Suprasegmentals in Germanic: Evidence from Gothic and Old High German

by

Paul Joseph Greiner

B.A. (University of California at Berkeley) 1982
B.A. (University of California at Irvine) 1987
M.A. (University of California at Berkeley) 1989

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Committee in charge:

Professor Irmengard Rauch, Chair
Professor Thomas F. Shannon
Professor Gary B. Holland

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The dissertation of Paul Joseph Greiner is approved:

Chair        Date

4/28/94

Date

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by

Paul Joseph Greiner
Abstract

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Doctor of Philosophy in German

University of California at Berkeley

Professor Irmengard Rauch, Chair

The phonologies of historical dialects, being natural, spoken languages, yield evidence of suprasegmentals. This study demonstrates that at least some suprasegmentals are reconstructible for historical languages such as Gothic and Old High German for which we have only written data. We accomplish this to a great extent with the help of indirect evidence. That is, we study the effect of suprasegmentals on the segmental component of the language, as reflected primarily in the orthography. We understand the nature of these seemingly invisible suprasegmentals by observing what sort of and which phonological/morphological configurations they motivate. Investigation of the prosodic features of Gothic and Old High German in turn lend clarification to the extrapolation of the speech sounds for these historical languages.

The effects of the word boundary juncture are felt throughout the grammars of Gothic and Old High German. Most fundamentally, word boundaries condition accentuation
patterns and syllabification, which in turn influence the segmental phonology significantly.

Word stress assignment, as conditioned by word boundaries, can be described generally for both Gothic and Old High German. With a single exception for Gothic preverbs, word stress assignment is fully predictable by rule. No evidence supports more than three degrees of stress for Germanic. Primary and secondary stress pattern in identical ways with regard to their effect on the vocalism. Under such prominent stress, vocalic distinctiveness is best maintained, even augmented. The effects of non-prominent, or 'weak', stress are seen in regular morphophonemic alternations. We also establish a positive correlation between weak stress and the occurrence of sporadic graphic variation. Weak stress results in vocalic neutralization, thus, qualitative changes which cloud distinctiveness and produce schwa-like vowels. With regard to quantitative changes both Gothic and Old High German maintain distinctive length under prominent stress, as indicated by the respective orthographies. The question of whether the same distinction applies to non-root syllables as well is more difficult to answer, although evidence suggests neutralization in favor of short segments.
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<td>dat.</td>
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<td>du.</td>
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<td>ev.</td>
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1:1. Prosody and Historical Dialects.

Linguists enjoy virtually unlimited access to contemporary languages like modern English in that living informants abound. We can apply modern methods and technologies to study and describe even the most subtle features of human speech. Phonemic inventories of modern languages (cf. Maddieson 1984) can be tested for exhaustiveness and accuracy through primary data.

Historical linguistics, on the other hand, presents an added challenge. The phonologies of historical dialects, being natural spoken languages, certainly included suprasegmentals. The goal of the present work is to study such phonemes/features, but without the benefit of a primary data source. There are no living informants or speech recordings of the languages of immediate interest to us and so we are reliant on secondary sources, i.e. literary monuments. Unfortunately, from our perspective, the written word in certain respects only rather crudely represents the amazing complexity and subtlety of its spoken analogue. Predominantly morphophonemic writing systems (cf. King 1969:204) may fail to represent important surface detail as in modern German nom. sg. Wald [valt] - gen. sg. Waldes [valdəs] 'forest', both spelled with <d> because of underlying /d/. This spelling convention contrasts with the earlier Middle High German practice of marking final devoicing: cf. MHG
**walt ~ waldes.**

Considering that most suprasegmentals are commonly not indicated in Germanic orthographies, we can appreciate the challenge facing the researcher investigating historical prosody. Although some overt suprasegmental signs do exist in the Pan-Germanic corpus, for instance accent marks in the late Old High German Notker, even these do not reveal the complete suprasegmental scheme. What is not retrievable through direct internal evidence, and cannot be derived through indirect means or comparative evidence, is perhaps lost forever. Indirect clues provide the bulk of our data and thanks to them, we are able to say much about historical Germanic phonology. But we must also concede frustrating limitations (cf. Penzl 1971:19). The present study does not address the suprasegmentals of pitch, tempo, volume, sentence stress and intonation, and rhythm. We regret that our informants may have taken too much data to their graves, although this should not discourage future study entirely.

What we *can* contribute to our knowledge of historical Germanic prosody are answers to questions on stress, length, and juncture, and most importantly the roles of these suprasegmentals in the phonologies of the respective Germanic dialects. We thereby gain a better understanding of the processes affecting lexical stress assignment, degrees of stress, the vocalism and consonantism of root versus non-root syllable, and syllabification. By better understanding
suprasegmental phonology, we better understand even tacit historical dialects as living, spoken languages in their day.

1:2. Sources of Data: Selection of Texts.

Our study of suprasegmentals in Germanic draws on two separate bodies of data, each representing a different branch of the Germanic language family. The first, the now extinct East Germanic branch, is represented by Gothic and accounts for the oldest extended Germanic texts. The Gothic language is the subject of Chapter Three. The late eighth century Old High German dialect of the Isidor represents the second branch, West Germanic. Chapter Four is devoted to this dialect. The third branch, North Germanic, is beyond the scope of the present work, but see Liberman 1982.

The East Germanic language Gothic is handed down to us primarily through the partial translation of the Greek Bible by the Bishop Wulfila († 383) in manuscripts dating from the fifth and sixth centuries. The texts from which our knowledge of Gothic comes are the Codex Argenteus (CA), the Codex Carolinans (Car), the Codices Ambrosiani (A, B, C, and D), the Gospel commentary Skeireins (Sk), fragments of a Gothic calendar (Cal) included in A, the 9th/10th century Salzburg-Vienna manuscript of Alcuin, and two Latin deeds featuring Gothic notes (cf. Streitberg 1960:xxv ff., Wright 1981:197). The decision to admit the entire body of Gothic
as data is based on the relative homogeneity of dialectal features across texts. The inclusion of the later, minor monuments hardly affects our analysis.

In selecting an Old High German dialect—that is, text—for analysis, we actually have a choice, unlike the situation for East Germanic, i.e. Gothic. Age, length, dialectal homogeneity, and orthographic regularity weigh heavily in choosing a literary monument for study. We consider a manuscript’s age of importance because older fragments of the Old High German mosaic might feature relatively more archaisms (although not necessarily so). A manuscript must be of sufficient length in order to provide a large enough corpus of data for observations to be significant. We must also be confident that we are dealing with a single dialect since any mixture would distort our reconstruction of an actual spoken historic language. Our final criterion is, to put it simply, that the fewer problems with interpreting the written text the better. Scribal inconsistencies and errors, when identifiable as such, can be clues to phonemic and phonetic processes in the spoken language—and we will make full use of these where possible—but less success in disambiguating the orthographic signs of a text results in a less solid base from which to work.

After considering the above criteria, one will understand why the Paris manuscript of the Old High German Isidor has been selected for analysis in the present study. We
choose the translation of Isidor of Seville's (†636) treatise *De fide catholica ex veteri et novo testamento contra Judaeos*, codex 2326 of the Bibliothèque Nationale in Paris. Originally translated from Latin into Old High German in the late eighth century by an anonymous scholar, the Paris manuscript was composed around 800. This makes it what Voyles calls (1974:69) 'the earliest rather lengthy OHG text attested'. The surviving text, a beautiful facsimile of which is accessible in Hench 1893, contains forty-three pages of approximately 4300 words total, indeed a substantial sample.

Modern scholars have yet to reach a consensus on pinpointing the dialect of the Paris manuscript. Conflicting opinions concerning dialect identification, summarized by Voyles (1974:69), range from Rhenish Franconian (Hench 1983:112), to Central Franconian (Mitzka 1963:36), East Franconian (Valentin 1969:14), and West Franconian (Penzl 1971:57). We do not attempt to settle the dialect question here as long as we are satisfied that our data represent a single, homogeneous dialect of early German, something upon which all of the cited scholars would agree. We also choose Isidor for its orthographic systematicity, perhaps its strongest asset. Hench praises (1893:111) the orthography as 'sorgfältig und consequent...Isidor unterscheidet sich von den übrigen fränkischen sowie oberdeutschen Denkmälern der ahd. Zeit dadurch, dass in demselben ein fein ausgedachtes,
verhältnismässig genaues System der Orthographie zur Anwendung kommt.' Such a careful system minimizes errors in interpreting the secondary written word, rendering our conclusions about the primary spoken language, the true focus of our study, more sound.

Scattered parts of the Isidor translation, five pages known as the Monsee fragments, have also survived and are housed today in the Österreichische Nationalbibliothek. The Monsee fragments are transcriptions from the original Isidor translation, as is the Paris manuscript (see especially Matzel 1970 for an extensive discussion of the relationship between these two monuments), but differ with regard to dialect, having been in turn translated into Bavarian. Mixed pedigree disqualifies the language of the Monsee fragments from inclusion in our study since, as a scribal Mischsprache, it is even further removed from any natural, actually spoken language, relative to monodialectal texts. Therefore, throughout this study, the title Isidor will refer to the Paris manuscript only.

The above-mentioned texts were not selected for some orthographically marked transparency with respect to the suprasegmentals of the dialects represented. In fact, the only prosodic feature receiving any overt marking in either of the two orthographies is length. Both Gothic and Isidorian Old High German mark surface length on consonants by writing double graphemes (cf. Go./Is. acc. sg. mannan ~ Go.
nom. pl. *mans*, Is. nom. sg. *man* 'man'). But only underlying vocalic length is marked in the former since we hypothesize vowel reduction under weak stress: Go. nom. sg. *laisareis* /laisariːz/ → [lɛ:saris] 'teacher'; spelled once *laisaris*. Length receives no marking on certain vowels; <a> and <u> are ambiguous. Isidorian orthography marks vocalic length by means of dittography but only somewhat haphazardly: Is. *huus* (37:9) [hu:s] 'house' versus *sculut* [skul-] 'you should', but also *sturirom* [stu:r-] 'stronger'. Chapters Three and Four provide details. The internal data per se are insufficient to fully describe vocalic length.

Consequently, we rely on external, comparative evidence when necessary but strive to find internal, albeit indirect, data if at all possible. Most of these data come in the form of graphic alternations. These consist of graphs alternating with other graphs or with zero, either predictably and regularly or sporadically. Predictable, regular morphophonemic alternations have long been the bread and butter of generative grammar. The generative rules which explain the observed allophony and allomorphy of a language constitute its grammar. On the other hand, the reliance on what has traditionally been referred to as 'scribal error' warrants heightened caution given that the nature of such sporadic variation is often open to question: is the variation phonologically significant or merely the product of random carelessness and scriptorial tedium? Given that writing
systems commonly lag conservatively behind the spoken languages which they represent, the occasional inadvertent scribal variation may be signalling conventionally unmarked but important phonetic information.

1:3. Interpreting Orthographic Variation.

'Scribal error' data become valuable for phonological analysis only after we are able to isolate those variations which are phonologically significant away from those purely mechanical errors of extralinguistic origin. Variants of the first type are Go. leikeis for expected lékeis 'physician', or Is. chi-offanodom 'we made clear' alternating with offono 'openly'. Such alternations must be considered differently from the relatively rare and purely mechanical errors, not grounded in phonetic reality, like Go. mananased for manased 'mankind', or Is. urdarscheit for undarscheit 'difference'. Data chapters Three and Four treat the two types of variation in detail.

Analysis of orthographic variation reveals identifiable limits and regularities, and these may tell us something about tendencies of phonological change at the time the manuscripts were being produced. Our later analysis of the positive correlation between weak stress and the frequency of graphic variation owes much to Franck who recognized at the beginning of the century (1909:59) that (referring to Old High German) 'Der weniger bestimmte Klang der Vokale
steigerte in der Hand ungeübter Schreiber noch die sowieso vorhandene Mannichfaltigkeit und Unsicherheit.' We must acknowledge that linguistic errors are commonly influenced by actual linguistic phenomena. Rauch (1989:379) states, 'The spontaneity and apparent unintentionality of speech errors, regardless of their fate, present us with possible early stage data of language change in progress.' Certain graphic variations, the type which we will attempt to isolate and on which we will focus in the data chapters, are no less than some of the vital signs of a living language.

1:4. General Methodology.

Of modern approaches to historical phonology, generative phonology has made the most inroads to date (cf. Chapter 2). Nevertheless, historical Germanic suprasegmentals have not been the primary focal point of generative phonology or any other phonological approach. The present work takes a generative approach, following the model of scholars like King (1969), and also adopted by Voyles (e.g. 1976, 1981, and 1992). In this tradition, our task is to first establish the underlying phonemes of the dialects to be studied, and second, to produce rules which account for the observable phonological facts (morphophonemic alternations) in the most general and economic way. We aim to provide a less abstract analysis than, say, Voyles or Chomsky and Halle (1968) in that we adopt an alternation
condition. We posit no underlying forms which are different from surface forms unless there is a paradigmatic alter-

tation.

A complete set of rules would constitute the comprehensive grammar of a language, or in other words, a speaker’s competence. We do not attempt to construct comprehensive grammars of Gothic and Old High German here, but rather investigate only the components of the respective synchronic grammars immediately pertaining to suprasegmental phonology.

Our method is best described as a diachronic synchrony, in the sense brought forward by Rauch (1992). We are investigating speaker competence, that is, the actual speech of the persons responsible for producing our textual data, which traditionally been considered a synchronic matter. King, for instance, writes (1969:102): ‘A grammar is an account of a speaker’s intrinsic knowledge of his language, his competence—not his father’s competence, not any of his ancestors’ competences, not the competence of his neighbor whose dialect is slightly different.’ But King’s position should be re-evaluated since it misrepresents the very nature of language, understood by linguists as being in a continuous state of change. Rauch sensibly argues (1992:20) that ‘the concept of a time frame in which language data are static is a fiction. Synchronous variation entails dia-

chrony.’ Seeds of linguistic change, necessarily diachronic,
are perpetually present in any living language. Synchronic grammars must account for variation, and variation is rooted in diachrony and dialectology.

Valentin poses a question (1962:356) which will remain pertinent throughout our study: 'Inwiefern ist es möglich, eine nur noch durch geschriebene Texte bekannte Sprachstufe phonologisch zu untersuchen?' Can we ever be certain that our interpretation of the data is one hundred percent correct? Valentin thinks not and we must reluctantly agree with him. We can and should, though, use every means at our disposal to arrive at the most reasonable conclusions. Any reconstruction of the segmental phonology of Gothic or Old High German—or any other language attested only through written records for that matter—based purely on internal, synchronic data would be impossible. Our analysis necessarily depends on various evidence, including what Rauch lists (1992:73) as: graphemic data (i.e., some knowledge of the values of the Greek or Latin alphabets which influenced the writing systems of Wulfila and the Isidorian translator respectively), metrical evidence (not immediately relevant to our chosen prose texts), loan evidence, comparative evidence with other languages or with other chronological stages of the same language, and typological and universal evidence. Certain features which we know must have existed, for example, Old High German vowel length in certain cases are simply not overtly indicated and
would be erroneously passed over by a purely internal analysis. Although we weigh unambiguous internal data more heavily in our analysis, diachronic and external data function invaluably to fill in the gaps.

1:5. Organization of the Data Chapters.

Data chapters Three (Gothic) and Four (Old High German) have three main goals: (1) to describe the relevant segmental phonology of each dialect, (2) to isolate the suprasegmentals, and (3) to describe the role of suprasegmentals in the respective dialects.

Mastering the segmental phonology through step (1) lays the important groundwork for further analysis, in that the influence of the less tangible suprasegmentals within the grammar is revealed and measured only through their effects on the segmental phonemes. In a certain sense, suprasegmentals operate behind the scenes in the overall phonology; we observe only the effects of suprasegmentals.

In the second and third steps, we investigate how prosody functions within the grammar. We discuss various phonological phenomena, i.e., surface phonetics, which appear to involve suprasegmentals and offer generative rules which account for the observed alternations for inclusion into the grammars of the individual dialects.
CHAPTER TWO: BACKGROUND STUDIES

2:0.0. Introduction.

Germanic suprasegmental phonology, as a particular object of study, remains in part an untamed frontier. It is difficult to describe the invisible: that is, for our purposes, what historical literary monuments fail to overtly reveal. The daunting challenge to produce testable and incontrovertible prosodic theories for historical languages is reflected in a smaller body of literature relative to other more tangible topics in Germanic linguistics. Still, scholars since Verner, who in the last century first understood the importance of pre-Germanic prosody for the development of descendant Teutonic dialects, have made great progress in the field. In the present chapter, we will provide an overview of the history and current state of research in areas relevant to the topic of suprasegmentals in Germanic and naturally, to the present study.

Reflecting the fact that historical languages hold many uncertainties, scholars must choose their terminology carefully. Accordingly, we find in the literature terms like 'privileged' and 'underprivileged' (Liberman 1990a), or 'prominent' and 'non-prominent' (van Coetsem et al. 1981) preferred over the terms 'stressed' and 'unstressed'. The former, structural terms describe stress or differences in sonority 'without involving perhaps unknowable, physically quantifiable forces and movements that give rise to the
auditory effect,' as pointed out by d'Alquen (1992:9). He argues that 'linguistics is ultimately about prominence and privilege, not centiseconds and decibels', although 'the linguist must have an understanding of the physical underpinning of language so that theoretical statements do not require the impossible, but rather grow out of the physically probable.' In the present work we adopt the terms prominent/non-prominent where a binary opposition applies, without abandoning the more traditional, but still useful, stress in treating various degrees of prominence, i.e. primary, secondary, tertiary.

Questions on the nature of prominence in historical language typify the challenges and limitations facing the researcher. Liberman recognizes this when he tells us (1990b:156), 'Accentology is the least exact branch of historical linguistics because it depends more on reconstruction than on the evidence of writing.' To be sure, we find very little direct suprasegmental marking in Germanic orthographies. Braune/Ebbinghaus regret (1975:§8) that 'besonders die 'suprasegmentalen' Elemente der gesprochenen ahd. Sprache, wie Intonation, Sprechtempo, Pausen u.ä., bleiben weithin unerkennbar.' In a sense, we are at the mercy of the writing systems, and must concede a few lost battles. For instance, 'if Gothic or Runic, or still earlier Germanic had tones of any kind, we will never know it, as we would not have known anything about tones in Norwegian and
Swedish or about stød in Danish if we only had written texts in these languages' (Liberman 1990a:13). Fortunately, though, there is still much about Germanic suprasegmentals that is retrievable (cf. Bennett 1972), albeit through mostly indirect evidence.

2:1.0. Pitch, Intonation, and Syntactic Stress.

We have already mentioned the nature of the problem facing researchers in investigating certain suprasegmentals, which has prompted Rauch to write (1973a:262): 'tone or tonelike features for Germanic has been, practically speaking, a dead issue', and Bennett (1972:116) to state, regarding the reconstructibility of pitch, that 'surmises are no substitute for tangible evidence,' and regarding primary syntactic stress, that (1972:107) 'the sum total of the available evidence is more suggestive than informative.' Still, some noble attempts in these areas deserve mention.

Investigations into contemporary languages exemplify the type of empirical study which linguists can probably only dream of doing for historical languages. Antonsen (1966) and Hoenigswald (1980) offer two such treatments of modern German. In the former, Antonsen describes the 'neat interplay of pitch and syntactic stress in marking the syntactic stress segment' (1966:591) as, for example, in the sentence 'Sie besitzt viele KLEIDER' 'She owns many
DRESSES'. Observe that the 'significant' pitch change always cooccurs with the syntactic accent. Antonsen ultimately concludes that phonetic pitch levels and degrees of stress depend on the placement of syntactic accents and terminal junctures. Hoenigswald discusses modern German word order vis-à-vis sentence stress and intonation as a first step in reconstructing pre-historic (Proto-Indo-European) word order. He searches (1980:76) for 'typological insights', i.e., 'implicational connections between types of [sentence] stressing and word ordering'. Unfortunately he is unable to draw any definite conclusions. That the parent language was generally OV is 'still chiefly a statistical assertion' (1980:82).

Syntactic stress is also the main theme of Kuhn (1933) who studies the positioning of weakly stressed particles. He claims to have discovered traces of the Pre- and Proto-Germanic state of affairs in historical Germanic poetry. Hopper's monograph (1975) on Proto-Germanic syntax focusses more on word order in the parent language than on prosody, but he draws from much of the same data as Kuhn. From the rich Old Saxon poetic monuments, Rauch (1993:95) is able to formalize syntactic stress conventions for this dialect. But

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1In this highly streamlined version of Antonsen's example, the superscripts indicate pitch, with three being the highest; acute and grave accents indicate primary and secondary stress respectively. The caps indicate the position of main syntactic stress.
without further supporting evidence, we should not apply analogous rules haphazardly to the Gothic and Old High German prose of immediate interest here. In a rather unorthodox article, word stress for early Germanic is rejected by Liberman (1990a) in favor of only sentence stress. Salmons (1990) does not afford this view much credence since Liberman leaves Verner's Law unexplained. At least for the Gothic **skeireins**, Bennett discovers (1970:468) some suggestion of primary phrase stress by means of punctuation and pause markers. He assigns secondary phrase stress to Gothic preverbs (except **ga-**; cf. also Cercignani 1984b:135), and weak stress to clitics.

Some scholars have attempted to reconstruct sentence intonation on the evidence of certain Germanic alternations. Sievers associates (1920:148) the rise of doublets with 'satzphonetische Einflüsse' and considers (156) sentence melody--his 'Steigton und Fallton'--to underlie many vocalic changes from Indo-European ablaut to breaking, umlaut, diphthongization, and continuing into the modern dialects. Rising pitch was allegedly responsible for exceptions to Gothic breaking (cf. Go. **hiri** 'here!' and **nuh** 'therefore' for expected **hæiri** and **næuh**) according to Streitberg (1920:54-55). Schweikle hypothesized (1964:256) that the Isidorian alternants **alliu** (33:21) ~ **ællic** (40:13) ~ **elliu** (24:20) 'all' (representing various, co-existing stages of umlaut) might be manifestations of sentence intonation.
Taking Hench's interpretation (1893:60) of the Isidorian Old High German scribal practice of slightly separating <aa> (for long /a/ in closed syllable) and even splitting the digraph at line breaks as proof of dual accentual peaks, Matzel finds (1966:155) a modern German parallel: 'Noch heute ist—etwa in emphatischer Aussprache—die schleifentonige Überdehnung eines Langvokals in geschlossener Silbe möglich, hingegen nicht in offener Silbe, wo der Langvokal stoßtonig bleibt.' Also pertaining to syllabic pitch, d'Alquen, in a response to Liberman (1990a above) and Salmons (1990 above), agrees with the latter in positing an early Germanic word accent (1992:2), but parts from him in believing (1992:6) that Verner's Law was the result of low pitch. He rejects (1992:8) dynamic stress for the relevant time period because:

...with stress accent in place, the weakening of unstressed syllables would probably have been completed within Germanic. Yet, in fact, the far-reaching developments of unstressed syllables took place in the various dialects, in many instances even after the earliest recordings. Pitch accent is our best bet for early Germanic.

By contrast, Bennett (1970) specifies distinctive, lexical, dynamic stress for Proto-Germanic. We will not enter into this fascinating and lively debate since it involves an era of Germanic far earlier than the historical periods with which we will be dealing. But let us at least take note of the ongoing controversies regarding suprasegmentals in Germanic.
2:2.0. Suprasegmentals and Causality.

The idea that the course of development of the Germanic languages, encompassing umlaut, diphthongizations and monophthongizations, the laws of finals, syncope, apocope, and myriad assimilations, has been appreciably shaped by Germanic fixed, initial accent, has prevailed in the scholarly literature. This is especially true for the weakening of final syllables, exemplified by Wright who, in no uncertain terms (1981:15), calls the 'confining of the chief accent to the first syllable' in primitive Germanic 'the cause of the great weakening--and eventual loss--which the vowels underwent in unaccented syllables.' Similarly, Baesecke calls (1918:§153) the initial accent 'der Beweger der starken ahd. Sprachentwicklung'. Schmitt points to the intensity accent (1931:131; quoted by Rauch 1967b:96) as the ultimate cause for Old High German diphthongization, to which Rauch responds, 'It seems unrealistic to isolate any one factor as the cause for a phonemic change.'

It would seem to make more sense to think along the lines of Schweikle who describes main word stress as 'eine Triebkraft' (1964:219; emphasis added) in Old High German vocalic assimilation. Several prosodic phenomena (reanalysis of dynamic or musical accentuation, changes in speech tempo or sentence melody, other prior sound changes, or syntactic changes) interact to create 'gleichwertige genuine Entwicklungsmöglichkeiten' from which other internal or
external factors select. Furthermore, Rauch recognizes (1973a:259-260) the conditioning effect of secondary stress and internal open juncture, to complement the consonantal conditioners, in Old High German monophthongization. Thus, 'the effect of the constraints [on monophthongization] is a feature or features derived from both suprasegmentals and segmentals.'

Surely, then, we find the justification of a study such as this one when we recognize the impossibility of divorcing segmental and suprasegmental phonology. We cite Rauch further who writes 'Every segmental sound has inherent pitch and stress' (1993:88). Voiceless consonants correlating with high tone and voiced consonants with low tone (Rauch 1973a:262) are examples. Old High German syllable nuclei 'can have as many as three immediate units or bits, segmental and/or suprasegmental' (Rauch 1973b:777). We find suprasegmental phonemes alternating with segmental phonemes in OHG fuir:vuigir, sāen:sāwen, and biheilt: pibeilt; and obviously in the widespread phenomenon of compensatory lengthening (Rauch 1973b:778 provides these and other examples). Thus, we appreciate the importance of understanding the nature and influence of suprasegmental phonemes.

2:3. Accentology.

A recent study of the development of Germanic accent
suggests that the familiar Germanic accent shift to initial syllable (or verbal root syllable) proceeded in stages. D'Alquen (1988) divides the chronology of the shift basically into periods before, during, and after Verner's Law. The shifting depended on syllable weight, meaning that the accent was withdrawn earliest from the lightest syllables and only later from the heaviest syllables. An improvement over mora-based approaches (e.g., Hirt 1892), d'Alquen's working hypothesis allows for the development of long final vowels in Germanic without assuming bi- and trimoric finals (1988:212). This well-presented and plausible study extrapolates from historical data, but the true focus is prediagonal, since the accent was fully shifted by historical times. With its focus on prehistoric phenomena, d'Alquen's book is not immediately pertinent to the present work.

Michels (1925) analyzes modern German data in an effort to reconstruct historical and prehistoric Germanic accentuation. He cites rhythmic causes for the accent shift in modern German compounds like Morgen + Ausgabe = Morgenausgabe 'morning edition [of a newspaper]' and explains the development of OHG hiu tāgu > hiutagā > hiutu 'today' (NHG heute) in the same way. Michels then hypothesizes on the intricacies of Gothic compound word stress. Younger deverbatives like garaishteinài bear main stress on the verbal root, in contrast to the older ti-abstractions like gásahtài which show the Germanic 'Akzentrevolution' (1925:
62-65). He discusses syntactic data to argue (1925:81) for primary stress on Proto-Germanic preverbs and secondary stress on verbal roots, which, by the literary period, had changed to primary stress on verbal roots accompanied by preverbal weakening. This intriguing article raises some tantalizing questions but unfortunately is plagued by Michels’ overreliance on his own modern German linguistic intuition in place of hard evidence.

There has been, though, much common ground regarding accentuation in the historical dialects, as characterized by Streitberg over seventy years ago for Gothic (1920:65):

über die got. Betonung sind wir durch Zeugnisse nicht unterrichtet, doch kann kein Zweifel darüber bestehen, daß auch im Got. das gemeingerm. Betonungsprinzip geherrscht hat, daß also der Wortakzent in heimischen Wörtern die erste Silbe getroffen haben muß. Eine Ausnahme mache nur die Verbalkomposita, die im Germ. nicht das Präfix, sondern die Stammsilbe betonen.

Bennett’s distinguished article on Gothic accentuation (1970), further representing prevailing opinion, will be discussed in detail in Chapter Three.

Old High German is generally believed to also follow what Streitberg (above) called ‘das gemeingermanische Betonungsprinzip’. No special mention of what will be delineated in Chapter Four will be made here outside of two somewhat peripheral studies. Lloyd (1961) analyzes the Old High German Notker and, on the strength of accentual markings and metrical data, correlates weak stress with vocalic quantitative reduction. In the main focus of his article, he
discusses secondary stress as simultaneously determined by several factors (1961:92). By confirming similar accentuation and reduction phenomena in a different text, the verse of *Otfrid*, Lloyd, in a sequel study (1964), tests the validity of his theory for common Old High German.

Cathey (1984) accounts for the not entirely clear-cut morphophonemic alternation between nominal and verbal prefixes *ant-/int-* and *ur-/ir-*, i.e. the differences between supposedly prominently stressed and non-prominently stressed forms. The leakage, i.e. apparent irregularity, is attributable to Old High German having at least two derivational levels within its lexical phonology. Levels one and two are reflected respectively in non-productive versus productive derivational morphology (1984:36). Level two attests to the possibility of cyclical rules and determines the formation of categorical frames. Cathey's work corresponds to the derivationally dependent accentuation rules employed in our data chapters (Three and Four) where his cycles translate into more complex categorical frames. The somewhat ad hoc advantage to Cathey's method is his ability to explain away leakage without recourse to analogy.

Very different from the approach employed in our study is the theory of metrical phonology, a type of non-linear phonology. This approach, developed by Liberman and Prince (1977; cf. also van der Hulst 1982), organizes phonological representations hierarchically. Stress is assigned at the
level of the syllable, and is viewed in terms of prominence relative to other syllables. The theory accounts for accentuation patterns by means of binary-branching tree diagrams, with nodes labelled 'strong' and 'weak'.

Metrical phonology has been fruitful in the study of modern languages, as Giegerich (1985) has demonstrated for modern English and German, and Féry (1986) for modern German. But the theory has had only limited success in historical studies, most notably with Old English poetic data (e.g., Kaminashi 1989, McCully and Hogg 1990). Such historical data fits the metrical model well since the well-understood metrics of the texts lend independent support to prosodic analyses. Unfortunately, metrical phonology does not handle historical prose as incontrovertibly.

2:4.0. Reduplication and Stress.

One of the most controversial topics regarding Germanic accentuation is the question of stress on the Gothic reduplication syllable. At the heart of the controversy lies the invariable vowel of the reduplicated syllable, /ɛ/ written <ai>. This vowel, from PGmc. *e, regularly is realized as Go. [i] except before /h h' r/, where [ɛ] occurs (Gothic breaking). Thus, besides in the reduplication syllable and a handful of other forms (cf. Cercignani 1984a), the Gothic [ɛ - i] alternation is totally predictable.

Streitberg criticizes (1920:§49) an early theory that
the vowel in forms like Go. laīlōt 'allowed' without conditioner are built upon verbal roots like Go. haihāit 'called' with conditioner, /h/, as unsatisfying. Rather, he believes Sievers (not cited) is correct that a suprasegmental conditioner, low falling pitch, not a segmental one, is responsible. Vennemann, on the other hand, resurrects the analogy theory (1971:125) with the qualificative suggestion that 'the deviant behavior of reduplicative elements be described by means of rule-specific exception forms'; this in spite of Prokosch ruling out (1939:179) the analogy theory, given only six reduplicating verbs in attested Gothic that begin with /h h' r/. Instead, on the evidence of forms like Go. saizlēp 'slept', ON sera < *se-zō 'sowed' (indicating the operation of Verner's Law), Prokosch demonstrates root stress and accordingly claims that 'pretonic e became Go. ai regularly'. He adds, 'but probably the accent was shifted to the first syllable in primitive Germanic times.' The resulting primary stress on all reduplication syllables is retained in Gothic according to Bennett (1970:465).

The vocalism of reduplication still requires explanation. If, in fact, this preterite marker bore primary stress (Voyles 1981:60-61, for instance, provides an argument to the contrary), then the Gothic vowel should be <i> except where breaking occurs. Part of the solution may have to do with the general nature of reduplication, as Fullerton
teaches us (1991:3):

Reduplication is not affixation of any kind, and reduplicated forms are not prefixed, let alone infixed. For Proto-Germanic and Gothic, reduplication is a morphological rule, a copying rule. The syllable it creates is not itself a morpheme, i.e. a prefix. Rather, the syllable marks the fact that the copying rule has applied. It is the application of the copying rule which signals preteritiveness in these verbs.

In the same article, Fullerton takes a mora counting approach to describe innovatively a more complex accentuation pattern for Germanic reduplicating verbs. Consider, for example (cf. 1991b:12) the preterite singular of the Proto-Germanic verb for 'to sleep', in which the trimoric syllable attracts the main stress: i.e., se.slep. Alternatively, the preterite plural endings keep the root syllable bimoric and the main stress is not attracted to the second syllable: i.e., sê.slë.pun. The stress alternation would have resulted in a height alternation in Gothic of *saî.slep - *sî.slë.pun (by a rule raising Proto-Germanic stressed *e). The limited scope of the height alternation, as restricted to reduplication syllables, led to the eventual loss of the rule from the grammar, and the vowel is realized uniformly as [ɛ], <aí>.

We are given a morphological account of e-vocalism by Cercignani (1984b:132-133). Considering the unique structure of the reduplication syllable, in which only the vowel is invariable (cf. also Vennemann 1971:125), 'the preservation of /ɛ/ ... prevented the introduction of a vocalic differ-
ence which would have obfuscated the identity of the reduplicating syllable.'

Cercignani also offers a second, phonological explanation (1984b:134-135) whereby a suprasegmental conditioner, internal open juncture, effected antiraising on the preceding reduplication vowel. But he indicates that this latter explanation is unnecessary in light of the previously stated one.

2:5.0. Syllabification.

Syllabification has been shown to involve stress and juncture, and therefore deserves inclusion in our study. Models of syllabification for the historical dialects, as well as the relevant literature, are detailed in turn in Chapters Three and Four, but at this point it is worth mentioning some recent studies on Proto-Germanic. In these reconstructions, the influence on other scholars of Murray and Vennemann's universal preference laws for syllable structure (cf. Murray and Vennemann 1983, Vennemann 1988) is apparent. Murray himself (1993) succeeds in arguing for Proto-Germanic syllabification *VC$iV$, in contrast to *VŚCiV proposed a century earlier by Sievers (1892) and most recently by Barrack (1991). Notably for the present study, Murray and Vennemann emphasize the interrelationship of two suprasegmentals, i.e. stress and juncture. They state (1983:518) the principle governing Proto-Germanic
syllabification within simplex words:

If, in a simplex word, a group of marginal segments occurs between two nuclear segments, the first of which is short and stressed, then the cluster is divided in such a way that only the first segment belongs to the first syllable.

By the above principle, stress draws segments into a syllable, determining the position of internal open juncture. It operates alongside their Stressed Syllable Law (1983:526) for Germanic: 'The preferred stressed syllable has exactly two morae.'

Both Salmons (1990) and d’Alquen (1992) reach similar results in their critiques of Liberman (1990a). Liberman’s intentionally ‘provocative’ article, as Salmons characterizes it, builds its arguments on a definition of a syllable as a word’s minimal prosodic unit (Liberman 1990a:3):

'Dividing a word into syllables is tantamount to cutting it into autonomous units, each of which is independent in that it is pronounceable as a natural complex of a given language and can stand before a pause.' In this regard, Liberman paraphrases Kuryłowicz (1948 and 1949) that 'only those complexes which can also function as potential words in a language can be syllables in it' (1990a:2). Liberman argues (1990a:4) that structures like Go. dag ‘day’ and nam ‘took’ justify the Gothic syllabification bat.a ‘that’ (instead of generally accepted ba.ta, cf. Chapter 3) because *ba would be too short to qualify as a meaningful word. Pronominal counterexamples Go. sa ‘that one’ and bu ‘you’ ‘must have
always been pro- or enclitic [in the natural flow of speech], so they hardly count.' Since monosyllabic Gothic words of the (C)VC type, e.g., dag, were in the relevant Germanic period disyllabic (cf. PGmc. *daga), then 'the smallest semi-independent part of the ancient Germanic word consisted of three segments (the count begins with the first root vowel and includes it)' (1990a:6)—a claim used to explain the glide/vowel alternations covered under Sievers' Law (cf. Go. harjis 'army' - hairdeis 'shepherd') without recourse to 'irreconstructible syllable boundaries'. Salmons' rebuttal (1990) exposes Liberman's failure to account for the extrametrical -a in bat.a and criticizes his abandonment of lexical stress for Germanic. Rather, Salmons considers the better solution to the problem to be found in Murray and Vennemann's above-mentioned Stressed Syllable Law.


We are fortunate to have at our disposal several excellent treatments of the phonologies of Gothic and Old High German, our target languages. Some of the most noteworthy recent literature, which we have found most useful for purposes of the present study, receives mention here—first for Gothic and then for Old High German. Not surprisingly, given nature of the data, various investigations,
employing various methods, often yield conflicting results. To provide a feel for the range of opinions on this subject, we will highlight three problematic areas of Gothic grammar: namely, the value of <iu>, monophthongization of <ái> and <áu>, and phonemic length (e.g., a quantitative distinction between /e/ and /eː/). From selected cases such as these we find the justification for our own extensive analyses of Gothic and Old High German segmental phonology which open Chapters Three and Four.


In his 1948 study, Moulton exemplifies well comparative-diachronic and structural approaches. He attempts to produce a segmental phonemic inventory of Gothic with the ubiquitous disclaimer of historical linguists, 'as far as the written evidence allows us to' (1948:76). Moulton argues for diphthongal allophones of /ai/, /au/ and /iu/ and for distinctive length.

Vennemann (1971) and the prevailing subsequent scholarship take transformational-generative approaches to the problem of describing the Gothic language, by which one

\[ \text{See also Beck (1973b) for a survey of Gothic phonemic inventories through 1971.} \]

\[ \text{Those scholars who believe Gothic <ái> and <áu> represent monophthongs, at least phonetically, agree on the phones [ε(:)] and [⟩(:)] respectively. A comparable consensus is lacking for monophthongal <iu>, see immediately below and Chapter 3.} \]

\[ \text{Full explanations on the nature of these controversies and the phenomena themselves are provided in Chapter Three.} \]
strives to construct the most economical set of rules which account for morphophonemic alternations. As mentioned in Chapter One, this is the same method adopted for the present work. Although Vennemann confidently recognizes phonemic length and believes <iu> was a monophthong, he demonstrates caution regarding <ái> and <áu> for which (1971:114) monophthongization is 'generally assumed, but not proved, for Gothic'.

A monograph by Marchand (1973) masterfully discusses Gothic graphemics, phonemics and phonetics. Here we find systematic analyses of internal (orthographic and structural) and external (comparative) evidence for the pronunciation of the language of Wulfila. Marchand contends in his methodological remarks (1973: 65-66) that the morphophonemic variations, on which many well-entrenched phonemic inventories have been based, say more about Pre-Gothic than about Wulfilian Gothic. In this sense, they belong to the realm of diachronic data. 'Taken together with other evidence, morphophonemics is one of our best sources of evidence; it is to be preferred to comparative evidence ... [but] must always be used with caution.' Marchand does not believe that Wulfilian Gothic had phonemic length. In his phonology, <iu> represents a diphthong, <ái> and <áu> monophthongs.

In reconstructing Proto-Germanic vocalism, Antonsen (1972) undertakes a comparative study of the daughter
languages. His phonemic inventory of Gothic includes phonemic length and monophthongal <iu>, <ái> and <áu> (comparable to Vennemann 1971, mentioned above, except that Antonsen proposes /i:/ for <iu>, Vennemann /u:/).

A series of works by Beck (1973a, 1973b and 1976) discuss Gothic phonology as a whole but with special attention paid to length, monophthongization and vowel/glide alternation. Beck draws on both comparative data and (in his opinion, more definitive) synchronic data from his generative analysis to establish length as a distinctive feature of the language (1973b:117): 'It is the function of the feature of length in rules, ... rules which must have a difference between long and short vowels in the environments in order to work properly, that provides decisive arguments in favor of positing length for Gothic.' Comparative evidence for <ái> and <áu> points to diphthongal allophones under prominent stress and monophthongal allophones post-tonically (1973b:124,136). Gothic <iu> represented a diphthong.

Wurzel's (1975) generative method produces a vowel triangle based on quality (height): i.e. analogous quantitative distinctions of sibling dialects are realized in Gothic as different features or they are neutralized. In addition, Wurzel posits no diphthongal phones.

Both Voyles' detailed study (1981) of Gothic and his updated and streamlined version in his 1992(b) book on the
broader development of the historical dialects from the proto-language, make extensive use of transformational-generative methodology. Our own Chapter Three leans heavily on Voyles’ work as a starting point and consequently includes much discussion of it. Voyles concludes for Gothic features of phonemic length, monophthongized phones for <ái> and <áu>, and diphthongal <iu>.

Finally for Gothic, we look at the work of Cercignani (1984b). This contribution to Gothic phonology follows vocalic development from Proto-Germanic through Pre-Gothic into Wulfilian Gothic. As for other stages of Gothic, Cercignani arrives at two quantitatively distinctive monophthongal subsystems for Wulfilian Gothic (the only stage of the language immediately relevant to the present study), implying, of course, phonemic length and monophthongal phones for <iu> [i], <ái> and <áu>.

Table 1 on the following page summarizes the results of our informal survey of selected Gothic vocalic features.
From the table we observe that the only full consensus exists between Moulton and Beck, and between Antonsen and Cercignani (although Vennemann differs here only in his choice of phone for <iu>). Table 1 exposes some of the ongoing debate of Gothic scholarship.

2:6.2. Old High German.

Several works stand out in Old High German scholarship: those pertaining specifically to Isidor and the phonological system derived from it, and those with a broader Old High German scope. We continue our discussion of prior research on segmental phonology, emphasizing, as was done for Gothic above, authors and their topics not presented in detail in the data chapters.

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5 In Wurzel's system, the graph <u> represents high, mid [u].

6 Unlike Beck though, Moulton does not address the case of posttonic vowels and diphthongs.
Voyles (1974 and 1976) derives his generative phonology of *Isidor* by taking every spelling variation at face value. Taking pre-Old High German reconstructions as underlying, he assigns statistical frequencies indicative of the optionality of given transformations, suggesting a dialect in flux. Every rule of the grammar starts out with a low frequency. Frequency increases as the rule becomes more imbedded in the language over time, until it becomes obligatory. Voyles work is an ambitious attempt to record a historical language in transition, but one has to question whether the language which Voyles dissects was ever actually spoken. As a source for variant forms though, this work is useful.

An interesting hypothesis from Taylor (1989) links the Old High German monophthongization (Gmc. *ai/au > OHG ə/ʊ conditionally; cf. Braune/Eggers 1975:§§43-46) to phonological energy. As in works by Rauch (1967a and 1973) and van Coetsem later (1993, see below), we are presented with alternations between segmental and suprasegmental phonemes. Unfortunately, Taylor’s paper suffers from self-contradiction, relying on two opposing segmental strength scales (one of consonantal strength and one of sonority) which he uses indiscriminately. It is also counterintuitive, for example, when *χ* must be weakened to *γ* in a voiceless environment to account for certain outputs.

In a series of articles, van Coetsem (1975 and 1993)
demonstrates an interrelationship between the Old High German vocalic changes defined by a single general or generalized raising rule (1975:1), which allows him to hypothesize (1993:295) an Old High German vowel shift under reconditioning. Van Coetsem and Buccini's (1990) term reconditioning describes a situation in which the inputs and outputs of a change remain constant; only the conditions effecting the change are altered. Consider the Old High German i-umlaut of a to e,' an example of what van Coetsem calls distance assimilation, i.e., with a heterosyllabic domain of operation. Concurrently, Germanic *a also became OHG e through a contact assimilation in the diphthong /ai/, but note how this assimilation occurs in a tautosyllabic domain. The only meaningful difference between the two changes is umlaut being 'a direct consequence of the language development, in which reduction of the conditioning factor plays a determining role (1993:296,n.6)', or the segmental correlate of a suprasegmental pattern; and contact assimilation showing no such reduction or alternation with a suprasegmental. Raising within the diphthong results by extension of the conditioning environment.

Harbert (forthcoming) attempts to dissociate Old High German monophthongization from segmental conditioners entirely. Rather, he argues that the environment for the

[For a full discussion of i-umlaut and relevant literature, see below §4:1.5.]
change \( au > ao > \bar{o} \) is defined at the level of morpheme structure, occurring in morpheme-final position. A form like *frau- \( > \text{frao} \) 'woman' requires then no further elaboration. But Harbert likewise explains monophthongization before Gmc. *h and coronals in terms of morpheme structure, claiming that the root-final consonants in, for example, *hauh- 'high' and *raud- 'red' are unspecified for place features at the abstract level: they represent the default cases and are consequently, for purposes of the monophthongization rule, 'invisible'.

2.7.0. Non-root Vocalism.

One special area of Germanic phonology to which the present work devotes much attention is non-root, specifically posttonic, vocalism. The posttonic position is a marked environment relative to the prominent syllable, as determined by greater suprasegmentally conditioned allophony (cf. §3:4.6. and §§4:6.0-4:6.7). From a diachronic perspective (cf. Prokosch 1939:137), we recognize, for example, that Germanic 'diphthongs are monophthongized earlier in unstressed than in stressed syllables' as part of the laws of finals. Beck argues (1973b:136) for a completed monophthongization process for Gothic, in which diphthongs are restricted to accentually prominent syllables. Thus, stress plays a major role in shaping the language. As an prelude to the in depth analyses of Chapters Three and Four, we introduce here
some studies which have helped to shape our view of non-root vocalism.

Rauch has dedicated companion articles (1981 for Gothic, and 1993 for Old Saxon) to Germanic schwa. She searches for 'systematic evidence within the synchronic structure of a Germanic dialect in support of the positing of a Germanic schwa' (1993:61), a phone which, in its association with weak stress, is 'understood in general phonetics as at least a relative universal, i.e., a general tendency in language'. Supporting data for Gothic take the form of graphic variation, alternation with apocope, and resistance to primary and secondary stressed vowel lowering. For Old Saxon, evidence comes from graphic variation, in particular in weakly stressed syllables and in the freely varying second element of diphthongs; general umlaut theory, by which vowel mutation correlates positively with the reduction of the end syllable conditioner; and syncope, apocope, and epenthesis phenomena. Phonemic status for Old Saxon schwa is established by the occurrence of OS so 'thus, so', written <so, sio, suo, sa, se> in manuscript C, outside of weak stress (cf. Rauch 1993:64).

Studies of specifically Old High German non-root vocalism have also linked vowel reduction to weak stress and retention of length and quality under at least secondary stress (cf. Lloyd 1961 and 1964; McClintock 1970). McClintock’s article shies away from the word 'schwa' in
favor of a more cautious 'neutral vowel' and speaks (1970: 16-17) of 'at most two vocalic phonemes, a palatal and a non-palatal' in medial weakly stressed syllables. Schweikle associates suprasegmental phonemes with assimilation phenomena (1964:219). The prominence of the primary stressed syllable waxes at the expense of other syllables:


This loss of distinctiveness manifests itself in graphemic variation (1964:263): 'In der Ambivalenz der Laute ist die Variabilität ihrer Wiedergabe selbst in ein und derselben Handschrift begründet.' As we have seen, and shall continue to observe throughout this investigation, graphemic variation serves as an indispensible guide toward understanding suprasegmentals.

Building upon the basal knowledge of comparative diachronic studies which ultimately derive phonological from orthographic systems, purely internal analyses are not only possible but can also be fruitful. One such internal study by Marino (1973) examines graphic alternation in Old Saxon weakly stressed syllables. Marino succeeds in bridling the superficial arbitrariness of free variations by discovering (1973:165) three fundamental, overlapping ranges of graph assignment: front, back, and low. The three ranges represent
a loss of distinctiveness from the five-vowel primary stressed system to a weakly stressed system having three allophonic foci. Our data chapters include similar studies for Gothic and Old High German.

Loss of functional load, mentioned by Schweikle above, also plays a significant role in Valentin’s analysis (1978:377):

The vowels in the proclitic elements never stand in pure phonemic contrast, as the consonantic environment is never the same... The functional load of the opposition between vowels is nil... so they could easily be reduced to a very neutral value [Indifferenzvokal], if other conditions--such as stress--were favorable.

The functional load of Isidorian /e:/a/ in absolute final position is also being affected by morphological levelling (1978:382), but ‘nothing points to neutralizations’ here. Valentin also reviews orthographic evidence which might establish some opposition in medial syllables. He contrasts (1978:377) the ‘consistent notation’ of historically long vowels with the ‘more or less erratic allography’ of historically short vowels, raising ‘a strong possibility’ that the opposition is based on length, tenseness, secondary versus tertiary stress, or some combination of these features.

Not only does Laferriere (1976) demonstrate that OHG <u> in final closed syllable was a reduced vowel, but she offers evidence to actually narrow in on the articulatory features of this phone. She concludes that the <u> which alternates with <o> does not condition umlaut (1976:39-40):
cf. OHG *sibun* ~ Eng. *seven*, OHG *hilfu* ~ *helfan* 'help'; but OHG *herzun/-on* is never **hirzun**. Therefore, she reasons, this vowel must have the feature [-high]. The reduced phone must also have the feature [-round] because it triggers glide loss (1976:43): cf. OHG *hirtes, hirtun/-on* ~ *hirtiu, hirteo* with [+round] desinences.

2.8. Graphemics/Orthographic Interpretation.

There can be no question that graphemics is fundamental to historical linguistics. Rauch assigns (1967b:46) to graphemic evidence the status of ‘conditio sine qua non for the understanding of sound change’ and furthermore quotes Penzl (1961:488): ‘Indeed the primary material of a historical linguist consists of the written reflexes of languages as transmitted to us, and all synchronic and diachronic analyses have been based on them.’ Fully understanding the primacy of graphemic evidence, Rauch focusses on these data (exhaustive attestation lists of Old High German diphthongal notations) and supersedes previous theoretical approaches.

With regard to graphic data, van Coetsem issues this caveat (1975:8):

The graphic data, particularly in the case of the [OHG] diphthongization, are not seldom ambiguous and difficult to interpret and relate to corresponding phonic realities, but we must work from them. It is not surprising that the attitude towards the relevance of graphic evidence can differ markedly from one investigator to another.

Part of the difficulty in interpretation to which van
Coetsem refers (cf. also 1993) can be illustrated by the lack of symmetry in the first components in the modern German digraphs <ei> and <au>, for [ai] and [au] respectively, in, say, *mein* 'my' and *Haus* 'house'. 'Graphic representation and phonic reality, though conventionally related, are distinct entities which may both change and spread, each governed to a certain extent by rules of its own (1975:7).’ The Isidorian versions of the new Old High German diphthongs, <ea> and <uo>, may represent another case of extraphonological graphic borrowing since these digraphs signal 'two quite different, even opposed types of diphthongization' (1993:295): in the former case, a lowering of the second element (< *e/ee); in the latter, a raising of the first element (< *i/oo).

Because of the suspect reliability of graphemic evidence, scholars must augment it with other type of data. In her Old Saxon grammar (1992:73), for instance, Rauch explains that the graphemic interpretation 'is aided by metrical evidence,' loan evidence, comparative evidence with other languages or with other time frames in its own history, and typological and universal evidence.' Such data provide a sort of Rosetta Stone for the decipherment of text.

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'Metrical evidence, although significant for the alliterative verse of the Old Saxon *Heliand*, has not been shown to be immediately applicable to the prose of the Gothic Bible nor the Old High German *Isidor*.'
CHAPTER THREE: GOTHIC

3:0.0. Introduction.

This chapter is organized into three parts. The first section concentrates on the segmental components of Gothic as can be ascertained from the fourth century (recorded in the fifth and sixth century) translation by Wulfila of the Greek Bible, as well as the Gospel commentary Skeireins. We offer a phonemic inventory for Gothic and, for those cases in which Gothic phonology still stirs up controversy, we provide the arguments we deem the most convincing towards deciding what the phonemes of Gothic are. The second section then investigates the word stress, phrase (or syntactic) stress, and length suprasegmentals of Gothic. Since none of the above features is overtly marked in Gothic texts, we must seek out and analyze indirect evidence in order to understand the nature of these features. Having described both the segmental and the suprasegmental components of Gothic, we turn in section three to the role which suprasegmentals play in phonological rules and surface phonetics. We examine phonological phenomena, i.e. vocalic qualitative and quantitative changes such as vowel lowering and breaking, and syncope, as well as other matters such as consonantal dissimilation and vowel glide alternations.

As we shall see, several synchronic rules of Gothic grammar involve suprasegmental conditioners. As historical linguists, we must never lose sight of the fact that the
written languages we study were actually spoken, and therefore, by the nature of human speech, must have involved stress, pitch, and other prosodic features. And so, to understand how these features express themselves in the surface grammar, is to breathe life into an extinct language.

3.0.1. Sources and Conventions.


Our analysis continues the convention of traditional grammarians (cf. Wright 1981) of everywhere marking the Gothic graphs <ē, ō> with a macron (even when the sounds represented may have been phonetically shortened). At phonemic and subphonemic levels, length is marked with a colon, e.g. mēna /meːna/ [meːna] ‘moon’.

In cases in which word stress is not relevant, digraphs representing former Germanic diphthongs are marked with a small acute over the first letter, i.e. <āi, āu>. The acute appears over the second letter when the digraphs do not continue Germanic diphthongs, i.e. <ai, au>.

In cases in which word stress is relevant, primary stress is marked with a large acute, with placement on digraphs governed by the aforementioned. Secondary stress is
marked with a large grave. Weak stress is left unmarked. Thus we have hrainjahairts 'pure-hearted'.

All foreign (underlined) words cited in this chapter are Gothic unless otherwise indicated.

3:1.0. The Phonemes of Gothic.

Our initial objective is to establish an inventory of the phonemes of Wulfilian Gothic. We will concentrate only on native words, which for the Gothic corpus means excluding Greek loans such as sabbato, with geminate [bb], names such as Wmainaius, where we find the graph <w> in environments from which native Gothic <w> is excluded. The graph <x> occurs only in loan words and in the name Xristus.

The following draws heavily from traditional grammars such as Wright (1981) and Braune/Ebbinghaus (1961). For more specific problems requiring more detailed analyses, we have turned primarily to Marchand (1973) which analyzes internal as well as comparative evidence in drawing its conclusions, and Beck's 1973 dissertation, which offers synchronic solutions to some nagging questions. Chapter Two above discusses these and other useful sources.

3:1.1. The Vocalic Phonemes.

The vocalic phonemes of Gothic can be subdivided by virtue of being short, long, or diphthongal. Although Marchand argues (1973:72f,92) against phonemic length by
Wulfila's time, claiming that length is predictable everywhere, we will maintain that Wulfilian Gothic did include distinctive length. Marchand's contention that only qualitative distinctions were phonemic does not account for long /a:/ and /u:/ (see below), to which we assign length on etymological and comparative grounds. Resorting to diachrony here may seem unjustified and one could argue that ON fá, OHG fāhan 'to take' tell us only that Pre-Gothic included /a:/.. But in the absence of internal evidence to the contrary, such diachronic knowledge at least provides us with a working hypothesis.

We observe that the inclusion of /a:/ and /u:/ into the phonology does create a symmetric long vocalic series (combined with undisputed long /i:, e:, o:/, see below) which is parallel to the short vocalic series.

Remembering that Wulfila based his alphabet predominately on the Greek model, it is not surprising that <a> and <u> would not be marked for length, whereas the pairs <i, ei>, <aí, ē> and <aú, ō> were. Fourth century Greek indicated length only for <i> and <εi> (pronounced [i] and [i:] respectively), <ε> and <αi, η> ([ε] and [ε:] respectively), and <o> and <ω> ([ɔ] and [o:]), but not for <a> (pronounced [a] as well as [a:]). The Greek pair <u, ou> did not provide an adequate model for Wulfila since, although <ou> does represent /u:/, Greek <u> was the sound [y], foreign to Gothic. This discord must have forced Wulfila to
borrow from runic, from which the Gothic sign comes (Marchand 1973:32). The graph <u> corresponds to <ou> in Biblical names.

In what follows, the vowels are presented along the lines of the traditional Gothic grammars mentioned, which do not take into consideration the effects of weak stress, e.g. that weakly stressed /a/ may in fact have been realized as schwa. We will take up this matter again in §3:4.6. below, only after our discussion of Gothic stress.

3:1.2. The Short Vowels in Root Syllable.

The phoneme /i/ is realized as the high front unrounded open vowel [i], written <i> in, for example, itan 'to eat', fiske 'fish', bi-faihon 'to covet', mikildubs 'greatness' and nemi 'he may take'; or as mid [ɛ], written <ai>, in the environment specified by the Breaking Rule (cf. §3:5.5.). The alternation becomes apparent when we compare different verbs of the strong class I: for example, p.p. laihwans [lɛhˈans] ←/#lihˈans#/ (inf. leihwan 'to lend') ← p.p. snibans [snɛθans] ←/#snɛθans#/ (inf. sneiban 'to cut'). The occurrence of [ɛ] in root syllable, such as in aɪrˈba 'earth' (known to have short [ɛ] and not an underlying diphthong /ai/ based on comparative evidence: cf. OHG ērde, OE eorðe, ON jorð; faihu 'property', cf. OHG fēho, OE feoh, Lat. pecūnia; and saihwan 'to see', cf. OHG sēhan, Lat. sequi 'follow') is entirely predictable by the Breaking Rule from
phonemic /i/, the vowel which remains in Go. *siuns* 'appearance'. Phonemic /i/ can also be realized as [j] when it is part of the diphthong /iu/ as described in §3:1.4. below.

The mid front unrounded open vowel /ɛ/, written <aɪ>, has a distribution limited in native Gothic words to the reduplicating prefix of strong class VII verbs, for example:

3 sg. pt. ind. *taito:k* /#ɛ+to:k#/ 'he touched', *aiāuk* /#ɛ+auk#/ 'he added'. Otherwise, [ɛ] is fully predictable from /i/, as described above. We do not enter into the debate of whether reduplication may be considered a morphological process outside the realm of phonology (cf. Vennemann 1971:124, Fullerton 1991:3). Rather, we simply include /ɛ/ in the phonemic inventory (cf. §3:3).

Short /a/ is a low central-back unrounded vowel realized as [a] in all positions. Examples are *ahtāu* 'eight', *dags* 'day', *biudans* 'king', and *waũrdas* 'word'.

The phoneme /u/ is realized as a high back rounded open vowel [u] as in *ubils* 'evil', *sunus* 'son', *handu* 'hand', and enclitics -u and -uh, unless followed by /h, r/—whereby the Breaking Rule (cf. §3:5.5.) applies, yielding [ɔ], written <au>: e.g. class II strong verbs inf. *drusans* 'to fall' ~ p.p. *drusans* [drusans], but inf. *tiuhan* 'to lead' ~ p.p. *taũhans* [tɔ:hans]; *haũrn* [hɔ:rn] ~ /#hurn#/ 'horn', dauhtar [dɔ:xtar] ~ /#duhtar#/ 'daughter'. The surface phone [ɔ] is entirely predictable by rule.
3:1.3. The Long Vowels in Root Syllable.

The phoneme /i:/ occurs initially, medially, and finally as a long high front unrounded close vowel [i:], written <ei>, as in eisarn 'iron', beitan 'to bite', mahteigs 'mighty', and imp. sōkei 'seek'.

Unless followed by a vowel, Gothic /e:/ is realized as a long front mid unrounded close vowel believed to be strongly i-colored (hence relatively higher than /e/ above). This belief finds support in 'scribal error' where <ei> sometimes replaces <e>, e.g. qeins for qēns (cf. Appendix 1). We find it represented in such words as ētum 'we ate', nēmum 'we took', manaseēps 'mankind', faheps 'joy' and gen. pl. dagē 'days'. Pre-vocalic /e:/ is realized as [ɛ:] by the Lowering Rule (10) (cf. §3:5.9.), as in saian [se:+an] <#/se:+an#/> 'to sow' with the same root, /se:-/, as in manaseēps [manaseːps] literally 'man-seed'.

The Gothic long vowel system also includes the front mid open phoneme /ɛː/. Although historically this phoneme derives from the Germanic diphthong *ai, and synchronically [ɛː] still derives from an underlying diphthong /ai/ (cf. §3:1.4.) where it alternates morphophonemically with [aj], we must posit phonemic /ɛː/ for Gothic for the cases where no alternation occurs. We agree with Vennemann (1971:118) here that 'if Gothic had undergone monophthongization, then the new long monophthongs would have been lexicalized where they were constant, i.e. before radical consonants and in
particles and affixes.’ Thus we have, for example, áigan /#ɛ:γ+an#/ ‘to have’ and stáins /#stɛ:n+z#/ ‘stone’ in root syllable, and non-alternating [ɛ:] from /ɛ:/ as well in non-root syllables, i.e. in numerous desinences, for example: dat. sg. fem. č-stem qibái /#yi&+e/.#/ ‘gift’, gen. sg. fem. a-stem. blindáizöz /#blinød+ɛ:zo:z#/ ‘blind’, 2 sg. prs. sbj. nasjáis /#nas+j+ɛ:+z#/ ‘you save’.

Since the comparative evidence of ON eiga, OHG eigan and ON steinn, OHG stein leads to the conclusion that the vowel in these examples and in their Gothic cognates goes back to the Proto-Germanic diphthong *ai, we need to justify our adoption throughout of monophthongal pronunciation for the etymologically diphthongal Gothic digraph <ái>. Let us review arguments proposed in the literature (see Braune/Ebbinghaus 1961:23f, Wright 1981:367f, and Marchand 1973:74f).

(1) Gothic <ái> corresponds to a diphthong elsewhere in Germanic. But: this fact says nothing about fourth century Gothic, only Pre-Gothic.

(2) The word háilag ‘holy’ (cf. OHG heilag) on the Ring of Pietroassa shows a diphthong. However, the date is uncertain and this form could represent third century, i.e. pre-Wulfilian, Gothic.

(3) Latin authors transcribe Gothic names having the Germanic diphthong by means of <ai ei>, e.g. Dagalaiphus, Gaina. However, there is so much fluctuation that no
conclusions may be drawn. The spellings <ai ei> are found relatively early. By the fourth century, <ai ei e i> all occur. Afterwards, <e i> are normal. In addition, proper names may be more conservative in their phonology than other parts of speech.

The case for a monophthong can be built on the knowledge that Wulfila based his alphabet on the Greek model. The fourth century Greek digraph <ai> was pronounced [ε]. Gothic <ai> corresponds to both <ai> and <ε> of Biblical Greek names. If Wulfila had needed to distinguish diphthongs from other vowels, he could easily have done so as he apparently did for [au] in Pawlus (cf. Gk. Παυλος; contrast with Go. uf-báuljan [-bɔːl-] 'to puff up') and [eu] in Áiwneika (cf. Gk. Αἰώνικη).

Based on these data we conclude that Wulfilian Gothic has no diphthongal phone [ai] and that (the scribes' diacritically unmarked) <ai> everywhere represents [ε(:)]. Analogous arguments on the Gothic digraph <áu> for and against monophthongal pronunciation are not repeated here, but see Braune/Ebbinghaus 1961:27f, Wright (1980), and Marchand 1973:76. Based on these we likewise conclude that Gothic scribal <au> everywhere represents [ɔ(ː)].

As mentioned above, we have no direct internal evidence for a long phoneme /a:/ and so are forced to rely mainly on etymological and comparative evidence. The phoneme /a:/ itself has a limited distribution in Gothic. It occurs as a
long low back unrounded vowel [a:] only medially before /h/ in root syllables.\footnote{This distribution is due to its provenience solely from Gmc. *-anh- with compensatory lengthening after n-loss. Consequently, like some long y from the same pre-Gothic environment, may have still been nasalized in Wulfila’s time.} Examples are fahan ‘to seize’ and bahta ‘I thought’.

The phoneme /ɔː:/ is a long mid back rounded open vowel and is realized as [ɔː], written <au>, in root syllable in environments where, analogous to the case of /ɛː/ and /ai/, it does not alternate with the allophones of /au/ (see below), namely in roots in which it is not morpheme-final: e.g. āugō /#ɔːɡo:#/ ‘eye’, dāubus /#ðɔːθu+z#/ ‘death’, gāumjan /#ɡɔːm+j+an#/ ‘to perceive’; and in non-root syllables: gen. sg. sunāus /#sun+ɔː+z#/ ‘son’, 1 sg. prs. sb. nīmāu /#nim+ɔː#/ ‘I take’.

We find the phoneme /oː/ occurring initially, medially before consonant, and finally as the long mid back rounded close vowel [oː], cf. ōg ‘I fear’, brōbar ‘brother’, hair-tōna ‘hearts’, gibōs ‘gifts’, and salbō ‘I annoint’. Before a vowel it is realized as [ɔː] by the Lowering Rule (cf. §3:5.9.): e.g. staua [stɔː:a] ‘judgement’ ~ stōjan ‘to judge’, both from /stoː-/.  

As with /aː/ above, from mainly etymological and comparative evidence we postulate a phoneme /uː/ for
Gothic. This long high back rounded close vowel was not subject to the same lowering rule as the homorganic open vowel /u/ in Pre-Gothic. Its sole realization, [u:], also has a somewhat limited distribution (although not as limited as /a:/). We find [u:] occurring initially and medially in words such as ūt 'out', rūms 'room', hūhrus 'hunger', and guðhūs 'temple, (literally) God-house'.

3:1.4. The Diphthongs.

The root alternations wāi-dēdja 'woe-doer, malefactor' ~ waj-a-mērjan 'to blaspheme' and tāu-jan 'to do' ~ taw-i 'deed' demonstrate the need to posit underlying diphthongs /ai/ and /au/ for Gothic. The surface realizations of /ai/ (/[ɛ:] ~ [aj]) and /au/ (/[ɔ:] ~ [aw]) are the outputs of either the Monophthongization Rule, given below, or the Glide Rules (cf. §3:5.7.), giving our above examples the following pronunciations: [weːdeːdja], [wajameːrjan], [tɔːːjan], and [tawi] from the respective roots /wai-/ and /tau-/. As indicated, the Glide Rules are detailed in a subsequent section dealing with suprasegmentals in Gothic. Since it does not involve suprasegmentals directly, but is still an integral part of Gothic phonology, we include the

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^For an opposing view, cf. Jones (1965). Jones introduces and discusses various arguments in favor of positing two quantitatively distinct u-phonemes for Wulfilian Gothic, then systematically refutes each.
Monophthongization Rule here, separate from the other generative rules. For distinctive feature charts of underlying and surface segments, cf. §3:3 below.

(1) Monophthongization Rule

\[
\begin{bmatrix}
+\text{son} \\
-\text{cons} \\
-\text{syll} \\
+\text{low}
\end{bmatrix}
\begin{bmatrix}
\text{a back} \\
\text{β round}
\end{bmatrix}
\rightarrow
\begin{bmatrix}
+\text{mid} \\
-\text{tense} \\
+\text{long}
\end{bmatrix}
\begin{bmatrix}
\text{a back} \\
\text{β round}
\end{bmatrix}
\rightarrow
\begin{bmatrix}
[-\text{son}] \\
\#
\end{bmatrix}
\]

That is, /ai/ and /au/ are realized as [ɛ:] and [ɔː:] respectively when followed by a non-vocalic segment or word boundary. Otherwise we find them as [aj] and [aw] respectively. There is no need to stipulate [-long] in the input's first segment, as Voyles does (1981:66), since /aː/ never occurs in this environment in Gothic. In a further departure from Voyles, we do not include a second environment in which monophthongization applies, i.e. under weak stress. Since Gothic exhibits no synchronic phonetic alternation in non-root syllable between monophthong and diphthong we take /ɛː/ and /ɔːː/ to be underlying where Gothic shows <ái> and <áu> in non-root morphemes.

Gothic /iu/ remains a diphthong, [iu], in root syllable when not subject to any of the Glide Rules (cf. §3:5.7.); in the latter case we find allophones [iw] and [ju]. Examples are kiusan [kiusan] ← /#kius+an#/ 'to choose', nom. sg. triu [triu] - dat. sg. triwa [triwa] ← /triu-/, gen. pl. suniwe [suniwe:] - nom. pl. sunjus [sunjus] ← /sun+iu-/ 'sons'.
3:2.0. The Consonantal Phonemes.

3:2.1. The Stop Series.

The series of voiceless stops is comprised of bilabial /p/, dental /t/, velar /k/, and labiovelar /q/ written <q>. The distribution of the voiceless stops is quite widespread. The phoneme /p/ appears initially only in loan words in Gothic whereas in other environments it can be found throughout the lexicon, cf. *pund* 'pound', *slepan* 'to sleep', *diups* 'deep', and *skip* 'ship'. The phoneme /t/ occurs initially, medially and finally in *taihun* 'ten', *háitan* 'to call', *mahts* 'might, power' and *waít* 'I know'. We find /k/ in the same environments: *kaurn* 'grain', *kniu* 'knee', *akrs* 'field', *brikan* 'to break', and *ik* 'I'. The same distribution applies to /q/ which we find in *gëns* 'woman', *siggan* 'to sink', *rigis* 'darkness', and acc. sg. *sagg* 'sinking, West'.

3:2.2. The Spirant Series.

For the series of voiceless spirants, as opposed to the stops, we are not always as certain precisely where these were articulated.

The phoneme represented by <f> was either bilabial /φ/ or labiodental /f/. It occurs initially, medially and finally

*We forego phonetic transcription where no significant deviation between underlying and surface segments exists and relevant pronunciation follows straightforwardly from the orthography.*
finally in fadar 'father', ufar 'over', wulfs 'wolf', fimf 'five', and gaf 'I gave'. Since the choice between the two points of articulation does not affect our analysis, we opt for representing this phoneme simply as /f/, realized as [f] in all environments.

Interdental pronunciation may be assumed for the graph <p>, i.e. /θ/. Its surface phone [θ] can be found in bagkjan 'to think', brôbar 'brother', brûps 'bride', and mîp 'with, among'.

Native Wulfilian Gothic lacked a voiceless velar spirant phoneme; we recall that the graph <χ> only occurs in loan words for Greek <χ> and even then it may have had the value [k] in Gothic (cf. Wright 1981:5). Further evidence for the absence of phonemic /χ/ comes from the transliteration of the proper noun Go. Zakarias for Gk. Ζαχαριας. The graph <χ> may even have been introduced by post-Wulfilian scribes (Beck 1973:29).

Gothic did have a phoneme /h/, which was pronounced as a glottal spirant [h] initially as in haurn 'horn' and hairto 'heart', and in intervocalic medial position as in faihu 'cattle, property' and tâihun 'ten'. Both Wright (1981:10) and Braune/ Ebbinghaus (1961:46) believe a voiceless velar spirant [χ] was realized before or after consonant as in hlâifs 'bread', hñâîws 'low', hrâins 'pure', saihs 'six', nahts 'night' and falh 'I concealed', and finally as in jah 'and', tâuh 'I led' and the enclitic -uh
'and'. Although this most probably applies to <h> in initial clusters with resonants (like hláifs above), given what we understand of preferred syllable structure (cf. Murray and Vennemann 1983 and §3:4.7 below), syllabification data (albeit sparse, cf. §3:4.7.) support a weaker postvocalic <h>, i.e. [h], since it does not pattern like the obstruents. Furthermore, consider the argument that Wulfila otherwise captured the morphophonemic alternation of forms like hláibus (gen.) ~ hláif (acc.) (similarly for <d> ~ <p>, see below). The only feature which alternates between these allophones is voicing—not point of articulation. Given that Wulfila did not mark the same phonetic variation for the velar voiced spirant (which surely existed), cf. dagis (gen.) [dayis] alternating with dag (acc.) [daɣ] and not **dah, we reason that the phone represented by <h> in this position was not homorganic with /γ/, making this graph ill-suited for the job.

The phoneme /hʷ/, according to Wright (1981:11), was either a labialized h or a voiceless w. Braune/Ebbinghaus (1961:48) opts for the former. It is realized as [hʷ] initially, medially and finally in, for example, hwōpan 'to boast', ahwa 'river', sahwt 'you saw', and nēhw 'near'.

Gothic has three voiced spirant phonemes, all of which exhibit the morphophonemic alternation mentioned above as well as having a third allophone.

Bilabial /β/ was realized as the stop [b] initially and
after consonant, cf. bairan [bəran] 'to carry', brobar [brə:θar] 'brother', salbōn [salbo:n] 'to anoint' and lamb [lamb] 'lamb'. Medially after vowel the spirantal pronunciation, [b], was maintained, as in haban [haβan] 'to have' and ibns [iβns] 'even'. Postvocalic /b/ in absolute final position or before tautosyllabic (voiceless) final consonant(s) is realized as [f]: nom. hláifs, acc. hláif ~ gen. hláibus 'bread'; fragifts 'a giving away', imp. gif, pt. gaf, gaft ~ inf. giban 'give', but not ibns 'even' with heterosyllabic n.

The phonetics of the velar phoneme of this series, /\gamma/, still causes scholarly debate (see Wright 1981:10, Braune/Ebbinghaus 1961:49). It most likely remains a voiced spirant in initial position as in *gasts* [γasts] ‘guest’ and *greipan* [γri:pan] ‘to seize’. We find [γ] intervocally in e.g. *agis* [aγis] ‘fright’, and *steigan* [sti:γan] ‘to climb’; and probably in the sequence /\gammaC/ as in *lagjan* [layjan] ‘to lay’ and dat. sg. *tagla* [taγla] ‘hair’, although Wright (1981:10) mentions the possibility of a stop here. After nasal, e.g. *briggan* [briŋgan] with <gg> for [ŋg], we find the voiced stop [g]. When geminated, a geminate voiced stop [gg] is realized: *bliggwan* ‘to beat’, *triggwa* ‘covenant’, *glaggwo* ‘accurately’, and *skuggwa* ‘mirror’. The <gg> for /\gammaγ/ spelling, as in *bliggwan*, must be kept distinct from <gg> representing underlying /ny/, found in *briggan*. Post-vocalic /\gamma/ finally or before final -s and -t was probably realized by its voiceless equivalent [χ] in words like *mag* [max] ‘I am able’, *dags* [daxs] ‘day’, and *mact* [maxt] ‘you are able’. Note that Wulfila did not mark the alternation in the orthography as he did with /\theta/ and /\delta/ (see above). But given a limited range of phonetic values for the expected alternate graph <h>, pronounced as a glottal spirant in final position (like English /h/) and not as a velar spirant, the lack of orthographic parallelism is explainable.

Gothic had two sibilant phonemes, voiceless dental /s/
and voiced dental \(/z\)/. The phoneme \(/s\)/ remained \([s]\) initially, medially, and finally in words like sunus 'son', skadus 'shadow', kiusan 'to choose', wasjan 'to clothe', acc. sg. gast 'guest', and gras 'grass'. It also occurs as geminated \([ss]\), for example in wissa 'I knew' and qaqiss 'consent'. The \(/z\)/ never occurs initially in Gothic. Medially it is realized as \([z]\), as in azets 'easy', hazjan 'to praise', and huzd 'treasure'. Gothic final devoicing, already demonstrated for the other voiced spirants, applies here as well. Voiceless \([s]\) is realized in final position in hwas 'who' (~ hwaz-uh 'each' ~ /h'a+z-/ and in nom. rigis [rik'is] ~ /rik'iz/ (~ gen. rigizis [rik'izis]). We also observe \(/z\)/ of the nominative singular ending alternating with zero in the following environments: after \(/s\ z\)/ in drus (from /drus+z/) : gen. drusis 'fall'; and after a short vowel plus \(/r\)/ in waiz (from /wir+z/) : gen. waizis 'man'. Assimilation with following \(/r\)/ occurs with the preposition us /uz/ 'out of' in the noun urruns 'departure' as well as in the univerbated prepositional phrase ur-rigiza (2 Cor. 4:6) 'out of the darkness'. Devoicing in preverbal us- found in us-agjan 'to frighten utterly' and us-beidan 'to await' provides evidence for the retention of a word boundary in these forms.

3:2.3. The Resonant Series.

The resonant series \(/l\ r\ m\ n/ had non-syllabic as well
as syllabic realizations. Non-syllabic variants occur initially, and medially and finally after vowel for lateral /l/ in láisjan 'to teach', blōma 'flower', wiljan 'to wish', and skal 'I shall'; for trilled apical /r/ in raihts 'right', bairan 'to carry', and fidwōr 'four'; for bilabial nasal /m/ in ména 'moon', guma 'man', ams 'shoulder', and nam 'I took'; and for the dental nasal /n/ in nahts 'night', kuni 'tribe', áins 'one', and niun 'nine'. The resonants also occur geminated in fulls 'full', wulla 'wool', faírra 'far', swamms 'sponge', imma 'him', brinnan 'to burn', kannjan 'to make known' and kann 'I know'. Syllabic surface forms, i.e. [l r m n], occur (cf. Wright 1981:75-6) after consonant finally or between consonants. Examples are taglı [taylı] 'hair', fugls [fuyls] 'bird', sigljō [siyljo:] 'seal'; tagr [tayr] 'tear', akrs [akrs] 'field', huggrian [huŋgrjan] 'to hunger'; bagms [bayms] 'tree'; rign [rîyn] 'rain', and tāikns [tɛːknɔs] 'sign'.

For the phoneme /n/, we can add to the above generalizations. Geminated /nn/ becomes simplex [n] before consonants other than [j] as in 2 sg. prs. ind. kant, 1 sg. pt. ind. kunba (~ 1/3 sg. prs. ind. kann) 'know'; uurruns 'running out', 2 sg. pt. ind. rant (~ inf. rinnan) 'run'. Simplex and geminate contrast in final position: cf. adv. inn 'inside' ~ prep. in 'in', and dat. sg. mann 'man' ~ lsg. man 'I think'. It also is realized as the velar nasal [ŋ] before a velar consonant: figgrs [fi grs] ~ /#finγr+z#/ 'finger',
3:2.4. The Glide Series.

The near-minimal pairs iup 'upwards' ~ juk 'yoke' and gāidw '[a] want' ~ leipu 'strong drink' demonstrate the need to posit distinctive glide phonemes for Gothic, i.e. /j/ and /w/.

The front glide /j/ occurs initially and medially before vowel in, for example, jah 'and', nom. pl. jus 'you', nasjan 'to save', and harjis 'army'. Before a consonant or finally it is realized as [i] (see Glide Rules §3:5.7.): acc. pl. izwis 'you', nasida 'I saved', and nom./acc./voc. sg. kuni 'race' (~ dat. sg. kunja, both from /kun+j-/). That /j/ may have been strengthened to some sort of voiced spirant in syllable-initial position has been maintained by several scholars (cf. Frey 1983:291, Murray and Vennemann 1983:517, and Suzuki 1991:173).

The back glide /w/ is vocalized to [u] before obstruent or two consonants (see Glide Rules, §3:5.7.); elsewhere non-vocalic [w] occurs: acc. sg. ajukdub 'eternity' (~ aiws 'time, eternity', both from /aiw-/), acc. pl. uns 'us' /w+ns/; nom. pl. weis 'we' /w+i:s/, wrikan 'to persecute', wlits 'face, countenance', speiwan 'to spit', balwjan 'to torment', nom. sg. snáiw, acc. snáiw 'snow', imp. afwalw 'roll away'.

drigkan [drīŋkan] ← /#drink+an#/ 'to drink', and siggan [siŋkan] ← /#sink+an#/ 'to sink'.
### 3:3. Summary of Gothic Phonemes

The following table (modelled after Voyles 1981:7) lists the underlying phonemes of Gothic along with relevant articulatory features. In the preceding text, what has been termed mid is reflected in the chart as the combined features [-high, -low].

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In addition to the above segments, the following occur in Gothic as surface forms: the voiced stops [b d g] (cf. §3:2.1.); syllabic [m n r l] and velar [ŋ] (cf. §3:2.3.); the voiceless velar spirant [ɣ] (cf. §3:2.2.); the short mid back round lax vowel [ɔ] (cf. §3:1.2.); and the reduced vowels [i ə ɔ] which have the features [-front -back -high -low] differentiated from each other by [+other features] (cf. §3:3.0.). Gothic also includes the underlying diphthongs /ai au iu/. The questionable phonemic status of /ɛ/ is discussed in §3:1.2.

3:4.0. Gothic Suprasegmentals.

The suprasegmentals relevant to the present study are stress, length, and juncture. Details on the nature of these are provided in what follows. Most of the cited examples are taken from Bennett (1970 and 1972) and are Gothic words unless otherwise indicated.


A key starting place for the study of Gothic lexical stress is an understanding of Gothic word formation: what constitutes a true compound versus a phrasal string of two or more words. The type of juncture between morphemes, determined by morphemes being independant words, affixes or clitics, or parts of a compound, is a conditioning factor vital to the assignment of degrees of stress. Unfortunately,
any glance at a Gothic manuscript will remind us that the scribes found parchment much too precious to waste by leaving a space between words (cf. the palimpsest Codex Ambrosianus which does not even allow the luxury of space between lines. Braune/Ebbinghaus [1961: ill. 2 facing p. 1] has a nice illustration of this.) Since juncture is not overtly indicated we must look for indirect clues as to the rules and outputs of Gothic derivational morphology; these include the possibility of enclitic particle insertion, the occurrence or not of syncope, and semantics—topics which will be dealt with below.

One of the defining features of the Germanic family of languages is the shift of the accent to the first syllable of simplex words and, unlike the parent Proto-Indo-European language, the accent remains fixed throughout the various paradigms. The effects of this shift can be seen in the reduction of final syllables which it induced: cf. acc. sg. PIE *pətər-m > PGmc. *fāderun > *fāderu > Go. fādar, ON fōbor (via PN *fādaru), OE fāder, OS fāder, and OHG fāter 'father'. Thus, the following representative Gothic words are accented as indicated: nom./acc. sg. ąugō, pl. ąugōna 'eye', 1 sg. prs. ind. baīra 'carry', dat. sg. masc. blīn-damma 'blind', ūfarō 'above'.

---

'Ve adopt the convention that the acute accent, indicative of primary stress, and the grave accent, indicative of secondary stress, may coincide with the traditional Gothic digraph markers, e.g. ąuga-dahroō 'window'.
3:4.2. Stress in Compounds.

Compounding complicates this otherwise uniform scheme of stem-initial stress. Gothic and its sister Germanic dialects differentiate between verbs and the rest of the word classes, especially nouns and adjectives, with regard to stress pattern. By a characteristic inherited from Proto-Indo-European (see Wright 1981:15) and still recognizable in the modern Germanic languages, if the right-most constituent of an apparent compound, the one which determines the word class, is nominal, then the first constituent bears the primary stress; if it is verbal, then the right-hand verbal root bears primary stress. We find internal evidence for this in word pairs in which syncope has or has not occurred: Go. ándanbons 'pleasant' : andnīman 'receive, take', ándahàfts '(an) answer' : andháfjan 'to answer'. Gothic retains the second /a/ in the substantive forms because here the prefix /anda-/ bears primary stress. In the verbal forms with root stress, the pretonal prefix is shortened through syncope.

We now formulate a word stress rule, borrowing and adapting from Voyles (1981:42ff), in order to describe what we know of Gothic accentuation.
(2) Word Stress Rule

\[ [+\text{son}] \rightarrow [+\text{stress}] / \# [-\text{son}] \]

Not: Verbal derivational prefixes, enclitic particles, or re-duplicative prefixes

Voyles adds the convention (1981:43) that this rule applies cyclically, and that 'the vowel stressed last in the cycle receives the primary stress and any other stressed vowels inside the construction are reduced by one.' Thus, taking his example un\textit{barnahs} 'childless', we have:

\[
\begin{array}{cccccccc}
1 & \# & \text{un} & [ & \# & \text{barn} & ] & \text{ahs} & \# & ] \\
\end{array}
\]

to which Rule (2) applies first to the innermost constituent and reapplys outward, resulting in:

\[
\begin{array}{cccccccc}
1 & \# & \text{un} & [ & \# & \text{barn} & ] & \text{ahs} & \# & ] \\
\end{array}  
\]

\[
\begin{array}{cccccccc}
1 & \# & \text{un} & [ & \# & \text{barn-ahs} & ] & \# & ] \\
A^1 & A^2 & A^2 & A^1
\end{array}
\]

\[
\begin{array}{cccccccc}
1 & 2 & \# & \text{un-barn-ahs} & \# & ] \\
A^1 & A^1
\end{array}
\]

with three degrees of stress indicated by the superscribed numbers: un\textit{barnahs}, where 1 stands for primary stress, 2 secondary, and 3 for tertiary. For the present, we will use these superscripts interchangeably with the acute (=1) and grave (=2) accents. Unmarked syllables represent tertiary or quaternary stress. This convention will be streamlined
By the same process, we can see how even more than three degrees of stress are possible, as in, for example, \textit{unanasiuniba} 'invisibly' (superscripts are used throughout here):

\[
\begin{align*}
1 & \quad \Rightarrow \quad \text{Av A}^1 \quad \text{A}^2 \quad \text{N} \quad \text{N A}^2 \quad \text{A}^1 \quad \text{Av} \\
1 \quad 2 & \quad \Rightarrow \quad \text{Av A}^1 \quad \text{A}^2 \quad \text{N} \quad \text{N A}^2 \quad \text{A}^1 \quad \text{Av} \\
1 \quad 2 \quad 3 & \quad \Rightarrow \quad \text{Av A}^1 \quad \text{A}^2 \quad \text{A}^2 \quad \text{A}^1 \quad \text{Av} \\
1 \quad 2 \quad 3 & \quad \Rightarrow \quad \text{Av A}^1 \quad \text{A}^1 \quad \text{Av} \\
\end{align*}
\]

which would imply a complete stress pattern of \textit{unanasiuniba} 'invisibly' with 4 standing for fourth degree stress, if, indeed, it differs from 3 (cf. further §3:4.3. below).

One apparent flaw of Voyles' theory of Gothic word stress is its overreliance on Gothic lexical information, overlooking a generalization of Gothic word-formation processes. Voyles claims that verbal prefixes, which he lists as /anda/, /bi/, /diz/, /fer/, /fra/, /fri/, /ga/,

\footnote{Voyles uses an unattested form \textit{*unanasiuns} as his example. Our choice of the corresponding attested (Sk.8,2.) adverb does not alter the end result of Voyles methodology.}
/tuz/, /twis/, and /unθa/, are never assigned primary stress even when affixed to nouns and adjectives (a statement for which he provides no evidence). But this stance leaves alternations like unapocopated andanėms 'pleasant': apocopated andniman, mentioned above, unaccounted for.

In addition, arguments can be made for certain of these morphemes occurring under primary stress in given environments. While Voyles' agrees with Prokosch (1939:119) in believing that the prefix ga- 'was probably always unstressed', Bammesberger (1981) makes a case for stressed ga- in nominal compounds at some point in the development of Germanic. He argues that Go. gābāurba, gen. gābāurbaus 'birth' first of all could not have come from a root-stressed Proto-Germanic form because 1) IE ti-derivatives typically had suffixal stress and zero grade on the root, as this one does (IE *bhṛ-ti > Gmc. *-burdi-), and 2) cognates show Vernerization: OHG gīburta, OS gīburda, OE gebyrd.

Secondly, the Pre-Gothic source seems to have had prefixal main stress, i.e. Pre-Go. *gāburdi-, since the only way to account for voiceless p in Go. gābāurbaus is by Thurneysen's Law (cf. §3:5.10.), which requires the segment in question to occur in a weakly stressed syllable. As further evidence for primarily stressed ga- Bammesberger cites Go. gaman 'companion' < Pre-Go. *gammann- for which degemination would not have occurred if the root had born primary stress. Old English cognates gamen, gomen 'entertainment' with
alliterating g- lend support.

Bennett (1970:469) shows that Go. *andbahts* 'servant', a loan from Celtic *ambaxtos* of which initial and- was 'restructured by folk etymology into the familiar native form and- ... with initial primary stress', would have been pronounced [andbauxt] (see also Feist 1939:48-9).

The key, then, is not what morphemes are strung together to form compounds, but rather how they are joined. Does univerbation occur, whereby the word boundary is deleted, or not? What have traditionally been called compound nouns and compound verbs are stressed differently in Gothic because they are formed by different morphological processes which affect underlying types of juncture in different ways.

The fact is, true compound verbs in Gothic--ones that begin 'with roots instead of proclitics' and are 'incapable of internal expansion' (Bennett 1972:108), unlike what we call 'phrasal verbs' in §3:4.4. below--are not accented any differently than compound nouns. The only compound verbs in Gothic are denominative and rare. Bennett (1970:468) gives the examples *ubil-waurdjan* 'speak evil of' derived from *ubil-waurds* 'evil-speaking' and *waja-merjan* 'blaspheme' derived from *waja-merei* 'blasphemy'. These verbal compounds would not surprisingly adopt the accentuation of their substantive models.

Our analysis then requires a cyclical rule which
deletes the word boundary (#) when two stems are compounded, as well as a revamped Word Stress Rule.

(3) Univerbation Rule

\[ # \rightarrow \emptyset / X \underline{\_\_\_} Y \]

where \( X \) and \( Y \) are stems which are being compounded and \( Y \) is a noun or adjective.

This rule applies indirectly to verbs like *ubilwaýردjan* which are derived from compound nouns with rule-generated stress patterns already set. The Univerbation Rule operates in conjunction with our new Word Stress Rule (since we will be amending Rule 2' in what follows we proceed with labelling this part 2'a):

(2'a) Word Stress Rule.

\[ [+\text{syll}] \rightarrow [+\text{stress}] / # [-\text{syll}] \underline{\_\_\_} 0 \]

We see Rules (2'a) and (3) at work in the following example:

[ # un [ [ # barn ] ahs # ] ] \rightarrow (Stress)

\[ \begin{array}{cccc}
1 & 1 & 1 & 1 & 1 & 1 \\
\end{array} \]

[ # un [ [ # barn ] ahs # ] ] \rightarrow (Univrb)

\[ \begin{array}{cccc}
1 & 1 & 1 & 1 & 1 & 1 \\
\end{array} \]

[ # un [ [ barn ] ahs # ] ] \rightarrow \text{eventually}

\[ \begin{array}{cccc}
1 & 1 & 1 & 1 & 1 & 1 \\
\end{array} \]

We are left with an unacceptable output, *unbárnahs* 'childless', since Gothic, assuming it to be a 'well-behaved' Germanic language, has a constraint against two
primary stresses in one word like its historical and modern sister dialects. We therefore add a second prong to the Word Stress Rule called the Compound Stress Rule:

\[(2'\ b) \text{ Compound Stress Rule}\]
\[ [+\text{stress-1}] \rightarrow [+\text{stress-2}] / [+\text{stress-1}] \ X \]

After the application of Rule \((2')\) we have the proper output, \(\text{Unbarnahs}\).

3:4.3. Degrees of Stress.

Our analysis differs from Voyles’ not only in its approach but also in its output. Remember from above that the previous Word Stress Rule \((2)\) yielded the form

\[\begin{array}{cccccc}
1 & 2 & 4 & 3 & 4 & 4 \\
\text{un-ana-siun-iba} \\
\end{array}\]

with four degrees of stress and that, by Voyles’ analysis, this number is limited only by constraints on the recursiveness of Gothic derivational morphology. Voyles neglects to produce sufficient evidence to justify the acceptance of the prosodic minutiae he suggests. By the analysis adopted here (Rules \(2'a-b\) and \(3\)), \(\#\text{un\#ana\#siunib#} \rightarrow \#\text{un\#ana-}\#\text{siunib#} \rightarrow \#\text{un\#ana-}\#\text{siunib#} \rightarrow \#\text{un-ana-}\#\text{siunib#}\) with two syllables under secondary stress and three degrees of stress in all. This seems to be the correct analysis since the diphthong [iu] otherwise does not occur in Gothic under
anything less than secondary stress (see Glide Rule 9d, §3:5.7.). The present theory admits only three degrees of stress. Voyles' process of cyclical 'stress demotion' (our term) lives and dies in the abstract and is never reflected in any hard data.

Bennett (1970:467) discusses consecutive weak syllables in Gothic and states that 'the language provides no internal evidence to indicate which of the two syllables was the weaker'. But he does point out, after considering data on developments within the Germanic dialects, that Proto-Germanic may have had different degrees of weak stress, whereby 'the weaker [of two consecutive weak syllables] was to be lost earlier.' Generally, this was the second of the two: cf. PGmc. *bewōanaz > Go. biudans 'king'; but the first weak syllable could be lost instead: PGmc. *hauzial > Go. häusida 3p. sg. pt. 'hear' but OE hierde, OHG hörta. Whether these shades of weak stress were distinctive in Wulfilian Gothic remains to be substantiated.

Since we are discussing, and therefore have the need to mark, only three degrees of stress, we can abandon the use of superscripts, and instead consistently employ the acute accent (✓) for marking primary stress, the grave accent (\) for secondary stress, and leave tertiary stress unmarked.
3:4.4. Phrasal Verbs and Internal Expansion.

In accordance with the Univerbation Rule (3), verbal compounds like *wajamērjan* 'to blaspheme' are incapable of internal expansion (Bennett 1970:468), meaning that no morphemes may be inserted between the two immediate constituents *waja*- and *-mērjan*. Reduplicated verbs also exclude internal expansion, making forms like **sai-bāu-sō** impossible (Voyles 1981:45); but not because of the non-application of Rule (3) but because no word boundaries, the only possible insertion points, ever exist between reduplicating prefix and verb stem. On the other hand, phrasal verbs, bracketed by a detached preverb and a verb,* may be characterized by the retention of word boundaries, leaving slots for the insertion of clitic particles, e.g. *ub-uh-wōpida* 'and he cried out' (Lk.18:38), *at-ub-ban-gaggand* 'and then entering' (1 Cor.14:23), *ga-u-hwa-sehwē* 'whether he saw anything' (Mk.8:23), *ga-b-ban-mib-sandidēdum* 'and we sent along then' (2 Cor.8:18B). The tmesis observed here, with its parallels in other older Indo-European dialects (cf. Hopper 1975:43), is analogous to the internal expansion of prepositional phrases containing enclitic particles: *ab-u bus silbin* 'of yourself?' (Jn.18:34), *in-uh jāinamma mēla* 'and at that time' (Mt.11:25).

Assuming no more than a single word boundary between a

*See Hopper (1975:40ff) for a more detailed description of the syntax of Germanic preverbs.*
preverb and a verb (ignoring other word boundaries for the present), i.e. /bi#li:ß+an/ bi-leiban 'remain', the internally expanded phrasal verb data provided by Streitberg (1920:161) show that enclitics are inserted to the left of the word boundary. Strings like gabbpantraua /γa+uh+θan-#tru:+a/ 'and I am certain then' (2 Tim.1:5) and anuhkumbei /ana+uh#kumb+i:/ 'and sit at table' (Lk.17:7) show syncope between immediate constituents (cf. Vowel Deletion Rule (6), §3:5.2.). Examples like uzuhhöf /uz+uh#hof/ 'and he raised' (Jn.11:41) corroborate this since, in the absence of a word boundary, the final segment of the preverb /uz/ avoids final devoicing (cf. gen. sg. hláibis ~ acc. sg. hláif 'bread'). Assimilation with following /r/ occurs with the preposition us /uz/ in the nominal example urruns 'rising, East' with no underlying internal word boundary. The same preposition showing devoicing in verbal usagjan 'to utterly frighten' and usbeidan 'to await' provides evidence for the retention of a word boundary in these forms. In cases with double expansion, e.g. bibbangitanda /bi+uh+θan#yit+a+nð+a/ 'and then we are found' (I Cor.15:15), we notice assimilation commonly between the two clitics, i.e. /-hθ-/ → [-θθ-] (not mandatorily: atuhbangaf 'and then he gave away' (Mk.14:44)), but the /h/ of the enclitic particle -uh never assimilates to the initial consonant of the main verb: cf. Go. gahmē-

'Contrast reduplicative prefixes which are inserted to the right of the word boundary, precluding internal expansion.
**gammelida, **anukkumbei, **ubuwwöpida, nor **inussandidëdun (Streitberg 1920:161). This constitutes further proof that a word boundary remains in phrasal verbs.

3:4.5. The Stress of Preverbs.

The steadfastness of the word boundary has important ramifications for the accentuation of phrases as opposed to univerbated forms. Let us see how the Word-Stress Rule applies to a simple phrasal verb like ga-lagjan ‘lay, set down’:

\[
\begin{array}{c|c|c}
V^2 & PV & V^1 \\
\hline
[ & # ga & ] & [# lag+j+an & # ] & \rightarrow \\
V^2 & PV & V^1 & V^1 & V^2 \\
\end{array}
\]

\[
\begin{array}{c|c|c}
V^2 & PV & V^1 \\
\hline
[ & # ga' & ] & [# lag+j+an & # ] & \rightarrow \quad ga'lagjan \\
V^2 & PV & V^1 & V^1 & V^2 \\
\end{array}
\]

(Rule (2'b) does not apply due to the presence of the word boundary.) Is this the desired result, i.e. the result which internal evidence suggests?

Our question concerns the preverb ga- in our example and preverbs in general. First of all we know that ga- is not weakly stressed because we can contrast how it behaves with the enclitic -uh with how a known weakly stressed syllable behaves in the same environment. The compound demonstrative pronoun neut. nom./acc. sg. batuh ‘this, that’ is composed of bata plus -uh. Certainly the second syllable of bata would be weakly stressed. Notice then how weakly stressed /a/ is apocopated in the form batuh. On the other
hand, masc. nom. sg. *sah* from the same paradigm, being monosyllabic, would have stressed /a/. Although its relative syntactic stress could remain low, it is safe to assume that its degree of stress approached that of the first syllable of *bata*, not the second. A conservative hypothesis would be to assign secondary stress and we can thus account for the direction of vowel deletion in the two forms *batuh* (progressive) and *sah* (regressive). The same process seems to operate in phrasal verbs. Like *batuh* we find *anuhkumbei* /ana+uh-#kumb+i:/ 'sit at table', and like *sah* is *gahmelida* /ya+uh-#me:l+ið+a/.

Another argument for ruling out weak stress for preverbs has to do with the phonological constraint that [ε] and [œ], the vowels found in *fair-* and *faîr-* respectively, occur nowhere else in Gothic under weak stress. Historically speaking, these vowels are the result of the 'breaking' of PGmc. *i* and *u* before *r*, *h*, and non-homorganic *h* in stressed syllable (for details see §§3:5.4.-3:5.5.).

We can rule out primary stress on preverbs by observing how disyllabic prefixes known to bear primary stress behave. In substantive compounds, which have primary stress on the first constituent, the final /a/ of, for example, *ânda*-remains: e.g. *andaláus* 'endless', *andanahtí* 'evening', *faîradáuri* 'street'. But before verbs, which bear primary root stress, it is missing: e.g. *andbeitan* 'to blame', *andstandan* 'withstand', *faîrbiudan* 'forbid'.

The nouns andaugi 'face' and andstald 'assistance' appear to contradict the bisyllabic regularity, but they are deverbative, cf. augjan 'show' (itself from n. augō 'eye'), andstaldan 'supply with', and may have even maintained primary root stress. Interestingly enough, there are three disyllabic preverbs with final non-apocopating /a/: ana-, wibra-, and unba-. The preverb ana- coexists beside the free form preposition ana 'on, at', as does wibra- beside the preposition wibra 'against'. Unba is attested only once in the phrasal verb unba-bliuhand (1 Thess. 5:3) 'they shall escape', making it difficult to draw any conclusions. Bennett (1972:108) equates at least unba and wibra with free-standing adverbs, not preverbs. He groups them with adverbial üt and faúra for which we have contrasting preverbs us- and faúr-; cf. ip atta is usgaggands üt bad ina (Lk.15.28) 'but his father, going out, entreated him', and faúra gaggan with a transparent meaning 'to go before' versus faúrgaggan with a lexicalized meaning 'to pass by'. Note that where there is alternation between apocopated and full forms, such as that between the preverb and- and the nominal prefix anda-, the corresponding preposition, in this case and 'along, throughout, towards' is monosyllabic. Thus, even if ana-, unba-, and wibra- are preverbs and not inde-

*The preverb und-, e.g. in undgreipands (Mk. 1:31) 'grasping', co-exists with the preposition und '(+acc.) unto, until, up to; (+dat.) for'. Feist (1923:392) links these etymologically with unba, but the semantics (cf. NHG ent-fliehen 'to escape'), are difficult to reconcile.
ependent adverbs, primary stress on the first syllable is not the only explanation for the stability of the final /a/. Such preverbs could very well be influenced by free forms.

Thus we conclude that Gothic preverbs are quasi-independent phrase-bound words which bear secondary stress (in agreement with Bennett (1972:108-9), with the exception of ga-, which for him is always weakly stressed). Our Word Stress Rule must account for this.

The new Word Stress Rule must also account for the stress patterns of what Bennett (1970:466-7) calls quasi-compounds. These include forms like biudinassus 'kingdom' and salbōđēdeina 'they might anoint' consisting of a first constituent with initial primary stress followed by weak stress, and a secondarily stressed derivational or inflectional suffix (respectively -assus and -đēdeina in our examples) as the second constituent. He argues for secondary stress on the suffix as a means for Gothic to avoid too many consecutive weak syllables. He states that 'Gothic shows no evidence for more than two consecutive weak stresses,' but unfortunately does not describe the nature of such lacking evidence.

We are left with some questions. How, for instance, do we know that salbōđēdeina was not pronounced [səlboːdːeːina], which would appear to sidestep Bennett’s consecutive weak stresses constraint equally as well? A solution based solely on syllable weight does not help to decide between
the third and fourth syllables since they are of equal weight. If we focus on morphological information and thereby assign secondary stress to the first syllable of any suffix of a quasi-compound, then what about a word like voc. pl. barnilōna ‘children’ (Jn.13,33), in which i is not thematic (barn = neut. a-stem) but rather part of the suffix and therefore deserving of secondary stress?

Internal Gothic evidence which might settle this debate is rare. The form fidurfalbs ‘fourfold’ clearly shows weak stress on the second syllable following primary stress on the initial syllable since /u/ would otherwise be lowered to [ɔ] (cf. §3:5.9.). Bennett claims that ‘weak stress ... occurred on syllable-forming suffixes that directly followed primary or secondary stress’ (1970:467) but offers only external evidence, i.e. that vowels in the weak stress position were syncopated earlier than other vowels: cf. Go. háusida, OE hierde, OHG hōrta ‘I heard’; Go. salbōda, OHG salbōta > MHG salbete > NHG salbte.

In determining which of the two possible accentuations in our example is the more likely one, salbōdedėina or salbōdedėina, we may look at what stress patterns are common throughout the language. Does 1-3-2-3(-3) or 1-3-3-2(-3) (with each number representing degree of stress on a syllable) represent the dominant pattern among four or five syllable words? The pattern 1-3-2-3(-3) seems to dominate among Gothic compounds: acc. pl. hrāinahārtaṃs ‘pure-
hearted’ (Sk.6:27), dat. sg. *weinagarda ‘vineyard’ (Lk.20:15), acc. sg. *augadaurō ‘window’ (2 Cor.11:33), nom. sg. *mänamaürpja ‘man-killer’ (Jn.8:42), acc. sg. *müssatáujandan ‘evil-doer’, gen. sg. *wallamèreinains ‘good tidings’ (1 Cor.1:21). This is not surprising given the nature of Gothic word formation: mostly monosyllabic root plus thematic vowel plus either consonantal desinence or the second constituent of a compound. The 1-3-3-2(-3) pattern does occur in the Gothic corpus but only in a few compounds with a trisyllabic first constituent: *ákranalàus ‘unfruitful’ (Mk.4:19), *ásilu-galrnus ‘mill stone’ (Mk.9:42), acc. pl. híninakùndins ‘heavenly’ (1 Cor.15:49), and dat. pl. *búsundifàdim ‘captains’ (Mk.6:21), dat. pl. *éisarnabàndjom ‘iron band, chain’ (Lk.8:29). If there is any commonality to be found between our 1-3-2-3(-3) and 1-3-3-2(-3) examples, it is the fact that secondary stress in both accentuation patterns falls on the syllable immediately after the thematic element. If *salbòðëdeina, with thematic /o:/ marking it as a class II weak verb, were to follow suit, we would expect [sálbo:-ðe:ði:na]. The multitude of Gothic compounds and quasi-compounds with thematic vowel established an alternating strong-weak-strong stress rhythm which words lacking the thematic element could follow. Our other example, *biudi-nassus, is such a form. The derivational suffix -in- < IE *-eno- has displaced the thematic element of this feminine o-stem root and adopted its accentuation, i.e. weak stress,
yielding biudinàssus.

We now offer a new Word Stress Rule which assigns only three degrees of stress and takes into account not only the accentuation of simplex and compound words but also the accentuation of preverbs and of quasi-compounds.

(2") Word Stress Rules (Final Version)

\[
a. \left[ +\text{son} \right] + \left\{ \begin{array}{c} (+\text{stress-1}) \\ (+\text{stress-2}) \end{array} \right\} \left[ -\text{cons} \right] \rightarrow \left[ (\text{Preverb}) \right]_0
\]

b. \left[ +\text{stress-1} \right] \rightarrow \left[ +\text{stress-2} \right] \left[ +\text{stress-1} \right] X __
where X contains no word boundary (#)

c. \left[ +\text{son} \right] \rightarrow \left[ +\text{stress-2} \right] \left[ -\text{stress} \right] __ \left[ -\text{stress} \right]
where \left[ -\text{stress} \right] = \left[ +\text{stress-3} \right]

By Rule (2"a), the first vowel after a word boundary receives secondary stress if within a preverb, and primary stress elsewhere; by (2"b), a primary stress will become secondary if it immediately follows another primary stress; and by (2"c), the middle syllable of three consecutive weakly stressed syllables will receive secondary stress. The operation of Word Stress Rules (2") shows itself in the following examples: /#aftra#ana#sto:δi:i:n+z#/ \rightarrow (2"a) #aftra#ana#sto:δi:i:nz# \rightarrow (Univrb) & (2"b) #aftra#ánastò:δi:i:nz# \rightarrow (Univrb) & (2"b) #aftra#ánastò:δi:i:nz# \rightarrow (ev.)
Vowel Reduction Under Weak Stress.

Remembering that §§3:1.1.-3:1.4. above dealt only with the vocalic phonemes of Gothic under prominent stress, we now turn to their possible weakly stressed realizations. This section examines evidence for hypothesizing vowel reduction, realized by quantitative and qualitative changes, in weakly stressed syllables. Our data consist of internal morphophonemic alternations as well as orthographic variation, so-called 'scribal error', as are taken from Streitberg (1920), Braune/Ebbinghaus (1961), and Rauch (1981).

Vowel reduction is expressed in qualitative and in quantitative change. In the former case, weakly stressed vowels tend toward centralization and possibly neutralization; in the latter case long vowels and diphthongs are shortened, and short vowels are syncopated. Gothic orthography does not provide special characters for these reduced vowels, but we may look for the evidence we require among scribal alternations. These variations are of value because they are not just random mistakes by the hands which gave us our surviving Gothic manuscripts (cf. §1:3. above). Rather, the scribal alternations observe identifiable limits and regularities (see below) suggesting phonological processes.

[aftraanuts:oi:ns] aftraanutsodeins 'renewal'; //salβ:o:-+e;ø+i:+na#/ → (2"a) #salβo:øi:na# → (2"c) [salβo:-øe;øi:na] salβodeineina 'they might anoint'.


Remembering that §§3:1.1.-3:1.4. above dealt only with the vocalic phonemes of Gothic under prominent stress, we now turn to their possible weakly stressed realizations. This section examines evidence for hypothesizing vowel reduction, realized by quantitative and qualitative changes, in weakly stressed syllables. Our data consist of internal morphophonemic alternations as well as orthographic variation, so-called 'scribal error', as are taken from Streitberg (1920), Braune/Ebbinghaus (1961), and Rauch (1981).

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at work. We cannot say exactly at what point in time or
where geographically orthographic alternations may have
crept into a manuscript chain, but even being post-Wulfilian
would not make them any less interesting or worthy of study.
They serve to remind us that Gothic was indeed a living
language at one time.

It may be useful to distinguish different types of
orthographic alternation relevant for Gothic. Some of these
may be clues as to Wulfilian or scribal pronunciation,
others may not. Marchand’s (1973:36ff) discussion of scribal
errors is extensive and most useful. He isolates three types
of errors: mechanical errors, e.g. ditography like manana-
sed (Jn.12:47 CA) for manased ‘mankind’, which tell us
nothing about pronunciation; errors which may be mechanical,
e.g. cluster simplification like waúrswa (Jn.6:28 CA) for waúrstwa ‘works’, which may indicate pronunciation; and
errors, e.g. e/ei/i confusion like leikeis (Lk.5:31 CA) for
lékeis ‘physician’, which do indicate pronunciation. We are
only interested in the latter two types. Still, we must
proceed cautiously in order not to draw unwarranted conclu-
sions based on what Marchand (1973:57) calls ‘guesswork’.
Writing usbulida (2 Tim. 3:11A) for usbuláida ‘I endured’
does not necessarily imply that the thematic part of this
third weak class verb was being raised and shortened from
[ɛ:] to [i]. Omission, a mechanical error, seems most likely
here, given that, as Rauch (1981:396) points out, this con-
stitutes the sole instance of substitution for <ai>, a fact which she calls 'remarkable in view of the many <ai> desinences.' The transposition of letters in arbáidēdēdjāu (Gal.4:11) for arbáidēdēdjāu 'I might have labored' may reflect actual metathesis occasioned by vowel weakening, but remember that Bennett (1972:104f) argues for secondary stress on syllable four of this word, a position adopted in the present work.

For the scribal alternation data to contribute to our knowledge of Gothic pronunciation, we must isolate those alternations which may not be so easily dismissed as purely innocent and random oversights or mistakes which are independent of any phonetic influence. The substitution of <e> for <i> in swekunbamma (Lk. 8:17) for swikunbamma 'manifest' or the insertion of <i> in greitan (Mk. 14:72) for grētan 'to weep' may be just as spontaneous and unintentional as countless other human errors resulting from scriptorial tedium, but the fact that only certain alternations occur allows us to group certain graphs together and leads us to ask on what this grouping might be based. It forces us to view these variations not as 'errors' but as phonetically significant graphic alternation. When the allophones which a certain group of graphs are supposed to represent are qualitatively close, or even neutralized in the extreme case, orthographic confusion is bound to occur. If we can demonstrate that 'scribal errors' are more than fits of random
carelessness, then these data will have something to contribute to our theory of Gothic phonology.

The orthographic alternation data of Appendix 1, while not exhaustive, are representative. Appendix 1 contains alternations in both primarily and secondarily stressed as well as in weakly stressed syllables. If the alternations represented no more than random scribal slips of the pen, then we would expect all the vowels to be equally involved in a more or less even distribution between those syllables bearing non-weak and those bearing weak stress. This is by no means the case. Only twenty-eight percent of the alternations involve prominent syllables, with thirty-seven out of forty-three of these involving some interchange of the graphs \(<e, i, ei>\) (such evidence has long prompted scholars to argue for the proximity of the Gothic \(e\)- and \(i\)-sounds under primary stress; see for instance Wright 1981:6). Put another way, orthographic alternation is almost three times more likely to occur with a weakly stressed vowel.

Further evidence of a positive correlation between weak stress and the occurrence of orthographic alternation is the fact that the number of possible variants for each grapheme under weak stress is always greater or equal to the number of possible variants under primary stress.* The following

*The single exception to this generalization is made by \(<\ddot{o}>\) for etymologically long \(<\ddot{u}>\) in \(\ddot{o}nteigo\), with no variants for this same \(<\ddot{u}>\) under weak stress. But this is not surprising since, with the exception of the suffix \(-dubs\) to which Bennett (1972:104f) assigns secondary stress in any case, Braune/
The table is based on Appendix 1.

Table 1

<table>
<thead>
<tr>
<th>Expected graph</th>
<th>Alternants under primary stress</th>
<th>Alternants under weak stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>phonemically long:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;ei&gt;</td>
<td>&lt;ei, e &gt;</td>
<td>&lt;ei, i, e &gt;</td>
</tr>
<tr>
<td>&lt;e&gt;</td>
<td>&lt;ei, i, e&gt;</td>
<td>&lt;ei, i, e &gt;</td>
</tr>
<tr>
<td>&lt;ái&gt;</td>
<td>&lt;ai &gt;</td>
<td>&lt;i, ai &gt;</td>
</tr>
<tr>
<td>&lt;áu&gt;</td>
<td>&lt;au &gt;</td>
<td>&lt;au, u &gt;</td>
</tr>
<tr>
<td>&lt;o&gt;</td>
<td>&lt;o, u &gt;</td>
<td>&lt;o, u &gt;</td>
</tr>
<tr>
<td>phonemically short:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;i&gt;</td>
<td>&lt;ei, i, e&gt;</td>
<td>&lt;ei, i, e, ai, a, o&gt;</td>
</tr>
<tr>
<td>&lt;a&gt;</td>
<td>&lt;a, ai &gt;</td>
<td>&lt;i, ai, a, o &gt;</td>
</tr>
<tr>
<td>&lt;u&gt;</td>
<td>&lt;o, u &gt;</td>
<td>&lt;a, au, o, u &gt;</td>
</tr>
</tbody>
</table>

Table 1 clearly shows that the only possible alternants for the phonemically long front vowel graphemes <ei, e, ái> under weak stress are front vowel graphs. The alternate graph for both phonemically long back vowels represents a back vowel. The two sets are mutually exclusive. This allows us to propose two distinct reduced vowels: a front-central vowel, possibly [ʰ], and a back-central vowel, possibly [ʌ] (following Rauch 1981), which the front and back vowel phonemes represented by these graphs, respectively, approach under weak stress.

The range of possible alternants for the graphs representing phonemically short vowels is much greater, although

---

Ebbinghaus' examples (1961:19f) show that /u:/ only occurs in root syllable in Gothic.
the sound represented by weakly stressed <u> does not seem
to ever share the feature of [-back]. The graph <a> appears
for the first time in our table, substituting for both front
and back vowels and suggesting that its corresponding weakly
stressed phone is distinct from [ι] and [∀]. Short phonemes
have a 'head start' in the reduction process relative to
long phonemes, and so it may be that only with them can
reduction to what Rauch (1981:399) calls 'the ultimate
neutral vowel [ə]' be achieved. Besides the possibility of
[ə] for all three short vowels, represented at least, but
not necessarily exclusively, by <a>, [∀] and [ι] look like
possible realizations, respectively, for weakly stressed
/i a u/ and /i a/ as well, since we encounter the same
alternate graphs as with the phonemically long vowels.

The data lead us to believe that weak stress does not
result in a total neutralization of vowel quality, but
rather that each weakly stressed allophone has a certain
range of phonetic space\(^\text{10}\). Diagram 1 suggests these ranges.
Only the phonemes which occur under weak stress in the
Gothic corpus are included (hence the exclusion of /a:/,
/u:/, /iu/, /ɛ/, and /ɔ/).

\(^\text{10}\) Pinpointing the features of the hypothesized reduced
vocalic allophones [ι], [∀], and [ə] for Gothic seems rather
reckless. For this reason we will be content to generally assign
[-front -back -high -low] in order to differentiate the reduced
allophones from the other vowels. Cf. the Vowel Reduction under
Weak Stress Rule in §3:5.3. below.
A distinction in schwa-like segments is further supported by the weakly stressed minimal pair copulative *nih* 'and not' versus interrogative *nuh* 'now' (see Rauch 1981:399). The orthographic distinction in these two words corroborates data of Appendix 1 and Table 1 which led us to hypothesize in Diagram 1 that [i] does not lie within the phonetic range of /u/. The /u/ of final syllables seems to have run an independent course in Germanic anyway, since, as Rauch (1981:399) reminds us, /u/ is the only Germanic vowel to survive under weak stress after a long root syllable, cf. Go. nom. sg. u-stem *handus* 'hand', but a-stem *dags* (even with short root syllable) and i-stem *gasts* 'guest'.

3:4.7. Syllabification.

An understanding of syllabification is important in the study of the role of juncture in Gothic. This section examines how syllables are divided, formulates syllabification rules, and then relates these rules to the type of junctures involved.

The Gothic manuscripts provide us with two types of
conspicuous clues as to how Gothic words are broken down into syllables. The first of these is the use, adopted from the contemporary Greek orthographic practice (cf. Braune/Ebbinghaus 1961:10), of a dieresis on the letter <i> word-initially, as in I<em>d</em>ja 'I went' and at-<em>î</em>st 'he is here', and, in what pertains to the present discussion, word-internally after a vowel where it begins its own syllable, as in sa<em>î</em>p 'he sows' and sa<em>û</em>il 'sun'. As shall become clear from what follows, these two environments may be captured under a single syllable-initial rubric.

The second source of evidence for Gothic syllabification comes from word division at the ends of lines of text. We may assume that the ample divisions reflect actual spoken Gothic syllabification phenomena since, as Hechtenberg Collitz (1906:72) tells us, these observed divisions are 'by no means arbitrary or dictated by space; on the contrary, certain rules are more or less accurately observed in all manuscripts.' Both Frey (1989: 289) and Schulze (1908:615) highlight the exceptional behavior of obstruent + liquid clusters (see below, rule 4d) as evidence that word division conventions were not purely mechanical and extra-linguistic. Moreover, Frey proves (1989:284-293) that the manner in which words are divided represents more than 'bloße Schreibkonvention' by demonstrating how these divisions across lines of text coincide with general syllable preference laws (cf. also Murray and Vennemann
1983). The hypothesis that observed word divisions reflect actual Gothic syllabification is further supported when the two above-mentioned sources of data overlap. Using a vertical slash (|) to indicate a line break and a period (.) to indicate a syllable boundary, we can safely assume that dat. sg. masc. stau|in (Mt.5:25)\(^{11}\) 'judge', gen. sg. masc. Esae|ins (Jn.12:38) 'Esaius', and gen. sg. masc. Iēsu|is (Neh.7:39 or 43)\(^{12}\) 'Jesus' would have had syllable boundaries as shown in stau.in, Esae.ins, and Iēsu.is (disregarding any other syllable breaks for now).

Our data for word division, and therefore Gothic syllabification, come primarily from Braune/Ebbinghaus (1960), Schulze (1908), Frey (1989)—with an exhaustive list of the divided words in the Skeireins, and Hechtenberg Collitz (1906)—with extensive word lists from the gospels. All four of these works make the same basic observations on syllabification, as outlined by the following rules. Rules (4a-4d) refer to simplex words only.

(4a) A syllable break occurs between immediately adjacent vowels or diphthongs.

Examples are: sai|ada (Mk.4:32) 'it is sown', stau|a

\(^{11}\)Schulze's example (1908:611) is andastau|in, which does not occur. In Streitberg (1960) one finds "...ibai hwan atgibai buk sa andastaua stauin..." but, unfortunately, line break data are omitted. Without having verified this with any Codex Argenteus facsimile, we assume Schulze meant stau|in.

\(^{12}\)Again Schulze (1908:611) is inaccurate, citing Neh.7:41.
(Sk.Vb 18/19) 'judgement'. Digraphs for monophthongs are never divided. The single attestation of a divided ni\|un (Lk.15:4) 'nine' suggests a heterosyllabic realization of the diphthong /iu/. The pronunciation [ni.un] could be explained by analogy to the other bisyllabic cardinals (cf. Schulze 1908:24): si\|bun (Lk.10:17) 'seven', ah\|täu (Lk.16:7) 'eight', and taj\|hun (Lk.14:31) 'ten'.

(4b) Single consonants begin the second syllable.

Examples are: da\|gans (Mk.8:31) 'days', lá\|isa\|ri (Mk.10:35) 'teacher', leij\|til (Mk.14:70) 'small'.

(4c) Clusters of two or more consonants not ending with a liquid are divided before the rightmost consonant.

Examples are: im\|ma (Mt.9:9) 'him', wal\|dufni (Mk.11:28) 'power', band\|jan (Mk.15:6) 'prisoner', waürst\|wa (Jn.9:3) 'deeds', fulhsn\|ja (Mt.6:18) 'secret'.

(4d) If a consonant cluster ends with an obstruent plus liquid then these two consonants together begin the second syllable.

Examples are: af\|tra (Jn.14:3) 'back, again', niu\|klahs (1 Cor.13:11), wi\|bra (Mt.10:35) 'against', gi\|blin (Lk.4:9) 'gable', fa\|dreinás (Lk.2:4) 'family', hug\|greip (Jn.6:35) 'he hungers'.

The three attested examples of /s/ plus liquid show variation: hun\|slastadis (Lk.1:11) 'altar', but sköhs\|la
(Mt.8:31) 'demon' and Isرأëa (Lk.7:9) 'Israel'. Hechtenberg Collitz (1906:83n) proposes that 'sī commences a new syllable after n, not after h' and regrets that 'there are too few examples to establish a definite rule.' The only two occurrences with /ɣ/ plus liquid, agláitei (Gal.5:19 B) 'lasciviousness' and aglōm (Eph.3:13 B) 'afflictions', break rule (4d), but these come from the Codex Ambrosianus B, which together with the Skeireins supplies almost all of the counterexamples to the syllabification rules described here. The sole aberrant form involving [p] plus liquid in all of the Codices Argenteus and Ambrosianus A is nēb|lōs (Lk.18:25) 'needle' (cf. Schulze 1908:617).

Although the evidence is just as scant for [h] plus liquid as it is for [s]- and [ɣ]-clusters, the fact that swāih|ro (Lk.4:38) 'mother-in-law' and hūh|rāu (Lk.15:17) 'hunger' come from the 'reliable' Codex Argenteus lends them more weight. The inferred syllabification, swāih.ro and hūh.rāu, supports our position that postvocalic <h> was pronounced as a glottal spirant [h], not as a velar spirant [χ]. If <h> represented the velar spirant here, then we would expect it to pattern itself after the other obstruents. It would have a rather high 'consonantal strength' in the sense brought forward by Murray and Vennemann (1983) and

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13In §3:2.2. above we argue that in the rather common initial clusters with resonants, e.g. hláifs 'bread', <h> must represent the voiceless velar spirant [χ]. This constitutes a preferred syllable head in line with Vennemann's general syllable structure law in footnote 14.
Frey (1989) and hence form a preferred syllable onset. On the other hand, the glottal spirant [h] has a very low consonantal strength, lying more toward the vocalic end of the scale and is perhaps better characterized as a voiceless vowel.

<table>
<thead>
<tr>
<th>Consonantal Strength for Gothic</th>
</tr>
</thead>
<tbody>
<tr>
<td>vowels</td>
</tr>
<tr>
<td>glottal h</td>
</tr>
<tr>
<td>liquids</td>
</tr>
<tr>
<td>glides</td>
</tr>
<tr>
<td>nasals</td>
</tr>
<tr>
<td>vcd. spirants</td>
</tr>
<tr>
<td>vcl. spirants</td>
</tr>
<tr>
<td>vcd. stops</td>
</tr>
<tr>
<td>vcl. stops</td>
</tr>
</tbody>
</table>

Increasing cons. strength

Its combination with (in our examples) [r] creates a poor syllable head, in that the consonantal strength of the segments first increases then declines on the way to the syllable nucleus. The only phones lower than liquids on the consonantal strength scale are glides, vowels, and the glottal spirant [h]. Thus [-h.r-] is a relatively well-formed, albeit not optimal, syllable contact.

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15 The Syllable Contact Law (Murray and Vennemann 1983:520): The preference for a syllabic structure A.B, where A and B are marginal segments and a and b are the Consonantal Strength values of A and B respectively, increases with the value of b minus a.
Compounds and phrasal verbs are divided at underlying word boundaries. Reduplicative prefixes are separated from the verbal root at the morpheme boundary.

Examples are: not only galēistand (Mk.12:6) 'they revere', frašetan (Lk.4:19) 'to liberate', and bindan (Mk.1:7) 'to loosen' and undgreipandans (Mk.12:8) 'seizing'—all of which can be explained by rules (1-4)—but also afairzidāi (1 Tim.1:6 AB) 'having gone astray', usiddja (Mk.1:28) 'it went out', ga skeireip (Mk.15:22) 'explained, translated', and ushramīdegēina (Mk.15:20) 'they might crucify'.

Reduplicated verbs are likewise divided: afskaīlskāidun sik (Lk.9:33) 'they parted themselves, left' and anasaiislepun (1 Thess.4:14 B) 'they have fallen asleep'. The division here must be at a morpheme boundary since we have argued above, §3:4.4., that no word boundary exists here between the prefix and the root. Such a pattern could be brought about by pressure to maintain the identifiability of the root.

By constrasting the syllabification of native Gothic words ga skafts 'creature' and ga stauida 'I/he judged, sentenced' with Greek loans aipis kaupus 'bishop' and apaüstaualus 'apostle' (citations not supplied), Schulze (1908:618) provides evidence of how a Gothic speaker would be conscious of morpheme boundaries in native words and apportion syllables accordingly. This same etymological
awareness apparently did not exist for loan words—cf. Gk. ἐπί-σκοπος, ἀπό-στολος—and consequently these are treated as simplex words (divided, in this case, by rule (4c)).

(4f) Words cliticized with -ei and -u are divided as simplex words; those with -uh vary between phonological (rules 4a-4d) and morphological (rule 4e) division.

Examples involving the relative particle -ei are:

nom./acc. sg. rel. prn. ba|tei (Mt.5:27 and over thirty times, Schulze 1908:621) 'which'; dat. pl. rel. prn. bai|mei (Mk.15:40) 'whom'; acc. pl. rel. prn. ban|zei (1 Tim.1:20 B) 'whom'; mibba|nei (Lk.5:1) 'while'. The interrogative particle -u is involved in: sijá|du (2 Cor.13:5 A) 'if you be'; skul|du sijái (Mk.10:2) 'whether it is necessary'.

We find the copulative particle -uh in: bam|muh (Sk.IIb 5) 'this'; naúhba|nuh (Jn.7:39) 'yet'; ba|ruh (Jn.6:67) 'there, then', alternating with bat|ubban (Eph.4:9 A) 'and that'; naúhban|uh (Mk.12:6) 'yet'; bar|uh (Jn.18:11) 'there, then'.

The syllabification of words like ban|zei, which behave like simplex words, is consistent with well-known descriptions of Gothic final devoicing (cf. §3:2.2.). Since we expect devoicing to occur before a word boundary, as in acc. pl. masc. /#0anz#/ → [θans] bans 'the', maintaining voicing on [z] in ban|zei may be explained in two different ways. On

16The division of skul/du may have been influenced by the related verb *skulan 'should, must'. Cf. 3 sg. pt. ind. skul/da (Lk.19:11), 1 pl. pt. ind. skul/dedum (Lk.17:10).
the one hand, Gothic cliti-cization is such that -ei is added before the word boundary, i.e. /#0anz#/ → /#0anz-i:#/. With no word boundary present between the two constituents, final devoicing does not apply and syllabifi-cation rule (3) applies. On the other hand, a word boundary may be present underlyingly, i.e. /#0anz#i:#/, but is deleted by the Word Boundary Deletion Rule (5) for clitics, given below in §3:5.1. The contrasting form suns|ei (Jn.11:32) 'as soon as' becomes all the more interesting since the steadfastness of the word boundary would explain both the devoicing of /z/ → [s] as well as this word being syllabified as a compound (as is suns|aiw (Mk.8:10) 'immediately'). The same holds for in bis|ei (Sk.I1b 7) 'on account of which', in opposition to bi|zei (Jn.10:12) 'of which'. Word Boundary Deletion also appears to apply in the case of sijá|du, with the interrogative particle, mentioned above. The corresponding non-suffixed word is sijáib ← /#sij+ai8#/ 'you (pl.) are'.

Although no one has yet provided a convincing explana-tion for the alternations involving copulative -uh, Schulze (1908:621-2) does make some observations. All of the suffixed verbs which he lists exhibit division along morpho-logical lines: idd|edun|uh (Jn.6:17) 'and they went', wēsun-\_uhban (Lk.1:6) 'and they were', wēsun|ubban (Jn.12:19) 'and they were', was|uhban (Mt.8:30, Jn.11:2, 18:14) 'and there was' (with Gmc. *s), qab|uh (Mk.14:13) 'and he said'. Words ending with /-z/ (= Gmc. *z) favor phonological division:
nom. sg. hwarji\textbackslash zuh (Lk.2:3) 'each', nom. sg. sahwa\textbackslash zuh (Mk.9:37) 'whosoever', acc. pl. suman\textbackslash zurban (Eph.4:11 A) 'and some'. The single exception to the latter regularity is nom. sg. sumz\textbackslash ubban (1 Cor.11:21 A) 'and another'.

Exceptions to the six syllabification rules given here are few. Frey (1989:283) lists ten exceptions beside the 335 regular word divisions in the Skeireins. She explains away four of these as 'kalligraphisch motiviert' and the rest as 'momentanes unbekümmertes Vorgehen der Schreiber'. Schulze (1908:613) similarly explains away exceptions for the entire Gothic corpus:

Schwankungen und Regelwidrigkeiten sind im Ganzen so selten, dass sie in der Menge des Gesetzmässigen fast verschwinden und in der Hauptsache der Nachlässigkeit oder Augenblickswillkür einzelner Schreiber zur Last gelegt werden dürfen.

To what extent the syllabification practices evident in the 5-6th century manuscripts recreate Wulfila's language cannot be known with complete certainty. But the regularity observed accross the various monuments suggests that Gothic syllable configuration had not changed appreciably in the century or so since the scriptures were translated.

To summarize, we find that of the two types of juncture, word boundary (#) and morpheme boundary (+), the former affects syllabification in a widespread manner; the latter only with reduplicative prefixes. Where the above morphological syllable division does not apply, Gothic follows universal preference laws for syllabification.
3:5.0. The Role of Suprasegmentals in Gothic Phonology.

Having established a theoretical basis for both segmental and suprasegmental features in Gothic, we now combine the two in order to understand how they interact. Our primary focus is to determine the role of stress and length in the rest of Gothic phonology. To do this we investigate first which phonological processes involve stress and length. Then we concentrate on the phonological rules which depend on stress and length as their primary conditioning features. We can compare how suprasegmentals function in specific cases, seek out analogies, and attempt to make general observations about the way they operate. The synchronic phonological processes which we will analyze here are Vowel Deletion, Breaking, Vowel-Glide Alternations, Long Vowel Lowering, and Thurneysen’s Law.

3:5.1. Vowel Deletion.

Before spelling out the rules of Gothic vowel deletion, we should start by asking where vowel deletion occurs in Gothic. Gothic inherited its basic CV(C) syllable structure from Indo-European in which the only vocalic segment which ever follows the vowel of any given root is a semivowel, either *i or *u, or a resonant. Thus IE *steigh- and *bheydn- are possible reconstructed roots, but not **ste.egh- or **bhe.edh- with two syllabic peaks. Therefore we do not talk of vowel elision intramorphemically since
adjacent full vowels simply do not occur here in Indo-European. We might consider the diachronic monophthongization of diphthongs in unstressed syllable to be a sort of vowel deletion, but note that vowel quantity is retained by the resulting long segment. This is Vennemann’s Monophthongization Principle: ‘In a language with a Length contrast in vowels, monophthongization leads to long vowels’ (Vennemann 1971:112).

Vowel deletion does occur at some morpheme boundaries in Gothic. This is the process described by Vowel Deletion Rule (6b) below. We also observe elision at the word boundary, although at this level Vowel Deletion is dependant on the application or non-application of the optional Word Boundary Deletion Rule (Voyles 1981:58), abbreviated #-Delet, which is recreated here:

(5) Word Boundary Deletion Rule (optional)

\[
\begin{align*}
\text{a. } & \quad \begin{bmatrix} \text{Enclitic particles } /i:/, /uh/, \text{ and perhaps others} \end{bmatrix} \\
\text{#} & \quad \rightarrow \emptyset \\
\text{b. } & \quad \begin{bmatrix} \text{Unstressed stems such as the prn. } /\text{pata}/, \\
/kara/ \text{ and perhaps others} \end{bmatrix} \quad \begin{bmatrix} \text{3sg.ind. } /\text{pata}/, \\
\text{prs. } /\text{ist}/ \end{bmatrix}
\end{align*}
\]

Although Rule (5) is optional, Voyles points out that Part (a) applies 99% of the time in the environments he cites. When Word Boundary Deletion does occur (e.g. /pata#ist/ \rightarrow [pataist]; the discussion of vowel deletion in §3:5.2. below provides the other examples of this intermediate step), then
the Vowel Deletion Rules (6a and 6b) may apply.

3.5.2. The Vowel Deletion Rule.

We now proceed to the actual Vowel Deletion Rule for Gothic, for which we have drawn on Voyles (1981:59):

(6) Vowel Deletion Rule

\[ [+\text{son}] \rightarrow \emptyset \quad / \quad a. \left[ [+\text{long or +stress}] \left[ \text{enclitic} \right] \right] \left[ \text{particle} \right] / \_\text{u}_h/ \]

\[ / \quad b. \left[ [-\text{long}] \left[ -\text{stress} \right] \right] \left[ +\text{vocalic} \right] \left[ [+\text{long or -stress}] \right] \]

The interpretation of this rule depends on the way the binary feature of [+stress] describes the at least three different degrees of stress for Gothic. By [+stress] is meant either primary or secondary stress, and by [-stress] is meant weak stress in the case of three degrees of stress. This is a departure from Voyles (1981:59) who believes in at least four degrees of stress (but see §3.4.3. above).

Environment (a), regressive assimilation, is exemplified for the [+long] case by gen. pl. masc./neut. demonstrative pronoun /\#\text{\theta}iz\#uh#/ → (#-Delet) \#\text{\theta}iz\#uh# → [\text{\theta}iz\#h] bizeh; for the [+stress] case by nom. sg. masc. demonstrative pronoun /#s\text{\acute{a}}\#uh#/ → (#-Delet) #s\text{\acute{a}}\#uh# → [sah] sah; and for the [+long, +stress] case by nom. sg. fem. demonstrative pronoun /#s\text{\textacute{o}}\#uh#/ → (#-Delet) #s\text{\textacute{o}}\#uh# → [so:h] s\text{\textacute{o}}h. Rauch (1981:397) cites a rare counterexample
nom. sg. fem. indef. prn. hwōub-ban (twice in II Cor.6:15-16) 'which?' for expected hwōb- (from hwō-uh-ban).

Environment (b), the progressive case, operates with a [+long] conditioner in /#fra#e:t#/ → (#-Delet) #fra#e:t# → (V-Delet) [fre:t] fēt; with [-stress] conditioners in /#0ámma#uh#/ → (#-Delet) #0ámmauh# → (V-Delet) [0ámmuh] bammuh, and /#0áta#ist#/ → (#-Delet) #0átaist# → (V-Delet) [0átist] batist; and with a [+long, -stress] conditioner in /#0áta#i:#/ → (#-Delet) #0áta:i:# → (V-Delet) [0áti:] batei. The masc. nom. sg. rel. prn. saei ← /#sá#i:#/ illustrates how [+stress] blocks the operation of rule (6b).

Departing from Voyles' version we have deleted the feature [+low] from the affected vowel, meaning that our rule covers more than just /a/. We argue that there are no Gothic examples in which non-low vowels are exempt from Rule (6b). Furthermore we offer possible cases in which /u/ is deleted: gen. sg. masc./ neut. y-stem adj. /#hår#d+u+ɔ:#/ → [hårɔ:s] hardaus 'hard' ~ nom. sg. masc. /#hår#d+u+z#/ → [hårduz] hardus; dat. sg. masc. u-stem noun /#sũn+u+ɔ:#/ → [sũnɔ:] sunau 'son' ~ /#sũn+u+z#/ → [sũnus] sunus.

The only pronominal forms which, in lieu of a long vocalic conditioner, do require [+stress] on the conditioner vowel for Rule (6a) to apply are nom. sg. masc. sah ← /#sá#uh#/ and nom./ acc. sg. neut. hwah ← /#h'ã#uh#/.

The Gothic word fret 'I devoured', given as an example for Rule (6b), deserves a closer look. Voyles claims that
Word Boundary Deletion has not occurred here, but that the vowel deletion rule 'can apply over # if the unstressed /a/ is in a V[verb] prefix and the following vowel [is] in a V[verb] stem' (1981:60). Apparently, this corollary to Rule (6b) was added to account for this isolated form in Gothic. No other verbal prefixes undergo the same apocope before a vowel and there are candidates: *ànà-
àukan [ànaːːkan], and several verbs in ga- like gàág
ìnìnon [gàːːgì:noːn]. Prenominal anda- corresponds consistently to preverbal and-, and wibra- is unattested before vowel in the Gothic corpus. The data are truly sparse; we might avoid complicating the vowel deletion rule (as Voyles does) by attributing the unique behavior of frêt, the preterite of fraitan 'devour', to lexicalization--i.e. the word boundary was perceived not to exist (cf. NHG fressen), or Word Boundary Deletion was mandatory in the preterite of this lexeme. The same might also be true of the preterite form uzôn 'expire' (Mk.15:37) from unattested *uzan
àn (Streitberg 1960, Feist 1939) or *usan
àn (Wright 1981). The absence of a word boundary in the preterite prevents devoicing of preverb's final segment.

Vowel Deletion can be used as evidence for determining the length of the phones represented by <ai> and <au> in non-root syllable. We contrast the <ai> of dat. sg. fem. relative pronoun bìzàiei with the unambiguously short vowel /a/ which is lost in the corresponding masculine/neuter form bámmei. In the latter case /θãmmaːiː/ → (#-Delet) θãmmaiː→
(V-Delet) [θammi:]. If the <ai> of bizáieji were underlyingly short then: /θizɛ#i:/ → (#-Delet) θizɛi: → (V-Delet) [θizi:] **bizei (bizei exists in Gothic not as the relevant declined form but as the masc./neut. gen. sg. relative pronoun from /θiz#i:/). According to Rule (6b) <ai> must be either [+long] or [+stress] to be exempt from deletion. The feature [+stress] can be immediately ruled out; we, therefore, conclude that the vowel is long /ε:/: [θizɛi:] (cf. §3:1.3. above).

The data described by the Vowel Deletion Rule in effect demonstrate an apparent Gothic phonetic constraint that immediately adjacent weakly stressed short vowels are not allowed to occur at the surface level. Thus, e.g. qimai-u 'whether he may come' (verb plus interrogative particle), is explained by the sustained presence of an intervening word boundary which prevents syncope (i.e. /k'ime#:u/).

The enclitic -u interrogative particle does present some complications to Gothic grammar. On purely phonological grounds, Vowel Deletion Rule (6a), written specifically to apply to the copulative enclitic -uh, should logically cover interrogative -u as well. Consider the phrasal verb gaulaub-jats 'do you believe?' (Mt.9:28). As we have argued in §3:4.4. above, no word boundary intervenes at any level between the preverb and the enclitic (i.e. /#ga+u#laub-+ja+ts#/). Therefore we need to ask why enclitic -u is not deleted in this post-vocalic environment in the same way
that the ü of copulative -uh regularly is by Rule (6a), cf. ga-b-ban-trauwa ← /#ga+uh+0an#tru:+a#/ 'and I then trust' (2 Tim.1:5). Consider further the puzzling fact that the interrogative particle -ų, when infixed, occurs exclusively after vowel in the examples which Streitberg lists (1920: 161): ga-u-lāubjats 'do you (pl.) believe?' (Mt.9:28), ga-u-lāubeis 'do you (sg.) believe?' (Jn.9:35), bi-u-gitái 'might he find?' (Lk.18:8), and ga-u-hwa-sēhwi 'whether he saw anything' (Mk.8:23). This contrasts with the copulative particle -uh which does occur after consonant when infixed—e.g. ub-uh-wōpida 'and he cried out' (Lk.18:38), at-uh-ban-gaf 'and he then delivered' (Mk.14:44)—in addition to occurring after underlying vowels.

These data lead us to believe that the presence of the particle -ų is not phonologically determined. It is possible that -ų is spared the vowel deletion process where its semantic interrogatory force was considered important to the translator or scribe. If the interrogative -ų would undergo vowel deletion by regressive Vowel Deletion Rule (6a) we would not know it from Gothic orthography, since, being a morpheme composed of a single vowel, it would leave no trace. Schulze claims (1905:565) that the bu and ju respectively in bu is sa qimanda 'are you the one to come?' (Mt.11:3) and ei is ju-ban gaswalt 'that he should be already dead' (Mk.15:44) represent [ŋu:] ← /ŋu+u/ and [ju:] ← /ju+u/ with the interrogative particle, but the argument
seems quite speculative.

It is a slightly different matter when a word boundary is present. The near minimal sentence pair *niu ussuggwup aiw* 'haven’t you ever read' (Mk.2:25) ~ *ni bata ussuggwud* 'haven’t you read this' (Lk.6:3), which Rauch (1981:398) cites as showing free variation of -u with zero, is such a case. We could explain this surface alternation by virtue of the optionality of the Word Boundary Deletion Rule (5), a property that affects whether Vowel Deletion Rule (6) may apply or not. If the alternation is not a matter of optional word boundary deletion then we have evidence, as Rauch states (1981:398), that interrogative -u alternates with zero and is ‘not at all constrained by the segmental phonology.’ A discourse level investigation, however, is required to confirm her view that ‘the semantic value of y in both the interrogative morpheme and the copulative morpheme appears to be zero.’ At least for the interrogative, its presence seems to rely exclusively on its semantic value.

The only semantically meaningful element of the copulative particle -uh may seem to be the h since the presence or absence of the vowel is so predictable. But we argue against scholars like Lindeman (1967:146) who interpret the y as epenthetic based on the forms *anubbaniujáib* 'and be then renewed' (Eph.4:23) and *anuhkumbei* 'and sit at table' (Lk.17:7). We know that the preverb at issue in these
words is *ana* and not *an* because *ananiujada* 'he is renewed' (2 Cor. 4:16) and *anakumbida* 'he was sitting at table' (Mt. 9:10), without infixation, occur. Since the weakly stressed vowel of the preverb undergoes progressive vowel deletion, then the *u* of the enclitic must be underlying, i.e. not merely the result of epenthetic insertion. Otherwise the actual forms would be ***anahniujaib* and ***anahkumbei* from ***/ana+h-/ not from actual */ana+uh-/ (which becomes [anuh-] by Rule (6b). Furthermore, */u/* is not the most likely candidate for a Gothic epenthetic vowel. The reduced vowel represented by <a> is the most neutral of the Gothic vowels (cf. §3.3.). The form *broprulubon* 'brotherly love' (1 Th. 4:9) with an r-stem first constituent may show *u*-epenthesis, but *brobralubon* is also attested (Rom. 12:10). The i-stem compound *gardawaldands* 'master of the house' occurs only with */a/* (Lk. 14:21, Mt. 10:25) (see Feist 1939:198). Based on these data we must maintain the exclusion of interrogative -* unhappy* from rule (6a).

Although Voyles' (1981:59) Vowel Deletion Rule involves five different environments, two of these are morpheme-specific, affecting solely the interrogative pronoun morpheme */h*a-/* before any vocalic segment and the anaphoric pronoun morpheme */i-/* before */a/* + consonant, found in dat. sg. Go. *hwamma* /h*a+amma/* and *imma* /i+amma/*, respectively (the other three environments resemble our rules 5a and 5b, and a fifth to be discussed below). Voyles' treatment neces-
sities the inclusion of additional subrules since the conditioning vowels of these pronominal morphemes have the feature [+stress] by his analysis and are otherwise unaccounted for.

But rules to delete the first /a/ of /h′a+amma/ and the /a/ in /i+amma/ are only required in the first place because of assumptions about the input. Taking the dative singular morpheme as an example, we could just as well assume /-mma/. This makes sense especially for the anaphoric personal pronoun since /a/ never surfaces throughout the paradigm. The vowel remains as part of certain stems, e.g. interrogative pronoun /h′a-/ as well as demonstrative /θa-/ (as in Go. bamma). Our deletion rule, then, must cover processes like gen. sg. masc./neut. interrogative /#h′a+iz#/ → [h′is] hwis 'of whom/what?', demonstrative /#θa+iz#/ → [θis] bis 'of this' which it does, by Rule (6b), if the vowels of such pronominal stems do not receive prominent stress.

The fifth environment in Voyles' analysis is meant to account for class II weak verb forms in which underlying morphemes are lost: prs. sbj. 1 sg. /#sálb+o:+ɔ:+ː#/ → [sálbo:] salbō 'I may anoint'; prs. psv. ind. 1 sg. /#sálb-+o:+a+ð+a#/ → [sálbo:ða] salbōda 'I am being anointed'. The proposed rule is the following:
(6c) Vowel Deletion

\[ [+\text{son}] \rightarrow \emptyset \big/\big[ [+\text{son} ] \\
\phantom{[+\text{son}]} +\text{stress} \big] \\
\phantom{+[+\text{son}]} +\text{long} \big/ \\
\phantom{+[+\text{son}]} -\text{stress} \big] \big] \]

where no # occurs between any of the segmental matrices nor within X.

We argue against the inclusion of this rule in the Gothic grammar for the following reasons. First of all, the examples which are given to demonstrate the need for such a rule raise questions about the nature of the underlying input. The vowels deleted in the examples are postulated solely from evidence from other Gothic weak verb paradigms, not from any alternation within the salbo class. Secondly, the dat. sg. fem. rel. prn. bizáiei \[\theta izɛ:i:] \rightarrow /\theta izɛ:#i:#/ violates the rule. Voyles would argue that a word boundary in this case between the final two matrices of his rule prevents Vowel Deletion from occurring. But Voyles himself orders Word Boundary Deletion before Vowel Deletion (1981: 96), and other forms in the paradigm show that the former optional rule does in fact apply within the paradigm: gen. sg. fem. rel. prn. bizōzei \rightarrow /\theta izoz#i:#/ shows no pre-word boundary devoicing, and nom./acc. sg. neut. rel. prn. batei \rightarrow /\theta ata#i:#/ shows syncope. Now consider Voyles' (1981:60-61) use of this rule as an argument for root stress on reduplicating verbs since the 1 pl. pt. ind. of saian 'to sow' is saisōum and not **saismo, as would be the case if the prefix were stressed. The argument is unconvincing when
weighed against evidence from Long Vowel Lowering phenomena, a complete discussion of which is to be found in §3:5.9. below. Inclusion of the last Vowel Deletion Rule (6c) would, in the present analysis, require the addition of morpho-lexical restrictions—an unnecessary complication to an unnecessary rule.

3:5.3. The Deletion of Reduced Vowels.

A second approach to explaining Gothic vowel deletion combines what has been said in the previous section with our hypothesis on vowel reduction under weak stress covered above in §3:4.6. Here we saw how Gothic vowels may undergo both quantitative and qualitative changes when subject to weak stress, whereby long front vowels tend toward [i] and long back vowels tend toward [ʌ]. The short vowels likewise undergo a centralization process. It is tempting to postulate that, under weak stress, /i/ becomes [ɪ], /u/ becomes [ʌ], and /a/ becomes [ə], but the current state of research does not allow us to assign precise features. Suffice it to say that these sounds were distinct from each other, and distinct from other vowels by virtue of the features [-front -back -high -low].

We accordingly propose a rule for vowel reduction under weak stress. Although the scribal data from §3:4.6. suggest that phonemically long vowels may also tend toward centralization, we are unable to confirm this by means of the syn-
copation data from §3:5.2. since long vowels never delete (cf. dat. sg. fem. rel. prn. šizáiei, not **bizei). For this reason we restrict our discussion, and our rule, to phonemically short vowels, which our data do show to be subject to deletion.

(7) Vowel Reduction under Weak Stress.

\[
\begin{array}{c}
[+\text{son}] \\
[-\text{cons}] \\
[-\text{long}] \\
\end{array} \rightarrow \begin{array}{c}
[-\text{front}]
\ 
[-\text{back}]
\ 
[-\text{high}]
\ 
[-\text{low}]
\end{array} \begin{array}{c}
[-\text{stress}]
\end{array} \bigg/ \begin{array}{c}
[-\text{other features}] \\
\end{array}
\]

Rule (7) states that Gothic vowels become centralized under non-prominent stress. The feature [+other features] allows for the hypothesized differentiation between [i, A, ŋ].

Unmistakable, direct examples with which to illustrate Rule (7) do not exist since reduced vowels have no special symbols in Gothic orthography. Rather, we must cite indirect evidence. Such evidence comes from a reworking of the Vowel Deletion Rules (6a-b) into a single Schwa Deletion rule.

(6') Schwa Deletion Rule

\[
\begin{array}{c}
[+\text{son}] \\
[-\text{front}]
\ 
[-\text{back}]
\ 
[-\text{high}]
\ 
[-\text{low}]
\end{array} \rightarrow \emptyset \bigg/ \begin{array}{c}
[+\text{son}] \\
[-\text{cons}] \\
\end{array} \begin{array}{c}
\text{a}
\ \ 
\text{a}
\end{array} \begin{array}{c}
[]
\ \ 
[-\text{cons}] \\
\end{array} \begin{array}{c}
\text{b}
\ \ 
\text{b}
\end{array}
\]

where either a or b applies.

Rule (6') states that reduced, schwa-like vowels are deleted in the immediate environment of another vowel. Let us run through some examples from §3:5.2. once more in order to check the validity of Rule (6'):

- gen. pl. masc./neut.
demonstrative prn. /#θize:uh#/ → (Stress) #θize:uh# → (V-Reduc) #θize:#h# → (#-Delet) #θize:#h# → (#-Delet) [θize:h] bizeh; nom./acc. sg. neut. rel. prn. /#θatai:#/ → #θatai:# → #θatai:# → #θat i:# → [θati:] batei; gen. sg. masc./neut. u-stem adj. /#har+u+:z#/ → #hár+u+:z → hár+u+:z → (ev.) [hár+:s] hardáus 'hard'. Our final example is especially interesting because it presents two adjacent reduced vowels at one level: dat. sg. masc./neut. demonstrative prn. /#θamma#uh#/ → #θamma#uh# → #θamma#h# → #θamma#h# → [θamma#h] bammuh. The fact that [ə] and not [ʌ] is deleted from /#θamma#h#/ to [θamma#h] demonstrates, rather trivially, that Rule (6') operates from left to right. More significantly though, it shows the relative strengths of these two central allophones. Being 'the ultimate neutral vowel' (Rauch 1981:399), [ə] would be expected to succumb to any other vowel, which it in fact seems to do. Unfortunately, we lack examples in which the sequence /-ʌə-/ might occur, by which we could test whether the Schwa Deletion process operates linearly or solely according to some articulatory feature.

3:5.4. Breaking.

The Breaking Rule of Gothic accounts for the occurrence of a high versus mid vowel in, for example, the past participle of strong verb classes I and II. The Gothic inf. lei-hwan 'to lend', p.p. laihwans [leh'ans] constrasts with
sneiban 'to cut', snipans [sniθans]; Go. tiuhan 'to lead, draw', taūhans [tʰans] contrasts with druusan 'to fall', drusans [drusans].

Accounts of this phenomenon vary. Vennemann (1971:84) describes the input to his equivalent of the Breaking Rule as a high short (actually [-F], the feature which is ultimately determined to be [length]) stressed vowel. Since Wurzel's phonological system excludes phonemic length in favor of qualitative distinctions, his rule (1975:311) needs to stipulate high mid stressed vowels as the input. Otherwise these two versions of Gothic breaking are similar, with the output having acquired the feature [+low] in the environment before what amount to (h hʰ r) in the respective systems.

The greater complexity of Voyles' Breaking Rule (1981:61) is in part an improvement over either Vennemann's or Wurzel's formulations in that it accounts for the form Go. bai̇t̆r, left unexplained by the other theories. But Voyles also seems to overcomplicate his rule in an effort to explain perplexing Gothic forms which can be accounted for independently of the Breaking Rule (a statement which applies to Go. bai̇t̆r as well; see below).
Voyles' version of the Breaking Rule is as follows:

\[ (+\text{son}) \rightarrow [\text{+high}] X \left[ \frac{\text{+stress}}{A} \right] Y \left[ \frac{-\text{stress}}{B} \right] Z \]

where the variables X, Y, and Z contain no word boundaries #; and Y and Z may contain instances of nonstressed vowels to which the rule can also apply.

\[ (2) [-\text{high}] \left[ \left[ \frac{\text{+stress}}{A} \right] \right] \{ h, h\ddot{w}, \{ t \} \}
\]

where no morpheme boundary of any kind occurs between the stressed vowel and the following /h h\ddot{w} r tr/.

By including Part 1 in the Gothic Breaking Rule, Voyles accounts for the fact that the phones /i e u/ are realized as [i u] when they bear primary stress (matrix A) within a word or anywhere in posttonic position (matrix B). Matrix A is the equivalent of Beck's (1973:67) Vowel Raising Rule, which raises /ɛ/ (cf. PGmc. *e) to [i] everywhere in Gothic except in the reduplication syllable, and like Voyles' Part 1, is ordered before the Breaking Rule (Voyles' Part 2). Part 2, modelled after traditional rules, then lowers the stressed resulting vowel in the given environment. Departing from tradition, it also indicates a lowering of [i] (from /i e/ in Part 1) before /tr/, e.g. acc. sg. baitr 'bitter'.

We must ask ourselves whether Part 1 of Voyles' rule is even necessary. Based on the examples provided to justify
its inclusion in the grammar, the answer seems to be 'no'.
Phonological rules are justified only when there is some
alternation which requires explanation. Voyles provides no
examples of alternation within native Gothic attributable to
his Breaking Rule. He claims the quality of the second syll-
able in Go. *fidurdōg* 'four-day', not 'broken' to **fidaur-
dōg**, is explained by the weakly stressed environment of
matrix B of Part 1, as well as the second vowel in Go. *tiuhan*
'to lead, draw'. But Voyles himself gives the under-
lying forms as /fīdur-/ and /tiuhan/ respectively, rendering
any transformation unnecessary.

The occurrence of [ε] and [♂] are predictable for
Gothic and therefore we have no cause to postulate /ε/ and
/♂/ as native phonemes, with the possible exception of the
front vowel for the special case of the reduplicating
syllable.

The remainder of Voyles' examples consist of Latin and
Greek borrowings for which hypothesized fourth century
pronunciations in the donor languages are taken as the basis
for the underlying forms of Gothic. For instance, Lat.
*urceus* [urkeus] 'jug' was borrowed into Gothic as /ūrkeus/ →
(Pt.1 of Breaking Rule) ūrkius → (Pt.2 of Breaking Rule)
órkius → (Glide Rule) [örkjus] aūrkjus. We must ask why it
is preferable or necessary to derive a form like /urkius/ by
rule as Voyles does, given the lack of any morphophonemic
alternation in Gothic for this morpheme. A greater objection
may lie in the fact that Voyles may be assuming too much with regard to the particular dialect or dialects of fourth century Latin (or, in other cases, Greek) with which Wulfila was familiar.

We can illustrate the problem further with another of Voyles' examples. He derives Go. diabulus 'devil' from /diábólo$s/ based on Gk. διάβολος. Both underlying /ɔː/’s are raised by Part 1 of the Breaking Rule. Voyles concedes that the Gothic form dia-baulus is also found, but that such a spelling 'probably indicates that the form was not yet completely assimilated' (1981: 62). If we were determined to take a foreign phonological string as the basis for Gothic, what evidence exists which would preclude us from choosing Lat. diabulus instead, with its already high vowels? The Latin word is the one cited by Reagan (1974), and Feist (1939) gives both the Latin and Greek words as alternative sources.

Too much dependence on foreign forms, and perhaps too little attention to other factors like post-Wulfilian scribal influence, emerges when we compare Go. paúrpura/ paúrpaúra 'purple', Lat. purpura, and Gk. πορφύρα. Both Latin /pur-/ and Greek /pɔːr-/ could be the basis for Gothic [ɔːr-] by means of Voyles' formulation of the Breaking Rule. But only the second syllable -pur- of the first Gothic variant is so derived. Voyles does not mention Go. paúr-paúra, leaving the lowering of weakly stressed -paúr-
unaccounted for.

Since the justification of Part 1 of Rule (8) fails, it seems an economical measure to strike it from the grammar of Gothic. We can also streamline the new Breaking Rule somewhat since it now applies solely to stressed segments and the feature [+stress] is redundantly [+vocalic].

(8') Breaking Rule

\[
\begin{array}{c}
-\text{low} \\
-\text{long} \\
+\text{stress} \\
\cdot(-\text{back}).
\end{array} \rightarrow [-\text{high}] / \begin{cases}
\text{h} \\
\text{hw} \\
\cdot(t).\text{r}
\end{cases}
\]

As before we stipulate that no morpheme boundary occurs between the vowel and the conditioner. This is necessary to account for forms such as Go. duhwē /#du#h'ē:/ 'why', n uh /#nu#uh#/ 'and now?' (as opposed to nauh / (Breaking) /#nuh#/ 'still, yet'), and n ih /#ni#uh#/ 'and not'. This applies also to the imperatives 2 sg. hiri, 2 du. hirjats, 2 pl. hirjib 'come here!' which Voyles derives from the deictic particle /hi/--cf. dat. sg. himma daga 'on this day' and hidłę 'hither')--plus an adverbial locative particle /-r-/.

Returning to Go. baıtr 'bitter', we observe that the rule affects only the front vowel; cf. Go. snutrs 'wise', not **snaıtrrs. The necessity for amending the Breaking Rule in this way comes from comparative evidence (ON bitr, OHG bittar, etc.) which would lead to an underlying /Bitr/ for Gothic. As Voyles notes, the frequent name Paitrus 'Peter' (cf. Gk. Πέτρος) is never spelled **Pitrus. But one can find
less frequently attested names, which admittedly might retain more conservative, or foreign, sounds, in which none of the hypothesized Gothic raising has occurred: Go. *Aīfaīsō 'Ephesus' for Gk. *Εψῆσος. An alternative explanation for Go. *baitr, and one which would simplify Breaking Rule (8'), would derive the Gothic word from /Baitr/ with an underlying diphthong (in which event we might spell it *bāitr as Wright [1981] does). This would then be realized as [bɛːːtr] by the Monophthongization Rule (1).

See Cercignani (1984b), Voyles (1981:63-4), and Braune/Ebbinghaus (1961:23) for discussions of these and other so-called exceptions to the Breaking Rule.

3:5.6. Vowel-Glide Alternations.

Through vowel-glide alternations, we observe stress affecting sonority. A study of Gothic phonology reveals certain vowels that alternate with glides, certain glides that alternate with vowels, and certain ones of both which never alternate. To these we must add the second constituents of diphthongs which may be realized as either vowel or glide. Near-minimal pairs like Go. iup /iup/ 'upwards' and juk /juk/ 'yoke', gāidw /gaið+w/ 'want, lack' and leibu /li:θ+u/ 'strong drink' demonstrate the need to postulate separate sonarant and non-sonorant phonemes, /i u/ and /j w/ respectively.
3:5.7. The Glide Rules.

The first of the Gothic Glide Rules account for the vocalization of the glides /j w/ in certain environments.

(9a) /j/ to [i] Rule

\[
\begin{align*}
\text{son} & \quad \text{cons} & \quad \text{back} \\
\rightarrow & \quad \text{[+son]} & \quad \text{[+cons]} & \quad \text{[+son]} & \quad \text{[+cons]} \\
\end{align*}
\]

where X ≠ #.

Rule (9a) accounts for alternations such as 2nd. acc. pl. /#j+zw+is#/ → izwis opposite nom. pl. /#j+uz#/ → jus, 1/3 sg. pt. ind. /#nas+j+θ+a#/ → nusida opposite inf. /#nas-+j+an#/ → nasjan 'save', as well as neut. ja-stem nom./acc./voc. sg. /#kun+j#/ → kunja. Underlying /j/, not /i/, in these examples, and therefore the necessity of Rule (9a) is demonstrated by contrasting iup 'upwards'. Rule (9b) applies in /#aiw+k-#/ → aiuk- (by Rule 8c, below) [ajuk-] in Go. ajukdups 'eternity' but not /#aiw+s#/ → aiws 'time, eternity', /#fiθwr-#/ (zero-grade ablaut of fidwor 'four') → fidur(falps) 'fourfold', and first person pronoun acc. pl. /#w+nz#/ → uns opposite nom. pl. /#w+i:z#/ → weis.
The next of the Glide Rules concerns the semivowels /i u/ which only occur as constituents of the diphthongal phonemes /iu ai au/.

(9c) Vowel to Glide Rule

\[
\begin{array}{c}
\hspace{1cm} +\text{son} \\
-\text{cons} \\
-\text{syll}
\end{array}
\rightarrow
\begin{array}{c}
\hspace{1cm} \text{[-son]} \\
\text{/-}
\end{array}
\begin{array}{c}
\text{[-son]} \\
\hspace{1cm} -\text{cons}
\end{array}
\]

The application or non-application of Rule (9c) yields such pairs as /#wai-/ → [waja-] in wajamerjan 'blaspheme' but → (Mono) [wε:-] in waidėdja 'woe-doer, thief'; also gen. pl. /#sun+iu+e:#/ → suniwē versus nom. pl. /#sun+iu+z#/ → (9d, below) sunjus 'sons'; and nom. sg. /#hau+j#/ → (9a) haui → (9c) [hawi] hawi in contrast to dat. sg. /#hau+j+a#/ → (Mono) [hɔ:jja] háuja 'hay'.

Gothic exhibits cases in which /i/, as the first constituent of the diphthong /iu/, becomes non-sonorant [j] when weakly stressed (/u/ never occurs in this environment since there are no Gothic diphthongs **uu or **ui). Therefore we have the following rule:

(9d) /i/ to [j] Rule

\[
\begin{array}{c}
\hspace{1cm} +\text{son} \\
\hspace{1cm} +\text{high}
\end{array}
\rightarrow
\begin{array}{c}
\hspace{1cm} \text{[-son]} \\
\text{/-}
\end{array}
\begin{array}{c}
\hspace{1cm} \text{-stress} \\
\hspace{1cm} +\text{son}
\end{array}
\]

We find an example of (9d) in operation in nom. pl. /#sun-+iu+z#/ → (Accentuation) sünius → (9d) [sunjus] sunjus 'sons'.
One might argue that Rule (9d) is unnecessary based on the data of u-stem adjectives. For these the thematic element appears to be /-u-/ ~ /-ju-/ and so (9d) need not apply:
masc. gen. sg. /#hárd+u+ːːz#/ → (V-Delet) [hárdːːs] hardáus ‘hard’, acc. sg. /#hárd+ju+ana#/ → (V-Delet) [hárđjána] hardjána and not **/#hárd+iu+ana#/ which, by Rule (9c) would yield **hardiwána. Gothic u-stem nouns, on the other hand, exhibit thematic /-u-/ ~ /-iu-/, justifying Rule (9d): gen.
sg. /#sún+u+ːːz#/ → (V-Delet) [súnːːs] sunáus, gen. pl.
/#sún+iu+eː#/ → (9c) [sunǐweː] suniwe and not **/#sún+ju-+eː#/ → (V-Delet) **sunjē.

3:5.8. Long Vowel Lowering.

We recall that Gothic <ai, au> alternate with <aj, aw> in the examples wáidęđja ~ wajamęřjan and háujuja ~ hawį. In these cases, the surface segments [ɛː, ɔː] and [aj, aw] are derived from diphthongs via the Monophthongization Rule (1) and Glide Rule (9c). Note, however, how the verb waijan ‘to blow’ provides a minimal contrast to waja-merjan ‘to blaspheme’. We also observe that <ai, au> also alternate with <ɛ, ō> respectively in pairs such as saian ‘to sow’ ~ manasęps ‘mankind, (literally) man-seed’ and staua ‘judgement’ ~ stōjan ‘to judge’. Clearly here, the phones [ɛː] and [ɔː] are not derived from diphthongs since, by the Glide Rules, we would expect **saijan and **stawa. Rather, they derive from monophthongs.
3:5.9. The Lowering Rule.

From these data we formulate a rule which derives [ɛː, ɔː] from long monophthongs:

(10) Lowering Rule

$$\left[ +\text{stress} \right] \rightarrow \left[ -\text{tense} \right] \left[ +\text{son} \right] \left[ -\text{cons} \right]$$

Rule (10) allows us to derive the following: /#se:+an#/ → (Stress) #se:an# → (Lower) [se:an] saian 'to sow', but not /#se:+θ+z#/ → (ev.) [se:θs] -səbs 'seed'; /#sto:+a#/ → #sto:a# → [stɔ:a] staua 'judgement', and /#sto:+j+θ+a#/ → (Stress, Glide-a) #sto:iða# → [stɔ:iða] stauida 'I judged', but not /#sto:+j+an#/ → (ev.) [stɔ:jan] stɔjan 'to judge'.

Rule (10) has been expressed in a maximally general way and consequently includes not just /eː oː/ as possible input, but rather affects the entire Gothic long vocalic series. Our analysis has been influenced by Voyles (1981: 67), who points out that /aː/ can never occur in the environment in question given its exclusive provenience from PGmc. *anh. The rule would also apply to /iː/ but relevant forms are unattested in the Gothic corpus.

This leaves /uː/, which some scholars (notably Feist 1923), Braune/Ebbinghaus 1961:29, Voyles 1981:67) consider to underlie the root vowel in Gothic trauan 'to trust', bauan 'to dwell', and bnuuan (from *bi-nauan) 'to rub away' based on comparative evidence (cf. OHG trúen, bűan, and
If so, then these surface forms are accounted for by Rule (10) as well.

Seemingly aberrant forms such as pronominal puei 'you who', sōei 'she who', and the class VII strong verb pt. ind. 3 pl. lailōun 'they reviled', with /u:, o:/ remaining tense before vowel, can be explained as Voyles (1981:67) does by including in his Lowering Rule a condition to the effect that Lowering does not apply to pronouns or to the preterite of strong verbs. Such a complication of the rule in gratuitous; lexical information is unnecessary in this case.

Regarding puei in particular, we recall that Wulfila’s <u> is unmarked for length and thus we may be dealing with a short vowel here which would not be subject to Rule (10). Germanic has both short and long variants of the 2 sg. personal pronoun: OE bu, OS thu, and OHG du beside ON OE bu, OS thū, and OHG dū. Moreover, Voyles argues that no word boundary exists between bu- or so- and the relative particle -ei since other forms in the paradigm show no pre-word boundary devoicing: e.g., masc. gen. sg. bizei /#θiz+i:#/ ~ devoiced bis /#θiz#/ . We argue instead that a word boundary does exist at the underlying level which is deleted after Lowering has had a chance to apply; thus /#so:#i:#/ ~ (Stress) #so:\#i:# ~ (Lower--N/A) ~ (#-Delet) [#so:#i:] sōei. All the

Vennemann (1971:119) considers the root vowel of these forms to derive from /o:/ and accordingly excludes [+high] segments from his version of the Lowering Rule. See also Wright (1981:31) for deriving Go. /–:/ from Gmc. *qiw.

It is interesting that Voyles uses his Vowel Deletion Rule (our Rule 5c, §3:5.2.) as evidence that reduplicated verbs like lailoun ‘they reviled’ have primary stress on the root (1981:60-1). He could just have well used his Lowering Rule as evidence that the same form is prefixally stressed since this would account for the non-application of the Lowering Rule, our Rule (10), without extra-phonological information. Even if Rule (6c) belongs in the grammar—we have argued above that it does not—can we restate one of these contradicting rules and resolve the matter of class VII strong verb accentuation? If the reduplicative prefix does bear primary stress, then Gothic grammar provides a systematic parallel between Long Vowel Lowering and Short Vowel Breaking (cf. §3:5.4.-5.), another type of lowering: both are triggered by the feature [+stress].

If some lexical restriction is necessary in either Rule (6c) or (10) in order to capture a generalization of Gothic phonology, then it logically belongs in Vowel Deletion Rule (6c) so that this rule does not apply to reduplicating strong verbs. Analogical pressure seems likely for the plural markers of the mere three known Gothic verbs subject to Rule (6c)—saian ‘to sow’, *laian ‘to revile’, and waian ‘to blow’ (perhaps also faian ‘to reproach’, cf. Streitberg
1920:148), of which only *lailoun* (Jn.9:28) and *waiwoun* (Mt.7:25,27) are attested with relevant (3 pl. pt.) morphology—against the entire remaining inventory of strong verbs, all of which have -umu, -up, -un in the preterite plural indicative. The same sort of analogical pressure is not as strong for root morphemes, A root vowel alternation like present system [sto:] ~ preterite system [st>:] of the weak verb *stōja* ~ *stauida* arguably would not have caused problems for Gothic speakers already accustomed to apophonic vowel alternations with the strong verb system.

Additional evidence for Long Vowel Lowering comes from Gothicized proper names. Whereas in Greek loan words <η> and <ω> are transcribed as <e> and <o> respectively before consonant, they are transcribed as <ai> and <au> before vowel: e.g., Gk. Νόε ~ Go. Nauel, Gk. Τρψδα ~ Go. Trauada, Gk. Ἱρα ~ Go. gen. Aieirins. The pair Gk. Σιλωδμ ~ Go. Silōamis would demonstrate further that Lowering does not apply when the prevocalic phonemes in question do not bear primary stress, but we must be careful not to rely too heavily on such loans given counterexamples like Gk. Βαγουέ ~ Go. Baguais (not expected **Bagōis), Gk. Όηέ ~ Go. Osaiin (not expected **Osein), and Gk. Ἱραμ ~ Go. Eieiramis (not expected **Eieiramis).

3:5.10. Thurneysen's Law.

We turn now from vocalic to consonantal phenomena and
consider the Gothic consonantal dissimilation known as Thurneysen's Law. Streitberg (1920:91) ascribes this phenomenon to Pre-Gothic, a notion to which Voyles (1981:50) nods when he includes exceptions within his synchronic rule for Wulfilian Gothic. Consonantal dissimilation of this type is no longer 100% productive in Gothic, but counterexamples are easily grouped together.

We base our rule for Thurneysen's Law on Voyles 1981:50, correcting his apparent oversight in not accounting for vowel-initial roots:

(11) Thurneysen's Law (Consonantal Dissimilation)

\[
\begin{align*}
X \, [+\text{stress}] & \quad Y \, [-\text{vcd}] \\
\text{Adj. or Noun} & \quad \text{not deriv. suffix /}i\theta/ \text{ when occurring with specific lexical items.}
\end{align*}
\]

\[
\left[ \begin{array}{c}
-\text{son} \\
+\text{cont} \\
-\text{vcd}
\end{array} \right] \quad \left[ \begin{array}{c}
+\text{cons} \\
-\text{low} \\
+\text{vcd}
\end{array} \right]
\]

where \( Y \) contains no word boundaries.

According to this rule /\theta\ h s/ become voiced to [β ð γ z] when occurring after a posttonic weakly-stressed syllable which begins with any voiceless segment, followed optionally by /j/ or /w/.

Rule (11) is expressed by the following examples: fas-tubni 'fasting' ~ waldufni 'power'; manniskóðus 'humanity' ~ gabairjóþus 'pleasure'; wulbægs 'glorious' ~ stáinahs
'rocky'; aqizi 'axe' - dat. sg. agisa 'fear' (cf. Streitberg 1920:91-2 for a more extensive list).

For purposes of determining voicedness of clusters, voiceless stop plus glide equals a voiceless syllable onset whereas a voiceless stop plus liquid equals a voiced onset. Compare the pairs auhjōdus 'tumult', weitwōdei 'witness' - brōbrāhans 'brethren', niuklāhei 'childish'.

Most exceptions involve the suffix /-iθ/: e.g., diupība 'depth', hāuhība 'height', armhaīrība 'pity', against expected āubīda 'desert'. Other exceptions are dat. sg. masc. mōdagma 'angry' and silubr 'silver'. Rule (11) does not apply to adverbs like iupabrō 'from above'. Adjectives with the derivational morpheme /-sam/ are also exempt. Voyles' explanation (1981:51) seems reasonable, that a form like lustusam 'desired' is structurally a compound, i.e., is derived from /#lust+u#sam#/ with an intervening, rule-exempting word boundary (note: the word sama 'same' still exists as a lexical root in Gothic). Thus we derive /#lust+u#sam#/ → (Stress) #lустu#sám# → (Univrb) #лустусám# → (ev.) [lустусaм] with secondary stress on -sam, as in Modern German.

A proviso of Voyles' dissimilation rule is that it applies from left to right, demonstrated by /#wi:t+wo:θ+iθ+a#/ →[wiːtwoː-θiθa] weitwōdība 'witness', not **weitwōbīda.

A survey of Biblical names shows that Rule (11) was still productive at the time these names were Gothicized:
gen. sg. Mōseis ~ nom. Mōses 'Moses', dat. sg. Iōseba but also Iōsefa 'Joseph', gen. sg. Iōsejis ~ nom. Iōses 'Joses'. The Greek models, Gk. Μωσῆς and 'Ιωσής, indicate that this is not just a case of final devoicing in the Gothic nominative forms from an underlying voiced segment. A spelling like Go. gen. sg. Daweidis 'David' proves that the dissimilation rule changed voiceless spirants into voiced ones, not the converse.


The study of suprasegmentals in Gothic has required a dependence on indirect evidence, since none of these features of the language (degrees of word and phrasal stress, length, juncture) are overtly marked in the manuscripts. Indirect evidence for Gothic suprasegmentals comes from infixation, word-division, scribal alternations, syncope, devoicing phenomena, and other phonological processes discussed in §§3:5.0-3:5.10.

Gothic stress depends heavily on processes of derivational morphology (cf. §3:4.1-5.), with the presence or absence of word boundary juncture /#/ influencing the accentuation of a morphemic string. Morpheme juncture /+/ does not affect accentuation. The differences in stress patterns between phrasal verbs and nominal compounds is neatly explained by the presence of a word boundary at the surface level. Phrasal verbs retain the underlying word
boundary between the cliticized preverb/clitics and the main verb. This accounts for primary stress on the verbal root. Preverbs receive secondary stress by rule. The deletion of the intervening word boundary juncture in nominal compounding triggers primary stress only on the leftmost constituent. Succeeding primary stresses are then reduced by one degree (cf. §3:4.5.).

There are at least three degrees of stress in Gothic: primary, secondary, and tertiary (or weak) stress. Whether Gothic also has quaternary stress distinct from tertiary remains an open question, but we can find no evidence that the syllables which are candidates for possible quaternary stress behave any differently than the ones bearing tertiary stress. Gothic words have no more than one primary stress. Phrase-bound morphemes like preverbs and enclitics bear secondary and tertiary stress respectively. Reduplicating prefixes on class VII strong verbs bear primary stress. Gothic avoids having three consecutive weak stresses by raising the stress of the medial syllable by one degree.

Gothic vowels under weak stress demonstrate a tendency toward weakening in the form of centralization to schwa-like allophones (cf. §3:4.6.). This process is clearest in the case of /a/ becoming schwa. Other reduced allophones [ᵻ] and [ʌ] may also have existed for front and back vowels respectively. Quantitative reduction, evidenced by syncopation for short vowels, may have applied to long vowels as well.
although evidence is scarce.

Scribal word-division data has allowed us to determine extremely regular rules of Gothic syllabification (cf. §3:4.7.). Compound words are syllabified morphologically at underlying word boundary junctures, but simplex words follow purely phonological rules, whereby syllable heads consist of single consonants or single consonant/liquid clusters. The Gothic data agree with universal syllable preference laws.

Suprasegmentals affect Gothic synchronic segmental phonology in the processes of vowel deletion (§3:5.1-3), breaking (§3:5.4-5.), vowel/glide alternations (§3:5.6-7., long vowel lowering (§3:5.8-9), and consonantal dissimilation (§3:5.10). Vowel deletion only occurs under weak stress with [-long] vowels. We generalize the vowel deletion process by showing that only short schwa-like vowels are involved. Short vowel lowering, known as breaking, occurs solely under prominent stress. This parallels long vowel lowering, with regard to stress, although the segmental environment differs. In both cases the output is a [-tense] vowel. Vowel/glide alternations involve the assignment of syllabicity. Weak stress conditions the transformation of the diphthong /iu/ to [ju] exhibiting a syllable nucleus shift. A weakening in weakly stressed syllable, analogous to vowel reduction, affects consonants as well. This is manifested by voicing as described by Thurneysen’s Law.
CHAPTER FOUR: OLD HIGH GERMAN

4:0.0. Introduction.

For the second of our data chapters we head west. We focus on Old High German to represent the West Germanic group which also includes Old Saxon, Old English, Old Frisian, Old Low Franconian and naturally their descendant languages. Unlike Gothic of the eastern branch of Germanic, handed down to modern scholars through two extended linguistically homogeneous texts, the term 'Old High German’ hardly designates a single dialect in a precise place or time. Instead, the dialects which comprise Old High German are grouped according to the common development known as the Second (or High German) Sound Shift, details of which can be easily found in any Old High German grammar (e.g., Braune/Eggers 1975).

4:0.1. Sources and Conventions.

After one hundred years, the best primary reference work for Isidorian studies remains Hench (1893) with facsimile photographs of the Paris manuscript, complete annotated Latin and Old High German texts for the Paris manuscript and the Monsee fragments, and a full glossary indexing each lexical occurrence. Eggers (1964) provides the complete texts as well, along with a more extensive apparatus reflecting the entire chronology of published versions of Isidor. His version is only useful as a campanion to
Hench though, given its lack of glossary and jumbling of Hench’s otherwise universally accepted pagination system.

For secondary literature helpful in arriving at a workable, consistent phonology we relied heavily on works which were either partially or entirely dedicated to the Isidor text. A descriptive analysis like Penzl’s (1971:57-74) proves most valuable for its separate discussions of orthographic, phonological and phonetic oppositions. Also included are diachronic treatments of common Old High German features; e.g., i-umlaut, monophthongization, and consonant shifts. Less thorough and concentrating more on graphemics than phonetics (at least with regard to the consonants) is Valentin (1962); but his later work (1969) includes one of the most indispensable studies of Isidorian phonology, providing exhaustive examples and detailed descriptive analysis. The most complete treatment to date of all aspects of the Isidor texts is to be found in the work of Matzel (1970). His approach to the phonology of his subject matter has a distinctive diachronic bent. Like Hench (1893:60-91), Matzel describes (1970:162-203) the reflexes of Proto-Germanic phonemes and lays out the orthographic data. Unfortunately, we are left without an understanding of the synchronic phonological system, but the strength of Matzel’s book lies in its presentation of amply cited and debated Isidorian scholarship, making it an invaluable reference work.
4:1.0. The Phonemes of the Old High German Isidor.

4:1.1. The Vocalic Phonemes.

In §§4:1.2.-4:1.4. we will present the vocalic phonemes as they occur in root syllable under prominent, i.e. primary or secondary, stress. Vowels under weak stress are discussed below in §4:1.6. and in detail in §§4:5.0-4:6.7. The alternation of i-mutation, referred to here simply as umlaut, merits its own section as well, §4:1.5. An inventory of underlying and surface segments can be found in §4.3.

4:1.2. The Short Vowels in Root Syllable.

The phoneme /i/ is a short high front unrounded vowel, written <i>, found in ih (1:4) 'I', findemes (30:11) 'we find', and possibly in bi (38:16) 'with', on account of. An alternate spelling <y> occurs twice in the prefix fyrr-, otherwise fir-, in fyrodhant (27:14) 'they will dissipate' and imp. fyrrstant (25:21) 'understand' and in loanwords like martyruna (30:11) 'suffering' ~ chimartirot (30:10) 'suffered'.

1 Since our dialect shows no evidence of a distinction between open [i] and close [i], we choose simply to work with the latter sign which is more recognizable and more easily printed. The same conditions apply to [ɔ] and [o] below. On the other hand, the phones open [ɛ] and close [e] do contrast phonetically (cf. section 2.1.4. on umlaut, below) requiring that a distinction be maintained in our notation.

2 Although cognate with NHG bei, showing diphthongization of a former long vowel, Isidorian bi might be considered to contain a short vowel, based on the synchronic contrast with sii 'he may be', dhrii 'three' (cf. §4:1.3.). The vocalism of prepositions in Isidor patterns like that of proclitics (cf. §4:5.1.).
The short mid front unrounded vowel /ɛ/ is usually represented by <e>, occurring initially and medially in *ezsant* (41:18) 'they eat', *berghe* (42:12) 'mountain', and *redha* (3:13) 'speech'. Often before an \( r + \)consonant cluster, the allographs <ae æ ë> are found. This leads Hench (1893:62) and Kirschstein (1962:22) to propose a more open surface form in the environment mentioned, relative to underlying /e/. Thus *aerdha* (24:20), *ərdu* (39:9), and *ərdha* (17:19) 'earth' are all attested. <e> is not among the eleven occurrences of this particular lexeme (Hench 1893:137), although alternations like *ernusti* (9:9) ~ *ernusti* (25:19) 'seriousness' and *arm-herzìn* (40:7) 'piety' ~ *herzìn* (3:23) 'heart' do exist. In addition, these allographs are not limited to the environment before \( r + \) but also occur before /w/: cf. *‡uuin* (36:21) ~ *euuin* (4:14) 'eternity'.

Therefore Penzl (1971:66) is probably correct, at least for short /ɛ/, when he attributes the <e ae æ ë> allography solely to Latin orthographic convention since /ɛ/ is already open. After comparing *aerdha*, *ərdu*, and *ərdha* denoting open [ɛ] before an \( r + \)cluster with *ədhile*, he concludes that these variants 'als solche weder phonetisch noch phonemisch gedeutet werden können'. The graph <e> in *seraphìn* (20:4) alternates with <y> in *syrafin* (20:22) in this loanword spelled with <e> both times in the adjacent Latin original.

The short low back unrounded vowel /a/, written <a>, is found initially and medially as in *aboha* (26:3) 'perverse'
and grab (42:21) ‘grave’.

The short mid back rounded vowel /o/ occurs in root syllable initially and medially. Examples are offerunc (35:18) ‘offering’ and folghet (40:3) ‘he follows’. Based solely on the internal evidence offered by comparisons with sii (21:7) ‘they’ and see (11:22) ‘behold’ showing long vowels (cf. 2.1.2.), we would have to agree with Hench (1893:65) that short /o/ occurs finally as well in so ‘so, thus’ (written as such sixty-two times, never **soo). This starkly contradicts external comparative evidence though: cf. OHG (Otloh) sō, ON svā, OS sô, OE swā ‘so, thus’, and Go. swē ‘so that’ but also swa ‘so, thus’. Consistency in marking vowel length may or may not prove anything. Compare Isidorian orthographic practice of marking vowel length (cf. §4:1.3.) with a similar system for modern Dutch. In the latter, only some long vowels are indicated word-finally: Dutch zee /ze:/ ‘sea’, but zo /zo:/ ‘so’. Still, our claim of a historically shortened vowel in Is. so is not entirely unlikely, as it could be the product of low sentence stress.

Short high back rounded /u/, written <u>, is found in all three positions: cf. undar (17:13) ‘under, among’, fundan (31:1) ‘found (p.p.)’, and nu³ (11:6) ‘now’.

4:1.3. The Long Vowels in Root Syllable.

³See Braune/Eggers (1975:§41 Anm.1) for a discussion of OHG nu ~ nu.
Vowel length is generally marked orthographically in *Isidor* by means of dittography. As Hench (1893:63) explains the scribal convention, the vowel graphs <a i o u> are doubled to signify length in closed syllables. Long /e:/ in closed syllables is represented by <ae æ e>. These same long phonemes are marked by single graphs in open syllable (in the case of /e:/, <æ> occurs four times in addition to <e>). Thus, we find nom. sg. masc. dhiin (4:20) ~ acc. sg. masc. dhi.nan (16:10) 'your'. The doubling rule applies to primarily or secondarily stressed syllables with the only two exceptions being subjunctive forms scoldii (24:14) 'he should' and anduurdeen (5:2) 'they might answer'. All five long vowels are marked by dittography in monosyllabic words ending in open syllable (examples below).

Open-syllable spellings such as the dat. sg. ziide (26:20) and ziidi (18:7) 'time' are by analogy to closed-syllable nom. sg. ziidh, as Hench (1893:64) reasonably suggests. Note that dat. sg. zide (26:10) is also attested. Hench goes on to call sijibunzo (7:4) 'seventy' (against sibunzo (25:22, 26:9, and 27:5) and four cases of sibun 'seven') 'schwerlich richtig'. Biidan (25:10) 'to wait for' is not so easily explained away. Single <i> for /i:/ in closed syllable appears in huuiil (18:8) 'while' (contrast

---

'The suffix -liih, surely taking secondary stress since liih 'flesh' still exists as an independent morpheme, occurs thirty-two times, e.g. baatliliihho (39:11) 'boldly'. Reduced -lih occurs seven times, e.g. huuelih (12:8) 'who' and solih so (36:22) 'just like' (see Hench 1893:64 for the complete lists).
uuïs (6:12) 'manner') and dhin (13:16), and, according to Hench, is scribal error.\footnote{Hench (1893:64) labels these deviant forms as places "wo der Schreiber aus Versehen den Strich zum nächsten Buchstaben verwandt hat." Checking against Hench's own facsimile, this may have been true for dhin but certainly not for huvelih in which the <1> extends to normal height, far above that for an <i>.}

One will note that the above length-marking system fails to differentiate between long and short vowels in open syllable. When we are not fortunate enough to have open/closed syllable alternants from the morphological paradigm as with chi-uuarin (32:11) 'true' and uuaar (24:21) 'true' we have no internal way of differentiating between long and short vowels. Pairs like so sama so /sa.ma/ (23:20) 'thus' and samun /sa:.mun/ (34:1) 'seed' must be analyzed according to comparative evidence: cf. Go. OS sama, ON OE same 'same' versus OS sámó, Go. -seps 'seed', and ON sáð 'chaff'.

The long high front unrounded vowel /i:/ occurs initially, medially, and finally in iisnine (6:2) 'of iron', riihhes (4:16) 'kingdom', uuïsi (39:7) 'wise' (~ uuïs-duom (3:22) 'wisdom'), and dhrii (21:7) 'three'.

Long mid front unrounded tense /e:/ before /r w h/ is probably realized as lax [ɛ:]. Closed syllables exhibit the variant spellings, <ae æ ø>. Examples are: in initial closed syllable aer (11:3), ær (37:21), and ær (1:12) 'earlier, before' and in medial closed syllable haerduom (31:7), herduom (22:9) 'authority'. Open syllables most often
exhibit the spelling <e>, but <æ> and <e> occur a total of four times (cf. Hench 1893:65). Examples of <e> for [ɛ:] in initial open syllable are fem. euuin (4:14) and in medial open syllable lerunga (41:20) ‘teaching’. Elsewhere, the surface form [e:] occurs, written <ee>: cf. see (11:22) ‘behold’.

Of the long back vowels /a: o: u:/ in word-initial position, only the mid vowel occurs overtly marked for length, thanks to the root structure of oostarriihhes (35:13) ‘eastern kingdom’. We are forced to rely on external comparative evidence to assign length in all other cases: e.g., adum (12:16) ‘breath, spirit’ (cf. OS ḥōm, OE ḥōm ‘breath, spirit’), gen. pl. orono (40:16) ‘ears’ (cf. Go. áusō, ON eyra, OS òra, OE ear ‘ear’), and uzs (42:11) ‘out of’ (cf. ON OS OE út ‘out of’).


4:1.4. The Diphthongs.

In addition to the above monophthongal phonemes, Isidorian Old High German features several diphthongs. Our

*Superscript <v> directly above <u> taken for the second <u> (Hench 1893:6).*
data contain the digraphs <ie, ia, iu, yu, ei, ea, eo, eu, au, uo>. The challenges facing us here are to establish, firstly, just how many, i.e. which, underlying phonemes are being represented; and secondly, what their phonetic realizations might be. We have organized our discussion of the diphthongs accordingly.

Phonemic minimal opposition (cf. Penzl 1971:59) within the definite article’s paradigm with acc. pl. neut. dhiu (6:3), acc. sg. fem. dhea (13:4), and acc. pl. fem. dheo (32:4) 'the', and the adverb dhuo (28:1) 'then' provides a starting point to hypothesize the diphthongs /iu/, /ea/, /eo/, and /uo/.

The digraph <yu> occurs three times in fyur (8:20, 9:4) 'fire', acc. sg. masc. lyuzilan (23:8) 'small', and dat. sg. lyuzilun (22:17) 'smallness, childhood'. The latter two spellings, which appear in free variation with <iu> of nom. sg. neut. liuzit (41:14, misspelling of *liuzil) and instr. sg. neut. liuzelu (23:10) 'small', may possibly reflect fronting by i-mutation (cf. 2.1.4.) and therefore the realization [iY]. Braune/Eggers (1975:52) provides additional references on fyur and its equivalents throughout the Old High German monuments. We do not endeavor here to speculate on the surface pronunciation of <yu>”, but in light of the data for the lexeme liuzil, we will assume that both

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7Hench (1893:67) opts for ūu, i.e. [yu]; Penzl (1971:67) favors iū, i.e. [iY].
<yu> and <iu> represent a single phoneme /iu/.

The digraphs <eo> and <eu> appear in complementary distribution among the attested class II strong verbs (cf. Hench 1893:105): <eo> before low /a/ and finally and <eu> before a non-low vowel, best illustrated by present participles leogando (35:10) ‘lying, telling a lie’ ~ himil-fleugendem (2:17) ‘fliers of the sky’*. Thus we find <eo> predictably in eo (6:13) ‘ever’, eoman (9:5) ‘anyone’, and huuueo (3:9) ‘how’. The realization represented by <eu> occurs in freuuuidha (4:20) ‘happiness’, freuui dhih (11:20) ‘be happy’, and hreuun (29:10) ‘penance’. The word dheodhun (5:18) ‘people’ with <eo> before a high vowel violates the otherwise regular distribution of surface variants for /eo/. This anomaly, taken together with the [o] ~ [u] alternation, may be signalling a schwa-like realization for these offglides or at least some intermediate shift on the way toward neutralization. Note, though, that the hypothesis of centralized/reduced offglides is supported by other Old High German evidence. Rauch discusses (1967:93) the later Old High German merger of /io/ (Isidorian /eo/) with /ie/ < Gmc. *e₂, having respectively back and front offglides, as evidence for reduction of the weakly stressed

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*The alternant present in lsg. prs. ind. liugu (36:20) ‘I [tell a] lie’ has already been phonemicized within this and other verbal paradigms according to Penzl (1971:61-2) and Hench (1893:62). Consider st.IV 3pl. prs. ind. nemant (35:14) ~ lsg. prs. ind. nimu (37:20) ‘take’, but also 2sg. imp. nim (25:21) without conditioner.
component.

The diphthong /ea/, the most common (42 times) Isidorian representation of *e₄, can be found, written <ea>, in hear (38:18) 'here' and acc. sg. fem. dheasa (43:16) 'this'. The digraph <ei> occurs once in 3sg. pt. subj. fir-leizssi (29:23) against firleazssi (34:7) 'he might have left'. The <ei> ~ <ea> alternation parallels above-mentioned <eo> ~ <eu> in that the centralization of the weakly stressed offglides and the consequent loss of distinctiveness would account for the orthographic variation, as Penzl believes (1971:67). Rauch proposes (1967b:69) that 'the <ei> probably may not be as clearly diphthongal as the <ea>'.

Personal pronouns linked secondarily to *e₄ (cf. Rauch 1967:37, Braune/Eggers 1975:§43 Anm.3) show variant spellings <ia> and <ie>, unmatched elsewhere in the lexicon: acc. sg. fem. sia (2:5, five times total) 'her', and nom/acc. pl. masc. sie (8:2, sixteen times total) ~ sii* (21:7) 'they'. The variance in offglide graphs may likewise be attributed to reduction under weak stress in conjunction with possible analogy to strong adjectival endings (e.g., acc. sg. fem. mina (11:1), nom. pl. masc. mine (12:5) 'my').

The opposition in syllable nuclei between <ea> and <ia> is puzzling, unless sia and sie are built on the model of nom. sg. fem. siu (2:18, four times total), or may actually be

*Appearing in the clause dhazs sii dhrii | goda siin 'that they are three gods', <ii> in sii is best explained as a case of graphic iconicity. See section §4:6.3. below.
considered clusters of two full vowels instead of diphthongs. Note also that <i> is the root vowel for the entire remaining third person paradigm. Therefore, it does not appear warranted to posit more than a single phoneme /ea/ as underlying the allophones represented by <ea, ia, ie> and this one instance of <ii>.

We find /uo/ medially and finally as well in quotliih (42:21) 'glorious' and dhuo (28:1) 'then'. Competing forms are observed in buohhum /-uo-/ (2:13) ~ boohhum /-o:-/ (17:22) 'books'.

The last two diphthongal phonemes in our data are /ei/ and /au/. The former occurs initially and medially in ein (13:18) 'one' and uweist (12:6) 'you know'. The latter is found in the three positions of auh (2:12) 'also', daufin (31:20) 'baptism', and dau (23:22) 'dew'. These bring the total to six diphthongal phonemes /iu, ei, ea, eo, au, uo/.

4:1.5. Umlaut.

For the Isidorian dialect, the standard theory of umlaut describes exclusively i-mutation, by which historically velar root vowels became fronted in the presence of palatal /i(:),j/ in the following syllables. The

10Cf. masc. nom. sg. ir, acc. sg. inan, dat. sg. imu, gen. pl. iro, dat. pl. im; fem. dat. sg. iru; neut. nom/acc. sg. izons.

11The root of aruwostit (27:9) 'destroyed' is either /-wuost-/ or /-wo:st-/ due to the ambiguity of <uu> (cf. Hench 1893:66, Braune/Eggers 1975:§107 Anm.1).
front vowel /e/ also becomes raised to [e] in this environment. Other qualitative changes like u-umlaut and breaking occurred elsewhere in Germanic (cf. Krahe and Meid 1969: §§35-40) and are not immediately relevant to the present study. Phonemicization preceded Isidor for alternants like 3pl. prs. ind. nemant (35:14) with /ε/ ~ 1sg. prs. ind. nimu (37:20) with /i/, on the evidence of the imperative nim (25:21) without conditioner, all forms of *neman 'to take' (cf. Penzl 1971:61-2).12

The standard theory of umlaut, which is how Voyles refers (1992a and 1992b) to Twaddell's generally accepted description (1938), deduces phonetic umlaut for Old High German even where no orthographic umlaut is present.13 This must have been the case for Old High German because later stages of the language developed orthographic umlaut after the conditioning environment had disappeared.

At most, two of a possible ten mutated vowels or diphthongs are marked as being fronted in Isidor. For example, we find the alternation nom. sg. stat [stat] (43:12) ~ dat.sg. stedi [stedi] (37:4) 'place' but no such overt marking for nom. sg. wk. ho:ho [ho:ho] (34:12) 'high' ~ nom. sg. superlative hohisto [ho:histo] (24:15) 'highest'.

12The same pre-Isidoran phonemicization applies to other strong verb classes as well: e.g., cl. V p.p. fir-gheban (10:6) 'appointed' ~ 1sg.prs.ind. ghibu (6:4) 'I will give', and wkII. prs. pt. leogando (35:10) ~ 1sg. prs. ind. liugu (36:20) '[tell a] lie'.

13See also Schweikle (1964).
Penzl compares (1971:117) this state of affairs with modern English spelling: e.g., hid, not, and met featuring [i], [o], and [ε]; and hide, note, and mete featuring [ai], [ou], and [ii] respectively with the diphthongs unambiguously signalled solely by final <-e>. The transformation of /a/ → [e] accounts for the only case in which umlaut is reflected orthographically, with the possible exception of /iu/ → [iY] (cf. where the fronting may be signalled in acc. sg. masc. lyuzilan (23:8) but not in nom. sg. neut. liuzit (sic) (41:14) 'small'). This may reflect the fact that the allophone [e] is the only fronted allophone which (at least nearly) overlaps with a phoneme of the language already represented in the alphabet: [e], /ε/, and /e:/, all represented by the graph <e> are front unrounded mid vowels. The other relevant phones are in total complimentary distribution. Even /a/ → [e] is not consistently marked,¹ as exemplified by 1sg. faru [yaru] (5:21) ~ 3sg. ferit [yerit] (14:10) ~ 2sg. faris [yeriz] (37:11) 'go'.

Arguments by Penzl (1971:117), representing one aspect of the traditional view, involve what we know about the phonological structure of the language and the assumption of parallel development of parallel phonemes, referred to as 'Reihenschritte bei der Phonemspaltung'. If we can prove umlaut for /a/ → [e] (or /iu/ → [iY]) where it is reflected

¹Voyles counts (1974:77) 261 out of 309, or 88.4%, where <e> by umlaut occurs, not counting cases with intervening /hC/-cluster.
orthographically, then we can assume umlaut for /u/ → [Y] and the other cases (including 11.6% of the occurrences /a/ → [e] already referred to), detailed below, where it is not reflected orthographically.

Turning to more cogent, comparative evidence, we can ascribe umlaut to North-West-Germanic, and therefore, obviously, pre-Isidorian Old High German, on the basis of its prevalence in Old Norse and West Germanic" (but not Gothic). Prokosch (1939:110-112) provides examples for each phoneme but we take a few typical ones: Go. dōmjan - ON dōma, OE dōman, dēman, OFris. dēma 'to judge'; Gmc. *mūsiz > ON mīss, OE mīs; Go. hāusjan - ON heyrar, OE hīeran, OFris. hīra. Not until late Old High German and Middle High German times are the fully phonemicized reflexes of umlaut uniquely represented in the orthography. Here we find graphs for fronted vowels where predicted: e.g., Is. slafis - MHG slafest 'you sleep', Is. hōhisto - MHG haehest 'highest', and Is. duri - MHG tūr 'door'. For a more indepth exposition on this standard view of umlaut along with bibliography see Braune/Eggers (1975: §51).

In the standard theory, umlaut is described as totally phonologically conditioned. Since other developments have removed the necessary palatal conditioners, the umlauted

"Like Isidoran Old High German, only /a/ → [e] is regularly indicated by the spelling in Old Saxon although rare cases of orthographic alternation do exist for other phonemes, e.g., OS bētian for bōtian 'to atone', andwirdi for andwurdi 'answer'.}
phones must be present in Old High German in order to explain Middle High German spellings and later stages of the language. But being non-distinctive, the Old High German umlauted segments eluded orthographic marking.

Voyles challenges (1992a and 1992b:212-214; see also 1976: 19-26) this standard theory from three different angles. He argues that virtually all subphonemic distinctions are 'certain to be represented somewhere at least sporadically' but since absolutely no orthographic umlaut besides /a/ → [e] occurs before 1000 A.D. in any Old High German monuments, that 'the other purportedly umlauted vowels such as [ö] and [ü] simply did not exist before that time' (1992a:367). Obviously Voyles no longer considers Isidorian <yu> in lyuzilan (23:8) (~ *liuzil [41:14]) 'small' to indicate fronting, in disagreement with Hench (1893:67) and Penzl (1971:67) and in contradiction with his usual literal reading of orthography (justified in Voyles 1976:2-3). Voyles also argues that no purely phonological, synchronic rule can accurately describe the occurrence of umlaut in any attested Old High German corpus (1992a:368). And finally, he criticizes the standard theory for failing to plausibly account for many later developments (1992a:

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16In his earlier work (1976:83), Voyles believed otherwise: "Spellings like fyur (8:20) and lyuzilan (23:8) for fiur 'fire' and liuzilan 'little' may well indicate an optional rounding of [i] to [ü] before [u]...Similarly, a spelling like fyrstant 'understand' (25:21) may indicate an optional rounding of unstressed [i] to [ü] before [r]."
it correctly predicts NHG *senden* 'to send' and *lösen* 'to loosen' (cf. Go. *sandjan* and *läusjan*), but incorrectly predicts **süchen** for NHG *suchen* 'to seek' and **gläuben** for NHG *glauben* 'to believe' (cf. Go. *sökjan* and *galáubjan*). He therefore concludes that Isidorian and other Old High German orthographies more faithfully reflect the state of umlaut than has been traditionally believed. He views umlaut as a morphosyntactic rule with conditions detailed in Voyles (1992b: 213-4), which for *Isidor* affects only /a/ → [e].

We do not attempt to debate the question of the extent of umlaut in the language of *Isidor*, since it is not pivotal to the present study. We will simply opt to follow the traditional pre-Voylesian view, whereby all back vowels are fronted in the conditioning environment.

**4:1.6. Vowels Under Weak Stress.**

A discussion of vowels under weak stress and the unique transformations these phonemes undergo is a surface phonetic matter and can only take place after a prerequisite treatment of word stress, the topic of §4:4.1. Afterwards, the vowels of non-prominent syllables are dealt with in turn, according to their position relative to the main word stress, in §§4:5.0.–4:6.7. below.
4:2.0. The Consonantal Phonemes.

4:2.1. The Stop Series.

The Isidorian stops are not divided by a voicedness feature, as are Gothic consonants, but rather are characterized as being fortis or lenis. All of the following fortis stops are generally believed\textsuperscript{17} to have had aspirated realizations, i.e. \([p^h \ t^h \ k^h]\), except when part of an \(s\)-cluster. In the latter case, unaspirated segments are realized, i.e. \([p \ t \ k]\). The phonetic detail of aspiration will not be indicated in the following analysis of Old High German since any reconstruction of rules of aspiration would be based solely on comparative data, given the absence of any marking of this phenomenon in the Isidorian orthography.


\textsuperscript{17}Phonetic detail for the stops, e.g. fortis/lenis and aspiration, is posited on the evidence of comparative developments according to Penzl (1971:151). But see footnote 18 below.
and *uph* (39:17) 'up' with an alternate spelling <ph>, which is not believed to signify any variant surface pronunciation, but rather shows the influence of 'romanische Schreibtadition' (see Penzl 1971:73). The same allography applies for *einic* (6:15) ~ *einich* (35:21) 'any', both with [k], and *titulo* (23:3) 'inscription' ~ *ith-niuvues* (1:18) 'aneu', both with [t] (see below).

The fortis dental stop /t/ in initial position is limited to the loan words *tempel* (35:17) 'temple', *titulo* (23:3) 'inscription' and *tradungum* (7:4) 'translation', and native words with r-clusters as in *triuuua* (40:19) 'faith' or after <s> as in *standit* (15:4) 'stands'. It occurs medially after consonant in borrowed *altari* (35:18) 'altar', and native *heftida* (12:21) 'threw', *gheiste* (10:2) 'spirit', and *dohter* (11:21) 'daughter'. Geminated /tt/ is attested intervocalically in *mitteru* (12:1) 'middle' and *bitdande* (42:20) 'praying for' with alternate <tt> and <td> spellings, as well as in a stop-resonant cluster after a long vowel in *hluttrot* (9:16) 'more brightly'. The apparent geminate in *rehttunga* (39:8, 40:17) 'justice' is most likely the result of a syllabification shift: [rɛxt.tun.ɡa] ~ rɛxt.un.ɡa ~ /reht+unga/ (cf. §4:7.1. below). The lexeme *got*-'God' occurs forty-one times with [t] against five times with [d] (cf. Hench 1893:80). Braune (1975:160) and Penzl (1971:63) explain such alternations as competing forms, one resulting from Verner's Law and the other from analogy. In final
position we have *ith-ni uuues* (1:18) 'anew' (*<th>* = [t], see above), *uuerdhant* (12:4) 'they become', and *chum ft* (25:12) 'arrival'. The alternation *re ht* (4:17) ~ *reh d* (26:5) 'justice' might indicate a lenis variant [d] in the environment after /h/, if Penzl (1971:73) and Hench (1893:79-80) are correct.

An affricate /tts/ is realized as [tts], written <tz> intervocalically, if the first vowel is short: cf. *setzan* (25:4) 'to set'. A shortened realization [ts], spelled <z>, occurs initially in *z ide* (26:10) 'time', after diphthong in *lyuzilan* (23:8) 'small', after resonant in *herzin* (3:23) 'heart', and finally in nom. sg. neut. *dhiz* (6:16) 'this'. We find the allograph <c> for [ts] in the loanword *cruci* [krutsi] (23:2) 'cross'.

The realization of fortis velar /k/, i.e. [k], is spelled <c> or <ch> according to Romance-Merovingian practice, as already mentioned for <p ~ ph> and <t ~ th>. Penzl (1971:64) records <ch> initially (cf. *chraft* (19:17) 'strength'; but not in the loan word *cruci* (23:2) 'cross') and medially after [r] and [l] (cf. *uuerchum* (29:16) 'works' and *folches* (31:8) 'people'. After [s], <ch> regularly appears before front vowels while <c> regularly appears elsewhere: *himilischin* (33:6), *undar-scheit* (18:1) 'difference', *fleisch es* (9:22) ~ *himilisca* (20:20) 'celestial', *screiph* (23:5) 'wrote', *fleisc* (43:20) 'flesh'. In other environments, the allographs appear to be in free variation,
as ercna (1:4) ~ erchno (14:8) 'distinguished' illustrate. Geminate /kk/ occurs with alternate spellings in hrucca (5:19) 'backs' and daucgal (1,21) 'secret'. The string /kw/ occurs word-initially and is spelled <quh>, cf. quhimu (11:22) 'I come' and quhad (2:4) 'he said'. The predecessor to the modern German ge- prefix is written chi-, as in chi-laubin (41:13) 'faith'. The same prefix is attested once as ghi- in ghi-laubin (6:12).

Turning now to the voiceless lenis series, the bilabial stop /b/ is realized as [β] initially and medially, except before a [+fortis] segment. Examples are berca (34:4) 'mountains', blome (39:18) 'flower', haubide (16:8) 'head', and simbles (9:10) 'always'. The possibility that the voiceless lenis series became voiced intervocally, as would be the case for haubide [haubide] above lacks any internal evidence and so we leave the question open.1

Medially before a fortis consonant and finally, the fortis [p] occurs, cf. hebit (3:16) 'has' ~ hapta (11:14) 'had', scribun (7:5) 'they wrote' ~ screiph (23:5) 'he wrote'. The graph <b> also occurs word-finally, leading Penzl (1971:73) to mention the possibility of a variant [β] for ab (37:20)

'from'," gab (19:1) 'he gave', and grab (42:21) 'grave'.

Lenis alveolar stop /d/ is realized as [d], written <d>, initially: cf. daghe (12:2) 'day', daufin (31:20) 'baptism'. Medially in clusters with resonants we find [d], illustrated by the examples sculdim (43:10) 'debts', ardon (12:1) 'abide', endi (22:15) 'end', and nadra (42:8) 'snake'. In final position, fortis [t], most commonly written <t>, is realized: cf. gen. sg. chiburdi (4:5) ~ acc. sg. chiburt (2:5) 'birth', nom. pl. hendi (18:4) ~ acc. sg. hant (11:1) 'hand', and antuurdeen [ant.wur.de:n] (5:2) 'they may answer' (with /d/ on the evidence of andreidim [an.drei.dim] (30:13) '(in) turn' with the lenis in the prefix /and-/ maintained by a syllabification shift; see §4:7.1. below). Alternate spellings <d> and <dh> for final [t] occur in chind (41:17) ~ chindh (22:8) 'child', and nom.sg. ziidh (35:11) (cf. dat.sg. zide (26:10)) 'time'. We find <th> in anth-lutti (20:7) 'face'.

Variation such as chi-teda (16:1) for chi-deda (12:16 and 13:1) 'he made', muotes (28:8, 35:14) 'mind' ~ ubar-muodic (29:17) 'stubborn', and uuortes (25:21) ~ uuordes (42:9) 'word, sermon' is generally understood as evidence for the language being in transition (see Hench 1893:80f.,

"Hench (1893:117) explains away this single attestation of prepositional ab in Isidor: "Lat. ab [wird] sonst überall durch fona übersetzt, und da ahd. ab sonst nur im Notker als präp. vorkommt, so ist höchst wahrscheinlich die lat. Präposition aus Versehen unübersetzt geschrieben worden."
by which we mean that this stage of the language has competing systematic phonemes, /t/ and /d/, in the relevant environments. We do not attempt any further interpretive sorting out of the data here, nor below with competing <d> and <dh>, except where clear, disambiguating evidence does exist. Such evidence would be of the sort where alternations like nom. pl. heida [heida] (21:8) ~ nom.sg. heit [heit] (9:6) 'person' (both from /heid-/) provide a model for interpreting dat.sg. zide [tsi:de] (26:10) ~ nom.sg. zidh [tsi:t] (35:11) 'time'. Too many inconsistencies obscure what may now be irretrievable linguistic realities of the spoken language on which the Isidor text is based. This often forces us to take the orthography of the surviving manuscript at face value. Consequently, our analysis treats the more common forms wherever practical and unavoidable. We will strive toward consistency where our ninth century counterparts have faltered, thereby creating a somewhat artificial secondary Old High German language, but one which provides a solid conservative framework for further study of the true issue at hand, the suprasegmentals.

The lenis velar stop /g/ is realized as [g] initially and medially. The orthography for the lenis is analogous to the <c> - <ch> alternation for /k/ above. The allograph <g> typically occurs before back vowels and consonants, and <gh> typically precedes front vowels, especially in initial
position (cf. Penzl 1971:64): e.g. *gah* (18:19) 'I gave' and *ghibu* (6:4) 'I (will) give', acc. sg. masc. *heilegan* (14:21) and wk. gen. sg. neut. *heileghin* (32:8) 'holy'. Exceptions to this adopted Romance-Merovingian practice are seen in *einighan* (23:12) 'any' and *heiligin* (4:8) 'holy' and include cases of borrowed Latin spelling as with *genesis* (33:3) for Lat. *genesis* 'Genesis', and *angila* (20:5) for Lat. *angelus* 'angel' (but also attested once as *anghila* (24:18)). In final position, /g/ becomes fortis [k], most often written <c> alternating with <ch>: cf. *heileghin* (32:8) ~ *heilac* (6:6) 'holy', *chuninge* (6:17) ~ *chuninc* (35:19) 'king', *einigan* (26:10) ~ *einic* (6:15) ~ *einich* (35:21) 'any'.

Another plausible explanation of the fortisization of /b d g/ → [p t k], as just described, takes into account syllable boundaries. As supported independently by the syllabification rules of §4:7.1., we find neutralization in favor of [+fortis] before a syllable boundary. This is well exemplified by the labial case: *hapta* [hap.ta] (11:14) 'had', but *lumblo* [lum.blo] (40:18) 'loins'.

4:2.2. The Spirant Series.

Similar to the stops, Isidorian Old High German spirants are divided between fortis and lenis phonemes. Unlike the corresponding stop series, the fortis spirants are always underlyingly geminate.
The labiodental fortis spirant /ff/ is realized as [ff], written <ff>, intervocalically if the first vowel is short. This is shortened to [f], written <f>, after a long vowel or diphthong, in a consonant cluster, or in final position. Thus we find p.p. chiscaffan (8:14) 'created' contrasting with 3.sg. subj. chiscuofi (7:21) 'he might create' and chiscafti (24:20) 'creatures'; dat. sg. lantscaffi (39:20) 'country' contrasting with acc. sg. lantscraf (32:2) 'country'. The opposition of [f] (< /ff/) and [v] (< /y/ [see below]) is apparent from hreofun [hreofun] (20:14) 'they called' and hreue [hreve] (23:17) 'womb'. We find an alternate spelling <pf> for [ff] attested once in ubar-hepfendi (3:3) 'surpassing'.

The fortis interdental /θθ/ written <thdh> is rare in Isidor. We find it attested solely in the form fethdhahha (20:5) 'wings'.

Unlike for its labiodental counterpart, Isidorian orthography does not indicate degemination of fortis alveolar /ss/ after a long vocalic segment. Since the means clearly existed to mark this, we must assume that a geminate allophone, written <zss>, occurs after long vowel or diphthong as well as after short vowel: cf. not only wuizssanne (3:6) 'to know' and ezssant (41:18) 'they eat', but also buuzssan (26:10) 'far from', fuozssi (20:8) 'feet', and chiheizssan (38:23) 'promise'. Like the other spirants, /ss/ is simplified to [s] finally, written <zs>, and before
consonant, written <s>, as uueizs (35:11) 'I know' and uueist (12:6) 'you know' (~ uujzssanne above) demonstrate.

The velar fortis spirant /χχ/ patterns like /ss/ in that the geminate is realized as [χχ] intervocally after both short and long vowels or diphthongs. We find it marked by the apparently interchangeable allographs <hh, ch, cch>: e.g., after a short vowel in aruuehhu (37:11) – aruuechu (39:5) 'I will awaken', dhehhidon (20:7) – dhecchidon (20:8; n.b. on the following line!) 'they hid', and antdhechidiu (2:23) 'revealed'; after a long vowel in riihhe (6:14) 'kingdom'; and after a diphthong in acc. sg. zeihhan (43:2) 'sign'. The simplex realization [χ], written <h>, occurs finally and before consonant: cf. sprehhendi (7:13) 'speaking' – sprah (17:14) 'he spoke'; dat. sg. zeihne (42:19) 'sign'.

The lenis labiovelar spirant /γ/ is realized as [γ] initially, for example, in fona (1:13) 'from' and freuuui (11:20) 'rejoice'. Although the lenis is not uniquely reflected in the orthography, since <f> for [γ] here overlaps with the sign for the homorganic fortis, we observe the distribution of the rest of the spirant series. Lenis /γ/, written <u>, stands in opposition to /ff/ intervocally as in auur (22:21) 'but', hreue (23:17) 'womb', and

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20<hh> must represent a heterosyllabic geminate here because dittography marking vowel length is restricted to closed syllable. Contrast dhiin ~ dinan 'your' mentioned in §4:1.3. above.
arheuit (32:18) 'exults' where it probably had the value [v], i.e. was voiced, in a voiced environment (cf. Penzl 1971:70). The argument for intervocalic voicing of lenis spirants is strengthened by a contrasting pair like un-
zuuiflo [-tswi:ylo] (7:7) 'undoubtedly' and zuuiuun [tswi:vun] (26:11) 'doubt' where hypothesized voicing is reflected in an orthographic distinction. In a cluster with a fortis consonant, [f] is realized, as in heftida (12:21) 'he threw'. The surface phone represented in final position in uuolf (40:21) could possibly be fortis, modelled after the lenis stops (cf. selbo ~ selp), but see below our descriptions of /ɔ/ and /ɔ/ which question word-final fortisization for the spirant series.

In initial position lenis interdental /ɔ/ is realized as [ɔ], written <dh>, as in the conjunction dhazs (5:17) 'that', dhrii (21:7) 'three', and chi-dhuuingu (5:22) 'I oppress'. Medially in a voiced environment, voiced [ɔ] is realized: for example intervocalically in edhile (35:12) 'tribe' and scheffidhes (30:1) 'builder', and after [r] in erdha (20:17) 'earth'. In syllable- and word-final position, the voiceless lenis [ɔ] is realized, as in adhmuot (15:16) 'he breathes' and chimeinidh (15:12) 'community'. Had the fortis allophone arisen in this environment, we could expect at least some instances of allography, most likely with <th> (cf. fethdhahha [veθaχχa] (20:5) 'feathers'. But <th> is never written for /ɔ/. It is true that <th> already signi-
fies [t] at syllable boundary (cf. *ith-niuuues* [it.niu.wez] (1:18) 'anew' and the preverb [ant-] once *anth-* (5:18) against eight *ant-*) but this is too rare to have reasonably caused confusion. Transitional alternants like *quhedan* [kwedan] (9 times) ~ *quhedhan* [kwedan] (10 times) 'to say' and *uuard* (25 times) ~ *uuardh* (24 times) 'he became' show where analogy is still in the process of erasing the effects of Verner's Law (cf. Braune 1975:164-6). Interestingly, analogical *quhad* 'he said' is attested fifty-four times, but not once *quhadh*.

Lenis alveolar /z/, written <s>, is realized initially and finally as [z], for example in *setzan* (25:4) 'to set', *sidiu* (3:16) 'manner', and *uuas* (18:8) 'I was'. Between voiced segments a voiced allophone [z] occurs: *uuesan* (37:17) 'to be'. That final /z/ remained lenis is evidenced by near-minimal pairs like conj. *dhazs* [δas] ~ /δass/ 'that' ~ *dhes* [δez] ~ /δez/ gen. sg. masc/neut. 'the, this'. No occurrences of the well-attested conjunction nor the masculine neuter genitive singular morpheme, are ever spelled with <zs> (= fortis [s]). One might attribute spellings like 3sg. pret. ind. *uuas* (17 attestations in all) 'was' to analogy with the infinitive *uuesan*, but this impossible for a lexeme like *sus* (14 times) 'thus, so'. In clusters with fortis consonant, a fortis allophone [s] is realized: *sprah* (17:14) 'I spoke', *gheist* 910:9) 'spirit'. The spelling <ss> in words like *chiuuisso* (4:11) 'certainly' and *gotnissa*
(9:14) 'divinity' remains distinct from <zss>, leading us to postulate a lenis [ zz ] or even simplex voiceless [ z ] here which contrasts with intervocalic voiced [ z ], cf. uuesan. ²

The lenis glottal spirant /h/, written <h>, occurs initially and medially between vowels, where it stands in opposition to /χχ/ <hh>: cf. hear (38:18) 'here', huuanda (17:18) 'because', and hneige (5:18) 'I bow'; chisehe (36:6) 'I see' contrasting with sprehhendi (7:13) 'speaking'. Word-finally, as in chisah (20:3) 'I saw', fortis [χ] was realized (cf. Braune/Eggers 1975:§151), in which case, neutralization with the final segment in sprah < /sprαχχ/ occurs. We find fortis [χ] also in clusters with fortis consonants, with variant spellings <h> or <x>: dohter (11:21) 'daughter', sehs (20:5) 'six', oxss (41:17) 'ox', uuaxsmin (36:18) 'fruit'. We include this last group here for diachronic reasons, although synchronically, they could just as readily be derived from /χχ/.

4:2.3. The Resonant Series.

The bilabial nasal /m/ occurs initially, medially, and finally, as in mit (1:7) 'with', smalero (41:9) 'small', himil (16:2) 'sky, heaven', stimna (11:6) 'voice', and dat. pl. faterum (38:10) 'fathers', as [m]. Geminated /mm/ also

²See also Voyles (1972) who takes issue with the notion of dental z, from the second sound shift, opposite palatal g, from Proto-Germanic *s (cf. Braune/Eggers 1975 §168). Voyles argues instead for a distinction based on the feature of stridency.
occurs medially in *grimmin* (35:8) 'stubbornness' (with /mm/ in opposition to /m/ of *himil* already mentioned).


The phoneme /r/ also occurs in all positions. Penzl (1971:69) cites forms showing epenthesis, *berahtnissi* (3:21) 'brightness' and *dhurah* (1:16) 'through', in arguing for apical r, since a velar r before a velar consonant would not
invite a transitional vocalic segment. Examples are *riihhi* (37:14) 'kingdom', *druhtin* (4:2) 'lord', *erdha* (17:19) 'earth', *faru* (5:21) 'I go', and *saar* (35:3) 'immediately'.


4:2.4. The Glide Series.

The bilabial glide /w/ is realized initially and medially as [w], where it is generally spelled <uu>. Examples are *uuerdhapt* [werδant] (12:4) 'they become', *uurehhan* [wrɛχan] (29:7) 'exiled one', *huuelih* [hwɛlix] (7:20) 'which', and *euuua* [e:wa] (1:4) 'law'. The combination [wu] is likewise written <uu> as in *uurza* [wurtsa] (2:21) 'root' and *euun* [e:wun] (38:4) 'eternity'. The cluster [kw] appears as <quh>: cf. *quhad* [kwad] (9:19) 'he said'.

The palatal glide /j/ occurs initially before vowel and medially as [j], written <i>, for example in *iaar* (25:13) 'years', *zuueiio* [tsweijo] (9:15) 'of two', and *nemniu* (6:7) 'I call, name'.

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2Note the dual interpretations for a sequence of three <u>'s: *freuuuidha* [vreuwidoa] (4:20) 'gladness' and *triuuuua* [triuwa] (40:19) 'trust', but also *faruuu* [yaruwu] (23:12) 'shape, image'.
4:3. Summary of Old High German Phonemes.

The following table lists the underlying phonemes of Isidorian Old High German along with relevant articulatory features. The feature [+mid] in the above phonemic descriptions corresponds to [-high -low] in the table.

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| lateral | - | + | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| continuant | + | + | + | - | - | + | + | + | + | + | + | + | + | + | + | + |
| tense | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
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In addition to the above segments, Isidorian Old High German also includes the following surface forms: a short fortis spirant series \([f \Theta s \chi]\) and a voiced lenis spirant series \([v \delta z]\) (cf. §4:2.2.), the velar nasal \([\eta]\) (cf. §4:2.3.), the front rounded umlauted vowels \([\emptyset(:) y(:)]\) (cf. §4:1.5.), and the reduced vowels \([i \emptyset e\emptyset]\) which have the features [-front -back -high -low] differentiated from each other by nondescript [+other features] (cf. §4:5.3. and §4:6.5.). Six underlying diphthongs also occur: /iu/, /ei/, /ea/, /eo/, /au/, and /uo/.

4:4.0. Old High German Suprasegmentals.

4:4.1. Accentuation.

Isidor does not feature any overt accentuation markers such as accents or circumflexes, nor does the prose text provide any metrical or alliterative clues as to stress patterns of the Isidorian dialect. Comparative evidence for all of Germanic, summarized for instance by Hirt (1929:88-95), leaves no doubt in reconstructing an expiratory accent on the first syllable, except for prefixed verbs which bore main stress on the root. This proved to be true for Gothic (cf. §§3:4.1.-3:4.5.) and it applies to Old High German as well. Keeping with our stated methodology, the present study targets the internal data regarding accentuation, albeit indirect, which Isidor reveals. In supplementing the uncontroversial results of preceding diachronic studies, we
concentrate here on the particular contributions of the Isidorian text to the larger Old High German picture.

Our primary sources of data are phonemic distribution and graphic alternation. From these data we hypothesize different degrees of stress and establish a working model for stress assignment on the word level. Later sections on pretonic (beginning with §4:5.0.) and posttonic (beginning with §4:6.0.) syllables will inject further data into the discussion of word stress, all of which will be summarized in §4:6.7.

4:4.2. Phonemic Distribution and Syllable Type.

The main difference between root syllables and non-root syllables in Isidor from a segmental standpoint is the distribution of vocalic phonemes. The contrast involves both diphthongs and long vowels.

We remember from §4:1.4. the six diphthongal phonemes /iu, ei, ea, eo, au, uo/, the status of which depends on their distinctive occurrences in root syllables. But when we search for diphthongs in non-root syllables we uncover a much different distribution. In non-root, open, final syllable only three diphthongs are attested, namely /iu/, /ea/ and /eo/, but even the status of these may be questioned.

The first of the three, /iu/, occurs (cf. Hench 1893: 92-109) once as the genitive plural neuter ja-stem ending,
once as the dative singular feminine jo-stem ending alternating with fourteen /u/, once as the feminine t-stem nominative singular ending alternating with three /in/, twice as the dative singular masculine u-stem ending alternating with one /i/ and one /ε/, four times as the feminine o-stem nominative singular strong adjective ending alternating with ten zero endings and one /u/, once as the instrumental singular and six nominative/accusative plural neuter a-stem strong adjective ending alternating with one /u/ and four zero endings respectively, once as the nominative plural neuter ja-stem strong adjective, once as the accusative singular feminine jo-stem weak adjective alternating with seven /un/, and once as the class I weak first person singular present indicative ending alternating with eleven /u/.

The second diphthong /ea/ occurs in non-root syllable only twice as the nominative singular and once as the genitive plural feminine jo-stem endings, alternating with one /ε/ and one /a/ in the former case and not alternating at all in the latter.

The last diphthong /eo/ is found as the genitive plural masculine i-stem ending alternating with one /o/, and five times as the nominative singular masculine ja-stem weak adjective ending alternating with three /o/.

In all cases of multiple occurrences of the above morphemes /iu/ alternates with some allomorph, for the most
part monophthongal /u/; /ea/ alternates with some allomorph, monophthongal /e/ or /a/; and /eo/ alternates with monophthongal /o/. Valentin argues that <iu>, <ea>, and <eo> in the examples just cited do not denote diphthongs at all, but rather either sequences of two phonemes or short monophthongs. He writes (1969:73):

Si ea, eo, iu sont remplaçables par un élément bref, il est tout de même probable qu’ils ne représentent pas un élément vocalique long, c’est-à-dire une diphongue: il est plus satisfaisant de penser que les désinences sont, depuis longtemps sans doute, -a, -o, -u et qu’un élément qui les précède est éliminé; ainsi tous les radicaux se terminent désormais par une consonne à l’exclusion de la combinaison consonne plus e ou i.

Three scenarios are possible to explain the distribution of vocalic segments in non-root syllables. First, Valentin is correct (cf. also 1969:68-70) that the final digraphs in words like minniu (29:15) 'love', gardea (39:17) 'domain', and heideo (13:6) 'persons' represent disyllabic sequences of two phonemes, thus excluding diphthongs entirely from non-root syllables on the underlying level. Second, underlying diphthongs undergo neutralization in non-root syllables, conditioned by the assignment of weak stress to these syllables, yielding surface monophthongs or at least a restricted number of surface diphthongs. Third, the restricted distribution of diphthongs in non-root syllables is already phonemicized in the language. In any case, the contrast between root and non-root syllables is significant.

The class II weak verb adhmuot (15:16) 'breathes'
represents a possible counterexample. But this anomalous form stands against expected adhmot (15:21) and thirty-four other class II weak verb forms having exclusively thematic <-o-> (cf. Hench 1893:107-8). Thus, this isolated variant most probably represents a purely mechanical scribal error, extraneous to phonological reality.

Also missing from non-root syllables is the dittography which so regularly marks long vowels elsewhere (cf. §4:1.3.). Regarding final open syllables Valentin wonders in reference to both Isidor and Tatian (1969:74, cf. also 1969:137), ‘s’ils avaient eu une opposition de quantité, n’y aurait-il pas eu au moins quelques fois une tentative pour la noter?’ An isolated form pt. sbj. 3sg. scoldii (24:14) ‘should have’ appears to indicate length, but scoldi occurs twice (25:18, 36:12) showing the spelling common to the other twenty-five attestations of the subjunctive morpheme. In conjunction with closed syllable dittography of wk.I 3pl. prs. sbj. antuurdeen (5:2) ‘answer’, Valentin offers the solution (1969:139, 141) that, barring phonetically insignificant scribal error, long vowels do characterize the subjunctive and that these long vowels have been preserved because they receive secondary stress, making the subjunctive doubly marked. But he concedes, ‘Ce n’est pas invraisemblable, mais ce n’est pas démontrable.’ To summarize, we have no hard evidence of quantitative oppositions in non-root syllables. In fact, the data seem to suggest phonemici-
zation or neutralization in favor of short monophthongs.

Whereas the phonemic distribution is broader for root syllables, meaning that the full complement of diphthongs and long and short monophthongs may occur here underlyingly, we find that non-root syllables exhibit fewer underlying segments but a broader array of surface variants. This latter phenomenon, detailed in §§4:5.0-4:6.7. below, will serve as a valuable suprasegmental indicator and allow us to measure the effects of accentuation on Isidorian phonology.

4:4.3. Degrees of Stress.

In the above discussion of dittograpy and non-root syllables mention of the suffix -liih in words such as heidhanliih (6:20) 'heathen' was deferred. The consistent spelling of this common suffix ensures the presence of a long vowel but we have already seen that Isidor contains no other direct evidence for long vowels in non-root, weakly stressed syllables. We find identical vocalism for this morpheme when occurring in root syllable, dat. sg. liihihi (28:16) 'flesh', to which we assign initial stress. We compare the -liih of qualificative adjectives to the suffix found in the indefinite pronoun gen. sg. huuelinhes (7:21) 'whose' with a short vowel indicated by a single vowel graph followed by geminate consonant. Note that geminate [χχ] can follow a long vowel as well, seen in riihihi (6:14) 'kingdom', but in our data only when the vowel is marked for
length. Thus suffixal -liih must represent some sort of semi-independent morpheme receiving something between main stress and weak stress.

The alternation between -liih and -lih appears to be one of grammaticalization, as characterized (1969:136-7) by Valentin. The former suffix maintains a perceptible relationship in form and meaning with the noun liih and could therefore also maintain old stress patterns. A word like huuelih has been lexicalized; i.e., has crossed the line from compound to derivative. The vowel has been shortened as all other posttonic vowels seem to have been in our data. Valentin points out that the syllable preceding -lih is consistently short whereas that preceding -liih is consistently long, which might indicate a possible rhythmic phenomenon at work phonetically. But he maintains that this would be a unique case in Isidor.

It appears that the Isidorian dialect features at least three degrees of stress which we will call primary, secondary and weak. Since primarily and secondarily stressed syllables appear to behave in similar ways, we will group these two degrees of stress under the term prominent stress and refer to the syllables bearing these stresses as prominent syllables. Weakly stressed syllables will be referred to as non-prominent syllables.

Like -liih, the suffix -duom, to be found for example in nom. sg. uuiisduom (3:22) 'wisdom' exhibits prominent
syllable vocalism in that it features the diphthong /uo/.

These two morphemes, and at least -niss and -sam as well, form quasi-compounds and accordingly receive secondary stress in the same manner we hypothesize secondary stress for the second constituents of the compounds ostarrlihhes (35:13) 'kingdom of the east' and himilfeugendem (2:17) 'fliers of the sky'. Following the convention established for Gothic in Chapter Three, where relevant we employ an acute to mark primary stress, a grave to mark secondary stress, and leave weakly stressed syllables unmarked.


In this section we set out to write generative rules which will account for the stress patterns of Isidorian Old High German not only as they are predicted by comparative Germanic evidence but also as suggested by synchronic data detailed later in our study. Our accentuation rules must account for the differences between nominal and verbal accentuation, i.e. primarily stressed nominal prefixes and weakly stressed preverbs; they must account for the accentuation of compounds, and they must correctly assign different degrees of stress. A similar treatment of Old High German stress assignment can be found in Voyles (1976:10-12).

2 Recall the /o:/ - /uo/ doublet in rood syllable with dat. pl. buohhum (2:13) ~ buuhhum (17:22) 'books' (§4:1.4. above).
A review of our notation is warranted here. The feature [+stress] refers to prominent stress (primary or secondary) as opposed to [-stress] which refers to non-prominent, or weak stress. When a distinction between primary and secondary stress is necessary we employ the shorthand [+stress-1] and [+stress-2] respectively.

Simplex words across Germanic show a straightforward stress pattern of initial stress. For example, we hypothesize chūninge (6:17) 'king' and quhīdit (4:1) 'he says', with stress assignment generated by the following rule:

(1) Word Stress Rule.

\[ [+\text{syll}] \rightarrow [+\text{stress-1}] / \# [-\text{syll}] \]

That is, the first vowel after a word boundary (#), with or without intervening consonant(s), receives primary stress. The above examples are derived accordingly: /#kuninge/ → [kūninge], /#kwit#/ → [kwīdit].

The above rule is insufficient to assign stress in compounds, which contain multiple underlying word boundaries. Rule (1), by itself, generates multiple primary stresses for compounds, a surface condition impossible for Germanic: e.g., øostarríhes (35:11) 'kingdom of the east' → /#øostarri:z/.

We require firstly a univerbation rule which will delete the word boundary between constituents,

\[ "\text{We omit some phonetic details, most noticeably syllabification, from our surface forms until they become relevant later in our analysis.}" \]
essentially what 'compounding' entails, and secondly a stress demotion rule which will guarantee that a given compound bears only one primary stress.

(2) Univerbation (#-deletion).

\[
# \rightarrow \emptyset / X \quad Y
\]

where X and Y are stems which are being compounded.

Rule (2) generates, for our current example, the intermediate form \#\(\texttt{starryyez}\) to which we apply the following:

(3) Stress Demotion.

\[[+\text{stress}-1] \rightarrow [+\text{stress}-2] / [+\text{stress}-1] X \quad\]

where X contains no word boundary (#).

By rule (3) the correct surface form \(\texttt{starryyez}\) \(\texttt{ostar-\text{riihhes}}\) results. The assignment of secondary, and not weak, stress by rule (3) is based on the prominent syllable vocalism of forms like \(\texttt{riihh-}\) (cf. \(\texttt{liih} - \texttt{lih}\) in the previous section).

The operation of rules (1), (2) and (3), which proceed intrinsically in that order, predicts the accentuation of prefixed nouns like \(\texttt{b{-namin} - /\#bi#nam+in#} / (31:6)\) 'surname', and demonstrates the semi-independent status of suffixes like \(\texttt{liih}\) which must be preceded by an underlying word boundary: cf. \(\texttt{offan\#li:xxo#/} \rightarrow \texttt{offan\#li:xxo}\)
offanlihho (1:11) 'openly'.

The accentuation process operates no differently with true verbal compounds like prs.p. himilfleugendem (2:17) 'flyers of the sky': /#hîmil#yłeug+end+em#/ → #hîmil#yëleugendem# → #hîmil-yëleugendem# → [hîmilyleugendem]. But yet, as we shall see in §4:5 dealing with preverbs and nominal prefixes, the first constituent of prefixed verbs like 3sg. prs. ind. ar-lfudit (39:17) 'will come forth' is weakly stressed while the root syllable receives the primary emphasis. Furthermore the nominal prefix ur-, corresponding to verbal ar-, in ur-chundo (37:3) 'witness' patterns more like the first constituent of a compound in that it attracts primary stress. Do we need to amend rules (1)-(3) with some morphological qualifier to account for preverbs or does the difference between the accentuation of himil-fleugendem and urchundo on the one hand, and arlfudit on the other lie in the underlying derivational structure to which the current versions of our accentuation rules apply equally well?

At some level we must draw a distinction between morphemes which may bear prominent stress (lexical roots, nominal prefixes and semi-independent suffixes) and clitics which never do (preverbs, the negative particle ni, and probably prepositions under non-emphatic syntactic conditions). This can be done at the phonemic level by the

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2Vowel reduction phenomena described in §4:6.6. below corroborate the presence of the word boundary.
placement of a prefacing word boundary to mark independent morphemes, or by word boundary omission to mark bound clitics. The absence of a word boundary would block primary stress assignment on the clitic and generate the correct output: for \textit{arliudit} /ur\#liud+it#/ \rightarrow \textit{(Stress)} ur\#l\#udit# \rightarrow \textit{(pretonic vowel reduction, cf. §4:5.5.)} ar\#l\#udit \rightarrow \textit{(Univrb)} [arl\#udit]. In contrast, \textit{urchundo} would contain an underlying word boundary before the prefix: /#ur#kund+o/ \rightarrow #ur#kund#o# \rightarrow #urkund#o# \rightarrow [urkundo], which triggers initial main stress typical of nouns.

The richness of Old High German derivational morphology is further exemplified by a compound like dat. sg. \textit{uueralt-chiuualdidu} (41:8) 'earthly power'. An underlying word boundary would, by definition, occur between the two immediate constituents and would trigger, by Rule (1), an erroneous primary stress assignment for the proclitic of the deverbative second constituent (i.e. \textit{***#\textit{w}rald#k\#-}) if the accentuation rules applied simply from left to right. Therefore we envision the complex structure of \textit{uueraltchiuualdidu} as:

\[
\text{[#werald [# [ki#wald] +id+u] ]} \\
\text{N2} \quad N1 \quad V \quad V \quad N1 \quad N2
\]

for which the accentuation rules apply cyclically from the innermost constituent outward:
Rule (1) \[\#\text{w}/\text{erald} \# \text{ki}/\text{wald}/\text{idu} \#\] \[N^2 \quad N^1 \quad V \quad N^1 \quad N^2\] \[\rightarrow\]

Suffixation \[\#\text{w}/\text{erald} \# \text{ki}/\text{wald}/\text{idu} \#\] \[N^2 \quad N^1 \quad N^1 \quad N^2\] \[\rightarrow\]

Rule (1) \[\#\text{w}/\text{erald} \# \text{ki}/\text{wald}/\text{idu} \#\] \[N^2\] \[\rightarrow\]

Rule (2) \[\#\text{w}/\text{erald} \text{ki}/\text{wald}/\text{idu} \#\] \[N^2\] \[\rightarrow\]

Rule (3) \[\#\text{w}/\text{erald} \text{ki}/\text{wald}/\text{idu} \#\] \[N^2\] \[\rightarrow\]

(eventually) \[\text{w}/\text{erald} \text{ki}/\text{wald}/\text{idu} \text{u}/\text{erald} \text{chi}/\text{u}/\text{ald}/\text{idu}\].

Only in the infrequently attested cases involving second constituent proclitics does internal structure become a factor. Therefore it will not always be necessary to include such detail in our analysis.

4:5.0. Pretonic Vocalics.

As we seek to understand the role of suprasegmentals in Old High German, we investigate regular allomorphy between preverbs and nominal prefixes, of the type 3sg. prs. ind. \textit{ar-deilit} (40:15) 'judges' and acc. sg. \textit{ur-deili} (39:8) 'judgement'. We begin with a comparative survey of the preverbs, nominal prefixes and related prepositions and adverbs. We then analyze the vocalism of these forms vis-à-vis accentual patterns as a way of accounting for the observed oppositions.
4:5.1. Preverbs, Prefixes, and Free-standing Forms.

Consistent with the above example, in which ar- occurs with verbal stems while ur- introduces nominal compounds, we find 3sg. prs. ind. ar-liudit (39:17) 'will come forth', 3sg. prs. ind. ar-augit (17:7) 'shows', and related deverbative feminine jō-stem noun ar-aucnissa (36:5) 'manifestation'; against dat. sg. ur-chundin (9:13) 'testimony', nom. sg. ur-chundo (37:3) 'witness', and related denominative weak class I verb ur-chundida (19:3) 'bore witness'.

Verbal zi- and nominal zuo- forms divide similarly, e.g., prs.p. zi-farande (3:17) 'vanishing' and 3sg. pt. ind. zi-strudida (27:22) 'destroyed' against acc. sg. adj. zuo-haldun (23:19) 'future' and nom. sg. adj. zuo-uuert (31:16) 'future'. The related adverb is zuo (14:13) 'to' while the preposition is zi 'to'.

A verbal fir-:nominal fora- split applies to 1sg. prs. ind. fir-brihhu (6:3) 'break into pieces', inf. fir-standan (3:4) 'to understand' and related deverbative fir-stand (40:5) 'wisdom' against acc. pl. fora-spel (25:1) 'prophecies' and weak class II denominative p.p. chi-fora-bodot (6:9) 'predicted'. We juxtapose fir- and fora- as a nod to Hench, who links these as morphophonological alternants (1893:78), but the synchronic affinity in a loose one. Old High German fir- is the single reflex of three converged Germanic morphemes, preserved in the distinct Gothic preverbs fāir-, faur- and fra-, all having unique meanings (cf.
Kluge 1960:812). Thus only a subset of the Isidorian fir-morphemes\(^2\) is semantically related to fora-; the only possibility out of the six attested lexemes (cf. Hench 1893:78) being the one found in p.p. fir-gheban (10:6) 'established'. The preposition furi (28:3) 'beyond' belongs in our discussion as well (cf. Braune/Eggers 1975:76), although corresponding fir-forms are lacking in our corpus. What may have been historically apophonic variants of a single root have become by the time of the Isidor translation semantically and lexically distinct forms. In sum, these data are useful, and therefore included, not for establishing allomorphic oppositions—other data sufficiently accomplish this—but for the supporting evidence of their vocalism to be discussed below.

The morpheme bi- shows no overt alternation between pre-verbal, prenominal, and free-standing forms. We find examples in the verbs p.p. bi-lohhan (5:21) 'closed' and 3sg. pt. ind. bi-gunsta (38:17) 'began', and in the nouns bi-iihti (20:19) 'confession' and bi-namin (31:6) 'surname', alongside the free-standing preposition bi 'with, by, on account of'.

Expanding to the disyllabic forms, we observe no vocalic alternation. Thus, adjective dhurah-chunt (3:8), 1pl. prs. ind. dhurah-faremes (30:13) 'we will investi-

\(^2\)The two occurrences of the non-phonetic spelling fyr- have no bearing on the present discussion.

27The lexicalized, non-transparent semantics of dhurah-faremes and other verbs below is the basis for our recognizing preverbs and not adverbs in these forms.

Our overview concludes with a discussion of in- and ant-, for which the distribution does not follow distinct morphosyntactic lines. Table 1 provides a complete list of attestations of these two morphemes in order of occurrence:

Table 1

True verbs:

<table>
<thead>
<tr>
<th>Morpheme</th>
<th>Form</th>
<th>Number</th>
<th>Stem</th>
<th>Line(s)</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ant-dhecchidiu</td>
<td>p.p. wk.I</td>
<td>(2:23)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ant-luuhhu</td>
<td>1sg. st.II</td>
<td>(5:20)</td>
<td></td>
<td></td>
<td>'open'</td>
</tr>
<tr>
<td>in-fenc</td>
<td>3sg. st.VII</td>
<td>(11:16)</td>
<td></td>
<td></td>
<td>'accept'</td>
</tr>
<tr>
<td>in-standemes</td>
<td>1pl. st.VI</td>
<td>(15:18)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ant-fenc</td>
<td>1sg. st.VII</td>
<td>(18:18)</td>
<td></td>
<td></td>
<td>'take on'</td>
</tr>
<tr>
<td>in-fenc</td>
<td>3sg. st.VII</td>
<td>(23:15)</td>
<td></td>
<td></td>
<td>'accept'</td>
</tr>
<tr>
<td>in-fahant</td>
<td>3pl. st.VII</td>
<td>(24:18)</td>
<td></td>
<td></td>
<td>'take on'</td>
</tr>
<tr>
<td>ant-fenc</td>
<td>3sg. st.VII</td>
<td>(29:20)</td>
<td></td>
<td></td>
<td>'take on'</td>
</tr>
<tr>
<td>in-fenc</td>
<td>3sg. st.VII</td>
<td>(31:7)</td>
<td></td>
<td></td>
<td>'hold, possess'</td>
</tr>
<tr>
<td>ant-fenc</td>
<td>3sg. st.VII</td>
<td>(32:7)</td>
<td></td>
<td></td>
<td>'take on'</td>
</tr>
</tbody>
</table>

Deverbative nouns:

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2"The terms 'true verbs' and 'deverbative nouns' refer to words with verbal root. 'True nouns' and 'denominative verbs' are built on nominal roots.

3"Different translations for identical Old High German forms are attributable to the original Latin and, naturally, the context."
on'

True nouns:

- **in-fancnissa** fem.-jö (23:8) 'taking

Denominative verbs:

- **ant-uuurdeen** 3pl. sbj. wk.I (5:2) ‘answer’
- **ant-uurdant** 3pl. wk.I (8:2) ‘answer’

Table 1 shows that in- as well as ant- occur as preverbs. Valentin makes the observation (1969:15) that the two forms are mutually exclusive with regard to text location: ant- appears on leaves 2-5 and 29-35, while in- occupies the middle of the manuscript: leaves 11-24. Valentin fails to include infenc (31:7), which spoils the regularity of his account, but his belief, shared by Matzel (1970:61 Anm.29), that the observed alternation goes back to faithful copying of the what Hench (1893:xvii) calls archetypetype (‘Stammcodex’) X is probably accurate. No synchronic, purely phonological explanation appears likely. Rather, we find general agreement in earlier works (cf. Hench 1893:78; Kirschstein 1962:38; Matzel 1970:237 Anm.409) that preverbal ant- reflects contamination from nominal morphology. Cathey (1984), on the other hand, would take the alternations at face value and ascribe the Isidorian leakage to lexical
processes. Two derivational levels, one non-productive (where stress assignment occurs) and one productive, affect the surface form. In this way, Cathey is able to deemphasize the role of analogy.

The lone anomaly among the nominal forms, which otherwise feature some variant of ant-, is the calque infleiscnissa (24:1), a translation of Lat. incorporationem (cf. Valentin 1969:15). We need not consider it further as a primary sound change.

If Hench is correct (1893:78) that 'dieses ant- in verbaler Composition kann kaum dem Lautwert des Praefixes entsprochen haben', we would be justified in setting aside the analogically written forms on the strength of verbal/nominal oppositions elsewhere, i.e. ar-/ur-, fir-/fora-, and zi-/zuo-. Our data then present predictably verbal in-, beside prepositional in 'in', as opposed to nominal ant-.

4:5.2. The Vocalism of Preverbs and Nominal Prefixes.

In the previous section we established the following inventory of preverbs for Isidorian Old High German: ar-, bi-, chi-, fir-, in-, and zi-. Each of these alternates with a nominal prefix as outlined in Table 2. In what follows we employ the term preverb to designate verbal prefixes and

\[30\text{Anth- represents a non-phonetic spelling variant (cf. §4:2.1.) whereas and- may reflect resyllabification (cf. §4:7.1.).}\]
limit prefix to referring to nominal prefixes.

Table 2

<table>
<thead>
<tr>
<th>Preverb</th>
<th>Prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>ar~</td>
<td>ur-</td>
</tr>
<tr>
<td>bi-</td>
<td>bi-</td>
</tr>
<tr>
<td>chi-</td>
<td>chi-</td>
</tr>
<tr>
<td>fir-</td>
<td>fora-</td>
</tr>
<tr>
<td>in-</td>
<td>ant-</td>
</tr>
<tr>
<td>zi-</td>
<td>zuo-</td>
</tr>
</tbody>
</table>

As described above, the synchronic relationship between preverb fir- and prefix fora- is primarily etymological and, as a result, a semantically imprecise one. We include the pair here, given that the observed vocalism serves simply to corroborate conclusions on phonetics to be drawn from other data, and use caution in weighing the fir-/fora- data per se.

A comparison of the vocalism of the two columns in Table 2 shows that the vowels of the preverbs are represented by just two graphs, <a> and <i>, while prefixes contain the vowels <u>, <i>, <o>, <a>, and <uo>. Semantic analysis of these forms together with their consistent consonantism (with the single exception of in-/ant-) allow us to hypothesize a single underlying morpheme for

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31The /t/ of an original *int- preverb was assimilated and dropped from the triple consonance its affixation often engendered. In- fully displaces *int- in Isidor and other Old High German monuments, aided perhaps by merging with Germanic *in-, still a distinct preverb in Gothic: cf. in- * and-. See Braune/Eggers (1975 §73 Anm.2) and Baesecke (1918 §43,6).
each pair. The orthography, then, would indicate that
vocalic distinctions present among the nominal forms have
somehow been neutralized in their verbal counterparts.

Braune/Eggers attributes (1975:72) this alternation to
the 'proklitische Natur' of the preverbs (and prepositions).
Most of these have 'starkbetonte Formen mit festem Vokal-
ismus' which occur in nominal compounds (or as adverbs).
This is an attractive hypothesis for our study, with ana-
logues throughout Germanic, but we risk circularity unless
we can unearth evidence of stress-based oppositions else­
where in our synchronic data.

An internal analogy to the preverbal/prenominal stress
question may be found among the free-standing prepositions
and adverbs. Specifically, the only attested case of a
monosyllabic preposition/adverb pair is that of prep. zi
'to' and adv. zuo in uuas mir zuo | sprehhendi (14:13-14)\(^{32}\)
'was speaking to me'. Regarding the stress of the adverb
zuo, we find that, with a single, easily explained counter­
example, the diphthong <uo> occurs throughout our corpus
only in root, i.e. non-weakly stressed, syllable (cf.
§4:4.2. above); the class II weak verb adhmuot (15:16)
'breathes' being the exception. We have already argued in
§4:4.2. that adhmuot most probably represents phonolog­
ically extraneous scribal error. We conclude, then, that the

\(^{32}\)The line break between zuo and sprehhendi leaves the
status of zuo as a possible univerbated preverb unresolved
on purely orthographic grounds (i.e. scribal word-spacing).
vocalism of the adverb zuo points to primary (or at least secondary) stress.

On the other hand, the preposition zi seems to be a prime candidate for a proclitic. It would certainly bear weak stress in the common adverbial phrase zi uuaare (21:10) 'truly' which Hench regularly transcribes (1893) as a single word, ziuua(a)re--although in our judgement this is justified clearly for only two (3:3, 5:9) of the seven attestations. The same lack of interlexical spacing, if this should prove significant pending further study, occurs elsewhere, for example, in zimezsse (40:13) 'to the (same) extent'. As a proclitic, zi would be weakly stressed.

Note that zi shares its vocalism with an unmistakable proclitic, namely ni 'not'. Its low syntactic stress is supported by syncopated forms like nalles (ni + alles) (22:18) 'not at all' and nist (ni + ist) (7:11) 'is not'. Zi shares both vocalism morphological class with the preposition bi, which syncopates in buuzssan (bi + uuzssan) (26:10) 'far from', likewise indicative of weak stress.

Thus the evidence supports the standard view, represented by Braune/Eggers, that stress and vocalism are correlated in tonic and pretonic environments. It is difficult to say whether the observed oppositions remain productive in Isidorian Old High German, but the analogical

"Spacing can appear carelessly imprecise and irregular, sometimes occurring where not expected: word-internally in acc. sg. zuui uun (26:11) 'doubt'.
levelling characteristic of the ant-/in- morphs would seem to indicate that phonemicization of the reduced preverbs has already occurred. The vowels of prefixes, receiving primary stress, have maintained their full value. The vowels of preverbs, receiving weak stress, have undergone changes in quality (e.g., ur- ~ ar-) and/or quantity (e.g., zuo- ~ zi-, possibly bi- ~ bi-).

4:5.3. The Reduced Vowels <a> and <i>.

Now that we have hypothesized vowel reduction under pretonic weak stress, the next step is to ask what the products of this process are. Remember that the morphemes in question, the pre-verbs ar-, bi-, chi-, fir-, in-, and zi-, exhibit only two vowel graphs, <a> and <i>, which we have concluded represent a neutralization of five underlyingly distinct vowels. As Valentin suggests (1969:16), the choice of these two graphs logically appears to be an attempt to indicate a distinction in aperture, given the extremes that their full values represent. He accordingly posits two phonemes, /a/ and /i/, retaining their distinctiveness before /r/ (cf. ar- vs. fir-) and neutralized in favor of [i] elsewhere. While Valentin’s analysis has its merits, it remains somewhat vague phonologically with respect to the values of /a/ and /i/ or their surface realizations. We also challenge the need to posit distinct phonemes here—distinct either from each other (Valentin’s /a/ and /i/) or from the
phonemes found in the corresponding prefixes.

Let us take a closer look at the anomalous <a> of ar-. Can we be so quick to assume that factors outside phonetics might not be influencing the orthography? We cannot rule out the possibility that the spelling ar- represents a conscious effort on the part of the translator or scribes to avoid confusion with the 3sg. personal pronoun ir 'he'. Similar arguments of disambiguation are brought forward to explain the quirky Isidorian spelling chi-, discussed below. If verbs like 3sg. araugit (17:7) 'shows' and arspringit (23:21) 'arises', alongside attested simplex forms 1pl. aughidom (21:18) 'show' and 3pl. springant (32:3) 'spring', were spelled with **ir-, they could be confused with strings like ir sendit (15:14) 'he sends' and ir chiscuof (8:1) 'he created'.

Valentin claims (1969:53) that the consonants of the preverbs were able to assume exclusively the distinctive function in which the vowels had previously also taken part. He correlates neutralization with the functional yield of the vowels becoming zero. A situation is created which is acquiescent to vowel reduction while upholding communicative precision. That Valentin fails to recognize compromised communicative precision in the case of fir- (cf. the prepositions OHG fora 'before', furi 'beyond'; and the Gothic pre-

3"Note, though, that it is more common (forty-seven out of sixty-eight times, or 69%) to find the pronoun ir not immediately preceding a verb.
verbs *faur-, fair-, fra-*) does not significantly detract from his stated general principle. The most natural candidate for the product of such a neutralization, involving both high and low, front and back vowels would be a centralized, schwa-like vowel. Given the fairly consistent representation of this vowel as <i> pretonically, it may contrast with other reduced vowels <a> and <e> (respectively for [ʌ] and [ə], cf. §4:6.5. below). We hypothesize, therefore, the high central vowel, [i]. Although we can be confident that reduced, schwa-like allophones characterize the vocalism of Isidorian preverbs, we are unable at this juncture to draw a precise conclusion. For this reason we distinguish these reduced vowels by the nondescript feature [+other features].

4:5.4. Stress Assignment of *bi- and *chi-.

To this point we have demonstrated that the weakly stressed preverbs all have nominal counterparts, which we are calling prefixes. Any change in the vocalism of each pair can be explained by a difference in assigned stress. One notices that two of the pairs from Table 2 in §4:5.1. *bi- and *chi-, exhibit no orthographic opposition. Does this necessarily imply that both the preverbal and prefixal allomorphs receive similar stress?

The prefix *bi- occurs in the nouns *biihti (20:19) 'confession', *bilidum (4:8) 'example', and *binamin (31:6) 'surname'. Regretably, we find no independent evidence for
vocalic alternation, marked more overtly for other morphemes. A fortuitous transcription **bii ihti would be strong evidence for length on the prefix but the manuscript reads bi iihti, yielding no clues with regard to length for an open syllable vowel following Isidorian scribal convention. The only information which these data may offer comes from a comparison of dat. sg. binamin with uncompounded dat. sg. nemin (5:14) 'name' (~ nom. sg. namo (13:22)). It is possible that i-mutation (cf. section 2.1.4.), observed in the latter case under primary stress, has not occurred in the former case due to secondary stress on the vowel in question. Umlaut of medial /a/ to [i] or [e] does occur, but only rarely in early Old High German (cf. Braune/Eggers 1975:§68). Our Isidorian corpus offers no further corroborative evidence. The argument remains weak, though, given the inconsistent scribal marking of mutated /a/.

In the case of the prefix chj-, found in the noun chinisti (29:11) 'forgiveness', and in the adjectives chinamno (8:17) 'of the same name' and chiliihhan (7:19) 'like, similar', more convincing independent evidence exists for assigning stress. One of the most recognizable characteristics the Old High German Isidor is the spelling chij- for the morpheme cognate with NHG ge-, for example in gewinnen 'to win', Geschichte 'story'. Elsewhere in Franconian, ga- gives way to gi-, both with lenis consonants, in the early ninth century (Braune/Eggers
If the spelling of chī- is phonetic, then we are at a loss to explain the curious provenience under weak stress of the fortis consonant which <ch> regularly indicates in Isidore.

Matzel (1970:281), Kirschstein (1962:71) and Kögel (1893: 225) represent the long-standing, widely held belief that <ch> for etymological [g] represents Merovingian/West Franconian scribal practice, but we may be dealing with more than just orthographic convention in this case. Franck suspects (1909:132) that <ch> does not so much displace <gh> but rather that <chī> displaces <ghi>. The two graphic strings represent two different sounds in that <chī> represents a weakly stressed variant (in most instances a preverb), while <ghi> is reserved for [gi] under primary or secondary stress (nominal or verbal roots). Kirschstein concurs (1962:74) that the spelling <chī> 'ist wohl als eine Hyperkorrektheit des Übersetzers anzusehen, der mit dieser besonderen orthographischen Maßnahme das Praefix für den (Vor-)Lesenden augenfällig machen wollte.' Such a practice would make an immediately obvious suprasegmental distinction between chībūrt (2:5) ‘birth’ and ghībū (6:4) ‘I give’, chīrūni (1:22) ‘mystery’ and ghīrūn (35:1) ‘ambition’. It would also imply that the prefix chī- never receives primary or secondary stress, in support of a commonly held view among Germanists (cf. Braune/Eggers 1975:72).

Here may lie the impetus for the errant spelling
chiriihha (42:12) 'church'. Initial <chi> appears to have been misinterpreted as prefix instead of part of the disyllabic root, *chiri- with etymological *k (cf. NHG Kirche). The middle syllable would be assigned primary stress, in the mind of a careless scribe, by the incorrect application of the stress rule for nominal compounds with the prefix chi-. Recognizing, perhaps as a folk etymology, the same root as in riihhi (37:14) 'kingdom', the scribe introduced into the manuscript chain the dittography marking vowel length.

Two isolated counterexamples deserve mention. Matzel explains (1970:283) ghi-laubin (6:12) 'to believe' as the earlier scribal usage popping up inadvertently. The form bluchisoe (9:5) 'may doubt', the only other instance of <ch> for etymological *g, could be a hypercorrection. Kögel recognizes (1893:225) 'wol eine verwechselung mit dem praefix'.

Interestingly, though, the chi-/ghi- opposition stands alone as a suprasegmental marker. Our data include ar-deilit (40:14) 'judges' but also ardon (12:1) 'I will dwell' and arbes (31:11) 'inheritance'; bi-chennen (11:4) 'to recognize' but also bidendi (34:10) 'waiting for'. Of course, initial closed root syllables, bitdande (42:20) 'praying' and zimbrit (37:15) 'builds' for example, would have evaded misinterpretation as preverbs, given the phonotactic impossibilities of morpheme-initial /tt-/ and
4:5.5. Conclusions on Preverbs.

Oppositions in the surface vocalism of related morphemes occurring pretonically versus under primary stress demonstrate neutralization in the pretonic environment. That this neutralization may be total, generating a single surface form, is suggested by the common spelling <i> in five out of six attested preverbs, with the sole exception <a> possibly due to extraphonological factors. At the very least, the <i> ~ <a> opposition shows partial neutralization of the five distinct underlying phonemes realized under primary stress in other morphosyntactic categories. These data constitute evidence that vowel quality and quantity are related to stress assignment.


In this section we will investigate posttonic syllables, referring to syllables which occur after the main stress of a word. Posttonic syllables, for the most part weakly stressed, deserve separate consideration from primary stressed root syllables since we find alternations and inconsistencies associated with non-prominent syllables which are largely foreign to prominent syllables.

Spelling alternations, our main source of data for the present analysis, do occur in root syllables but we are able to explain these as phenomena other than the products of hypothesized vocalic mutations under weak stress. For example, the alternation faris (37:11) 'you go' ~ ferit (14:10) 'he goes' results from an inconsistent marking of umlauted vowels (cf. §4:1.5.). The dittography (cf. §4:1.3.) of dat. sg. ziide (26:20) 'time' against expected spelling zide (26:10) suggests analogy to nom. sg. ziidh (35:11). The allography of erdha (20:17), aerdha (16:2), and erdhu (39:9) has already been attributed to Latin orthographic convention in §4:1.2. Of the prominent vowels, only that in aefter (4:3) (~ thirty-six after) 'after' defies conclusive explanation (see Matzel 1970:141-2 for a complete discussion).

Owing to the nature of diphthongs we can find even in a root syllable an alternation in the non-prominent component of a syllable nucleus. Penzl sees (1971:67) in 3sg. pt. sbj. fir-leizssi (29:23) ~ firleazssi (34:7) 'leave behind' evidence for the 'unbestimmten Wert der zweiten Diphthongkomponente'. As mentioned earlier in §1:3., it makes sense that phones which are less distinct, through neutralization or some other process, would be more susceptible to 'misspelling' or what we have called scribal

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3The variants <ia>, <ie>, and <ii> which are also historically associated with <ea> were introduced in §4:1.4. above.
error.

More distinct phones, like vowels under primary stress and consonants, would logically tend toward more consistent representations and this is exactly what the data show. Very few unmistakable spelling mistakes involving consonants appear in the corpus, listed in Table 3.

Table 3

I. Incorrect graphs:

<table>
<thead>
<tr>
<th>Incorrect Graph</th>
<th>Corrected Form</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>urdarscheit (9:14)</td>
<td>*undarscheit</td>
<td>'difference'</td>
</tr>
<tr>
<td>sebbo (22:4)</td>
<td>*selbo</td>
<td>'self'</td>
</tr>
<tr>
<td>qubedhandan (33:17)</td>
<td>*quhedhandan</td>
<td>'speaking'</td>
</tr>
<tr>
<td>liuzit (41:14)</td>
<td>*liuzil</td>
<td>'small'</td>
</tr>
</tbody>
</table>

II. Omissions:

<table>
<thead>
<tr>
<th>Omission</th>
<th>Corrected Form</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>uuor dhurah (10:10)</td>
<td>*uuort dhurah</td>
<td>'word through'</td>
</tr>
<tr>
<td></td>
<td>(Consider the oblique stem uuord- and very little spacing between these two words in the manuscript.)</td>
<td></td>
</tr>
<tr>
<td>feozuc (27:1)</td>
<td>*feorzuc</td>
<td>'forty'</td>
</tr>
<tr>
<td>guha³⁶ (18:9)</td>
<td>*guhad</td>
<td>'said'</td>
</tr>
<tr>
<td>chiforabodot (36:15)</td>
<td>*chiforabodot</td>
<td>'prophesied'</td>
</tr>
<tr>
<td></td>
<td>(likely a quasi-haplological error)</td>
<td></td>
</tr>
</tbody>
</table>

Other consonantal corrections seem to be less errors than differences of opinion between the scribe and the proof-reader as to orthographic convention. We find examples like megînes (13:22) 'strength', bîcînadi (20:2) 'recognize'. Or, they involve 'transitional phonemes' or doublets in the language: uuard³⁶ (11:17, 22:19, 33:15) 'became',

³⁶Superscribed letters depict subsequent corrections to the manuscript.
"antdhecchit'ero" (35:16) 'revealed', "chit'eda" (16:1) 'made'." In summary, the above errors provide little insight into synchronic phonetics.


The great majority of orthographic alternations are found among posttonic syllables. And as we have already suggested, we do not believe this to be coincidental. To test our hypothesis that weak stress results in qualitative and quantitative reduction of vowels, which in turn prompts sporadic scribal variation, we began by cataloguing all of the vocalic alternations in middle and final syllables, drawing data from Hench (1893:68-77, 92-109) and Valentin (1969:58-74, 131-141, 185-190). Since not all (if any) orthographic variation betrays purely phonetic phenomena—analogy plays a major role—we have weeded the scribal error data of anything that can be explained extra-phonetically. Synopses of these two procedures are given below. We then analyze the remaining data to see if they are consistent

3From Hench's apparatus (1893:17): "über dem t ein Strichlein, wahrscheinlich ein Zeichen, dass dies in d verändert werden sollte".

3The remainder of the consonantal data is the following: chrismen (5:11), frmc'umonti (36:13), iul'esc'un (41:7-8), ford'rom (37:11), d'erselbo (42:14), berg'e (42:12), isra'el (21:12), da'niel (25:20-1), dauit'e (36:20), d'ruhtin (19:2) which Hench describes (1893:20) as "der Strich eines h zum Teil ausradiert", the erasure himilisc(h)un (33:14), and chilothzssom (4:21-2) metathesized from *chihlozssom or *chihlotzssom (cf. Hench 1893:79).
with our hypothesis.

Posttonic syllables fall into three major categories: second syllables of disyllabic roots (e.g., -nec in the noun honec (32:3) 'honey' and -dal- in aridalida (11:15) 'plundered'), derivational suffixes (e.g., -ac in heilac (13:9) 'holy' and the second -q- in chioffanodom (28:10) 'we opened'), and in desinences (e.g., -um in uuerchum (29:16) 'workings' and -da in aarughida (14:12) 'revealed'). We divided these syllables up morpheme for morpheme and noted where orthographic alternations occur. For instance, the root {offan-} 'open' is realized with three different spellings: chioffanodom (28:10) 'we made clear', offenliihho (1:11) and offono (27:5) 'openly'.

To understand the weeding process consider the following cases. The dative plural desinence for neuter ja-stem nouns is attested four times as <-um> and once <-im>: bilidum (4:8) 'examples', endum (35:13) 'ends', herrum (31:22) 'armies', chunnum (31:21) 'tribes' - abqudim (6:22) 'idols'. In determining which one of these endings is 'basic', even without considering comparative data, we might consider the twenty-seven nominative/accusative singular and plural attestations of this noun class exclusively with thematic -i, as in endi (22:15) 'end'. The <-um> ending mirrors the well-attested (twelve times, or twenty-one times counting masculines) a-stem dative plural. Analogy would account for the variants, as Valentin (1969:133) and
Kirschstein (1962:80) believe. On the other hand, masculine i-stem dative singular hantgriffa viewed against three -e cannot possibly be due to analogy (cf. Valentin 1969:60, Matzel 1970:205 Anm. 259) since no other dative singular in any nominal or adjectival class ends in -a. Clearly, this constitutes a different type of 'error', one possibly occasioned by the quality of the vowel.

In order to test the hypothesis that scribal errors provide phonetic clues we present now a body of data exhibiting orthographic alternations which do not appear to be linked to analogical processes, borrowings, or pre-Isidorian sound changes. It may be the case that these errors constitute simple slips of the quill or misreadings of the source manuscript, which we might speculate for urdarscheit, sebbo, gubedhandan, and liuzit (from Table 3 above), whereby the data would be of a purely graphic nature and totally extraneous to our discussion of phonology. But if we detect a pattern within the errors, we will know that we are dealing with more than random carelessness. Patterns in choice of alternants and when and where these alternants occur can then be linked to other features of the language.

We proceed in §4:6.3. with a graph by graph exposition of observed scribal errors, with emphasis on the conclusions of previous scholarship regarding these same data.39 Our

39A discussion of many of the same alternations, detailed here for Isidor, can be found for Tatian in McLintock 1970.
own detailed analysis follows in §§4.6.4.-4.6.6. We depend upon Hench (1893) for attestation counts where the actual words are not cited.


4:6.3.a. <e> For Expected <a>.

Feminine o-stem acc. sg. strong adjectives alle (19:6) 'all', mine (10:11) 'my', sine (23:16,19) 'his' against twelve <-a> occurrences.

Braune/Eggers attributes <-e> here to analogy with the feminine jō-stems (1975:§248 Anm.8) but the data are inconclusive for Isidor, which specifically attests only two jō-stem accusative singular forms split between the two spellings, quhedhenda (13:15) 'saying' and chimeine (41:20).

Kirschstein points out (1962:96) that the total for feminine jō-stem accusative singular endings is 15:1 <-a> over <-e>, arguing that analogy provides an insufficient explanation. She rejects Baesecke's suggestion (1918:178) of pronominal influence, which may help to explain a similar alternation in Tatian, by showing that the relevant Isidorian pronouns are sia and dhe(a), both with reflexes of *e, and a preference for <-a>. Analogy to the jō-stems seems unlikely also given the general tendency for analogical direction from the ioticized to non-ioticized classes.\(^4\) Valentin suggests

\(^4\)A few examples are cited here: f-jō. dat. sg. uuarnisseu (36:17) 'truth' ~ expected minniu (29:15) 'love'; m-ja. acc. sg. chiminnan (18:21) 'beloved' ~ expected eouuesanden (38:2); wk.I inf. chifrumman (8:9) 'to create' ~ expected bichennen (11:4) 'to recognize'.
(1969: 58) <-e> as a doublet marker available for possessive and indefinite adjectives (alternating with expected <-a> in mina (11:1, 14:10, 37:19) 'my', dhina (33:5) 'your', and unsera (22:5) 'our').

Neuter a-stem acc. sg. gheistliihhe (21:19) 'spiritual', undarguhedene (29:4) 'forbidding', susliihhe (38:4) 'such' ~ selba (2:12, 14:22) 'same'.

These three forms have also been tied analogically to a ioticized class (cf. Valentin 1969:58) but the evidence seems coincidental. The same could be said of the unique masculine a-stem acc. sg. dhinen (37:12) 'your' alternating with thirty-seven forms having expected <-an>. One could claim analogy to the ja-stems but those same ja-stems are 2-to-1 <-an> over etymological <-en> (cf. Hench 1893:101). Kirschstein (1962:96-7) critiques other proposed explanations, such as Paul's (1877:344) which discusses the <-a> ~ <-e> alternation in light of analogous examples from the Monacensis manuscript of the Old Saxon Heliand. Paul does not ascribe the raising to final vowel weakening but rather matches this phenomenon in Old Saxon with the Anglo-Frisian raising of /a/ also in root syllable. Kirschstein argues that what happens only in root syllable in Anglo-Frisian (an erroneous statement: cf. Rauch 1992:xxix and §13.2) has little to do with Isidorian finals. Franck intriguingly theorizes (1909:62 and 211) that because the three <-e>’s
occur on the sentence level before unstressed syllables" they could possibly behave like word-internal, as opposed to word-final, syllables for which raising is quite common in Franconian (cf. Isidorian nom. pl. uuazsar (15:17) - dat. pl. uuazsserum (16:3) 'waters'). But Kirschstein rejects this idea by her insistence on a unified account of both the anomalous neuter a-stems and feminine q-stems mentioned above, for which Franck's theory does not always apply." Kirschstein does not offer an explanation of her own for the provenience of <-e> in both adjective classes but simply calls it a feature 'wodurch wiederum der Is[idor] mit nördlicheren Sprachverhältnissen verknüpft wird'.

Feminine jō-stem nom. sg. garde (4:16) ~ garde (4:16) ~ gardea (39:17, 21) 'domain'.

Analogical <-a> predominates in the accusative singular of this class (see miltnisso in §4:6.3.b. below) in which <-e> was the original ending. The other four nominative singular forms all feature the suffix -nissa,‘‘ making comparison less reliable. Valentin calls (1969:68) gardea a trisyllabic compromise form. Both he, Matzel (1970:74-5 Anm.80) and Braune/Eggers (1975:§209 Anm.3) recognize <-a>

4 Cf. gheistlihhe chiruni (21:19), undargu hedene | chibot (29:4-5), and suslihhe so huuer so (38:4).

2 Cf. alle dhea (19:6), mine zungun (10:11), sine euuigen | chiburt (23:16-17), and sine chiburt (23:19).

2 Cf. folnissa (40:14) 'abundance', gotnissa (9:14) 'deity', idalnissa (27:18) 'desolation', and uuoootnissa (8:11) 'madness'.

4 "Cf. gheistlihhe chiruni (21:19), undargu hedene | chibot (29:4-5), and suslihhe so huuer so (38:4)."

2 "Cf. alle dhea (19:6), mine zungun (10:11), sine euuigen | chiburt (23:16-17), and sine chiburt (23:19)."

2 "Cf. folnissa (40:14) 'abundance', gotnissa (9:14) 'deity', idalnissa (27:18) 'desolation', and uuoootnissa (8:11) 'madness'."
and <-ea> as more recent forms. Even after conceding triplet morphology, can the juxtaposition of *garda* and *garde* in the same sentence tell us anything? The full phrasing runs *rehtnissa garda | ist garde dhines riihhes* (4:15-16) 'The domain of justice is the domain of your kingdom.' Given further examples in what follows of apparent 'graphic assimilation' (cf. Matzel 1970:222 Anm. 335), which we are calling graphic iconicity (cf. Rauch 1992:§13.1), it is entirely possible that the choice of ending was influenced by the neighboring morphology."


The above examples are grouped together to illustrate a phonological process whereby word-final <a> alternates with medial <e> (cf. Braune/Eggers 1975:§64 Anm.2). We observe that *manacsamo* behaves like a compound with an underlying

"'Inflectional assimilation' does not imply morphological assimilation but rather refers to a phonological process affecting desinences, i.e. inflectional endings.

"For a complete list of all twenty-nine attestations of *heileg-* and eight attestations of *heilac* see Hench's glossary (1893:146).

"If we were to follow Hench's (1893:7) or Eggers' (1964:21) reading of the Paris manuscript, we would include the alternants gen. pl. *heidheno* (6:22) 'heathens' ~ adj. *heidhanliih* (6:19-20) 'heathen' as well. We refrain from interpreting the unusual allography to be found in the latter case: ."

4:6.3.b. <o> For Expected <a>.


Kögel’s opinion (1897:448) that nom. pl. -o and -a, representing long vowels, are doublets has been disputed by subsequent authors, namely Braune/Eggers (1975:§193 Anm.4) Baesecke (1918: 141), and Kirschstein (1962:79), who consider *himilo* to be scribal error. Franck implies (1909:174) that the regular gen. pl. *himilo* occurring two lines down (24:20) could have caught the copyist’s eye. Voyles raises the possibility (1976:84) of a mistranslation: an Old High German genitive plural corresponding to Latin *celi* which is homophonous in the genitive singular and the nominative
plural. Note that the full relevant noun phrase himilo endi anghila (24:17-18) 'heaven and angels' includes an identical masculine a-stem nominative plural morpheme but with the expected graph. Inflectional assimilation can be ruled out in this case.

Feminine io-stem acc. sg./pl. miltnisso (42:4) 'mercy'.

Hench (1893:94), Kirschstein (1962:84) and Braune/Eggers (1975:§206 Anm.6) see an accusative plural here, which is otherwise unattested but reconstructed as *-a. Matzel believes (1970: 210 Anm.283) it to be a singular form, which would alternate with fourteen <-a>, given the 'umschreibend-interpretierend' translation of Latin converting etiam paruoli 'and converted to childhood' into chi|hhuuor-uane in miltnisso chindo (42:3-4) 'converted to the grace of children', 'wenn auch ihr Sinn nicht völlig klar ist'. Both Kirschstein (1962:85) and Matzel (1970:210) agree that <-o> for <-a> in this example shows inflectional assimilation to the following genitive plural <-o> of chindo.


The alternation offan-/offen- has already been mentioned in §4:6.3.a. above. The graph <o> appears by regressive assimilation as recognized by Hench (1893:77) and Valentin (1969:187).
4:6.3.c. <u> For Expected <a>.


Braune/Eggers favor the notion (1975:§207 Anm.5) that <-u>, more characteristic of the dative singular of this noun class, reflects an ongoing syncretism throughout Old High German. They find traces of it in the ninth century but, as Baesecke confirms (1918:145-6), during this period the syncretism runs in favor of the genitive -a, providing possible explanations for dat. sg. minera (36:22) 'my' and ira (24:4) 'her', with 'sehr wenige' reverse cases. Not until the tenth century does dative -u for genitive -a become more widespread. As the evidence begins to mount, we cannot ignore the fact that the word in question occurs in the phrase zi rehtnissu uuerchum (29:16) 'to the workings of justice' containing another u-desinence.

4:6.3.d. <a> For Expected <e>.

Masculine i-stem dat. sg. hantgriffa (19:9) 'cup of a hand' ~ 3 <-e>.

With the absence of dative singular -a in any other noun or adjective class, analogy can be immediately ruled out in this case. We consider free graphic variation to be most likely, in agreement with Valentin (1969:60) and Matzel (1970:205 Anm.259).

Masculine a-stem strong adjectives acc. pl. dhina [daga] (37:10) 'your' and mina [bergal] (34:4) 'my' ~ six <-e>.
Franck discusses (1909:209) the endings as possibly analogical to the a-stem nouns. Valentin disputes the analogy argument (1969:60 n.1) on the grounds that the observed alternation hardly occurs in other texts, in contradiction to the several literary monuments, including Tatian, which Kirschstein cites (1962:98). Matzel agrees (1970:222) with Kirschstein that <a> attests to the openness of the acc. pl. -e morpheme, thus likening the <a> for expected dat. sg. <e> in hantgriffa above with the <e> for expected dat. sg. <e> in anthlutte (5:18) 'face'.

Wk.I 3sg. prs. subj. bichnaa (6:18) and 3pl. bichnaan (23:6) 'he/they may recognize' ~ <-e, -en>.

Data for the subjunctive mood of class I weak verbs are scarce but observations of continuity of desinences across verb classes lead us to propose {-e, -en} morphemes diachronically with an underlying vowel /ɛ/ synchronically: wk.I 1sg. prs. subj. <-e> in hneige (5:18) 'I may bow, kneel', wk.II 3sg. prs. subj. bluchise (9:5) 'he may doubt', and 3pl. prs. subj. chilauben (23:7) 'they may believe'. Hench then sees (1893: 77) in bichnaa(n) [bikná:(n)] < bikná-a(n) < /bi#kna+e(n)#/ a case of progressive assimilation. In addition to acknowledging Hench, Kirschstein compares (1962:109-110) the final vowel of bichnaa to that in hantgriffa mentioned above, describing for Isidor 'die Tendenz, auslautendes e zu öffnen'.
4:6.3.e. <i> For Expected <e>.

Masculine a-stem dat. pl. strong adj. *[in] hej[legim ][quhidim]* (26:14-15) '[in] holy [pronouncements]'.

The adjective in question is presented here with its complete prepositional phrase to illustrate another clear case of graphic iconicity (cf. Valentin 1969:139, Matzel 1970:222 Anm.335).

4:6.3.f. <u> For Expected <e>.

Neuter a-stem dat. pl. strong adj. allūm *[herrum]* (31:22) 'all [hosts]'.

The macron over the <u> possibly indicates a correction mark (cf. Eggers 1964:57). Valentin (1969:139) and Matzel (1970:222 Anm.335) best explain this scribal error as graphic assimilation, i.e. iconicity between the two dative plural desinences.

4:6.3.g. <e> For Expected <i>.

Disyllabic roots inst. sg. liuzelu (23:10) ~ nom. sg. *liuzil" (41:14), acc. sg. lyuzilan (23:8) 'small'; and nom. sg. tempel (35:17) ~ acc. sg. tempil (28:1) 'temple'.

In Valentin's data (1969:132-35), tempel (35:17) marks the only instance of final <-el> in Isidor, which could suggest a neutralization of hypothesized /-el#/ and /-il#/ → [-il#]. But the case for neutralization is weakened by the status of tempel/ tempil as an isolated loanword and the

"Manuscript reads liuzit."
existence of oppositions like <-al> in nom. sg. *sedhal (4:14) 'seat' and <-ul> in acc. sg. *suuebul (9:3) 'sulfer'. We find no vocalic alternations among the multiple attestations of the lexemes *angil 'angel', *himil 'heaven', or *mihhil 'great', in the penultimate syllables of oblique cases or otherwise, which would reveal potential, underlying mid vowels, and therefore take */-il/ as basic for all the disyllabic roots showing <-el, -il> including alternating *tempel ~ tempil and *liuzil ~ liuzelu. The latter alternation then provides a remarkable parallel to that discussed above in §4:6.3.a. In *liuzil ~ liuzelu and *uuazssar ~ uuazssserum (from §4:6.3.a.) we find weakly stressed peripheral vowels before liquids in final closed syllables. With the addition of subsequent weakly stressed syllables, the peripheral, now medial vowels become neutralized to what orthographically is a mid vowel, but what may very well be more precisely a centralized schwa-like vowel intersecting the phonetic ranges of both the high front and low back vowel.

Comparative suffixes in *chiminnerodes (23:9) 'you lessened', *smalero (41:9) and *smelerun (41:19) 'smaller', *suuozssera (32:6) 'sweeter' ~ *furiro (28:22) 'preferred', *sturirom (41:11) 'stronger'.

As we have already attempted for *liuzil ~ liuzelu, Valentin links (1969:188) this lowering of /i/ in the comparative suffix -ir to the raising /a/ in uuazssserum: a neutralization of /i/ and /a/ in the environment described above.
Masculine i-stem dat. pl. heidem (13:21) 'persons' ~ eight <-im>, including heidim (20:11, 21:9).

Analogy with the strong adjective dative plurals by a noun would constitute the only such case in our data, rendering it unlikely. A better explanation could be graphic iconicity: in dhesem dhrim heidem (13:21) 'in these three persons'. If graphic iconicity between inflectional syllables is at play here then we may be observing a weakly stressed syllable’s preference to assimilate to the (at this point, hypothesized) reduced vowel of another weakly stressed syllable rather than to a more proximate vowel bearing prominent stress.


The phrase fona des chrismen salbe (5:11) 'by the salve chrisma', dhes selben christes (30:16) 'of the same Christ', and dhes unchideiliden meghines (13:22) 'of indivisible majesty' all exhibit graphic iconicity suggesting neutralization. Both Kirschstein and Matzel relate this <-in> ~ <-en> alternation to <-un> ~ <-on>, discussed in full in §4:6.3.1. below.

4:6.3.h. <o> For Expected <i>.


Hench explains (1893:77) the alternation within this
loanword as regressive assimilation. Taking this one step further, Valentin (1969:188) associates the variant with the same vocalic weakening of /i/ and /a/ before a liquid and another weakly stressed vowel observed elsewhere in our data (cf. uuazssserum, smalero, and liuzelu above). Valentin finds it tempting to explain the appearance of the first <o> of chimartorodan as a process whereby /i/ becomes neutralized in the environment already described. Exactly what this intermediate neutralized vowel is remains vague from Valentin's use of the imprecise sign /a/. The neutralized vowel undergoes assimilation to [o] before the /o/ of the following verbal formant.

4:6.3.i. <e> For Expected <iu>.

Neuter a-stem nom. pl. strong adj. [zisamandel]
chizelide (26:19) 'counted [together]' - six
<-iu>.

Although considered to be scribal error influenced by the preceding word by Valentin (1969:59), Hench may be correct (1893:191) in believing that the masculine nominative singular ending was mistakenly written for the neuter one. The total absence of comparable diphthongal variants (i.e., those not explanable by analogical processes) would support the latter explanation, but we are unable to draw any definite conclusion.
4:6.3.j. <a> For Expected <o>.

Feminine ð-stem nom. pl. strong adj. chisamnoda
(12:3-4) 'gathered' ~ nine <-o>.

At a loss to otherwise explain this alternation,
Valentin wonders (1969:59) whether <a> here might be by
analogy to the feminine ð-stem nouns. But since such analogy
would be 'exceptionnel en allemand', he ultimately blames
scribal error. Matzel agrees (1970:209-10 Anm.281) but,
given the uniqueness of this case of <a> for expected <o>,
hypothesizes that the parent manuscript could have had
chisamnode, an erroneous nominative plural masculine form.
Confusion between <a> and <e> and between <o> and <a> has
already been demonstrated (cf. §§4:6.3.a. and 4:6.3.b.
above).

4:6.3.k. <e> For Expected <o>.

Masculine a-stem gen. pl. weak adj. heilegeno
(26:7) 'holy' ~ four <-ono> including heilegeno
(26:12).

Valentin calls this (1969:190) an error. Kirschstein
describes it (1962:92) as 'möglicherweise ein besonders
frühes Beispiel für die fränk. Entwicklung der Endung -óno >
-ono > -eno'.

4:6.3.1. <o> For Expected <u>.

Masculine a-stem acc. sg. weak adj. chisalbodon
(5:8) 'annointed' ~ sixteen <-un>; feminine n-stem
acc. pl. uuehhon (26:17) 'weeks' ~ twelve nom/acc.
pl. <-un> including nom. pl. uuehhun (26:14).
Progressive assimilation is a possibility for the former example but may not be the only process at work here (cf. Valentin 1969:136). Both Kirschstein (1962:89) and Matzel (1970:214 Anm.302) draw parallels between the back vowel lowering observed in chisalbodon with the front vowel lowering recorded in section 3.3.3.g. above for chrismen (5:11) 'chrisma', unchideiliden (13:22) 'indivisible', and selben (30:16) 'same'. Again we seem to be dealing with peripheral vowels which are weakened by low stress and which in turn become more susceptible to assimilatory processes.


Further analysis of the data brought forward in §4:6.3. progresses in two steps. We begin here with a closer look at the phenomenon we have been calling graphic iconicity, describing apparent assimilation of vowels from neighboring desinences. §4:6.5. deals with word-internal assimilation.

The scribal error data involving inflectional vowels is recreated in Table 4. Just over half of these variants, grouped together under A, are characterized by graphic iconicity. The variants under B are non-iconic. Bold type marks the variant in each case.
### Part A: Iconic Variation.

<table>
<thead>
<tr>
<th>Iconic Form</th>
<th>Hebraic Equivalent</th>
<th>Hebrew Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;i&gt;</td>
<td>in heilegim quhidim (26:14)</td>
<td>'in holy pronouncements'</td>
</tr>
<tr>
<td>&lt;e&gt;</td>
<td>fona dhes chrismen salbe (5:11)</td>
<td>'by the salve chrisma'</td>
</tr>
<tr>
<td></td>
<td>dhes selben christes (30:16)</td>
<td>'of the same Christ'</td>
</tr>
<tr>
<td></td>
<td>dhes unchideiliden meghines (13:22)</td>
<td>'of indivisible majesty'</td>
</tr>
<tr>
<td></td>
<td>in dhesem dhrim heidem (13:21)</td>
<td>'in these three persons'</td>
</tr>
<tr>
<td>&lt;e&gt;</td>
<td>zisamande chizelide (26:19)</td>
<td>'counted together'</td>
</tr>
<tr>
<td>&lt;a&gt;/&lt;e&gt;</td>
<td>rehtnissa garda</td>
<td>'The domain of justice is the domain of your kingdom.'</td>
</tr>
<tr>
<td>&lt;a&gt;</td>
<td>dhina daga (37:10)</td>
<td>'your days'</td>
</tr>
<tr>
<td></td>
<td>mina beraa (34:4)</td>
<td>'my mountains'</td>
</tr>
<tr>
<td>&lt;o&gt;</td>
<td>miltnisso chindo (42:4)</td>
<td>'the grace of children'</td>
</tr>
<tr>
<td>&lt;o&gt;</td>
<td>sibun iaaro uuehhon (26:17)</td>
<td>'seven weeks of the year'</td>
</tr>
<tr>
<td>&lt;u&gt;</td>
<td>zi rehtnissu uuerchum (29:16)</td>
<td>'to the workings of justice'</td>
</tr>
<tr>
<td>&lt;u&gt;</td>
<td>allūm herrum (31:22)</td>
<td>'to all hosts'</td>
</tr>
</tbody>
</table>

### Part B: Non-Iconic Variation.

<table>
<thead>
<tr>
<th>Non-Iconic Form</th>
<th>Hebraic Equivalent</th>
<th>Hebrew Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;e&gt;</td>
<td>dhurah mine zungun (10:11)</td>
<td>'through my tongue'</td>
</tr>
<tr>
<td></td>
<td>umbi dhea sine euuigun</td>
<td>'about this his eternal birth'</td>
</tr>
<tr>
<td></td>
<td>alle dhea dhrinissa (19:6)</td>
<td>'all the trinity'</td>
</tr>
<tr>
<td></td>
<td>sine chiburt (23:19)</td>
<td>'his birth'</td>
</tr>
<tr>
<td></td>
<td>gheistliihhe chiruni (21:19)</td>
<td>'spiritual mystery'</td>
</tr>
<tr>
<td></td>
<td>undargu hedene</td>
<td>'forbidden commandment'</td>
</tr>
<tr>
<td></td>
<td>Dhiz susliihe so huuer so</td>
<td>'whoever thinks such a thing'</td>
</tr>
</tbody>
</table>
<a> for <e> in eine|mhu hantgriffa (19:8-9) 'in a fist'
<a> for <o> manego dheodun chisam|noda (12:3-4) 'many people [were] gathered'
<o> for <a> hi|milo endi anghila (27:17-8) 'the heavens and angels'

The question marks in part A reflect uncertainties mentioned in §4:6.3.: possible doublets in the cases of rehtnissu and garda/ garde and a possible gender switch in the case of chizelide. The inclusion of these examples does not affect the outcome of our analysis, only the statistical count.

The data in part A of Table 4 illustrate that the domain of apparent graphic iconicity is the syntagm of a noun phrase. The affected desinence can be nominal or adjectival, from any of the four major cases, from any gender and number. Vowels assimilate both progressively and regressively.

Since we cannot prove which of the variations reflect phonetic reality and which are phonetically insignificant we must take the all-inclusive position and consider the data as a whole. The phonetic data displaying graphic iconicity may or may not be contaminated and so we must be satisfied with discussing generalities. Even in so doing, contrasts between parts A and B emerge. Consider part B first. In these instances, weakly stressed vowels display variant spelling attesting to their reduced, neutralized, schwa-like character which arises from the following optional rule.
(4) Final Vowel Neutralization (Optional)

\[
[+\text{syl}] \rightarrow \left[\begin{array}{c}
\text{-front} \\
\text{-back}
\end{array}\right] \lor \left[\begin{array}{c}
\text{-stress}
\end{array}\right] \left[\text{-syl}\right].
\]

That is, weakly stressed vowels in final syllable are optionally centralized. We must stipulate the optionality of Rule (4) because its operation is reflected only sporadically in the orthography. The resultant phones are represented by three graphs in part B: predominately <e> but also <a> and <o>.

In part A, the same schwa-like vowels undergo a further, optional assimilation whereby vocalic coloring from one or more neighboring desinences is assumed. As phonetic iconicity favors graphic iconicity, we find a greater variety of attested graphs and, presumably, phones: <i>, <e>, <a>, <o> and <u>.

The alternations in B also differ from those in A in that the phonetic range of the vowels in B seems to be more precisely defined, that is, limited.

**Figure 1: Inflectional Vocalic Alternations**

A) \(\begin{array}{c}
i \\swarrow \\
\searrow \varepsilon \\
a \swarrow [o] \searrow u
\end{array}\)  

B) \(\begin{array}{c}
i \\
\searrow \varepsilon \\
a \swarrow [o] \searrow u
\end{array}\)

The phones in B represented by <e> and <a> alternate back and forth, as do the phones represented by <o> and <a>. The data include no alternations between the front and back
vowels, respectively <e> and <o>. This would indicate a central position for [a] within the range of both [e] and [o]. It makes sense that these data are more straightforward relative to the data of part A which have undergone an extra phonological transformation of Schwa Coloring (cf. §4:6.6. below). The back vowel replacing the front vowel in allūm illustrates the loss of integrity with regard to front-back phonetic range.

Considering further the relative 'purity' of the data in B (not having undergone the optional inflectional assimilation, i.e. Schwa Coloring Rule), it is perhaps significant that the most common alternation in B, <e> for /a/, is all but missing in A. Garde would be the only example but we cannot even say for certain what phoneme synchronically underlies the ending (cf. §4:6.3.a.). This could mean that the most neutral reduced vowel, a true schwa, is most often signified by <e> in non-iconic inflections.

Inflectional assimilation, as we have defined it, affects only nominal and adjectival desinences. "Verbal and invariable morphemes resist this particular transformation (cf. Valentin 1969:57), although word-internal assimilations for verbs do occur (cf. §4:6.5.). The difference could indicate greater syntactic affinity between nouns and their determiners than between verbs and other

"Recall that Part A of Table 4 above provides evidence that the domain of inflection assimilation in the noun phrase."
sentential constituents. We do find one example in which the vocalism of the verb *uues* appears to be influenced by its environment (cf. Hench 1893:60; Kögel 1893:240; Matzel 1970:142-3) in the phrase *Huuer uues mezssendi* (19:8) 'who was measuring'. A possible link to inflectional assimilation may lie in the low syntactic stress hypothesized for *uues* which functions here like a modern English auxiliary verb.

4:6.5. Word-internal Assimilation.


Just as part A of Table 4 in §4:6.5. suggests an additional optional assimilation rule generating phrases like *in heilegim quhidim* in which <i> would not otherwise
represent a schwa-like surface variant," so too do the data of the preceding paragraph complicate the manifestations of vowel reduction. The graph <u> like that in faruuu is nowhere else attested as a non-analogical, non-assimilated variant. Therefore we seek a body of data for which we can establish vowel reduction but in which the reduced vowels do not assimilate. Such data should shed further light on the nature of weakly stressed vocalism.

Word-internal assimilation affects verbal morphology on a large scale, specifically with regard to the past participles of strong verbs. We have already seen how assimilation can accompany vowel reduction and hope that the participial data may provide clues about the quality of reduced vowels. Hench counts (1893: 104) a total of seventy-three non-inflected strong past participles in the Paris and Monsee manuscripts of the Isidor family, spelled exclusively with <-an>, which leads us to postulate the morpheme as /an/. The inflected forms, on the other hand, exhibit orthographic variation in this past participle morpheme as listed in full below for the Paris manuscript:

---

"Of course, an expected <i> like that in masculine i-stem. dat. pl. guhidim (21:11) from Proto-Germanic *i does occurs in weakly stressed syllables."
Valentin finds these data especially significant (1969:187) due to the impossibility of analogy with the weak past participles having a dental formant. The same cannot be said of, say, strong and weak present participles, both with -nd, for which analogy very likely plays a major role. Table 6, adapted from Valentin (1969:187), illustrates a loose correlation between root vowels and the spelling of the past participle morpheme.

### Table 5

<table>
<thead>
<tr>
<th>A) -an-</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>chifangana</td>
<td>(42:10)</td>
<td>'caught'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chiscaffanes</td>
<td>(1:17)</td>
<td>'created'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chislaganagan</td>
<td>(30:5)</td>
<td>'nailed [to a cross]'</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>chiboranin</td>
<td>(3:12)</td>
<td>'born'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chiboranana</td>
<td>(23:7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chiboranan</td>
<td>(27:7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chihuuoruane</td>
<td>(42:3)</td>
<td>'converted'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>uuordanan</td>
<td>(23:8)</td>
<td>'become'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>aruuyoranun</td>
<td>(29:6)</td>
<td>'banished'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B) -en-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>zifareneru</td>
<td>(31:14)</td>
<td>'transgressed'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>quhomenan</td>
<td>(28:9)</td>
<td>'come'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>undarguedene</td>
<td>(29:4)</td>
<td>'forbidden'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ardribenem</td>
<td>(31:21)</td>
<td>'driven out'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bilibenem</td>
<td>(31:16)</td>
<td>'been inactive'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chiheizssenin</td>
<td>(31:11)</td>
<td>'promised'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chiheizssenenun</td>
<td>(32:2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bigunnenun</td>
<td>(30:15)</td>
<td>'begun'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C) -on-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chiborgonun</td>
<td>(6:3)</td>
<td>'hidden'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chiholono</td>
<td>(18:6)</td>
<td>'in secret'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The table shows that the underlying phoneme /a/ of the past participle morpheme is realized within the phonetic range of <a> only after an /a/ or /o/ in the root, an environment which suggests a somewhat back, partially assimilated vowel, perhaps [ʌ]. The vowel represented by <e>, occurring in the widest range of environments, significantly including non-iconic ones, appears to be the most neutral and a good candidate for schwa. The exceptional cases of <o> in the ending attested only after /o/ suggests that additional coloring by the root vowel.

To summarize, our data suggest at least two reduced vowels for the Isidorian dialect which occur under weak stress: [ʌ] and [ə], which are often written <a> and <e> respectively. These contrast with [i], described in §4:5.3.

4:6.6. Other Vowel Reduction Phenomena.

Throughout the present work, we have used the term vowel reduction as a cover term for qualitative centralization as well as quantitative shortening which results in syncope. In this section we review the remainder of the data from §4:6.3 concerning the centralization/neutralization of peripheral vowels. Then we close with a look at quantitative changes.

We reintroduce the following data for analysis:
Table 7

Part A)

nom. sg. *heilac (13:9) and acc. sg. heilac-nissa (20:18) 'holiness' ~ acc. sg. heilegan (15:9) 'holy'
nom. pl. [so] manac-samo (40:10) '[so] much' ~ nom. pl. manegeo (12:3) 'many'
om. pl. uuazssar (15:17) ~ dat. pl. uuazsserum (16:3) 'waters'
conj. huuedhar (25:9) 'whether' ~ inst. [dhoh dhiul] huuedheru (16:21) 'nevertheless'

Part B)

nom. sg. *liuzil (41:14) ~ inst. liuzelu (23:10); but also acc. sg. lyuzilan (23:8) 'small'
comp. suffixes furiro (28:22) 'preferred' and sturirom (41:11) 'stronger ~ chiminnerodes (23:9) 'you lessened', smalero (41:9) and smelerun (41:19) 'smaller'

Part A of Table 7 provides examples of /a/ with allophones represented by <a> in final syllable and <e> in medial syllable. In other words, when weakly stressed /a/ is followed by another weakly stressed vowel--the quasi-independent suffixes -nissa and -samo would attract secondary stress (cf. §4:4.3.)--it is raised. The data for part B are less clear cut. An analogous alternation exists with *liuzil ~ liuzelu whereby a peripheral vowel, this time high, is likewise shifted toward the mid range and represented by <e>, although medial -il- is also possible. The comparative suffix -ir-/er- also does not evince complementary distribution. If we are dealing with a single neutralization phenomenon, it appears to be optional for
The text provides only indirect evidence regarding the other high vowel /u/ in the root /a:ɡuːm-/ (cf. nom. sg. adum (12:16) 'breath'), where /u/ would first have to be reduced before being syncopated in generating 3 sg. prs. ind. adhmot (15:21) 'breathes' (cf. Rules 5 and 7 below). The only overt attestations in medial syllable (cf. Hench 1893:72, Valentin 1969:186) are ernusti (9:9) 'seriousness' and iungundhi (23:22) 'youth' preceding a high vowel, and the suffix -unɡa in which the /u/ may remain because of secondary stress, the raising influence of the following velar cluster, and/or orthographic conservativism for a common derivational suffix.

An analogy can be easily drawn between the examples in (at least part A of) Table 7 and the strong past participle data found in Table 5 of §4:6.5. We recall that in the latter case, uninflected forms like p.p. chiquhedan (43:21) 'spoken' which end exclusively with -an sometimes alternate with inflected forms having -en-: for example, p.p. undar-guḥedene (29:4) 'forbidden'. The cases which feature -an- do not necessarily indicate an absence of neutralization. They could possibly be the consequence of the more conservative orthography characteristic of verbal desinences as a whole. As another possibility, the participial surface allomorph -an-, which only co-occurs medially with root vowel /a/ or /o/, is the realization of a centralized vowel colored by full or partial progressive assimilation. As was mentioned
before, [^a] could still be in the range assigned to the graph <a>. The same surely holds true for p.p. *chiborgonun* (6:3) 'hidden' and p.p. *chiholono* (18:6) 'in secret'. Accordingly, we cannot rule out the possibility that the phonetic process responsible for *uuazssar/uuazssserum* and the rest of the examples in part A of Table 7 is the same process at work between the uninflected and inflected strong past participles. The differences between the two sets of data are explainable by additional assimilation rules which permeate the entire phonological system.

Kirschstein's observations (1962:106) on the 1 pl. prs. ind./imp. ending -emes, common to all verb classes, provide further evidence of medial neutralization under weak stress. She compares 1 pl. -emes with 3pl. -ant of the strong and first weak classes. The significance of the <e>:<a> opposition lies in the expectation that analogy between the two verb classes should operate unidirectionally: either in favor of the strong paradigm with prehistoric *a* or the weak with prehistoric *ja*. Kirschstein argues therefore that the universal spelling -emes represents more than just analogy. She attributes the first <e> to neutralization in a weakly stressed medial syllable, sandwiched between a main stress and a long, heavy final. Note, though, that other examples

[^a]Among the strong verbs, eighteen -ant alternate with a single -ent in *sizent* (36:1) 'they sit' (from Gmc. *sit-ja*). All seven attestations of third person plural class I weak verbs end in -ant (cf. Hench 1893:103, 106).
of medial vowel neutralization presented here demonstrate that the weight of the final syllable is irrelevant.

We can express, then, this general neutralization in the form of a phonological rule.\(^{51}\)

\[(5) \text{Medial Vowel Neutralization} \]

\[
\left[\begin{array}{c}
+\text{syll} \\
-\text{stress} \\
(\text{+high})
\end{array}\right] \rightarrow \left[\begin{array}{c}
-\text{high} \\
-\text{low} \\
-\text{front} \\
-\text{back}
\end{array}\right]
\]

\[
\left[\begin{array}{c}
+\text{stress} \\
+\text{cons}
\end{array}\right] \rightarrow \left[\begin{array}{c}
+\text{syll} \\
-\text{stress}
\end{array}\right]
\]

That is, weakly stressed vowels, optionally if high, become [Ø] in the first posttonic syllable if followed by another weakly stressed syllable. The output of the above rule is often represented by the graph <e>. By Rule (5), acc. sg. /#hëilagan#/ → [hëiləgan] heilegan (15:9) 'holy'; but secondary stress on the following syllable prevents neutralization: acc. sg. /#hëiləgənɪssə#/ → [hëiləgnɪssa] heilagnissa (20:18) 'holiness'. The optionality for high vowels is observed in inst. sg. /#lfiuttsil+u#/ → [lfiutsələ] liuzelu (23:10), but acc. sg. /#lfiuttsil+an#/ → [lfiutsilən] lyuzilan (23:8) 'small'.

Examples like ernusti with [u] may also point to the non-application of Rule (5), but the possibility exists that this medial vowel is also neutralized underlingly but that

\(^{51}\)For different versions of all the rules in this section see Voyles (1974:75-78).
the orthography reflects assimilatory coloring, by Rule (6) below, by the following vowel.

Rule (5) then feeds an assimilation rule by which schwa can take on features of neighboring vowels.

(6) Schwa Coloring (Optional)
\[
\begin{array}{c}
\text{[+syll] } \\
\text{[-front -back] } \\
\text{[-high -low] } \\
\end{array}
\rightarrow
\begin{array}{c}
[\text{afeat}] \\
\end{array}
\bigg/ \begin{array}{c}
[\text{afeat}] \\
\times \text{X} \\
\times \text{X} \\
\end{array}
\begin{array}{c}
\text{[+syll]} \\
\end{array}
\]

Note: X may contain a word boundary (#).

That is, to schwa are optionally assigned features of either a preceding or a subsequent vowel. Schwa Coloring may operate across word boundaries in the case of inflectional assimilation (cf. §4:6.4.). We judge the operation of Rule (6) by the presence of orthographic alternations, including graphic iconicity.

The phenomenon of vowels alternating with zero in Isidor, when viewed diachronically, arises from the opposite processes of epenthesis and syncope. The former case explains dat. pl. zeihnum (43:13) ~ acc. sg. zeihhan (43:2) 'sign' (cf. Go. taikn < PGmc *taikna-), and the latter case applies to after (10:18 and elsewhere) 'after' ~ aftristo (18:3) 'latest' (cf. Matzel 1970:461-2, Braune/Eggers 1975:$§65$). But from a synchronic perspective, Isidorian phonology becomes greatly simplified if we view these similarly behaving alternations as a single process, as contemporary speakers probably did. Nordmeyer (1958:29)
remarks that **Isidor** 'seems to have regulated svarabhakti in terms of syllable division (pattern **zeihhan** -- **zeihne**), even going so far as to show corresponding suppression of old suffix vowel in **ander/ andres, aftristo...**' Matzel refutes the synchronic connection (1970:462) citing Baesecke's statement (1918:§42) that the syncopation in question was rooted in 'vorahd. Mittelvokallosigkeit' and not modelled after Franconian epenthetic paradigms. But if both phenomena pre-date **Isidor** we have all the more reason to associate them synchronically, given identical outputs bound to vowel reduction and syllabification rules.

As a unified explanation, we favor vowel deletion rules over vowel insertion for various reasons. First, vowel insertion rules would need to account for the full range of vowels which alternate with zero: cf. <e> and <a> **after** and **zeihhan** mentioned above, as well as <u> for 3sg. prs. ind. **adhmot** (15:21) 'breathes' ~ nom. sg. **adum** (12:16) 'breath', and <i> for wk.I 3pl. pt. ind. **chihordon** (13:13) 'heard' ~ **chifrumidon** (18:4) 'made'. Second, we would need to add a

---

52Franck amazingly stands alone in his interpretation of the manuscript regarding nom. pl. *hi|mlo* (24:17-8) ~ acc. sg. **himil** (16:2) 'heaven(s)'. Neither Eggers' (1964:47) comprehensive apparatus, including all the previous editors' notes going back to 1706, nor any of the other secondary literature in our study even acknowledge the possibility of such a reading. The 'contro-versy' arises from the <mi> ligature often employed in the Paris manuscript as in **himl** (16:2). The **m** of **himlo** (24:17-8) appears more rounded than the simple **m** of **himlo** (24:20) but the tail to indicate the [i] is clearly absent in the former case. We note, though, that as part of our word-division data, the reading **hi|mlo** would violate an otherwise exceptionless syllabification
series of syllabic resonants to the phonemic inventory, since syllabification would have to precede vowel insertion, to know when insertion is required to correctly generate, for example, zeih han and zeih num. On the other hand, a simple syncopation rule would be fed by the established vowel reduction rule and require no new phonemes. It would be an optional rule—frequently occurring roots like offan- 'open' and fater- 'father' never syncopate in our corpus—ordered before syllabification (cf. §4:7.0.).

(7) Syncope (Optional)

\[
\begin{align*}
+\text{syll} & \\
-\text{front} & \\
-\text{back} & \\
-\text{high} & \\
-\text{low} & \\
\end{align*}
\rightarrow \emptyset
\]

We illustrate Rule (7), which is intrinsically ordered after Medial Vowel Neutralization Rule (5), with the example:

super. /#afftɛr+ist+o#/ → (Stress) and (V-reduc) #afftɛr-tisto# → (Sync) #afftristo# → (Syllab and Degemination) [ɛ.tris.to] aftristo (18:3) 'latest'.

### 4:6.7. Summary of Vowel Reduction

Our conclusions on vowel reduction/neutralization are based on scribal alternations which are believed to indicate lessened distinctiveness among vocalic allophones. We draw further evidence from the overall distribution of vowels between prominent and non-prominent syllables.

rule which hi milo does not.
Vowel reduction occurs in the dialect of *Isidor* under weak stress; mandatorily in certain medial syllables and optionally elsewhere. The extent of optionality is disguised by conservative orthography. Final syllables lag behind the other non-prominent syllable perhaps because of what Kirschstein labels (1962:106) their 'flexivische Geltung'. That is, final vowels are less likely to become neutralized because they convey important morphological information.

Vowel distribution in proclitic syllables suggests neutralization of five distinct underlying vowels to perhaps two surface forms distinguished by the graphs <i> and <a>. But lost semantic transparency between morphophonemically alternating preverbs and nominal prefixes, analogical levelling and a regrettable paucity of data showing synchronic alternations lead us to believe that phonemization of weakly stressed preverbs has already occurred.

The quality of hypothesized reduced vowels is impossible to pinpoint. We have characterized these allophones as 'schwa-like' because of their central articulation, an argument based on scribal alternations. That schwa-like vowels are highly susceptible to assimilation processes, assuming articulatory features of neighboring vowels, can also be verified by scribal data.

4:7.0. Syllabification.

As was done for Gothic in §3.4.7., we investigate Old
High German syllabification in order to better understand the nature of juncture and its effect of syllables. As before, our primary source of data for syllabification is drawn from word divisions at the ends of lines of text. Comprehensive investigations of Gothic syllabification like Hechtenberg Collitz (1906), Schulze (1908) and Frey (1989) are lacking for Isidorian Old High German. Fortunately, Hench's facsimile edition (1893) supplies comparable word-break data for Isidor. From these data, over 250 divided words reproduced in Appendix 3, augmented by observations on syllable-final fortisization, we formulate the following syllabification rules for Isidor.


Rules of syllabification, as suggested by the Isidorian data are enumerated here. Their ordering, relative to other rules of the grammar, may be found in §4:8. below.

(8a) Syllable boundaries coincide with word boundaries.

Divisions like \textit{chi\,boran} - /ki#bor+an/ and \textit{arm\,hérzin} - /#arm#hertz+in/ are just as well explained respectively by Rules (8b) and (8c) below. Isidorian word formation is in fact of such a nature that for most cases no morphologically specific syllabification rule is required. But Rule (8a) alone accounts for the divisions in \textit{chi\,scaffan} - /ki#skaff-+an#/ (8:14-5) 'to create', \textit{chi\,scrip} - /ki#skrip#/ (24:11) 'scripture', and \textit{fyr\,stant} - /yir#stand#/ (25:21) '(you)
understand'.

Remarkable in view of the many occurrences of the prefix ant- (cf. §4:5.1.) is the unique noun andreidim (30:13) 'sequence'. We recall how syllable- and word-final stops are neutralized in favor of fortis allophones as in hen.di (18:4) 'hands' ~ hant.griffa (19:9) 'fist' and chiburdi (4:5) ~ chiburt (2:5) 'birth'. Accordingly, we are not surprised to find regular examples like antlutti (=ant.lut.ti) (20:7) 'face' in conjunction with Syllabification Rule (8a). A form like andreidim could signal the loss of the morpheme boundary if, in the fixed phrase in andreidim (30:13) 'in sequence' lexicalization has occurred, clouding the boundaries of the constituent morphemes. If the morphological boundary is not perceived, other syllabification rules may apply. In this case, Rule (8d) below would yield an.drei- and syllable-final fortisization would not occur.

(8b) A syllable boundary immediately precedes a single intervocalic consonant.

We find examples after short monophthongs as in go|des (9:6-7) 'God' (cf. nom. sg. got) and after long monophthongs as in si|nem (34:21-2) 'his' (cf. nom. sg. siin), and after diphthongs as in de|i|le (14:3) 'part'.

(8c) Clusters of two (or more) consonants not ending with a liquid are divided by a syllable boundary before the last consonant.

Two-constituent clusters divide into geminates and non-geminates. Of the former type we find gen. pl. man|no
"men" after a short monophthong (cf. nom. sg. man), riih|hison (38:17-8) 'to rule' after a long monophthong, and biheiz|sit [-s.s-] (2:8-9) 'he confesses' after a diphthong. The latter type is exemplified by en|di (40:5-6) 'and' after a short monophthong, alos|nin (43:8-9) 'redemption' after a long monophthong (cf. aloosnin (30:7)), and bauh|nida (16:14-5) 'he showed' after a diphthong.

Clusters of more than two consonants without a liquid are rare in our word break data; such strings hardly occur in Isidorian Old High German at all, thus calling for the parentheses in Rule (8c). The string <scr> occurs only morpheme initially triggering the application of Rule (8a): e.g., chi|scrip (24:11) 'scripture'. This leaves only reht-|tunga (39:8) 'justice' which recurs, undivided, on the following leaf. What makes this lexeme interesting is geminate <tt> in opposition to rehtniss- (4:15, 29:16) 'justice'; and from our word-break data, eleven total occurrences of druh|tin- 'lord' and almah|tig- 'almighty' without a single variant -ht|t-, nor any other <-htt-> in the remainder of the Isidorian corpus. Hench may account (1893:79) for this one lexeme where 'die Silbengrenze fällt zwischen den Spiranten und das t oder in das t, welches dadurch gedehnt wird', but we are left guessing why here and nowhere else. Braune/Eggers' claim (1975:§161 Anm.5) that 'das häufige Auftreten [in Old High German] dieser Schreibung muß den lautlichen Grund haben, daß der t-
Verschluß vielfach schon vor der Silbenpause gebildet wurde’ sheds no light on the phonetics involved. Voyles sees (1976:85) nothing more than ‘orthographic error’. The existence of a second rehttunga (40:17) makes scribal error or line-division aesthetics less likely explanations. Given the contexts in which the two forms occur, we raise the possibility of expressive gemination under high syntactic stress.

endi frummit urdeili endi reht\tunga oba ærdhu
(39:8-9)
‘and he will do judgement and justice over the earth’

oh rehttunga ist | bruohha sinero lumblo endi |
triuuua sindun sinero lending | gurdl (40:17-20)
‘but justice is the swordbelt of his loins and beliefs are the belt of his loins’

In both cases, rehttunga stands in opposition to some other abstract noun: respectively, urdeili ‘judgement’ and triuuua ‘beliefs’.

As a second possible explanation of rehttunga we wonder if at some point in the manuscript chain the word was divided along the morphological boundary, producing *reht\tunga. This form was then corrected by a later scribe in a manner that strengthens the onset of the second syllable (cf. Vennemann 1989:40-55), i.e. reht.tun.ga. But although the true answer as to the source of this variation may be irretrievable, we can at least be satisfied that the syllabification of the surface form follows the established rules.
(8d) If a consonant cluster ends with a liquid, the syllable boundary immediately precedes the second to last consonant, provided a phonotactically acceptable head is thus created. Otherwise the syllable boundary immediately precedes the last (liquid) consonant. Geminate liquids are split by a syllable boundary.

Rule (8d) is necessary to account for the word division attested in *unzwuui|flo* (7:7-8) ‘undoubtedly’. Additional, more indirect evidence for the operation of this rule comes from *lumbo* (40:18) ‘loins’, *sculdrom* (22:10) ‘shoulders’, *sundric* (18:1) ‘particular’ and *zimbrit* (37:15) ‘he builds’. The presence of lenis stops in these words attests to their following a syllable boundary. Otherwise we would expect fortis allophones (**lump.lo, **scult.rom, etc.) modelled after *he.bit* (3:16) ‘has ~ hap.ta (11:14) ‘had’, and *hen.di* (18:4) ‘hands’ ~ *hant.griffa* (19:9) ‘fist’. Rule (8d) would also predict the syllabification *hlut.tror* (9:16) ‘more brightly’.

The syllabification of a geminate liquid is illustrated by *al|lem* (1:12-3) ‘all’. The same would apply for *her.rum* (31:22) ‘hosts’.

The proviso in Rule (8d) that the resulting syllable head must be phonotactically acceptable, meaning it must be a possible syllable-initial sound sequence for the language, is necessary to avoid syllabification errors in words like

"Although, in the case of *hant-griffa*, the syllable boundary coincides with an underlying morpheme boundary, weakening the analogy."
hohsetli (36:21-2)" 'throne'. The argument in favor of -set.li rather than **-se.tli, which Rule (8d) would otherwise predict, depends on establishing what the underlying root is. We are fortunate to have in our corpus the related word nom. sg. sedhal (4:14) 'seat' for which we postulate /zedal/. Since <dh> never alternates with <t>, but <d> alternates with both, we can postulate a doublet morpheme /zedal/ on the strength of other doublets: uuerdhant (12:4) ~ uuerdant (11:2) 'they become' and dat. sg. dodhe (43:9) ~ dode (11:18) 'death'; and dat. sg. gode (5:4) ~ gote (5:2) 'God'. The operation of word stress, vowel reduction and syncope rules yield dat. sg. /zedali+i/ → zedali → zedali → zedli. Syllabification must favor the intermediate form zedli in order to explain fortis [t] in -setli [zet.li]. Although [ze] is a possible syllable (cf. se.dhal above), [dli] as a syllable occurs nowhere else in Isidor nor in Germanic.55 Thus the syllabification process is shown to avoid phonotactically impossible sound sequences.

For comparison, consider the alternation observed in nom. sg. masc. ander (9:6) ~ dat. sg. masc. andremu (20:14) 'other'. The second form is generated much like -setli but

54Hohsetli occurs in our word-break data but unfortunately not because of the syllable boundary pertinent here.

55Syllable-initial pl- does exist in Gothic. Vennemann mentions (1988:19) the gap **/tl dl/ in many language systems, including standard varieties of modern English generally and modern German at least word-initially.
with a different end result: \(/\text{ander}+\text{emu}/ \rightarrow \text{Stress and V-Reduc}) \text{\textit{\underline{ander}emu} \rightarrow \text{Sync} \text{\textit{\underline{ander}emu} \rightarrow \text{Syllab}} [\text{\an.dre.mu}]\text{\textit{\underline{an.dre.mu}}}, since [\text{dr-}] is a possible syllable head.

Other lexemes not among the word-break data deserve attention for the questions they raise, specifically forms like nom. sg. \text{erchno} (14:8) 'distinguished' and 3pl. prs. ind. \text{lastront} 'they slander' with clusters of multiple consonants. Rule (8c) predicts \text{erch.no} and Rule (8d) and \text{las.tront} but notice that [kn-] and [str-] are perfectly formed syllable heads in Isidor: e.g., \text{chneht} (18:17) 'boy' and \text{strango} (14:15) 'strong'. Exactly what would constrain pronunciations like *er.chno and *la.stront? This problem requires further study. We could begin with an investigation of the correlation between primary stress and syllable weight. Predictions can be made but the search for proof continues.

(8e) A syllable break occurs between immediately adjacent vowels.

The only direct evidence in our work-break data comes from \text{isra|elo} (6:7-8) 'Israel'. The more common alternate spelling \text{israhelo} (6:13) suggests full vowels and not a split diphthong in this foreign word. Rule (8e) would also predict gen. sg. \text{sip.be.a} (22:15) 'peace' and nom. sg. \text{gar.de.a} (39:17) 'branch'--if Valentin is correct (1969:68) in arguing for full thematic and inflectional vowels--and

\[\ldots\]

\[\ldots\]

Footnote: For a further discussion of h as a hiatus breaker in Old High German see Rauch (1973b).

A number of words appear to defy the regularities put forward here. These exceptions among the word-break data fall into three groups: split monophthongal dittography in final closed syllables, split diphthongs in final closed syllables, and split diphthongs in medial syllables. We concern ourselves here with the phonological significance of these anomalous data, or whether they reflect scribal practice or accident.

The two occurrences of p.p. chida|an (35:3-4) 'done' and ia|ar (26:15-6) 'years' comprise the only data in which a line break affects long vowels of word-final closed syllables. The conscious or unconscious decision by the scribe to split the <a>‘s most likely was an effort to avoid stranding lone consonants on the following line. The word break attests well to the length of the vowel but could in no way indicate heterosyllabicity, given what we know about these words diachronically and synchronically. It is a purely orthographic phenomenon.

Two diphthongs in word-final closed syllables also occur: 3sg. pt. ind. arslu|oc (29:6-7) 'he killed' and nom. sg. ghe|ist (15:20-1) 'spirit'. The same orthographic argument as with the monophthongs applies here. Note that non-finally we find the expected line break, gheis|tes
(40:14-5), with no stranded consonants. We find no reason to believe that the offglides in these cases have become new syllabic nuclei.

The final group consists of diphthongs in medial syllables, namely uuerodhe|oda (10:17-8) 'army', chihru|oru (17:18-9) 'I will shake' and chiuue|ihhit (15:15-6) 'she will dissolve'. Where we expect regular divisions like dheo|dun (33:18-9) 'peoples' and riih|hison (38:17-8) 'to rule', we find split diphthongs unexplainable by the previous orthographic argument. But an examination of Hench's facsimile (1893) prompts the following comments which may lead to an explanation. Regarding the first word, the scribe was close enough to the line's end that he could have stopped at the morpheme boundary, i.e. uuero|, but was induced somehow to continue. Once the <d> made it onto the page, <h>, the second constituent of the digraph, would be required by orthographic convention. Ending with <dh> would violate syllabification rules, so at least the <e> would have to be written. At this point the scribe has run out of room and the word is continued on line eighteen. But we still do not know why the scribe kept writing beyond the first constituent of the compound. In the case of chihru-|oru, the scribe could have squeezed the <o> on the first line--other lines on the same leaf extend even farther. But something possibly influenced him not to complete the diphthong. The last word, chiuue|ihhit, may provide the clue
as to what influence the scribe may have felt. Line (15:15) ends with endi chi uue showing ample spacing. The scribe could easily have included the entire syllable <-uueih-> on the line. What is striking is that he appears to have made a conscious effort not to do so, by means of generous spacing. Such would be the case if our scribe was copying exactly a parent manuscript which featured these unusual word divisions. Although ascribing these anomalies to an earlier manuscript simply pushes the question of their origin one step backward, the weight we assign them in understanding Isidorian suprasegmental phonology diminishes. Without further knowledge of the orthographic system of which these forms appear to be the product, they make for extremely unreliable data, especially against the prevailing precision of our data.

4:8. Old High German Conclusion.

In this chapter we have attempted to identify the suprasegmental phonemes of the Isidorian dialect and describe their function in the overall phonology. Our analysis has revealed stress, length, and juncture as relevant suprasegmental features/phonemes.

For the suprasegmental feature of stress, we can isolate at least three suprasegmental allophones, i.e. degrees, predictable by rule: primary stress, secondary stress, and tertiary/weak stress. Degree of stress is a key
phonetic conditioner for the realization of surface segments. In this role, primary and secondary stress pattern in a similar way and therefore may be grouped together under the term prominent stress, in a binary relationship with weak, i.e. non-prominent stress. While prominent stress maintains underlying distinctiveness between syllabic phonemes, non-prominent stress occasions vocalic neutralizations, i.e. reductions in distinctiveness, evident in orthographic alternations. The outputs of these reductions are both qualitatively and quantitatively transformed: centralized, schwalike vowels and/or offglides (the non-prominent constituents of diphthongs) (§4:5.0.-4:6.7.), possibly monophthongized phones in the case of preverbal diphthongs (§4:5.0-5.), and zero by syncope (§4:6.6.).

Isidorian orthography marks the suprasegmental phoneme of length in root syllable fairly regularly, but not exhaustively since long vowels in open syllables receive no distinct marking. Length is realized as either [+long] or [-long], including both vowels and consonants in its domain. Length would appear to be neutralized in non-prominent syllables in favor of [-long] since the diacritical ditto­graphy which operates in prominent syllables is absent elsewhere. But the distribution of vocalic length may already be phonemicized, i.e., long vowels do not occur underlyingly in non-root syllables, since the orthography reveals no productive alternations.
Juncture belongs to the suprasegmental inventory as well. This phoneme links morphosyntax with phonology in that types of juncture, word boundaries, /#/\, and (word-internal) morpheme boundaries, /+/, condition stress assignment (§3:1.3.). Juncture also determines syllabification not only with respect to morphosyntactic boundaries, but also with respect to morpheme-internal divisions. In this regard, juncture plays a key role in the phonological processes of degemination and fortisization of consonants (§3:5.1.).
5:0. Approach.

In this study of suprasegmentals in Germanic, we have proceeded in three steps. Our first goal was to describe the segmental phonologies of the target languages, namely Gothic as a representative of East Germanic and Isidorian Old High German as a representative of West Germanic. This first step was important in order to provide a working blueprint—in some cases having to take a stand on still-debated linguistic topics—on which to build our investigation and analysis of historical prosody.

Secondly, we described the reconstructible suprasegmental phonemes/features for each language. Here we focussed on lexical stress, isolating three different degrees: primary, secondary, and weak, and formulated rules which correctly and economically assign stress to syllables. We also discussed length which is distinctive in both languages. A third suprasegmental, juncture, was also discussed. We recognize two types of juncture: the word boundary /#/ and the internal morpheme boundary /+/ . The presence or absence of these two types of boundaries characterizes segmental affinity.

The third step in our general procedure investigated the role that suprasegmentals play in the phonologies of each language. The effect of the reconstructed suprasegmentals on the segmental phonologies and the prosody itself is
significant, as indirectly suggested by regular morphophonemic alternations and irregular graphic variations involving suprasegmental conditioners. Details are provided in summary below.


The internal morpheme boundary juncture is virtually invisible in the grammars of both Gothic and Old High German, meaning that it has almost no effect on surface phonology. The one exception arises when the morpheme boundary between a Gothic reduplicative prefix and its verbal root is responsible for determining the syllable boundary (cf. §3:4.7.). In an example from our word break data, Go. afskai|skaidun (Lk.9:33) ‘they parted’, the division of -skai.skai- specifically does not follow from any of the purely phonological syllabification rules, (4a-4d), which would predict **-skaís.kái-. We have argued that only an internal morpheme boundary and not a word boundary is present here because of the impossibility of internal expansion (cf. §3:4.4. and below).

On the other hand, the effects of the word boundary juncture are felt throughout the grammars of Gothic and Old High German. Most fundamentally, word boundaries condition accentuation patterns, which in turn influence segmental phonology (see below). As described in §3:4.2. and §4:4.4., the first [+syllabic] segment after each underlying word
boundary receives primary stress. Nominal compounding amounts to word boundary deletion which occasions secondary stress on the root of the second constituent.

Clitics are characterized in both languages as not being preceded by a word boundary. This accounts for both their weak stress and for their status as dependent morphemes. Such is the case for Old High German verbal prefixes (cf. §4:4.4.). Attesting to the assignment of weak stress and their status as dependent morphemes, the neutralized vocalism of the verbal prefixes contrasts with the vocalism of related free-standing adverbs and corresponding nominal prefixes (cf. §4:5.0-5.). In Gothic, pairs like ufwōpida (Lk.8:8) /#uB#wo:p+i+5+a#/ 'he cried out' and ubuhwōpida (Lk.18:38) /#uB+uh#wo:p+i+5+a#/ 'and he cried out' demonstrate that the particle uh 'and' is inserted to the left of the word boundary. That enclitic uh does not add its own word boundary is evidenced by the fact that the final devoicing of uf- before /#/ in the first form does not occur in the second where only a morpheme boundary is found as the relevant juncture (cf. §3:4.4.).

The intervening word boundary of the Gothic phrasal verb must be maintained at the surface level in order to explain the absence of consonantal assimilation (cf. §3:4.4.) which commonly occurs in other environments: e.g., assimilation of /h/ in ga-b\-ban\-traua /#γ+uh+θan#tru:+a/ (2 Tim.1:5) 'and then I am certain', but not in an-uh-kumbei
Unlike the enclitic particles, the Gothic reduplicative prefix is inserted to the right of the verbal root's initial word boundary with only a morpheme boundary between it and the root, e.g., in *ana-saislep* /#ana#sɛ+sle:p#/ (Lk.8:23) 'he fell asleep' (cf. §3:4.4.). This accounts for primary stress assignment which this prefix receives (cf. also §3:5.9.) as well as for the exclusion of internal expansion (cf. *an-uh-kumbei* above).

Word boundary juncture also has ramifications for both Gothic and Old High German syllabification (cf. §3:4.7. and §4:7.1.). Syllable breaks in these languages, as reconstructed from word break data at the ends of lines of text and from consonantal devoicing/forticization, coincide with word boundaries in, for example, Go. *us.i dd.ja* (Mk.1:28) 'it went out' and OHG *chi.scaf.fan* (8:14-5) 'to create', which, by the purely phonological preference laws of syllable structure to which these languages otherwise adhere, would be **u.sidd.ja** and **chis.caf.fan**.

§:2. Stress.

The accentuation process, whereby stress is assigned (cf. §3:4.1-5. and §4:4.1-4.), can be described generally for both Gothic and Old High German. With the single exception of the lexical specification of [+stress] being necessarily [+stress-2] (i.e., no more than secondary
stress) for the semi-independent Gothic preverbs, stress assignment is fully predictable by rule. By associating stress assignment with the positions of underlying word boundaries, we are able to correctly account for main stress on the first syllable of simplex words, the leftmost constituent of nominal compounds, and on verbal roots.

We can identify three degrees of stress; no evidence supports more than three. Primary and secondary stress pattern in identical ways with regard to their effect on vocalism. Under such prominent stress, vocalic distinctiveness is best maintained, even augmented. In Gothic, for instance, prominent stress partially conditions vocalic tenseness in the Lowering Rule (§3:5.9.), vowel height in the Breaking Rule (§3:5.5.), and sonority in the Glide Rules (§3:5.7.). The effects of non-prominent, or 'weak', stress are seen in regular morphophonemic alternations: i.e., in Gothic syncope (§3:5.1-3.), vowel-glide alternations (§3:5.7.), and consonantal neutralization by Thurneysen's Law (§3:5.10), as well as in Old High German vowel reductions in preverbs and in medial syllables (§4:5.2. and §4:6.6.). We have established a positive correlation between weak stress and the occurrence of graphic variation (cf. §3:4.6 and §4:6.0-7.). Weak stress results in vocalic neutralization in the form of qualitative changes, which cloud distinctiveness, and quantitative changes, with syncope being the extreme case.
From the graphic evidence, we conclude that vowel neutralization conditioned by weak stress produces schwa-like vowels. The non-random nature of graphic variation leads us to believe that there may have been as many as three such vowels, [ɨ], [ɔ], and [ʌ]. We assign to these vowels the features [-front, -back, -high, -low] to distinguish them from the other syllabic segments, and the non-specific feature [+other features]. Our analysis of the graphic data suggests that vowel neutralization was not total but rather that the reduced surface segments occupied certain ranges of phonetic space. Therefore, it is difficult to pinpoint precise features other than to hypothesize that [ɨ] may have been more fronted, [ʌ] more back, and [ɔ] the most positionally neutral.

5:3. Length.

Both Gothic and Old High German maintained distinctive length under prominent stress, as indicated by the respective orthographies (cf. §3:1.3. and §4:1.3.). The question of whether the same distinction applied to non-prominent syllables as well is tougher to answer.

For Gothic, graphic variation data (§3:4.6.) indirectly suggest some vocalic neutralization; yet, we cannot know the true extent of such changes since they are generally not indicated by the orthography. But note that regularities in the vowel deletion data from §3:5.2. demonstrate length for
desinences in <ái> and <áu>.

For Old High German, length is most probably neutralized in non-root syllables (cf. §4:4.2), although the orthography remains somewhat ambiguous in this matter. Dittography, indicating length, is employed only in closed syllables, and posttonic syllables are for the most part open. Forms like OHG 3 pl. prs. subj. *antwurdeen* (5:2) 'answer' may have arisen under the influence of secondary stress.

5:4. Implications.

This study has demonstrated that at least some suprasegmentals are reconstructible for historical languages such as Gothic and Old High German for which we have only written data. We accomplish this to a great extent with the help of indirect evidence. That is, we study the effect of suprasegmentals on the segmental component of the language, as reflected in the orthography. We understand the nature of these seemingly invisible suprasegmentals by observing what sort of and which phonological/morphological configurations they motivate. Investigation of the prosodic features of Gothic and Old High German in turn lend clarification to the extrapolation of the speech sounds of these historical languages.

Application of the approach demonstrated herein to sister dialects such as Old Norse, Old English, and Old
Saxon will allow the reconstruction of a suprasegmental system for the Germanic language family. Beyond this, such application serves to ferret out and often refocus intractible problems in the segmental phonology of a given language. Finally, the enhanced understanding of the diachronic development of historical Germanic phonologies, such as Gothic and Old High German, provides arguments indispensible to comparative Indo-European.
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APPENDIX 1: GRAPHIC VARIATION IN GOTHIC

Compiled from Gaebeler (1911), Streitberg (1920), Braune/Ebbinghaus (1961), Rauch (1981), and Köbler (1989).

p = alternant occurs under primary stress  
s = alternant occurs under secondary stress  
Otherwise: tertiary/weak stress

Verbs forms are active voice except where indicated (psv.).  
Citations are from the Codex Argentius except where indicated.

<table>
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<tr>
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<th>actual</th>
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<td>&lt;ei&gt;</td>
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<tr>
<td>andbahtei</td>
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</tr>
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<td>kunnei</td>
<td>3sg.prs.sbj.</td>
</tr>
<tr>
<td>usdreibeina</td>
<td>p</td>
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</table>

| <i> | <e> |
| aggeljus | nom.pl.masc. | Rom.8:38A | 'angel' |
| andbahtedun | 3pl.pt.ind. | Lk.8:3 | 'serve' |
| filegrja | dat.sg.neut. | Lk.19:46 | 'den' |
| hweleika | p | nom.sg.fem. | Lk.1:29 | 'what sort' |
| Paunteau | dat.sg.masc. | 1 Tim.6:13AB | 'Pauntius' |
| swekumamma | p | dat.sg.neut. | Lk.8:17 | 'manifest' |
| seneigana | p | acc.sg.masc. | 1 Tim.5:1B | 'old' |
| usdrebi | p | 3sg.pt.sbj. | Mk.5:10 | 'drive out' |

| <i> | <ai> |
| tiuhaið | 2pl.prs.ind. | 1 Th.4:14 | 'bring' |

| <i> | <o> |
| arbjos | gen.sg.neut. | Eph.1:14AB | 'heir' |

| <i> | <a> |
| andalausaise | gen.pl.neut. | 1 Tim.1:4A | 'endless' |
| mipgardawaddju | acc.sg.masc. | Eph.2:14B | 'middle wall' |
| spedistan | dat.sg.masc. | Jn.11:24 | 'last' |

<p>| òo&gt; | &lt;o&gt; |
| ohteigo | p | adv. | 2 Tim.4:2B | 'seasonably' |</p>
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<th>Page</th>
<th>Reference</th>
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<td>20:12</td>
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spaikulatur acc.sg.masc. MK.6:27 'executioner'
sunjus gen.sg.fem. Eph.1:13A 'true'
supuda 3sg.prs.pass.ind. MK.9:50 'season'
ughtedun p 3pl.pt.ind. MK.11:32 'fear'

afleitan p inf. Mt.9:6 'forgive'
bireikjai nom.pl.masc. 1 Cor.15:30 'endangered'
bistuggei gen.pl.neut. 2 Cor.6:3B 'offence'
dalei gen.pl.masc. Lk.3:5 'valley'
dupei adv. Lk.7:7 'therefore'
faheid acc.sg.fem. Lk.2:10 'joy'
faheidai dat.sg.fem. Lk.8:13 'endangered'
frailetakis p 2sg.prs.sbj. Lk.2:29 'Forgive'
frailtan p inf. MK.15:9 '

gagreifitai p dat.sg.fem. 2 Cor.8:12B 'decree'
greitai p 3sg.prs.sbj. Jn.11:31 'lament'
greitan p inf. MK.14:72 '

greitandei p nom.sg.fem. Lk.7:38 'lamenting'
greitandein p acc.sg.fem. Jn.11:33 '

greitip p 2pl.prs.ind. Jn.16:20 'lament'
leikes p nom.sg.masc. Lk.5:31 'physician'

leiki p acc.sg.masc. Col.4:14B 'physician'

manaseips s nom.sg.fem. Jn.14:17 'mankind'

manaseidai s dat.sg.fem. Lk.9:13 '

qeins p nom.sg.fem. Lk.1:5 'woman'

swarei adv. 2 Cor.6:1B 'in vain'
teikais p 2sg.prs.sbj. Col.2:21AB 'touch'
pizeieli gen.pl.masc. Ph.3:19A 'who'
waurdei gen.pl.neut. Lk.20:20 'word'

aritizo nom.sg.neut. Mk.10:25 'easier'
birusjos p nom.pl.masc. Lk.2:41 'parents'

duatsninun p 3pl.pt.ind. Mk.6:53 'hasten'

frawaurhtl gen.pl.fem. Rom.7:5A 'sin'
qiipeina p 3pl.pt.sbj. Lk.8:56 'say'

qiipeip p 2pl.pt.sbj. Lk.9:21 '

spidistai p dat.pl.masc. 1 Tim.4:1B 'last'

swiunja p 3sg.prs.sbj. Col.3:15B 'rejoice'
tawidideina s 3pl.pt.sbj. Lk.6:11 'do'
wripus p nom.sg.masc. Lk.8:33 'herd'
ake  conj.  Gal.2:14  'but'
frume  nom.sg.fem.  K Überschr.A  'first'
ize  nom.sg.masc.  Mt.5:32  'who'
  
  "  Nom.1:15  "
  "  Lk.8:13  "
  "  Lk.8:15  "
milplane  conj.  Lk.2:43  'while'
qenes  nom.pl.fem.  Eph.5:22  'woman'
  
  "  Eph.5:24  "
skerein  p  acc.sg.masc.  1 Cor.14:26  'revelation'
spewands  p  nom.sg.masc.  Mk.7:33  'spitting'
wehsa  p  dat.sg.neut.  Mk.8:26  'town'
  "  Mk.8:27  "

<ei>  <e>
andbahtip  3sg.prs.ind.  Jn.12:26  'serve'
laisaris  nom.sg.masc.  Lk.6:40  'teacher'
silubrinaize  s  gen.pl.neut.  Mt.27:3  'silver'
wisandin  dat.sg.fem.  1 Tim.1:4A  'being'
  "  "  "  "
U-stem vocative alternation
<au>
sunu  Mt.8:29, 9:27, Lk.8:28, 18:39,Mk.5:7, 10:47, 48  'son'
maqau  Lk.2:48  'boy'

<u>
daupu  Lk.18:38  'death'
sunu  Lk.18:38  'son'

Foreign names:
Filippu  Jn.14:9  'Philip'
Lazaru  Jn.11:43  'Lazarus'
Nazorenu  Lk.4:34  'Nazorean'
Teimaupaiu  1 Tim.1:18B  'Timothy'
Palaufeilu  Lk.1:3  'Theophilus'
Xristu  Mt.26:68 C  'Christ'
Zakkaiu  Lk.19:5  'Zacheus'

Apparent Metathesis
arbaidedidjaw  lsg.pt.sbj.  Gal.4:11  'work'
gakrotuda  3sg.prs.pass.ind.  Lk.20:18  'break to pieces'
APPENDIX 2: SUMMARY OF PHONOLOGICAL RULES

Below are listed for the grammars of Gothic and Old High German the generative rules involving suprasegmental conditioners, as discussed in the text. Rules are grouped according to their order of operation, meaning that the rule(s) under a lower order number must precede one or all of the rules under a higher order number. The sequences of operation within each ordering group is irrelevant. Rules are generally intrinsically ordered, or non-ordered, with the following exceptions: Gothic (4) before (3), and (9a-c) before (10); Old High German (7) before (4), and (4) before (2).

I. Gothic.

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<td>b)</td>
<td>/w/ to [u]</td>
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<td>c)</td>
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II. Old High German Suprasegmental Rules

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APPENDIX 3: ISIDORIAN WORD-BREAK DATA

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### II. Monophthong/Single Consonant

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### III. Diphthong/Single Consonant

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IV. Consonant Clusters—Geminate.

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V. Consonant Clusters—Non-Geminate.

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VI. Consonant Cluster with Liquid.

unzuui|flo (7:7)

VII. Hiatus Vowels.

isra|elo (6:7)

VIII. Divided Digraphs and Diphthongs.

arslu|oc (29:6)    ghe|ist    (15:20)
chida|an (35:3)    ia|ar      (26:15)
chihru|oru (17:18)  uuerodhe|oda (10:17)
chiuue|ihhit (15:15)