Introduction. Certainly one of the most significant innovations in the development of the Germanic languages was the fixation of primary word-stress on the so-called root syllable. The repercussions of this change continue to this day effecting both the phonology and the morphology of the several Germanic languages. One of these effects has been the reduction and loss of unstressed vowels in the Modern German dialects. The reduced vowel may be lost at the end of a word (apocope) or in a pretonal prefix (syncope). The following examples in standard German orthography illustrate these two types of vowel loss (König 1978:159):

Apocope: 

<table>
<thead>
<tr>
<th>German</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>ich fahr</td>
<td>I go/drive</td>
</tr>
<tr>
<td>im Haus</td>
<td>in the house</td>
</tr>
<tr>
<td>Gänse</td>
<td>geese</td>
</tr>
<tr>
<td>müde</td>
<td>tired</td>
</tr>
</tbody>
</table>

Syncope: 

<table>
<thead>
<tr>
<th>German</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>gesagt</td>
<td>said</td>
</tr>
<tr>
<td>besonders</td>
<td>especially</td>
</tr>
</tbody>
</table>

Within the German dialects we find a high degree of variation in both apocope and syncope. Many have argued that the variation in apocope is due to the relative strength of the morphological categories represented by the vowel to be lost (case, number, person, etc.). On the other hand certain dialects exhibit a distinctly phonological basis for the variation. The same holds true for syncope. The loss of e in prefixes evidences a marked phonological conditioning of the variation as we proceed from dialect to dialect.

The question that I wish to examine in this paper is whether the loss of unstressed e occurs in some principled manner. Although the phonological situation
may seem at first glance to be rather complicated, I will argue that both processes can be clarified and better understood when viewed within a framework of atomic phonology as series of derived rule additions to basic rules of apocope and syncope.

1. Apocope. When we use the term apocope in German dialectology we mean specifically the loss of final \(-e\) (or schwa) in all words which had such an \(-e\) in the normalized Middle High German of c. 1200. Apocope was a rather consequent event in many German dialects, especially in South Bavarian where written evidence for apocope is found as early as the 12th century. In northern or Low German dialects apocope is not evidenced until the 16th century in Mecklenburg. Today, final \(-e\) is retained in a narrow band of dialects extending from the Dutch border in the northwest to Silesia (now Polish) in the southeast. Dialects retaining \(-e\) include Westphalian, Eastphalian, Brandenburg with Berlin, North Hessian, Thüringisch and Upper Saxon. \(-e\) was lost in all western and southern dialects (Franconian, Bavarian, Alemannic – except fringe Swiss German dialects) and in northern and northeastern Low German dialects as the following examples illustrate (apocope examples from Schirmunski 1962:159-161):

South Hessian -
- **hos** 'Hase/hare'
- **ag** 'Auge/eye'
- **beis** 'böse/angry'
- **helf** 'helfe/I help'

Mecklenburg -
- **köl** 'Kohle/coal'
- **höv** 'Höfe/farms'
- **grib** 'greife/I grasp'
- **döft** 'taufte/he baptized'

(dialect forms are presented in simplified version for greater clarity, i.e., some diacritics omitted)

The borders of apocope for various grammatical categories do not coincide. For instance, the final \(-e\)
of a plural ending in a word like Gänse 'geese' is retained in a much larger area than the -e of the dative singular ending in zu Hause 'at home'. We thus seem to be confronted with a morphologically conditioned process.

However, phonological factors surface when we examine the loss of -e in those dialects through which the more general isoglosses pass. In dialects on the border between Low Franconian and Low Saxon in the northwest we find -e retained after stop consonants, but lost after voiced fricatives and sonorants: strate 'Straße/ street', bluem 'Blume/flower', müs 'Mäuse/mice'. In Thüringisch, which generally exhibits a more conservative position in regard to vowel loss, we find final -e lost after sonorants only: bagwam 'bequem/comfortable', från 'Hahn/rooster', toōl 'Zahl/number'. The loss of -e after sonorants is evidenced in southern dialects as early as Middle High German times. Typically, this loss is a feature of the standard literary language: bequem 'comfortable', leer 'empty'.

2. Syncope. The term syncope is used similarly to characterize the loss of -e- (schwa) non-finally, primarily in the prefixes be- and ge-. Again, the normalized Middle High German serves as the reference point for this process. We can make the general statement that the loss of pretonal -e- in the prefixes be- and ge- occurs in a strictly phonological manner. The degree of loss in a given dialect depends on the nature of the following consonant, the consonant which initiates the stressed syllable.

The loss of -e- intensifies as we move from north to south in the High German dialects. We can see distinct stages in the development of this process which are totally independent of any morphological category. Schirmunski (1962:166) believes that the variation in syncope is just as significant for the classification of the German dialects as the High German sound shift and the developments in long vowels and diphthongs.

The High German dialects exhibit a five-way distinction in the loss of -e- in the prefixes ge- and be-:
The northernmost group (Low and Middle Franconian, Lower and Upper Hessian, East Middle German) generally retains \textit{-e-} regardless of the following consonant (examples for syncope Schirmunski 1962: 157-159): \textit{gabona} 'gebunden/bound', \textit{gafaoan} 'gefahrene/driven', \textit{gemolga} 'gemolken/milked'.

II. In South Hessian and Pfälzisch \textit{-e-} is lost when followed by voiceless spirants and \textit{h}. When \textit{h} is the initial consonant of the stressed syllable the remaining consonant of the prefix changes into a strongly aspirated stop (fortis). In all other environments \textit{-e-} is retained: \textit{gfloga} 'geflogen/flown', \textit{khad} 'gehabet/had', \textit{gabaud} 'gebaut/built'.

III. In South Franconian, East Franconian and Lower Alsatian \textit{-e-} is lost in all instances valid for Group II as well as when followed by non-nasal sonorant consonants and the voiced glide \textit{w}: \textit{gelegt/lebt}, \textit{gruna} 'geronnen/run', \textit{pwiss} 'gewiesen/pointed'.

IV. In Swabian, Upper Alsatian and Bavarian \textit{-e-} is lost in all possible environments. Prefix initial \textit{g} is also lost if the loss occurs before a stop obstruent: \textit{bräxt} 'gebracht/brought', \textit{gfonda} 'gefundenFOUND', \textit{gmaxd} 'gemacht/made'.

V. In Swiss German \textit{-e-} loss patterns similarly to that of Group IV. However, differences in the consonant system, the retention of lenis-fortis contrast in stop consonants, trigger different results in the reduced prefixes: \textit{ksei} 'gesehen/seen', \textit{kxäüft} 'gekauft/bought', \textit{pxännä} 'bekennen/to know'.

In addition to this more recent syncope, there was apparently an older syncope in almost all dialects before a following sonorant, especially \textit{l} or \textit{r}. This syncope occurs in Middle High German times and is also reflected in the standard language as well as in dialects which typically do not syncopate: \textit{bleiben} 'to stay', \textit{glauben} 'to believe'. Different consonant reflexes in Swiss German attest to the isolated development of this process: \textit{glix} 'gleich/right away', \textit{blibä} 'bleiben/to stay'.

A few East Middle German dialects preserve prefix -e- in all instances; these dialects even insert -e- where it is historically unjustified: gelid 'Glied/limb', galands 'Glanz/splendor'.

3. Analysis. If we attempt to analyze apocope and syncope as diachronic rule additions we find that both appear to conform to the general notions underlying atomic phonology. That is, variations on a phonological process derive in a precise manner from a most limited, most specific rule characterizing that process, an atomic rule. The manner of rule generalization, complement rule addition, has been fully explicated elsewhere (cf. Dinnsen 1976, Keel 1977).

As we have already seen, apocope exhibits little variation in most dialects. Rule (1) represents the formulation of apocope for most High and Low German dialects.

\[(1) \quad \begin{array}{c}
\text{V} \\
[-\text{stress}] \\
\rightarrow \\
\emptyset / _\text{#}
\end{array}\]

However, those dialects which do exhibit phonological variations of general apocope are most significant. We have seen that some dialects, such as Thüringisch, lose final -e only after sonorant consonants. These dialects are the most conservative with respect to -e loss. The situation in those dialects can be characterized by rule (2), a much more limited rule than rule (1).

\[(2) \quad \begin{array}{c}
\text{V} \\
[-\text{stress}] \\
\rightarrow \\
\emptyset / [+\text{cons}] \\
[+\text{son}] / _\text{#}
\end{array}\]

The other group of dialects in the northwest, which exhibited variation in apocope, revealed -e retained only after voiceless obstruents. Thus for these dialects rule (3) offers an accurate description of apocope.

\[(3) \quad \begin{array}{c}
\text{V} \\
[-\text{stress}] \\
\rightarrow \\
\emptyset / [+\text{cons}] \\
[+\text{voice}] / _\text{#}
\end{array}\]
Rule (3), of course, is more general than rule (2); it applies in more instances. By the same token, rule (1) is more general than rule (3).

A brief analysis of the three rules in question reveals that these rules satisfy the conditions imposed by atomic phonology on rule generalization. It could be argued that apocope began initially as -e loss after sonorants. The redundant feature of [+voice] in the sonorants permitted a later expansion of the rule's environment to include voiced obstruents. Finally, once obstruents formed part of the rule's environment, the way was clear for the introduction of voiceless obstruents into the environment. Of course, once all consonants were included, it would be no longer necessary to mention them in the rule itself. Whether such a scenario is true for this process awaits diachronic investigation. What is significant is that no dialect exhibits -e loss variations which would violate the principles of atomic phonology, such as loss of -e after sonorants and voiceless obstruents only.

As with apocope, a large number of dialects have lost -e in unstressed prefixes. Rule (4) provides us with a starting point for our discussion. Rule (4) would characterize syncope in a dialect such as Bavarian, where the process is essentially exceptionless. Again, our interest is not the rule itself, but possible variations of the rule.

\[(4) \quad V \mid \text{-stress} \rightarrow \emptyset / \#[-\text{cont}]^{+\text{cons}} \]

We noted at the end of our discussion of the data for syncope that there was apparently and older rule of syncope which deleted prefix -e- before a sonorant consonant. All dialects exhibit this stage of development as well as the standard language. This syncope can be characterized by rule (5).

\[(5) \quad V \mid \text{-stress} \rightarrow \emptyset / \#^{+\text{son}}_{+\text{cons}} \]

Is rule (5) then the most basic rule for syncope
and the starting point for the further development of the process? My answer is no. I base this response on two crucial points: First, (5) must apply in dialects where the initial consonant is not a stop and, second, application of (5) results in different initial consonant clusters, particularly in Swiss German. It seems that the so-called older syncope is a totally distinct process.

Where, then, does syncope begin? Rule (6), which describes the syncope of \_e\_ when followed by a voiceless spirant, seems to be the most limited rule for this process.

\[(6) \quad \begin{array}{c} \text{V} \\ \text{[-stress]} \rightarrow \emptyset / \#[-\text{cont}] / [+\text{cont}] \end{array} \]

The next group of dialects (Group III) syncopates \_e\_ before l, r and w. At first glance, we may wonder why these consonants should function as a class, but closer analysis of redundant features and phonemic inventories of the dialects reveal that l, r and w constitute the class of voiced continuants in these dialects. We can express this additional set of environments for syncope as rule (7).

\[(7) \quad \begin{array}{c} \text{V} \\ \text{[-stress]} \rightarrow \emptyset / \#[-\text{cont}] / [+\text{cont}] / [+\text{voice}] \end{array} \]

Since these dialects also syncope before voiceless continuants, we can formulate rule (8) as the more general rule of syncope.

\[(8) \quad \begin{array}{c} \text{V} \\ \text{[-stress]} \rightarrow \emptyset / \#[-\text{cont}] / [+\text{cont}] \end{array} \]

The southernmost dialects which exhibit syncope before all consonants, characterized by rule (4), have in effect added rule (9) to rule (8). Rule (9) describes vowel syncope before a non-continuant consonant. Note that this is sufficient to include nasal consonants as well as stop obstruents in the syncopating environment.
(9) \[\text{\[-stress\]} \rightarrow \emptyset / \#\text{\[-cont\]}\]

As with the rules for apocope, we find the extension of the most limited syncope rule, (6), occurring according to the principles of atomic phonology. In rule (7) a complementary class of segments is added to the environment of (6) and results in the generalized rule (8). Similarly, rule (9) adds a complementary class of segments to the environment of (8), resulting in the final rule of syncope, rule (4). Since other logically possible developments in syncope do not in fact occur, syncope in the German dialects provides strong confirmation for the basic principles of atomic phonology.

4. Other issues. Beyond the significance of this study for atomic phonology, other related issues for further investigation have emerged. The process of syncope tends to destroy the "natural" syllable structure from one of CVCV to one of CCV. Typically, languages introduce rules to break up consonant clusters. The German dialects discussed here appear to be behaving unnaturally because they delete vowels to create consonant clusters. Another issue is the relationship of syncope and its creation of consonant clusters and the development of syllable initial affricates in the Upper German dialects. Interestingly, those dialects which exhibit the highest degree of affrication (South Bavarian and Swiss German) are the most consistent in syncope as well. Thus these dialects seem to have a more general tendency toward initial consonant clustering. Also, recalling rule (6), the clusters created by syncope - stop + fricative - parallel the phonetic detail of the so-called affricates ts, pf, kk. To be sure, many of the syncope clusters are not homorganic as are the affricates, but the relationship is intriguing. Finally, perhaps all of these developments are trying to tell us something about the ultimate drive of the Germanic languages toward monosyllabic
REFERENCES


