrow [-\text{syll}] / \text{a} \langle C [+\text{stress}] [+\text{seg}] \rangle \rightarrow [+\text{syll}] \text{b}\langle[+\text{high}] \rangle \]

|Condition: If b, then a|

With the rule of Glide Formation formulated in (2.22), all of the alternations between [i] and [j] in the present tense forms in TABLE III are accounted for. Sample derivations illustrating the operation of this rule on a number of class I weak verb forms are given in (2.23):

(2.23) a. /nás + i + an/ /nás + i + is/ GF (2.22)
    \[ nášjan \] \[ násjis \]

b. /stóó + i + an/ /stóó + i + is/ GF (2.22)
    \[ stójjan \] \[ stójis \]

c. /sóók + i + an/ /sóók + i + is/ GF (2.22)
    \[ sókjan \] \[ sókeis \]

d. /nám + i + an/ /nám + i + is/ GF (2.22)
    \[ nánmnjan \] \[ námneis \]

e. /míkil + i + an/ /míkil + i + is/ GF (2.22)
    \[ míkiljan \] \[ míkileis \]

As the derivations in (2.23) illustrate, the only present tense forms in TABLE III in which the process of Glide Formation (2.22) does not
apply are those forms of the verbs sökjan, namnjan, and nikiljan in which the inflectional ending begins with the vowel /i/. This is exactly the mode of operation required. With respect to the past tense forms in TABLE III, it is clear that since all of the inflectional endings in these forms begin with a consonant, the rule of Glide Formation (2.22) will never apply here. This is also as it should be. In short, Glide Formation (2.22) accounts for all of the instances in which [i] alternates with [j] in the class I weak verbs in Gothic.

In addition to the first class of Gothic weak verbs, a number of other lexical classes in the language also exhibit the effects of the process of Glide Formation (2.22). The masculine ja-stem nouns, for example, show alternations between [i] and [j] identical to those which characterize the class I weak verbs, as the paradigms of the masculine ja-stem nouns hairdeis ('shepherd') and harjis ('army'), given in (2.24), indicate:

(2.24)  Singular

<table>
<thead>
<tr>
<th></th>
<th>hairdeis</th>
<th>harjis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>hairdeis</td>
<td>harjis</td>
</tr>
<tr>
<td>Gen.</td>
<td>hairdeis</td>
<td>harjis</td>
</tr>
<tr>
<td>Dat.</td>
<td>hairdja</td>
<td>harja</td>
</tr>
<tr>
<td>Acc.</td>
<td>hairdi</td>
<td>hari</td>
</tr>
<tr>
<td>Voc.</td>
<td>hairdi</td>
<td>hari</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>hairdjoš</th>
<th>harjoš</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>hairdje</td>
<td>harje</td>
</tr>
<tr>
<td>Gen.</td>
<td>hairdjam</td>
<td>harjam</td>
</tr>
<tr>
<td>Acc.</td>
<td>hairdjans</td>
<td>harjans</td>
</tr>
</tbody>
</table>

Thus, just as with the class I weak verbs, in the nominal paradigms in (2.24) morphophonemic /i/ becomes [j] before a vowel, but before the vowel /i/ only if it is immediately preceded by a stressed short
syllable. Such behavior is accounted for by the rule of Glide Formation (2.22), as the derivations in (2.25) illustrate:

\[(2.25)\]
\[
\begin{align*}
(2.25) & \ a. /\text{hari} + \text{is}/ & /\text{hari} + \text{a}/ \\
& j & j \\
& \text{harjis} & \text{harja} \\
& b. /\text{herdi} + \text{is}/ & /\text{herdi} + \text{a}/ \\
& j & j \\
& \text{hairdeis} & \text{hairdja}
\end{align*}
\]

In fact, comparing the nominative singular form of the masculine ja-stem noun hairdeis (i.e. hairdeis) with the genitive singular form of the neuter ja-stem noun reiki (i.e. reikjis), treated in 2.2.2.1.1, the distinction in the patterns of alternation between [i] and [j] in those forms which undergo Glide Formation (2.22) as compared to those which undergo Syllabification (2.11) becomes clear. In hairdeis, morphophonemic /i/ fails to become [j] before an inflectional ending beginning with /i/ because it is not immediately preceded by a stressed short syllable. In reikjis, on the other hand, the segment alternating between [i] and [j] in the paradigm of the noun reiki appears on the surface as [j], this in spite of the fact that this segment is likewise not immediately preceded by a stressed short syllable. Thus, this segment cannot have the morphophonemic value /i/; rather, it must be an underlying /j/. Since, however, this /j/, when it occurs word-finally appears phonetically as [i], a process of word-final Syllabification is required in the description of the Gothic phonological system. This distinction in the derivations of the forms hairdeis and reikjis, then, is illustrated in (2.26):
(2.26) a. /hérđi + is/ \hérđi + a/  
  ħärdeis  ħārdja  
  b. /ri'ikj + is/ /ri'ikj + 0/  
  ĭrēkjis  ĭrēki

2.2.2.2. The [u] - [w] Alternations

Just as alternations between [i] and [j] are observed in Wulfil- 
ian Gothic, so also are alternations to be found in the language be- 
tween the [+ back] counterparts of these segments—the vowel [u] and 
the glide [w], respectively. Thus, while /j/ syllabifies word-finally, 
so also does /w/, as the pair of forms in (2.27) illustrates:

(2.27) a. triu ('tree': n.s.)  
  b. triwis ('tree': g.s.)

However, unlike the alternations between [i] and [j] considered in the 
discussion of the process of Syllabification in 2.2.2.1.1 above, 
alternations between [u] and [w] also occur medially before [− syll] 
segments. Such alternations are illustrated in (2.28):

(2.28) a. siujan ('sew': infinitive)  
  b. siwida ('sew': 1st s. past)

In determining the nature of the process of Syllabification as it 
affects the segment /w/, one limiting factor which restricts all occur- 
rences of the [u] - [w] alternations in the language must be noted. 
This restriction arises from the fact that occurrences of an alterna- 
tion between [u] and [w] are observed only after the vowel /i/. That 
such a limitation obtains word-finally is verified by the word-final 
appearance of [w] in forms such as those in (2.29):
(2.29) a. **waurstw** ('work': n.s.)
    **hlaiw** ('grave': n.s.)

As regards the effects of this restriction word-medially, it must be noted that in this position the syllabic status of an underlying /w/ which precedes a [-syll] segment is obliterated in all (actually occurring) cases except those in which this segment follows /i/ by a process of Monophthongization (treated in 2.2.2.3). As will be seen when considering this process, its most general formulation requires that underlying /w/, when preceding a [-syll] segment but not preceded by /i/, maintain its [-syll] status up to the point at which Monophthongization applies. In 2.2.5, where the ordering relationships among the Gothic phonological rules are considered, it is shown that Syllabification must precede Monophthongization in the rule ordering. Such considerations indicate, then, that the phonological system of Wulfilian Gothic determines an alternation between [u] and [w] only after the vowel /i/. This process, thus, receives the formulation appearing in (2.30):

(2.30) /w/-Syllabification:

\[
\begin{align*}
[- \text{cons}] & \quad \rightarrow \quad [+ \text{syll}] / \\
+ \text{high} & \quad \quad \quad [+ \text{syl}] \\
+ \text{back} & \quad \quad \quad \quad \quad \quad [- \text{back}] \\
\end{align*}
\]

As the formulation of /w/-Syllabification in (2.30) reveals, the process responsible for the syllabification of /w/ has a number of features in common with the process considered in 2.2.2.1.1 and formulated as Syllabification (2.11). Thus, both processes affect glides, both produce high vowels, and both operate in word-final position. Such
common characteristics of these two phonological processes indicate that they are, in fact, two aspects of a single phonological rule, and thus should be formally combined. In effecting this combination, two considerations must be made. First, while alternations between [i] and [j] in pre-consonantal position are not found in Wulfilian Gothic (as alternations between [u] and [w] in this position are), it is also the case that no [j]'s occur pre-consonantally in the Gothic corpus. Thus, while it is not necessary to posit that /j/ becomes [i] pre-consonantally in Wulfilian Gothic, it is likewise not necessary to prevent such a change from occurring. Consequently, the pre-consonantal conditioning environment required for the change from /w/ to [u] can, in a unified process of Syllabification for both /w/ and /j/, be extended to /j/ as well. Second, the restriction on the change from /w/ to [u] whereby this alternation takes place only after the vowel /i/ does not, as seen in 2.2.2.1.1, affect the change from /j/ to [i]. Thus, in formally combining these processes, this restriction must only be allowed to hold for those expansions of such a combined process which condition the [u] - [w] alternation. Such limitation can be formally accomplished through the use of the angled bracket notation defined in SPE. Such considerations lead, then, to the unified formulation of the Wulfilian Gothic process of Syllabification appearing in (2.31):

$$(2.31) \text{ Syllabification (final version):}$$

$$\left[ \begin{array}{c} - \text{cons} \\ + \text{high} \\ a \langle \text{back} \rangle \end{array} \right] \rightarrow [+ \text{syll}] / b \left[ \begin{array}{c} + \text{syll} \\ + \text{high} \\ - \text{back} \end{array} \right] \quad \text{([} - \text{syll} \text{] X) #}$$

\[\text{Condition: If } a, \text{ then } b\]
Two additional aspects of Gothic phonology which concern the [u] - [w] alternations determined by the rule of Syllabification (2.31) require consideration. First, with respect to such alternations, no process with effects comparable to those which Sievers' Law introduces into the [i] - [j] alternations is observed. Consequently, all alternations between [u] and [w] occurring in Gothic are accounted for by the rule of Syllabification (2.31). Second, the existence of a process of Syllabification affecting the segment /w/ when this segment occurs after /i/ and before a [- syll] segment, motivated on the basis of the [u] - [w] alternations considered above, allows an additional generalization, one concerning certain aspects of segmental distribution in Gothic, to be made. That is, in Gothic, a constraint on the internal structure of morphemes such as that defined in (2.32) appears in general to hold:

(2.32) Morpheme-internal vowel sequences are not permitted in Wulfilian Gothic.

There is only one class of apparent exceptions to such a characterization of Gothic morpheme structure, this class consisting of a number of forms containing the vowel sequence [iu]. Thus, morpheme-internal [iu] sequences are observed in such Gothic forms as those in (2.33):

(2.33) a. hiuwma ('crowd'); liugnja ('liar')
    b. giutan ('to pour'); kiusan ('to test')
    c. niun ('nine'); iupa ('above')

However, as in all of the forms in (2.33), all morpheme-internal [iu] sequences observed in Gothic occur before a [- syll] segment, an environment in which the process of Syllabification (2.31) applies to the segment /w/. Thus, given this process, such phonetic [iu] sequences
as those appearing in (2.33) can be derived from underlying /iːw/ sequences, as illustrated in (2.34):

(2.34) a. /hiwrm + a/  
   u               /liwgnj + a/  
   _______________  j  
   hiurna          liugnja

b. /giwt + an/  
   u               /kiws + an/  
   _______________  u  
   giutan          kiusan

c. /niwn + Ø/  
   u               /iwpα/  
   _______________  u  
   niun            iupa

On the basis of derivations such as those in (2.34), then, the morpheme structure constraint defined in (2.31) can be maintained. This constraint on the structure of Gothic morphemes, in turn, provides support for the decision to posit, within the framework of the present treatment of Gothic phonology, a distinctive feature of length for Gothic vowels. That is, rather than treat phonetic long vowels as morphophonemic vowel sequences, \(^8\) such vowels are viewed here as, underlyingly, single segments bearing the feature specification [+ long]. Given the constraint appearing in (2.32), it is only the treatment of phonetic long vowels as morphophonemic long vowels which is maintainable, since positing underlying vowel sequences for such vowels would violate this morpheme structure constraint.

2.2.2.3. Monophthongization

An additional alternation which involves glides and vowels in Mulfilian Gothic is that between the long vowel [5] and the diphthong [əw].
This alternation is observed, for example, in the paradigm of the first class weak verb tāujan ('to do'), as the members of this paradigm appearing in (2.35) indicate:

(2.35)

<table>
<thead>
<tr>
<th></th>
<th>Present</th>
<th>Past</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singular:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>tāuja</td>
<td>tawida</td>
</tr>
<tr>
<td>2.</td>
<td>tāujis</td>
<td>tawides</td>
</tr>
<tr>
<td>3.</td>
<td>tāujip</td>
<td>tawida</td>
</tr>
<tr>
<td>Dual:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>tāujōs</td>
<td>tawidēdu</td>
</tr>
<tr>
<td>2.</td>
<td>tāujats</td>
<td>tawidēdu’s</td>
</tr>
<tr>
<td>Plural:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>tāujam</td>
<td>tawidēdu’m</td>
</tr>
<tr>
<td>2.</td>
<td>tāujip</td>
<td>tawidēdu’p</td>
</tr>
<tr>
<td>3.</td>
<td>tāujand</td>
<td>tawidēdu’n</td>
</tr>
</tbody>
</table>

Two types of segmental alternation are exhibited in (2.35): (1) [i] with [j]; and, (2) [ɔ] with [aw]. The [i] - [j] alternation which characterizes the forms in (2.35) is, as discussed in 2.2.2.1.2 in connection with the process of Glide Formation (2.22), an aspect of all class I weak verb paradigms in Gothic. The conditioning factor in the second type of segmental alternation appearing in (2.35)—that between [ɔ] and [aw]—is the syllabic status of the segment which follows the alternating segments. That is, the alternation between [ɔ] and [aw] in the paradigm of the verb tāujan is determined as in (2.36):

(2.36) a. If the segments alternating between [ɔ] and [aw] are immediately followed by a [- syll] segment, the alternation is realized as [ɔ] (as in the infinitival form tāujan).

b. If the segments alternating between [ɔ] and [aw] are immediately followed by a [+ syll] segment, the alternation is realized as [aw] (as in the preterite form tawida).

Such a description, in fact, characterizes all instances in Gothic in which an alternation between [ɔ] and [aw] is observed, as further illustrated by the paradigmatically-related pairs of forms in (2.37):
(2.37) a. mawi ('girl': n.s.)
    māujōs ('girl': g.s.)

b. gawi ('district': n.s.)
    gaujōs ('district': g.s.)

Note, however, that in all of the forms involving an alternation between [aw] and [ɔ] cited here, the segment which conditions this alternation (that is, the segment which immediately follows the [aw] - [ɔ] alternation site) also alternates phonologically. Such alternations have, of course, already been accounted for: those in (2.35) on the basis of Glide Formation (2.22), and those in (2.37) on the basis of Syllabification (2.31). For the purposes of explicating the [aw] - [ɔ] alternation, then, it is necessary that the syllabic status of the segment which conditions each occurrence of the alternation between [aw] and [ɔ] already be determined at the point in the derivation at which this alternation is conditioned. Given such information, the alternation between [aw] and [ɔ] receives the description in (2.39):

(2.38) Morphophonemic /aw/ becomes [ɔ] when immediately followed by a [- syll] segment.

There are two reasons for choosing, as in (2.38), /aw/ as the underlying form in the [aw] - [ɔ] alternations in Gothic. First, a large number of forms are observed in Gothic in which the phonetic segment [ɔ] is followed by a [+ syll] segment, suggesting that a description of the [aw] - [ɔ] alternation of the form given in (2.39) does not hold for the language as a whole:

For example, forms such as stāuida ('judge': 1st sing. past) and tāui ('deed': n.s.), each exhibiting such a [5]+ syll sequence, are observed, and thus contradict the characterization of Gothic phonology embodied in (2.39).

The second, and much more significant motivation for choosing the description of the [aw] - [5] alternation in Gothic appearing in (2.38) concerns the appearance in the language of another, highly similar type of segmental alternation, that between [5] and [3]. One aspect of this alternation is revealed, in fact, in the two forms stāuida and tāui cited above. Thus, as concerns these two forms, paradigmatically-related pairs such as those in (2.40) are observed:

(2.40) a. stōjan (to judge)
      stāuida (judge': 1st sing. past)

b. tāui ('deed': n.s.)
   tōjīs ('deed': g.s.)

The conditioning factor in the [ō] - [5] alternation is, just as with the [aw] - [5] alternation, the syllabic status of the segment following the alternation site, as the paradigmatic forms of the verb stōjan given in (2.41) indicate:

(2.41)  

<table>
<thead>
<tr>
<th></th>
<th>Present</th>
<th>Past</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singular:</td>
<td>1. stōja</td>
<td>stāuida</td>
</tr>
<tr>
<td></td>
<td>2. stōjis</td>
<td>stāuidēs</td>
</tr>
<tr>
<td></td>
<td>3. stōjīp</td>
<td>stāuida</td>
</tr>
<tr>
<td>Dual:</td>
<td>1. stōjīs</td>
<td>stāuidēdu</td>
</tr>
<tr>
<td></td>
<td>2. stōjat</td>
<td>stāuidēduits</td>
</tr>
<tr>
<td>Plural:</td>
<td>1. stōjam</td>
<td>stāuidēdam</td>
</tr>
<tr>
<td></td>
<td>2. stōjīp</td>
<td>stāuidēduięp</td>
</tr>
<tr>
<td></td>
<td>3. stōjand</td>
<td>stāuidēdun</td>
</tr>
</tbody>
</table>

Thus, as these forms show, [ō] appears when the segment immediately
following the alternation site is [- syll] (i.e. [j], as in all of the present tense forms), and [5] appears when this segment is [+ syll] (i.e. [i], as in all of the past tense forms). Such behavior indicates that, as with the [aw] - [5] alternations exhibited in pairs such as tāujan/tavida, the syllabic status of the [j] in stōjan and the [i] in stāuida must be taken as already determined at the point in the derivation of each of these forms at which the alternation between [ō] and [5] is conditioned.

Considering now both the [aw] - [5] and the [ō] - [5] alternations together, the following asymmetry characterizing Gothic phonology can be noted: while (alternating) [aw] always appears before syllabic segments (as in tavida), and (alternating) [ō] always appears before non-syllabic segments (as in stōjan), (alternating) [5] appears sometimes before syllabic segments (i.e. when alternating with [ō], as in stāuida) and sometimes before non-syllabic segments (i.e. when alternating with [aw], as in tāujan).

The first aspect of this asymmetry led above to the adoption of /aw/ as underlying the [aw] - [5] alternations in Gothic, resulting in the description of these alternations appearing in (2.38). Correspondingly, the second aspect of this asymmetry in Gothic phonology leads to the view that it is /ō/ which underlies the [ō] - [5] alternations in the language. Consequently, such alternations receive the description given in (2.42):

In considering further the two types of segmental alternation depicted in (2.38) and (2.42), note that in each case it is a sequence of segments which participates in the alternation. That is, in the case of the [aw] - [ɔ] alternation, the base value is the (bi-segmental) diphthong /aw/, while for the [ɔ] - [ɔ] alternation, the underlying form is /ɔ/, a segment which, on the basis of the Interpretive Principle for Segment Length defined in (2.16), is analyzed as the vowel sequence /ɔɔ/. Note, in addition, that in each instance of both the [aw] - [ɔ] and the [ɔ] - [ɔ] alternations observed above, the sequence of segments undergoing the respective alternation contains the lexically-stressed vowel, an aspect of these alternations which both holds for the Gothic corpus as a whole, and is crucial in the functioning of each such alternation. Thus, given these considerations, the [aw] - [ɔ] and the [ɔ] - [ɔ] alternations which characterize Wulfilian Gothic can be schematically formulated as in (2.43)a and b, respectively:

(2.43) a. Monophthongization:

/aw/ → [ɔ] / ___ [- syll]

b. Long Vowel Lowering:

/ɔɔ/ → [ɔ] / ___ [+ syll]

These processes of Monophthongization and Long Vowel Lowering are traditionally treated in accounts of Gothic phonology as independent phenomena (as, for example, by Voyles (1968) and Vennemann (1971)). However, the schematic formulations of these processes appearing in (2.43) reveal, by depicting the considerable degree of parallelism between Monophthongization and Long Vowel Lowering, the unitary nature
of these processes, indicating that there is in Wulfilian Gothic a single phonological process which creates the long vowel [5]. This process can be described as in (2.44):

(2.44) When the second segment in either of the sequences /áw/ or /óó/ agrees in syllabicity with the following segment, the sequence converts into the long vowel [5].

Using the Greek-letter variable notation (SPE: 350), the appropriate formulation of the phonological process described in (2.44) is given in (2.45):

(2.45) Monophthongization:

\[
\begin{array}{c}
\text{+ syll} \\
\text{+ high} \\
\text{+ back} \\
\text{+ stress}
\end{array}
\begin{array}{c}
\text{- cons} \\
\text{+ back} \\
\alpha \text{ syll}
\end{array}
\]

\[\begin{array}{ccc}
1 & 2 & 3 \\
\end{array}\]

\[
\begin{array}{c}
\text{+ low} \\
\text{+ long} \\
\text{+ round}
\end{array}
\]

\[\emptyset \ 3\]

Derivations illustrating the operation of the process of Monophthongization formulated in (2.45) appear in (2.46):

(2.46) a. /stóó + i + an/  
\[
\begin{array}{c}
\text{j} \\
\text{stójan}
\end{array}\]

\[
\begin{array}{c}
\text{G} \\
\text{M (2.45)}
\end{array}\]

b. /táw + i + an/  
\[
\begin{array}{c}
3 \\
\text{j} \\
\text{táujan}
\end{array}\]

\[
\begin{array}{c}
\text{G} \\
\text{M (2.45)}
\end{array}\]

c. /tóój + 0/  
\[
\begin{array}{c}
5 \\
\text{j} \\
\text{táui}
\end{array}\]

\[
\begin{array}{c}
\text{S (2.31)} \\
\text{M (2.45)}
\end{array}\]
As the derivations in (2.46) indicate, the evidence to be found in Wulfilian Gothic in support of the view that a process of Monophthongization characterizes the phonology of the language is well motivated. The strength of this evidence arises from the fact that the pairs of forms exhibiting the respective phonetic realizations of those segments operated on by the rule of Monophthongization (2.45) occur within individual inflectional paradigms. That is, in Wulfilian Gothic, such inflectionally-related pairs as stōjan - stāuda, tāujan - tavida, etc., occur, and on the basis of such forms alternations between [ō] and [ə], on the one hand, and [aw] and [ɔ], on the other, are well established. On the basis of such well-documented alternations, a phonological process (in the present analysis, a process of Monophthongization) to account for the derived values of the alternating segments is, in turn, clearly necessitated.

Note, in addition, that all of the evidence so far considered in connection with the phenomenon of Monophthongization in Wulfilian Gothic involves alternations dealing with back segments only: a diphthong ([aw]) containing two [+ back] segments; the [+ back] long, mid vowel [ō]; and, the [+ back] long, low vowel [ə]. The motivation for restricting the treatment of the process of Monophthongization in Gothic to such [+ back] entities rests on the fact that, in Wulfilian Gothic, no intraparadigmatic alternations involving the [- back] counterparts of these segments occur. There is in Wulfilian Gothic, however, evidence to indicate that,
historically at least, parallel alternations occurred involving (certain of) the [- back] counterparts of those segments seen above to participate in the process of Monophthongization. Thus, for example, the historically-related forms wāi ('woe') and wajamerei ('bad reputation') are found in the Gothic corpus at the time of Wulfila, and indicate that a process determining an alternation between [aːj] and [ɛ] parallel to that determining alternations between [aw] and [ɔ] characterized the Gothic language at some point during its historical development. Likewise, the historically-related pair seps ('seed') - sālan ('to sow') indicates that, at some time during the history of the Gothic language, a process of Monophthongization determining alternations between [eː] and [ɛ] parallel to those found in Wulfilian Gothic between [ɔ] and [ɔ] was active in the language.

However, while such forms as these are clearly historically related, crucial with respect to the process of Monophthongization in Wulfilian Gothic is whether or not such lexical pairs are derived synchronically in this language from identical lexical roots. In attempting to determine the synchronic status of the historical relationship between such pairs of forms, it is necessary to note that, unlike those cases involving inflectionally related lexical pairs considered above in originally motivating a process of Monophthongization for Wulfilian Gothic, in the case of each of the respective pairs wāi - wajamerei and seps - sālan a morphophonemic identity of the respective stem vowels can only be based on the claim that such pairs of forms are derivationally related to one another. Such a claim must, in turn, rest upon a
demonstration that a productive derivational process which creates such lexical pairs must be posited as an aspect of the synchronic grammar of Wulfilian Gothic. In short, in constructing a synchronic phonological description, it is not sufficient to note that two forms are related historically and then propose that, on the basis of such a relationship, such forms must be synchronically derived from identical lexical stems. Rather, a claim that certain historically-related forms continue to be derived synchronically from identical lexical stems must be accompanied by evidence related to the synchronic productivity of the relationship between the forms.

In evaluating the synchronic productivity of the relationship holding between derivationally-related lexical items, the two primary factors to be taken into consideration are: (1) the transparency of the semantic relationship holding between those lexical items for which a synchronic derivational relationship is posited; and, (2) the number of forms in the language which exhibit the same derivational relationship as that holding between those lexical items for which a synchronic derivational relationship is posited. In terms of these two criteria, the pair wāi - wajamerei appears not to be a productively-related lexical pair in the grammar of Wulfilian Gothic, since the semantics of the two lexical items differ considerably, and the frequency of such interjection - compound noun pairs occurring in the Gothic corpus is limited to just this pair. There appears to be no motivation, therefore, for positing that these two forms are derived in Wulfilian Gothic from identical morphophonemic stems. Consequently, this lexical pair furnishes
no evidence that a process of Monophthongization causing /aj/ to become [e] was active in the phonology of Wulfilian Gothic.

With respect to the pair sebs – sālan, however, the situation is considerably different. Thus, this lexical pair is characterized by a fully transparent substantival - verbal semantic relationship. Moreover, as Braune/Ebbinghaus (1973), concerning such feminine l-stem nouns as sebs, note:

Ungemein häufig sind die Verbalabstrakta, welche mit dentalem Suffix t (p, d) von jedem starken Verbum bildbar sind.

(Braune/Ebbinghaus, 1973: 69)

Such considerations indicate, then, that there is strong evidence for positing that the noun sebs and the verb sālan are derived synchronically in Wulfilian Gothic from identical lexical stems.

A morphophonemic identity between the stem-vowels in each of these forms indicates, in turn, that the process of Monophthongization formulated in (2.45) to account for alternations involving the pairs [aw] - [ɔ] and [ɔ] - [ɔ] must be extended to account for alternations between [œ] (as in sebs) and [e] (as in sālan). Note, however, that if the morphophonemic value of those segments participating in the [œ] - [e] alternation is taken to be /œ/ (parallel to the value /ɔ/ posited for the [ɔ] - [ɔ] alternation), then the conditioning environment for the process of Monophthongization, as formulated in (2.45), need not be altered. That is, the form sālan indicates that such a morphophonemic /œ/ becomes [e] pre-vocally, just as the form tāui was seen above to indicate that morphophonemic /ɔ/ becomes [ɔ] in a likewise pre-vocalic
position. Moreover, to account for the [e] - [ē] alternation observed in the pair sebs - saîan, the formulation of the rule of Monophthongization (2.45) need only be generalized through the use of additional Greek-letter variables as feature coefficients. Thus, using the Greek-letter variable notation, the [- back] counterparts (crucially, the long vowel /ê/) of the [+ back] segments on the basis of which the process of Monophthongization was originally motivated can also be made subject to the rule formulated in (2.45). The appropriate reformulation of this rule is that given in (2.47):

\[
(2.47) \text{ Monophthongization (revised)}: \\
\begin{bmatrix}
+ \text{ syll} \\
- \text{ high} \\
\beta \text{ back} \\
+ \text{ stress}
\end{bmatrix}
\begin{bmatrix}
- \text{ cons} \\
\alpha \text{ syll} \\
\beta \text{ back} \\
\beta \text{ round}
\end{bmatrix}
\rightarrow
\begin{bmatrix}
1 \\
2 \\
3
\end{bmatrix}
\begin{bmatrix}
+ \text{ low} \\
\beta \text{ back} \\
\beta \text{ round} \\
+ \text{ long}
\end{bmatrix}
\]

With the formulation of Monophthongization given in (2.47), in addition to derivations such as those appearing in (2.46), derivations for the forms sebs and saîan such as those in (2.48) are obtained:

\[
(2.48) \text{ a. } /\text{sëé} + \beta + s/ \quad \text{b. } /\text{sëé} + \text{ an}/ \\
\begin{array}{c}
\text{sebs} \\
\text{saîan}
\end{array}
\]

With (2.47), then, three types of segmental alternation—[ō] with [ō], [aw] with [ō], and [ē] with [ē]—all of which have been seen above to characterize the phonology of Wulfilian Gothic, are accounted for.
There remain, however, certain additional considerations to be made in connection with the process of Monophthongization in Wulfilian Gothic. The first of these concerns the operation of this process in word-final position. As noted above, in all of the forms so far considered in which the operation of the process of Monophthongization has been observed, such operation has been seen to occur word-internally. However, there does exist some evidence in the corpus of Wulfilian Gothic to indicate that the phonological process of Monophthongization may have operated word-finally. Thus, in support of the view that /aw/ becomes [ɔ] word-finally in Wulfilian Gothic, the Ablaut-related pair *sniwan* ('to snow') - *snāu* ('it snowed') is generally cited (cf. Voyles (1968) and Vennemann (1971)). Fairly convincing evidence exists, however, indicating that the Germanic process of Ablaut cannot be taken to be productive in any of the extant Germanic languages. Thus, if it is in fact the case that the process of Ablaut was not productive in Wulfilian Gothic, then the Ablaut-related pair *sniwan* - *snāu* cannot be viewed as providing evidence that, in the synchronic phonology of this language, /aw/ becomes [ɔ] in word-final position.

The preterite form *snāu*, which derives historically from the Proto-Germanic form *sonaw*, does indicate, however, that historically the process of Monophthongization which entered the Gothic language at some point after the Proto-Germanic period did affect the diphthong /aw/ in word-final position. Crucial to the determination of the word-final behavior of such /aw/ sequences in Wulfilian Gothic, then, is whether any productively-related forms occurred in the language which would be
responsible for maintaining word-finality as an environment for the
operation of the process of Monophthongization in Wulfilian Gothic.

In this connection, the inflectional paradigm of the masculine
i-stem noun nāus ('death') can be cited. The lexical stem of this
noun has the morphophonemic value /naw-/ , as indicated by the nominative
plural form naweis (from underlying /naw + ūs/). Given this lexical
stem, the observed form of the nominative singular, nāus, is explicable on the basis of the process of Monophthongization formulated
in (2.47), as illustrated in (2.49):

\[
\begin{align*}
(2.49) & \quad /naw + s/ \\
& \quad \frac{\text{i}}{\text{M}} \quad \text{nāus} \\
\end{align*}
\]

The accusative/vocative singular inflectional ending for the Gothic
i-stem nouns is /ū/, and thus the underlying value of this inflectional
form for the i-stem noun nāus would be /naw + ū/. This form fails,
however, to occur in the Gothic corpus, so a definitive determination
of its surface value cannot be made. It is reasonable to assume, however,
that a paradigm such as that of the noun nāus, in which an alternation
between [aw] and [ū] is still active in Wulfilian Gothic, and
in which an underlying /aw/ occurs in word-final position, would motivate
the retention in Wulfilian Gothic of word-finality as an environment
for the operation of the process of Monophthongization. Thus, one
would, on the basis of these considerations, predict a surface value
\( + [nū] \) (rather than a surface value \( + [naw] \)) for the morphophonemic form
/naw + ū/.
A similar indeterminacy holds with respect to the second person singular imperative form of the strong verb saīan. As discussed above, there is evidence in Wulfilian Gothic which indicates that the lexical stem of this verb has the morphophonemic value /sē-/ , and that the infinitival form of this verb derives from the underlying string /sē + an/ through the operation of the process of Monophthongization (2.47). The inflectional ending for second person singular imperative verbal forms in Wulfilian Gothic has the morphophonemic value /Ø/. Thus, the second singular imperative form of the verb saīan has the underlying value /sē + Ø/. As with the accusative/vocative singular form of the noun nāus, however, the surface value of this crucial verbal form fails to occur in the Gothic corpus, so a definitive determination of its surface form cannot be made. The existence in Wulfilian Gothic of such morphophonemic strings as /naw + Ø/ and /sē + Ø/ does indicate, however, that a determination of the behavior in word-final position of those entities operated on by the process of Monophthongization is a substantive issue in Gothic phonology. Moreover, while this issue is, given the available evidence, unresolvable, as the discussion of the noun nāus above indicates, what evidence there is in the Gothic corpus concerning the word-final operation of Monophthongization favors the view that this process does operate word-finally in the synchronic phonology of Wulfilian Gothic. On the basis of such considerations, then, it is this viewpoint concerning the operation of Monophthongization in word-final position which is adopted in the present account of Gothic phonology, leading to the final formulation of this process appearing in (2.50):
(2.50) Monophthongization (final version):

\[
\begin{align*}
\text{+ syll} & \quad \text{[ - cons ]} \\
\text{- high} & \quad \alpha \text{ syll} \\
\beta \text{ back} & \quad 2 \text{ back} \\
\text{+ stress} & \quad \beta \text{ round} \\
\end{align*}
\]

\[
\begin{array}{ccc}
\text{1} & \text{2} & \text{3} \\
\end{array} \rightarrow \begin{array}{c}
\text{\text{+ low}} \\
\beta \text{ back} \\
\beta \text{ round} \\
\text{+ long} \\
\end{array}
\]

\[
\begin{array}{c}
\text{0} \\
\text{3} \\
\end{array}
\]

Before concluding this discussion of the process of Monophthongization in Wulfilian Gothic, one additional consideration concerning this process remains to be made. This consideration involves the fact that, while a stressed /\tilde{o}/ regularly becomes [ɨ] in pre-vocalic position (and, as posited above, word-finally) by the application of Monophthongization (2.50), one set of forms occurs in Wulfilian Gothic in which such a change fails to take place. This set of forms involves the preterites of the reduplicating/Ablauting class VII strong verbs in the language. In this verb class, preterite forms such as those in (2.51) occur in the Gothic corpus:

(2.51) a. saisō ('sow': 1st sing. past)
saisōum ('sow': 1st pl. past)

b. waiwōun ('blow': 3rd pl. past)

c. lailōum ('ridicule': 1st pl. past)

In each of these forms, /\tilde{o}/ remains unchanged, in spite of the fact that this segment occurs in each case either pre-vocalically or word-finally.

In attempting to account for such recalcitrant forms, a number of suggestions have been made in various treatments of Gothic phonology. Voyles (1968), for example, views such forms as indicating that the
alternation between [ɔ] and [ɔ] in the language "appears to have become morphologically conditioned by the time of Wulfilian Gothic." Vennemann (1971), however, rejects this viewpoint, and proposes that the cause for the failure of /ɔ/ to become [ɔ] in such class VII strong verb preterite forms is that this segment does not bear lexical stress in such forms. According to Vennemann, then, since, as noted above, only stressed /ɔ/ 's are observed to undergo the process of Monophthongization in Wulfilian Gothic, the failure of this process to apply to the forms in (2.51) should not be considered surprising.

In evaluating Vennemann's proposal concerning the failure of Monophthongization (2.50) to apply to the forms cited in (2.51), two considerations must be made. The first of these has to do with the nature of the reduplicative class VII strong verbs in Gothic. As noted above, the verbs in this class exhibit the effects of two morphological processes--Ablaut and reduplication. The first of these, Ablaut, is responsible for the alternation observed in the stem-vowel of the class VII strong verbs. That is, as the pair saīlan ('to sow') - saīsōum ('we sowed') indicates, the stem-vowel in the infinitival form of the class VII strong verb saīlan is [ɔ] (from underlying /ɔ/, as discussed above), while in the preterite forms it appears as [ɔ]. This difference is effected by the process of Ablaut. In addition to the stem-vowel distinction in this verbal pair introduced by Ablaut, a prefix [1e] is added to the preterite form of the verbal stem by a process of partial reduplication. Thus, as this description of the preterite form saīsōum indicates, this verb form has the morphological structure appearing in (2.52):
(2.52) \( \text{saisōum} = [ [\text{sec} + [\text{sō} \text{verbal stem} \text{preterite} + \text{um}]] \text{lst pi.} \) 
(preterite)

As depicted in (2.52), then, the \([\text{ō}]\) in \( \text{saisōum} \) is the stem-initial vowel and, given the description of the process of Stress Assignment in Gothic appearing in 2.2.1, it is this vowel which receives lexical stress in this verbal form. Consequently, Vennemann's proposal for blocking the application of Monophthongization (2.50) to the \([\text{ō}]\) in forms such as \( \text{saisōum} \) on the basis of its not bearing lexical stress appears to be in violation of the facts of Wulfilian Gothic.

The second consideration concerning the proposal advanced by Vennemann to prevent \(/\text{ō}/\) from becoming \([\text{ɔ}]\) in the forms in (2.51) by claiming that this segment does not bear lexical stress in these forms involves another phonological process in Wulfilian Gothic—the process of Vowel Deletion. As discussed in 2.2.3 below, the nature of this process is such that it causes the deletion of one of two sequential unstressed vowels (other than in the vowel sequence \(/\text{ii}/\) ). Given the presence of such a process in Gothic phonology, the claim that the \([\text{ō}]\)'s in the forms \( \text{saisōum}, \text{waiwōun}, \) and \( \text{lailōum} \) in (2.51) do not bear lexical stress leads to irregularity as concerns the operation of Vowel Deletion. That is, in such forms neither the \([\text{ō}]\) nor the \([\text{u}]\) with which each \([\text{ō}]\) appears in sequence is observed to delete. Thus, either one of these two vowels, \([\text{ō}]\), is stressed, or such forms are exceptional as regards the process of Vowel Deletion. As the above considerations concerning the morphological structure of such forms indicates, the evidence available supports the view that, in each of the forms \( \text{saisōum}, \text{waiwōun}, \) and \( \text{lailōum} \), the \([\text{ō}]\) is the lexically-stressed vowel.
If, however, the [ō]'s in the verbal forms in (2.51) are the respective lexically-stressed vowels, then the failure of Monophthongization (2.50) to affect these vowels remains unaccounted for. Moreover, given the above considerations concerning the forms in (2.51), it appears that, as originally suggested by Voyles (1968), recourse must be made in the case of such forms to morphological conditioning. Thus, in the present account of the phonology of Wulfilian Gothic, the application of the process of Monophthongization to those forms listed in (2.51) will be blocked by means of the readjustment rule defined in (2.53):

\[
(2.53) \text{Readjustment rule:} \\
[+ \text{class VII verb}] \\
[+ \text{preterite}] \\
\rightarrow [- \text{Monophthongization (2.50)}]
\]

2.2.3. Vowel Deletion

Alternations indicating the existence in Wulfilian Gothic of a process of Vowel Deletion are, in all cases, interparadigmatic in nature. This aspect of Vowel Deletion in Gothic can be seen, for example, by comparing inflectional forms of the class I weak verb nasjan ('to save') with those of the class II weak verb salbōn ('to anoint'), as in (2.54):

\[
(2.54) \text{Infinitive:} \quad \text{nasjan} \quad \text{salbōn}
\]

Present

\[
\begin{array}{ll}
\text{Singular:} & 1. \text{nasja} \quad \text{salbō} \\
& 2. \text{nasjis} \quad \text{salbōs} \\
& 3. \text{nasjib} \quad \text{salbōp} \\
\text{Dual:} & 1. \text{nasjōs} \quad \text{salbōs} \\
& 2. \text{nasjats} \quad \text{salbōts}
\end{array}
\]
Plural: 1. nasjam  salbōm
        2. nasjāp  salbōp
        3. nasjānd  salbōnd

Past

Singular: 1. nasida  salbōda
         2. nasidēs  salbōdes
         3. nasida  salbōda
Dual: 1. nasidēdu  salbōdedu
      2. nasidēduts  salbōdeduts
Plural: 1. nasidēdum  salbōdedun
       2. nasidēdup  salbōdedup
       3. nasidēdun  salbōdedun

As the forms of the verb nasjan appearing in (2.54) show, when the
class I weak verb stem-extension marker /i/ is concatenated with each
of the verbal inflectional endings, either this /i/ becomes [j] (if
the inflectional ending begins with a vowel), or this /i/ remains un-
changed (if the inflectional ending begins with a consonant). Such
behavior, discussed in 2.2.2.1.2, is governed by the rule of Glide
Formation (2.22). In the forms of the verb salbōn, on the other hand,
a different pattern of behavior is observed. In this paradigm, an [ō]
appears in each form between the verbal stem and the inflectional ending.
This [ō], which characterizes all class II weak verbs in Wulfilian Gothic,
is the stem-extension marker for this verb class. Given such a stem-
extension marker, then, note that in each of the past tense forms of the
verb salbōn appearing in (2.54), in which each inflectional ending be-
gins with a consonant, the phonetic value observed is identical to the
morphophonemic value. For example, the first singular preterite form
[salbōda] is derived from the underlying string /salb + ō + da/. Such
identity between the underlying and surface levels does not, however,
characterize the present tense forms of this verb. Rather, in these
forms the effects of a process of Vowel Deletion are observed. That is, in the present tense forms of the verb salbōn, the vowel which appears as the initial segment in each inflectional ending has been deleted. Thus, derivations exemplified by those in (2.55) obtain for the present tense forms of the class II weak verb salbōn:

\[(2.55)\]  
\[
\begin{array}{ll}
\text{a.} & /\text{salb} + \text{oo} + \text{an/} \\
\text{b.} & /\text{salb} + \text{oo} + \text{is/} \\
\text{c.} & /\text{salb} + \text{oo} + \text{a/} \\
\text{d.} & /\text{salb} + \text{oo} + \text{oos/}
\end{array}
\]

\[
\begin{array}{ll}
\text{VD} \\
\text{salbōn (infinitive)} \\
\text{salbōs (2nd sing. pres.)} \\
\text{salbō (1st sing. pres.)} \\
\text{salbōs (1st sing. dual)}
\end{array}
\]

In seeking to characterize the deletions appearing in (2.55), consider first the derivation appearing in (2.55)d. In the form treated in this derivation, salbōs, two inflectional vowels are observed to delete, the two identical vowels oo which arise from the underlying long vowel /ō/ on the basis of the Interpretive Principle for Segment Length (2.16) introduced in 2.2.2.1.2. Thus, given this instance of dual vowel deletion, in conjunction with the other cases of deletion appearing in (2.55), the pattern of vowel deletion exhibited by the class II weak verb salbōn (and, by extension, by all class II weak verbs in Vulfulian Gothic) receives the characterization appearing in (2.56):

\[(2.56)\] One or more sequential unstressed vowels delete when preceded by a morphologically-independent unstressed vowel.

As the description of Vowel Deletion given in (2.56) indicates, two complexities are introduced into the formulation of this process by the decision to treat long vowels as vowel sequences, an aspect of the present treatment of Gothic phonology embodied in the Interpretive Principle
(2.16). Thus, the stipulation that the vowel conditioning the process of Vowel Deletion be morphologically-independent from the vowel or vowels undergoing this process is required solely to prevent the deletion of the second of the two vowels into which the stem-extension /ʊ/ is analyzed by (2.16). Without this restriction on Vowel Deletion, a derivation such as that in (2.57) would obtain for the preterite form salbōda:

\[(2.57) \quad \text{/salb} + \text{oo} + \text{da/} \quad \emptyset \quad \text{VD} \]

\text{*salboda}

Second, the treatment of long vowels as vowel sequences requires that the description of the process of Vowel Deletion given in (2.56) allow for the deletion of more than one vowel, this in spite of the fact that the only instances in which Vowel Deletion is required to delete more than one vowel are those cases in which a single long vowel--treated as a vowel sequence according to (2.16)--is deleted. Such considerations indicate then that, while the incorporation of the Interpretive Principle for Segment Length (2.16) into the present treatment of Gothic phonology is crucial in the case of both the process of Glide Formation (as discussed in 2.2.2.1.2) and the process of Monophthongization (as noted in 2.2.2.3), it is problematic with respect to the process of Vowel Deletion.

In dealing with the complexities introduced by the Interpretive Principle for Segment Length (2.16) into the description of Vowel Deletion, note the effect which this principle has in the two processes in which it is essential (Glide Formation and Monophthongization), as
compared to the role it plays in the process of Vowel Deletion. Thus, in the case of each of the processes of Glide Formation and Monophthongization, the Interpretive Principle defined in (2.16) crucially analyses stressed long vowels into vowel sequences, as all of the derivations illustrating these processes presented in 2.2.2.1.2 and 2.2.2.3, respectively, indicate. In the case of Vowel Deletion, on the other hand, it is the analysis of unstressed long vowels into vowel sequences which results in added complexity in the description of this process. Such considerations indicate, then, that rather than interpreting long vowels in accordance with the Interpretive Principle given in (2.16), repeated in (2.58):

(2.58) Interpretive Principle for Segment Length:

In languages with a length contrast, long segments (both consonants and vowels) are analyzed as bisegmental in phonological (and metrical) processes.

(Verneuille, 1971: 107)

the appropriate interpretation of long vowels by the phonological rules of Wulfelian Gothic is that defined in (2.59):

(2.59) Interpretive Principle for Vowel Length in Gothic:

Stressed long vowels are analyzed as bisegmental in phonological processes.

Replacing the Interpretive Principle appearing in (2.58) with that given in (2.59), the two complexities in the description of Vowel Deletion in Gothic discussed above are eliminated, resulting in the characterization of this process appearing in (2.60):

(2.60) In a sequence of two unstressed vowels, the second vowel deletes.
Before considering further the phenomenon of Vowel Deletion in Gothic, note in connection with (2.59) that this Interpretive Principle receives additional support from certain aspects of the process of Glide Formation not previously considered. Thus, in Gothic, as discussed in 2.2.2.1.2, a process of Glide Formation affects the vowel /i/ when this vowel both precedes the segment /i/ and is itself preceded by a stressed short syllable. Consider, in connection with such a process of Glide Formation, a form such as the nominative plural of the masculine i-stem noun náus, that is, náweis. If the long vowel in this form were to be treated phonologically as a sequence of two vowels, the resulting string, /náw+iis/, would satisfy the requirements of the process of Glide Formation described above, and as a result should appear on the surface as *(náw)jis, as illustrated in (2.61):

\[(2.61) \quad /náw + iis/ \quad j \quad \text{GF (2.22)} \quad *(náw)jis\]

However, with the incorporation into the present treatment of Gothic phonology of the Interpretive Principle defined in (2.59), rather than that appearing in (2.58) (= (2.15)), the unstressed /I/ in náweis remains a single segment, and the correct surface form, náweis, is obtained.

Returning now to examine additional aspects of the phenomenon of Vowel Deletion in Gothic, note that the pattern of deletion observed in sequences of unstressed vowels characterized by the description in (2.59) is not the only such pattern to occur in the language. That this is so can be seen by examining the third class of Gothic weak verbs. The paradigm of one such verb, the class III weak verb haban ('to have')
appears in (2.62), where it is contrasted with that of the Gothic class I weak verb nasjan:

(2.62) Infinitive: nasjan haban

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<thead>
<tr>
<th>Present</th>
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<tbody>
<tr>
<td>Singular:</td>
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<tr>
<td>1. nasja</td>
<td>haba</td>
<td></td>
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<tr>
<td>2. nasjís</td>
<td>habais</td>
<td></td>
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<tr>
<td>3. nasjîp</td>
<td>habaiþ</td>
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<tr>
<td>Dual:</td>
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<tr>
<td>1. nasjós</td>
<td>habós</td>
<td></td>
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<tr>
<td>2. nasjats</td>
<td>habats</td>
<td></td>
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<tr>
<td>Plural:</td>
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<tr>
<td>1. nasjam</td>
<td>habam</td>
<td></td>
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<tr>
<td>2. nasjîp</td>
<td>habaiþ</td>
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<tr>
<td>3. nasjand</td>
<td>haband</td>
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<thead>
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<tbody>
<tr>
<td>Singular:</td>
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<tr>
<td>1. nasida</td>
<td>habalda</td>
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<tr>
<td>2. nasides</td>
<td>habalðes</td>
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<tr>
<td>3. nasida</td>
<td>habalda</td>
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<tr>
<td>Dual:</td>
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</tr>
<tr>
<td>1. nasidédu</td>
<td>habalðédu</td>
<td></td>
</tr>
<tr>
<td>2. nasidéduits</td>
<td>habalðéduits</td>
<td></td>
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<tr>
<td>Plural:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. nasidéduum</td>
<td>habalðéduum</td>
<td></td>
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<tr>
<td>2. nasidéduþ</td>
<td>habalðéduþ</td>
<td></td>
</tr>
<tr>
<td>3. nasidéduþn</td>
<td>habalðéduþn</td>
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</tbody>
</table>

As the preterite forms of the verb haban listed in (2.62) indicate, the stem-extension marker for the Gothic class III weak verbs is the long vowel /ɛ/. Thus, the first person singular past form habalda, for example, is derived from the underlying string /hab + ɛ + da/.

In the present tense forms of the verb haban appearing in (2.62), then, a process of Vowel Deletion is observed. Thus, underlying the first person present form haba is the morphophonemic string /hab + ɛ + a/.

In the derivation of this form, the stem-extension vowel /ɛ/ undergoes deletion, as illustrated in (2.63):

(2.63) /hab + ɛ + a/  

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<td>VD</td>
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<tr>
<td>Spirantization</td>
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<td>haba</td>
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Such a pattern of deletion, in which it is the first vowel in a sequence of two unstressed vowels which deletes, contrasts with that pattern of deletion observed in the paradigm of the class II weak verb salbōn, and described in (2.60) above. Thus, compare the derivations of the two infinitival forms salbōn and haban in (2.64)a and b, respectively:

(2.64) a. /salb + ə + an/  b. /hab + ɛ + an/

\[\text{VD}\]

\[\text{Sp}\]

salbōn  haban

As these two derivations indicate, a pattern of post-vocalic vowel deletion characterizes the derivation of salbōn, while it is a pattern of pre-vocalic vowel deletion which is observed in the derivation of haban.

The pattern of deletion occurring in the infinitival form haban does not, however, characterize all of those inflectional forms of this verb in which a process of vowel deletion is observed. Thus, three present tense forms of the verb haban exhibit a pattern of vowel deletion identical to that found in the class II weak verb salbōn. These three forms--habaš, habaš (2nd sing.), and habaš (2nd pl.)--and these forms only, are characterized by the fact that the inflectional ending which each contains begins with a [+ high] vowel (in each case, the vowel /i/). Such considerations indicate, then, that the presence of an inflectional high vowel plays a role in the pattern of vowel deletion which these forms exhibit.

An additional influencing factor in the distinctive patterns of vowel deletion characterizing the Gothic class II and class III weak verbs involves the nature of the stem-extension vowels themselves.
Thus, the stem-extension for the class II weak verbs in Gothic, \( /\ddot{o}/ \), is a mid-vowel (i.e. \([-\text{high}, -\text{low}]\)), while that for the Gothic class III weak verbs, \( /\ddot{e}/ \), is a low vowel. Using this distinction in the feature specifications of the stem-extension vowels involved in the process of Vowel Deletion in Gothic, in conjunction with the considerations given above concerning the pattern of vowel deletion observed in vowel sequences whose second element is \([+\text{high}]\), a description of the process of pre-vocalic vowel deletion observed in the present tense paradigm of the verb \( \text{haban} \) such as that appearing in (2.65) is motivated:

\[
(2.65) \text{ In a sequence of two unstressed vowels the first of which is } [+\text{low}] \text{ and the second of which is } [-\text{high}], \text{ the first vowel deletes.}
\]

The process of Vowel Deletion described in (2.65), together with that process of Vowel Deletion characterized in (2.60) above, accounts for all instances of Vowel Deletion exhibited in the class II and class III weak verbs considered above. These two processes receive the respective formulations appearing in (2.66):

\[
(2.66) \begin{align*}
\text{a. Pre-Vocalic Vowel Deletion:} & \quad \begin{array}{c}
[+ \text{syl}] \\
[+ \text{low}]
\end{array} \rightarrow \emptyset / \begin{array}{c}
[+ \text{syl}] \\
[- \text{high}]
\end{array} \\
\text{b. Post-Vocalic Vowel Deletion:} & \quad [+ \text{syl}] \rightarrow \emptyset / \begin{array}{c}
[+ \text{syl}] \\
[- \text{stress}]
\end{array}
\end{align*}
\]

Derivations illustrating the operation of (2.66)a and (2.66)b are given in (2.67) and (2.68), respectively:
In examining the role which the two processes of Vowel Deletion formulated in (2.66) play in the phonology of Wulfilian Gothic, two additional considerations must be made. First, the formal relationship between the two processes of Vowel Deletion is one in which Pre-Vocalic Vowel Deletion \((2.66)_a\) takes precedence over Post-Vocalic Vowel Deletion \((2.66)_b\). That is, as the descriptions of these respective processes in (2.65) and (2.60), and their formulations in (2.66), indicate, Pre-Vocalic Vowel Deletion defines a more restrictive type of deletion affecting a sequence of unstressed vowels than does Post-Vocalic Vowel Deletion, which in essence embodies the "elsewhere" type of vowel deletion occurring in unstressed vowel sequences in Wulfilian Gothic.

Thus, Pre-Vocalic Vowel Deletion applies to a string first, and only if its requirements are not met does the more general process of Post-Vocalic Vowel Deletion determine the deletion pattern observed.
A more substantive consideration concerning these rules involves the formulation of Post-Vocalic Vowel Deletion appearing in (2.66)b. As noted above, the rule formulated here does account for the pattern of vowel deletion observed in the paradigm of the class II weak verb *salbôn* and certain of the vowel deletions occurring in the paradigm of the class III weak verb *haban*. But this rule is in fact too general for the Gothic language as a whole. Thus, consider the class I weak verb forms *sôkeis* and *nimnis*, which arise from the underlying strings /sook + i + is/ and /namn + i + is/, respectively. Such forms should, given the rule of Post-Vocalic Vowel Deletion appearing in (2.66)b, undergo derivations such as those in (2.69)a and b, respectively:

\[(2.69) \begin{align*}
\text{a. } /\text{sook} + i + \text{is}/ & \rightarrow \emptyset \\
\text{b. } /\text{namn} + i + \text{is}/ & \rightarrow \emptyset & \text{VD (2.66)b}
\end{align*}\]

\[*sôkis* \hspace{1cm} *nimnis*

As such forms indicate, then, Vowel Deletion in Gothic does not apply to sequences of unstressed /i/'s, an aspect of Gothic phonology which requires that the rule of Post-Vocalic Vowel Deletion (2.66)b be re-formulated as in (2.70):

\[(2.70) \text{Post-Vocalic Vowel Deletion (revised): } [+ \text{syl}] \rightarrow \emptyset / \left[ \begin{array}{l}
+ \text{syl} \\
- \text{high} \\
- \text{stress}
\end{array} \right] \]

Finally, in connection with the two processes of Pre-Vocalic and Post-Vocalic Vowel Deletion in Gothic, note their inherent similarities. Thus, the effect of each of these processes--the deletion of an unstressed vowel--is identical. The sequences of segments upon which each of these processes operates--sequences of unstressed vowels--are also identical.
There is, then, strong evidence that these two processes are two aspects of a single phenomenon which characterizes Wulfilian Gothic.

There are a number of ways in which such unity could be formally incorporated into the description of Gothic phonology. One suggestion for dealing with cases such as the present one was made by Keyser (1975), in connection with a similar duality of operation of Vowel Deletion in Old English. Keyser notes that in Old English a "complicated deletion pattern" characterizes sequences of unstressed vowels such that in some cases it is the first of two such vowels which deletes, whereas in other cases it is the second. To account for this patterning, he proposes that, prior to the application of the rule of Vowel Deletion in Old English, a process of Metathesis operates to re-order certain unstressed vowel sequences into the proper order for a single process to account for all observed instances of Vowel Deletion in the language.

Similarly, then, a rule of Metathesis could also be incorporated into the present description of Gothic phonology, causing the order of the vowels which constitute certain unstressed vowel sequences to be reversed. Such a rule would be used to replace the rule of Pre-Vocalic Vowel Deletion (2.66)\textsubscript{a}, as illustrated in (2.71):

\[(2.71)\ a. \ /\text{hab} + \bar{\varepsilon} + \text{an}/ \quad b. \ /\text{hab} + \bar{\varepsilon} + \bar{\text{os}}/\]

\[
\begin{array}{cc}
\text{a} & \bar{\varepsilon} \\
\text{0} & \varepsilon \\
\beta & \beta \\
\text{haban} & \text{habos}
\end{array}
\]

The appropriate formulation of such a rule of Metathesis is that given in (2.72):

\[(2.72)\]
(2.72) Metathesis:

\[
\begin{array}{c}
+ \text{syll} \\
+ \text{low} \\
- \text{stress}
\end{array}
\begin{array}{c}
+ \text{syll} \\
- \text{high}
\end{array}
\quad 1 \quad 2 \quad \rightarrow \quad 1 \quad 2
\]

Concerning his rule of Metathesis, however, Keyser notes that "it is a rule whose output never appears unmodified on the surface." Such a characterization would also hold for a rule of Metathesis such as (2.72) in the description of Gothic phonology. In connection with this characteristic of his rule of Metathesis, Keyser goes on to state: "This fact may lead one to suppose that the rule is, therefore, not a possible rule of phonology." Indeed, in response to Keyser's proposal for a rule of Metathesis in Old English phonology, Kiparsky and O'Neil (1976) outline an alternative account of the Old English data considered by Keyser—an account not containing a process of Metathesis—and suggest that, in general, solutions to phonological problems such as that given by Keyser for Old English should be ruled out on theoretical grounds. To accomplish this, Kiparsky and O'Neil cite the following constraint (suggested to them by Alan Prince):

(2.73) All applications of a rule may not feed a neutralization rule.

The nature, then, of Keyser's rule of Metathesis in Old English is somewhat controversial. The same controversial status obtains for the rule of Metathesis formulated in (2.72) to account for the pattern of Vowel Deletion which characterizes Gothic phonology. However, quite apart from this controversy, the approach to the problem of Vowel Deletion in Gothic involving a rule of Metathesis is, in fact, descriptively
inferior to an alternative account of this phenomenon available on the basis of certain notational devices defined in SPE. That is, an account of Gothic Vowel Deletion utilizing a rule of Metathesis in conjunction with a single process of Vowel Deletion is characterized by the same shortcoming as an account of this phenomenon employing two separate rules of Vowel Deletion. In both accounts, two independent phonological rules are required to characterize a single phonological phenomenon. However, rather than using an approach to Vowel Deletion in Gothic containing two rules, a more direct unification of the rules of Pre-Vocalic Vowel Deletion (2.66) and Post-Vocalic Vowel Deletion (2.70) can be accomplished by employing the braces notation (SPE: 333). Thus, since the two Vowel Deletion rules formulated above: (1) contain partially identical inputs; (2) contain identical outputs; and, (3) are ordered consecutively in the grammar, they can be formally combined into a single phonological rule, as in (2.74):

(2.74) Vowel Deletion (final version):

\[
\begin{align*}
\begin{array}{c}
\text{[+ syll]} \\
\text{[- stress]} \\
\end{array} & \rightarrow \emptyset \\
\end{align*}
\]

\[
\begin{array}{c}
\begin{cases}
\text{[+ low]} & \text{[+ syll]} \\
\text{[- high]} & \\
\end{cases} \\
\begin{cases}
\text{[+ syll]} \\
\text{[- high]} \\
\text{[- stress]} \\
\end{cases}
\end{array}
\]

The formulation appearing in (2.74), then, captures the view that there is a unitary process of Vowel Deletion, albeit one with two distinct conditioning environments, which characterizes the phonology of Wulfilian Gothic.
2.2.4. Consonantal Alternations

2.2.4.1. /s/-Deletion

A unitary inflectional /s/ is observed to delete in Wulfilian Gothic in two word-final positions: (1) after a short syllable ending in /r/; and, (2) after a stem-final /s/. Such deletions are illustrated in (2.75)\textsubscript{a} and \textsubscript{b}, respectively:

\begin{align*}
(2.75) \text{a.} & \quad /\text{wir} + s/ \quad /\text{unsar} + s/ \\
& \quad \emptyset \quad \emptyset \quad \text{s-D} \\
& \quad \text{wir} ('\text{man}': \text{n.s.}) \quad \text{unsar} ('\text{our}': \text{n.s.m.}) \\
\text{b.} & \quad /\text{drus} + s/ \quad /\text{swes} + s/ \\
& \quad \emptyset \quad \emptyset \quad \text{s-D} \\
& \quad \text{drus} ('\text{fall}': \text{n.s.}) \quad \text{swes} ('\text{own}': \text{n.s.m.})
\end{align*}

Given the fact that all of the long vowels which fail to trigger the operation of /s/-Deletion after /r/, as, for example, in the forms derived in (2.76):

\begin{align*}
(2.76) \text{a.} & \quad /\text{skir} + s/ \quad \text{b.} & \quad /\text{swir} + s/ \\
& \quad \text{skeir} ('\text{clear}': \text{n.s.m.}) \quad \text{swir} ('\text{dignified}': \text{n.s.m.}) \\
\text{c.} & \quad /\text{hor} + s/ \\
& \quad \emptyset \quad \text{s-D} \\
& \quad \text{hors} ('\text{adulterer}': \text{n.s.})
\end{align*}

are stressed, in conjunction with the treatment in the present account of Gothic phonology of stressed long vowels as vowel sequences (in accordance with the Interpretive Principle for Vowel Length defined in (2.59)), the appropriate formulation of the process of /s/-Deletion in Gothic is that appearing in (2.77):

(2.77) /s/-Deletion:

\[ /s/ \rightarrow \emptyset / \{ \text{C [+ syll] /r/} \} + \text{#} \]
2.2.4.2. Spirantization

A second type of alternation observed in Gothic involving consonantal segments arises on the basis of an assimilatory process of Spirantization which affects voiced obstruents in the language. The nature of this process is such that it causes a voiced obstruent to become spirantized post-vocalically. The effects of Spirantization can be seen in forms such as those derived in (2.78):

(2.78) a. /haban + ɛ + an/  
   ---  β  
   β  
   haban

b. /stibn + 0/  
   ---  a  
   β  
   vD (2.74)

   β  
   Sp

   stibna ('voice': n.s.)

c. /liwd + an/  
   ---  u  
   d  
   liudan ('to grow')

d. /hidr̥/  
   ---  d  
   d  
   hidr̥ ('hither')

S (2.31)

There are two restrictions on the spirantization of obstruents in Gothic. First, as noted above, the process applies to voiced obstruents only. Observe, for example, the failure of voiceless obstruents to spirantize post-vocally in the derivations in (2.79):

(2.79) a. /grizp + an/  
   ---  Sp

greipan ('to grasp')

b. /mit + an/
   Sp

mitan ('to measure')

Second, in those forms in which identical voiced obstruents occur sequentially in a post-vocalic position, neither obstruent is observed to spirantize, as the derivations in (2.80) illustrate:

(2.80) a. /rabbi + 0/  
   ---  Sp

   rabbei ('master': n.s.)

b. /dadd + i + an/  
   ---  j  
   Sp

daddjan ('to suckle')

GF (2.22)
The failure of such obstruent sequences to undergo Spirantization, in light of the fact that voiced obstruents appearing post-vocally in other obstruent clusters (as in forms such as hlaif ("bread") and stab ("place"), derived from the respective underlying strings /hlaːb + s/ and /stɑb + s/, as illustrated in (2.33) below) do spirantize, can be accounted for by positing that, underlyingly, such obstruent sequences are single [+ long] segments. Utilizing such an approach, the process of Spirantization in Gothic receives the formulation appearing in (2.81):

\[(2.81)\] Spirantization:

\[
\begin{array}{c}
\text{- sonorant} \\
\text{+ voice} \\
\text{- long} \\
\end{array} \quad \rightarrow \quad [+ \text{ continuant}] \quad / \quad [+ \text{ syll}] \\
\]

2.2.4.3. Devoicing

The final type of Gothic consonantal alternation to be dealt with involves the devoicing of fricatives. A process of fricative devoicing operates in Vulfilean Gothic in two environments. First, voiced fricatives undergo devoicing in word-final position, as illustrated in (2.82):\(^5\)

\[(2.82)\]
a. /hlaːb + ə/  \qquad b. /stɑb + ə/  \qquad Sp (2.81)

\[
\begin{array}{c}
\text{hlaif ('bread': a.s.)} \\
\text{stɑb ('place': a.s.)} \\
\end{array} \quad \text{Sp (2.81)}
\]

c. /ɗay + ə/  \qquad d. /dɪwz + ə/  \qquad S (2.31)

\[
\begin{array}{c}
\text{ɗay ('day': a.s.)} \\
\text{dɪwz ('animal': a.s.)} \\
\end{array} \quad S (2.31)
\]

Second, in addition to in absolute word-final position, a fricative in Gothic is also observed to devoice in an environment in which a voiceless consonant intervenes between it and word-final position. Such
fri"cative devoicing is illustrated in the derivations in (2.83):

(2.83) a. /hlɔb + s/  
    \[ \varepsilon \]  
    \[ \emptyset \]  
    hlæfs (n.s.)

b. /stad + s/  
    \[ \emptyset \]  
    \[ \emptyset \]  
    stabs (n.s.)

That devoicing does not occur when a voiced consonant appears between a voiced fricative and word-final position can be seen in the derivations in (2.84):

(2.84) a. /abr + s/  
    \[ \emptyset \]  
    abrs ('severe': n.s.m.)

b. /huzd + \emptyset/  
    \[ \emptyset \]  
    huzd ('treasure': a.s.)

Finally, while all observed instances of fricative devoicing in Gothic occur either in absolute word-final position or in a position separated from word-finality by a single voiceless consonant, no forms occur which indicate that Devoicing must be restricted to permit only a single voiceless consonant to appear between the segment undergoing Devoicing and word-final position. Such considerations lead, then, to a formulation of the process of fricative devoicing in Wulfilian Gothic as in (2.85):

(2.85) Devoicing:

\[
\begin{array}{c}
\text{+ cons} \\
\text{+ cont}
\end{array} \rightarrow \text{[- voice] / \text{[- voice]}_0 #}
\]

In connection with the process of Devoicing in Gothic, two additional considerations remain to be made. First, the nature of this process is such that it provides evidence in favor of a particular aspect of the conception of phonological processes espoused in SPE and adopted in the present work. That is, in SPE the view taken towards phonological processes is that such processes effect changes on the basis of the
feature composition of a segment and the phonological environment in
which a segment occurs, but not on the basis of distributional facts
about the segments in a language. Thus, according to this viewpoint,
whether, on the one hand, a phonological process defines alternations
involving morphophonemically-distinct segments, or whether, on the
other hand, it determines alternations involving allophonic variants
of a single morphophonemic segment is immaterial, and it is in fact to
be expected that, in some cases, a single phonological process will be
found to define alternations of both types.

Devoicing in Gothic is, then, an example of that type of phono-
logical process which defines both morphophonemic alternation and allo-
phonic variation. Thus, this process determines, on the one hand, al-
ternations between the respective morphophonemically-distinct segmental
pairs [f] - [β] ([β] being an allophone of the morphophonemic segment
/b/), [θ] - [æ] ([æ] being an allophone of the morphophonemic segment
/d/), and [s] - [z], while at the same time determining an allophonic
surface realization, [x], of the morphophonemic segment /ɣ/. Such op-
eration of the Gothic process of Devoicing supports the view, which is
central to the theory of generative phonology being employed in the
present work, that a distinction between "phonemic processes" and "al-
lophonic processes" does not characterize the phonological component
of a natural language.

The final consideration to be made in connection with the Gothic
phonological process of Devoicing concerns the relationship between
this process and the process of Spirantization considered in 2.2.4.2.
Thus, as the derivations in (2.82) and (2.83) indicate, all of the /β/ and /ḍ/ segments which undergo the process of Devoicing are produced from underlying /b/‘s and /d/‘s, respectively, by the operation of Spirantization (2.81). In addition, all of the underlying /γ/‘s which are subject to Devoicing are, as in (2.82) and (2.83), in post-vocalic position, an environment in which they are subject to the application (albeit vacuous) of the process of Spirantization. Such considerations indicate that, with the processes of Spirantization and Devoicing, two aspects of a single phonological phenomenon are being observed. The unitary nature of this phenomenon can be formally incorporated into the description of Gothic phonology by combining Spirantization and Devoicing into a single phonological rule. Such a unitary formulation of these processes, requiring the use of the angled bracket notation, appears in (2.86):

(2.86) Spirantization/Devoicing:

\[
\begin{align*}
\text{[son} & \quad \text{ [+ voice] } \\
\text{ [+ cont}] & \quad \text{[< - voice>]} \quad / \quad \text{[+ syll]} \quad \text{[- voice]_o} \quad \# \\
\text{[- long]} & \\
\end{align*}
\]

2.2.5. Ordering the Phonological Rules

The phonological rules developed in 2.2.2 through 2.2.4 above are, in a number of instances, crucially related to one another by extrinsic rule-ordering statements. Thus, Glide Formation (2.22) must operate before Syllabification (2.31), since it is observed to feed this process, as illustrated in (2.87):
(2.87) /sǐw̃ + i + an/  
\[\text{GF (2.22)}\]  
\[\text{S (2.31)}\]  
\[\text{sǐw̃an} \]

Glide Formation must also precede Monophthongization (2.56), since the /j/'s created by the process of Glide Formation are observed, in a number of forms, to trigger the operation of Monophthongization, as in (2.88):

(2.88) /tėw̃ + i + an/  
\[\text{GF (2.22)}\]  
\[\text{M (2.50)}\]  
\[\text{tėw̃an} \]

In addition to feeding the rule of Monophthongization, as in (2.88), the prior application of Glide Formation also crucially bleeds the operation of Monophthongization in certain forms, as shown in (2.89):

(2.89) /stōo̲ + i + an/  
\[\text{GF (2.22)}\]  
\[\text{M (2.50)}\]  
\[\text{stōo̲an} \]

Syllabification also crucially precedes Monophthongization, since certain of the applications of the process of Syllabification crucially feed, while others crucially bleed, certain applications of Monophthongization, as indicated in the derivations in (2.90):

(2.90) a. /tōo̲j + 0/  
\[\text{S (2.31)}\]  
\[\text{tōo̲uj} \]

Finally, the rule of Stress Assignment (2.7) must precede both of the rules of Glide Formation and Monophthongization, since in the operation of each of these rules the position of lexical stress, determined
by Stress Assignment, is crucial. Such considerations, then, lead to the extrinsic ordering relationships among the phonological rules of Wulfilian Gothic summarized in (2.91):

(2.91)  
- Stress Assignment (2.7)
- Glide Formation (2.22)
- Syllabification (2.31)
- Monophthongization (2.50)
- Vowel Deletion (2.74)
- /s/-Deletion (2.77)
- Spirantization/Devoicing (2.86)

The full set of Gothic phonological rules, ordered as in (2.91) is summarized in TABLE IV:
TABLE IV: Summary of the Phonological Rules of Wulfilian Gothic

1. Stress Assignment (2.7):

\[
[+ \text{syll}] \rightarrow [+ \text{stress}] / [\#_{C_{o}} -] \text{lexical stem}
\]

2. Glide Formation (2.22):

\[
[+ \text{high} \quad \text{- back}] \rightarrow [- \text{syll}] / a\langle c [+] \text{stress} [+] \text{seg} \rangle_{b} \left[+ \text{syll} \begin{array}{l}
\text{Condition: If } b, \text{ then } a
\end{array}\right]
\]

3. Syllabification (2.31):

\[
[\text{- cons} \quad [+ \text{high} \quad \text{- back}]] \rightarrow [+ \text{syll}] / b\langle [+] \text{high} \rangle_{a} \rightarrow (- \text{syll}) X \# \quad \text{Condition: If } a, \text{ then } b
\]

4. Monophthongization (2.50):

\[
\begin{align*}
[+ \text{syll}] [\text{- cons} & \quad [a \text{ syll} \quad \beta \text{ back} \quad \beta \text{ round}] \\
[+ \text{stress}] & \rightarrow [1 \quad 2 \quad 3] \\
& \rightarrow [1 \quad 0 \quad 3]
\end{align*}
\]

\begin{align*}
& + \text{low} \\
& \beta \text{ back} \\
& \beta \text{ round} \\
& + \text{long}
\end{align*}
TABLE IV (continued):

5. Vowel Deletion (2.74):

\[
[+ \text{syll} \quad - \text{stress}] \rightarrow \emptyset / \left\{ [ + \text{low} \quad [ + \text{syll} \quad [ - \text{high} ] ] ] \right. \\
\left. [ + \text{syll} \quad [ - \text{high} \quad [ - \text{stress} ] ] ] \right. \\
\]

6. /s/-Deletion (2.77):

\[
/s/ \rightarrow \emptyset / \left\{ [ C \ [ + \text{syll} ] /r/ \right. \\
\left. /s/ \right. \\
\left. + \quad \# \right. \\
\]

7. Spirantization/Devoicing (2.86):

\[
[ - \text{son} \quad + \text{voice} \quad - \text{long} ] \rightarrow [ + \text{cont} \quad [ < - \text{voice} > ] \right. \\
\left. / [ + \text{syll} ] \quad \quad [ - \text{voice} \quad \# ] \right. \\
\]
2.2.6. The Minor Phonological Rules of Wulfilian Gothic

The nature of the phenomena being designated here as minor phonological rules is treated in detail in Chapter 4, where a number of issues in phonological theory are discussed in connection with the phonological analyses developed in the present work. Briefly, within the theory of generative phonology being employed here, the task of the phonological component of a linguistic description is taken to be, in part, to reduce (optimally, to eliminate), by factoring out those morphophonemic - phonetic distinctions which are rule-governed, the surface allomorphy which characterizes the language being described. The discovery of truly phonological phenomena (which are governed by what, in comparison with minor phonological rules, may be referred to as major phonological rules, such as those discussed in 2.2.2 through 2.2.5 above) results in wholesale reduction of such allomorphy by explicating observed morphophonemic - phonetic distinctions which characterize a language as a whole. However, after such (major) phonological phenomena have been isolated and described, two types of surface allomorphy are still to be found. First, there is the surface allomorphy which results from the existence in a language of morphophonemic allomorphy. Such allomorphy, exhibited in suppletive morphological forms, is an aspect of the morphological component of a linguistic description. The second type of surface allomorphy which remains after the (major) phonological alternations have been discerned arises as a result of what are here called the minor phonological processes of a language. Such processes give rise to surface allomorphic variation
whose distribution is rule-governed, such rule-governed behavior occurring, however, only within a particular morphological domain of operation. Thus, such rules have both a phonological and a morphological conditioning environment.

The significance of including such processes in a phonological description is twofold. First, the minor phonological processes often serve to explicate certain phenomena which are similar to but independent of the (major) phonological processes in a language. Such a case occurs, for example, in Wulfilian Gothic. In Gothic, there is a minor phonological process, /j/-Weakening, which affects a stem-final /j/ in the strong adjective declensions. This process produces certain alternations which appear to be problematic for an account of the [i] - [j] alternations in Gothic based upon the rules of Glide Formation (2.22) and Syllabification (2.31). Thus, it is only by noting that a process of /j/-Weakening exists quite independently of the processes of Glide Formation and Syllabification that one can gain full insight into the workings of the [i] - [j] alternations in Wulfilian Gothic.

The second motivation for including the minor phonological rules in an account of the phonological component of a language is based essentially upon the necessity for completeness of description. Thus, since the minor phonological processes of a language define alternations which are amenable, in part, to a phonological description, then such rules are a necessary aspect of a complete phonological description of a language. As indicated above, a number of such minor phonological processes are found in Wulfilian Gothic.
2.2.6.1. /ō/-Deletion

The minor phonological process of /ō/-Deletion affects the class IV weak verbs in Gothic. The operation of this process is illustrated in the paradigm of the Gothic class IV weak verb fullnan ('to become full'), part of which is presented in (2.92):

(2.92)  

<table>
<thead>
<tr>
<th></th>
<th>Present</th>
<th>Past</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singular:</td>
<td>1. fullna</td>
<td>fullnōda</td>
</tr>
<tr>
<td></td>
<td>2. fullnis</td>
<td>fullnōdes</td>
</tr>
<tr>
<td></td>
<td>3. fullnip</td>
<td>fullnōda</td>
</tr>
<tr>
<td>Dual:</td>
<td>1. fullnōs</td>
<td>fullnōcēdu</td>
</tr>
<tr>
<td></td>
<td>2. fullnats</td>
<td>fullnōcēcuits</td>
</tr>
<tr>
<td>Plural:</td>
<td>1. fullnam</td>
<td>fullnōcēcum</td>
</tr>
<tr>
<td></td>
<td>2. fullnip</td>
<td>fullnōcēduńp</td>
</tr>
<tr>
<td></td>
<td>3. fullnand</td>
<td>fullnōcēdun</td>
</tr>
</tbody>
</table>

Imperative  
(singular): 2. fulln

As these forms indicate, the Gothic fourth weak verb class is characterized by a surface allomorphy in the value of its stem-extension marker. That is, in all of the present tense forms the stem-extension appears on the surface as [n:], while in the past tense it has the phonetic form [nō]. Thus, the present tense form fullna apparently arises from the morphophonemic string /full + n + a/, while the preterite form fullnōda appears to correspond to the underlying string /full + nō + da/.

Such surface allomorphy is not explicable on the basis of general phonological considerations concerning Wulfilian Gothic. Recall, for example, that in the second class of Gothic weak verbs, forms such as underlying /salb + ō + a/ are seen to appear phonetically, as a result of the application of Vowel Deletion (2.74), as [salbō]. Such forms contradict directly any proposal to set up the underlying form for
**fullna** as /full + nō + a/ and have this string undergo a derivation as in (2.93):

\[(2.93) \quad /full + nō + a/ \quad \star \quad VD (2.74) \quad \emptyset \]

**fullna**

since it would be the /a/, and not the /ō/, which would be deleted by the process of Vowel Deletion (2.74).

However, while the distribution of the [n] and [nō] values for the class IV weak verb stem-extension marker cannot be accounted for in terms of general phonological characteristics of the Gothic language, this distribution does follow a phonologically-definable pattern within the fourth class of Gothic weak verbs. That is, the value [n] for the class IV weak verb stem-extension is found in those class IV weak verb forms in which the inflectional ending either begins with a vowel (as in all of the present tense forms in (2.92) except **fulln**), or it has the value /∅/ (as in the form **fulln**). The value [nō], by comparison, appears in all of the class IV weak verb forms in which the inflectional ending begins with a consonant (as in all of the past tense forms in (2.92)). Such distributional facts suggest that the observed allomorphy which characterizes the class IV weak verb stem-extension marker is in fact governed by a phonological process which operates within this verb class. This process, which must be restricted in its application to the Gothic class IV weak verb class, is a minor phonological process, and it receives the formulation appearing in (2.94):

\[(2.94) \quad /∅/-\text{Deletion:} \quad [ + \text{syll} \quad \star \quad 0 \quad / \quad \text{(VC)} \quad \# \quad \{ \text{class IV weak verb} \} \quad ] \]
That is, as expressed in (2.94), the stem-extension marker for the class IV weak verbs in Gothic has a single morphophonemic value, /nō/, but undergoes a phonological process specific to the fourth class of Gothic weak verbs by which the /ō/ contained in this stem-extension deletes when it occurs either word-finally or pre-vocally. Treating the observed phonetic duality in the value of the stem-extension marker for this verb class as being conditioned by a minor phonological process, rather than as being a case of morphophonemic allomorphy, captures the generalization noted above concerning the phonological determinability, as presented in (2.94), of the surface allomorphs of this stem-extension. Derivations illustrating the operation of the minor phonological rule of /ō/-Deletion (2.94) are given in (2.95):

\begin{align*}
(2.94) & \text{a. } /\text{full} + \text{nō} + \text{a/} & \text{b. } /\text{full} + \text{nō} + \text{is/} \\
& \text{fullna} & \text{fullnis} \quad \text{ō-D (2.94)} \\
& \text{c. } /\text{full} + \text{nō} + \emptyset/ & \text{d. } /\text{full} + \text{nō} + \text{da/} \\
& \text{fulln} & \text{fullnōda} \quad \text{ō-D (2.94)}
\end{align*}

2.2.6.2. /i/-Lengthening

A second type of surface allomorphy found in Wulfilian Gothic which is not explicable in terms of general phonological characteristics of the language, but whose distribution nonetheless follows a phonologically determined pattern, is found in the second person singular imperative forms of the class I weak verbs in the language. The standard inflectional ending for the second singular imperative forms in Gothic is /ō/, as indicated by the imperative forms appearing in (2.95):
(2.95) Verb Class: | Inf.: | 2nd S. Imp.: | Gloss:  
A. Strong: 1. steigan | steig | 'climb'  
2. liugan | liug | 'lie'  
3. bindan | bind | 'bind'  
4. niman | nim | 'take'  
5. sitan | sit | 'sit'  
6. graban | grab | 'bury'  
7. sêpan | sêp | 'sleep'  
B. Weak: 2. salbô | salbô | 'anoint'  
3. haban | habai | 'have'  
4. fullnan | fulln | 'become full'  

Thus, in the case of each of the strong verbs in (2.95), the second singular imperative form consists of the verbal stem (as revealed in the infinitival form, which in each case is composed of the string /stem + an/) concatenated with a /Ø/ inflectional ending. The weak verb imperative forms in (2.95) likewise exhibit an inflectional ending with the value /Ø/. That is, such forms consist of a verbal stem plus the appropriate stem-oration marker, as illustrated in (2.96):

(2.96) a. /salb + ò + Ø/ → [salbò] (= salbô)  
b. /hab + e + Ø/ → [habê] (= habai)  
c. /full + no + Ø/ → [fulln] (= fulln)  

As the morphophonemic - phonetic correspondences in (2.96) indicate, only the morphophonemic strings in (2.96)b and c appear altered at the surface, the underlying /b/ in /hab + e + Ø/ having become [ß] by the operation of Spirantization (2.86), and the underlying /ò/ in /full + no + Ø/ having been deleted by the operation of /ò/-Deletion (2.94).  

In comparison with the forms in (2.95), the Gothic class I weak verbs exhibit second person singular imperative forms such as those in (2.97):
(2.97) Class I Weak Verbs:

<table>
<thead>
<tr>
<th>Infinitive</th>
<th>2nd S. Imp.</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>n̂asjan</td>
<td>nasei</td>
<td>'save'</td>
</tr>
<tr>
<td>stôjan</td>
<td>stauei</td>
<td>'judge'</td>
</tr>
<tr>
<td>ŝokjan</td>
<td>sokiei</td>
<td>'seek'</td>
</tr>
<tr>
<td>namnjan</td>
<td>nannei</td>
<td>'name'</td>
</tr>
<tr>
<td>t̂aûjan</td>
<td>tawei</td>
<td>'do'</td>
</tr>
</tbody>
</table>

As discussed in 2.2.2.1.2 above, the stem-extension marker for the class I weak verbs in Gothic is /i/. On the basis of such a value for this stem-extension, along with the fact that the second singular imperative ending in Gothic is /Ø/, class I weak verb imperative forms such as those in (2.98) would be predicted:

(2.98) a. /n̂as + i + Ø/ → *[n̂asi]
b. /stôo + i + Ø/ → *[stői]
c. /ŝôk + i + Ø/ → *[ŝoki]
d. /namn + i + Ø/ → *[n̂amni]
e. /t̂aû + i + Ø/ → *[t̂awi]

Two approaches might be taken to such discrepancy between the observed and the expected values of the class I weak verb second singular imperative forms. On the one hand, it might be proposed that the value of the second singular imperative inflectional ending for the class I weak verbs is not the one found in the other verb classes in the language (i.e. /Ø/), but rather has the morphophonemic value /i/. Alternatively, one might posit that the class I weak verb stem-extension /i/ becomes lengthened to [I] in the second singular imperative form (the only form in which this stem-extension appears in word-final position).

In evaluating these two approaches to the class I weak verb second singular imperative forms, note that the proposal based upon an allomorphic
value /i/ for the second singular imperative inflectional ending suffers from two fundamental shortcomings. First, it treats as accidental the fact that the supposed morphophonemic value of the second singular imperative ending in the first class of weak verbs is identical to the stem-extension marker for this verb class. That is, the fact that an allomorph value /i/ for this inflectional ending characterizes just that verb class which exhibits a stem-extension /i/ is not accounted for. A second, and more problematic aspect of an approach to the class I weak verb second singular imperative forms based on inflectional allomorphy concerns the fact that such an approach leads, in a number of instances, to incorrect surface forms. That is, an inflectional /i/ as the second singular imperative ending for the class I weak verbs would trigger the application of the process of Glide Formation in forms such as those in (2.99):

\[(2.99) \text{a. } /n\acute{a}s + i + i/ \quad \text{b. } /s\tilde{t}\ddot{o} + i + i/ \quad \text{GF (2.22)}\]

\[\text{*n\acute{s}ji} \quad \text{*s\tilde{t}o\ddot{i}}\]

\[\text{c. } /t\acute{a}w + i + i/ \quad \text{GF (2.22)} \quad \text{M (2.50)}\]

\[\text{*t\acute{a}\ddot{u}ji}\]

The fact that the application of Glide Formation (2.22) is not observed in imperative forms such as nasei, st\ddot{ae}i, and taw\ddot{e}i indicates that an approach to the class I weak verb second singular imperative forms in terms of an allomorph value /i/ for the second singular imperative inflectional ending cannot be maintained.
The alternative account of the class I weak verb second singular imperative forms outlined above—that it is the stem-extension marker for the Gothic class I weak verbs which has the surface allomorphic value [I] in just this inflectional form—suffers from neither of the difficulties which characterize the approach based upon inflectional allomorphy. That is, a phonetic value of [I] for the class I weak verb stem-extension marker in imperative forms such as nasei, stāuei, and taweii correctly accounts for the failure of such forms to undergo the process of Glide Formation, since the respective forms involved, /nās + ɨ + ə/, /stā' + ɨ + ə/, and /tāw + ɨ + ə/, do not satisfy the requirements of this process. Moreover, under such an approach, it is not taken as accidental that the observed allomorphic value, [I], is highly similar to the standard morphophonemic value, /i/, of the class I weak verb stem-extension marker. That is, such an allomorphic value is in fact predictable on the basis of the phonological environment in which the stem-extension occurs. Thus, as noted above, it is only in the second singular imperative form that the class I weak verb stem-extension marker appears in word-final position. In this position, it is observed to have the surface value [I]. Such considerations indicate, then, that a process of lengthening affects the class I weak verb stem-extension /i/ in word-final position.

This process of /i/-Lengthening must, however, be viewed as a minor phonological process. That such is the case can be seen by noting that short /i/’s appear word-finally in a number of forms in Wulfilian Gothic. They occur, moreover, both as stem-final segments (as in the accusative
singular form andi ('end'), from underlying /andi + ə/) and as inflec-
tional endings (as in the third plural past optative form nēmi ('take'),
from underlying /nēm + i/). Consequently, it cannot be taken as a gen-
eral phonological characteristic of the Gothic language that /i/ length-
ens in word-final position. The observed lengthening of the stem-exten-
sion /i/ in the second singular imperative forms of the class I weak
verbs must, then, be treated as a phenomenon inherently associated with
this verb class, and thus be accounted for on the basis of a minor pho-
nological rule. The appropriate formulation of this rule is given in

(2.100) /i/-Lengthening:

\[
\begin{align*}
\text{[+ syll]} & \quad \rightarrow \quad [+ \text{long}] / & \quad \# & \quad \{\text{class I weak verb}\}
\text{[+ high]} & \quad \begin{array}{c}
\quad - \text{back}
\end{array}
\end{align*}
\]

Derivations illustrating the operation of this process are presented in

(2.101):

(2.101) a. /nás + i + ə/ \quad b. /táw + i + ə/

\[\text{násei} \quad \text{táwei}\]

\[i\]

\[\text{i-L (2.100)}\]

c. /sóok + i + ə/ \quad d. /nám + i + ə/

\[\text{sókei} \quad \text{námnei}\]

\[i\]

\[\text{i-L (2.100)}\]

Confirmation of the existence of such a minor phonological process
of /i/-Lengthening in Wulfilian Gothic can be obtained by considering
a derivational process of abstract noun formation which is observed to
apply to the Gothic class I, class II, and class III weak verbs. 17
This process of abstract noun formation is revealed, for example, in the
forms lápons ('invitation') and libāns ('life'), corresponding to the
class II weak verb laþon ('to invite') and the class III weak verb liban ('to live'), respectively. Given both the transparency of the semantic relationship between such pairs and the large number of such pairs which are found in the Gothic corpus, a productive derivational relationship between the forms laþon and laþons, on the one hand, and the forms liban and libaïns, on the other, can be assumed. That is, the deverbal nouns laþons and libaïns can be taken as having been produced by the derivational word-formation process outlined in (2.102):

(2.102) Deverbal Abstract Noun Formation:

[stem + stem-extension] verb

[[stem + stem-extension] verb # n] noun

Thus, this process derives the nominal stems laþon- and libaïn- (to each of which is added the nominative singular inflectional ending -s to derive the respective forms laþons and libaïns), as in (2.103)a and b, respectively:

(2.103) a. [laθ + ō] verb → [[laθ + ō] verb # n] noun

b. [lib + ī] verb → [[lib + ī] verb # n] noun

Consider, then, with respect to such a word-formation process, the abstract nouns corresponding to the class I weak verbs in Gothic. A partial list of such noun - verb pairs appears in (2.104):

(2.104) a. naseins ('saving') - nasjan ('to save')

b. laïseins ('teaching') - laïsjan ('to teach')

c. haũheins ('rising') - haũhjan ('to rise')

d. naĩteins ('slander') - naĩtjan ('to slander')

Given the formulation in (2.102) of the word-formation process which
creates the nouns in (2.104), morphophonemic - phonetic correspondences such as those in (2.105) are motivated:

(2.105) a. /nas + i/verb # n + s/noun → [nasǐns]
b. /lēs + i/verb # n + s/noun → [lēsǐns]
c. /hōn + i/verb # n + s/noun → [hōnǐns]
d. /nēt + i/verb # n + s/noun → [nētǐns]

Each of the derivations in (2.105) illustrates an identical type of segmental change: morphophonemic /i/ appears on the surface as pho-
netic [I]. It is exactly such a change which was seen above to char-
acterize the class I weak verb stem-extension marker when it occurs in
word-final position. This alternation between [i] and [I], which is
conditioned by the minor phonological rule of /i/-Lengthening (2.100),
thus occurs before the derivational noun-forming affix /#n/ as well as
in word-final position. Such operation of /i/-Lengthening is, however,
in accord with the formulation of this process given in (2.100). The
forms in (2.105), then, provide additional support for the existence
in the phonology of Wulfilian Gothic of a minor phonological process
which lengthens the class I weak verb stem-extension /i/ before a word-
boundary. The operation of /i/-Lengthening (2.100) in the forms in
(2.105) is illustrated in the derivations in (2.106):

(2.106) a. /nas + i # n + s/ i
     naseins

     b. /lēs + i # n + s/ i
     laiseins

     c. /hōn + i # n + s/ i
     haũheins

     c. /nēt + i # n + s/ i
     næteins

i-L (2.100)
2.2.6.3. /i/-Gemination

The process of /i/-Gemination has the effect of introducing a particular type of surface inflectional allomorphy into the paradigms of two classes of lexical items in Wulfilian Gothic. The effects of this process are observed, for example, in the masculine a-stem noun paradigm, as the forms of the masculine a-stem nouns *dags* ('day') and *harjis* ('army') appearing in (2.105) illustrate:

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>dags</td>
<td>harjis</td>
<td></td>
</tr>
<tr>
<td>Gen.</td>
<td>dagis</td>
<td>harjis</td>
<td></td>
</tr>
<tr>
<td>Dat.</td>
<td>dagā</td>
<td>harja</td>
<td></td>
</tr>
<tr>
<td>Acc.</td>
<td>dag</td>
<td>hari</td>
<td></td>
</tr>
<tr>
<td>Voc.</td>
<td>dag</td>
<td>hari</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Plural</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>dagōs</td>
<td>harjōs</td>
<td></td>
</tr>
<tr>
<td>Gen.</td>
<td>dagē</td>
<td>harje</td>
<td></td>
</tr>
<tr>
<td>Dat.</td>
<td>dagām</td>
<td>harjam</td>
<td></td>
</tr>
<tr>
<td>Acc.</td>
<td>dagans</td>
<td>harjans</td>
<td></td>
</tr>
</tbody>
</table>

The alternation between [i] and [j] in the paradigm of *harjis* is accounted for by the rule of Glide Formation (2.22), as discussed in 2.2.2.1.2. The only inflectional difference, then, between these two paradigms occurs in the nominative singular forms. That is, in the nominative singular, *dags* exhibits an inflectional ending [s] affixed to the lexical stem /dай/, while *harjis*, whose stem is /hari/, is characterized by an inflectional ending with the surface form [is]. Such distinctive patterning obtains for all masculine a-stem nouns in Gothic. Thus, in the nominative singular, nouns such as stāins ('stone'), fīks ('fish'), wulfs ('wolf'), etc., all of which contain a stem-final consonant, appear with an inflectional [s]. By comparison, in the nominative
singular, nouns such as hairdeis ('shepherd'), asneis ('laborer'), andeis ('end'), nībjas ('kinsman'), etc., all of whose stems end in the vowel /i/, appear on the surface with an inflectional ending [is].

Such a duality of inflectional patterning is observed, moreover, not only in the masculine a-stem nominal paradigm in Gothic, but in the strong adjective paradigms as well. Consider, for example, the strong masculine declension of the adjectives blinds ('blind') and wilpeis ('wild'), given in (2.106):

<table>
<thead>
<tr>
<th>(2.106)</th>
<th>Singular</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>blinds</td>
</tr>
<tr>
<td>Gen.</td>
<td>blindis</td>
</tr>
<tr>
<td>Dat.</td>
<td>blindemma</td>
</tr>
<tr>
<td>Acc.</td>
<td>blindana</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Plural</td>
<td></td>
</tr>
<tr>
<td>Nom.</td>
<td>blindael</td>
</tr>
<tr>
<td>Gen.</td>
<td>blindaižē</td>
</tr>
<tr>
<td>Dat.</td>
<td>blindaijm</td>
</tr>
<tr>
<td>Acc.</td>
<td>blindans</td>
</tr>
</tbody>
</table>

In the nominative singular forms of these two adjectives, an inflectional distinction occurs which parallels exactly that distinction observed in the paradigms of the masculine a-stem nouns dags and harjis, as seen in (2.105) above. Thus, in the paradigms of those lexical forms whose stems end in /i/ (in the case of the strong adjectives, this /i/ is derived from an underlying /j/ by the process of /j/-Weakening, discussed in 2.2.6.5), the inflectional ending in the nominative singular appears on the surface as [is], while in those forms whose stems end in a consonant, the nominative singular inflectional ending takes the form [s]. Such parallelism between these two
lexical classes indicates that it is rule-governed alternation, and not morphophonemic allomorph variation, which is being observed.

To determine the nature of the phonological process which governs this alternation note that it is only in the nominative singular in both the masculine a-stem nominal paradigm and the masculine strong adjectival declension that the underlying value of the inflectional ending, as revealed by the forms cæs and blīns, is a single consonant—the consonant /s/. Moreover, in both of these lexical classes, in those forms in which a stem-final /i/ is concatenated with this single inflectional consonant, the inflectional ending appears phonetically, not as its underlying value, /s/, but in a form containing a copy of the stem-final vowel, /i/, plus the inflectional consonant, /s/. Such considerations indicate that a phonological process operates in these two lexical classes to epenthesize a copy of a stem-final /i/ between a lexical stem and a single inflectional consonant. Note, in addition, that since the masculine strong adjectival declension is, in fact, the adjectival counterpart of the masculine a-stem nominal declension,¹⁸ both of these lexical classes can be designated as "a-stem" classes. Finally, the only other "a-stem" lexical classes in Wulfilian Gothic—the neuter a-stem nouns and adjectives—contain no inflectional endings comprised of a single consonant. Thus, the formulation of the minor phonological process which epenthesizes an [i] into inflectional forms such as harīs and wīlpeis can be given as (2.107):
(2.107) /i/-Gemination:

\[
\begin{array}{ccc}
\varepsilon & 2 & 3 \\
\hline
\text{i} & \text{+} & \text{[+ cons]} \\
\hline
1 & l & 3
\end{array}
\]

\{ a-stem noun/adj \}

Derivations illustrating the operation of /i/-Gemination (2.107) appear in (2.108):

\[
\begin{array}{ccc}
\varepsilon & 2 & 3 \\
\hline
\text{day} & \text{+ s/} & \text{hari} & \text{+ s/} \\
\hline
\text{i} & i \\
\hline
\text{harjis} & \text{harjis} \\
\hline
\text{blinds} & \text{wilbeis} \\
\end{array}
\]

As noted above (and indicated in (2.107)), the Wulfilian Gothic process of /i/-Gemination is a minor phonological process. In determining this aspect of the nature of /i/-Gemination, it must first be noted that inflectional strings containing the sequence required for the operation of this process, that sequence formulated in (2.109):

\[
\begin{array}{ccc}
\varepsilon & 2 & 3 \\
\hline
\text{i/} & \text{+ [+] cons]} \\
\hline
\end{array}
\]

occur infrequently in the language. In fact, in addition to occurring in the masculine a-stem nominal and adjectival paradigms, as noted above, such morphophonemic sequences are found in but one other paradigm in Wulfilian Gothic—the strong inflectional paradigm of the class I weak verb past participles. Thus, in Wulfilian Gothic each of the first three classes of weak verbs forms its past participle through the suffixation of the segment /-θ/. The participles so formed are then
declined using the inflectional endings of the adjectival paradigms.
The nominative and accusative singular inflectional endings in
the neuter strong adjectival paradigm alternate between /∅/ and /ata/,
depending upon whether, respectively, a nominal or a pronominal form
is chosen. Thus, for each of the first three weak verbal paradigms in
Gothic, morphophonemic strings such as those depicted in (2.109) can
occur:

(2.109) a. Class I: /stem + i + ∅ + ∅/
    b. Class II: /stem + ə + ∅ + ∅/
    c. Class III: /stem + e + ∅ + ∅/

In the case of the class I weak verb past participle form defined in
(2.109), then, the required sequence for the operation of /i/-Gemination
(2.107) is present. The effect of an application of this process on
such a form would be the derivation of a form such as that defined in
(2.110):

(2.110) */stem + ii + ∅ + ∅/

The observed phonetic value of such class I weak verb past participle
forms is, however, not in accord with the string presented in (2.110).
Thus, while the number of such participle forms occurring in the Gothic
corpus is (understandably) small, those that do occur—such as */haimi:
('veiled')—indicate that such forms are not subject to the process of
/i/-Gemination. It is on the basis of such considerations that this
process is restricted in the present account of Gothic phonology to
being a minor phonological process, one which applies only in the a-stem
noun and adjective paradigms.
2.2.6.4. /a/-Insertion

A further type of minor phonological alternation which characterizes Wulfilian Gothic is observed in the ɔ-stem noun declension in the language. In this nominal class two distinct declensional patterns occur. These patterns are exemplified in the paradigms of the nouns giba ('gift') and mawi ('girl'), which appear in (2.111):

(2.111)          Singular

<table>
<thead>
<tr>
<th></th>
<th>giba</th>
<th>mawi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>giba</td>
<td>mawi</td>
</tr>
<tr>
<td>Gen.</td>
<td>gibœs</td>
<td>maujœs</td>
</tr>
<tr>
<td>Dat.</td>
<td>gibai</td>
<td>maujaí</td>
</tr>
<tr>
<td>Acc.</td>
<td>giba</td>
<td>mauja</td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>gibœs</td>
<td>maujœs</td>
</tr>
<tr>
<td>Gen.</td>
<td>gibœ</td>
<td>maujo</td>
</tr>
<tr>
<td>Dat.</td>
<td>gibœm</td>
<td>maujom</td>
</tr>
<tr>
<td>Acc.</td>
<td>gibœs</td>
<td>maujœs</td>
</tr>
</tbody>
</table>

The alternation between [aw] and [ɔ] in the paradigm of mawi is accounted for by the rule of Monophthongization (2.50), as discussed in 2.2.2.3. The only distinction, then, between these two inflectional patterns is in the nominative singular forms. That is, the nominative singular form mawi exhibits a [ɔ] inflectional ending, while the nominative singular form giba contains an inflectional [a].

This inflectional distinction within the Gothic ɔ-stem nouns follows the rule-governed distributional pattern described in (2.112):

(2.112) In the Gothic ɔ-stem nominal declension, on those lexical stems which end in a consonant, the inflectional ending /ɔ/ is realized phonetically as [a].

That is, in this noun class there is only one inflectional ending with the morphophonemic value /ɔ/—-the nominative singular inflectional ending.
When this inflectional ending occurs with a lexical stem which ends in a consonant, it appears on the surface as [a]. Thus, according to (2.112), patterning with *giba* are such Gothic ō-stem nouns as *bīca* ('request'), *airba* ('earth'), *huaila* ('hour'), *hansa* ('troop'), etc. Correspondingly, Gothic ō-stem nouns such as *bandi* ('prisoner'), *gini* ('female servant'), *waistī* ('garment'), *hōftuli* ('glory'), etc., are all observed to pattern with *nawi*. The phonological process described in (2.112) is a minor one, since in many other lexical paradigms in Gothic a /o/ inflectional ending appears after a consonant unaltered at the surface. The process which epenthesizes an inflectional /a/ onto the nominative singular forms of the Gothic ō-stem nouns containing a stem-final consonant receives, therefore, the formulation appearing in (2.113):

(2.113) /a/-Insertion:

\[
/\emptyset/ \rightarrow /a/ / [+ \text{cons}] + \# \{\text{ō-stem noun}\}
\]

Derivations illustrating the operation of /a/-Insertion (2.113) are given in (2.114):

(2.114) a. /gib + o/  b. /nawj + o/

--- a   --- i

\[\text{giba} \quad \text{nawi}\]

--- a   --- i

\[\text{hansa} \quad \text{bandi}\]
2.2.6.5. /j/-Weakening

The final minor phonological process of Wulfilian Gothic to be dealt with is /j/-Weakening, a process which applies only in certain strong adjective forms. To see one of the effects which this process has on the strong adjectives in Gothic, consider the strong adjectival paradigm of the Gothic i-stem adjective hrains ('clean'), given in (2.115):

(2.115) i. Masculine:

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>hrains</td>
<td>hraínjā</td>
</tr>
<tr>
<td>Gen.</td>
<td>hraínis</td>
<td>hraínjāizē</td>
</tr>
<tr>
<td>Dat.</td>
<td>hraínjama</td>
<td>hraínjāim</td>
</tr>
<tr>
<td>Acc.</td>
<td>hraínjana</td>
<td>hraínjans</td>
</tr>
</tbody>
</table>

ii. Neuter:

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>hraín</td>
<td>hraínja</td>
</tr>
<tr>
<td>Gen.</td>
<td>hraínis</td>
<td>hraínjāizē</td>
</tr>
<tr>
<td>Dat.</td>
<td>hraínjama</td>
<td>hraínjāim</td>
</tr>
<tr>
<td>Acc.</td>
<td>hraín</td>
<td>hraínja</td>
</tr>
</tbody>
</table>

iii. Feminine:

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>hrains</td>
<td>hraínjōs</td>
</tr>
<tr>
<td>Gen.</td>
<td>hraínjāizōs</td>
<td>hraínjāizō</td>
</tr>
<tr>
<td>Dat.</td>
<td>hraínjāi</td>
<td>hraínjāim</td>
</tr>
<tr>
<td>Acc.</td>
<td>hraínja</td>
<td>hraínjōs</td>
</tr>
</tbody>
</table>

The [j]'s which appear in a number of the forms in (2.115) are aspects of the lexical stem of the adjective hrains. This can be seen by comparing the forms in (2.115) with those of the strong declension of the adjective blīnds ('blind'), which appear in (2.116):
(2.116) i. Masculine:

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>blinda</td>
<td>blindai</td>
</tr>
<tr>
<td>Gen.</td>
<td>blindis</td>
<td>blindizē</td>
</tr>
<tr>
<td>Dat.</td>
<td>blindama</td>
<td>blindām</td>
</tr>
<tr>
<td>Acc.</td>
<td>blindana</td>
<td>blindana</td>
</tr>
</tbody>
</table>

ii. Neuter:

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>blind</td>
<td>blind</td>
</tr>
<tr>
<td>Gen.</td>
<td>blindis</td>
<td>blindizē</td>
</tr>
<tr>
<td>Dat.</td>
<td>blindama</td>
<td>blindām</td>
</tr>
<tr>
<td>Acc.</td>
<td>blind</td>
<td>blind</td>
</tr>
</tbody>
</table>

iii. Feminine:

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>blindōs</td>
<td>blindōs</td>
</tr>
<tr>
<td>Gen.</td>
<td>blindaiōs</td>
<td>blindaiō</td>
</tr>
<tr>
<td>Dat.</td>
<td>blindai</td>
<td>blindai</td>
</tr>
<tr>
<td>Acc.</td>
<td>blindaiō</td>
<td>blindaiō</td>
</tr>
</tbody>
</table>

As the forms of the adjective *blinda* appearing in (2.116) illustrate, none of the strong adjective inflectional endings in Gothic begins with a /j/. Consequently, the [j]'s observed in the strong declension of the adjective *hraĩns* in (2.115) must be taken as part of the lexical stem of this adjective.

The declensional forms of the adjective *hraĩns* in (2.115) reveal, however, that the stem-final /j/ which characterizes the morphophonemic string underlying each of these forms (i.e. each embodies the morphophonemic construction /hraĩn + ending/) is not always found in the surface form. Specifically, this stem-final /j/ deletes in three environments: (1) before an inflectional consonant (i.e. the consonant /s/, as in the
masculine and feminine nominative singular form hrāınıs); (2) before a [+ high] inflectional vowel (i.e. the vowel /i/, as in the masculine and neuter genitive singular form hrāınıs); and, (3) word-finally (as in the neuter nominative and accusative singular form hrāin). Such deletion of a stem-final /j/ is a characteristic of certain strong adjective forms only; it is not a general phonological characteristic of Wulfilian Gothic. Thus, the process responsible for the deletion of /j/ in certain strong adjectival forms must be viewed as a minor phonological process.

A second declensional paradigm in which the stem-final deletion of /j/ is observed in Gothic is the strong declension of the u-stem adjectives. Such deletion occurs, for example, in the paradigm of the adjective hardus ('hard'), as indicated in (2.117):

(2.117)  i. Masculine:

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom. hardus</td>
<td>hardjāi</td>
</tr>
<tr>
<td>Gen. ***</td>
<td>hardjāizē</td>
</tr>
<tr>
<td>Dat. hardjamma</td>
<td>hardjaim</td>
</tr>
<tr>
<td>Acc. hardjana</td>
<td>hardjans</td>
</tr>
</tbody>
</table>

ii. Neuter:

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom. hardu</td>
<td>hardja</td>
</tr>
<tr>
<td>Gen. ***</td>
<td>hardjāizē</td>
</tr>
<tr>
<td>Dat. hardjamma</td>
<td>hardjaim</td>
</tr>
<tr>
<td>Acc. hardjana</td>
<td>hardja</td>
</tr>
</tbody>
</table>
iii. Feminine:

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>hardus</td>
<td>hardjós</td>
</tr>
<tr>
<td>Gen.</td>
<td>hardjáizós</td>
<td>hardjáizô</td>
</tr>
<tr>
<td>Dat.</td>
<td>hardjái</td>
<td>hardjám</td>
</tr>
<tr>
<td>Acc.</td>
<td>hardjá</td>
<td>hardjós</td>
</tr>
</tbody>
</table>

As the forms in (2.117) illustrate, in the strong declension of the u-stem adjectives in Gothic, a stem-final /j/ deletes before a high vowel (i.e. the vowel /u/). Such deletions are exhibited in the forms hardus (from underlying /hardj + us/) and hardu (from underlying /hardj + u/). No inflectional endings consisting solely of a single consonant or having the form /∅/ occur in the u-stem adjective strong declension, so further parallels between the deletion of /j/ in the i-stem and u-stem strong adjectives cannot be determined. However, in line with the concept of phonological generality discussed in Chapter 1, a single process can be formulated to account for all observed instances in which a stem-final /j/ deletes in a Gothic strong adjective paradigm. The appropriate formulation of this process is given in (2.118):

\[
(2.118) /j/-Weakening:
\]

\[
\begin{align*}
/j/ & \rightarrow \emptyset / \\
\{ [+ \text{cons}] \} & \quad \{ [+ \text{high}] \} \\
\emptyset & \\
\text{strong adjective} & 
\end{align*}
\]

With the rule of /j/-Weakening formulated in (2.118), derivations such as those in (2.119) are obtained:

\[
(2.119) a. /hrēñj + ñ/ \quad b. /hrēñj + ð/ \\
\begin{align*}
\text{hraēns} & \\
\text{hraīn} & 
\end{align*}
\]

\[j-W (2.119)\]
c. /hrēnj + is/  
   hrēnis

d. /harēj + us/  
   hardus

Finally, in connection with the Wulfilian Gothic minor phonological process of /j/-Weakening, consider the strong declension of the third adjectival class in the language whose lexical stems end in the segment /j/—the subset of the a-stem adjectives known as the ja-stems. The strong declension for one such adjective, wilbēis ('wild'), is given in (2.120):

(2.120) i. Masculine:

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom. wilbēis</td>
<td>wilbjaī</td>
</tr>
<tr>
<td>Gen. wilbēis</td>
<td>wilbjaīze</td>
</tr>
<tr>
<td>Dat. wilbjama</td>
<td>wilbjaīm</td>
</tr>
<tr>
<td>Acc. wilbjanα</td>
<td>wilbjaīns</td>
</tr>
</tbody>
</table>

ii. Neuter:

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom. wilbī</td>
<td>wilbja</td>
</tr>
<tr>
<td>Gen. ---</td>
<td>wilbjaīze</td>
</tr>
<tr>
<td>Dat. wilbjama</td>
<td>wilbjaīm</td>
</tr>
<tr>
<td>Acc. wilbī</td>
<td>wilbja</td>
</tr>
</tbody>
</table>

iii. Feminine:

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom. wilbī</td>
<td>wilbjiōs</td>
</tr>
<tr>
<td>Gen. wilbjaizōs</td>
<td>wilbjaizō</td>
</tr>
<tr>
<td>Dat. wilbjaī</td>
<td>wilbjaīm</td>
</tr>
<tr>
<td>Acc. wilbja</td>
<td>wilbjiōs</td>
</tr>
</tbody>
</table>
Crucial in this declensional paradigm are the masculine nominative and genitive singular forms--both wilbeis. Such surface forms arise from the underlying strings appearing in (2.121):

\[(2.121) \ a. \ /\text{wil}0\text{j} + s/ \rightarrow [\text{wil}p\text{i}s] \ (n.\text{s.m.})
\]
\[b. \ /\text{wil}0\text{j} + is/ \rightarrow [\text{wil}p\text{i}s] \ (g.\text{s.m.})
\]

The values /s/ and /is/, respectively, for the inflectional endings in (2.121) can be verified, as seen in the discussion of the process of /i/-Gemination in 2.2.6.3 above, on the basis of such corresponding forms as blindis (n.s.m.) and blindis (g.s.m.). The value /j/ for the stem-final segment in the adjective stem /wil0j/ can be substantiated by examining members of the weak declension of this adjective. In the weak declension of wilbeis, forms such as wilpjin (g.s.m.) and wilpjin (d.s.m.) occur, indicating that, since the [j]'s in these forms cannot be derived from underlying /i/’s by means of any phonological process in the language (e.g. by Glide Formation (2.31), as these [j]'s are not preceded by a stressed short syllable), then they must exist underlyingly as /j/. Thus, given the fact that for each adjective in Vulfrilian Gothic both the strong and the weak adjectival declensions are constructed from the same lexical stem, if the stem-final segment in the weak declension of the adjective wilbeis is /j/, then it must also be /j/ in the strong adjective forms appearing in (2.121).

A value of /j/ for the stem-final segment in the forms in (2.121) is, however, problematic, since in both (2.121)a and b such /j/’s appear phonetically as [i]'s. In neither of these forms, moreover, would such an observed syllabification of /j/ be the result of a general
phonological process in the language. Note, however, that in the strong
decension of the ja-stem adjective willbeis it is in just those inflec-
tional forms in which the stem-final /j/ appears on the surface as [i]
(i.e. before an inflectional consonant, as in /wilθj + s/ (n.s.m.);
before an inflectional [+ high] vowel, as in /wilθj + iːs/ (g.s.m.); and,
word-finally, as in /wilθj + θ/ (n.s.n.)) that, in the strong de-
cension of the adjectives hrains and hardus, the process of /j/-Weaken-
ing (2.118) causes the deletion of a stem-final /j/. That is, as was
seen above, before /s/, /iː/ or /uː/, and /θ/, hrains (as a representa-
tive of the Gothic ð-stem adjectives) and hardus (as a representative
of the Gothic u-stem adjectives) exhibit the deletion of an underlying
stem-final /j/. Such parallelisms between the strong decensions of the
Gothic ja-stem, ð-stem, and u-stem adjectives (the only three adjective
types in the language which, as noted above, are characterized by a stem-
final /j/), in conjunction with the problematic nature of the stem-final
/j/ in certain inflectional forms in the strong decension of the ja-stem
adjectives, indicates that the minor phonological process of /j/-Weaken-
ing, motivated above on the basis of the ð and u-stem adjectives, applies
in the strong decension of the ja-stem adjectives as well. The effect
of this process on the ja-stem adjectives is, however, different than
that observed in both the ð and u-stem adjectives. Thus, while in the
ð-stem and the u-stem strong adjectival decensions the process of /j/-
Weakening causes the deletion of a stem-final /j/ in certain inflectional
forms, in the corresponding inflectional forms of the ja-stem strong ad-
jectival decension /j/-Weakening is responsible for the syllabification
of a stem-final /j/. That is, in those forms in which harðus and

harðus exhibit [i] corresponding to underlying /j/. wilbiís exhibits

[i], as illustrated in (2.122):

(2.122) a. /hrānj + s/ /hardj + us/ /wil⁰j + s/
     ０ ０ ｉ ｊ-W (2.118) ｉ ｉ-G (2.107)
     hrān̥is hardus wilbiís

    b. /hrānj + is/ /hardj + u/ /wil⁰j + is/
     ０ ０ ｉ ｊ-W (2.118)
     hrān̥is hardu wilbiís

    c. /hrānj + ū/ ---- /wil⁰j + ū/
     ０ ｉ ｊ-W (2.118)
     hrān̥in wilbi

To incorporate the above observations into the formulation given
to the process of /j/-Weakening in (2.118), the view will be adopted
here that in Wulfilian Gothic each strong adjective stem ending in the
segment /j/ is marked as to whether it patterns with the ja-stem adjectives
(and thus exhibits syllabification of its stem-final /j/ in cer-
tain environments) or whether, alternatively, it patterns with the i and u-stem adjectives (and thus exhibits deletion of its stem-final
/j/ in certain environments). This approach to the Wulfilian Gothic
minor phonological process of /j/-Weakening leads to the formulation
of this process appearing in (2.123):

(2.123) /j/-Weakening (final version):

/j/ → ([+ syll]) / ___ 
    {[+ cons]} {[+ high]} #
    {strong adjective}

According to the standard notational conventions, then, the formulation
of /j/-Weakening given in (2.123) expands as the two rules appearing in (2.124):

\[(2.124)\ a. \quad /j/ \quad \rightarrow \quad [+ \ syll] \quad \rightarrow \quad \{ [+ \ cons] \quad \rightarrow \quad [+ \ high] \quad \} \quad \} \quad \{ \text{strong adjective} \quad \}

\[b. \quad /j/ \quad \rightarrow \quad 0 \quad \rightarrow \quad \{ [+ \ cons] \quad \rightarrow \quad [+ \ high] \quad \} \quad \} \quad \{ \text{strong adjective} \quad \}

Each of the sub-rules in (2.124) accounts for one of the two types of phonological alternation observed with respect to stem-final /j/’s in the Gothic strong adjetival declensions. With (2.123), then, the present treatment of the Wulfilian Gothic minor phonological process of /j/-Weakening is complete.

2.2.6.6. Ordering the Minor Phonological Rules

The only extrinsic ordering relationship which obtains among the minor phonological rules of Wulfilian Gothic concerns the two rules of /j/-Weakening (2.123) and /i/-Gemination (2.118). As seen in 2.2.6.3, the minor phonological process of /i/-Gemination has the effect of inserting an /i/ between a stem-final /i/ and an inflectional consonant. In 2.2.6.5, then, it was noted that some strong adjective forms which contain an underlying stem-final /j/ concatenated with an inflectional consonant exhibit the effects of /i/-Gemination (as, for example, the form wilbeis (n.s.m.), derived in (2.122)a). Consequently, in those strong adjective paradigms in which the minor phonological process of /j/-Weakening is responsible for turning a stem-final morphophonemic
/j/ into an [i], this syllabification of /j/ must be effected prior to the application of /i/-Gemination. Such an ordering insures the feeding relationship depicted in (2.125):

(2.125) \[ \text{wil}^0 \text{j} + s/ \]
         \[ i \quad i \quad \text{G} \quad \text{W} \]

\[ \text{wilbeis} \]

The opposite ordering between these two rules would lead to the incorrect surface form derived in (2.126):

(2.126) \[ \text{wil}^0 \text{j} + s/ \]
         \[ i \quad \text{I} \quad \text{G} \quad \text{W} \]

\[ \text{wilbis} \]

Finally, one other extrinsic ordering relationship involving a minor phonological rule is found in the Wulfilian Gothic phonological system. In this instance, the minor phonological process of /ʊ/-Deletion (2.94) must precede the (major) phonological process of Vowel Deletion (2.74). Thus, /ʊ/-Deletion represents, in essence, an anomalous process of vowel deletion, anomalous in that the pattern of deletion which it determines characterizes only one morphological class in the language, the class IV weak verbs. To prevent, then, the Gothic phonological process of Vowel Deletion from causing an incorrect pattern of vowel deletion to arise in the class IV weak verbs, the minor phonological process of /ʊ/-Deletion must apply first, thereby bleeding the application of Vowel Deletion to the fourth class of Gothic weak verbs. Derivations illustrating the necessity of maintaining such an extrinsic ordering between /ʊ/-Deletion and Vowel Deletion appear in (2.127):
(2.127) a. /full + nō + an/  

   O  

   ___  

   VD (2.74)  

   O-D (2.94)  

   fullnan  

b. /full + nō + an/  

   O  

   ___  

   VD (2.74)  

   O-D (2.94)  

   *fullnōn

This extrinsic ordering relationship between the minor phonological rule of /ō/-Deletion (2.94) and the (major) phonological rule of Vowel Deletion (2.74) in Gothic is, in fact, indicative of the general relationship holding between minor and major phonological rules in linguistic systems. That is, minor phonological rules, on the basis of their reliance on a morphological conditioning environment, tend to apply before all of the (major) phonological rules. They share this tendency with the other linguistic rule type which relies on a morphological conditioning environment—the morphological rules. This characteristic of minor phonological rules is examined in detail in Chapter 4.
Footnotes to Chapter 2

1 In the present work the symbol "⁺" is used before a form to indicate that the form is hypothetical (i.e. "reconstructed"). The symbol "⁻", often used for this purpose, is restricted in the present work to indicating that a form is incorrect.

2 Specifically, Vennemann wishes to interpret the orthographic sequence ḷu as phonetically [ɯ] in order to maintain a parallelism between ḷu (with which ḷu is observed to alternate, see 2.2.2.2) and iy. (Note: ḷ in Vennemann's transcription is equivalent to j in the notation used throughout the present work.) This viewpoint is made clear in the summary of his "rules for glides" in Gothic, in which he proposes that the Gothic phonological rule which monophthongizes the diphthongs /ay/ and /aw/ "be slightly changed so as to cover the monophthongization of /iy/ to [ɪ] and the probable, although not firmly established, monophthongization of /iu/ to [ɯ]" (p. 115). However, all instances in which the diphthong /iy/ must, in Vennemann's phonological account of Gothic, be "monophthongized" arise through interpretation by the morphophonemic rules, in conjunction with the following interpretive rule:

\[
\text{We introduce a language-specific interpretive rule into the grammar of Gothic:}
\]

/ɪ/ is analyzed as /iy/ by morphophonemic processes.

(Vennemann, 1971: 113)

Thus, such /iy/ sequences are, phonologically, /ɪ/, and need not be monophthongized by a phonological rule. There is, consequently, no reason to expect a "parallel" rule which monophthongizes /iu/ to exist. Rather, the facts indicate (and it has traditionally been assumed) that the ḷu sequences which are observed in Gothic to alternate with ḷu represent nothing more than what their orthographic form indicates—phonetic [iu] sequences.

3 The rule of Syllabification formulated in (2.11) accounts for the effects of this process on the segment /j/. The effects of Syllabification on /w/ are treated in 2.2.2.2, where the alternations between [w] and [u] which are observed in Gothic are dealt with.

4 The interaction of the Interpretive Principle for Segment Length (2.16) and the Gothic rule of Stress Assignment (2.7) is taken up in 2.2.3, where the distinct phonological behavior of stressed long vowels
with respect to the Interpretive Principle (2.16) is discussed. At this point it can be assumed that both morae of a long vowel which occurs as the first vowel in a lexical stem receive lexical stress, as indicated in the derivations in (2.23)b and c below.

5 Recall that in Chapter 1 that aspect of the Wulfilian Gothic process of Glide Formation which is traditionally referred to as Sievers' Law was formulated, in connection with the concept of substantive generality of rule formulation in phonology, as in (i):

(i) Sievers' Law in Gothic:

\[ [+ \text{ high}] \rightarrow [- \text{ syll}] / C [+ \text{ stress}][+ \text{ segment}] [+ \text{ syll}] \]

In this formulation, no specification [- back] for the segment undergoing the rule is included, since no [+ high, + back] segment occurs in Gothic in a position in which it would undergo this process. Similarly, then, a fully general formulation of the process of Glide Formation would not contain the specification [- back] for the segment being operated on, since likewise no [+ high, + back] segment occurs in an environment in which it would be subject to this process.

6 The notation \([- \text{ syll}] X)# appearing in this rule is adopted from work conducted by M. Halle and J.-R. Vergnaud on certain formal aspects of phonological notation. It abbreviates the two conjunctively ordered environments defined in (i):

(i) a. \([- \text{ syll}]\)

b. #

7 In fact, in the present account of Gothic phonology, no morphophonemic /j/'s occur pre-consonantally in the language. In other accounts, however, such as that of Voyles (1968) and that of Vennemann (1971), /j/'s do occur in this position, but become [i]'s by the operation of the phonological rules.

8 Except, of course, those phonetic long vowels which arise from the concatenation of identical short vowels which are members of distinct morphemes, such as, for example, the [ī] in the form nāmēs, as illustrated in (i):

(i) /namm + i + is/ → [nammīs]
9 For a discussion of the transformational format used in the formulation of this rule, see Anderson (1974: 77-78). Note that the specification [+ back] for the initial segment undergoing this rule is needed due to the fact that a /ew/ sequence occurring before a [- syll] segment (as in hmalus ('lowly')) does not undergo Monophtongization.

10 Indeed, that this is so can be seen by noting the verb - noun pair tājian - tāui, considered in detail above. Thus, these lexical items are clearly historically related, but they are derived in the synchronic grammar of Huelifian Gothic from the non-identical stems /taw-/ and /tōj-/, respectively.

11 For a discussion of these and other factors related to the productivity of derivational (i.e. "word-formation") processes, see Aronoff (1978).

12 The evidence that Germanic Ablaut was no longer a productive process by the time of Proto-Germanic is quite strong. This evidence derives from the well-known and well-documented phenomenon known as Verner's Law. The line of argument which calls into question the productivity of the process of Ablaut in late Proto-Germanic proceeds as follows.

In early Proto-Germanic, when it can be assumed that Ablaut was still a fully productive process of tense and number marking for Germanic verbs, the interaction of two well-studied phonological phenomena--those phenomena subsumed under the headings Grimm's and Verner's laws, respectively--seems to have been as follows: The Indo-European voiceless stops p, t, and k had become, in early Proto-Germanic, the respective voiceless fricatives f, θ, and x, by Grimm's Law. This set of voiceless fricatives, joined by the other Proto-Germanic voiceless fricative s, then became subject to a process of voicing known as Verner's law, whose operation relied crucially on the position of lexical stress. This process can be formulated as in (i):

(i) Verner's Law.

\[ [+ \text{cont}] \rightarrow [+ \text{voice}] / [- \text{stress}] \]

As a result of these developments, inflectionally-related Ablaut pairs such as those in (ii) are posited for early Proto-Germanic:

(ii) Infinitive: Past Plural: Gloss:

\[ +\text{snīgan} \rightarrow +\text{snīdúm} \]
\[ +\text{tēuxan} \rightarrow +\text{tyúm} \]
\[ +\text{wēsan} \rightarrow +\text{wēzúm} \]

'cut'

'pull'

'be'
As the above description indicates, the respective voiceless - voiced fricative alternations holding between the infinitival and the past plural forms in (ii) are fully predictable on the basis of the location in each form of lexical stress.

However, in late Proto-Germanic, the movable stress which characterized both Indo-European and early Proto-Germanic was eliminated in favor of fixed root stress. Thus, if at the time that this change in the position of lexical stress occurred the relationship between the respective pairs of Ablaut forms in (ii) was still one of full productivity (i.e. if the members of each pair were still being derived synchronically from identical lexical stems), then the voiced fricatives in the past plural forms in (ii), having lost the conditioning environment for their becoming voiced, should appear in the extant Germanic languages as voiceless fricatives. This is not, however, the form in which such fricatives are found. Thus, while in a number of cases the alternations introduced by Verner's Law have been 'levelled' in the extant Germanic languages, a large number of Ablaut-related forms exhibiting such alternations are observed. For example, the Old English cognates of the verbal forms appearing in (ii) are those given in (iii):

(iii) Infinitive: Past Plural: Gloss:

\[
\begin{array}{ccc}
\text{sniban} & \text{snidon} & \text{'cut'} \\
\text{teon} & \text{tugon} & \text{'pull'} \\
\text{wesan} & \text{wæron} & \text{'be'}
\end{array}
\]

In the pair sniban - snidon (cf. Modern German schneiden - schnitten), the development of \( t \) to \( d \) is common Germanic, and the distinction in the stem-final consonant of this verbal stem due to Verner's Law is preserved. The pair teon - tugon (cf. Modern German ziehen - zogen), in which the /h/ in the underlying infinitival form /tʰən + an/ deletes by the Old English process of intersonant /h/-Deletion (see Chapter 3), likewise preserves the effects of the Proto-Germanic process of Verner's Law. Finally, the pair wesan - wæron (cf. Modern English was - were), which illustrates the West Germanic development of \( tz \) to \( r \), also shows the effects of the process of Verner's Law.

In short, such extant forms, by exhibiting the effects of Verner's Law, a process which lost its conditioning environment in late Proto-Germanic, indicate that the process of Germanic Ablaut had already, by the time of late Proto-Germanic, ceased to be a productive process of tense and number marking in the Germanic languages. By extension, then, if Ablaut was no longer a productive process in late Proto-Germanic, it could not have been a productive process in Wulfilian Gothic. Consequently, the Ablaut-related pair sniawan - snáu, which served as the point of departure in this discussion, cannot be taken to provide evidence for the operation of Monophthongization in word-final position in the synchronic phonology of Wulfilian Gothic.
This process consists of reduplicating the stem-initial consonant (if one occurs), or the stem-initial consonant sequence (if this sequence begins with /s/), and concatenating this reduplicated material with the vowel /ɛ/, as illustrated by the pairs in (i):

(i) a. fraīsan ('to try') - faifrāīs ('I tried')
    b. āukan ('to augment') - aiāuk ('I augmented')
    c. skaidan ('to depart') - skaiskaīp ('I departed')

The phonological process of Spirantization is treated in 2.2.4.2 below.

The minor phonological process of /a/-Insertion is discussed in 2.2.6.4 below.

The morphophonemic value of each of the stem-final segments in (2.82) can be verified by noting the forms in (i)a - d below, related paradigmatically to the respective forms derived in (2.82)a - d:

(i) a. hlāībis (= [hlāībis]; 'bread': g.s.)
    b. stādis (= [stādis]; 'place': g.s.)
    c. dagis (= [dagis]; 'day': g.s.)
    d. diuzis (= [diuzis]; 'animal': g.s.)

The failure of this process to apply to the fourth class of weak verbs in Gothic involves the semantic properties (specifically, the inchoative semantic nature) of the members of this verb class.

That is, both the masculine a-stem nouns and the masculine strong adjectives utilize the same set of Inflectional endings in all cases except those members of the adjectival declension in which the nominal inflectional ending has been supplanted by a pronominal form.
CHAPTER 3

THE PHONOLOGY OF OLD ENGLISH

3.1. Old English

The term "Old English" designates that Germanic language which was spoken in Great Britain from the time of the arrival there of Germanic-speaking peoples (during the fifth century A.D.) until approximately the year 1100 A.D. The oldest extant records of this language date from around the year 700 A.D.

While such a definition of Old English as that given above is satisfactory for general purposes, when dealing with Old English as a linguistic entity two restrictions must be placed on the above conception of the language. First, the time-span covered in the above definition is of such length that between the earliest and the latest period of the language known as "Old English" considerable linguistic differences are to be found. Second, even if one isolates the language at a particular point in time, a number of distinctions characterize the manuscripts of different geographical dialects of Old English. Thus, in order to insure that it is a unitary linguistic system being studied, any linguistic description of Old English must focus on the language of a particular dialect at a particular point in time.

3.1.1. The Old English Dialects

In the Old English documents, four distinct geographical dialects can be discerned: Mercian, Northumbrian, West-Saxon, and Kentish. The present study of Old English phonology is concerned with the Mercian
dialect, that dialect which, in the words of Kuhn (1965), "seems to be the nearest thing we have to a direct ancestor of Modern English." Extant manuscripts of this Old English dialect are fairly numerous, and include the following: the interlinear glosses on the Vespasian-Psalter and Hymns, the Rushworth Gospels, and the Blickling Psalter; the Corpus Glossary; the Epinal Glossary; the Erfurt Glossary; the Lorica Glosses and the Lorica Prayer; the Royal Glosses; and a number of Old English charters. These Mercian manuscripts span, moreover, the greater part of the Old English period, the Erfurt Glossary, for example, being of eighth century origin, while the Royal Glosses date from around the year 1000 A.D.

In the present phonological treatment of the Mercian dialect of Old English, only one of the above sources—the interlinear glosses of the early ninth century manuscript known as the Vespasian-Psalter (VP)—will be adopted as the data-base for the phonological description to be developed. The motivation behind this choice is twofold. First, VP provides a rich but uniform corpus of the Mercian dialect of Old English. Thus, again in the words of Kuhn (1965):

The English gloss, or interlinear translation, of the Psalter and hymns is the most extensive (and probably the purest) text in the Mercian dialect that has survived to modern times.

(Kuhn, 1965: v)

Basing a phonological description upon the language of this manuscript assures, therefore, both that it is a unitary linguistic system which is being described and that a rich enough source of data is being employed to supply sufficient detail to the description. Second, and
equally as important, a number of phonological analyses of Old English which have recently appeared in the literature (e.g. that of Keyser (1975) and that of Kiparsky and O'Neil (1976)) utilize VP as their data-base. If the present analysis of Old English phonology is to make a significant contribution to this on-going discussion, then it too must be based upon the Old English language as recorded in this manuscript.

3.1.2. The Pronunciation of Old English

The orthography of VP contains the monographic and digraphic vowel symbols appearing in (3.1):

(3.1) a. Monographs: a, o, u, e, i, y
    b. Digraphs: ae, oe, ea, eo, io

Each of the symbols in (3.1) can represent either a long or a short segment. However, while such distinctions in segment length are indicated graphically in some Old English manuscripts by doubling the orthographic symbol, and in others by placing a diacritic to mark shortness on non-long vowels (see Campbell, 1959), in VP such length distinctions were not noted orthographically by the scribes. In line with most treatments of Old English phonology, however, in the present treatment of the phonology of VP, length distinctions involving the orthographic symbols appearing in (3.1) will be indicated in the conventional manner—by placing a macron over an orthographic symbol which represents a long segment.

The respective phonetic values of the orthographic symbols in (3.1) have been subjects of considerable controversy in recent years.¹ This
controversy, the details of which are beyond the scope of the present work, involves essentially a disagreement concerning monophthongal versus diphthongal phonetic values for the digraphs ea, eo, and io appearing in (3.1). Crucial in connection with the present treatment of Old English phonology, however, is only the fact that a distinction between long and short values for each of the symbols in (3.1) is an indisputable characteristic of VP.

For purposes of presentation, then, the interpretation of Hockett (1959) (who deals specifically with the phonetic values of the vowel symbols appearing in VP) for the symbols given in (3.1) will be adopted. This interpretation is depicted in (3.2):

(3.2) a. Front vowels:

(i) $\overset{i}{i} = [i]$
(ii) $\overset{e}{e} = [e]^2$
(iii) $\overset{ae}{ae} = [e]$
(iv) $\overset{y}{y} = [y]$
(v) $\overset{oe}{oe} = [\phi]$

b. Back vowels:

(i) $\overset{io}{io} = [i]$ 
(ii) $\overset{eo}{eo} = [e]$ 
(iii) $\overset{ea}{ea} = [a]$ 
(iv) $\overset{u}{u} = [u]$ 
(v) $\overset{o}{o} = [o]$ 
(vi) $\overset{a}{a} = [\alpha]$

Thus, as indicated in (3.2), in the interpretation of Hockett (1959) (and, in turn, in the present work), the Old English monographic and digraphic vowel symbols are taken, in VP, to, in all cases, render phonetic monophthongs.
The consonant symbols occurring in VP have the same phonetic values as the corresponding consonant symbols in Modern English in all cases except the following. The symbols $\tilde{f}$, $\tilde{d}$, and $\tilde{s}$ represent the voiced fricatives $[v]$, $[\theta]$, and $[z]$, respectively, when occurring between voiced segments, and the voiceless fricatives $[f]$, $[\theta]$, and $[s]$, respectively, when occurring "elsewhere." The orthographic symbol $h$ represents the glottal spirant $[h]$ in word-initial position, and the velar fricative $[x]$ in all other positions. The symbol $c$ is used to represent both phonetic $[k]$ and phonetic $[\chi]$, its particular value in each instance being determinable on historical grounds only. In addition, in the orthographic sequence $sc$, the symbol $c$, in conjunction with the $s$, corresponds to a phonetic $[\$]$. Finally, the orthographic symbol $g$ is used to render both the obstruent $[g]$ and the glide $[j]$, its particular value in each instance being, like that of $c$, determinable on the basis of historical considerations only. Thus, the phonetic values of the orthographic symbols occurring in VP can be summarized as in TABLE V:
<table>
<thead>
<tr>
<th>Example</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>p = [p]</td>
<td>open ('open')</td>
</tr>
<tr>
<td>f = [f]</td>
<td>fot ('foot')</td>
</tr>
<tr>
<td></td>
<td>geof ('thief')</td>
</tr>
<tr>
<td>[v]</td>
<td>stefn ('voice')</td>
</tr>
<tr>
<td>b = [b]</td>
<td>boga ('bow')</td>
</tr>
<tr>
<td>m = [m]</td>
<td>fruma ('origin')</td>
</tr>
<tr>
<td>t = [t]</td>
<td>wite ('punishment')</td>
</tr>
<tr>
<td>d = [θ]</td>
<td>dorn ('thorn')</td>
</tr>
<tr>
<td></td>
<td>töd ('tooth')</td>
</tr>
<tr>
<td>[d]</td>
<td>brodur ('brother')</td>
</tr>
<tr>
<td>d = [d]</td>
<td>lædan ('to lead')</td>
</tr>
<tr>
<td>n = [n]</td>
<td>mōna ('moon')</td>
</tr>
<tr>
<td></td>
<td>singan ('to sing')</td>
</tr>
<tr>
<td>s = [s]</td>
<td>slep ('sleep')</td>
</tr>
<tr>
<td></td>
<td>gast ('spirit')</td>
</tr>
<tr>
<td>[z]</td>
<td>ārison ('to arise')</td>
</tr>
<tr>
<td>c = [k]</td>
<td>speocan ('to speak')</td>
</tr>
<tr>
<td>[c]</td>
<td>mēce ('sword')</td>
</tr>
<tr>
<td>x = [ks]</td>
<td>oxa ('ox')</td>
</tr>
<tr>
<td>g = [g]</td>
<td>tunge ('tongue')</td>
</tr>
<tr>
<td></td>
<td>hēgan ('to praise')</td>
</tr>
<tr>
<td>sc = [ɔ]</td>
<td>scip ('ship')</td>
</tr>
<tr>
<td>h = [h]</td>
<td>hūs ('house')</td>
</tr>
<tr>
<td>[x]</td>
<td>pliht ('danger')</td>
</tr>
<tr>
<td>l = [l]</td>
<td>hālig ('holy')</td>
</tr>
<tr>
<td>r = [r]</td>
<td>hors ('horse')</td>
</tr>
<tr>
<td>w = [w]</td>
<td>sāwul ('soul')</td>
</tr>
<tr>
<td>i = [i]</td>
<td>fisc ('fish')</td>
</tr>
<tr>
<td>[i]</td>
<td>tid ('time')</td>
</tr>
<tr>
<td>u = [u]</td>
<td>hund ('dog')</td>
</tr>
<tr>
<td>ū = [ū]</td>
<td>lūtian ('to hide')</td>
</tr>
<tr>
<td>e = [e]</td>
<td>deg ('day')</td>
</tr>
<tr>
<td>ē = [ē]</td>
<td>dēd ('deed')</td>
</tr>
<tr>
<td>o = [o]</td>
<td>god ('God')</td>
</tr>
<tr>
<td>ō = [ō]</td>
<td>god ('good')</td>
</tr>
<tr>
<td>ae = [ɛ]</td>
<td>aeldu ('old age')</td>
</tr>
<tr>
<td>āe = [ɛ̃]</td>
<td>hāelu ('health')</td>
</tr>
<tr>
<td>a = [ɔ]</td>
<td>salm ('Psalms')</td>
</tr>
<tr>
<td>ā = [ɔ̃]</td>
<td>sar ('pain')</td>
</tr>
<tr>
<td>y = [y]</td>
<td>cyn ('race')</td>
</tr>
<tr>
<td>ū = [ɨ]</td>
<td>syl ('pillar')</td>
</tr>
<tr>
<td>oe = [o]</td>
<td>dochter ('daughter': d.s.)</td>
</tr>
<tr>
<td>oē = [ɔ̃]</td>
<td>doēma ('judge')</td>
</tr>
<tr>
<td>ea = [a]</td>
<td>heard ('hard')</td>
</tr>
<tr>
<td>eā = [œ̃]</td>
<td>gleāw ('skillful')</td>
</tr>
<tr>
<td>eo = [ə]</td>
<td>heorte ('heart')</td>
</tr>
<tr>
<td>eō = [œ̃]</td>
<td>cneōw ('knee')</td>
</tr>
<tr>
<td>io = [i]</td>
<td>niomun ('to take')</td>
</tr>
<tr>
<td>io = [ɪ]</td>
<td>niowe ('new')</td>
</tr>
</tbody>
</table>
3.1.3. The Distinctive Feature Specifications of the Old English Segments

The distinctive feature specifications for each of the Old English segments occurring in VP are given in TABLE VI (p. 127). As noted with the distinctive feature specifications of the Gothic segments given in Chapter 2, a number of such specifications are, in any given segmental system, redundant. Such redundancy is not, however, at issue in the present treatment of the phonology of Old English, and thus will not be dealt with here. The distinctive feature specifications appearing in TABLE VI, then, in conjunction with the specifications for the distinctive feature [long] (see below), define the segments upon which the phonological rules of the Mercian dialect of Old English, as recorded in VP, operate.

3.1.3.1. The Distinctive Feature [long]

In addition to the distinctive features listed in TABLE VI, the feature [long] also functions crucially in the phonology of Old English. As noted in 3.1.2, each of the vowels occurring in VP can occur with either a [+ long] or a [- long] specification. With respect to the consonantal segments occurring in VP, while a [+ long] dichotomy for such segments is not crucial for the phonology of VP, each of the consonants occurs with a [- long] value, and, for the consonants ɬ, r, ɬ, m, p, t, d, c, and s, forms occur, as illustrated in (3.3), which indicate the possible existence of consonants with [+ long] specifications: 4
TABLE VI: The Distinctive Feature Specifications of the Old English Segments

| Feature          | p | t | k | b | d | g | f | v | θ | s | z | x | s | c | m | n | η | l | r | j | i | w | i | y | i | u | e | θ | ο | ε | α |
| syllabic         |   |   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | + | + | + | + | + | + | + | + | + | + |
| consonantal      |   |   |   |   |   |   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| high             |   |   |   |   |   |   |   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | + | + | + |
| back             |   |   |   |   |   |   |   |   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| low              |   |   |   |   |   |   |   |   |   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| anterior         |   |   |   |   |   |   |   |   |   |   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| coronal          |   |   |   |   |   |   |   |   |   |   |   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| round            |   |   |   |   |   |   |   |   |   |   |   |   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| voice            |   |   |   |   |   |   |   |   |   |   |   |   |   | - | - | - | - | - | - | - | - | - | + | + | + | + | + | + | + | + | + | + |
| continuant       |   |   |   |   |   |   |   |   |   |   |   |   |   |   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| nasal            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| strident         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| sonorant         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| delayed release  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

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(3.3) a. galla ('bitterness', 'gall')
    b. aferrorian ('to separate', 'to depart')
    c. rinnelle ('stream')
    d. unwenne ('spotless')
    e. sceppand ('Creator')
    f. eætte ('that')
    g. sceædan ('to injure')
    h. reccere ('ruler')
    i. blissian ('to rejoice')

3.2. The Phonological System

3.2.1. Stress Assignment

The pattern of lexical stress which characterizes Old English is the same as that which was seen in Chapter 2 to characterize Wulfilian Gothic, a stress pattern which each language inherited from Proto-Germanic. Thus, just as in late Proto-Germanic, lexical stress in Old English (and, in particular, in that dialect of Old English found in Vf) occurs on the first vowel in each lexical stem. Such a pattern of stress assignment characterizes all of the lexical classes in the language, as illustrated in (3.4):

(3.4) a. Nouns: ētēn ('animal'); diōful ('devil')
    b. Verbs: ōfrīan ('to offer'); bliccettan ('to flash')
    c. Adjectives: hālig ('holy'); micel ('great')

On the basis of this description of the position of lexical stress in Old English, the process which assigns such stress receives the formulation appearing in (3.5):

(3.5) Stress Assignment:

\[ [+\text{syll}] \rightarrow [+\text{stress}] / [\#_c \quad \_\_\_\_] \text{lexical stem} \]
3.2.2. Vowel Deletion Processes

3.2.2.1. /i/-Absorption

Before dealing directly with the Old English phonological process of /i/-Absorption, some preliminary considerations concerning certain morphological aspects of the Old English language are in order. As seen in the discussion of Wulfilian Gothic in Chapter 2, one characteristic of the Germanic languages is that they contain two morphologically distinct verb types—the so-called "strong" and "weak" verbs. These two verbal categories are defined by two fundamental distinctions, one inflectional and one structural. Inflectionally, the Germanic strong verbs employ a series of stem-vowel alternations (Ablaut) to encode tense, and in some cases number, distinctions. Correspondingly, the weak verbs utilize a set of inflectional endings (specifically, a so-called "dental preterite") to indicate these same distinctions.

The phonologically more significant distinction between the Germanic strong and weak verbs is, however, the structural one. The strong verbs are characterized, as seen in Chapter 2, by a morphological structure in which the inflectional endings are attached directly to each verbal stem. That is, Germanic strong verbs have the schematic morphological structure depicted in (3.6):

(3.6) Germanic strong verb morphological structure:

/stem + inflectional ending/

The weak verbs, by comparison, contain an extra structural unit in their proto-typical forms. That is, in the case of the Germanic weak verbs (and as seen in Wulfilian Gothic in Chapter 2), a "stem-extension"
marker appears between each verbal stem and the inflectional ending with which it is concatenated. Thus, schematically, Germanic weak verbs have the morphological structure given in (3.7):

\[(3.7) \text{ Germanic weak verb morphological structure:} \]

/stem + stem-extension + inflectional ending/

In Proto-Germanic there were four distinct classes which comprised the weak verbs, all four of which occur in their morphologically productive forms in Wulfilian Gothic, as seen in Chapter 2. All four of these weak verb classes did not, however, survive into Old English. First, by the time of Old English, all of the members of the Germanic fourth weak verb class had moved into other (mostly into the second) weak verb classes. In addition, of the original members of the Germanic class III weak verbs, only four retained paradigms distinct from both the first and second weak verb classes. These four verbs—hycgan ('to think'), secgan ('to say'), lifgan ('to live'), and habban ('to have')—exhibit, moreover, considerable irregularity in their attested forms in the Old English manuscripts. In VP, specifically, only the latter three of these verbs occur, and their extant forms exhibit likewise irregular inflectional patterning. Such facts concerning these four Old English verbs, in conjunction with the additional fact that only four such verbs are found in the language, indicate that, by the time of Old English, the third class of Germanic weak verbs had been "de-activated" as a morphologically-productive verb class in the language. This verb class had, that is, been reduced to a small group of verbs (consisting of but four members) marked as morphologically
irregular. That left in Old English, then, just two productive classes of weak verbs (i.e. two classes whose members embody the weak verb morphological structure depicted in (3.7)), the traditional class I and class II weak verbs.

Given such a description of the Old English weak verbs, then, we note that, in both of the productive Old English weak verb classes a phonological process which has the effect of deleting an inflectional /i/ in a position immediately following an unstressed vowel is observed in VP. This process, which given that it is violated nowhere in the language can be taken as holding for the language as a whole, is illustrated in the derivations appearing in (3.8):

(3.8) a. Class I weak verbs:

/sé1 + i + iθ/ /bérn + i + iθ/  
ē  e  e  i-A  T/i/-Lowering  
séled ('he sells')  bérned ('he burns')

b. Class II weak verbs:

/lúf + c + iθ/ /míkl + c + iθ/  
v  0  0  i-A  Voicing

lúfæd ('he loves')  míklæd ('he praises')

The rule which accounts for such deletions receives the formulation given in (3.9):

(3.9) /i/-Absorption:

[+ syll]  [+ syll   
[+ high   - stress] + ___
[ - back ]  ___]  ___] 

0 / ___]  ___]
3.2.2.2. High Vowel Syncope

In Old English, high vowels are observed to undergo a process of deletion in a number of phonological environments. The particular details of the environments in which such deletions are observed vary considerably from dialect to dialect, and, as discussed below with respect to VP, even within a given dialect a significant degree of variation in the deletion patterns of high vowels is often observed. However, such deletions do consistently require that two distinct environmental conditions be met. That is, the phenomenon of Old English High Vowel Syncope requires for its occurrence that the high vowel to be synooped not be preceded by a stressed "short" syllable, and that this vowel occur either pre-vocalically, in an "open" medial syllable, or word-finally.

3.2.2.2.1. Pre-Vocalic Syncope

In VP, the deletion of a high vowel in pre-vocalic position is observed in all three of the major lexical classes, as illustrated in (3.10):

(3.10) a. Nouns:

\[ /\acute{w}íti + u/ \quad /\acute{e}rri + u/ \]
\[ \emptyset \quad \emptyset \]
\[ \acute{w}ítu ('punishment': n.p.) \quad \acute{e}orru ('anger': n.p.) \]

b. Verbs:

\[ /\acute{c}y\acute{e} + i + u/ \quad /sw\acute{e}n\acute{c} + i + u/ \]
\[ \emptyset \quad \emptyset \]
\[ \acute{c}y\acute{e}u ('I declare to') \quad sw\acute{e}n\acute{c}u ('I afflict') \]
As indicated in the derivations in (3.10), the deletions of high vowels in (2.10) adhere to the restriction noted above that such deletions occur only in forms in which the high vowel does not appear immediately after a monosyllabic "short" syllable. Thus, by comparison, in those forms in which a high vowel occurs pre-vocally after a short stem-initial syllable, a process of Glide Formation, rather than Vowel Deletion, takes place, as illustrated in (3.11):

\[
\begin{align*}
\text{(3.11) a. } & /\text{w}ěr + i + \text{on}/ & /\text{kē} + i + \text{en}/ \\
& \text{\textit{wērgan}} ('\text{to do evil}') & \text{\textit{cēgen}} ('\text{we call}': \text{subj.}) \\
& \text{GF} & \text{GF}
\end{align*}
\]

Additionally, if the glide created by the process of Glide Formation follows a non-\text{/r/} consonant, it triggers a process of Gemination, as illustrated in (3.12):

\[
\begin{align*}
\text{(3.12) a. } & /\text{sēl} + i + \text{on}/ & /\text{sēt} + i + \text{on}/ \\
& \text{\textit{sēllan}} ('\text{to sell}') & \text{\textit{sēttan}} ('\text{to set}') \\
& \text{GF} & \text{Gem}
\end{align*}
\]

As the derivations presented above indicate, in determining whether a monosyllabic lexical stem is to be considered a "short" syllable for purposes of the process of Pre-Vocalic Syncope, a long vowel is to be equated with a VC sequence. That is, stems such as \text{/wer-/}, \text{/sel-/}, and \text{/set-/}, all of which are monosyllabic and end in a VC sequence, pattern with respect to Pre-Vocalic Syncope with stems such as \text{/kē-/}, consisting of a monosyllable ending in a long vowel. Correspondingly, monosyllabic stems such as \text{/kýθ-/}, containing a long stem-vowel and a single stem-final consonant, and \text{/swenč-/}, containing a short stem-vowel and a single stem-final consonant, pattern together in undergoing this process.
Recall in this connection that an identical patterning of syllable types was observed in Wulfilian Gothic with respect to the phenomenon of Sievers’ Law, and that such patterning led in Chapter 2 to the adoption of the Interpretive Principle for Vowel Length defined in (3.13):

(3.13) Interpretive Principle for Vowel Length:

Stressed long vowels are analyzed as bisegmental in phonological processes.

Note, now, with respect to the phonological system of Old English, that the incorporation of such a principle into this system would allow a unitary account of both the process of Pre-Vocalic Syncope and the process of Glide Formation to be formulated, since, given such a principle, those strings which undergo each of these respective processes would share identical structural configurations. That is, assuming that \( \dot{V} = \ddot{V} \), lexical stems such as /k\u0165\u017c\u0160-\( \ddot{\text{y}} \) and /sw\u0163\u0160-\( \ddot{\text{n}} \) both contain two segments after the initial stressed vowel, while lexical stems such as /w\u0160r-\( \ddot{\text{e}} \), /s\u0163l-\( \ddot{\text{e}} \), /s\u0163t-\( \ddot{\text{e}} \), and /k\u0160\u0160-\( \ddot{\text{e}} \) all contain exactly one segment in this position. Moreover, restricting the treatment of long vowels as vowel sequences to only those long vowels which bear lexical stress accounts for the fact that the process of Stress Assignment crucially assigns stress to both morae of a long vowel which occurs as the first vowel in a lexical stem. Thus, for example, Stress Assignment (3.5) applies to lexical stems such as /k\u0165\u017c\u0160-\( \ddot{\text{y}} \) and /k\u0107-\( \ddot{\text{e}} \) as illustrated in (3.14):

(3.14) a. /k\u0165\u017c\u0160 + i + \text{on}/

\[ \ddot{\text{y}} \quad \ddot{\text{i}} \quad \ddot{\text{e}} \quad \ddot{\text{n}} \]

b. /k\u0107 + i + \text{on}/

\[ \ddot{\text{e}} \quad \ddot{\text{i}} \quad \ddot{\text{n}} \]

\[ \ddot{\text{y}} \quad \ddot{\text{e}} \quad \ddot{\text{n}} \]

\[ \ddot{\text{y}} \quad \ddot{\text{e}} \quad \ddot{\text{n}} \]

\text{cy\u00e6dan} ('to declare to')

\text{c\u00e6gan} ('to call')
As the derivations in (3.14) show, long vowels are treated by the process of Stress Assignment as unitary entities, a treatment which, since prior to the operation of Stress Assignment all vowels are unstressed, accords with the Interpretive Principle for Vowel Length defined in (3.13).

On the basis of such considerations, then, the principle formulated in (3.13) will be incorporated into the present account of Old English phonology. Given this principle as an aspect of the Old English phonological system, the process of Pre-Vocalic Syncope can be described as in (3.15):

(3.15) A high vowel in pre-vocalic position deletes if it:

(i) occurs post consonantally, and
(ii) is separated from the nearest lexically-stressed vowel by at least one segment (be it a vowel or a consonant) in addition to the consonant which it follows.

The phonological process so-described receives the formulation appearing in (3.16):

(3.16) Pre-Vocalic Syncope:

\[ \ [+\text{syll}] \rightarrow \emptyset / [+\text{stress}][+\text{segment}]_1 C \rightarrow V \]

If, now, the process of Pre-Vocalic Syncope formulated in (3.16) is taken to apply to Old English morphophonemic strings prior to the application of the process of Glide Formation to such strings, then the Old English process of Glide Formation can be viewed as operating in the manner described in (3.17):

(3.17) An unstressed high vowel in pre-vocalic position becomes a glide (i.e. becomes [-syll]).
The description given in (3.17) leads, in turn, to the formulation of the Old English process of Glide Formation appearing in (3.18):

(3.18) Glide Formation:

\[
\begin{array}{c}
  \text{[+ high]} \\
  \text{[- stress]}
\end{array} \rightarrow \begin{array}{c}
  \text{[- syll]} \\
  \text{V}
\end{array}
\]

Finally, the process of Gemination which, as noted above, applies in certain cases to the glide /j/ created by Glide Formation, can be formulated as in (3.19):

(3.19) Gemination:

\[
C \quad /j/ \quad \rightarrow \quad 1 \quad 1 \quad \text{Condition: } C \neq /r/\]

With the phonological rules of Pre-Vocalic Syncope (3.16), Glide Formation (3.18), and Gemination (3.19), derivations such as those in (3.20) are obtained:

(3.20) a. /witi + u/ 
   \[\text{PVS (3.16)} \]
   Voicing
   \[\text{GF (3.18)} \]
   b. /fremgi + on/
   \[\text{GF (3.18)} \]
   Gem (3.19)
   \[\text{c. } /\text{wr} + i + on/ \quad \text{d. } /\text{ke} + i + on/ \]
   \[\text{wergan} \quad \text{cegan} \]
   \[\text{e. } /\text{sel} + i + on/ \quad \text{f. } /\text{set} + i + on/ \]
   \[\text{sellan} \quad \text{settan} \]

3.2.2.2.2. Internal Syncope

The second environment noted above in which a high vowel in Old English undergoes deletion is in an "open" medial syllable. A vowel
is said to be in an "open" syllable if it is directly followed by a CV sequence. The deletion of high vowels in such syllables is observed in all three of the major lexical classes in Old English, as illustrated in (3.21):

(3.21) a. Nouns:

\[
\begin{array}{ll}
/\text{hafud} + \text{es/} & /\text{neten} + \text{c/} \\
\emptyset & \emptyset \\
\text{hæfdes} ('\text{head}': \text{g.s.}) & \text{netna} ('\text{animal}': \text{g.p.})
\end{array}
\]

b. Verbs:

\[
\begin{array}{ll}
/\text{rin} + \text{i} + \text{de/} & /\text{bën} + \text{i} + \text{de/} \\
\emptyset & \emptyset \\
\text{rinde} ('\text{it rained}') & \text{bënæ} ('\text{he burned}')
\end{array}
\]

c. Adjectives:

\[
\begin{array}{ll}
/\text{holig} + \text{um} & /\text{éfestig} + \text{on/} \\
\emptyset & \emptyset \\
\text{hælugum} ('\text{holy}': \text{d.p.m.}) & \text{éfestgan} ('\text{envious}': \text{d.s.m.})
\end{array}
\]

That the Old English phonological process of Internal Syncope, just like the process of Pre-Vocalic Syncope considered above, only takes place in those forms in which the high vowel to be syncopated does not occur immediately after a stressed short syllable can be seen by noting the derivations in (3.22):

(3.22) a. /\text{gén} + \text{i} + \text{de/} \\
\emptyset & \emptyset \\
\text{dénede} ('\text{I stretched}')

b. /\text{trı́m} + \text{i} + \text{dun/} \\
\emptyset & \emptyset \\
\text{trı́medun} ('\text{they strengthened}')

Taken together, the derivations appearing in (3.21) and (3.22) motivate a formulation of the Old English rule of Internal Syncope such as that given in (3.23):
(3.23) Internal Syncope:

\[ [+ \text{syll}] \rightarrow \emptyset / [+ \text{stress}][+ \text{segment}]_C \quad \text{CV} \]

As the formulations of the processes of Pre-Vocalic Syncope (3.16) and Internal Syncope (3.23) indicate, these two phenomena appear to be two aspects of a single Old English phonological process. The unitary nature of this process can be formally captured by combining, through the use of the parentheses notation (SPE: 29-30), the rules formulated in (3.16) and (3.23) into a single phonological rule, as in (3.24):

(3.24) Pre-Vocalic Syncope/Internal Syncope:

\[ [+ \text{syll}] \rightarrow \emptyset / [+ \text{stress}][+ \text{segment}]_C \quad \text{C (C) V} \]

According to the conventions for expanding the parentheses notation defined in SPE, the formulation in (3.24) embodies the two (disjunctively ordered) rules of Internal Syncope (3.23) and Pre-Vocalic Syncope (3.16), and thus accounts for all of the Old English high vowel syncope phenomena so far considered.

3.2.2.2.3. Terminal Syncope

The final environment noted at the outset of the discussion of High Vowel Syncope in which high vowels in Old English are observed to delete is in word-final position. Again, just as with the previous two types of high vowel syncope phenomena considered, such deletion affects only those word-final high vowels which do not immediately follow a stressed short syllable. Also as with the processes of Pre-Vocalic and Internal Syncope, Terminal Syncope is evidenced in all three of the
major lexical classes in Old English, as the derivations in (3.25) illustrate:

\[(3.25)\] a. Nouns:

\[
\begin{array}{ll}
\text{/sed} + u/ & /\text{word} + u/ \\
\underline{\text{ sed}} ('seed': a.p.) & \underline{\text{ word}} ('word': a.p.) \\
\text{/\text{"alond} + u/} & /\text{h\text{"ordern} + u/} \\
\underline{\text{"alond}} ('island': n.p.) & \underline{\text{h\text{"ordern}} ('storehouse': n.p.)}
\end{array}
\]

b. Verbs:

\[
\begin{array}{ll}
\text{/\text{"om} + i + \emptyset/} & /\text{b\text{"em} + i + \emptyset/} \\
\underline{\text{"om}} ('judge': imp.) & \underline{\text{b\text{"em}} ('burn': imp.)}
\end{array}
\]

c. Adjectives:

\[
\begin{array}{ll}
\text{/\text{f\text{"ul} + u/} } & /\text{b\text{"erxt} + u/} \\
\underline{\text{f\text{"ul}} ('full': n.s.f.)} & \underline{\text{b\text{"erxt}} ('bright': n.s.f.)}
\end{array}
\]

The pattern of syncope found to characterize Old English high vowels occurring in word-final position involves, however, considerably more complexity than those patterns which characterize pre-vocalic and internal high vowel syncope in the language. Thus, while word-final high vowels in Old English fail to delete if they are immediately preceded by a stressed short syllable, such vowels also fail to delete if they are constituents of the lexical stems in the morphophonemic string in which they occur. In this connection, then, note that in all of the derivations in (3.25), in each of which a word-final high vowel deletes, the vowel which is syncopated is either an inflectional ending or a stem-extension marker. In contrast to these derivations, however, derivations
such as those in (3.26) occur in Old English, in each of which a word-
final high vowel fails to syncopate, in spite of the fact that the
word-final high vowel is, in each case, preceded by a long syllable:

\[(3.26)\]

\[
\begin{array}{ll}
\text{a. } /witi + 0/ \\
\text{b. } /frémgi + 0/ \\
\end{array}
\]

\[
\begin{array}{ll}
\text{TS} \\
\text{/i/-Lowering} \\
\text{Voicing} \\
\end{array}
\]

\[
\begin{array}{ll}
\text{wite (n.s.)} \\
frémde (n.s.m.)
\end{array}
\]

Thus, such a duality of patterning as concerns the deletion of high
vowels in word-final position in Old English can be taken to motivate
a formulation of Terminal Syncope such as that given in (3.27):

\[(3.27)\] Terminal Syncope:

\[
\begin{array}{c}
\text{[+ syll]} \\
\text{[+ high]}
\end{array}
\rightarrow 0 / \text{[+ stress][+ segment]}_1 C + ___ #
\]

According to (3.27), then, in Old English a high vowel is susceptible
to deletion in word-final position, but only if, in addition to not
being preceded by a stressed short syllable, it is morphologically-

independent of the lexical material which precedes it.

A second, and more fundamental complexity involving the Old Eng-
lish phonological process of Terminal Syncope concerns the operation
of this process in trisyllabic forms. In such forms its behavior in
VP appears to be highly variable, as described in (3.28):

\[(3.28)\]

\[
\begin{array}{ll}
\text{a. Some lexical items, such as } yfel ('evil') \text{ and } tācen \text{ ('token'), exhibit consistent deletion of a word-final} \\
\text{high vowel, as illustrated in (i):}
\end{array}
\]

\[
\begin{array}{ll}
\text{(i) } /yfjil + u/ \rightarrow 0 \\
\text{tōkin + u/ } 0 \\
\end{array}
\]

\[
\begin{array}{ll}
\text{TS (3.27)} \\
\text{/i/-Lowering} \\
\text{Voicing}
\end{array}
\]

\[
\begin{array}{ll}
\text{yfel (n. & a.p.: 25x)} \\
tācen (a.p.: 5x)
\end{array}
\]

\[
\begin{array}{ll}
\text{v} \\
\text{e}
\end{array}
\]
b. Some lexical items, such as nēten ('animal'), exhibit consistent retention of a word-final high vowel, as illustrated in (ii):

\[(ii) \, /nēten + u/\]

\[\text{TS}\]

\[-/i/-\text{Lowering}\]

\[\text{netenu} \, (\text{n.p., a.p., v.p.: 5x})\]

c. Some lexical items, such as heafud ('head') and micel ('great') exhibit sometimes deletion, sometimes retention of a word-final high vowel, as illustrated in (iii):

\[(iii) \, /\text{heafud} + u/ \quad /\text{heafud} + u/\]

\[\text{TS}\]

\[\text{Voicing}\]

\[\text{heafud} \, (\text{a.p.: 5x}) \quad \text{heafudu} \, (\text{a.p.: 2x})\]

\[\text{TS}\]

\[-/i/-\text{Lowering}\]

\[\text{mikil} \, (\text{n.s.f., n.p.n., a.p.n.: 4x}) \quad \text{micelu} \, (\text{n.s.f., n.p.n., a.p.n.: 8x})\]

Such variation in the application of the Old English phonological process of Terminal Syncope to trisyllabic forms in VP indicates that, in this dialect of Old English, such lexical forms could be optionally exempted from undergoing this process. Such behavior can be accounted for by incorporating a readjustment rule of the form defined in (3.29) into the phonological description of VP:\textsuperscript{10}

\[(3.29) \, \text{Readjustment rule (optional):}\]

\[C_o V C_o V C_o \, [+ \text{high}] \, \# \quad \rightarrow \quad [- \text{Terminal Syncope}]\]

In connection with this readjustment rule, consider the interaction of the process of Terminal Syncope with the other two types of high vowel syncope already considered--Pre-Vocalic Syncope and Internal
Syncope. As the formulation of Terminal Syncope (3.27) indicates, this process is formally quite similar to the processes of Pre-Vocalic and Internal Syncope, the formulations of which are presented in a combined form in (3.24). Such similarity indicates that the phenomenon of Terminal Syncope is yet another aspect of a general process of High Vowel Syncope in Old English, and that its formulation should be combined with those of the phenomena of Pre-Vocalic and Internal Syncope. Before actually carrying out this formal rule conflation, however, the effect which such rule-combining would have on the rule of exceptionality defined in (3.29) must first be considered. Thus, if Terminal Syncope is in fact just one aspect of a general process of Old English High Vowel Syncope, then the exceptionality defined in (3.29) must define exceptionality with respect to all aspects of this process. This follows from the fact that lexical strings cannot be marked as exceptional with respect to only one part of a phonological rule.

It is important to note, then, that such generality as concerns the exceptionality of trisyllabic forms with respect to a generalized process of High Vowel Syncope is exactly what one finds in the extant forms in VP. Thus, note that (a subset of) those trisyllabic forms which are optionally marked as exceptional with respect to Terminal Syncope (3.27) by Readjustment rule (3.29) are also, when such optional exception-marking is exercised, potential candidates for the process of Internal Syncope. For example, consider once again such forms as nētenu and hēafudu, derived in (3.28)b and c, respectively. The morphophonemic
strings involved in such derivations, which have the respective values /nētin + u/ and /hāfud + u/, are trisyllabic and end in high vowels, and thus are candidates for the Readjustment rule defined in (3.29). If this optional rule is applied to such forms, then the process of Terminal Syncope is blocked from deleting the terminal high vowel which each of these strings contains. Moreover, by virtue of the fact that such high vowels are retained, each of the strings /hāfud + u/ and /nētin + u/ contains a high medial vowel in an environment in which the process of Internal Syncope would cause such a vowel to delete. Such strings, however, fail, without exception, to undergo the process of Internal Syncope. That is, such strings consistently appear on the surface as nētenu and hēafedu, not as *nētnu and *hēafdu, respectively. Such behavior is automatically accounted for by the fact that the environment for the application of Internal Syncope in such strings is met only if the string is marked as exceptional with respect to Terminal Syncope. This, if, as argued above, Terminal Syncope is actually just one aspect of a more general process of Old English High Vowel Syncope, a process which also includes Internal Syncope, then marking a string as exceptional with respect to Terminal Syncope also marks a string as exceptional with respect to Internal Syncope. To summarize, then, Readjustment rule (3.29), which given a unified process of High Vowel Syncope takes on the formulation given in (3.30):

(3.30) Readjustment rule (optional):

\[ C_0 V C_o V C_o \text{ [+ high]} \# \rightarrow [- \text{ High Vowel Syncope}] \]
accounts for the behavior of forms such as *netenu* and *heafudu* with respect to both the Old English process of Terminal Syncope and the Old English process of Internal Syncope.

The only task remaining with respect to Terminal Syncope, then, is to formally combine this process with the other two aspects of Old English High Vowel Syncope discussed above—Pre-Vocalic and Internal Syncope. In effecting this rule combination, two considerations must be made. First, the application of the process of Terminal Syncope must be made to precede the applications of both the processes of Internal and Pre-Vocalic Syncope. The applicational precedence of Terminal Syncope over Internal Syncope is indicated in the above considerations concerning the interaction of each of these two processes with the Readjustment rule defined in (3.30). Thus, if this Readjustment rule is optionally not applied to a string such as */netin + u/*, then this string, which satisfies the structural requirements for both Terminal Syncope and Internal Syncope, is observed to undergo the former, not the latter. Such behavior necessitates that Terminal Syncope apply before Internal Syncope. As for the interaction of Terminal Syncope and Pre-Vocalic Syncope, derivations such as those in (3.31) show that the former must precede the latter:

\[
\begin{align*}
(3.31) \text{a. } & /kyθ + i + u/ & \text{b. } & /wɔsti + u/ \\
& \emptyset & & \emptyset \\
& \underset{d}{\text{cydu}} \text{ ('I declare to')} & & \text{wöstu} \text{ ('waste': n.s.f.)}
\end{align*}
\]

Thus, applying these two rules in the opposite order would produce the incorrect derivations depicted in (3.32):
The second consideration to be made in connection with combining the process of Terminal Syncope with the processes of Internal and Pre-Vocalic Syncope involves the restriction noted above which affects the former of these processes but which does not affect either of the latter two. This restriction concerns the fact that a high vowel in word-final position is susceptible to deletion only if it is morphologically independent of the lexical material which precedes it. This restriction in the operation of Terminal Syncope was incorporated into the formulation of this process given in (3.27) by including a morpheme boundary immediately to the left of the focus of the rule. However, since this restriction does not hold for either the process of Internal Syncope or the process of Pre-Vocalic Syncope, the formulation of a unified process of High Vowel Syncope cannot require the presence of a morpheme boundary for those expansions of the rule defining these latter two processes. Such considerations indicate, then, that this restriction on the deletion of high vowels in Old English must be tied directly to the word-final deletion environment, and, in conjunction with the above considerations concerning the ordering of Terminal Syncope relative to Internal and Pre-Vocalic Syncope, lead to the formulation of the unified process of Old English High Vowel Syncope appearing in (3.33):
(3.33) High Vowel Syncope:

$$\left[ ^+ \, \text{syll} \, + \, \text{high} \right] \rightarrow \emptyset \, / \, [+ \, \text{stress}] [+ \, \text{seg}] \, C \, a^+ \rightleftharpoons \left\{ \begin{array}{c}
\text{a} \\
\text{C} \, V
\end{array} \right\}$$

[Condition: If \( b \), then \( a \)]

The rule of High Vowel Syncope formulated in (3.33), in conjunction with the Readjustment rule defined in (3.30) above, accounts for all of the vowel deletion phenomena conditioned by the processes of Pre-Vocalic, Internal, and Terminal Syncope. Thus, its operation is illustrated in the derivations appearing in (3.10), (3.14), (3.20), (3.21), (3.25), (3.28), and (3.31).

3.2.2.3. Vowel Elision

The final Old English phonological process which effects the deletion of vowels is the process of Vowel Elision. This process is responsible for the elision of an inflectional or a stem-extension vowel in post-tonic position. Thus, the operation of Vowel Elision is observed, for example, in a number of class I weak verb forms, as illustrated in (3.34):

(3.34) a. /kē + i + id/  
\[
\begin{array}{c}
\emptyset \\
\emptyset \\
\text{cēd} ('he calls')
\end{array}
\]

b. /ge # kē + i + ə/  
\[
\begin{array}{c}
\emptyset \\
\emptyset \\
\text{gečē} ('invoke': imp.)
\end{array}
\]

The process of Vowel Elision also occurs in the derivation of certain nominal forms, as shown in (3.35):

(3.35) /lō + ōna/  
\[
\begin{array}{c}
\emptyset \\
\text{leōna} ('lion': g.p.)
\end{array}
\]

\( i \)-A

\( \bar{VE} \)
On the basis of the above description of the operation of the process of Vowel Elision, this Old English phonological process receives the formulation appearing in (3.36):

(3.36) Vowel Elision:

\[ [+\text{syll}] \rightarrow \emptyset / [+\text{stress}] + \]

3.2.3. Other Vocalic Alternations

3.2.3.1. /ɔ/-Raising

The Old English phonological process of /ɔ/-Raising is observed, as noted in Chapter 1 in connection with the discussion there of the generality of rule application in phonology, only in the class II weak verbs in the language. Its existence is motivated by a series of alternations between [ɔ] and [i] in this verbal class. Thus, as indicated in the second person singular imperative and in all of the pret erite forms, the stem-extension vowel for the second class of weak verbs in the Old English dialect recorded in VP is /ɔ/, as illustrated in (3.37):

(3.37) a. /hólst + ɔ + ð/ b. /hræθ + ɔ + ð/ Voicing

\[ \text{háls}a \ ('\text{beg'}: \text{imp.}) \quad \text{hréæda} \ ('\text{hasten'}: \text{imp.}) \]

c. /hót + ɔ + de/ d. /bléðs + ɔ + de/ Voicing

\[ \text{hát}áde \ ('\text{he hated}') \quad \text{bléðs}áde \]

The class II weak verb stem-extension /ɔ/ is also evidenced in the second and third person singular forms of the class II weak verbs, in which this stem-extension triggers the process of /i/-Absorption, as illustrated in (3.38):
(3.38) a. /árə + ɔ + ɨs/ b. /rɪs + ɔ + ɨs/
    z  3  0 i-A  Voicing
    ʃoɾsəs ('you are angry')  rɪsəs ('you rule')
    c. /bliːds + ɔ + iθ/ d. /blɪss + ɔ + iθ/
    z  3  0 i-A  Voicing
    bliːdsəd ('he blesses')  blɪssəd ('he rejoices')

An alternate phonetic value of this stem-extension, the value [i], is observed, however, in all of the class II weak verb forms in which the inflectional ending begins with a non-/i/ vowel. Thus, for example, in the first person singular present, in the present plural, and in the infinitival forms, derivations such as those in (3.39) obtain:

(3.39) a. /ˈɔfr + ɔ + ɯ/ b. /θrɔw + ɔ + ɯ/
    i  3  0 i  3  0 e-R  Voicing
    ʃɔfriu ('I offer')  ʃɔwɪu ('I suffer')
    c. /fɔrkw + ɔ + ɵθ/ d. /ɡɪp + ɔ + ɵθ/
    i  3  0 i  3  0 e-R
    fɔrkɪəd ('they fear')  ɡɪpɪəd ('they felt')
    e. /árd + ɔ + ɔn/ f. /kwɛk + ɔ + ɔn/
    i  3  0 i  3  0 e-R
    ʃɔrdiən ('to dwell')  ʃʊæciən ('to shake')

The derivations in (3.39) suggest, then, that in Old English an unstressed /ɔ/ becomes [i] before an inflectional vowel. However, since such a change is not observed before the inflectional /i/'s of the second and third person singular present endings, the process which effects this change must apply after the process of /i/-Absorption, that process responsible, as illustrated in (3.38), for deleting such inflectional /i/'s. Given this ordering, the rule which causes the class
II weak verb stem-extension /ɔ/ to become [i] in pre-vocalic position appears as (3.40):

\[(3.40) \quad /ɔ/-\text{Raising:} \quad \begin{bmatrix} + \text{syll} \\ + \text{low} \\ - \text{stress} \end{bmatrix} \rightarrow \begin{bmatrix} + \text{high} \\ - \text{back} \\ - \text{round} \end{bmatrix} / \quad + [+ \text{syll}] \]

The operation of this rule is illustrated, then, in the derivations presented in (3.39) above.

3.2.3.2. /i/-\text{Lowering}

The final Old English vocalic alternation to be dealt with is that alternation conditioned by the process of /i/-\text{Lowering}. This process, whose operation has been observed in a number of derivations presented above, is seen most clearly in such class I weak verb forms as those derived in (3.41):

\[(3.41) \quad \begin{array}{ll}
\text{a.} & /\text{hēr} + i + \emptyset/ \\
\text{b.} & /\text{hēr} + i + d/ \\
\end{array} \quad \begin{array}{ll}
\text{e} & \text{e} \\
\text{i-L} & \text{i-L} \\
\text{hērē} ('\text{praise'}: \text{imp.}) & \text{hēred} ('\text{praise'}: \text{past part.}) \\
\end{array} \]

That the underlying value of the segment which undergoes /i/-\text{Lowering} in each of the derivations in (3.41) is /i/ can be seen by noting the derivations in (3.42):

\[(3.42) \quad \begin{array}{ll}
\text{a.} & /\text{hēr} + i + u/ \\
\text{b.} & /\text{hēr} + i + eθ/ \\
\end{array} \quad \begin{array}{ll}
\text{j} & \text{j} \\
\text{GF} (3.18) & \\
\text{hērgu} ('\text{I praise}') & \text{hērgæd} ('\text{they praise}') \\
\end{array} \]

Thus, as indicated in (3.42), a [+ high] value for the class I weak verb stem-extension marker is necessitated by the fact that this segment appears on the surface in a number of forms as the [+ high] glide [j]. Given this [+ high] underlying value for this stem-extension, its
surface appearance as [e] in the forms in (3.41) motivates a rule of /i-/Lowering for Old English.

In determining the formulation to be given to such a process of /i-/Lowering, a number of considerations must be made. First, the /i/ which reduces to [e] in the derivations in (3.41) is crucially non-stressed. As seen in the derivations in (3.43), for example, stressed /i/’s in Old English do not reduce to [e]:

(3.43) a. /lixt + i + on/  
   ---  
   lihtan ('to light')

b. /hriss + i + on/
   ---  
   hrissan ('to shake')

HWS (3.33)

In conjunction with the failure of stressed /i/’s to undergo the process of /i-/Lowering, note the behavior with respect to this process of those derivational prefixes and suffixes containing an /i/ which are found in VP. Since such lexical formatives are not members of a major lexical class, they do not receive stress by the Old English rule of Stress Assignment (3.5). However, such prefixes and suffixes are also observed not to undergo the Old English process of /i-/Lowering, as illustrated by the surface forms listed in (3.44):

(3.44) a. Prefixes:
   /bi-/: bismītan ('to contaminate')
   /in-/: inaelan ('to inflame')
   /mid-/: middeglic ('of midday')
   /mis-/: misfōedan ('to devour')
   /twi-/: twibill ('two-edged axe')
   /wi9-/: widstondan ('to withstand')
   /wi9er-/: widerbroca ('adversary')
b. Suffixes:

/-ig/: hālig ('holy')
/-ing/: lýtling ('child')
/-lic/: federlic ('paternal')
/-nis/: īdelnis ('idleness')
/-incel/: hūsincel ('small house')

The consistent failure of the non-lexically-stressed /i/'s in such prefixes and suffixes is taken in the present work as being indicative of the fact that such lexical material is distinguished in Old English from such non-lexical material as stem-extensions and inflectional endings by bearing a secondary stress.

In fact, the existence of a secondary stress for Old English is necessitated not only for such word-formative elements as those listed in (3.44), but must also be assumed in order to account for the failure of the /i/'s in such non-major lexical categories as adverbs, prepositions, and pronouns to undergo lowering, as illustrated in (3.45):

(3.45) a. Adverbs:

hider ('hither'); hwider ('whither');
innan ('within'); éider ('thither')

b. Prepositions:

binnan ('within'); in ('in');
mid ('among'); wid ('against')

c. Pronouns:

ic ('I'); hit ('it': n.&a.s.); his ('his');
him ('him': d.s.); hine ('him': a.s.);
hire ('her': g.&d.s.)

To account for the behavior of the stem-initial /i/'s in each of the
forms in (3.45) with respect to the process of /i/-Lowering, a secondary lexical stress on each such /i/ will be assumed. Given, in addition, such a stress on the prefixes and suffixes cited in (3.44), the Old English process of /i/-Lowering can be formulated as in (3.46):

\[(3.46) \text{/i/-Lowering:} \]
\[
\begin{array}{c}
+ \text{syll} \\
- \text{back} \\
- \text{stress}
\end{array} \rightarrow [- \text{high}]
\]

The formulation of /i/-Lowering appearing in (3.46) thus differentiates those /i/'s in (3.44) and (3.45) which, by virtue of bearing a secondary stress are not subject to this process, from those /i/'s which occur as either stem-extension markers, as in the derivations in (3.41) above, inflectional endings, as in the derivations in (3.47):

\[(3.47) \]
\[
a. \quad /mër + i/ \quad b. \quad /wëît + i/ \\
\underline{mëre} ('lake': a.s.) \quad \underline{wëite} ('beauty': a.s.)
\]

or as non-stem-initial stem vowels, as in the derivations in (3.48):

\[(3.48) \]
\[
a. \quad /wëiti + \emptyset/ \quad b. \quad /bi\acute{g}i + \emptyset/ \\
\underline{wëite} (n.s.) \quad \underline{bi\acute{g}e} ('joyful': n.s.m.)
\]

all of which undergo the process of /i/-Lowering.

Before concluding the present discussion of /i/-Lowering in Old English, two additional aspects of this phonological process must be considered. The first concerns the behavior of the Old English class II weak verbs with respect to this process. As seen in 3.2.3.1, a number of inflectional forms in this verb class exhibit unstressed [i]'s in their phonetic representations. These [i]'s arise, however, not
from underlying /i/'s, but rather from underlying /ɔ/'s, by means of
the process of /ɔ/-Raising formulated in (3.40) above. Since the [i]'s
created by this process do not undergo /i/-Lowering, the rule of /i/-
Lowering (3.46) must be ordered after the rule of /ɔ/-Raising (3.40) in
the rule ordering. Thus, applying these two rules in this order, cor-
rect derivations of the class II weak verb forms containing phonetic
unstressed [i]'s are obtained, as illustrated in (3.49):

(3.49) a. /syṅg + o + on/ b. /grōrn + o + oθ/

\[ \frac{\text{syṅgian ('to sin')}}{\text{grōrnian ('they murmur')}} \]

The final aspect of the process of /i/-Lowering to be considered
concerns certain characteristics of its formulation. Thus, formally,
as presented in (3.46), the Old English rule of /i/-Lowering is, in the
terminology of Kiparsky (1973), a rule of "absolute neutralization."
That is, it defines a context-free phonological change. It is rules
of this formal type that are central to the "abstractness controversy"
in phonological theory, and, on the basis of such importance, have re-
ceived considerable attention in the literature (see, for example, Kip-

The issue of abstractness in phonological description is taken up
in Chapter 4, where those aspects of each of the present phonological
analyses which concern phonological abstractness are considered. How-
ever, in the case of the rule of /i/-Lowering (3.46), it is worthwhile
to make note here of the interaction of this "absolute neutralization:"
rule with the constraints on phonological abstractness proposed by
Kiparsky.
In attempting to constrain the abstractness which the theory of generative phonology as outlined in such works as SPE makes available to phonological description, Kiparsky, in his 1973 work, defines what he calls the alternation condition:\(^{11}\)

\[(3.50)\text{ Neutralization processes cannot apply to all occurrences of a morpheme.}\]

In discussing the interaction of this condition with the existence in phonological systems of rules of absolute neutralization, Kiparsky examines two possibilities:

One possibility is that the alternation condition categorically forbids absolute neutralization. The weaker alternative, to which we may ultimately be driven, is that the alternation condition is a clause of the evaluation measure which says (among other things) that absolute neutralization is linguistically complex. In that form the alternation condition would, in any given case, balance out the generalizations gained by absolute neutralization against some fixed cost assigned to it in phonological theory.

(Kiparsky, 1973: 30)

Thus, according to Kiparsky, the alternation condition provides a mechanism for either eliminating, or at least making "costly," rules of absolute neutralization.

In connection with such a proposal, note the interaction of the alternation condition with the Old English rule of /i/-Lowering formulated in (3.46). First, this rule is a neutralization rule, since it determines an alternation between the morphophonemically-distinct segments /i/ and /æ/. Thus, since /i/-Lowering is, in addition, a context-free phonological rule, it is a rule of absolute neutralization. According to Kiparsky's interpretation of the alternation condition (3.50), then, this condition either rules out (in its strong form), or makes
"costly" (in its weak form), the absolute neutralization rule of /i/-
Lowering (3.46).

However, given the nature of the Old English phonological system,
the interaction of the alternation condition (3.50) with the rule of
/i/-Lowering (3.46) is, in fact, quite different than the normal in-
teraction of this condition with rules of absolute neutralization
(i.e. the type of interaction discussed by Kiparsky above). That is,
while /i/-Lowering (3.46) is, formally, a rule of absolute neutraliza-
tion, it does not apply to all occurrences of those morphemes upon
which it operates. Thus, as seen in the case of the class I weak verbs,
for example, the stem-extension segment, /i/, while subject in some
forms to the "absolute neutralization" process of /i/-Lowering, as in
(3.51):

(3.51) /hér + i + ə/
   e
hér ("praise": imp.)

is observed in other forms to undergo the process of Glide Formation
(3.18), as shown in (3.52):

(3.52) /hér + i + ən/
   j
hér ("to praise")

and in still other forms to undergo the process of High Vowel Syncope
(3.33), as in (3.53):

(3.53) /rín + i + de/
   ə
rín ("it rained")

Thus, the alternation condition defined in (3.50) neither prohibits
nor makes "costly" the rule of absolute neutralization formulated in (3.46).

Such considerations suggest, in fact, that, as a rule type, absolute neutralization processes are not to be viewed as inherently more complex than contextual neutralization processes. That is, the alternation condition (3.50) seems to correctly weigh against the positing of a phonological system in which a given morphophonemic distinction is everywhere neutralized. However, such a phonological system need not arise on the basis of a process of absolute neutralization. Thus, contextually-conditioned neutralization processes can "apply to all occurrences of a morpheme" as well. In short, the alternation condition (3.50) does not address the issue of absolute neutralization per se, but it does mitigate against the positing of morphophonemic distinctions which are never realized on the surface. On these grounds, this condition appears to be a viable candidate for inclusion in linguistic theory.

3.2.4. Consonantal Alternations

3.2.4.1. /x/-Deletion

In Old English, the voiceless velar spirant /x/ is observed to delete when it occurs intersonorantly. For example, in the strong inflectional paradigm of the Old English adjective hēh ('high'), the accusative singular form (in which the stem-vowel appears in VP as ēa instead of ē) is characterized by the derivation in (3.54):

\[
(3.54) \quad /h\acute{a}x + ne/ \quad \xrightarrow{ } \quad \emptyset \quad \xrightarrow{ } \quad \text{heane}
\]
The Old English phonological process of /x/-Deletion is often observed to interact with the process of Vowel Elision, as, for example, in the derivation of the accusative singular masculine form of the weak declension of the adjective héh, illustrated in (3.55):

(3.55) /hæx + ɔn/  
     0   0  x-D  
     0  VE (3.36)  
     0  hæan

Although the process of /x/-Deletion does not occur often in the extant forms of Old English recorded in VP, it is well-attested in the other dialects of the language. Given the above description of this process, it receives the formulation given in (3.56):

(3.56) /x/-Deletion:  
     /x/  →  0 / [+ son]  →  [+ son]

As the derivation in (3.55) above indicates, the process of /x/-Deletion crucially precedes the process of Vowel Elision in the rule ordering.

3.2.4.2. Voicing

The final Old English phonological process to be considered here is that process which determines an "allophonic variation" between voiced and voiceless fricatives in the language. In describing the respective distributions of voiced and voiceless fricatives in Old English, the standard handbooks (for example, that of Campbell (1959)), note the following (concerning the "fricative" orthographic symbols /ʃ, ɹ, and s/):

Initially and finally voiceless spirants are represented.

Internally between voiced sounds voiced spirants are represented.
Internally before and after voiceless sounds voiceless spirants are represented.

(Campbell, 1955: 20)

This description of the distribution of the Old English fricatives indicates, then, that the voiceless value of such segments occurs in the "elsewhere" case, and that the derived value of the Old English fricatives is the voiced value. To account for such voiced fricatives in Old English, the phonological rule defined in (3.57) is therefore required:

(3.57) Voicing:

\[ [+ \text{cont}] \rightarrow [+ \text{voice}] / [+ \text{voice}] \underline{---}\ [+ \text{voice}] \]

In connection with the process of Voicing formulated in (3.57), note the behavior of the Old English "geminate" fricatives \(ff\), \(dd\), and \(ss\) in word-internal position. Such entities are generally viewed as remaining voiceless (e.g. by Campbell, 1959: "[O]ld [E]nglish] had no voiced spirantal geminates."). If, however, such phonetic sequences are taken as arising from underlying fricative sequences, rather than from underlying [+ long] fricative segments, then such behavior in word-internal position of \(ff\), \(dd\), and \(ss\) is automatically accounted for. That is, since each fricative involved in each such sequence would be contiguous with a morphophonemically [- voice] segment (i.e. the other fricative in the fricative sequence), it would not be subject to the process of Voicing, and thus would appear on the surface in its observed voiceless form.

Interestingly, then, with respect to such geminate clusters, the Old English phonological process of Voicing contrasts with the Gothic
phonological process of Spirantization. That is, as seen in Chapter 2, Spirantization in Wulfilian Gothic differentiates such geminate clusters as \( bb \) and \( dd \) from their non-geminate counterparts \( b \) and \( d \), respectively. In Gothic, \( b \) and \( d \) become spirants in post-vocalic position, while \( bb \) and \( dd \) do not. To account for such distinct behavior, it was proposed in Chapter 2 that \( bb \) and \( dd \) are, at the morphophonemic level, single \([+ \text{ long}]\) segments.

In Old English, however, the evidence from the process of Voicing indicates that the surface fricative clusters \( ff \), \( dd \), and \( ss \) are to be taken as morphophonemic fricative clusters, and not as morphophonemic \([+ \text{ long}]\) segments. That is, a treatment of the Old English phonetic geminates \( ff \), \( dd \), and \( ss \) as single \([+ \text{ long}]\) morphophonemic segments would leave such segments susceptible to the process of Voicing defined in (3.57), a process which such segments are observed not to undergo.

3.2.5. Ordering the Phonological Rules

As noted in a number of instances in the above discussions, the Old English phonological rules developed here are, in certain cases, crucially ordered with respect to one another. First, given the centrality of the position of lexical stress in the operation of the Old English phonological system, the rule which assigns such stress—Stress Assignment (3.5)—must appear first in the extrinsic ordering of the Old English phonological rules. This process of Stress Assignment in Old English crucially precedes, in fact, each of the phonological rules listed in (3.58):
(3.58) a. /i/-Absorption (3.9)
   b. Glide Formation (3.18)
   c. High Vowel Syncope (3.33)
   d. Vowel Elision (3.36)
   e. /ɔ/-Raising (3.40)
   f. /i/-Lowering (3.46)

Thus, each of the processes listed in (3.58) is crucially either bled or fed by the Old English phonological process of **Stress Assignment.**

An extrinsic ordering relationship likewise **holds** between /i/-Absorption (3.9) and Glide Formation (3.18). That is, the prior application of /i/-Absorption crucially bleeds in a number of cases the application of Glide Formation, as illustrated in (3.59):

(3.59) /s̪e̞l̩ + i + iɒ/  
\[ \quad \emptyset \quad \frac{i-A (3.9)}{\text{e}} \quad \frac{GF (3.18)}{\text{e}} \quad \frac{i-L (3.46)}{\text{e}} \]

\[ \text{seleē} ('he sells') \]

As noted in 3.2.2.2.1, High Vowel Syncope (3.33) (specifically, the sub-rule of Pre-Vocalic Syncope), by virtue of the fact that it too bleeds Glide Formation, must also precede this process in the rule ordering, as seen in (3.60):

(3.60) /b̩er̩n̩ + i + on/  
\[ \quad \emptyset \quad \frac{HVS (3.33)}{\text{b̩er̩nan} ('to burn')} \quad \frac{GF (3.18)}{\text{b̩er̩nan} ('to burn')} \]

Glide Formation, in turn, must precede Gemination (3.19), since a number of the /j/’s created by the former process are operated on by the latter, as shown in (3.61):

(3.61) /s̪el̩ + i + on/  
\[ \quad j \quad \frac{GF (3.18)}{\text{sell̩an} ('to sell')} \quad \frac{l}{\text{sell̩an} ('to sell')} \quad \frac{Gem (3.19)}{\text{sell̩an} ('to sell')} \]
Glide Formation must also precede /ɔ/-Raising (3.40), since, as indicated in (3.62) below, the unstressed [i]'s produced by /ɔ/-Raising never undergo Glide Formation, this in spite of the fact that such [i]'s always appear in pre-vocalic position, that position in which unstressed /i/ becomes [j] by Glide Formation:

(3.62) /kwēk + ɔ + ɔn/
   ---
   i
  GF (3.18)
  ɔ-R (3.40)

_cwaecian_ ('to shake')

Both Glide Formation and High Vowel Syncope (3.33) must, moreover, precede /i/-Lowering (3.46), since each of the former processes bleeds the latter process, as indicated in the derivations in (3.63):

(3.63) a. /werp + i + ɔn/
   ---
   j
  GF (3.18)
  i-L (3.46)

_wergan_ ('to do evil')

b. /wīti + u/
   ---
  HVS (3.33)
  i-L (3.46)

_wītu_ ('punishment': n.s.)

As noted in 3.2.3.2, however, /i/-Lowering must apply before /ɔ/-Raising, a fact illustrated in the derivation in (3.64):

(3.64) /syng + ɔ + ɔn/
   ---
   i
  i-L (3.46)
  ɔ-R (3.40)

_syngian_ ('to sin')

Finally, the process of /x/-Deletion (3.56), as seen in 3.2.4.1, crucially precedes the process of Vowel Elision (3.36) in the Old English phonological rule ordering, as indicated in (3.65):
heán ('high': a.s.m.)

The above considerations result, then, in the extrinsic rule-ordering relationships among the phonological rules of Old English (specifically, of the Mercian dialect of Old English as recorded in VP) summarized in (3.66):

(3.66) Stress Assignment (3.5)

/i/-Absorption (3.9)

High Vowel Syncope (3.33)

Glide Formation (3.18)

Gemination (3.19)

/x/-Deletion (3.56)

Vowel Elision (3.36)

/i/-Lowering (3.46)

/ɔ/-Raising (3.40)

Voicing (3.57)

The full set of Old English phonological rules developed in the present work, ordered as in (3.66), is summarized in TABLE VII:
TABLE VII: Summary of the Phonological Rules of Old English

1. Stress Assignment (3.5):

\[ [+ \text{syll}] \rightarrow [+ \text{stress}] / [\#C_0 \quad \text{lexical stem}] \]

2. /i/-Absorption (3.9):

\[ [+ \text{syll}] + \text{high} \rightarrow \emptyset / [+ \text{syll}] + \quad \text{high} \rightarrow \emptyset / [+ \text{stress}][+ \text{seg}] \quad \text{C} \ a^{+} \rightarrow \quad \text{b}^{+} \text{C} \quad \text{V} \quad (C) \ V \]

|Condition: If \( b \), then \( a \) |

3. High Vowel Syncope (3.33):

\[ [+ \text{syll}] \rightarrow \emptyset / [+ \text{stress}][+ \text{seg}] \quad \text{C} \ a^{+} \rightarrow \quad \text{b}^{+} \text{C} \quad \text{V} \quad (C) \ V \]

4. Glide Formation (3.18):

\[ [+ \text{high}] \rightarrow [+ \text{syll}] / \quad \text{V} \quad \text{V} \]

5. Gemination (3.19):

\[ C \quad /j/ \]

\[ 1 \quad 2 \rightarrow 1 \quad 1 \]

|Condition: \( C \neq /r/ \) |
6. /x/-Deletion (3.56):

\[
/x/ \rightarrow \emptyset / [+\mbox{sonorant}] \_ / [+\mbox{sonorant}]
\]

7. Vowel Elision (3.36):

\[
[+\mbox{syll}] \rightarrow \emptyset / [+\mbox{stress}] + \_
\]

8. /i/-Lowering (3.46):

\[
\left[ \begin{array}{c}
[+\mbox{syll}] \\
-\mbox{back} \\
-\mbox{stress}
\end{array} \right] \rightarrow \left[ \begin{array}{c}
[-\mbox{high}]
\end{array} \right]
\]

9. /ɔ/-Raising (3.40):

\[
\left[ \begin{array}{c}
[+\mbox{syll}] \\
+\mbox{low} \\
-\mbox{stress}
\end{array} \right] \rightarrow \left[ \begin{array}{c}
[+\mbox{high}] \\
-\mbox{back} \\
-\mbox{round}
\end{array} \right] / \_ / [+\mbox{syll}]
\]

10. Voicing (3.57):

\[
[+\mbox{cont}] \rightarrow [+\mbox{voice}] / [+\mbox{voice}] \_ / [+\mbox{voice}]
\]
Footnotes to Chapter 3

1 A controversy which, in fact, dates back some four decades. See in this connection, for example, Daunt (1939), Kuhn and Quirk (1953, 1955), Kuhn (1961), Stockwell and Barritt (1955), and Hockett (1969).

2 Hockett uses the orthographic symbol æ to render the low, front, unrounded vowel which in the present work is rendered by the symbol e.

3 There is some disagreement concerning the respective phonetic values of the orthographic symbols hl, hr, hm, and hw, but this issue is not germane to the present discussion of Old English phonology.

4 Although, in this connection, see the discussion of the Old English geminate fricatives ff, dd, and ss in 3.2.4.2.

5 Jasenoff (1973), for example, concerning the reflex in Old English of the Germanic third weak verb class, notes the following:

The greatest complexity is found in Old Saxon and Old English. In both languages, the 3rd weak class is a mere vestige of a category, the great majority of originally 3rd class verbs having been absorbed into the productive 2nd, or 0 class.

6 The process of Glide Formation in Old English also affects the high vowel /u/, as illustrated in the derivations in (i):

   (i) a. /smerö̞u + θ/  b. /sme̞rö̞u + e/
       ___   ___
       sme̞rö̞wu ('fat': n.s.) sme̞rö̞we ('fat': d.s.)

GF

7 Restricting this process to unstressed high vowels is necessitated by the fact that the initial /i/ and the initial /u/ of the /ii/ and /uu/ sequences, respectively, into which stressed long /i/'s and /u/'s are analyzed by the Interpretative Principle for Vowel Length (3.13) do not become glides.

8 Thus, by comparison with the forms derived in (3.25) below, all of which contain lexical stems composed of a single long syllable, those forms derived in (i) indicate that word-final high vowels do not delete in strings containing stressed short stem syllables:
Old English forms such as tācen are traditionally described as arising from monosyllabic stems through a process of Vowel Epenthesis (e.g. by Campbell (1959)). Thus, according to Campbell, the epenthe-sized vowel, "if developed, was i (later e) after a front vowel, u (later o) after a back vowel." As Campbell also notes, however, there was "considerable divergence" in the application of this process, and, thus, "the parasiting (i.e. epenthesis--RS) must be regarded as prehistoric." In evaluating such a process of Vowel Epenthesis for the synchronic phonology of VP, the following considerations can be cited:

(i) The operation of any such posited process would have to be viewed as highly inconsistent. That is, such a process would have to be defined as operating in the environment:

\[ [+ \text{cons}] \quad [\text{+ cons}] \quad [\text{+ son}] \]

but a number of forms occur, such as hregl ('garment'), stefn ('voice'), frign ('ask': 2nd s. imp.), hrefn ('raven'), etc., which contain such an environment but which fail to undergo Vowel Epenthesis.

(ii) A posited process of Vowel Epenthesis for VP would be superfluous, since its inclusion in the phonology of VP would only be proposed on the grounds that it permits the process of High Vowel Syncope to be formulated as a fully regular phonological phenomenon. However, as the forms being cited here indicate, a process of Vowel Epenthesis notwithstanding, the behavior of High Vowel Syncope in VP cannot be taken as fully regular.

(iii) Finally, viewing a form such as tācen as having arisen from the stem /tɔkn-/ via Vowel Epenthesis overlooks the fact that the vowel which Vowel Epenthesis would epenthe-size in such a form would be /u/, and the pre-final vowel which actually occurs in this form appears to derive from /i/.

For these three reasons, then, no process of Vowel Epenthesis will be posited in the present account of the synchronic phonology of VP.

As a readjustment rule, (3.29) applies before all of the Old English phonological rules. Thus, since (3.29) applies before the rule of Stress Assignment (3.5), long vowels are treated by (3.29) as single segments. The formulation of (3.29) reflects this fact.
By a neutralization process Kiparsky means a process which causes "the merger of distinct representations." Thus, all phonological processes which define alternations other than "allophonic variation" are neutralization processes.
CHAPTER 4

PHONOLOGICAL THEORY

The accounts of the phonological components of Wulfilian Gothic and Old English, presented in Chapters 2 and 3 respectively, are of value to the study of phonological systems in two respects. First, each embodies an application of the principles of generative phonological theory to the task of phonological analysis, and by so-doing provides insight into this task. In addition, the analyses presented in the two preceding chapters incorporate, and thus demonstrate, those assumptions implicit in the view that linguistically-significant generalizations characterize the sound systems of natural languages. That is, by showing that certain fundamental aspects of natural language enable the perception of significant insight into a language's sound system, with an accompanying decrease in the overall complexity of this system, each of these analyses argues for the existence of a theory of phonology. It is the purpose of the present chapter to explicitly discuss, with particular reference to the foregoing phonological analyses, a number of the considerations central to determining the form which such a theory should take.

4.1. Rule Typology in the Morphophonemic Component

Before undertaking to examine the rule types which characterize the phonological component of a linguistic system, it is instructive to note first the primary typological division characterizing morphophonemic processes in general—the division into morphological rules
and phonological rules. The consistent and widespread use of such a rule typology arises from two characteristics of each of these rule types. First, both the concept of morphological rule and the concept of phonological rule can be rigorously defined, and thus the two rule types are, in all cases, formally distinguishable. Second, and more importantly, both types of rules are universal aspects of the morphophonemic systems of natural language.

4.1.1. Morphological Rules

A standard definition of the study of the morphological component of a linguistic system can be found in Bloomfield (1933), where it is stated that "morphology includes the constructions of words and parts of words." According to this definition, then, morphological rules are those rules which involve word-construction processes. Thus, as this description of the notion morphological rule indicates, the defining characteristic of such a rule is a functional, not a formal one. Consequently, regardless of its formal characteristics, a morphophonemic rule is a morphological rule if its operation results in the construction of a new word (or part of a word). ¹

Formally, most morphological rules involve processes of affixation, that is, the addition of one or more segments to a lexical string. However, other types of morphological processes are found in natural language, among which are those which exclusively involve processes of segmental alternation. It is in the case of such rules that the semantic aspects of the concept of morphological rule come to play a crucial
role in differentiating morphological rules from phonological rules. That is, it is in the case of those morphological rules which involve only processes of segmental alternation that such rules share significant formal similarities with phonological rules. Consider, for example, the Germanic morphological process of Ablaut, found in its productive form in early Proto-Germanic. This process is responsible for alternations in the stem-vowels of the Germanic strong verbs. Thus, one of the Ablaut rules to which the Proto-Germanic strongs verbs were subject is that rule formulated in (4.1):

\[
\begin{align*}
(+\text{syll}) & - \text{high} - \text{back} (+\text{stress}) & \quad \text{[+ back]} / \quad \text{[+ cons]} [+\text{cons}] \\
\{\text{pret. sing.}\}
\end{align*}
\]

(4.1) Proto-Germanic Ablaut (Class V Strong Verbs):

On the basis of such a rule, infinitive - preterite pairs such as those in (4.2) are reconstructed for Proto-Germanic:

(4.2) **Infinitive:** 1st Sing. Pret.: Gloss:

\[
\begin{align*}
\text{†fen\textipa{\textl}} & \quad \text{†fan\textipa{\textl}} & \quad \text{'find'} \\
\text{†wer\textipa{\textl}} & \quad \text{†war\textipa{\textl}} & \quad \text{'become'} \\
\text{†ster\textipa{\textl}} & \quad \text{†star\textipa{\textl}} & \quad \text{'die'} \quad \text{('become stiff')} \\
\end{align*}
\]

As illustrated in (4.1), in terms of its phonological conditioning environment, this Ablaut rule is formally quite similar to most phonological rules in that it defines a segmental alternation coupled with an environmental specification indicating in which forms the defined alternation takes place. Moreover, in containing a morphological conditioning environment as well, the rule formulated in (4.1) is formally
identical with what have been referred to above as minor phonological rules, such as those considered in connection with the phonology of Wulfilian Gothic in Chapter 2.

Such formal identity notwithstanding, the definition of morphological rule given above provides a mechanism for distinguishing a rule such as that in (4.1), which is a morphological rule, from a minor phonological rule. That is, as noted above, for a rule to be a morphological rule it must embody a word-construction process. It must, that is, create a lexical string with at least one semantic property which differs from the semantic properties of the string serving as the input to the rule. This condition is met by the Ablaut rule formulated in (4.1), since those strings which are produced by this rule bear a semantic tense distinction from those strings upon which the rule operates. Such is not the case, however, with a minor phonological rule. Thus, for example, the Wulfilian Gothic minor phonological rule of /i/-Lengthening (2.100), discussed at length in Chapter 2, operates upon strings such as /nas + i + 0/, such strings having been produced by the morphological rules of the Gothic language. The effect of the process of /i/-Lengthening on such a string is to lengthen the stem-extension vowel /i/, producing the output string /nas + ï + 0/. Such a resultant string is, however, in no way semantically distinct from the string which served as the rule's input. This resultant string is still, that is, the second person singular present imperative form of the Gothic class I weak verb nasjan.² In short, then, by their very nature, minor phonological rules encode no semantic changes in the forms upon which they operate. It is this characteristic of such rules
which permits a typological distinction between minor phonological rules and morphological rules to be maintained.

4.1.2. Phonological Rules

As indicated in the phonological analyses developed in Chapters 2 and 3, phonological rules can be defined as those rules which mediate between the morphophonemic and the phonetic levels of linguistic representation. Thus, phonological rules effect those changes in morphophonemic strings observed in the phonetic realizations of such strings.

The primary typological division which characterizes the rules of the phonological component is, as noted in Chapter 2, the division into major and minor phonological rules. This distinction in phonological rule type derives essentially from Lightner (1972). The definitions of each of these two rule types given by Lightner differ in certain respects, however, from those assumed in the present work. Thus, citing a similar division of rule type proposed by Lakoff (1965) for syntactic transformational rules, Lightner defines major and minor rules, respectively, as follows:

All segments which meet the conditions of application for a major rule undergo that rule unless the segment is idiosyncratically specified as not undergoing the rule.

No segment which meets the conditions of application for a minor rule undergoes that rule unless the segment is idiosyncratically specified as undergoing the rule.

(Lightner, 1972: 429)

The definition of major rule given above by Lightner accords with the view generally held concerning the application of phonological rules. That is, in the unmarked case, a phonological rule applies to
each string which meets its structural description. Thus, those phonological rules which are characterized by such an unmarked mode of application have been referred to in the present work simply as phonological rules.

With respect to Lightner's above definition of minor rule, however, two distinctions hold between the present conception of such rules and that conception embodied in Lightner's definition. First, Lightner's description of minor rules suggests that application of such rules is highly variable over the domain of lexical items in a language. That is, the above definition fails to indicate any inherent connection between morphological class membership and the application of a minor phonological rule. Thus, such a conception views as accidental the fact that, for example, each of the lexical items marked as undergoing a given minor rule of Wulfilian Gothic is so marked on the basis of its being a member of a particular morphological class, all of the members of which are subject, if they meet the phonological conditioning environment, to that minor rule. Consequently, contrary to Lightner's conception of minor rules as stated above, in the present view, a morphological conditioning environment is taken to be an inherent aspect of a minor phonological rule.

The second distinction to be drawn between Lightner's conception of minor rules and the present one also involves the domain of application of such rules. Thus, as an example of a minor rule, Lightner cites the following Modern English plural formation process:

(4.3) The rule which changes the front/back quality of the vowel in plural forms like goose - geese, foot - feet, mouse - mice.
Such a rule, then, is taken by Lightner as typologically equivalent to such minor rules as those from Wulfilian Gothic studied in Chapter 2.

By comparison, while in the present conception of morphophonemic systems such a process as the Modern English plural formation process cited above is likewise viewed as a minor rule, it is taken to be a minor rule of a fundamentally different type than such minor rules as those from Wulfilian Gothic examined in Chapter 2. Thus, such a rule as that cited above by Lightner is viewed in the present framework as a minor morphological rule, and is to be kept typologically distinct from those morphophonemic processes which are governed by minor phonological rules. That is, as discussed above, a rigorous distinction between phonological rules and morphological rules is definable, and, given this distinction, a parallel distinction between minor phonological rules and minor morphological rules can likewise be drawn. Since the plural formation process cited in (4.3) above, to which can be added such Modern English processes as those described in (4.4):

(4.4) a. The rule which changes the stem-vowel in verbs from /i/ to [e] to form the past tense (e.g. sit - sat, ring - rang, drink - drank, etc.)

b. The rule which replaces all segments following the initial consonant cluster in verbs with the sequence [st] to form the past tense (e.g. seek - sought, catch - caught, fight - fought, etc.)

is a morphological process, it is taken in the present work as being typologically different from those minor processes, such as those from Wulfilian Gothic studied in Chapter 2, which are truly phonological in nature.
However, Lightner's formal definition of minor rules notwithstanding, his later discussion of such processes indicates that his actual conception of minor rules coincides in significant respects with the present view of such rules. Thus, he notes that, in his view, the environment of a minor rule "always contains a reference to some morphological category." Thus, Lightner, in full agreement with the present viewpoint, adopts the position that a morphological conditioning environment is an inherent aspect of a minor rule. Indeed, he proceeds to give as an additional example of such a rule his formulation of Lachman's Law in Latin, repeated in (4.5):

(4.5) Lachman's Law in Latin (Lightner, 1972):

\[ V \rightarrow \bar{V} \quad \text{before a voiced consonant in perfect passive participles} \]

As discussed above, the process described in (4.5) is typical of a minor phonological rule not only in Lightner's conception of such rules, but in that conception adopted in the present work as well. Thus, the typological division of the rules of the phonological component into major and minor rules being employed here agrees, in large measure, with the viewpoint concerning such rules first explicitly espoused in Lightner (1972).

4.1.3. Ordering Relationships among the Rules of the Morphophonemic Component

4.1.3.1. Major Rules versus Minor Rules

In discussing the typological distinction between major and minor rules, Lightner (1972) proposes that minor rules "always apply before
all major rules." Thus, continues Lightner, "if this is correct, then minor rules are in intermediate position between syntactic rules and phonological rules; they serve a truly morphological function." In evaluating such a proposal, it is of primary importance to note that, unlike in the present system, in Lightner's view of morphophonemic systems no distinction is drawn between minor phonological rules and minor morphological rules. Thus, the view that minor rules precede major rules, held by Lightner, is due in large part to the fact that morphological rules, both minor and major, precede, in the unmarked case, all phonological rules.

However, even beyond such natural rule orderings between morphological and phonological rules, it remains true that, given their morphological conditioning environment, minor phonological rules are highly morphological in nature, and thus, like true morphological rules, are apt to precede phonological rules in their application to morphophonemic strings. In fact, the four types of morphophonemic rules under consideration here--minor morphological rules, major morphological rules, minor phonological rules, and major phonological rules--all can be viewed as having typologically different functions in morphophonemic systems, such functions leading to a natural ordering tendency among such rules. Thus, the minor morphological rules, which characterize the marked (i.e. "irregular") morphological processes in a language, operate on material drawn from the lexicon, but produce morphophonemic strings not in accord with the major (i.e. "regular") morphological processes in the language. Such rules, then, bleed the major morphological rules, this
relationship requiring that the minor morphological rules precede the major morphological rules in their application to lexical material. After the operation of the minor morphological rules, the major morphological rules apply, completing the task of constructing the basic morphophonemic strings of the language by producing the "regular" morphological forms. The minor phonological rules, which apply, per definition, only in certain morphological classes, then function to "adjust" the basic morphophonemic strings produced by the morphological rules in ways which prepare them for the operation of the major (i.e. "general") phonological rules. The major phonological rules, in turn, account for all discrepancies between these "adjusted" morphophonemic strings and the observed phonetic forms of the language. On the basis, then, of such a description of the role played by each of the rule types of the morphophonemic component in the construction and derivation of lexical forms, the expected (i.e. "unmarked") ordering among the four rule types is that summarized in (4.6):

(4.6) MINOR MORPHOLOGICAL RULES
     ↓
MAJOR MORPHOLOGICAL RULES
     ↓
MINOR PHONOLOGICAL RULES
     ↓
MAJOR PHONOLOGICAL RULES

As noted, however, the ordering relationships depicted in (4.6) represent only the expected orderings to be found among the rules of the morphophonemic component. Thus, such orderings are to be viewed as ordering tendencies, and not as ordering principles which are
universally adhered to. Thus, for example, Anderson (1974b) discusses a number of cases in which morphological (in his terminology "morpho-lexical") processes must operate after certain purely phonological processes, and Aronoff (1976) notes a case from Masoretic (pointed out to him by Alan Prince) in which a minor phonological rule must follow certain of the major phonological rules of the language in the rule ordering. Such cases, while not numerous, do indicate that strict adherence to the ordering relationships defined in (4.6) is not found in all instances. Such cases do not, however, countermand the observation that, in the large majority of instances, the ordering relationships among the rules of the morphophonemic component are as outlined in (4.6).

Such a natural ordering tendency among the rules of the morphophonemic component functions within the present theory of linguistic systems, then, in two important ways. First, it accounts directly for the fact that in the majority of those cases which have been sufficiently well-studied, the rules of the morphophonemic component have been found to be ordered as defined in (4.6). In addition, the statement of such an ordering tendency as an aspect of linguistic theory eliminates the need for explicit ordering statements between the various rule types of the morphophonemic component in those cases in which this natural ordering tendency is found to hold, and thus simplifies the description of such linguistic systems. For example, as was seen in Chapter 2 in discussing the minor phonological rules of Wulfilian Gothic, all such rules may be ordered before all of the Gothic major phonological
rules, and in addition the minor rule of /o/-Deletion (2.94) must crucially precede the major rule of Vowel Deletion (2.74). Such an ordering relationship is, however, automatically accounted for on the basis of the ordering tendencies among the rules of the morphophonemic component defined in (3.6). Consequently, the description of the Wulfilan Gothic morphophonemic system need not contain any extrinsic ordering statements which define ordering relationships between typologically distinct rules.

The final consideration to be made in connection with the ordering relationships among the morphophonemic rule types concerns the traditional justification given for allowing phonological rules to be "morphologically conditioned" (a view which is receiving renewed criticism: see, for example, Hooper (1972)). One of the earliest and most explicit defenses of such a view appears in Postal (1968). In discussing "nonphonetic properties in phonology," Postal introduces two phonological rules from the Mohawk language which rely on certain "categorial properties" of the strings upon which they operate. One of these is a rule which epenthesizes an initial [i] onto those verbs which are characterized by a particular segmental structure. In Postal's words:

In this language no Verb may have less than two vowels in its phonetic representation. If at a certain, not very late, point in derivations a sequence which is a Verb has only one vowel in its representation, a segment identical to systematic /i/ is added initially.

(Postal, 1968: 116)

To illustrate the effects of this phonological process, Postal cites such morphophonemic - phonetic pairs as those in (4.7):³
(4.7) a. /t + w a + k + s/  → [idewaks] ('you (pl.) and I eat it')

b. /s + ëk + s/  → [izeks] ('you (sing.) eat it')

c. /k + ëk + s/  → [izeks] ('I eat it')

d. /t + ni + ek + s/  → [ideneks] ('you (sing.) and I eat it')

e. /s + ni + ek + s/  → [izeneks] ('you (dual) eat it')

f. /ya + k + ni + ek + s/  → [yageneks] ('someone and I eat it')

g. /ya + k + wa + k + s/  → [yagwaks] ('they and I eat it')

In describing the operation of the Prothesis rule (i.e. the rule which epenthesizes an initial [i] onto certain verbs) on such forms, Postal notes:

In each case where the systematic representation contains only one vowel, an [i] is added in the phonetic representation (i.e. in (4.7)a, b, and c--RS). Such a vowel is also added in (6.2) and (6.5) (i.e. in (4.7)d and e, respectively--RS) because at the point where the [I] insertion rule applies only one vowel is present. That is, in these cases the systematic representation has one vowel in front of another, but the first is dropped by the vowel dropping rule. This rule must precede the [i] insertion rule, a fact which guarantees the phonetic regularity that each verb has at least two vowels. It should also be noted that those [e] which occur between true consonants and sonorant nonvowels are epenthetic, and the rule for this epenthesis also follows the [i] insertion rule. Hence these epenthetic vowels do not count when determining if a verb contains more than one vowel.

(Postal, 1968: 117)

Thus, the phonological system accounting for the morphophonemic-phonetic correspondences given in (4.7) is one in which, according to Postal's description above, there are three extrinsically-ordered phonological rules, as in (4.8):
(4.8) Truncation (i.e. "vowel dropping")
-Prothesis
-/e/-Epenthesis

In the present conception of phonological systems, the Mohawk rule of Prothesis is viewed as a minor phonological rule, and, as such, possesses a tendency to apply before the two major phonological rules of Truncation and /e/-Epenthesis. As seen in (4.8), with respect to the rule of /e/-Epenthesis this predicted ordering obtains. Postal specifically argues, however, against ordering Prothesis before Truncation, an ordering which, since it accords with the natural ordering tendency among the rules of the morphophonemic component, would eliminate the need to make any extrinsic-ordering statements at all with respect to the three rules listed in (4.8). First, he formulates the rules of Truncation and Prothesis as in (4.9):

(4.9) a. Truncation:
\[ V \rightarrow \emptyset / \quad \_ \_ \_ V \]

b. Prothesis:
\[ \emptyset \rightarrow /i/ / \quad \# \_ \_ \_ [- \text{syll}]_o \ V [- \text{syll}]_o \# \quad \text{verb} \]

Then, in discussing forms such as [iceneks] (from underlying /t + ni + ek + s/: 'you and I eat'), which are crucial to the determination of the ordering relationship which holds between these two rules, he notes that:

After the Truncation rule eliminates the first vowel, the structure meets the 'one vowel' condition of Prothesis in verbs. But without the ordering, it is necessary to modify the Prothesis rule to apply not only if there is one vowel in a verb but also when there are two vowels which are contiguous (except for intervening morpheme boundary). That is, structural facts which
are completely predicted by the Truncation rule, namely, that at one stage two contiguous vowels behave like a single vowel, must be redundantly built into another rule, in this case Prothesis.

(Postal, 1968: 145)

In short, arguing on the basis of the simplicity of rule formulation, Postal concludes that the "morphologically-conditioned phonological rule" of Prothesis must follow the purely phonologically-conditioned phonological rule of Truncation.

In connection with the issue of formal simplicity, however, consider the formulation which Postal gives to the rule of Prothesis in (4.9)b. Note in particular the specification \( V \) appearing in the conditioning environment of this rule. This symbol abbreviates the specification: \([+ \text{ syll}]^1_1\). However, if this environmental specification is evaluated in terms of the concept of the generality of rule formulation in phonology, discussed in Chapter 1, its formal complexity is seen to be greater than that warranted on the basis of the operation of the rule of Prothesis as described by Postal. That is, the specification \([+ \text{ syll}]^1_1\), since it contains the superscript 1, specifically rules out the application of Prothesis to strings containing more than one vowel in a sequence. As Postal's description of this process makes clear, however, there is no need to impose this restriction on the Prothesis rule in order to prevent such applications, since forms such as /t + ni + ek + s/, which contain such vowel sequences, are observed to undergo Prothesis. In short, formulating the rule of Prothesis without this restriction (and thus in accordance with the concept of the generality of phonological rule formulation) eliminates the need to
order Prothesis after Truncation. Eliminating this extrinsic ordering relationship eliminates, in turn, the extrinsic ordering statement between Prothesis and /e/-Epenthesis given in (4.8). That is, Prothesis, which is a minor phonological rule, automatically precedes, in the absence of any evidence to the contrary, both of the major phonological rules of Truncation and /e/-Epenthesis, such ordering obtaining without the need for any extrinsic ordering statements.

The importance of this example from Mohawk with respect to the system of morphophonemic rule typology being advocated here is twofold. First, it exemplifies the correspondence between what are traditionally called "morphologically-conditioned phonological rules" and what are here called "minor phonological rules." Second, and more importantly, this example from Mohawk illustrates the advantages, in terms of descriptive simplicity, of a theory which typologically differentiates between major and minor phonological rules over a theory which does not draw such a formal distinction. That is, as the example shows, in a theory containing minor phonological rules as a distinct rule type, the tendency of such rules to precede all major phonological rules can be factored out of the descriptions of particular morphophonemic systems. It thus introduces the potential for a significant reduction in the number of required extrinsic rule-ordering statements in each linguistic description, a potential which, as seen above, is realized in the case of Mohawk.
4.1.3.2. Extrinsic Rule-Ordering

As discussed above, certain of the rule orderings which hold among the rules of the morphophonemic component of a linguistic system are unmarked, and thus, to a limited degree, predictable. This does not imply, however, that extrinsic ordering relationships among the rules of the morphophonemic component are not an integral part of linguistic theory. Specifically, two proposals have appeared recently in the literature which are aimed at eliminating extrinsic rule-ordering statements as viable aspects of linguistic systems. Both of these proposals—that of Hooper (1972) and that of Koutsoudas, Sanders, and Noll (1974) (hereinafter KSN)—are rejected as empirically inadequate in the present conception of linguistic theory.

Hooper, giving explicit formulation to the principles of Natural Generative Grammar, proposes what she terms the "No-Ordering Condition," repeated in (4.10):

(4.10) The No-Ordering Condition (Hooper, 1972):

Rules apply in random sequential order, one after another; each rule applies everytime its structural description is met.

This condition, while it does limit to a considerable degree the power of linguistic theory (this being the primary motivation cited by its proponents for including this condition in linguistic theory), it also prevents a large number of systematic regularities from being incorporated into linguistic descriptions. Thus, a theory containing the No-Ordering Condition (4.10) takes a considerably different view of the notion "linguistically-significant generalization" than that adopted
in the standard theory of generative phonology as formulated in SPE.

To see this, consider the three phonological rules of Glide Formation (2.22), Syllabification (2.31), and Monophthongization (2.50) from Wulfilian Gothic. As discussed in Chapter 2, these three rules are extrinsically-ordered in the Gothic phonological system as in (4.11):

\[
(4.11) \begin{cases}
    \text{Glide Formation (2.22)} \\
    \text{Syllabification (2.31)} \\
    \text{Monophthongization (2.50)}
\end{cases}
\]

Crucial with respect to the No-Ordering Condition (4.10) proposed by Hooper (1972) are the ordering relationships between the first two of these rules and the third. Thus, both Glide Formation and Syllabification must apply before Monophthongization, since both of these processes crucially feed, in certain cases, and crucially bleed, in other cases, the process of Monophthongization. However, given that, according to the No-Ordering Condition, "rules apply in random sequential order," a bleeding relationship between phonological rules cannot be an integral part of a linguistic system, since no provision can be made for preventing a rule B which is bled by a rule A from applying (randomly) before A. Consequently, the generalization concerning Gothic phonology embodied in the rule of Monophthongization (2.50) cannot be maintained within a linguistic theory containing the No-Ordering Condition of Natural Generative Grammar. However, as seen in Chapter 2, this generalization is, in fact, not only "linguistically significant" but central to an understanding of the phonology of Wulfilian Gothic. Indeed, a number of parallel examples of extrinsic rule orderings
necessitated in the phonological analyses developed in the present work but ruled out in the theory of Natural Generative Grammar (such as the relationship between Old English High Vowel Syncope (3.33) and both /i/-Lowering (3.46) and /o/-Raising (3.40), the relationship between Old English /i/-Absorption (3.9) and Glide Formation (3.18), etc.) can be cited to support the present decision to reject the No-Ordering Condition (4.10) as an aspect of linguistic theory.

The second proposal designed to eliminate extrinsic rule-ordering statements from linguistic theory—that of KSN (1974)—receives a similar evaluation on the basis of the phonological analyses developed in the present work. Thus, KSN propose a set of universal principles, repeated in (4.12), designed to obviate the need for any language-specific extrinsic ordering statements:

(4.12) a. In general, rules apply whenever their structural descriptions are met, subject to the following conditions:

b. Proper Inclusion Precedence:
   For any representation R, which meets the structural description of each of two rules A and B, A takes applicational precedence over B if and only if the structural description of A properly includes that of B.

c. Counterbleeding Precedence:
   For any representation R, which meets the structural description of each of two rules A and B, A takes applicational precedence over B if there is some string that is included in the inputs of both A and B, but not in the output of B.

The principle defined in (4.12)a embodies, among other things, the view that no surface forms can exist in a language which satisfy the structural description of a phonological rule of that language. Such
a principle, then, rules out, for example, all Old English class II weak
verb forms which exhibit the effects of the process of /o/-Raising (3.40),
sicene all such surface forms contain an unstressed [i] and therefore sat-
ify the structural description of /i/-Lowering (3.46). Even more prob-
lematic is the principle of Counterbleeding Precedence defined in (4.12).
This principle is designed specifically to prohibit the application of
one rule from bleeding the application of another rule. However, as noted
in the above discussion of the No-Ordering Condition (4.10), a number of
such bleeding relationships exist as crucial aspects of the phonological
analyses of Wulfilian Gothic and Old English developed in the present
work. Such analyses, consequently, provide sufficient data to lead to
the conclusion that the principles proposed by KSN to determine the or-
dering relationships which hold among the rules of a phonological system
are empirically inadequate, and thus cannot be taken to be aspects of
universal grammar.\footnote{5}

4.2. Segments and Features in Phonology

The respective roles of segments and features in phonological sys-
tems are, in general, fully distinct. Thus, segments define the linear
composition of a lexical string, and phonological features define the
composition of segments. Such distinctness is not to be found, however,
in all cases. To see this, the relationship between the morphophonemic
and the phonetic levels in phonology, and the role which segments and
features play in this relationship, must be considered.
4.2.1. The Naturalness Condition

Prior to the appearance of SPE, the view taken within the framework of generative phonology concerning the relationship between the morphophonemic and the phonetic levels in phonology received detailed consideration by Postal (1968). Postal proposed in this work that a "naturalness" obtains between these two phonological levels, and he formalized this viewpoint in what he called the Naturalness Condition. The essence of this condition is the view that all correspondences between the morphophonemic and the phonetic levels which need not be mediated by language-specific statements (i.e. phonological rules, interpretive principles, etc.) must be viewed as contributing no complexity of individual grammars. As this statement indicates, the role of such a Naturalness Condition in generative phonological theory is to differentiate "natural" (i.e. "automatic") correspondences between the two phonological levels from correspondences requiring specific treatment in particular phonological descriptions. For example, in accord with the Naturalness Condition, a morphophonemic specification [-syll], in the absence of a phonological rule causing it to be altered, appears at the phonetic level as its "natural" counterpart—a likewise [-syll] specification.

For the most part the Naturalness Condition plays only a formal role in phonological theory. Specifically, it allows a determination of the complexity of a phonological description in terms of the correspondences which the description maintains between the underlying and surface levels to be made. Thus, each non-"natural" correspondence
between these two levels requires language-internal justification. The role of the Naturalness Condition is not limited, however, to such formal matters. That is, while, as illustrated above using the feature specification [− syll], this device determines, in general, a simple (i.e. a one-to-one) relationship between the morphophonemic and the phonetic levels in phonology, there are certain cases in which the Naturalness Condition defines a more complex relationship between these two phonological levels. It is in such cases that the Naturalness Condition interacts in an important way with the roles played by segments and features in phonological description.

For example, consider in this connection a phonological system containing both a morphophonemic segment specified [+ delayed release] (i.e. "[+ affricate]"), such as /ts/, and a sequence of morphophonemic segments consisting of a stop followed by a fricative, such as /ts/. In those cases in which such morphophonemic entities appear at the surface unaltered, they receive identical phonetic realizations—[ts]. In such instances, then, distinct morphophonemic specifications result, on the basis of the morphophonemic - phonetic correspondences defined by the Naturalness Condition, in non-distinct phonetic realizations. Here, a "natural" two-to-one correspondence exists between the underlying and the surface levels in phonology. The significance of such a two-to-one correspondence between the two phonological levels lies in the fact that, where such a complex relationship between these two levels exists, the roles of segments and features in phonological description merge (i.e. become non-distinct). That is, in the case of phonetic [ts] in a language
containing the feature [delayed release], for example, such a phonetic sequence can arise either from a single morphophonemic segment marked [+ delayed release] or from a sequence of two morphophonemic segments, neither phonetic realization requiring a language-specific statement for its occurrence. In short, given a complex correspondence between the underlying and surface levels in phonology defined by the Naturalness Condition, an indeterminacy exists with regard to the use of segments vis-à-vis features in the morphophonemic specifications of those entities involved in such a correspondence.

In the case of affrication, such a two-to-one correspondence between the morphophonemic and the phonetic levels in phonology has not been found to play a crucial role in the operation of phonological systems. There is, however, another two-to-one correspondence between these phonological levels which has, in a number of cases (such as, for example, in the treatments of both Wulfilian Gothic and Old English phonology in the present work), been found to be central to the determination of the functioning of phonological systems. This morphophonemic-phonetic correspondence arises as a result of the phenomenon of phonological length. Specifically, of crucial importance to the task of phonological description is the treatment—whether in terms of segmentality or in terms of a feature of length—which is to be given to phonetically long vowels. 7

4.2.2. The Phonological Treatment of Phonetically Long Vowels

Concerning the phonological treatment which is to be given to phonetically long vowels, it has been noted that "two different methods
of representing long vowels have been used more or less indiscriminately in phonological descriptions. In some cases long vowels have been represented as a single segment marked for length and in other cases they have been represented as a sequence of identical short vowels" (Pyle, 1970). Such arbitrariness of treatment arises on the basis of the fact that, corresponding to long vowels at the phonetic level, there are at the morphophonemic level two "natural" counterparts. That is, either a sequence of two identical morphophonemic segments, or a single morphophonemic segment bearing the feature specification [+ long] would be realized, in the absence of any intervening process affecting such morphophonemic entities, as a phonetically long segment. In the case of phonetic length, then, just as in the case of phonetic affrication, a two-to-one correspondence is defined by the Naturalness Condition between the morphophonemic and the phonetic levels in phonology.

The discussion of the proper treatment to be afforded in phonological description to phonetically long vowels has dealt with a number of approaches to such vowels. Halle (1975), for example, in remarking on Hopi phonology, suggests that determining the proper treatment of long vowels is a matter of determining the "facts" of the language with which one is dealing. In this view, then, once the facts concerning vowel length have been discovered (i.e. once it has been determined whether phonetically long vowels are morphophonemic sequences of identical short vowels or whether they are morphophonemic [+ long] segments), phonological analysis based on these facts can proceed. This viewpoint embodies the general approach taken in phonological
analyses to phonetically long vowels, an approach which might be referred to as the principle of uniformity: whichever of the two morphophonemically "natural" treatments of phonetically long vowels is adopted in the description of a particular phonological phenomenon, it is that treatment of such vowels which is to be maintained throughout the description of the entire phonological system containing that phenomenon. In short, for each phonological system, phonetically long vowels are to be treated either as morphophonemically long vowels or as morphophonemic sequences of identical short vowels, but never as both.\textsuperscript{9}

A number of other approaches to the phonological treatment of phonetically long vowels; however, have focused on a search for an algorithm to determine which of the two "natural" treatments of such vowels should be adopted in the case of each particular phonological phenomenon encountered. Such approaches have explicitly recognized a fundamental shortcoming of the principle of uniformity outlined above, namely that such a principle fails to account for the fact that within a given phonological system some rules appear to require a bi-segmental treatment of long vowels while other rules seem to require the use of a distinctive feature of length for such vowels. Thus, in connection with his discussion of Lithuanian phonology, Kenstowicz (1970), for example, notes that "in the grammar of Lithuanian vowel length should be represented in two different ways in order to express the fact that in some cases a long vowel acts like a sequence of segments, while in others it behaves as a single segment." In attempting to provide an algorithm
for determining which of these two treatments of long vowels is to be employed in the case of each particular rule application, Kenstowicz goes on to suggest that "it appears to be the case that which notation is required is predictable on the basis of the kind of phonological process involved. Prosodic rules require the sequence notation, while vowel quality rules demand that vowel length be represented in terms of the feature plus or minus long."

Likewise, in the case of the treatment of long vowels in both Gothic and Old English in the present work, an algorithm for determining the type of treatment—whether as a single [+ long] vowel or as a vowel sequence—to be given to such vowels is definable. However, contrary to Kenstowicz's proposal for Lithuanian phonology, in the present cases it is a compositional aspect of each long vowel—its specification for the feature [stress]—which determines its treatment by the phonological rules. That is, in both Gothic and Old English, an interpretive principle causing stressed long vowels to be treated by the phonological rules as vowel sequences, leaving non-stressed long vowels as single [+ long] segments, was motivated. Such an algorithm for determining the type of treatment to be given to long vowels thus relies upon a property of the long vowel itself, and not, as with the Kenstowicz proposal for Lithuanian phonology, upon properties of the phonological rules which apply to such vowels.

Such observations concerning the treatment of vowel length in phonological systems suggests the following: (1) That the manner in which a given language treats phonetic long vowels in its phonological system
is a language-specific characteristic of each language containing such vowels; and, (2) That this language-particular treatment of long vowels can be founded upon either a typological division of the phonological rules according to the type of treatment which the rules require, or upon specific characteristics of the long vowels in the language. Thus, in Gothic, for example, phonetic long vowels are taken as morphophonemically long, but those morphophonemically long vowels which receive stress are thereafter treated by all phonological rules as bi-segmental entities. Correspondingly, in Lithuanian, according to Kenstowicz's account of the language, one would presumably adopt either a monosegmental \([+\ \text{long}]\) or a bi-segmental morphophonemic value for phonetic long vowels, and then account for the alternate treatment of such vowels by one of the respective interpretive principles defined in (4.13):

(4.13) a. Long vowels are treated as bi-segmental by prosodic rules.

b. Sequences of identical vowels are treated as mono-segmental by quality-changing rules.

Such language-particularity of the interpretive principles required for determining the treatment of long vowels in languages which exhibit vocalic length contrasts need not, however, preclude the existence of certain universal characteristics of such principles. Thus, given the interaction of the Naturalness Condition with the phenomenon of phonetic length distinctions (i.e. that this Condition defines a two-to-one correspondence such that a phonetically long vowel can be "naturally" viewed as either a single \([+\ \text{long}]\) morphophonemic segment or as a
sequence of two identical segments), as well as the observation noted above that phonetically long vowels are, in fact, treated either as mono-segmental [+ long] or as bi-segmental entities, a constraint on possible interpretive principles determining the treatment of long vowels such as that given in (4.14) is motivated:

(4.14) In a language exhibiting phonetic length distinctions, segments which are phonetically long can function phonologically as, at most, two segments.

Thus, given this linguistic universal, none of the language-specific interpretive principles of segment length noted above is required to specify that a non-mono-segmental treatment of vowel length involves exactly a bi-segmental treatment of vowel length. Rather, this aspect of such interpretive principles is incorporated directly into linguistic theory in the form of (4.14).

A final consideration involving the interaction of the phenomenon of segmental length with universal aspects of linguistic systems concerns the phonetic realization of sequences of identical segments in excess of the phonetic length distinctions maintained by the language in which they occur. Pyle (1970) discusses this phenomenon with respect to West Greenlandic Eskimo:

[T]here are no vowels which are longer than two mora on the surface, although there are several types of cases where one would expect to find three mora long vowels. For example, the underlying representation of 'its entrance' is paa + a. Q-deletion would give paa + a, so one would expect the vowel to be three moras long phonetically, but it is only two.

(Pyle, 1970: 141)

Such phonetic realization of a sequence of three identical vowels as a (binarily) long vowel leads Pyle, therefore, to conclude that the
grammar of West Greenlandic Eskimo must contain a rule which specifies that "a sequence of three identical vowels must ... be shortened to only two."

However, such facts from West Greenlandic Eskimo, rather than indicating the existence in the grammar of this language of a rule which shortens "overlong" vowel sequences to the longest permissible length for phonetic segments in the language, seem to be illustrative of a general principle (linguistic universal) characteristic of all linguistic systems, that principle formulated in (4.15): 11

(4.15) In a language exhibiting binary phonetic length distinctions, sequences of identical segments involving a length of L, such that L > 2, are realized phonetically as a single long segment.

Thus, in West Greenlandic Eskimo, for example, since only binary length distinctions are maintained at the phonetic level, the sequence of vowels in the form paa+a is realized phonetically, in the absence of any language-specific rule affecting such a sequence, as a phonetic long vowel—the vowel [ā].

Indeed, a parallel situation is found in Wulfilian Gothic. Thus, consider the genitive singular form of the strong adjective freis ('free'). This surface form—[frīs]—is derived from the morphophonemic string /frī + is/, and thus, in the absence of any phonologically-induced changes, should appear phonetically as [frīs] (in which ũ indicates an "overlong" [i]). However, such "overlength" does not occur, in accordance with the fact that the Gothic language maintains only binary length distinctions. Requiring that Gothic contain a language-specific rule to reduce "overlong" sequences of identical segments to
a phonetic segment of the longest permissible length fails to account for the fact that only two phonetic length distinctions characterize the language. If, however, the reduction of the /ɪ + i/ sequence in the string /tɪrɪ + is/ is accomplished by the universal principle defined in (4.15), then this reduction is treated not as an arbitrary aspect of the Gothic phonological system, but as an automatic consequence of the structure of this system.

To summarize this discussion of the treatment of vowel length in phonological systems, then, we have seen that each language which exhibits phonetic length distinctions is a candidate for a languagespecific interpretive principle which determines the phonological treatment of long vowels for that language. It has also been shown that such principles can be based either upon characteristics of the rules of the phonological system (as in Lithuanian) or upon characteristics of the long vowels themselves (as in both Wulfilian Gothic and Old English). Such interpretive principles are, however, constrained so as to be able to treat a long vowel as at most two segments. Finally, the universal failure of "overlong" morphophonemic vowel sequences to violate the phonetically-permissible length distinctions in languages in which such sequences occur has provided motivation for a universal principle to account for the observed reduction of such sequences.

4.3. Phonological Exceptionality

The role which exceptionality plays in phonological systems is given detailed treatment by Chomsky and Halle in SPE. There, they
propose a number of conventions for dealing with such exceptionality, the two most significant of which concern the two most basic types of phonological exceptionality—idiosyncratic and rule-governed exceptionality.

4.3.1. Idiosyncratic Phonological Exceptionality

With respect to idiosyncratic exceptionality in phonology, Chomsky and Halle note that "not infrequently an individual lexical item is exceptional in that it alone fails to undergo a given phonological rule or, alternatively, in that it is subject to some phonological rule."

To incorporate such idiosyncratic exceptional behavior into a phonological description, they propose the following:

The natural way to reflect such exceptional behavior in the grammar is to associate with such lexical items diacritic features referring to particular rules, that is, features of the form [a rule n], where a is, as before, a variable ranging over the values + and - and n is the number of the rule in question in the linear ordering.

(Chomsky and Halle, 1968: 374)

A number of examples of such idiosyncratic lexical exceptionality from the phonological analyses of Wulfilian Gothic and Old English developed in the present work can be cited. Consider, for example, the Gothic noun stiur ('steer'). The nominative singular form of this noun, stiur, derives from the morphophonemic string /stiwr + s/. The change from underlying /w/ to surface [u] in this string is caused by the rule of Syllabification (2.31). The deletion of the inflectional /s/ is a result of the process of /s/-Deletion (2.77). However, this lexical form in fact fails to meet the environmental requirements for
the rule of /s/-Deletion, since it contains a Wr sequence immediately prior to the deletion site, rather than the Cv Wr sequence required by (the relevant sub-part of) the rule (see (2.77)). To account for such a deletion of the inflectional /s/, then, the string /stümr + s/ must be exceptionally marked as [+ /s/-Deletion].

Examples of forms which fail to undergo a given phonological rule in spite of the fact that they meet the structural requirements of the rule can also be found. Thus, in Old English, for example, the "irregular" weak verbs seejan ('to say') and lifzan ('to live'), exhibiting the respective phonetic forms [seʃjan] and [liʃjan], both are exceptions to the rule of Gemination (3.19). Likewise, the Old English plural form ȝ we ('cows': n.p.), containing the morphophoremic sequence /kʰ + i/, fails to undergo Vowel Elision (3.36), in spite of the fact that it contains a post-tonic inflectional vowel.

4.3.2. Rule-Governed Phonological Exceptionality

The theoretically much more significant type of exceptionality found in phonological systems is rule-governed exceptionality. Exceptions of this type are, suggest Chomsky and Halle, to be handled by means of readjustment rules:

[W]e assume that the readjustment rules that convert a syntactically generated structure to an appropriate input to the phonology may modify or introduce diacritic features. In particular, then, they may affect specifications of the type [a rule n].

(Chomsky and Halle, 1968: 374)

With respect to the treatment of phonological exceptionality by means of readjustment rules, consider the (optional) exclusion of
strings of the form $C_0^{VC_0^{VC_0^{V_{^\text{high}}}}}$ from the effects of the Old English phonological rule of High Vowel Syncope (3.33), noted in Chapter 3. Such exclusion was accomplished by means of Readjustment rule (3.30), a rule which marks strings embodying such a structure as $[-\text{High Vowel Syncope}]$. In discussing this readjustment rule in Chapter 3, it was noted that the incorporation of such a rule into the description of Old English phonology results in a relatively non-complex formulation for the rule of High Vowel Syncope (3.33), as well as in explaining the highly idiosyncratic behavior of strings containing the sequence $C_0^{VC_0^{VC_0^{V_{^\text{high}}}}}$ with respect to the process of High Vowel Syncope. That is, it was seen that in the dialect of Old English recorded in VP—that dialect of Old English under discussion in Chapter 3—strings of this form behave highly divergently with respect to the rule of High Vowel Syncope, a result that can be predicted on the basis of the fact that such forms are optionally marked as exceptions to this rule.

This readjustment rule in Old English is, however, highly similar to a type of rule of exceptionality specifically discussed and rejected by Chomsky and Halle. They raise the question, that is, of "whether the rules of the phonology themselves may modify these features (i.e. exception features--RS): for example, should we permit rules of the form (127): (127) $A \rightarrow [-\text{rule n}] / Z \_\_W.$" In evaluating this issue, Chomsky and Halle note that "rules of the form (127) permit us to formalize the notion "except;" in other words, they permit us to refer to contexts in which a rule does not apply, as well as to those in
which it does apply." They then note that they "have not found any convincing examples to demonstrate the need for such rules," and thus propose, tentatively, that [such] rules ..., with the great increase in descriptive power that they provide, not be permitted in the phonology.

However, a significant distinction between rules of the type portrayed in Chomsky and Halle's rule (127), and rejected by them as permissible aspects of phonological systems, and the rule proposed in Chapter 3 to optionally exclude strings of the form $C_o V C o V C_o [+ \text{high}]$ from the effects of the Old English rule of High Vowel Syncope (3.33) is to be observed. In discussing their rule (127) as a "rule of the phonology," Chomsky and Halle mean specifically that such a rule appears ordered among the set of phonological rules. In this respect, then, it is distinct from a readjustment rule, since all readjustment rules apply before any of the rules of the phonology. In terms of this criterion, the Old English rule which marks strings of the form $C_o V C o V C_o [+ \text{high}]$ as being optional exceptions to the rule of High Vowel Syncope appears more to be a readjustment rule than a true rule of the phonology, since it need not be preceded by any of the phonological rules.

If, however, this Old English rule marking exceptionality with respect to the rule of High Vowel Syncope is a readjustment rule (and thus a permissible rule of Old English grammar), it is a readjustment rule which is both formally and functionally identical to rules of the type exemplified by Chomsky and Halle in their rule (127), rules which they wish to exclude from linguistic theory. That is, this rule, repeated
in (4.16):

(4.16) Readjustment rule (optional):

\[ C_0 V C_0 V C_0 [\text{+ high}] \# \rightarrow [- \text{High Vowel Syncope}] \]

just as Chomsky and Halle's rule (127), repeated in (4.17) in a form in which its formal identity with (4.16) is transparent:

(4.17) ZAW \rightarrow [- \text{rule n}]

allows reference to be made "to contexts in which the rule does not apply," a type of reference which Chomsky and Halle suggest should not be permitted in linguistic theory. However, as seen in Chapter 3 (and noted above), the motivation for including Readjustment rule (4.16) in the description of Old English phonology is quite strong. The existence of such a rule, in turn, indicates that, contrary to the position taken by Chomsky and Halle, linguistic systems appear to be able to make reference to contexts in which a phonological rule does not apply, although such reference is made by a rule of readjustment, not by a true rule of the phonology.

A second type of rule-governed exceptionality which characterizes the phonology of the dialect of Old English recorded in VP involves the first person singular present forms of the strong verbs. In VP, the inflectional ending which characterizes such verb forms has the morphophonemic value /u/. This segment, however, is never syncopated by the Old English phonological rule of High Vowel Syncope (3.33). Thus, first person singular present forms such as those in (4.18) are found in VP:
(4.18) a. haldu ('I hold')
    b. arīsu ('I arise')
    c. biddu ('I pray')

In conjunction with the fact that it is only in the first person singular present forms of such verbs that the structural requirements of the rule of High Vowel Syncope (3.33) are met, such forms, characteristic of the first person singular present forms of the strong verbs in VP, motivate for the Old English dialect found in VP a rule of exceptionality such as that formulated in (4.19):

(4.19) Readjustment rule:

\[
\begin{array}{c}
[- \text{strong verb}] \quad \rightarrow \quad [\text{- High Vowel Syncope}] \\
\end{array}
\]

As is common with such "exceptional" forms, a number of variant forms which do not violate the rule of High Vowel Syncope are found in VP. Thus, in a number of instances, for example, the [+ high] inflectional vowel of the first person singular present forms, 中小, is "reduced," thus eliminating such forms from the class of forms which are exceptions to High Vowel Syncope. So, for example, forms such as halde ('I hold'), drinco ('I drink'), etc., occur in VP.

However, an examination of the forms appearing in VP reveals that the number of such deviant first person singular present forms is far less than the number of "deviant" noun forms which, although optionally markable as exceptional with respect to High Vowel Syncope, nonetheless undergo this process (e.g. hēafud as an alternate to hēafud, Ídal as an alternate to Ídalu, etc.). This observation concerning the strength of the exceptionality of the first person singular present strong verb
forms (indeed, the exceptionality itself) can, in fact, be accounted for in terms of language-internal aspects of the Old English phonological system. Recall that in the treatment in Chapter 3 of the two (productive) Old English weak verb classes derivations for the first person singular present forms such as those in (4.20) were motivated:

(4.20) a. Class I Weak Verbs:

\[
\begin{array}{ccc}
/fré:\text{m} + i + u/ & /wé:\text{nd} + i + u/ & \\
\text{y} & \text{---} & \text{GF (3.18)} \\
\text{m} & \text{---} & \text{Gem (3.19)} \\
\text{---} & \text{0} & \text{HVS (3.33)} \\
\end{array}
\]

fré:\text{mmu} ('I praise') \quad wé:\text{ndu} ('I turn')

b. Class II Weak Verbs:

\[
\begin{array}{ccc}
/ló:\text{k} + o + u/ & /blé:\text{ds} + o + u/ & \\
\text{---} & \text{---} & \text{HVS (3.33)} \\
\text{i} & \text{i} & \text{2-R (3.40)} \\
\end{array}
\]

ló:\text{ciu} ('I look') \quad blé:\text{dsiu} ('I bless')

In the case of all of the forms derived in (4.20) (and, as such forms indicate, in the case of all class I and class II first person singular present verbal forms in Old English), the inflectional /u/ appears unsyncopated on the surface. This fact gives strong impetus to a process of "analogical levelling" (i.e. in this case, a process of exceptionality marking) which causes the Old English strong verbs to pattern with their weak verb counterparts. Thus, such "parallel patterning" at the surface arises from a phonological regularity of the Old English weak verbs in conjunction with a phonological exceptionality of the Old English strong verbs. It is this aspect of the Old English phonological system which appears to lie at the root of the rule of exceptionality defined in (4.19) above.
The final consideration to be made in connection with the readjustment rule of exceptionality required in the case of the Old English strong verbs, formulated in (4.19), concerns the fact that such a rule marks exceptionality on the basis of the morphological class membership of lexical forms. Thus, according to Readjustment rule (4.19), in Old English strong verbs fail to undergo the rule of High Vowel Syncope. It is clear that rules of this type introduce considerable power into linguistic theory, and for this reason their use is to be viewed as "costly" in terms of the evaluation of a grammar in which such rules appear. With respect to this aspect of morpologically-conditioned rules of exceptionality, therefore, it is instructive to examine an alternate account of certain aspects of the phonology of Wulfilian Gothic, one proposed by Vennemann (1971) and containing such a rule of exceptionality.

In his analysis of Gothic phonology, Vennemann takes the traditional view that all observed instances of an alternation between [i] and [j] in the language are to be accounted for on the basis of a morphophonemic /j/. This position is taken, moreover, irrespective of the fact that Vennemann, in line with all others who have dealt recently with the phonology of Wulfilian Gothic, accepts the presence of both /i/ and /j/ in the morphophonemic inventory of the language. This viewpoint leads Vennemann to propose, as his account of the [i] - [j] alternations occurring in Gothic, the system of rules given in (4.21):

(4.21) a. Sievers' Law in Gothic:

\[
\begin{align*}
\text{[- cons]} & \rightarrow [+ \text{vocalic}] / [+ \text{stress}] [+ \text{seg}]_1 C \rightarrow [+ \text{high}] \\
\text{[- back]} &
\end{align*}
\]
b. Syllabification:
\[
\begin{align*}
[- \text{ cons}] & \rightarrow [+ \text{ vocalic}] / \{C\} \\
[+ \text{ high}] & \rightarrow \{V\} \rightarrow \{C\} \\
[- \text{ back}] &
\end{align*}
\]

c. Readjustment Rule:
\[
\begin{align*}
\left\{ [+ \text{ noun}] \\
[+ \text{ neuter}] \\
[+ \text{ n-stem}] \right\} & \rightarrow [- \text{ Sievers' Law}] 
\end{align*}
\]

Crucial in this system is the Readjustment Rule, (4.21)c. This rule of exceptionality blocks the application of Vennemann's version of Sievers' Law, (4.21)a, in the paradigms of the neuter ja-stem nouns, the masculine n-stem nouns, and the masculine and neuter n-stem adjectives.

Blocking Vennemann's formulation of Sievers' Law from applying in these lexical classes is required, since, in each of these classes, forms occur in which a [j] appears in an environment in which it should become [i] by the application of Sievers' Law, as illustrated in (4.22):

(4.22) a. Neuter ja-stem nouns:
  i. reikjis ('kingdom': g.s.)
  ii. arbjis ('heir': g.s.)

b. Masculine n-stem nouns:
  i. bandjin ('prisoner': d.s.)
  ii. fiskjin ('fisherman': d.s.)

c. Masculine and Neuter n-stem adjectives:
  i. unseljin ('evil': d.s.)
  ii. unhrainjin ('impure': d.s.)

As Vennemann's account of the [i] - [j] alternations which characterize the Gothic phonological system illustrates, readjustment rules
which mark exceptionality with respect to phonological rules on the basis of morphological class membership can be used to incorporate considerable exceptionality into a phonological system. Indeed, in the case of Vennemann's analysis of Gothic, in comparison with the four morphological classes which are excluded from the effects of Sievers' Law by Readjustment Rule (4.21)c, there are but three morphological classes—the class I weak verbs, the masculine ja-stem nouns, and the masculine ja-stem adjectives—which contain forms which actually exhibit the effects of Sievers' Law. Thus, as with all rules of exceptionality, morphologically-conditioned readjustment rules which introduce exception features incorporate directly into phonological systems a degree of rule opacity (i.e. such rules result in the occurrence of a number of surface forms which appear to satisfy the requirements of a particular phonological rule, but which fail to exhibit the effects of that rule), but, unlike other types of exception-marking rules, morphologically-conditioned readjustment rules can incorporate into a phonological system rule opacity of an unlimited degree. That is, while lexical exception features and "environmentally-conditioned" readjustment rules of exceptionality can only mark exceptionality with respect to a phonological rule to a degree at which "rule-governed" behavior is still discernible (i.e. to a point at which one can still claim that a phonological process is in fact being observed), morphologically-conditioned exceptionality rules can mark anomalous phonological behavior for all lexical categories down to the smallest morphological sub-division in the language. Thus, for example, in an account of Gothic phonology,
one could posit a general rule of /i/-lengthening, and claim that all morphological classes other than the class I weak verbs are marked as exceptions to this rule. Such considerations, then, are indicative of the "cost," in terms of grammar-evaluation, which characterizes the inclusion of such rules in a linguistic system, and underscore the value of the account of Gothic phonology motivated in Chapter 2, an account in which a readjustment rule comparable to (4.21) need not appear.

4.4. Phonological Abstractness

The theory of generative phonology, in maintaining a distinction between a morphophonemic (underlying) and a phonetic (surface) level of phonological representation, necessarily embodies a certain degree of abstractness in its account of the operation of phonological systems. In connection with such abstractness, consider, for example, the alternations between [i] and [j] found in Wulfilian Gothic. As seen in Chapter 2, two distinct patterning are found to characterize such alternations in Gothic, and these are accounted for by adopting a distinct morphophonemic value--/i/ on the one hand, /j/ on the other—for each of these observed patterns of alternation. Thus, to arrive at the phonologically regular characterization of the Gothic [i] - [j] alternations outlined in Chapter 2, one must allow certain instances of morphophonemic /i/ to come to the surface as [j] (via the rule of Glide Formation (2.22)), while also allowing underlying /j/ to be realized phonetically in some cases as [i] (via the rule of Syllabification (2.31)). In such a system, then, distinct morphophonemic segments are made to "cross" in the course
of derivation. This account of the [i] - [j] alternations in Gothic
is, as seen in Chapter 2, formulable in a quite straightforward man-
ner, but it does, by virtue of the fact that it posits two different
morphophonemic segments as underlying a single type of segmental al-
ternation, possess a significant degree of abstractness as concerns
the relationship between the morphophonemic and the phonetic levels in
phonology. Such a phonological description indicates, then, that sig-
nificant insight can be gained into the operation of a phonological
system through the recognition of the abstractness inherent in morpho-
phonemic - phonetic relationships.

An additional example illustrative of the importance of the dis-
tinction drawn between morphophonemic and phonetic representations is
found in the behavior with respect to the rule of High Vowel Syncope
(3.33) of certain Old English nominal forms. Thus, consider the para-
digm of the Old English noun wite ('punishment'), given in (4.23):

<table>
<thead>
<tr>
<th>(4.23)</th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>wite</td>
<td>witu</td>
</tr>
<tr>
<td>Gen.</td>
<td>wites</td>
<td>wita</td>
</tr>
<tr>
<td>Dat.</td>
<td>wite</td>
<td>witum</td>
</tr>
<tr>
<td>Acc.</td>
<td>wite</td>
<td>witu</td>
</tr>
</tbody>
</table>

Etymologically, the noun wite is a member of the Germanic neuter ja-
stem noun class, a noun class which forms a sub-paradigm of the German-
ic neuter a-stem nouns. In Old English, the set of inflectional end-
ings exhibited by that noun class which is a reflex in this language of
the Germanic neuter a-stem nouns is illustrated by the paradigm of the
noun hof ('dwelling'), presented in (4.24):
(4.24)  

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>hof</td>
<td>hofu</td>
</tr>
<tr>
<td>Gen.</td>
<td>hofes</td>
<td>hofa</td>
</tr>
<tr>
<td>Dat.</td>
<td>hofe</td>
<td>hofum</td>
</tr>
<tr>
<td>Acc.</td>
<td>hof</td>
<td>hofu</td>
</tr>
</tbody>
</table>

On the basis of this paradigm, the inflectional endings for the Old English neuter a-stem nouns listed in (4.25) can be isolated:

(4.25)  

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>-Ø</td>
<td>-u</td>
</tr>
<tr>
<td>Gen.</td>
<td>-es</td>
<td>-a</td>
</tr>
<tr>
<td>Dat.</td>
<td>-e</td>
<td>-um</td>
</tr>
<tr>
<td>Acc.</td>
<td>-Ø</td>
<td>-u</td>
</tr>
</tbody>
</table>

Given such a set of nominal inflectional endings in Old English, and assuming that it is this set of endings which occurs with the Old English noun wite, the observed inflectional forms of this noun, listed in (4.23) above, are derivable in all cases from an underlying stem /witi-/ on the basis of fully regular and independently motivated Old English phonological processes, as exemplified by the derivations appearing in (4.26):

(4.26) a. /witi + Ø/  
         ---
         e
         wite

b. /witi + e/  
         Ø
         wite

HVS (3.33)  

i-L (3.46)

c. /witi + c/  
         Ø
         wita

d. /witi + u/  
         Ø
         witu

HVS (3.33)

Indeed, it was just such an approach which was taken to the Old English noun wite in the account of Old English phonology developed in Chapter 3. However, the amount of discrepancy between the underlying and the surface forms in this nominal paradigm is, in a number of instances,
considerable, and in the case of the nominative and accusative plural forms (both of which appear on the surface as *wītu*), the observed form in fact appears as a form which is exceptional with respect to the Old English rule of High Vowel Syncope, since it contains a high vowel (i.e. [u]) in an environment in which this vowel should delete. Such considerations attest, then, to the abstractness of the morphophonemic values underlying the inflectional forms of the noun *wēte*.

Moreover, in Old English, there is another nominal paradigm, the neuter i-stem noun paradigm, which exhibits inflectional endings which, on the basis of superficial examination, appear to be much more similar to those "endings" exhibited by the inflectional forms of *wēte* than the Old English neuter a-stem noun inflectional endings are. Thus, consider, for example, the inflectional paradigm of the Old English neuter i-stem noun *sperę* ('spear'), given in (4.27):

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom.</td>
<td>sperę</td>
<td>speru</td>
</tr>
<tr>
<td>Gen.</td>
<td>speres</td>
<td>sperma</td>
</tr>
<tr>
<td>Dat.</td>
<td>sperę</td>
<td>sperum</td>
</tr>
<tr>
<td>Acc.</td>
<td>sperę</td>
<td>speru</td>
</tr>
</tbody>
</table>

As seen in (4.27), the inflectional endings exhibited by this i-stem noun are identical to the "apparent endings" of the Old English noun *wēte*. That is, on the basis of its surface forms, the noun *wīte* might be taken as consisting of the stem /wīt-/ in concatenation with a set of inflectional endings, which endings would then be identical to those which characterize the Old English i-stem noun *sperę*, as indicated in (4.27) above. Consequently, on the basis of surface appearance alone, one might wish to class the Old English noun *wīte* as a member of the
neuter i-stem noun class. However, given such a classification of the noun 
white, the two inflectional forms which appear on the surface as 
white (i.e. the nominative and accusative plural forms) would be ex-
ceptional with respect to the rule of High Vowel Syncope, since in each form a surface [u] is, as noted above, in an environment in which it should delete by means of this rule. Consequently, in the case of the noun white, over-reliance on surface considerations leads to a fail-
ure to perceive systematic regularities which characterize the observed forms of this noun. This aspect of a "surface-based" treatment of Old English nouns such as white points up the centrality of the role played by the abstractness of morphophonemic forms in phonological systems. Indeed, as both this example from Old English and the previous one from Wulfilian Gothic indicate, it is to a large extent the perception of the abstractness of the morphophonemic values underlying respective observed forms, in conjunction with the phonological processes which characterize the linguistic systems in which the forms occur, which is the source of insight into the workings of a phonological system. And just as importantly, these examples illustrate that it can be the fail-
ure to delve sufficiently deeply into the abstractness of morphophonemic forms which prevents the perception of the regularities which charac-
terize the operation of a given phonological system.

4.5. Summary and Conclusions

The analyses of Wulfilian Gothic and Old English presented in Chap-
ters 2 and 3, respectively, have been shown in the present chapter both
to be illustrative of and to explicate a number of significant parameters of phonological analysis. Thus, in 4.1, a treatment of the rule types found in morphophonemic systems was undertaken, and it was found that a natural ordering tendency holds among the respective rule types found in such systems. Moreover, it was seen that, given this ordering tendency as an aspect of universal grammar, extrinsic rule-ordering statements can often be eliminated from the description of a phonological system. For example, on the basis of a discussion of certain rules of Mohawk phonology, it was suggested that such simplification of rule-relationships is to be expected upon detailed consideration of the morphophonemic system of a language. Finally, it was also pointed out that, contrary to certain proposals designed to eliminate extrinsic rule-ordering statements from linguistic descriptions, the nature of linguistic systems is such that the formulation of a number of significant generalizations requires that such statements be incorporated into linguistic descriptions.

In 4.2, the relationship between segments and features, with particular reference to the phenomenon of vocalic length distinctions, was examined. It was seen, as a result of this study, that language-specific principles are needed in a number of instances to mediate between segments and features. Specifically, such principles are crucial in those cases in which the Naturalness Condition (Postal, 1968) defines a relationship between the morphophonemic and the phonetic levels in which distinct representations—one based on segments, the other based on features—at the morphophonemic level are, in view of the Naturalness Condition,
non-distinct at the phonetic level. However, as also discussed in this section, such interpretive principles are constrained in certain respects on the basis of aspects of universal grammar.

In 4.3, the issue of phonological exceptionality—both idiogrammatic and rule-governed—was considered. It was shown here that, on the basis of the analyses of Gothic and Old English developed in the present work, rule-governed exceptionality can be defined either on the basis of lexical class membership (as proposed in SPE) or on the basis of segmental characteristics of lexical strings (a type of exceptionality ruled out in SPE).

Finally, in 4.4, the role of the abstractness of morphophonemic forms in explicating phonologically regular behavior was examined. It was seen in this connection that, in many cases, forms which are superficially anomalous with respect to certain phonological processes in fact behave quite regularly when morphophonemic values possessed of an appropriate degree of abstractness are posited for such forms.

However, the above insights into the functioning of phonological systems notwithstanding, perhaps the most significant conclusion which can be drawn from the above considerations has to do with the relationship between the thoroughness of the analysis made of a phonological system and the validity of the insights into the operation of phonological systems gained from such analysis. The importance of such in-depth treatment has been noted many times in the literature. Indeed, with respect to the phonological analyses developed here it has been seen in a number of instances that, had not all of the significant
aspects of the phonological system being treated been considered, cer-
tain insights into the operation of the system could not have been
made. Thus, consider for example the Interpretive Principle for Seg-
ment Length (2.15) proposed by Vennemann (1971) on the basis of his
treatment of Gothic phonology as a universal principle for determining
the treatment to be given by phonological systems to long segments:

(4.28) Interpretive Principle for Segment Length

In languages with a length contrast, long segments
(both consonants and vowels) are analyzed as bi-
segmental in phonological (and metrical) processes.

(Vennemann, 1971: 107)

As seen in Chapter 2, however, certain phonological processes in Wul-
filian Gothic appear to violate such a principle. That is, they treat
long vowels as single segments. In fact, the process of Vowel Dele-
tion (2.74) was seen in Chapter 2 both to treat long vowels as single
segments when such vowels are in a position to undergo deletion, and
to likewise treat long vowels as single segments when they are in a
position to condition the deletion of another vowel. Significantly,
in his treatment of Gothic phonology Vennemann failed to deal with the
process of Vowel Deletion in the language, and thus was unable to de-
termine that the principle for interpreting segment length which he
proposed as an aspect of universal grammar is, in fact, untenable even
in Wulfilian Gothic, the language on the basis of which the principle
was motivated.

Such an example illustrates the necessity for in-depth analysis
in the attempt to gain valid insight into the workings of a phonological
system, and, in a broader perspective, into the nature of phonological systems in general. In addition, this example provides strong support for the view espoused by Keyser (1975) in prefacing his analysis of Old English phonology:

An account (of a phonological system) that deals with a small number of facts and a very few rules, though often interesting, is rarely conclusive since the possibility that more data will shed an entirely different light on the isolated set of facts at hand is quite strong. However, other things being equal, the wider and wider the range of facts that are adequately covered, the more confidence one can have in an account precisely because it is less vulnerable to the onslaught of new data.

(Keyser, 1975: 377)

Indeed, the validity of the present analyses of Wulfilian Gothic and the Mercian dialect of Old English, and of the considerations concerning phonological theory made in this chapter on the basis of these analyses, rests fundamentally on the thoroughness of the treatment which each gives to the respective linguistic system with which it deals.
Footnotes to Chapter 4

1 For a lexical string which is the output of a morphophonemic rule to be characterizable as a "new word" (or word sub-part), it must be semantically distinct from the lexical string which serves as the input to the rule. Thus, the concept of morphological rule is, for any given language, inherently associated with aspects of the semantic distinctions maintained by that language.

2 That is, if a morphophonemic string such as /nas + i + ə/ were not subject to the minor rule of /i/-Lengthening (2.100), this string would appear on the surface as [nas₁]. Such a surface form would, however, still be identifiable as the second person singular imperative form of the verb nasjan, since its morphological make-up would correspond exactly to that which is expected of this form.

3 The lengthening of the epenthesized [i] in (4.7)b and c is not germane to the present discussion, and thus will not be discussed here.

4 The formulations of the rules of Truncation and Prothesis in (4.3) are as they would appear in the formalism adopted in the present work. The actual formulations given by Postal for these respective processes appear in (i):

(i) a. Truncation:
\[ V \rightarrow \emptyset \quad \text{in} \quad V \]

b. Prothesis:
\[ \emptyset \rightarrow i \quad \text{in} \quad (# \quad D^n_o \ V \ D^n_o \ #) \]
\[ \text{verb} \quad \text{verb} \]

The symbol \(D\) in (i)b is defined by Postal as "any nonvowel, i.e. consonant, or \(\overline{n}, \overline{r}, \overline{2}\)."

5 For a more detailed discussion of the problematic aspects of the KSN proposal, see Deniers and Cathey (1976).

6 A phonological system illustrating the occurrence of both morphophonemic /ts/ and morphophonemic /ts/, each such entity giving rise to phonetic [ts], is Modern English, which contains the affricate /tʃ/ (as in the final segment of the word 'prince') and the stop plus fricative sequence /ts/ (as in the final two segments of the homophonous word 'prints').
While a corresponding indeterminacy exists with respect to the phonological treatment of phonetically long consonants, such consonants have not been found to function as centrally in phonological systems as phonetically long vowels. That is, length distinctions in vowels, but not in consonants, have been found, in general, to lie at the heart of those phonological systems in which they occur. It is for this reason that vocalic length distinctions, to the exclusion of consonantal length distinctions, have been discussed extensively in the literature (see below), and it is for this reason also that the present discussion focuses on the treatment of vocalic length distinctions.

Of concern in the present discussion is the phenomenon of binary phonetic length only. In the case of languages exhibiting so-called "overlong" vowels (such as Estonian), the phonological correlate of such phonetic overlength is as yet not well understood. However, such overlength appears, at any rate, not to be a strictly segmental phenomenon. Thus, in discussing segment quantity in Estonian, Lehiste (1970) notes that:

The essential point in the quantity system of Estonian ... is that, in Estonian, quantity cannot be satisfactorily analyzed as something that is associated with segmental pho-
nemes exclusively.

Indeed, concludes Lehiste:

I see no way of accurately predicting the phonetic re-
alization of segmental sounds in Estonian without reference to higher-leval phonological units—syllables and sequences of syllables.

Such remarks indicate that segmental overlength is to be treated as a phenomenon which is markedly different from segmental binary length distinctions.

As seen in Chapter 2, Vennemann (1971) takes a position on this issue which represents an extreme version of such a principle of uni-
formity. That is, he proposes that, universally, long vowels are treated phonologically (and metrically) as bi-segmental in all cases (see his Interpretive Principle for Segment Length (2.16)). However, not only is such a position untenable as a language universal (as discussed below), but it is also violated by the phonological system of Wulfilian Gothic (as noted in connection with the process of Vowel Deletion in Chapter 2).
Except in those cases in which such long vowels arise from a concatenation of separate morphemes, such as in namneis (= [namnis], from /namn + i + is/); see Chapter 2, footnote 8.

By "sequence" in (4.15) is meant a series of phonetically-realized elements, including such entities as syllable boundaries, word-boundaries realized phonetically as pauses, etc.

For example Voyles (1968), who makes the following statement:

The fact of the matter would seem to be that /i/, /j/, /u/, and /w/ were simply not in complementary distribution.

By this, Voyles means that "there were four different Gothic phonemes /i u j w/".

Such a position is taken, for example, by Keyser (1977).

For example, by Demers and Cathey (1976):

Many valuable theoretical insights have been gained by comparing linguistic processes obtaining in various dialects and/or languages. Generalizations drawn from such diverse sources can be fruitful, but it must not be imagined that universal or even useful generalizations can always be derived from the comparison of isolated phenomena. Any putative generalization must be carefully checked against a deep analysis of the linguistic data. Even the very processes taken from various languages for comparative purposes cannot be established without a thorough understanding of the language in question.

(Demers and Cathey, 1976: 611)
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